Improving Transportation Infrastructure Resilience Against Hurricanes, Other Natural Disasters, and Weathering: Part II - Analysis of Pedestrian Bridges Failures Due to Hurricane Maria

Volume 1

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16 Abstract

After the passage of Hurricane Maria as a strong category 4 storm through Puerto Rico, many different types of structures were affected. The objective of this investigation was to determine whether Hurricane Maria caused damages to pedestrian bridges in Puerto Rico, taking the San Juan Metropolitan Area (SJMA) as a case study. To achieve the project objective, the following tasks were performed: first, a literature review on pedestrian bridges in general was performed; second, several visits were made to the Bridges Office of the Puerto Rico Highway Transportation Authority to search for available information on pedestrian bridges location and condition; third, all the bridges on the SJMA were geolocated; fourth, visits were made to visually inspect the pedestrian bridges; fifth, by comparing the visual inspection findings to the previous inspection findings and old photographs, an assessment of possible damages induced by wind action was performed; and finally, all the documentation process was carried out. It was concluded that, out of the 21 bridges that were inspected, only four could have been affected by Hurricane Maria. It is understood that the main cause of the damages was the presence of traffic signs that were mounted on the bridges. Two of the damaged pedestrian bridges experienced inelastic lateral deflections due to the wind pressure these signs exerted on the bridge structure. On the other two, the transit signs were detached from their bottom supporting bases, probably due to wind induced vibrations; the signs were swinging due to the lack of lower end supports, situation that constituted a safety hazard to the vehicles that passed below the bridge. It is recommended that special considerations are taken when attaching signs to pedestrian bridges and that, after an extreme wind event, preliminary inspections should not only contemplate the main bridge structure, but any flexible elements attached to it. Volume 2 of this project investigates a steel truss pedestrian bridge that experienced permanent lateral deflections due to the hurricane. The main purpose of the research was to determine if the presence of traffic signs mounted on the bridge were the main cause for the inelastic lateral response. A detailed inspection of the bridge was performed, a condition assessment was developed, lab tests were carried out to characterize the material, and FE simulations were executed to capture the response with and without the signs. It was concluded that the signs played a predominant role in the inelastic response, but that there were also other conditions that may have contributed to the plastic deflections.

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1 Introduction

Pedestrian bridges are structures that are required to provide pedestrians with a safe passage in areas that are not accessible by walking (i.e., crossing water bodies) or that impose special risks to pedestrian flow (i.e., crossing high volume roadways). As they are obviously used in different situations with different characteristics, pedestrian bridges can be built with different materials (such as reinforced concrete, prestressed concrete, steel, wood, stone, aluminum, among others) and use different structural systems (such as arches, beams and slabs, trusses, suspension cables, or cable-stayed, among others). As these structures are very important for the safety of the public, it is imperative to continuously evaluate their integrity and serviceability, especially after an extreme event like a hurricane.

On September 20, 2017, Hurricane Maria crossed Puerto Rico from its southeast end to its northwest end (see Figure 1.1). The island suffered major damages in diverse structures, such as houses, multistory buildings, vehicular bridges, roads, sport venues, and storage facilities, among many others. The damages caused by Hurricane Maria in Puerto Rico and the Virgin Islands has been estimated to be around \$90 billion, making it the third most expensive hurricane in the history of the United States (Pasch, Penny, & Berg, 2019). Due to the intensive and extensive damages produced by Hurricane Maria, it was decided to explore the effects of this extreme event on pedestrian bridges in order to evaluate to what extent they were affected.

The objective of this project was assessing pedestrian bridge damages that may be attributed to Hurricane Maria and determining their causes and possible improvements that may have avoided such damages. The San Juan Metropolitan Area (SJMA) was selected as the case study area. The project had five principal stages: conduct a literature review on pedestrian bridges (the specifications that apply to the design and inspection of pedestrian bridges in Puerto Rico), identify

and geolocate the pedestrian bridges in the SJMA, consult and document available drawings and inspections performed in previous years for each pedestrian bridge identified in the SJMA, perform field visits and inspections to each pedestrian bridge, and finally evaluate the findings and assess if the encountered damages were related to the hurricane. This document covers all the stages of the project and presents conclusions and recommendations.

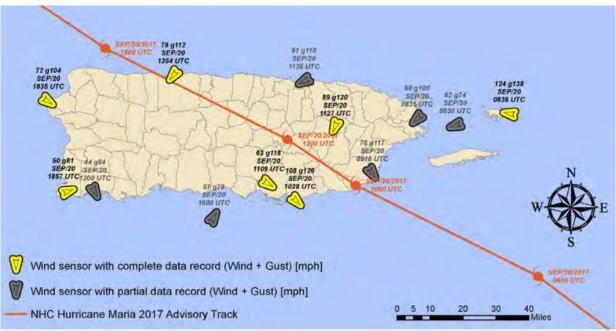


Figure 1.1: Trajectory of Hurricane Maria over Puerto Rico (FEMA, 2018)

2 Literature Review

Two important aspects for a resilient pedestrian bridge construction are the design process and the inspection and condition assessments that allows a proper maintenance. In this chapter, a summary is presented of the specifications that apply to the design and inspection of pedestrian bridges in Puerto Rico.

2.1 Design Specification for Pedestrian Bridges

The design and construction of pedestrian bridges should be done in accordance with the *LRFD Guide Specifications for the Design of Pedestrian Bridges* (AASHTO, 2009). These specifications are meant to be used as a supplement to the *LRFD Bridge Design Specifications* (AASHTO, 2020), which are widely used for the design of vehicular bridges.

Pedestrian bridges are designed to support different loads, such as dead load, pedestrian loading, maintenance vehicle load (unless vehicular access is prevented by permanent physical methods), equestrian load, wind load, and fatigue load, among others. Again, both sets of specifications mentioned in the previous paragraph must be used together in order to determine the applicable loads and their combinations.

Given the objective of this project, the determination of wind loads is of particular interest. The LRFD Guide Specifications for the Design of Pedestrian Bridges (AASHTO, 2009) indicates wind loads shall be determined in accordance with the Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals (AASHTO, 2015), unless otherwise required by the bridge owner. This is done because pedestrian bridges are potentially more flexible than vehicular bridges and because of the possibility of traffic signs being mounted on pedestrian bridges (AASHTO, 2009). The LRFD Guide Specifications for the Design of Pedestrian Bridges

(AASHTO, 2009) clearly indicate that signs mounted on pedestrian bridges must be considered when calculating wind loads.

2.2 Inspection Procedures for Pedestrian Bridges

The Puerto Rico Highway and Transportation Authority (PRHTA) used to be in charge of the inspection of pedestrian bridges in Puerto Rico. For these inspections, PRHTA followed the standards of the National Bridge Inventory (NBI). When visual inspections of pedestrian bridges were performed, they focused their assessments mostly to NBI Items 58, 59, and 60, which corresponds to the deck, the superstructure, and the substructure, respectively. A condition assessment was given according to the findings using a rating scale that ranges from nine (9) to zero (0). Table 2.1 presents the Condition Rating Scale used for the bridge Items 58, 59, and 60 and a description of the condition.

Table 2.1: NBI general condition rating guidelines (Federal Highway Administration, 1995)

| Code | Description | |
|------|--|--|
| N | NOT APPLICABLE | |
| 9 | EXCELLENT CONDITION | |
| 8 | VERY GOOD CONDITION (No problems noted.) | |
| 7 | GOOD CONDITION (Some minor problems.) | |
| 6 | SATISFACTORY CONDITION (Structural elements show some minor deterioration.) | |
| 5 | FAIR CONDITION (All primary structural elements are sound but may have minor | |
| | section loss, cracking, spalling or scour.) | |
| 4 | POOR CONDITION (Advanced section loss, deterioration, spalling or scour.) | |
| 3 | SERIOUS CONDITION (Loss of section, deterioration, spalling or scour have seriously | |
| | affected primary structural components. Local failures are possible. Fatigue cracks | |
| | in steel or shear cracks in concrete may be present.) | |
| 2 | CRITICAL CONDITION (Advanced deterioration of primary structural elements. | |
| | Fatigue cracks in steel or shear cracks in concrete may be present or scour may | |
| | have removed substructure support. Unless closely monitored it may be necessary | |
| | to close the bridge until correction action is taken.) | |
| 1 | "IMMINENT" FAILURE CONDITION (Major deterioration or section loss present in | |
| | critical structural components or obvious vertical or horizontal movement affecting | |
| | structure stability. Bridge is closed to traffic but corrective action may put back in | |
| | light service.) | |
| 0 | FAILED CONDITION (Out of service; beyond corrective action.) | |

Appendix A presents the forms and procedures used by PRHTA for the documentation of inspections of pedestrian bridges. These documents are:

- Bridge Load Capacity Summary Form
- Critical Finding Memorandum
- Safety Inspection Report
 - Initial Inspection Report
 - o Routine Inspection Report
- Standards for Photographs of Existing Bridges
- Standard Element Numbering Procedure
- Quality Assurance / Quality Control Forms
- Scope of Work of Underwater Inspection
- Procedure for Conducting Underwater Inspection
- Failure Critical Inspection Procedures

All inspections were carried out with the most up-to-date forms by PRHTA. These above-mentioned forms were filled out based on findings, giving ratings (as per Table 2.1) and comments. Any rating of 7 or less was accompanied with an explanatory comment. When the rating was 4 or less, in addition to the comment, the inspector had to attach photographs that exemplify the condition and justify the rating.

At some point before the passing of Hurricane Maria through Puerto Rico, the ownership of the pedestrian bridges passed to the municipalities, together with the responsibility of inspecting them. Still, old inspection reports by the PRHTA were collected for this project.

3 Methodology

In order to achieve the objectives of this research, the following list of tasks summarizes the procedure followed to assess the impact of Hurricane Maria on pedestrian bridges in the San Juan Metropolitan Area (SJMA) of Puerto Rico:

- Perform a literature review and collect background data.
 - Visit the offices of the Puerto Rico Highway and Transportation Authority to obtain relevant background data (i.e., inspection reports, photos, drawings, manuals of inspections).
 - o Perform a literature review on pedestrian bridges.
 - Study the available inspections reports on pedestrian bridges.
 - Review news reports on bridge damages.
- Identify pedestrian bridges in the SJMA.
 - Obtain a list of bridges in the area.
 - o Geo-locate the pedestrian bridges with the platform Google Earth Pro.
 - Assess ownership and accessibility.
- Perform field visit and visual inspection of pedestrian bridges in the area of study.
 - Try to identify possible damages that may have been produced by the hurricane.
 - Complement the visual inspection with interviews of local residents, when possible, to receive their input on the condition of the bridge previous to the hurricane.
 - O Document with several high-quality photographs each bridge.

- Fill in forms with comments on the preliminary findings during the visit. The forms used for field inspections are presented in Appendix B.
- Evaluate the findings and compare them to previous inspections finding by the PRHTA to identify damages that may be attributed to Hurricane Maria.
- Document all information collected and the findings.

It should be pointed out that, for this project, the inspected pedestrian bridges were not rated, since the objective was only to identify the damages that were understood to have been caused by the hurricane. Those damages are described in detail.

4 Pedestrian Bridges in the San Juan Metropolitan Area

As previously mentioned, in the past the Puerto Rico Highway and Transportation Authority (PRHTA) was responsible for the inspections and evaluation of pedestrian bridges, but at some point before Hurricane Maria made landfall in Puerto Rico, that changed. Currently, the responsibility of inspecting and evaluating pedestrian bridges is of the municipality in which the bridge is located. Nonetheless, PRHTA performed visual inspections of many pedestrian bridges and still maintains information about them.

For this project, PRHTA provided inspection reports (which include plans and photos) of 32 pedestrian bridges located in the San Juan Metropolitan Area (SJMA). Out of the 32 pedestrian bridges, four had been removed prior to Hurricane Maria due to deteriorating conditions; one was removed between 2014 and 2017, while three had already been completely removed by April 2014. Interestingly, the four removed bridges were made of steel and were constructed between 1971 and 1978.

The information of the remaining 28 bridges was used to determine their location, as listed in Table 4.1. Also indicated in Table 4.1 is whether the owner of the bridge is a municipality or if it is owned by another type of entity. These bridges were then geolocated using Google Earth Pro, as shown in Figure 4.1.

Out of the 28 bridges, it was decided to inspect only the 21 bridges owned by the municipality. The seven bridges privately owned were not inspected because they would require a permit from the owner. The following two chapters present the findings of the visual inspections of the 21 bridges.

Out of the 21 pedestrian bridges inspected, it was found that four presented damages that may be attributed to Hurricane Maria. These bridges are discussed in Chapter 5, including background information and descriptions of the damages attributed to the hurricane.

Meanwhile, the bridges that did not present damages due to Hurricane Maria are discussed in Chapter 6. Although these bridges did not present damages due to the hurricane, the inspection team documented any deterioration they detected.

Table 4.1: List of Pedestrian Bridges in the SJMA

| Bridge No. | Latitude | Longitude | Ownership |
|------------|---------------|---------------|--------------|
| 0626 | 18° 23′ 46″ N | 66° 03′ 09″ W | Municipality |
| 0745 | 18° 27′ 08″ N | 66° 05′ 12″ W | Municipality |
| 0748 | 18° 23′ 42″ N | 66° 02′ 50″ W | Municipality |
| 0960 | 18° 23′ 35″ N | 66° 04′ 14″ W | Municipality |
| 1095 | 18° 25′ 03″ N | 66° 02′ 36″ W | Municipality |
| 1137 | 18° 26′ 50″ N | 66° 02′ 59″ W | Municipality |
| 1307 | 18° 26′ 47″ N | 66° 02′ 41″ W | Municipality |
| 1418 | 18° 24′ 36″ N | 66° 02′ 37″ W | Municipality |
| 1478 | 18° 23′ 57″ N | 66° 06′ 17″ W | Municipality |
| 1513 | 18° 21′ 04″ N | 66° 05′ 26″ W | Municipality |
| 1616 | 18° 27′ 38″ N | 66° 04′ 52″ W | Hotel |
| 1736 | 18° 23′ 42″ N | 66° 02′ 41″ W | Municipality |
| 1743 | 18° 23′ 48″ N | 66° 02′ 35″ W | Municipality |
| 1762 | 18° 24′ 03″ N | 66° 03′ 02″ W | University |
| 1774 | 18° 24′ 26″ N | 66° 04′ 21″ W | Municipality |
| 1888 | 18° 26′ 41″ N | 66° 04′ 09″ W | Hospital |
| 1897 | 18° 23′ 12″ N | 66° 03′ 41″ W | University |
| 1926 | 18° 25′ 27″ N | 66° 04′ 14″ W | Municipality |
| 1927 | 18° 25′ 29″ N | 66° 03′ 33″ W | Airline |
| 2087 | 18° 26′ 37″ N | 66° 04′ 14″ W | Municipality |
| 2336 | 18° 24′ 43″ N | 66° 01′ 44″ W | Municipality |
| 2351 | 18° 24′ 40″ N | 66° 06′ 08″ W | Telecom Co. |
| 2355 | 18° 24′ 30″ N | 66° 02′ 10″ W | Municipality |
| 2549 | 18° 23′ 22″ N | 66° 04′ 51″ W | Hospital |
| 2566 | 18° 24′ 28″ N | 66° 03′ 32″ W | Municipality |
| 2665 | 18° 27′ 55″ N | 66° 05′ 27″ W | Municipality |
| 2682 | 18° 26′ 53″ N | 66° 03′ 35″ W | Municipality |
| 2683 | 18° 26′ 51″ N | 66° 03′ 21″ W | Municipality |



Figure 4.1: Aerial photo of pedestrian bridges in the San Juan Metropolitan Area (Source: Google Earth Pro)

5 Pedestrian Bridges with Damages Possibly Caused by Hurricane Maria

Out of the 21 pedestrian bridges in the San Juan Metropolitan Area (SJMA) inspected for this project, four exhibited damages that may have been caused by Hurricane Maria. These are:

- PB 0960 Traffic sign detached from mounting assembly and damaged handrail
- PB 1137 Lateral deflections in the plastic range
- PB 1307 Lateral deflections in the plastic range
- PB 2336 Traffic sign detached from mounting assembly

In this chapter, background information is presented on these four pedestrian bridges, as well as the findings of the visual inspections performed for this project. The background information was obtained from information provided by the Puerto Rico Highway and Transportation Authority (PRHTA).

5.1 Pedestrian Bridge 0960

Pedestrian Bridge 0960 (shown in Figure 5.1 and Figure 5.2) was constructed in 1967. It is a slab type bridge made of reinforced concrete. The bridge is located at coordinates 18° 23' 35" N and 66° 04' 14" W, connecting Villa Nevarez Urbanization with Quintas de San Ramon Urbanization, which is next to the Puerto Rico Medical Center (see Figure 5.3). The bridge crosses above Las Americas Expressway (PR-18), where by 2005 it had an ADT of 178,900 and a Truck ADT of 4%. Neighbors from the area estimate that the bridge is mostly used by medical students living in Villa Nevarez and working at the Medical Center.



Figure 5.1: South view of PB 0960



Figure 5.2: North view of PB 0960



Figure 5.3: Location of PB 0960 (Source: Google Earth Pro)

5.1.1 PRHTA Inspection Reports

PRHTA provided inspection reports with the following dates, (full reports are presented in Appendix C):

- April 15, 2014
- August 12, 2002
- February 9, 2000
- March 20, 1998
- March 5, 1996
- September 30, 1992

The latest inspection report, dated April 15, 2014, refers to an inspection carried out on December 9, 2008. The report for the 2008 inspection was not available. Table 5.1 presents the ratings given to the bridge's deck, superstructure, and substructure on two most recent inspections. It can be seen that the deck showed a slight improvement, but the superstructure and substructure kept the same rating.

Table 5.1: PB 0960 ratings from most recent inspections (Source: PRHTA)

| | Rating | | |
|--------------------------|------------------|----------------|--|
| Item | December 9, 2008 | April 15, 2014 | |
| Deck (Item 58) | 4 | 5 | |
| Superstructure (Item 59) | 4 | 4 | |
| Substructure (Item 60) | 5 | 5 | |

The latest inspection report made the following observations: "The wearing surface shows poor finishing, light scalings and fine to medium transverse cracks. Inadequate ramps for handicaps, holes and much vegetation along the wearing surface and railings. Ramps railings with broken sections from supports and movement. Large spallings with exposed reinforced steel due to traffic impact at beams of second span over route towards Caguas and over reversible lane. Medium horizontal crack at pier cap (East Side)."

5.1.2 Plans of the Bridge

Figure 5.4 and Figure 5.5 reproduce plans of the pedestrian bridge. The plans are dated 1976, but they were copied from the 2014 inspection report.

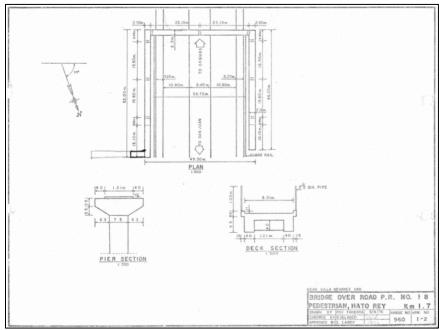


Figure 5.4: PB 0960 plans sheet 1 of 2 (Source: PRHTA)

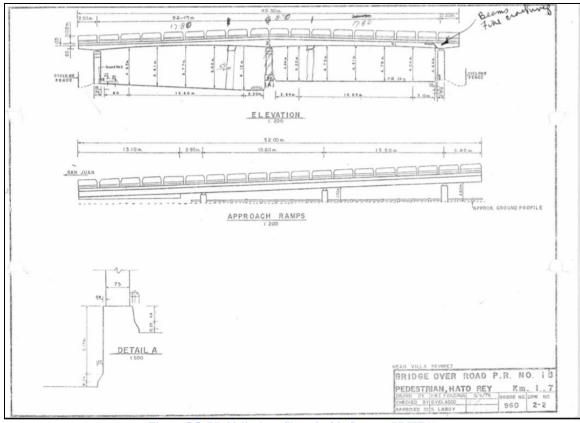


Figure 5.5: PB 0960 plans Sheet 2 of 2 (Source: PRHTA)

5.1.3 Photos of Inspections by PRHTA

Figure 5.6, Figure 5.7 and Figure 5.8 present photos of the bridge from 1972. It can be seen in this pictures that, back then, the bridge did not have chain-link fencing, nor did it have traffic signs attached to it.



Figure 5.6: North side of PB 0960 on July 21, 1972 (Source: PRHTA)



Figure 5.7: Underside of PB 0960 on July 21, 1972 (Source: PRHTA)



Figure 5.8: Walkway of PB 0960 on July 21, 1972 (Source: PRHTA)

5.1.4 Photos Before and After Hurricane Maria

To detect if the bridge suffered any major deformations due to Hurricane Maria, old photographs from PRHTA were compared to pictures taken in 2019. One such comparison can be made between a photo of the walkway from 2000 (Figure 5.9) and a another from 2019 (Figure 5.10). No deformation in the structural elements was detected from the comparison of photographs.



Figure 5.9: Walkway of PB 0960 on September 6, 2000 (Source: PRHTA)



Figure 5.10: Walkway of PB 0960 on March 13, 2019

5.1.5 Inspection by PUPR

The inspection by PUPR was conducted by Civil Engineering undergraduate students Adriana Murati-Núñez and Jonathan Hernández on March 13, 2019. During the inspection, the weather was sunny. The bridge was open to pedestrians.

During the visit, a neighbor approached the inspection team and expressed concern for the safety of the people that use the bridge. One of the concerns was that the sidewalk (at the location indicated in Figure 5.11) used to approach the bridge ramp on the west side has a hole with a depth of more than 1 ft. This hole was covered with a pallet, as shown in Figure 5.12. In the same area, a section of the sidewalk has sunk, as shown in Figure 5.13. Other observations made by the inspection team were the growing vegetation on the chain-link fence of the ramp (see Figure 5.14) and presence of corrosion on the support bases of the chain-link fence (see Figure 5.15).



Figure 5.11: Pedestrian path with the red circle indicating location of tripping hazards (Source: Google Earth Pro)



Figure 5.12: Holes in sidewalk covered with a pallet



Figure 5.13: Sunk section of sidewalk



Figure 5.14: Vegetation in chain-link fencing



Figure 5.15: Corrosion in base support of chain-link fencing

At the time of the inspection, the bridge had attached five signs of different sizes, as it can be appreciated in Figure 5.1 and Figure 5.2. In terms of possible damages caused by Hurricane Maria, it was observed that one of the traffic signs mounted on the bridge was detached at the bottom end from the mounting assembly, as indicated in Figure 5.16. It is theorized that the detachment was due to wind induced vibrations that occurred during the hurricane.



Figure 5.16: Traffic Signs partially detached from support

It was observed that all the traffic signs mounted on the bridge were attached to the handrails, as shown in Figure 5.17. It was noticed that there were cracks at the base of handrails posts (see Figure 5.18), and one section was detached (see Figure 5.19) and bent, affecting the sign (see Figure 5.20). Wind vibrations may have induced the cracks and triggered the bent.



Figure 5.17: Sign mount attached to handrail



Figure 5.18: Cracks at the base of the handrail posts



Figure 5.19: Detached handrail post



Figure 5.20: Deformed sign due to handrail bent

5.2 Pedestrian Bridge 1137

Pedestrian Bridge 1137 (shown in Figure 5.21) was a steel structure constructed in 1968. The bridge was located at coordinates 18° 26′ 49.75″ N and 66° 02′ 59.80″ W. This Bailey bridge connected Norte Shopping Center and Luis Lloréns Torres public housing complex at the north with the Villa Palmeras sector at the south, as shown in Figure 5.22. The structure is very important for the security of pedestrians, as it crosses over the Román Baldorioty de Castro Expressway, which has a very high vehicular flow (67,300 ADT with the Truck 4% ADT in 2017). As it will be explained later, PB 1137 was removed by PRDOT because it was highly affected by Hurricane Maria. Still, the PUPR team was able to inspect the structure before its removal.



Figure 5.21: Pedestrian Bridge 1137



Figure 5.22: Location of PB 1137 (Source: Google Earth Pro)

5.2.1 PRHTA Inspection Reports

PRHTA provided inspection reports with the following dates, (full reports are presented in Appendix D):

- May 15, 2017
- January 23, 2014
- June 29, 2001
- March 11, 1999
- August 19, 1996
- December 22, 1994
- February 24, 1993
- June 8, 1991
- June 23, 1989
- July 28, 1987

- April 21, 1986
- July 16, 1975
- November 13, 1972

Table 5.2 presents the ratings given to the bridge's deck, superstructure, and substructure on two most recent inspections. It can be seen that the deck had reached a rating of Poor (4), while the substructure kept deteriorating.

Table 5.2: PB 1137 ratings from most recent inspections (Source: PRHTA)

| | Rating | |
|--------------------------|------------------|--------------|
| Item | January 23, 2014 | May 15, 2017 |
| Deck (Item 58) | 5 | 4 |
| Superstructure (Item 59) | 5 | 5 |
| Substructure (Item 60) | 6 | 5 |

The latest inspection report made the following observations about the deck: "There is moderate to severe corrosion on the surface, there are several big holes due to corrosion on the decking plates, there is a big section with a detached and skewed corner creating a hole, big patches to repair corroded sections, there are several sections of the deck that have disconnected from its weld points, ..." Referring to the superstructure, the report indicates that "several of the lateral bracing components have light, moderate and sever corrosion and loss of section, some of the upper chord sections have moderate loss of section due to corrosion." Finally, the report indicates that the "steel columns are in good condition, light corrosion."

5.2.2 Plans of the Bridge

The oldest set of plans obtained for this bridge were undated and drawn by hand, as shown in Figure 5.23 and Figure 5.24. Also obtained were a plan from 1976 with a 1982 revision (Figure 5.25) and 1987 revision (Figure 5.26), and a set of plans from 2001 (Figure 5.27 to Figure 5.32).

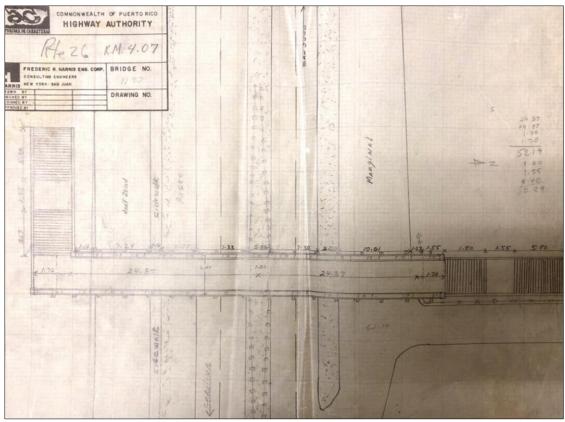


Figure 5.23: PB 1137 undated plan Sheet 1 of 2 (Source: PRHTA)

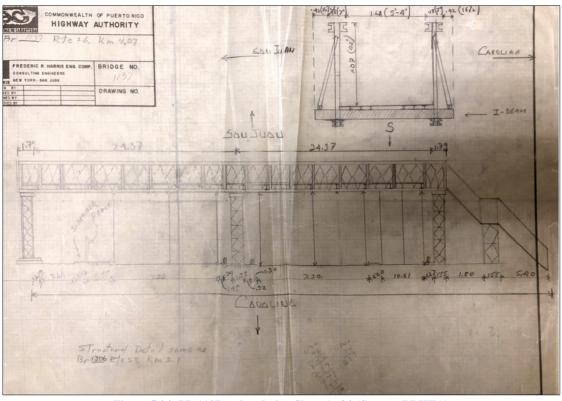


Figure 5.24: PB 1137 undated plan Sheet 1 of 2 (Source: PRHTA)

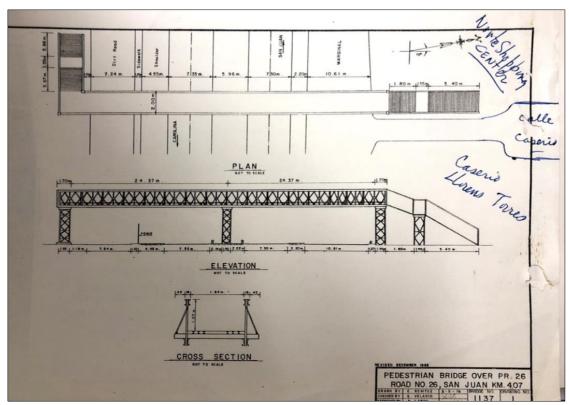


Figure 5.25: PB 1137 plan from 1976 with 1982 revision (Source: PRHTA)

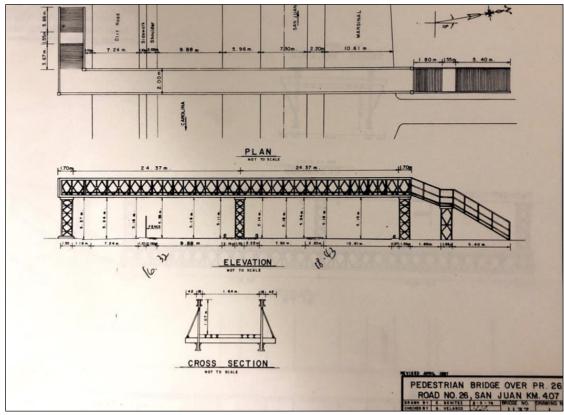


Figure 5.26: PB 1137 plan from 1976 with 1987 revision (Source: PRHTA)

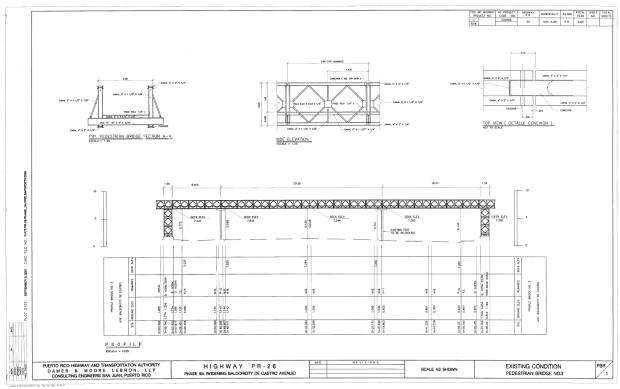


Figure 5.27: PB 1137 plans from 2001 sheet 1 of 6 (Source: PRHTA)

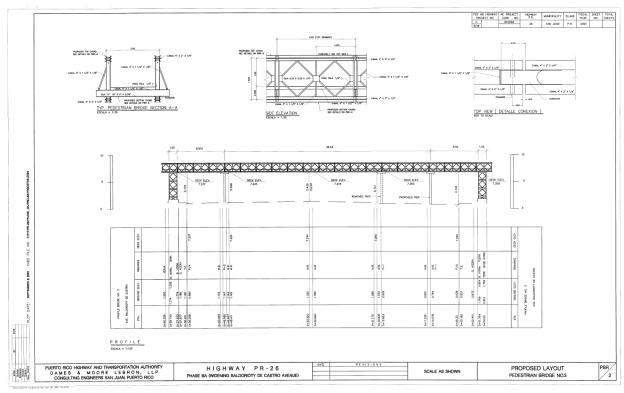


Figure 5.28: PB 1137 plans from 2001 sheet 2 of 6 (Source: PRHTA)

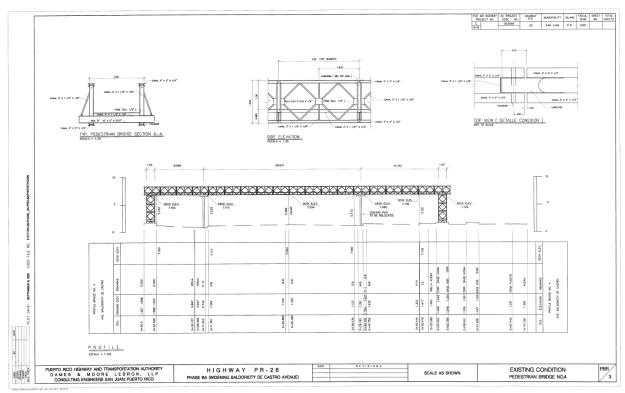


Figure 5.29: PB 1137 plans from 2001 sheet 3 of 6 (Source: PRHTA)

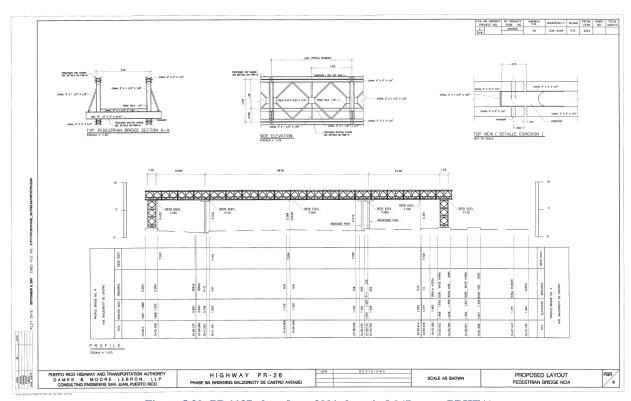


Figure 5.30: PB 1137 plans from 2001 sheet 4 of 6 (Source: PRHTA)

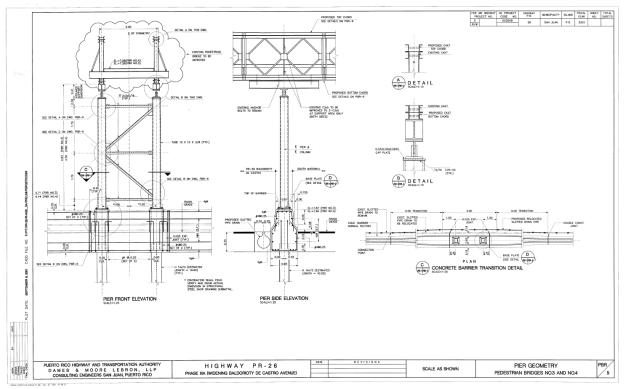


Figure 5.31: PB 1137 plans from 2001 sheet 5 of 6 (Source: PRHTA)

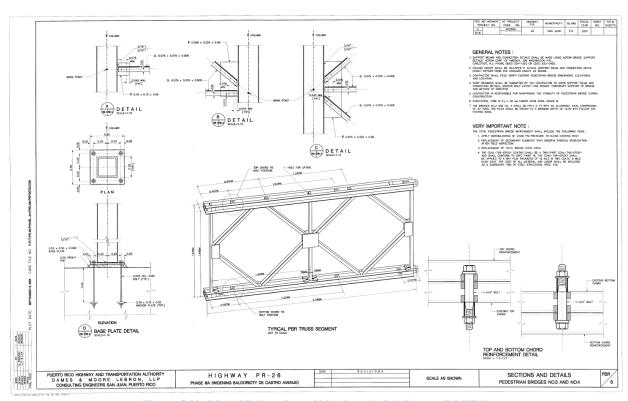


Figure 5.32: PB 1137 plans from 2001 sheet 6 of 6 (Source: PRHTA)

5.2.3 Photos of Inspections by PRHTA

Figure 5.33 presents a set of photos of the bridge taken in 1999. It can be seen in this pictures that, back then, the bridge did not have chain-link fencing, but that it already has at least two traffic signs attached to it.

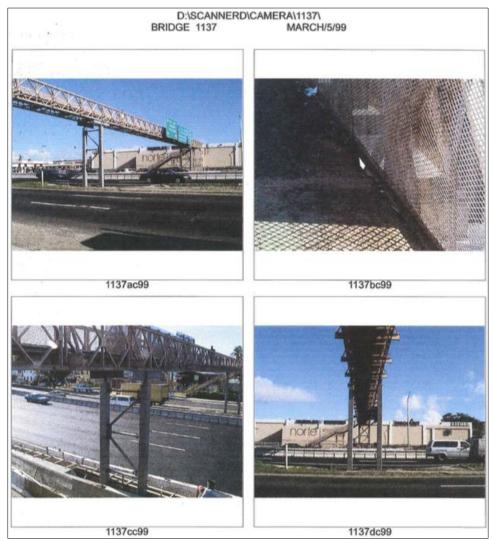


Figure 5.33: Photos taken by PRHTA in 1999 (Source: PRHTA)

5.2.4 Photos Before and After Hurricane Maria

To detect if the bridge suffered any major deformations due to Hurricane Maria, photographs from before and after the hurricane were compared. Examples of these are the comparison that can be made between Figure 5.34 and Figure 5.35, and between Figure 5.36 and Figure 5.37. By the

comparing the photographs, it is appreciated that the bridge experienced lateral deflections in the plastic range.



Figure 5.34: Aerial photo of PB 1137 before Hurricane Maria (April 8, 2016) (Source: Google Earth Pro)



Figure 5.35: Aerial photo of PB 1137 after Hurricane Maria (April 28, 2018) (Source: Google Earth Pro)

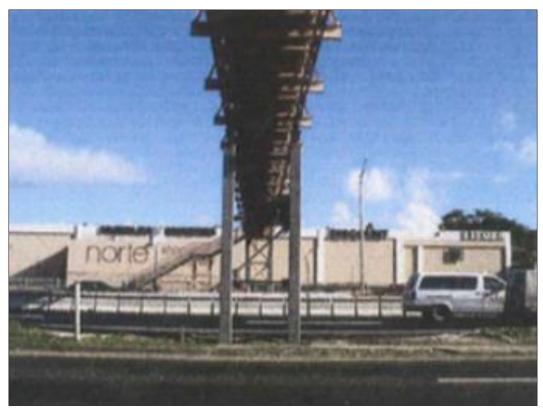


Figure 5.36: Underside of PB 1137 before Hurricane Maria (March 5, 1999) (Source: PRHTA)



Figure 5.37: Underside of PB 1137 after Hurricane Maria (November 3, 2018)

5.2.5 Inspection by PUPR

The inspection by PUPR was conducted by Civil Engineering graduate students Nelson Sotelo and Geoffrey Vega, and undergraduate students Adriana Murati-Núñez, Jonathan Hernández and Gustavo Cruz on November 13, 2018. During the inspection, the weather was sunny. The bridge was closed to pedestrians and there were no traffic signs attached to it.

During the visit, it was evident that the bridge had corrosion problems in many components. Corrosion had caused holes in the walkway, as shown in Figure 5.38 and Figure 5.39. Some transveral elements were missing, as shown in Figure 5.40. (Further details about the inspection of this bridge can be found in Volume 2 of this document).

In terms of possible damages caused by Hurricane Maria, it was evident that the bridge had experienced lateral deflections in the plastic range as evidenced by the curvature in the structure that can be appreciated in Figure 5.41 and Figure 5.42. Although the traffic signs that were attached to the bridge had already been removed, the mounting assembly was still present, as shown in Figure 5.43. It was observed that the location of the mounting assembly coincides with the section of the bridge with larger curvature. Therefore, it is theorized that the lateral deflection on the bridge was partly due to the extreme wind loads on the signs during Hurricane Maria. This theory is furthered studied in Volume 2 of this document.

PRDOT deemed Pedestrian Bridge 1137 as unreliable and in danger of collapsing (ElNuevoDia.com, 2019). Therefore, in March 2019, PB 1137 was removed in sections to be later demolished at another site.



Figure 5.38: Some holes in the steel



Figure 5.39: Original piece with all elements



Figure 5.40: Piece without one element



Figure 5.41: Curvature in deck



Figure 5.42: Underside view of lateral deflection



Figure 5.43: Base of the Traffic Sings

5.3 Pedestrian Bridge 1307

Pedestrian Bridge 1307 (shown in Figure 5.44) was a steel structure constructed in 1968. The bridge was located at coordinates 18° 26′ 48.40″ N and 66° 02′ 41.89″ W. This Bailey bridge connected the Luis Lloréns Torres public housing complex at the north with the Villa Palmeras sector at the south, as shown in Figure 5.45. The pedestrian bridge crosses over the Román Baldorioty de Castro Expressway, which has a very high vehicular flow (67,300 ADT with the Truck 4% ADT in 2017). The reader may notice that PB 1307 is a structure very similar to PB 1137, almost identical. They both are Bailey bridges constructed the same year, with each structure located down the road from the other. PB 1307 was also removed by PRDOT because it was highly affected by Hurricane Maria. Still, the PUPR team was able to inspect the structure before its removal.



Figure 5.44: Pedestrian Bridge 1307



Figure 5.45: Location of PB 1307 (Source: Google Earth Pro)

5.3.1 PRHTA Inspection Reports

PRHTA provided inspection reports with the following dates, (full reports are presented in Appendix E):

- May 15, 2017
- January 24, 2014
- June 30, 2008
- March 14, 2003
- March 12, 2003
- November 17, 2000

- May 8, 1998
- September 24, 1993
- February 28, 1991
- December 3, 1991
- November 17, 1988
- October 23, 1986
- February 2, 1984
- June 18, 1975
- November 13, 1972

Table 5.3 presents the ratings given to the bridge's deck, superstructure, and substructure on two most recent inspections. It can be seen that the bridge maintained a rating of Fair (5) for its major items.

Table 5.3: PB 1307 ratings from most recent inspections (Source: PRHTA)

| | Rating | |
|--------------------------|------------------|--------------|
| Item | January 24, 2014 | May 15, 2017 |
| Deck (Item 58) | 5 | 5 |
| Superstructure (Item 59) | 5 | 5 |
| Substructure (Item 60) | 5 | 5 |

The latest inspection report made the following observations about the deck: "Steel surface with severe corrosion, slight loss of sections and slight perforations on the sides of the surface of the decking plates. Several decking plates have detached from their weld points, large sections have been repaired, although there are sections in poor conditions, several small holes due to corrosion and sections of the welded decking plates that leave small gaps between them." Referring to the chain-link fencing, the report indicated: "Severe corrosion of the security mesh, several sections are detached from their points of support. In the stairways there are vertical fencing posts

detached from their welding supports." superstructure, the report indicates that "Finally, the report indicates that there is "moderate and severe corrosion on all lower members of the structure. There are perforations with loss of sections. Stairs have severe corrosion and perforations with loss of sections. There are railings that have severe corrosion in the anchors or bases, they have lateral movements."

5.3.2 Plans of the Bridge

PRHTA provided a plan drafted originally in 1976 and revised in 1993, as shown in Figure 5.46. Another set of drawings from 1991 were obtained and shown on Figure 5.47 and Figure 5.48. The orientation of the stairways differs between the 1976 and 1991 drawings. It appears that, at some point, the stairways were modified. This is confirmed with photographic evidence.

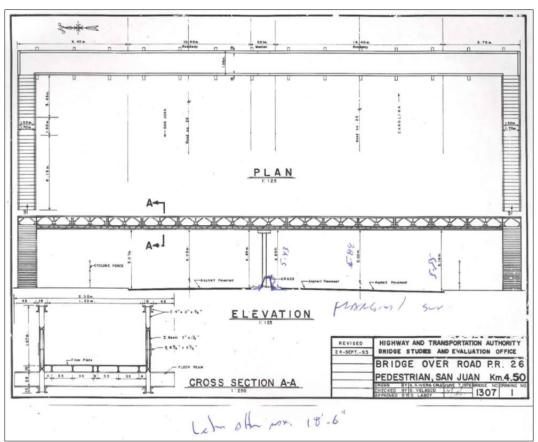


Figure 5.46: PB 1307 plan from 1976 with 1993 revision (Source: PRHTA)

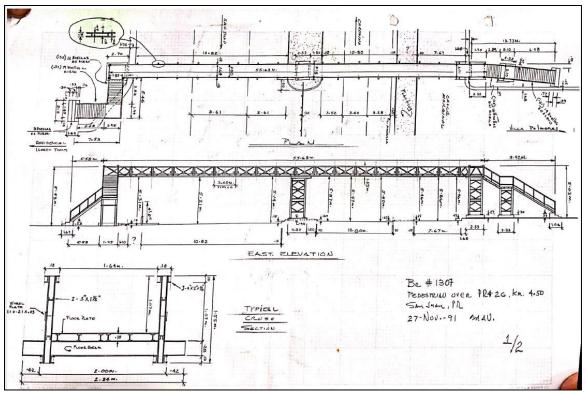


Figure 5.47: PB 1307 plans from 1991 sheet 1 of 2 (Source: PRHTA)

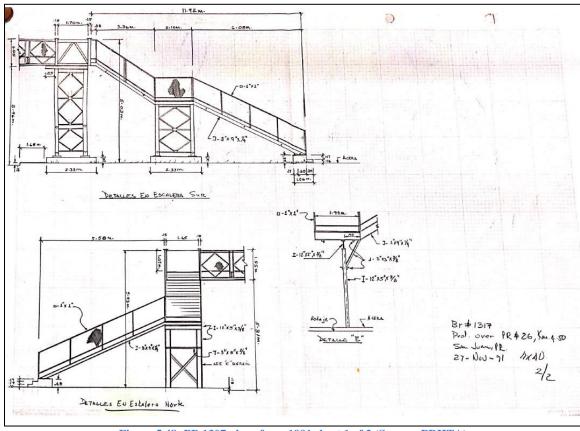


Figure 5.48: PB 1307 plans from 1991 sheet 1 of 2 (Source: PRHTA)

5.3.3 Photos of Inspections by PRHTA

Several photographs were provided by PRHTA. Some undated photographs are shown in Figure 5.49 to Figure 5.52. As explained in the previous section, these photographs show the original orientation of the stairways. It is assumed that these undated photographs are from some point between 1968 and 1990. Figure 5.53 presents a photograph from 1991 which shows the stairways with the modified orientation. Other photographs from 1993 are shown in Figure 5.54 and Figure 5.55. It can be seen in these photos that in 1993, the bridge still did not have chain-link fencing, nor any sign attached to it. A photograph from 2000 (see in Figure 5.56) shows the bridge with traffic signs attached to it, but still with no chain-link fencing.



Figure 5.49: East side view of PB 1307 taken between 1968 and 1990 (Source: PRHTA)



Figure 5.50: Phot of west side view of PB 1307 taken between 1968 and 1990 (Source: PRHTA)



Figure 5.51: Photo of south end of PB 1307 taken between 1968 and 1990 (Source: PRHTA)



Figure 5.52: Underside and north end of PB 1307 taken between 1968 and 1990 (Source: PRHTA)



Figure 5.53: Photo of PB 1307 taken on November 27, 1991 (Source: PRHTA)



Figure 5.54: Photo of deck of PB 1307 taken on September 24, 1993 (Source: PRHTA)



Figure 5.55: Photo of underside of PB 1307 taken on September 24, 1993 (Source: PRHTA)



Figure 5.56: Photo of PB 1307 taken on November 17, 2000 (Source: PRHTA)

5.3.4 Photos Before and After Hurricane Maria

To detect if the bridge suffered any major deformations due to Hurricane Maria, photographs from before and after the hurricane were compared. Examples of these are the comparisons that can be made between Figure 5.57 (taken in 1996) and Figure 5.58 (taken in 2019), and between Figure 5.59 (taken in 1993) and Figure 5.60 (taken in 2019). By the comparing the photographs, it is appreciated that the bridge experienced lateral deflections in the plastic range as evidenced by the curvature exhibited by the deck and the superstructure in the most recent photographs.



Figure 5.57: Deck of PB 1307 before Hurricane Maria (March 18, 1996) (Source: PRHTA)



Figure 5.58: Deck of PB 1307 after Hurricane Maria (February 28, 2019)



Figure 5.59: Underside of PB 1307 before Hurricane Maria (September 24, 1993) (Source: PRHTA)



Figure 5.60: Underside of PB 1307 after Hurricane Maria (February 28, 2019)

5.3.5 Inspection by PUPR

The inspection by PUPR was conducted by Civil Engineering undergraduate students Adriana Murati-Núñez and Jonathan Hernández on February 28, 2019. When the inspection started, the weather was sunny, but it later started raining. The bridge was officially closed to pedestrians, but a hole had been cut through the meshing that was supposed to keep the public out. The traffic signs once attached to the bridge were not present, but the mounting assembly still remained. A neighbor from the area assured that he saw as the bridge "moved from side to side" and as the traffic signs were blown away during Hurricane Maria.

During the inspection, the stairs and deck exhibited corrosion, as shown in Figure 5.61 and Figure 5.62, respectively. It can also be observed in Figure 5.62 that sections of the security messing attached to the guardrail had fallen off. Gaps and holes in the deck were observed as shown in Figure 5.63 and Figure 5.64.

In terms of possible damages caused by Hurricane Maria, PB 1307 exhibited the same damage found on PB 1137, which was a lateral deflection in the plastic range. Although the traffic signs that were attached to the bridge had already been removed or had been blown away, the mounting assembly was still present, as shown in Figure 5.65. It was observed that the location of the mounting assembly coincides with the section of the bridge with larger curvature. Therefore, as with PB 1137, it is theorized that the lateral deflection in PB 1307 was partly due to the extreme wind loads on the signs during Hurricane Maria.

Pedestrian Bridge 1307 was also deemed as unreliable and in danger of collapsing by PRDOT (ElNuevoDia.com, 2019). Therefore, in March 2019, PB 1307 was removed in sections to be later demolished at another site.



Figure 5.61: Corrosion on stairway



Figure 5.62:Corrsoion on deck and section of guardrail without security meshing



Figure 5.63: Detached plates



Figure 5.64: Hole in plates



Figure 5.65: Lateral deflection at mounting assembly location

5.4 Pedestrian Bridge 2336

Pedestrian Bridge 2336 (shown in Figure 5.66) was constructed in 1994. It is a slab type bridge made of reinforced concrete. Access to the bridge is given by a circular ramp at each end. The bridge located at coordinates 18° 24′ 39″ N and 66° 01′ 43″ W. It connects Matienzo Cintron Urbanization and the San Juan School of Sports in the West with the Ramos Antonini Public Housing complex and the Mall of San Juan in the East (see Figure 5.67). The bridge crosses above Jesus T. Piñero Expressway (PR-17), which by 2005 had an ADT of 89,200 and a Truck ADT 5%.



Figure 5.66: Pedestrian Bridge 2336 (Source: Google Earth Pro)



Figure 5.67: Location of PB 2336 (Source: Google Earth Pro)

5.4.1 PRHTA Inspection Reports

PRHTA only had available on inspection report for PB 2336. This report is date April 16, 2014. The full report is included in Appendix F. This report refers to a previous inspection carried out on December 10, 2008. Table 5.4 presents the ratings given to the bridge's deck, superstructure,

and substructure on two most recent inspections. It can be seen that the ratings of the main items remain unchanged.

Table 5.4: PB 2236 ratings from most recent inspections (Source: PRHTA)

| | Rating | |
|--------------------------|-------------------|----------------|
| Item | December 10, 2008 | April 16, 2014 |
| Deck (Item 58) | 6 | 6 |
| Superstructure (Item 59) | 7 | 7 |
| Substructure (Item 60) | 7 | 7 |

The latest inspection report made the following observations: "At the present time (04-16-2014) this structure is being reconstructed, construction of additional span at south side by construction of ramp with access to PR-17." It has been determined that the bridge was not being reconstructed, as stated in the inspection report, by examining the photos from the same report and historical aerial photography. It is theorized that merely there was a construction of a new ground level ramp to give access to the circular ramp on the east side. It appears that the bridge structure itself was not modified.

The 2014 inspection report also states: "Fine transverse and longitudinal cracks, exposed aggregates and small spallings at wearing surface some holes at cyclone fence of railings."

5.4.2 Plans of the Bridge

Figure 5.68 and Figure 5.69 reproduce plans of the pedestrian bridge. The plans are dated 1994, but they were copied from the 2014 inspection report.

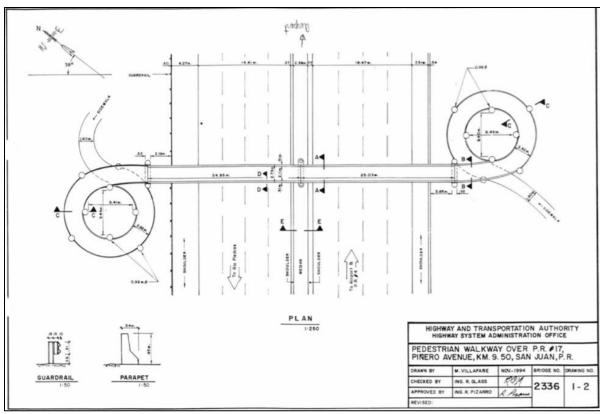


Figure 5.68: PB 2336 plans from 1994 sheet 1 of 2 (Source: PRHTA)

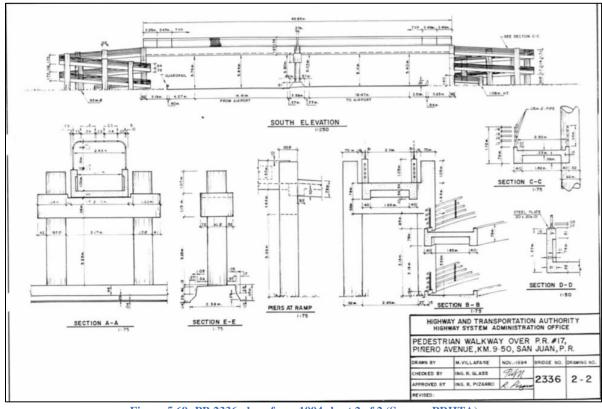


Figure 5.69: PB 2336 plans from 1994 sheet 2 of 2 (Source: PRHTA)

5.4.3 Photos of Inspections by PRHTA

Figure 5.70 presents a set of photographs taken for the inspection report dated April 16, 2014. It can be seen that in 2014, the bridge had traffic signs mounted on it.



Figure 5.70: Photos of the inspection report dated April 14, 2016 (Source: PRHTA)

5.4.4 Photos Before and After Hurricane Maria

To detect if the bridge suffered any major deformations due to Hurricane Maria, photographs from 2014 by PRHTA were compared to pictures taken in 2019. An example of this is the comparison between Figure 5.71 and Figure 5.72. No deformation in the structural elements was detected from the comparison of photographs.



Figure 5.71 Walkway of PB 2336 on April 16, 2014 (Source: PRHTA)



Figure 5.72: Walkway of PB 2336 on April 12, 2019

5.4.5 Inspection by PUPR

The inspection by PUPR was conducted by Civil Engineering undergraduate students Adriana Murati-Núñez and Jonathan Hernández on April 12, 2019. During the inspection, the weather was sunny. The bridge was open to pedestrians.

The bridge itself did not appear to have any problems. In terms of possible damages caused by Hurricane Maria, it was observed that one of the traffic signs mounted on the bridge (the larger sign inside the red rectangle indicated in Figure 5.73) detached at the bottom end from the mounting assembly (see Figure 5.74) It is theorized that the detachment was due to wind induced vibrations that occurred during the hurricane. It was also observed that the smaller airport sign has only one support (see Figure 5.75), and it was oscillating and twisting.



Figure 5.73: Transit Signs in south side of PB 2336 (Source: Google Earth Pro)



Figure 5.74: Transit sign detached from mounting assembly



Figure 5.75: Small airport sign on top of larger sign

6 Undamaged Pedestrian Bridges

As explained in Chapter 4, a total of 21 pedestrian bridges were inspected for this project, out of which four were determined to have suffered some kind of damage due to Hurricane Maria. These four bridges were covered in Chapter 5.

This chapter presents the remaining 17 pedestrian bridges that were inspected but that did not exhibit damages due to the hurricane. Although these bridges did not present damages due to wind loads, they showed problems commonly associated to lack of maintenance.

6.1 Pedestrian Bridge 0626

Pedestrian Bridge 0626 was built in 1959 and is made of reinforced concrete. It has one span and is approximately 91 feet long. The following findings were made during the visual inspection:

- Presence of mold and silt on access ramps (see Figure 6.1)
- Blocked pluvial drains (see Figure 6.2)
- Corrosion on the railings (see Figure 6.3)
- Missing sections of safety meshing (see Figure 6.4)
- Exposed rebars (Figure 6.5)



Figure 6.1: Mold and silt in the access ramps of PB 0626



Figure 6.2: Blocked pluvial drain in PB 0626

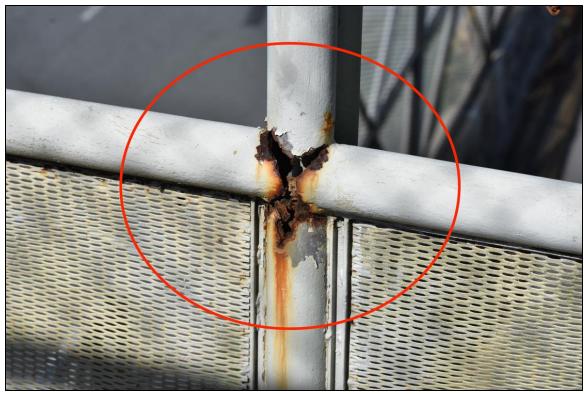


Figure 6.3: Corrosion in the railings of PB 0626



Figure 6.4: Missing section of safety meshing on PB 0626



Figure 6.5: Exposed rebar on PB 0626

6.2 Pedestrian Bridge 0745

Pedestrian Bridge 0745 was built in 1957 and is made of reinforced concrete. It has three spans and is approximately 176 feet long. The following findings were made during the visual inspection:

- Vegetation (see Figure 6.6)
- Blocked pluvial drains (see Figure 6.7)



Figure 6.6: Vegetation in PB 0745



Figure 6.7: Blocked pluvial drains in PB 0745

6.3 Pedestrian Bridge 0748

Pedestrian Bridge 0748 was built in 1958 and is made of reinforced concrete. It has two spans and is approximately 147 feet long. The following findings were made during the visual inspection:

- Broken pluvial drainpipe blocked with vegetation (see Figure 6.8)
- Exposed rebars (see Figure 6.9)



Figure 6.8: Broken drainpipe blocked with vegetation on PB 0748



Figure 6.9: Exposed rebar on PB 0748

6.4 Pedestrian Bridge 1095

Pedestrian Bridge 1095 was built in 1974 and is made of a prestressed concrete beam on top of reinforced concrete columns. It has one span and is approximately 112 feet long. The following findings were made during the visual inspection:

- Presence of mold and silt on the deck (see Figure 6.10)
- Holes in safety fence (see Figure 6.11)



Figure 6.10: Mold and silt on PB 1095



Figure 6.11: Hole in safety fence on PB 1095

6.5 Pedestrian Bridge 1418

Pedestrian Bridge 1418 was built in 1975 and is made of a prestressed concrete beam on top of reinforced concrete columns. It has two spans and is approximately 125 feet long. The following findings were made during the visual inspection

- Mold on the stairways (see Figure 6.12)
- Cracks on concrete (see Figure 6.13)
- Holes in security fence (see Figure 6.14)
- Broken railings (see Figure 6.15)
- Corrosion on railings (see Figure 6.16)
- Exposed steel tendons (see Figure 6.17)



Figure 6.12: Mold on stairways of PB 1418

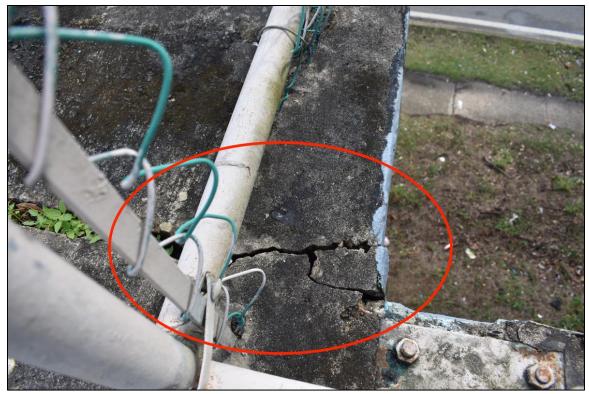


Figure 6.13: Cracks on PB 1418

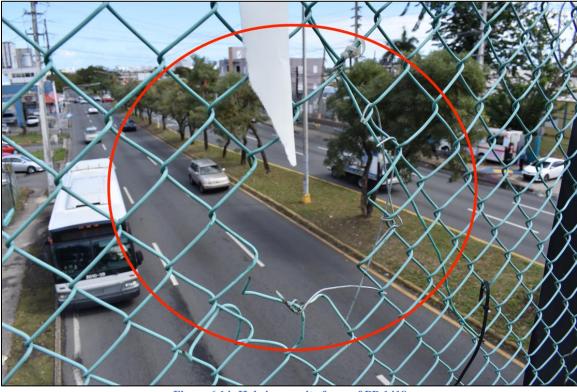


Figure 6.14: Hole in security fence of PB 1418



Figure 6.15: Broken railings on PB 1418



Figure 6.16: Corrosion on railing on PB 1418



Figure 6.17: Exposed steel tendon on PB 1418

6.6 Pedestrian Bridge 1478

Pedestrian Bridge 1478 was built in 1973 and is made of a prestressed concrete beam on top of reinforced concrete columns. It has one span and is approximately 100 feet long. The following findings were made during the visual inspection:

- Exposed rebars (see Figure 6.18)
- Transverse cracks on the deck (see Figure 6.19)



Figure 6.18: Exposed rebars on PB 1478

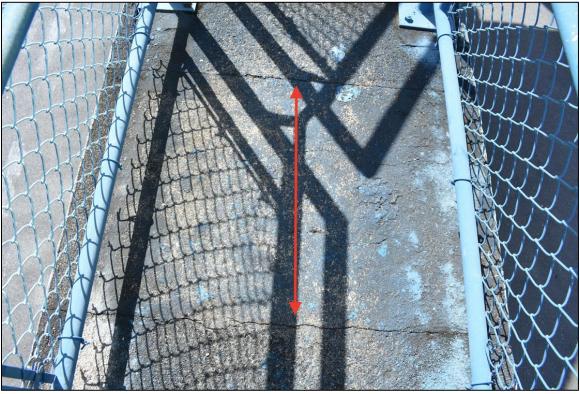


Figure 6.19: Transversal cracks on deck of PB 1478

6.7 Pedestrian Bridge 1513

Pedestrian Bridge 1513 was built in 1975 and is made of prestressed concrete beam on top of reinforced concrete columns. It one span and is approximately 111 feet long. The following finding was made during the visual inspection:

• Mold and silt on one of the stairways (see Figure 6.20)



Figure 6.20: Mold and silt on PB 1513

6.8 Pedestrian Bridge 1736

Pedestrian Bridge 1736 was built in 1981 and is made of a prestressed concrete beam on top of reinforced concrete columns. It has one span and is approximately 113 feet long. The following findings were made during the visual inspection:

- Exposed rebar (see Figure 6.21)
- Mold and silt on stairways (see Figure 6.22)
- Corrosion of security fencing (see Figure 6.23)
- Cracks on stairways (see Figure 6.24)



Figure 6.21: Exposed rebar on PB 1736



Figure 6.22: Mold and silt on stairway of PB 1736



Figure 6.23: Corrosion of security fencing on PB 1736



Figure 6.24: Crack on stairway of PB 1736

6.9 Pedestrian Bridge 1743

Pedestrian Bridge 1743 was built in 1981 and is made of a prestressed concrete beam resting on top of reinforced concrete columns. It has one span and is approximately 111 feet long. The following findings were made during the visual inspection:

- Mold and silt on the stairways (see Figure 6.25)
- Corrosion of security fencing (see Figure 6.26)
- Vegetation growing on one of the piers (see Figure 6.27)



Figure 6.25: Mold and silt on stairway of PB 1743

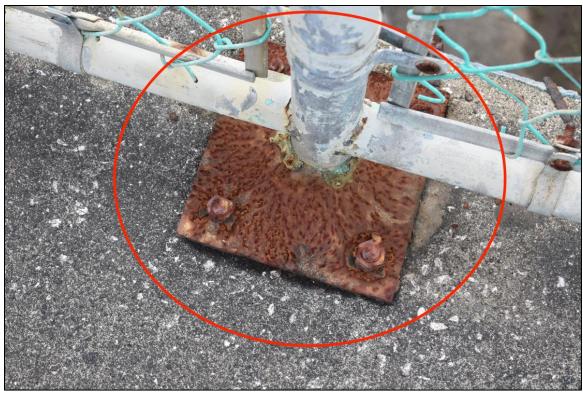


Figure 6.26: Corrosion of security fencing of PB 1743



Figure 6.27: Vegetation on pier of PB 1743

6.10 Pedestrian Bridge 1774

Pedestrian Bridge 1774 was built in 1980 and is made of steel superstructure and a reinforced concrete substructure. It has three spans and is approximately 186 feet long. No findings were made during the visual inspection.

6.11 Pedestrian Bridge 1926

Pedestrian Bridge 1926 was built in 1989 and is made of reinforced concrete substructure. It has one span and is approximately 65 feet long. The following findings were made during the visual inspection:

- Electrical cables block the pathway of pedestrians (see Figure 6.28 and Figure 6.29)
- Mold and silt on deck and stairways (see Figure 6.29)



Figure 6.28: Electrical cables passing closely over PB 1926



Figure 6.29: Electrical cables blacking pathway and mold and silt on PB 1926

6.12 Pedestrian Bridge 2087

Pedestrian Bridge 2087 was built in 1979 and is made of a prestressed concrete beam resting on reinforced concrete columns. It has one span and is approximately 131 feet long. The following findings were made during the visual inspection:

- Exposed rebars (see Figure 6.30 and Figure 6.31)
- Corrosion of guardrail and security fencing (see Figure 6.32 and Figure 6.33)



Figure 6.30: Exposed rebar on PB 2087



Figure 6.31: Exposed rebars on PB 2087



Figure 6.32: Corrosion of guardrail on PB 2087



Figure 6.33: Corrosion of security fencing on PB 2087

6.13 Pedestrian Bridge 2355

Pedestrian Bridge 2355 was built in 1995 and is made of reinforced concrete. It has two spans and is approximately 129 feet long. The following finding was made during the visual inspection:

• Holes on security fence (see Figure 6.34)



Figure 6.34: Security Fence with holes, Pedestrian Bridge 2355

6.14 Pedestrian Bridge 2566

Pedestrian Bridge 2566 was built in 1998 and is made of prestressed concrete superstructure with a reinforced concrete substructure. It has one spans and is approximately 142 feet long. The following finding was made during the visual inspection:

- Detachments of security mesh from guardrail (see Figure 6.35)
- Vegetation-covered drains (see Figure 6.36)



Figure 6.35: Detachment of security mesh from guardrail on PB 2566



Figure 6.36: Vegetation covered drains on PB 2566

6.15 Pedestrian Bridge 2665

Pedestrian Bridge 2665 was built in 2000 and is made of a prestressed concrete superstructure and a reinforced concrete substructure. It has a main It has one span and is approximately 84 feet long. No findings were made during the visual inspection.

6.16 Pedestrian Bridge 2682

Pedestrian Bridge 2682 was built in 2000 and is made of steel. It has two spans and is approximately 174 feet long. The following findings were made during the visual inspection:

- Damaged to the façade of and signs of corrosion on the central pier (see Figure 6.37)
- Corrosion on the superstructure (see Figure 6.38)
- Detachment of security mesh (see Figure 6.39)



Figure 6.37: Damage to the facade and sings of corrosion on the center pier of PB 2682



Figure 6.38: Corrosion on the superstructure of PB 2682

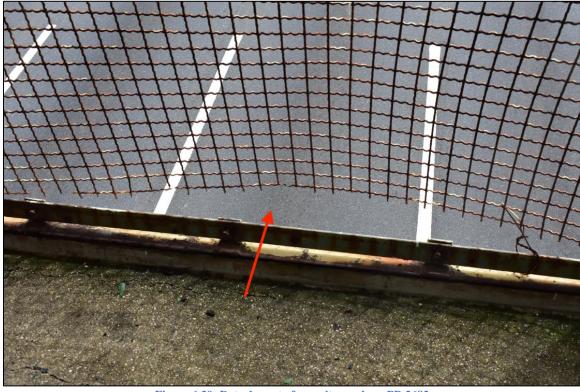


Figure 6.39: Detachment of security mesh on PB 2682

6.17 Pedestrian Bridge 2683

Pedestrian Bridge 2683 was built in 2000 and is made of steel. It has three spans and is approximately 174 feet long. The following findings were made during the visual inspection:

- Corrosion on the superstructure (see Figure 6.40)
- Missing roof panel (see Figure 6.41)
- Detachment of security mesh (see Figure 6.42)



Figure 6.40: Corrosion on the superstructure of PB 2683



Figure 6.41: Missing roof panel on PB 2683



Figure 6.42: Detachment of security mesh on PB 2683

7 Conclusions and Recommendations

Out of the 21 pedestrian bridges inspected for this project, only two experience structural damages. It is apparent that these two bridges were not designed considering that traffic signs were going to be attached to them. Another two bridges were structurally undamaged, but signs attached to them, and their mounting assemblies, exhibited damages that appear to have been caused by the hurricane. The remaining 17 bridges showed no evidence of damages due to the hurricane. Therefore, it is concluded that, in general, pedestrian bridges in the San Juan Metropolitan Area behaved adequately during Hurricane Maria.

The two pedestrian bridges that experienced structural damages and were ultimately removed by PRDOT (PB 1137 and PB 1307) were constructed in 1968, were made of steel trusses, and showed severe deterioration due to corrosion. Prior to Hurricane Maria passing through Puerto Rico, another four bridges made of steel trusses and constructed between 1971 and 1978 had been removed due to deteriorating conditions. The other two pedestrian bridges made of streel trusses and inspected for this project (PB 2682 and PB 2683) were constructed in 2000 and are already showing signs of corrosion, although they did not show any structural damages. When designing a pedestrian bridge, many aspects have to be taken into consideration. It is not suggested here that steel trusses should not be used in Puerto Rico, but that their past performance should be further investigated when this structural system is being considered for new bridges.

Given the findings of this project, the following recommendations are given:

- Attaching signs to pedestrian bridges require the following considerations:
 - If signs are to be attached to existing pedestrian bridges, the structure needs
 to be adequately reinforced to support additional loads, especially if the

- original design of the bridge did not consider signs attached to the structure. This was the case of PB 1137 and PB 1307.
- Systems used to attach signs to pedestrian bridges have to be carefully design, considering support layout and maintenance, in order to avoid damages and disconnection during high wind events, like it happened to PB 0960 and PB 2336.
- After an extreme wind event, preliminary inspections should not only contemplate
 the main bridge structure, but any flexible elements attached to it, including signs,
 guardrails, safety meshing, luminaires, and any other element that, if detached, may
 imply a safety risk to pedestrian or vehicles
- Teams of routine and emergency inspectors should be established by the municipalities in Puerto Rico. Currently, PRHTA Bridge Department does not inspect pedestrian bridges as they have experienced large reduction in personnel due to budget cuts.

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Appendix A Inspections Forms

A.1 Bridge Load Capacity Summary Form Example

| | | | | BRID | GE LOAD | CAPA | CITY SU | MMARY |
|---|------------------|---------------------|---------------------|-------------|----------------|--|----------------------|---|
| BRIDG | BRIDGE DATA | | | | | LIVE LOAD DISTRIBUION | | |
| Bridge | Number | 2364 | | | | As Indicated on Plans | | |
| STR Type Main [Item 43] 119 | | | | | | AASHTO LFD AS PER ART, 6.40 SECTION 6 | | |
| | | | 119 | | | AASHTO LRFD | | |
| 2,,,, | ibe. de l | - | | | | OTHER | 8 | |
| POSTI | NG DATA | | | | | | | |
| | | | | | | | | |
| Curre | nt Restrict | ions | | | | | | |
| | | | | | | LONG | TUDINAL | GOVERNING COMPONENT |
| | | | | | | | | |
| | | | ONE | | | Main / Approach Span Main | | |
| | | | | | | Description BOX CULVERT TOP SLAB (span 1) Material REINFORCE CONCRETE | | |
| item : | 21 2 | | | _ | | | | ntinuous Span CONTINUOS |
| BASIS | FOR ANA | LYSIS | | | | | | h12.10 ft |
| MICHAELE | - Sur Bulb | BLUMBER. | | | | | | ear or Principal Tension FLEXURE |
| Desig | n Drawing | sx | | | | 339 | ELECTRICAL PROPERTY. | |
| As Bu | ilt Drawin | gs) | (| | | TRAN | SVERSE G | OVERNING COMPONENT |
| Shop | Drawings | | | _ | | | | |
| Field I | Measuren | nent | | | | | | h Span |
| | | | | | | Descri | ption | |
| OTHE | R: | | | _ | | Material | | |
| | | | | | | | | bstructure |
| | | | | | | Hexur | e, snear o | or Principal Tension |
| | | neritudinal | Capacity - 0 | naratio | e Patine | | | L. VASQUE |
| | | originouniar | (Tons) | perou | & mount | | | Responsible Engineer RO |
| Design L | oading | | | | | | | Signature LICENCIADO |
| inventor | y Rating Fa | ctor 17.45 | Operati | ing Rati | ng Factor | 29.09 | _ | Name LAndersop Asphez |
| | | | 2000 | | | M/S | | Date: 15, 2001 |
| Vehicle Type | Vehicle GVW | Inventory Rating | Operating Rating | Span No. | Span Length | or | LLDF | Lic. No. 25541 |
| | | | | | | PT | | |
| HS20 HS30 | 36 Ton 54 Ton | 75.35 74.99 | 125.61 | 1/2 | 12.1 ft. | M | 0.10 | LIC.#15541 |
| 1330 | 39.100 | 74.33 | 125.01 | 4/4 | 44.4 16. | | 0.20 | Page Pavious MAC Q |
| | | | | | | | | Peer Review by FRTO Proposition Landing |
| | | | | | | | | |
| | | | | | | | | Name: Ruben González Colon |
| | | | | | | | | Date: Jun 15, 2011 |
| | | | | | | | | Lic. No. 15758 |
| | | | | | | | | |
| | - | | - | - | - | ** | | |
| | Concret | e Box Girder | (Tons) | Capacit | ty – Opera | ting | | Rating Method |
| | oading | | (10hs) | | | | | |
| Design Loading Inventory Rating Factor Operating Rating Factor | | | | | Factor | | | LFR X |
| | y maring re | | oberanis. | aring i | | 7 | | LRFR |
| | | | | | | | | |
| Inventor | de . | | | | | | | |
| | de | | _ | | | | | |

A.2 Critical Finding Memorandum Example

c. José Orozco, Director Interino, Área Servicios ingeniería

ESTADO LIBRE ASOCIADO DE PUE. J RICO copias AUTORIDAD DE CARRETERAS Y TRANSPORTACION 1 de febrero de 2010 tion de Importecte Ing. Héctor Laureano Pagán Gerente Programa de Puentes FEB - 3 2010 Manuel Coll Borgo Jefe Interino Oficina de Ingeniería de Puentes RECOMENDACIÓN DE ATENCIÓN A PUENTE: 1200 NIVEL DE PRIORIDAD1: 1 (180 días) SOCAVACIÓN EN PILASTRA #5 DE PUENTE ESTATAL 1200 EN LA CARRETERA PR 3 KILÓMETRO 10.8 SOBRE EL RÍO GRANDE DE LOIZA EN CAROLINA En la inspección de rutina del puente número 1200, realizada el 8 de diciembre de 2009, por el personal de inspección de la Oficina, se observó lo siguiente: La socavación en la pilastra #5 sigue en aumento, 4.40 metros máximo al tope de la zapata y 3.4 metros máximo de pilotes expuesto. Esta condición ha aumentado 10 centímetros desde la última medida en noviembre de 2007. Algunos de los pilotes expuestos tienen hasta 50% de pérdida de sección debido a corrosión. Se recomienda lo siguiente: Reparar y proteger la pilastra #5. De no reparase la condición existente es necesario realizar cálculos estructurales para determinar si la condición actual es estable, y a que profundidad de socavación la estructura del puente sería inestable. Para información adicional se puede comunicar al que suscribe a la extensión 2900 ó por correo electrónico a mcoll@act.dtop.gov.pr. 6602/mcb NIVEL DE PRIORIDAD: 1- Requiere atención dentro de seis meses (en este caso especificar tiempo) Requiere atención dentro un año. 3- Requiere atención dentro de tres años Requiere atención dentro de tres años, pero se considera menos serio, en términos de falla estructural, que la prioridad tres. Requiere atención dentro de cinco años.

> Autoridad de Carreteras y Transportación • Departamento de Transportación y Obras Públicas PO Bax 42007 • San Juan, Puerto Rico 00940-2007 Fel. (787) 721-8787 Fax (787) 727-5456

A.3 Safety Inspection Report Forms (Initial Inspection) Example

| Team Leader: Heriberto González Bridge Inspector: Micky Santiago | | | | | | |
|---|--|--|--|--|--|--|
| Bridge Evaluator: Heriberto González | | | | | | |
| Assistants: Juan C. Otero Luis. D. Collazo_ | Assistants: Juan C. Otero Luis. D. Collazo | | | | | |
| Driver: Alfredo Erazo | | | | | | |
| Inspection date: Oct22-2008 | | | | | | |
| Weather Conditions: Sunny | | | | | | |
| Amount of Time on Inspection: 2.5 Hours | | | | | | |
| Equipment: X Bus or Van _ Underwater | _Ladders _Snooper X | | | | | |
| Camera _ Boat _ Other | : | | | | | |
| Bridge Number: 2921 | | | | | | |
| Road on Structure: State Highway Number or Nar | ne: PR-751 Km. 0.01 | | | | | |
| Road Under Structure: N/A Number or Nar | ne: _ Km | | | | | |
| Ident. Plaque: No Num | | | | | | |
| IDENTIFICATION | | | | | | |
| 2. HIGHWAY DISTRICT: 6. Guayama | | | | | | |
| 3. Municipality: Arroyo | | | | | | |
| 4. Place Code: 62192 Bo. Pitahaya | | | | | | |
| 5. Route on Structure: PR-751 Km. 0.01 | Route Under Structure: _ | | | | | |
| Km | | | | | | |
| B: 3 State Highway C: 1: Mainline E: 0: N.A. E: 0: N.A. | B: N.A. C: 0: None of the Below | | | | | |
| Features Intersected: Waterway Pitahaya Cree | k Km . | | | | | |
| _ Description: _ | | | | | | |
| 7. Facility Carried: Highway: PR-751 | Km. 0.01 Ramp From: | | | | | |
| | | | | | | |
| 8. Structure Number: 2921 | | | | | | |
| 9. Location: 2 Kms. @ North of Arroyo Town (17°-5 | 9'-45", 66°-03'-37") | | | | | |
| 10. Minimum Vertical Clearance: Over: _ Under: _ | | | | | | |
| 19. Bypass Length: Structure over river | | | | | | |
| 20. Toll: No N.A. | | | | | | |
| COMMENTS AND/OR RECOMMENDATIONS: | | | | | | |
| | | | | | | |
| Inspection by: Micky Santiago | Revised and Approved by: | | | | | |
| Heriberto González | | | | | | |
| Bridge Inspector | Team Leader | | | | | |
| | | | | | | |

STRUCTURE DATA

27 (a). Year Built: 1992 (b) Year Reconstructed: _

28 (a). Lanes On Structure (total): 2 (b) Lanes Under Structure (total): _

32. Total Approach Width: [1] 9.40 [2] 8.35

| Positio | n L. | L. | Median | R. Rdwy. | R. |
|---------|--------|-------|--------|----------|--------|
| | Shldr. | Rdwy. | Shldr. | | Shldr. |
| Up Sta | . 1.18 | 3.56 | | 3.56 | 1.10 |
| [1] | | | | | |
| Down | 1.18 | 3.46 | | 3.46 | 0.25 |
| Sta. [2 | 1 | | | | |

33. Median: No open

34. Skew: Yes A: 2.43 B: 4.98

35. Flare: No C:_ D:_

36. Traffic Safety Features:

Bridge railings: meets acceptable standards Transitions: meets acceptable standards

Approach Guardrail: meets acceptable standards

Approach Guardrail Ends: meets acceptable standards

- 38. Navigation Control: [N] Not waterway
- 39. Navigation Vertical Clearance: _
- 40. Navigation Horizontal Clearance:
- 42 Type Service

On Structure [1] Highway

Under Structure: [5] Waterway

43. Structure Materials: [1] Concrete Type: [19] Culvert (incl. Frame Culvert)

44. Structure Type Approach Materials: -- Type: --

45. Number of Span (main): 2

46. Number of Span (appr.) Down Station: _ Up Station: _

47. Total Horizontal Clearance (Inventory Route) L: 8.88 R: _

48. Length of Maximum Span: 4.91

49. Structure Length: 9.79 front to front abutments

50. Sidewalk L: R:

51. Bridge Roadway Width: 7.02

52. Deck Width (out to out): 8.88

_ Truss or plate girders (inside face to inside face members): _____ m.

Other: ____ m.

| 53. Minimum Vertical Clearance Over Bridge Roadway: Unlimited |
|---|
| 54. Minimum Vertical Underclearances: _ |
| 55. Minimum Lateral Underclearances on Right: _ |
| 56. Minimum Lateral Underclearances on Left: _ |
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58. DECK

58.1 Wearing Surface: Material: Steel

Condition: 5

Thickness

cm.

Deterioration: 10 to 25 %

Drainage: Inadequate

Ponding: Yes

Safety: Yes

58.2 Slab or Plate: Material: Steel

Condition: 5

Cracking: None

Spalling: Top: No

Bottom: No

Scaling: Top: No Efflorescence: No

Bottom: No Exudation: No

Rust Stains: No

Corrosion: Moderate

58.3 Movement:

Deck to backwall:

cm. Deck to approach slab:

cm.

| | Material | Cond. Rating | Height Loss (cm) | Joints | Drainage | Alignment | Corrosion | Paint | Safety | Cracking | Spalling | Scaling |
|-------------------|----------|-----------------|------------------------|--------|----------|-----------|-----------|-------|--------|----------|----------|---------|
| 58.4 Curb | N/A | - | | - | - | - | - | - | - | - | - | - |
| 58.5 Median | N/A | - | | - | - | - | - | - | - | - | - | - |
| 58.6 Sidewalks | N/A | - | | - | - | - | - | - | - | - | - | - |
| 58.7 Parapets | N/A | - | | - | - | - | - | - | - | - | - | - |
| 58.8 Railing | Steel | 6 | | Good | Good | Good | Moderate | - | Yes | - | - | |

58.9 Lighting Standards: Material: N/A

Condition: N/A

Functioning: N/A

58.10 Utilities:

Type:

Size:

Safety: _

58.11 Joints: Condition: N/A

Type: N/A

Functioning: N/A

Leaking: N/A Cracking: N

Spalling: N

Armor: No

58.12 Drains and Scuppers:

Material: None Condition: N Functioning: N/A

Comments:

58.1- Ligera y moderada corrosión en superficie, algunas pequeñas perforaciones por corrosión en las tolas.

59. SUPERSTRUCTURE

59.1 Bearing Devices: Type: Fixed/Mov.

Out of Plumb: No

Paint: None

Condition: 5

59.2 Bridge seats, pedestal, grout pads, abutments or pier seat where beams bear directly on conc.

Condition: N

Cracking: No

Spalling: None

Scaling: None

Crushing: No

59.3 Steel beams: N/A Type: N/A

Condition: N/A

Corrosion: N/A

Paint: N/A

59.4 Concrete: N/A Type: N/A

Condition: N Cracking: No

Spalling: Small

Scaling: None

59.5 Truss: Ped. Bailey

Condition: 5 Paint: Fair

Functioning: N/A

Corrosion: Moderate Members: N/A

59.6 Drainage: Type: N/A

Condition: N/A 59.7 Hinges: Condition: N/A Functioning: N/A

Movement: N/A

59.8 Deflection: N/A

| 59.9 | Vibrations: | N/A |
|------|-------------|-------|
| 60.0 | SUBSTRUC | TURE: |
| | | |

| | | | Material | Cond. Rating | Cracking | Spalling | Scaling | Corrosion | Paint | Movement | Erosion | Undermining |
|-----------------|--------|---------------------|----------|-----------------|----------|----------|---------|-----------|-------|----------|---------|-------------|
| _ | 60.1.1 | Wingwalls | N/A | N | - | - | - | - | - | - | - | - |
| ments | 60.1.2 | Breast- Backwall | N/A | N | - | - | - | - | - | - | - | - |
| Abutm | 60.1.3 | Footing | N/A | N | - | - | - | - | - | - | - | - |
| • | 60.1.4 | Piles | N/A | N | - | - | - | - | | - | - | - |
| | 60.2.1 | Caps | N/A | N | - | - 1 | - | - | - | - | - | - |
| or Non Bents | 60.2.2 | Bracing | N/A | N | - | - | - | - | - | - | - | - |
| a d | 60.2.3 | Columns | Steel | 6 | - | - | - | Moderate | - | No | No | No |
| Piers Pile | 60.2.4 | Footing | Concrete | 7 | F | Small | - | - | - | No | No | No |
| | 60.2.5 | Piles | N/A | N | - | - | - | | - | - | - | - |
| * - | 60.3.1 | Caps | N/A | N | - | - | - | - | - | - | - | - |
| Rocker Bents | 60.3.2 | Bracing | N/A | N | - | - | - | - | | - | - | - |
| 2 m | 60.3.3 | Piles | N/A | N | - | - | - | - | - | - | - | - |
| _ | 60.4.1 | Caps | N/A | N | - | - | - | - | - | - | - | - |
| Pile Bents | 60.4.2 | Bracing | N/A | N | - | - | - | - | - | - | - | - |
| - 6 | 60.4.3 | Piles | N/A | N | - | - | - | - | - | - | - | - |

Comments:

59.5- Varios de los componentes laterales de los "bracing" tienen ligera, moderada corrosión y pérdida de sección, algunas secciones en el "upper chord" tienen moderada pérdida de sección por corrosión.

61. CHANNEL AND PROTECTION

Condition: N

61.1 Channel Scour: N/A

61.2 Embankment Erosion: N/A

| | | Туре | Material | Condition Rating | Functioning |
|------|---------------------|------|----------|---------------------|-------------|
| 61.3 | Protective Device | | - N/A | N | - |
| 61.4 | Fender System | | N/A | N | - |
| 61.5 | Rip Rap | | N/A | N | - |
| 61.6 | Spur Dikes, Jetties | | N/A | N | - |

61.7 Obstruction: N/A

61.8 Channel Change: N/A Detrimental: N/A

61.9 Adequate Waterway: N/A

61.10 Surrounding Area: Flooding: N/A if yes explain:

Erosion: N/A if yes explain:

61.11 Location of piers and/or abutment detrimental: N/A if yes explain:

61.12 Other features that may affect structure:

Comments:

62. CULVERT AND RETAINING WALL

| | Material | Condition Rating | Functioning | Cracking | Spalling | Scaling | Corrosion | Settlement | Alignment | Scour |
|---------------------|----------|------------------|-------------|----------|----------|---------|-----------|------------|-----------|-------|
| 62.1 Barrel | N/A | N | - | - | - | - | - | - | - | - |
| 62.2 Head Walls | N/A | N | - | - | - | - | - | - | - | - |
| 62.3 Cut-off wall | N/A | N | - | - | - | - | - | - | - | - |
| 62.4 Retaining wall | N/A | N | - | - | - | - | - | - | - | - |

Comments:

71. WATER ADEQUACY:

N/A

N/A

72. APPROACH ROADWAY

72.1 Alignment: 6

72.2 Slab or Pavement

Condition: N Material: Other

Cracking: No

Spalling: None

Scaling: None

Rough: No

Settlement: No

Movement: Approach slab-backwall: No

Breaking up: No

Excessive deformation: No

Safety:

Hazardous: No Inadequate: No

Drainage: Movement:

Pavement-approach slab: No

Embankment: Condition: N

Functioning: Yes

Erosion: No

Construction: Flimsy: No Integrity impaired: No

72.3 Undesirable Impact: No

72.4 Joints: No

Type: None

Inadequate: N/A

Satisfactory Alignment: N/A

72.5 Guardrail Type: None Condition: N

Material: N/A

Functioning: N/A Vertical: N/A

Alignment Horizontal: N/A

Joints Functioning: N/A Safety Securely Attached: N/A Pedestrian Hazards: N/A

Comments:

90. INSPECTION DATE: Jan 23, 2014

93. CRITICAL FEATURE INSPECTION DATE

Fracture Critical:

Underwater:

Other Special Inspection:

102. DIRECTION OF TRAFFIC: Highway traffic not carried

106. YEAR RECONSTRUCTED:

107. DECK STRUCTURE TYPE: Steel Plate (includes orthotropic)

108. WEARING SURFACE/PROTECTIVE SYSTEM

Type wearing surface: Other Type Membrane: None Deck protection: None

111. PIER OR ABUTMENT PROTECTION (FOR NAVIGATION): N/A

113. SCOUR CRITICAL BRIDGES: N

116. MINUMUM NAVIGATION VERTICAL CLEARANCE:

AUXILIARY ITEMS

Signs: Type: Route Orientation

Material: Alum.

Condition: 5

| | | | | | C | re Eleme | ents | | | | |
|--------------|----------------------|---------|--------------|-------------------|-------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|-------------------------|
| Elem. No. | Elements Description | a | E n v. | State Quantity | Units | Quantity Condition State 1 | Quantity Condition State 2 | Quantity Condition State 3 | Quantity Condition State 4 | Quantity Condition State 5 | Total State Quantity |
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| | | | | | Non | Core Ele | ments | | | | |
|--------------|----------------------|--------|---|-------------------|-------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|-------------------------|
| Elem. No. | Elements Description | P a g. | | State Quantity | Units | Quantity Condition State 1 | Quantity Condition State 2 | Quantity Condition State 3 | Quantity Condition State 4 | Quantity Condition State 5 | Total State Quantity |
| | | | | | | | | | | | 0 |
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|--------------|----------------------|---------------|--------------|-------------------|-------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|-------------------------|
| Elem. No. | Elements Description | | E n v. | State Quantity | Units | Quantity Condition State 1 | Quantity Condition State 2 | Quantity Condition State 3 | Quantity Condition State 4 | Quantity Condition State 5 | Total State Quantity |
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| | | Г | П | | | | | | | | 0 |
| | | П | П | | | | | | | | 0 |
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A.4 Safety Inspection Report Forms (Routine Inspection)

| | 36 |
|---|---|
| | B. Routine Inspection Report |
| | Team Leader: Arturo Cáceres |
| | Bridge Inspector: Angel T. López |
| | Bridge Evaluator: Arturo Cáceres |
| | Assistants: José R. Vázquez Ramón Rodriguez |
| | Driver: Alfredo Erazo |
| | Inspection date: 1 OCTUBRE 2010 |
| | Weather Conditions: Sunny |
| | Amount of Time on Inspection: 1.5 Hours |
| | |
| | Equipment: X Bus or Van _ Underwater _ Ladders _ Snooper X Camera _ Boat _ Other: |
| | |
| | Bridge Number: 2921 |
| | Road on Structure: State Highway Number or Name: PR-751 Km. 0.01 |
| | Road Under Structure: N/A Number or Name: _ Km |
| | Ident. Plaque: No Num |
| | |
| | 36. Traffic Safety Features: |
| | Bridge railings: meets acceptable standards |
| | Transitions: meets acceptable standards |
| | Approach Guardrail: meets acceptable standards |
| | Approach Guardrail Ends: meets acceptable standards |
| | 41. Posting: Condition: A (Open) Sign Type: N/A Posting Load: N/A |
| | Comments and/or Recommendations: |
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| | Jaconstian by Appel T Lines Project and Appelled |
| | Inspection by: Angel T. López Revised and Approved by: |
| | Arturo Cáceres Bridge Inspector Team Leader |
| | Bridge Inspector Team Leader |
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58. DECK

58.1 Wearing Surface: Material: Steel

Condition: 5

Thickness

cm.

Deterioration: 10 to 25 %

Ponding: Yes

Safety: Yes

58.2 Slab or Plate: Material: Steel

Condition: 5

Drainage: Inadequate

Cracking: None

Spalling: Top: No

Bottom: No

Scaling: Top: No Efflorescence: No

Bottom: No Exudation: No

Rust Stains: No

Corrosion: Moderate

58.3 Movement:

Deck to backwall:

cm. Deck to approach slab:

cm.

| | Material | Cond. Rating | Height Loss (cm) | Joints | Drainage | Alignment | Corrosion | Paint | Safety | Cracking | Spalling | Scaling |
|-------------------|----------|-----------------|------------------------|--------|----------|-----------|-----------|-------|--------|----------|----------|---------|
| 58.4 Curb | N/A | - | | - | - | - | - | - | - | - | - | - |
| 58.5 Median | N/A | - | | - | - | - | - | - | - | - | - | - |
| 58.6 Sidewalks | N/A | - | | - | - | - | - | - | - | - | - | - |
| 58.7 Parapets | N/A | - | | - | - | - | - | - | - | - | - | - |
| 58.8 Railing | Steel | 6 | | Good | Good | Good | Moderate | - | Yes | - | - | - |

58.9 Lighting Standards: Material: N/A

Condition: N/A

Functioning: N/A

58.10 Utilities:

Type:

Size:

Safety: _

58.11 Joints: Condition: N/A

Type: N/A

Functioning: N/A

Leaking: N/A Cracking: N

Spalling: N

Armor: No

58.12 Drains and Scuppers:

Material: None Condition: N Functioning: N/A

Comments:

58.1- Ligera y moderada corrosión en superficie, algunas pequeñas perforaciones por corrosión en las tolas.

59. SUPERSTRUCTURE

59.1 Bearing Devices: Type: Fixed/Mov.

Out of Plumb: No

Paint: None

Condition: 5

59.2 Bridge seats, pedestal, grout pads, abutments or pier seat where beams bear directly on conc.

Condition: N

Cracking: No

Spalling: None

Scaling: None

Crushing: No

59.3 Steel beams: N/A Type: N/A

Condition: N/A

Corrosion: N/A

Paint: N/A

59.4 Concrete: N/A Type: N/A

Condition: N

Cracking: No

Spalling: Small

Scaling: None

59.5 Truss: Ped. Bailey

Condition: 5 Paint: Fair

Corrosion: Moderate Members: N/A

59.6 Drainage: Type: N/A

Condition: N/A 59.7 Hinges: Condition: N/A Functioning: N/A Functioning: N/A Movement: N/A

59.8 Deflection: N/A

59.9 Vibrations: N/A

60.0 SUBSTRUCTURE:

| | | | Material | Cond. Rating | Cracking | Spalling | Scaling | Corrosion | Paint | Movement | Erosion | Undermining |
|-----------------|--------|---------------------|----------|-----------------|----------|----------|---------|-----------|-------|----------|---------|-------------|
| _ | 60.1.1 | Wingwalls | N/A | N | - | - | - | - | - | - | - | - |
| ments | 60.1.2 | Breast- Backwall | N/A | N | - | - | - | - | - | - | - | - |
| Abutme | 60.1.3 | Footing | N/A | N | - | - | - | - | - | - | - | - |
| 4 | 60.1.4 | Piles | N/A | N | - | - | - | - | | - | - | - |
| | 60.2.1 | Caps | N/A | N | - | - 1 | - | - | - | - | - | - |
| No. | 60.2.2 | Bracing | N/A | N | - | - | - | - | - | - | - | - |
| ŏå | 60.2.3 | Columns | Steel | 6 | - | - | - | Moderate | - | No | No | No |
| 100 | 60.2.4 | Footing | Concrete | 7 | F | Small | - | - | - | No | No | No |
| | 60.2.5 | Piles | N/A | N | - | - | - | | - | - | - | - |
| | 60.3.1 | Caps | N/A | N | - | - | - | - | - | - | - | - |
| Rocker Bents | 60.3.2 | Bracing | N/A | N | - | - | - | - | | - | - | - |
| 2 m | 60.3.3 | Piles | N/A | N | - | - | - | - | - | - | - | - |
| | 60.4.1 | Caps | N/A | N | - | - | - | - | - | - | - | - |
| Pile Bents | 60.4.2 | Bracing | N/A | N | - | - | - | - | - | - | - | - |
| - 60 | 60.4.3 | Piles | N/A | N | - | - | - | - | - | - | - | - |

Comments:

59.5- Varios de los componentes laterales de los "bracing" tienen ligera, moderada corrosión y pérdida de sección, algunas secciones en el "upper chord" tienen moderada pérdida de sección por corrosión.

61. CHANNEL AND PROTECTION

Condition: N

61.1 Channel Scour: N/A

61.2 Embankment Erosion: N/A

| | | Туре | Material | Condition Rating | Functioning |
|------|---------------------|------|----------|---------------------|-------------|
| 61.3 | Protective Device | | - N/A | N | - |
| 61.4 | Fender System | | N/A | N | - |
| 61.5 | Rip Rap | | N/A | N | - |
| 61.6 | Spur Dikes, Jetties | | N/A | N | - |

61.7 Obstruction: N/A

61.8 Channel Change: N/A Detrimental: N/A

61.9 Adequate Waterway: N/A

61.10 Surrounding Area: Flooding: N/A if yes explain:

Erosion: N/A if yes explain:

61.11 Location of piers and/or abutment detrimental: N/A if yes explain:

61.12 Other features that may affect structure:

Comments:

62. CULVERT AND RETAINING WALL

| | Material | Condition Rating | Functioning | Cracking | Spalling | Scaling | Corrosion | Settlement | Alignment | Scour |
|---------------------|----------|------------------|-------------|----------|----------|---------|-----------|------------|-----------|-------|
| 62.1 Barrel | N/A | N | - | - | - | - | - | - | - | - |
| 62.2 Head Walls | N/A | N | - | - | - | - | - | - | - | - |
| 62.3 Cut-off wall | N/A | N | - | - | - | - | - | - | - | - |
| 62.4 Retaining wall | N/A | N | - | - | - | - | - | - | - | - |

Comments:

71. WATER ADEQUACY:

N/A

N/A

72. APPROACH ROADWAY

72.1 Alignment: 6

72.2 Slab or Pavement

Condition: N Material: Other

Cracking: No

Spalling: None

Scaling: None

Rough: No

Settlement: No

Movement: Approach slab-backwall: No

Breaking up: No

Excessive deformation: No

Safety:

Hazardous: No Inadequate: No

Drainage: Movement:

Pavement-approach slab: No

Embankment: Condition: N

Functioning: Yes

Erosion: No

Construction: Flimsy: No

Integrity impaired: No

72.3 Undesirable Impact: No

72.4 Joints: No

Type: None

Inadequate: N/A

Satisfactory Alignment: N/A

72.5 Guardrail Type: None Condition: N

Material: N/A

Functioning: N/A Vertical: N/A

Alignment Horizontal: N/A

Joints Functioning: N/A Safety Securely Attached: N/A Pedestrian Hazards: N/A

Comments:

90. INSPECTION DATE: Jan 23, 2014

93. CRITICAL FEATURE INSPECTION DATE

Fracture Critical:

Underwater:

Other Special Inspection:

102. DIRECTION OF TRAFFIC: Highway traffic not carried

106. YEAR RECONSTRUCTED:

107. DECK STRUCTURE TYPE: Steel Plate (includes orthotropic)

108. WEARING SURFACE/PROTECTIVE SYSTEM

Type wearing surface: Other Type Membrane: None Deck protection: None

111. PIER OR ABUTMENT PROTECTION (FOR NAVIGATION): N/A

113. SCOUR CRITICAL BRIDGES: N

116. MINUMUM NAVIGATION VERTICAL CLEARANCE:

AUXILIARY ITEMS

Signs: Type: Route Orientation

Material: Alum.

Condition: 5

| | | | | | C | re Eleme | ents | | | | |
|--------------|----------------------|---------|--------------|-------------------|-------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|-------------------------|
| Elem. No. | Elements Description | a | E n v. | State Quantity | Units | Quantity Condition State 1 | Quantity Condition State 2 | Quantity Condition State 3 | Quantity Condition State 4 | Quantity Condition State 5 | Total State Quantity |
| | | | | | | | | | | | 0 |
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| | | | | | Non | Core Ele | ments | | | | |
|--------------|----------------------|--------|---|-------------------|-------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|-------------------------|
| Elem. No. | Elements Description | P a g. | | State Quantity | Units | Quantity Condition State 1 | Quantity Condition State 2 | Quantity Condition State 3 | Quantity Condition State 4 | Quantity Condition State 5 | Total State Quantity |
| | | | | | | | | | | | 0 |
| | | | | | | | | | | | 0 |
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| | | П | Г | | | | | | | | 0 |

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|--------------|----------------------|---------------|--------|-------|-------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|-------------------------|
| Elem. No. | Elements Description | | E n v. | otate | Units | Quantity Condition State 1 | Quantity Condition State 2 | Quantity Condition State 3 | Quantity Condition State 4 | Quantity Condition State 5 | Total State Quantity |
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A.5 Standards for Photographs of Existing Bridges

Abril 2005

Por:

Manuel Coll Borgo

Estandarización de las Fotos de los Puentes Existentes

A. Alcance y Objetivos

Evaluar la condición y la toma de decisiones sobre un puente existente es una tarea muy usual y típica realizada por los Ingenieros tanto de la Oficina de Ingeniería de Puentes como de otras oficinas de la Agencia. Una de las partes mas útiles del archivo de puentes son las fotografías del puente tomadas en cada inspección que este archivo incluye. Antes de que la tecnología digital estuviera disponible, las fotos que se podian tomar en un puente eran limitadas debido al costo y espacio de almacenamiento disponibles, por lo tanto, la parte visual del puente en el archivo era limitada. Con las cámaras de tecnología digital y la computadora estas barreras se han eliminado.

El objetivo de este documento es ayudar a establecer un patrón estándar de fotografía para los puentes inspeccionados de tal manera que se pueda observar todo el puente mediante las fotos tomadas durante la inspección. Esto, aprovechando lo económico y relativamente sencillo que es tomar y archivar fotos con las cámaras digitales.

B. Procedimiento

El procedimiento descrito a continuación es uno general que se debe aplicar para cada puente individualmente. Básicamente el patrón de fotos va a consistir de dos partes. Primero, se tomarán las fotos generales de tal manera que se puedan ver todas las partes del puente con o sin daños y luego se tomaran fotos más específicas de las áreas donde se observa deterioro y otras partes importantes del puente. El procedimiento se puede describir en tres pasos generales descritos a continuación:

- 1. Se debe documentar en una tabla el número de la foto y la parte del puente que se está fotografiando. Debe haber espacio para poner comentarios, como por ejemplo, dónde se ubicó el fotógrafo para tomar la foto de tal manera que se tome la foto igual en la próxima inspección. Esta debe ir acompañada de un dibujo de planta donde indique donde se tomó cada foto. La tabla básicamente hay que hacerla la primera vez que se estandaricen las fotografias del puente, pero a medida que aparezcan partes deterioradas en el puente y se tomen fotos de esas áreas éstas se deben añadir a este documento. El documento se debe colocar en el archivo y también se debe mantener una copia digital de este documento en el mismo directorio donde se almacenen las fotos.
- 2. Fotos Generales del Puente Se debe incluir por lo menos una foto de cada parte importante del puente. Si se necesitan más fotos para cubrir una parte del puente, esto se debe documentar en la tabla de la parte (1). Las partes principales que se deben incluir típicamente para cada tramo (span) del puente incluyen, entre otras cosas, lo siguiente:
 - a. Placa de identificación del puente si la tiene.
 - Letreros de restricciones de pesos, geometría y pórticos para limitar altura si los incluye el puente
 - Superficie de Rodaje o vista superior del tramo. Se deben incluir las losas de entrada del puente (Aproach Slabs).
 - Vista Lateral del Tramo (ambos lados), por ejemplo, cuando el puente atraviesa un canal, vista desde aguas arriba y vista desde aguas abajo.
 - e. Vista inferior del tramo con énfasis en la losa y las vigas. Ésta es la más difícil de tomar y por lo general tomará más de una fotografía. Hay que tomar en cuenta que también es la más importante y es bien importante documentar todas las fotos bien para que se tomen iguales en la próxima visita.
 - f. Fotos de las pilastras y sus fundaciones si se ven. Se deben tomar por lo menos dos fotos por pilastra, una de cada lado de la pilastra para poder observar la condición de ésta en su totalidad.
 - g. Fotos de los estribos y asientos (bearings) del puente. En puentes típicos, esto tomaría al menos tres fotos. Una para cada lado incluyendo vista de la pared lateral (wing wall) y por lo menos una foto donde se vea el estribo de frente y los asientos.
- 3. Fotos Particulares del Puente Si el puente presenta zonas de deterioro y tiene detalles importantes que se deben retratar, estas fotos se deben enumerar y documentar en la tabla de la parte (1) luego de las fotos generales del puente. De esta manera los comentarios del informe de inspección pueden hacer referencia a estas fotos. La tabla debe

documentar bien la localización de la foto para poder identificar bien en otras inspecciones el lugar, sobre todo, por si se hacen reparaciones entre inspecciones.

C. Comentarios Adicionales

Las fotos (c), (d) y (e) de las fotografías generales (parte (2)) deben tomarse para cada tramo (span), pero se debe evaluar para cada puente particular si una foto puede incluir más de un tramo con suficiente claridad. Por ejemplo, en puentes pequeños de dos tramos, a lo mejor una sola foto lateral puede incluir la vista de los dos tramos del puente y de los dos estribos, por lo que se podrían reducir cuatro fotos de las descritas arriba en una sola. De hacerlo así, esto se debe documentar en la descripción de la foto en la tabla de la parte (1).

Por otra parte, debido a la geometría y localización de cada puente particular no siempre será posible tomar una foto de las vistas que se describen en la parte (2). En ese caso, se deben tomar una o más fotos en otro ángulo pero de tal manera que se pueda ver lo descrito. No se debe dejar de tomar una foto de una parte del puente a menos que ésta esté debajo del agua.

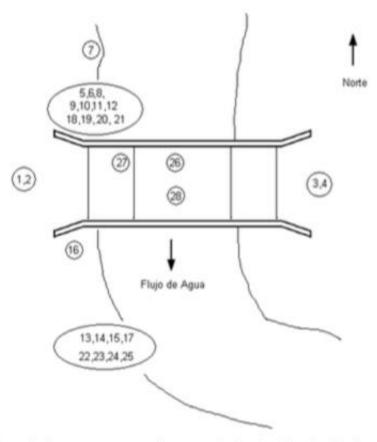
D. Ejemplo: Puente No. 1496 en Guayanilla

Tabla de Descripción de Fotos

| Foto | Descripción | Comentarios |
|-------|--|---|
| Fotos | s Generales del Puente | |
| # 1 | Losa de entrada lado oeste | |
| # 2 | Superficie de rodaje lado oeste | |
| #3 | Losa de entrada lado este | |
| # 4 | Superficie de rodaje lado este | |
| # 5 | Tramo oeste: Vista lateral desde el norte | |
| # 6 | Tramo este: Vista lateral desde el norte | |
| #7 | Vista aguas arriba del puente y el canal | Aguas arriba del canal del lado norte |
| # 8 | Muro lateral norte del estribo oeste | |
| # 9 | Muro lateral norte del estribo este | |
| # 10 | Estribo oeste: vista frontal | |
| # 11 | Estribo este: vista frontal | |
| # 12 | Pilastra: vista desde lado oeste | |
| # 13 | Pilastra: Vista desde lado este | Se tomó la foto desde el lado oeste de río, pero en ángulo, de tal manera que se observe el lado que no se ve en la foto #13 |
| # 14 | Tramo oeste: Vista lateral desde el sur | |
| # 15 | Tramo este: Vista lateral desde el sur | |
| # 16 | Muro lateral sur del estribo oeste | |
| # 17 | Muro lateral sur del estribo este | |
| # 18 | Losa tramo oeste: Vista por debajo | |
| # 19 | Losa tramo este: Vista por debajo | |
| # 20 | Gaviones estribo oeste | |
| # 21 | Gaviones estribo este | |
| # 22 | Detalle de Zapata expuesta | |
| # 23 | Muro caído en estribo oeste | Esta condición existía antes de la |

| Foto | Descripción | Comentarios |
|-------|--|--|
| Fotos | Generales del Puente | |
| | | reparación de puente con Gaviones. |
| # 24 | Socavación en Gaviones del estribo este | |
| # 25 | Grieta en muro lateral sur del estribo este | |
| # 26 | Abrasión de la superficie de rodaje Tiro central de losa | La losa se tiró en tres paños. |
| # 27 | Abrasión de la superficie de rodaje Tiro de losa oeste | |
| # 28 | Grietas en tiro central de losa | En los otros tiros también hay grietas pero menos marcadas. |

Diagrama de Localización desde donde se tomo la Fotografía



Nota: Para el diagrama se puede usar el boceto ("as built drawing") del Puente.





Foto #2





Foto #4

A.6 Standard Element Numbering Procedure

| Elements in Longitudinal Direction : Elements that run in the direction of traffic such as Main Girders, Beams or stringers shall be numbered from left to right when pointing to the direction of traffic or when pointing to the direction of the increasing kilometer sings when traffic goes both ways. |
|---|
| Elements in Transverse Direction: Elements that run transverse to the direction of traffic such as Abutments Piers or Floor Beams shall be numbered in the direction of traffic or pointing to the direction of the increasing kilometer sings when traffic goes both ways. For example pier #1 will be the first one when entering the bridge, for bridges with one direction of traffic, and in the case of two way traffic pier #1 will have the lesser kilometer point. |
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A.7 Quality Assurance / Quality Control Forms

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| TEAM L | EADER: | | | | | | | | |
| INSP. D | ATE: | | | | | | | | |
| 1. Inspe | ction Type | and Dates | s: | | | | | | |
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| 93 B | Insp. | | | | | | | | |
| 93 C | Other: | | | | | | | | |
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INSPECTION REPORT SUMMARY SHEET QUALITY ASSURANCE

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| Rating Engineer/Consultant: LOAD RATING REPORT QUALITY CONTROL FORM Rating Report Item Obes report includes data used for rating (Drawings/Field Measurements/NDT's) Are Dead load calculations presented Are Live load distribution factors computed/presented Stransverse section data and reinforcement presented Report explains reasons to (or not to) consider deterioration. Report explains reasons to rate (or not to) Substructure Report shows spans and explains boundary conditions support types, continuity) Design Load / Legal Loads are clearly presented Verify Input data of model for consistency Report Includes Load Rating Results: At inventory level At Operating level Legal loads Verify output data is consistent with report results and with the rating summary sheet report. Verify items 63 to 66 be reported from summary sheet. Verify items 41 and 70 are correctly coded in summary sheet. | Bridge No. | |
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| Bridge No. | |
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| Date: | |
| SCOUR EVALUATION PHASE 1 | |
| QUALITY CONTROL FORM | |
| Scour Evaluation Report Item | Yes/No, N/A or Checked |
| Does report includes project description and location? | |
| Does report includes summary of significant findings? | |
| Does report includes conclusions and recommendations? | |
| Does report includes photos showing exiting conditions? | |
| Does report includes data used for scour evaluation (Drawings/Field Measurements/NDT's)? | |
| Does report includes sources of data collection presented (i.e. H-H report, scour report, soil survey, etc)? | |
| Does report includes stream characteristics? | |
| Does report includes overall stream stability (lateral, vertical, potential response)? | |
| Does report includes abutments characteristics and conditions? | |
| Does report includes piers characteristics and conditions? | |
| Does report includes name of engineers responsible for each discipline, engineer registration numbers, and name of reviewing engineer? | |
| Does report is signed and sealed by a professional engineer? | |
| Verify data presented is consistent with the conclusions and recommendations. | |
| Comments: | |
| Reviewer Name: | |
| Reviewer Signature: | |

| Date: | | |
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| SCOUR EVALUATION PHASE 2 QUALITY CONTROL FORM | | |
| | | |
| Does report includes summary of significant findings? | | |
| Does report includes conclusions and recommendations? | | |
| Does H-H report include field survey and cross sections signed and sealed by a surveyor? | | |
| Does H-H and Scour report was performed based on Scope of Work guide for H-H report (Appendix A of the SOW)? | | |
| Does H-H report include sources of hydrologic data and/or peak flow value? | | |
| Does Scour report include a grain size analysis? | | |
| Does Scour report recommend at least three (3) countermeasures? | | |
| If any, is increase in existing water surface elevation due to countermeasures within limits of the PB # 13 regulation? | | |
| Does the scour report include analysis for the Design Scour Flood Event? | | |
| Does the scour report include analysis for the Check Scour Flood Event? | | |
| Does the scour report include scour results for long term, contraction, local, and total scour? | | |
| Does the scour report include plot of bridge foundation elements and computed scour depths? | | |
| Does plot of bridge foundation indicate if foundations are known? In the case of deep foundation, does it indicate tips elevation? | | |
| Does report includes name of engineers responsible for each discipline, engineer registration numbers, and name of reviewing engineer? | | |
| Does report is signed and sealed by a professional engineer? | | |
| Verify data presented is consistent with the conclusions and recommendations. | | |
| Comments: | | |

| Bridge No. | | |
|--|------------------------|--|
| Date: | | |
| SCOUR EVALUATION PHASE 3 | | |
| QUALITY CONTROL FORM | | |
| Scour Evaluation Report Item | Yes/No, N/A or Checked | |
| Does report includes summary of significant findings? | | |
| Does report includes conclusions and recommendations? | | |
| Does report includes data for the geotechnical and structural scour assessment (Drawings/Field Measurements/NDT's)? | | |
| Are live loads capacities evaluated in accordance with the PRHTA's current load rating guidelines? | | |
| Does report includes estimated capacity of each foundation unit under scour conditions defined in Phase 2? | | |
| Does report indicates method used to estimate capacity of foundation units for unknown foundations? | | |
| Does report includes name of engineers responsible for each discipline, engineer registration numbers, and name of reviewing engineer? | | |
| Does report is signed and sealed by a professional engineer? | | |
| Verify data presented is consistent with the conclusions and recommendations. | | |
| Comments: | | |
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| Reviewer Name: | | |

| Bridge No. | |
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| Date: | |
| SCOUR EVALUATION PHASE 4 QUALITY CONTROL FORM | |
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| Does report includes summary of significant findings? | |
| Does report includes conclusions and recommendations? | |
| Does report includes POA based on Scour Critical Bridge – POA format? | |
| Does POA include at least three (3) alternate countermeasures? | |
| Does POA include a conceptual plan for recommended alternative countermeasure? | |
| Does report includes name of engineers responsible for each discipline, engineer registration numbers, and name of reviewing engineer? | |
| Does report is signed and sealed by a professional engineer? | |
| Verify data presented is consistent with the conclusions and recommendations. | |
| Comments: | |
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A.8 Scope of Work of Underwater Inspection

SCOPE OF WORK

UNDERWATER INSPECTION

I. PROJECT DESCRIPTION

The purpose of this work is to perform an adequate level of underwater inspections to bridges on marine and freshwater areas in Puerto Rico. An adequate inspection level detects damaged structure members, section loss, timber decay or attack by marine borers, scour, and undermining of footings or concrete walls.

II. GENERAL DESCRIPTION

The Consultant will provide all labor, equipment and materials necessary to complete the inspections and reports.

The bridges that will require an underwater inspection are included in **Appendix A**. For each structure the PRHTA will provide, when available, site descriptions, plans or sketches, previous inspection reports, and access information.

If during the period of contract, any new procedures or regulations regarding Underwater Inspection are added or modified, they shall be added to the work performed by the Consultant with no additional cost for the PRHTA.

III. INSPECTION PERSONAL QUALIFICATIONS AND REQUIREMENTS

- A. Qualification requirements for the Engineer in charge of the inspection and report preparation:
 - 1. Be a registered professional engineer licensed to practice in Puerto Rico.
 - Have a minimum of five years experience in underwater structure inspection assignments.
 - Meet the qualifications of a bridge inspection team leader in accordance with the National Bridge Inspection Standards (NBIS), 23 CFR 650.309(b).
 - Within five years prior to the inspection completion, successfully complete an
 approved comprehensive bridge inspection training course or bridge inspection
 refresher training course in accordance with NBIS, 23 CFR 650.309(b) or
 650.313(g), respectively.
 - 5. Be on site at all times coordinating the inspections.

- B. Qualification requirements for the Diver(s) performing the inspection:
 - Meet the qualifications of underwater bridge inspection diver per NBIS 23 CFR 650.309 (b).
 - Have all the required licensing to practice commercial diving in Puerto Rico.

IV. CODES, REGULATIONS, STANDARDS AND PROCEDURES

Inspect in accordance with the practices and procedures contained in the following regulations and operational guidelines. Consider the following:

- · Geographical location of the site,
- · Climatic conditions.
- · Tides.
- · Currents,
- · River levels, and
- · Site-specific constraints.

FHWA Guidelines

Bridge Inspector's Reference Manual, October 2002, (Report No. FHWA NHI 03-001 and

03-002)

Underwater Inspection of Bridges, (Report No. FHW A-DP-80-1)

Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges, (Report No. FHWA-PD-96-001)

Manual of Uniform Traffic Control Devices, December 2009 or latest edition.

AASHTO Specifications and Guidelines

Manual for Bridge Evaluation, 2 nd Edition, with current interims.

National Bridge Inspection Standards

Title 23, Code of Federal Regulations, Part 650, subpart C, latest rule applicable.

Commercial Diving Operations

Title 29, Code of Federal Regulations, Part 1910, subpart T, latest revision.

U.S. Coast Guard Navigation Rules

U.S. Coast Guard pamphlet CG-169, May 1, 1977, Rule 27, or latest revision.

Puerto Rico Highway and Transportation Authority Specifications

Standard Specification for Road and Bridge Construction, 2005 edition.

Units

Use English units of measurement.

Bridge Member Identification

Use the member identification convention consistent with PRHTA provided documents and the <u>Bridge Safety Inspection Manual</u>, Department of Transportation and Public Works, Puerto Rico Highway and Transportation Authority, July 2011

V. TERMS AND DEFINITIONS

PRHTA - Puerto Rico Highway and Transportation Authority

<u>Consultant</u> - The individual, partnership, firm, corporation, or any acceptable combination thereof, contracting with the PRHTA for performance of the work included in this contract.

<u>Professional Registration - Prepare all work under the direct supervision of the registered professional engineers who are in responsible charge for the services. These Engineers currently registered in Puerto Rico will sign, seal and certify the accuracy of each final work product.</u>

<u>Correspondence</u> - On all correspondence include the PRHTA's assigned Project name and numbers.

<u>Identified Substructure Unit (ISU) - Each</u> structure description lists the substructure members for inspection.

<u>Documents and Reports</u> - Print reports with solid black letters that are double-spaced on white, 8.5-inch x 11-inch bond or "Xerox Copy" paper. Fold larger paper sizes to 8.5 -inch by 11-inch.

Submit a digital copy of final reports complete with color photographs and sketches. Provide this report in Adobe Acrobat (pdf) or other approved format.

Report Copies - Provide (2) hard copies and (1) digital copy.

Covers - Include the following information on the cover of all documents and reports:

- a. Name of document or report.
- b. Date.
- c. Indicate whether draft or final.
- d. Project Name.

- e. State and Federal Project Number(s).
- f. Prepared for: Puerto Rico Highway and Transportation Authority
- g. Prepared by: (Company Name)

<u>Revisions</u> - Modify work products in response to direction from the PRHTA. Consider corrections, adjustments, or modifications necessitated by the review/approval process, which do not substantially affect the scope, complexity, or character of the services, as a normal part of the Consultant services.

<u>Errors and Omissions - Submit the completed work products to the PRHTA.</u> Prior to submitting correct all significant errors or omissions within the work products. The PRHTA will not accept errors or omissions in the work product.

<u>Comment Resolution</u> - Provide a written response with subsequent submittals that address all written and oral PRHTA comments. Clearly explain all changes from previous submittals.

VI. PROJECT WORK TASKS

Structure Inspection

The inspections include but are not limited to the following:

- 1. Identify and list each member of the underwater inspection or Substructure Unit.
- Include a drawing with the UW inspection elements (ISU's) identified at the beginning of the inspection report.
- Document inspection procedure for UW inspection of the bridge and include the procedure as part of the UW inspection report.
- As defined in the FHWA Manual, <u>Underwater Inspection of Bridges</u>: A complete Level I underwater inspection on 100% of ISU's from the mud line to the water surface.
- Identify and document the High Watermark.
- Visually inspect the ISUS's from the High Watermark down to the current water level of the above water portion of ISU's using the diver in the water or inspector from a workboat.

- Assign a Condition Rating to each member according to the FHWA Recording and Coding Guide.
- Identify the AASHTO Core elements and assign condition state quantities. Document the quantities per ISU's and in total.
- As defined in the FHWA Manual, <u>Underwater Inspection of Bridges</u>: A Level II underwater inspection on 10% of ISU's below the water surface.
- 10. As defined in the FHWA Manual, <u>Underwater Inspection of Bridges</u>: A Level III underwater in depth inspection identified in the Scope of Work -or- where deemed necessary by the Engineer in Charge. Immediately notify the PRHTA Contract Manager when a Level III inspection is deemed necessary and the reasons for this determination. Based on the information provided, the PRHTA may require a more detailed inspection.
- 11. Assess the riprap condition at embankments and intermediate piers.
- 12. Document all deficiencies with photos and additional sketches.
- Document typical conditions, with colored photographs and/or sketches including debris build up.
- 14. Locate, describe and quantify all structural defects with colored photographs and/or sketches including damaged members, remaining section, timber decay or attack by marine borers. Use clear water box when necessary.
- 15. Measure all local scour and scour undermining of footings, concrete walls or around piles by width, length and depth. Reference the scour elevations from the as-built drawings and locate in relation to adjacent substructure unit. Measure and locate the maximum water depth at each substructure unit.
- 16. Identify stream or channel bed material.

Documentation and Reporting

Submit draft and final reports for each structure to the PRHTA for review and approval.

VII. CONSULTANT RESPONSIBILITY

General

- Comply with all laws, ordinances, rules, regulations and orders of any public authority bearing on the performance of the work.
- 2. Establish a safe environment for work site personnel.

Scheduling

Prepare a proposed schedule thirty (30) calendar days prior to starting underwater inspections. Update detailed structure inspection dates and approximate times at least two (2) weeks prior to the actual start date. When schedule revisions arise, immediately submit a revised schedule to the PRHTA Project Manager. No inspection shall begin prior to schedule approval.

Identify the optimal time for underwater inspections. Balance underwater inspection schedule between the low flow and the higher flows produced by and seasonal rains.

Debris Removal

Remove sufficient debris such as trees, brush and other miscellaneous objects that inhibit inspection efforts or cause unsafe conditions.

The Consultant may review existing inspection records to identify debris accumulation history when such data is available.

Work Zone Traffic Control

Use inspection procedures which minimize traffic disruption. Omit traffic control, when underwater inspections are completely off the roadway and behind existing railing. Develop and submit to the PRHTA for approval a TCP, when a TCP is needed.

Provide a safe and expeditious movement of traffic around and through the inspection/work site. Implement the approved TCP and utilize traffic control devices when the underwater inspection affects the movement or safety of traffic or the safety of the work force.

Employ the Traffic Maintenance in accordance to the most recent Manual on Uniform Traffic Control Devices (MUTCD). Obtain an approved and signed TCP prior to submitting or commencing work on PRHTA right of way. During the work maintain a copy of the PRHTA approved traffic control plan on site.

Inspection Coordination

Prior to performing the inspections coordinate the inspection efforts with the PRHTA, all applicable Federal, State, and Local Agencies including law enforcement.

Coordinate activities with Marine Transport Authority managers and schedule inspections to avoid conflicts with ferry vessel (Aqua Expreso) arrivals and departures.

Permits

Obtain all permits required for these inspections including, but not limited to, any required by the U.S. Army Corps of Engineers, Natural Resources Department and U.S. Coast Guard.

Inspection Procedures

Determine how to safely access each structure. Develop an access plan for each structure. Assess site conditions prior to diving. Document unsafe diving conditions by providing color photos and a written explanation of why the site is unsafe.

Contact the PRHTA Project Manager every regular business day or immediately as necessary with inspection updates. Immediately notify the PRHTA Project Manager or on-site PRHTA Inspector of any significant inspection findings.

Do not block or restrict stream navigation. Provide adequate notification to water traffic during dive operations and provide safety vessel as necessary.

VIII. MANAGEMENT

Schedule(s)

Adhere to the Project Duration to meet the PRHTA's long-term goals and commitments. Expend all effort necessary to stay on schedule.

Project Coordination

Coordinate all project correspondence through or with the concurrence of the PRHTA's Project Manager.

FHWA Communication

The PRHTA shall conduct all project related communications with FHWA.

PRHTA Activities

The PRHTA's Project Manager coordinates the Consultants activities with those of various functional groups within the PRHTA. These groups include Traffic, Safety & Utilities; Highway Construction; Bridge Engineering Office; and Contracts.

For quality assurance purposes, the PRHTA may have an inspector on site for some or all inspection activities.

Release of Information

The PRHTA's Project Manager must approve the release of any project related information.

IX. QUALITY CONTROL PROGRAM

The Quality Control Program shall include the following elements:

- Quality Reviews: The Consultants shall conduct quality reviews to make certain
 their own organization is in compliance with the requirements cited in this scope
 of services. Quality reviews shall be conducted to evaluate the adequacy of
 materials, documentation, processes, procedures, training, guidance, and staffing
 included in the execution of this contract.
- Quality Control Plan: The Consultant shall include a quality control plan in the technical proposal furnished to the PRHTA. The quality control plan shall detail the procedures, evaluation criteria, and instruction to his organization to assure conformance with the contract. No work shall be initiated until the Consultant's quality control plan is approved by the PRHTA. Significant changes to the work requirements may require the Consultant to revise the quality control plan. It shall be the responsibility of the Consultant to maintain a plan current with the work requirements. The Plan shall include, but not be limited to, the following areas.
 - a. <u>Organization</u> A description is required of the Consultant's quality control organization and its functional relationship to the part of the organization performing the work under the contract. The authority, autonomy, and responsibilities of the quality control organization shall be detailed as well as the names and qualifications of personnel in the quality control organization.
 - <u>Quality Control</u> The Consultants methods use to monitor and assure compliance with the contract requirements for services and products shall be detailed.
 - Quality Assurance The Consultant's methods used to monitor and assure compliance with the quality control requirements shall be detailed.

- d. Quality Records The types of records which will be generated and maintained by the Consultant during the execution of a quality control program shall be outlined.
- Control of Subcontractors and Vendors The methods used by the Consultant to control the quality of the subcontractors shall be detailed.
- f. Quality Control Certification An officer of the Consultant firm will be required to sign and seal a certification that will accompany each submittal stating that the drawings, reports, etc. have been prepared and checked in accordance with PRHTA Specifications.

The Consultant shall maintain adequate records of the quality control actions performed (including subcontractors and vendors) in providing services and products under this contract. All records shall indicate the nature and number of observations made, the number and type of deficiencies found, and the corrective actions taken. Deficiencies identified through the consultant's QC and/or QA processes shall be reported to the PRHTA and immediately corrected. Failure to make satisfactory and timely correction to deficiencies, identified by the consultant or by the PRHTA, shall result in withholding of payments, pending satisfactory corrections being made. These records shall be available to the PRHTA upon request during the contract term. All records shall be kept at the primary job site. All records are subject to audit review.

X. BRIDGE INSPECTION REPORTS

Requirements

Submit a concise, complete and separate report for each structure with the following:

- Executive Summary Identify critical findings and locations of significant observations and deficiencies. Provide critical findings and maintenance work recommendations. Include the site time, inspection date, type of dive and safety vessels used, and crew size in a summary table.
- Introduction Include a description of the structural members inspected, inspection method, Inspection access method, traffic control, equipment used, and list the name and date of Agencies and individuals contacted.
- Inspection Findings Include detailed observations and a brief narrative with an overall
 condition summary for the members inspected. Provide inspection findings for each
 member.
 - Describe, quantify, and locate all defects.
 - Discuss nondestructive testing methods. Provide all test results.

- Assign a Condition Rating to each member according to the FHWA Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges, (Report No. FHWA-PD-96-001)
- Special Conditions Discuss all hydrological data including debris, scour, streambed material, and water conditions. Discuss access method, traffic control, and nondestructive testing methods used. Provide all test results.
- Sketches Provide plan and elevation views of piers and abutments drawn to scale. On these sketches:
 - Show the streambed spot water depth map; the flow direction; and north arrow.
 - Locate scour holes and points of maximum scour depth with approximate dimensions (length, width and depth below normal streambed); reference the horizontal location to the nearest substructure unit; and vertical distance from the deck to water surface.
 - Locate all deficiencies.
 - Show deck elevation to water surface measurement.
- Typed Daily Dive Reports Include crew size and crew names, the time the diver's
 actually spent inspecting the structure, tide table record with time and location references,
 maximum dive depth at each identified substructure unit, maximum current, visibility,
 ambient and water temperatures. Provide typed Daily Inspection Logs.
- Color photos documenting the typical member condition and all defects, diver access
 methods include staging and boat launch areas, substructure members above and below
 the water, in-place traffic control, rip rap condition, and debris before and after removal.

Draft Reports

Submit all draft Structure Reports complete with color photos and sketches to the Bridge Engineering Office for review. Provide a digital copy and one hard copy.

Final Reports

Submit final Structure Reports complete with color photos, sketches and Engineers seal. Provide a digital copy and two bound paper copies.

| XI. METHOD OF COMPENSATION | |
|---|--|
| The method of payment for the Consultant contract will be on per bridge basis. In the sealed Economical Proposal submitted by the Consultant a task breakdown shall be included per bridge. A lump sum item for debris removal shall be included per bridge. This lump sum shall be negotiated on a per bridge basis when needed. | |
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A.9 Procedure for Conducting Underwater Inspection

The Federal Highway Administration (FHWA), through the National Bridge Inspection Standards (NBIS), and through guidance provided in Technical Advisories, specifies that underwater members shall be inspected to the extent necessary to determine with certainty that their condition has not compromised the structural safety of the bridge. The NBIS recognizes seven types of bridge inspections: routine, initial, damage, in-depth, underwater, special, and fracture critical.

Underwater inspection (UWI) is the evaluation carried out on those bridges where the submerged portions of the structure have a history of at least four feet of water depth throughout the year, or, where the elements are submerged in less than four feet of water, but the evaluation thereof by the method of wading, would be unsafe. A summary of the procedure to perform the UWI is presented below, complying with the NBIS' minimum requirements for the safety and proper inspection of all highway bridges. Also, the UWI procedure must comply with the safety standards set by the Occupational Safety and Health Administration's (OSHA), as well as any other local, federal or more restrictive applicable regulation.

Procedure for Conducting the Underwater Inspection

1. Select the Underwater Inspection Team

Bridge owner must select the UWI team. The UWI team is composed of individuals who meet the requirements for bridge inspection specified by the NBIS and the minimum requirements of diving required by OSHA regulations, for commercial diving operations (29 CFR 1910 Subpart T).

Members of the team that participated in the inspection of this bridge are included in Table I:"Inspection Data" of the "Underwater Bridge Inspection Report", for Bridge No. 0542, prepared by Behar Ybarra & Associates, LLP and Bolt Underwater Services.

2. Site Reconnaissance and Data Collection

Through data collection or an on-site reconnaissance, the dive inspection team leader should:

- a. Determine the approximate water depth, from the drawings or from field measurements.
- Determine the approximate velocity of the water.
- c. Perform a hazard analysis.
- d. Do a pre-dive checklist.
- e. Determine if due to the work of inspection, traffic may be affected.
- f. Obtain all data related to the structure to prepare for an inspection.
- g. Prepare an UWI operation plan.
- h. Review previous reports so that they can help to determine the rate of deterioration of the previously observed defects.
- i. Review the previously established measures against scour.

3. Determine the Level of Inspection

Bridge owner and/or UWI team must determine the level of inspection required. Three levels of inspection have been adopted for UWIs, these are summarized below as:

Level I: Visual, tactile inspection.

Level II: Detailed inspection with partial cleaning.

Level III: Highly detailed, inspection with Non-Destructive Testing or Partially Destructive Testing.

A routine UWI normally includes a 100% Level I inspection and a 10% Level II inspection. It may also include additional Level II inspections and Level III inspections, as necessary.

For the evaluation of this bridge, Level I inspection were performed on 100% of the submerged portions of each identified substructure unit. Level II cleanings and Level III inspection were not required for this bridge.

4. Establish the Inspection Frequency

UWI team shall establish the inspection frequency. UWI shall be done at least every 60 months or more frequently if conditions warrant. However, the NBIS has specified certain factors that shall be considered in establishing the frequency of inspections and normal levels of inspection effort.

The UWI for Bridge No. 0542 was completed on August15, 2012. The recommended next UWI should be done no later than 60 months from this date.

5. Bridge Data

a. Bridge Type

Cast in place concrete bridgewith6 spans

b. Location - Refer to Figure 1: "Bridge Location Map".

6. Identify the Substructure Unit Located in Water

The inspector must recognize the various types of substructure configurations, likely locations and types of commonly encountered defects, and understand the causes and mechanisms of deterioration. The types of structures include pile bents, piers, abutments, caissons, cofferdams and foundation seals, protection devices and culverts. The ISU's in water, requiring Level I inspection at 10% of Level II, are presented below:

- a. ISU: Columns 1 and 2 of Bents 2 through 6
- b. ISU: Channel

7. Select the Underwater Inspection Method and Technique

The UWI team shall select the inspection method. There are currently three methods used to conduct UWI, these are:

- a. Wading requires only a probing rod and boots to be effective.
- b. Scuba Diving A method that allows a more detailed examination of substructure conditions at the mudline.
- c. Surface-Supplied Air Diving: A diving mode in which the diver in the water is supplied from the dive location with compressed air for breathing. This method may involve the use of sophisticated diving equipment. This inspection method is well suited when adverse conditions will be encountered.

For this bridge, the Wading and Scuba Diving methods and techniques have been employed.

8. Perform the Routine Inspection and Determine the Deterioration of Structural Material

A routine inspection is a regularly scheduled inspection consisting of observations and measurements needed to determine the physical and functional condition of the bridge, to identify any changes from initial or previously recorded conditions, and to ensure that the structure continues satisfying the present service requirements. The routine inspection may indicate that an in-depth inspection is needed in some areas to confirm the Level I and Level II findings, or to gain additional data so that the structural conditions can be evaluated with certainty.

The UWI team shall determine the deterioration of the structural material, primarily concerned with ratings of the five inventory and appraisal NBI items: Item 60-Substructure, Item 61-Channel and Channel Protection, Item 62-Culverts, Item 71-Waterway Adequacy, and Item 113-Scour Critical Bridges (see section 10).

Deterioration of structural material depends mainly on the type of material. For concrete, there are four main types of deterioration: cracking, scaling, spalling, and chemical attack. Steel foundation elements located in water, can suffer distress in the form of corrosion. Typical problems found in masonry structures include cracking, scaling, and deteriorated pointing. The deterioration of structural materials found on Bridge No. 0542 includes concrete scaling, and spalling with exposed steel; for detailed deficiencies and locations refer to Table 3.

9. Underwater Inspection Equipment and Safety Measures

- a. Vehicular Traffic The vehicular traffic was not impacted during the inspection. Traffic Control Devices and/orMaintenance of Traffic were not needed for UWI of this bridge.
- b. Access The access to many small bridges can be accomplished from the adjacent shore; for larger waterways, a boat will be necessary. In this case the bridge was accessed by the adjacent shore.
- c. Divers Equipment—There are several divers equipment including: exposure suits, commercial scuba equipment, and communication equipment, among others. For the evaluation of this bridge, diving equipment was used. For additional equipment employed in the evaluation of this bridge, refer to Table 1: "Inspection Data".
- d. Inspection Tools There are two types of inspection tools; hand tools and power tools. For this bridge, both types of tools have been used.
- e. Images—Color photographs taken during the UWI are included in the report, refer to Appendix

10. Inspect the Scour

UWI team must evaluate bridge for scour (Refer to NBIS-Item 113-Scour Critical Bridges). UWI team shall accomplished two main objectives in inspecting bridge for scour: To accurately record the present condition of the bridge and the stream and to identify conditions indicative of potential problems with scour and stream stability, for further review and evaluation by others. For bridges that are scour critical, bridge owners must prepare a plan of action to monitor known and potential deficiencies and to address critical findings.

A basic scour investigation should include sounding and probing the channel bottom adjacent to the structure, and determining channel cross sections in the area of the bridge.

For information related to scouring, refer to "Underwater Bridge Inspection Report", for Bridge No. 0542, made by Behar Ybarra & Associates, LLP and Bolt Underwater Services.

- 11. Critical Findings Critical findings shall be identified by the UWI team and shall be addressed in a timely manner. The FHWA shall be periodically notified of the actions taken to resolve or monitor critical findings. The underwater inspection team found some incidental issues on Bridge No. 0542. There are:
 - a.There are struts running between Piles No. 1 & 2, of Bents No. 3 through 5, 6 feet, approximately, below the waterline.

12. Determine the Condition Rating and Core Element Level Condition Rating

UWI team shall determine the condition rating and the core element level condition rating. The NBI rating system assigns a numerical rating from "9" to "0" for substructure units; an element based rating system breaks the substructure units into Commonly Recognized (CoRe) Structural Elements, and determines the quantity of submerged piles that should be classified in various condition states. In general, the condition states range from "1" to "5".

The CoRe Structural Elements are a group of structural elements endorsed by the American Association of State Highway Transportation Officials (AASHTO) as a means of providing a uniform basis for data collection for any bridge management system. Each element is also assigned an environment rating from "1" to "4" representing the aggressiveness of operating practices and the local environment in which the element is located.

For NBIS ratings refer to Table 2: "NBIS Overall Condition Rating" of the "Underwater Bridge Inspection Report", for Bridge No. 0542, made by Behar Ybarra & Associates, LLP and Bolt Underwater Services. 12

Bridges with fracture critical members and complex bridges shall be inspected according to those

procedures.

The Procedure for Conducting the Underwater Inspection shall comply with the NBIS and OSHA requirements and any other more restrictive local or federal requirement. The Underwater Inspection Report for Bridge No. 0542, done by Behar Ybarra& Associates, LLP/Bolt Underwater Services on July 2013, as well as, previous inspection's reports for this bridge, provided by the Puerto Rico Highway and Transportation Authority, have been used as reference also.

A.10 Failure Critical Inspection Procedures

Inspection procedures begin with proper advanced planning. Important planning aspects usually based on an office review of the structural plans, fracture critical inspection records, and aerial views of the location, include:

- Identify all fracture critical members on both the superstructure and substructure including all
 primary gusset plate locations.
- Note the particular members in the structure that may require special field attention, such as built-up tension members composed of few individual pieces.
- Determine equipment necessary to access the fracture critical members, such as a SNOOPER® truck, ladders, bucket truck, boom lift, boat, etc.
- Identify all personal protective equipment necessary to inspect the structure such as hard hat, vest, steel toed boots, flashlight, respirator, or eye protection.
- Many structures designed for urban situations with necessary complex alignment geometries
 result in FCMs. Proper inspection of these bridges may require closing a traffic lane or require a
 night time inspection due to high average daily traffic. Coordinate safe traffic control in advance
 with the local District and Area offices and their Safety Review Team.
- Identify and make available any necessary special tools and equipment that may be required in addition to the normal inspection gear.
 - Tools for cleaning:
 - o Shop-vac to remove loose debris
 - o Brushes both wire and synthetic
 - o Needle scaler
 - o Chipping hammer
 - Compressed air

- · Non-destructive test equipment
 - Penetrant Testing Used for crack verification and crack tip location.
 - o Magnetic Particle Testing Used for crack verification and crack tip location
 - ULtrasonic Testing Used to detect subsurface cracks and evaluate remaining thickness at locations that have experienced section loss. All pin-and-hanger connections are evaluated using this method.

The actual field inspection of all FCMs consists of a hands-on visual inspection of all fracture critical members. The inspector notes any:

- Visual cracks and records the crack length, direction, and location, describing what member the crack is in and where on the member the crack is located. Marks are made on the member documenting crack limits and the date crack observations were made. A picture is taken of each crack and placed in the picture report.
- Corrosion resulting in section loss of the fracture critical member, or resulting in pack rust between built-up members. At least one picture showing the worst location of this type of deficiency is placed in the picture report.
- · Weld terminations, plug welds, or intersecting welds in a tension area.
- Interrupted back-up bars used for built-up-member fabrication.
- Arc strikes, scars from assembly cables or chains, or other physical damage.
- Cross-section changes which may cause a sudden increase in the stress pattern.
- Each type of AASHTO defined fatigue detail and all known problematic details that exists on the member. A picture of each is taken and placed in the picture report.

After the field inspection has been performed, a report is written to document the inspection plan and the current condition of the FCMs. This written report is supplemented by a picture report. The picture report contains an example of each type of fatigue detail, the overall layout of the structure, a picture of every crack, and the location of moderate to severe section loss. The format of the report is as follows:

Methods:

- The equipment used to perform hands on inspection of all FCMs, including required safety equipment.
- · Who performed the inspection?
- · How long was required to perform the inspection?
- When the inspection was performed (night/day date).
- Site specific details requiring special attention (fatigue details, problematic details, primary gusset plates, dangerous conditions).

- List special equipment necessary to clean and verify cracks and quantify section loss, including non-destructive evaluation techniques used.
- · Equipment setup and access points

Traffic Control:

- The agency or contract firm that provided the traffic control.
- · Lane closure information.
- · Advanced notification time required to obtain ROW access

Structure Description:

- · Year Built, Structure Type, Length of Structure
- · Structure Orientation.
- · Identification of each FCM which are then grouped by the appropriate AASHTO fatigue category.
- · List of fatigue details and problematic welded detail.

Inspection Summary:

- Describe the general condition of the structure.
- List all cracks, on the structure, in a table showing length, location, and direction.
- · List all section loss dimension and locations. This value should be recorded as remaining thickness.
- List all pack rust locations that are causing bowing of the built-up members or causing bolts or rivet to shear.

Recommendations:

- Repair and/or preventative maintenance recommendations based on the information shown in the inspection summary.
- Items to be updated on the NBI as a result of the fracture critical inspection. Implem 59 Superstructure Rating (0-9)
 - Item 60 Substructure Rating (0-9)
 - Item 92A Fracture Critical Inspection Frequency (0-24)
 - Item 93A Fracture Critical Inspection Date (Month/Year)

Appendix A includes an example layout of a typical fracture critical inspection report outlining items that are documented from the inspection.

Maintenance and Preservation

Although rare, routine FC inspections occasionally reveal defects or deterioration in fracture critical elements. In those cases, the inspectors who observe and document the defects work closely with the engineers in the Bridge Maintenance group, located in DOT Bridge Division, to develop appropriate repair procedures and details.

When damage is limited to a few isolated locations, DOT personnel often perform repair work themselves. There are several Certified Bridge Welders on staff in the Bridge Maintenance group who are capable of performing a variety of routine repairs to steel structures. When damage is more substantial or widespread, DOT engineers develop repair procedures and details for use by a qualified steel repair contractor.

Repairing damage to fracture critical elements is given a high priority, particularly when the deterioration appears to be rapidly advancing or when it could potentially lead to failure of the element and consequently to the bridge itself. Routine maintenance is also an important aspect of preserving fracture critical elements. Repairs are typically far more effective and less expensive when a problem is addressed before it advances to the point that the load-carrying capacity of the structure is compromised. For example, cleaning and coating steel that exhibits minor surface corrosion can prevent deterioration from worsening to the point that more substantial structural repairs are necessary.

Appendix B Forms for Field Inspections

| Location Team Insp. Date Previous Insp. Date Struct Number of Spans Main Span Material Deck Protection | Bridge Number: cture Type and Materials |
|---|--|
| Team Insp. Date Previous Insp. Date Struct Number of Spans Main Span Material | cture Type and Materials |
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| | Superstructure |
| Туре | |
| Paint | |
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| | Steel beams |
|-----------|-------------|
| Туре | |
| Condition | |
| Corrosion | |
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| | Concrete |
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Appendix C Inspection by PRHTA of PB 0960

C.1 April 15, 2014

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|--|---|--|---------------------|------|----------------|--------|------|-------------|------|---------|-----------|
| INSP. DATE: | Type and D | otos: | - | | | | | | | | |
| NBI | Туре апа В | | Perform (Yes/No/ | | Freq (MONTH | | | us Insp. DA | ATE | Next Ir | ISP. DATE |
| ITEM 90 | Routine Ins | pection | GH | 0 | 48 |) | 121 | 9/08 | | 4/15 | -/18 |
| ITEM 93 A | FC Inspection | n | 2 | | - | | | _ | | - | |
| ITEM 93 B | Underwater | Insp. | N | | - | | | - | | _ | |
| ITEM 93 C | Other: | | N | | _ | | - | _ | | ~ | |
| 2 NPI Cond | tion Rating S | | | | 1 | | | | | | |
| Z. NBI COIId | tion Kating s | Item 5 | | 59 1 | tem 60 | Item (| 61 | Item 62 | Item | 113 | |
| Previous Ins | pection | 4 | - 4 | - | 5 | n |) | N | A | 7 | |
| Current Insp | | 5 | - 4 | - | 5 | 1 |) | N | 1 | | |
| Other Check | s: (Y, N, NA) | | | | Rev | iew Co | mmer | nts: | | | |
| ∠ AASHTO 0 ∠ Smart Flag fire damag ∠ Channel P ∠ FC & Unde ∠ Asphalt Ov ∠ Drawings ∠ Photos ∠ Critical Fin | rofile/Clearar erwater Memi verlay Thickn | CD consel plate, nce Tabl bers Tabl ess | e bles | | | | | | | | |
| Reviewer: Safety Eng.: | X | Del 134 | n/ 1/ | | | | | | | | |

Bridge Inspection Report

| Bridge Key: 009601 Agenc | y ID: 009601 Sufficiency Rating: -2.0 |
|---|--|
| IDENTIFICATION | INSPECTION |
| State 1; 72 Puerto Rico Struc Num 8; 009601 | Frequency 91: 48 months Inspection Date 90: 4/15/2014 Next Inspection: 04/15/201 |
| Facility Carried 7: PR 18 Location 9: 0.5 KM N INT PR21 & PR18 | FC Frequency 92A: NA FC Inspection Date 93A: NA Next FC Inspection: NA |
| Rte.(On/Under)5A: One Route Under Rte. Signing Prefix 5B: 1 Interstate Hwy | UW Frequency 92B: NA UW Inspection Date 93B: NA Next UW Inspection: NA |
| evel of Service 5C: 1 Mainline Rte. Number 5D: 00018 | SI Frequency 92C: NA SI Date 93C: NA Next SI: NA |
| Directional Suffix 5E: 1 North % Responsibility : NA | Element Frequency: 48 months Element Inspection Date: 01/01/1901 Next Elem. Insp. Due: 01/01/190 |
| SHD District 2: -1 County Code 3: SAN JUAN | |
| Place Code 4: SAN JUAN ZONA Kilometer Post 11: 01.7 km URBANA | CLASSIFICATION |
| Feature Intersected 6: PEDESTRIAN WALKWAY | Defense Highway 100: 2 On Non-Interstate STRA Parallel Structure 101: Unknown (NBI) |
| Latitude 16: 18d 23' 24" Longitude 17: 066d 04' 36" | Direction of Traffic 102: 0 Not hwy traffic Temporary Structure 103: Not Applicable (P) Highway System 104: 0 Not on NHS NBIS Length 112: Unknown (NBI) |
| Border Bridge Code 98: Unknown (P) | Toll Facility 20: 3 On free road Functional Class 26: 12 Urban Fwy/Expwy |
| Border Bridge Number 99: Unknown | Historical Significance 37: Not Applicable (P) |
| STRUCTURE TYPE AND MATERIALS Number of Approach Spans 46: -1 Number of Spans Main Unit 45: -1 | Owner 22: -1 Unknown (P) Custodian 21: -1 Unknown (P) |
| Main Span Material/Design 43A/B: | |
| 2 Concrete Continuous 04 Tee Beam | CONDITION |
| | Deck 58: 5 Fair Super 59: 4 Poor Sub 60: 5 Fair Culvert 62: N N/A (NBI) Channel/Channel Protection 61: N N/A (NBI) |
| Deck Type 107: Unknown (NBI) | LOAD RATING AND POSTING |
| Wearing Surface 108A: Unknown (NBI) | Inventory Rating Method 65: Unknown (NBI) Operating Rating Method 63:Unknown (NBI) |
| Membrane 108B: Unknown (NBI) | |
| Deck Protection 108C: Unknown (NBI) | Topic and the control of the control |
| AGE AND SERVICE | Design Load 31: 7 Pedestrian Posting 70: Unknown (NBI) Posting status 41: Not Applicable (P) |
| fear Built 27: 1967 Year Reconstructed 106: Unknown | rot Approachs (r) |
| Type of Service on 42A: 3 Pedestrian-bicyle | ADDDAIGAL |
| Type of Service under 42B: 1 Highway | APPRAISAL Bridge Rail 36A: N N/A or not required Approach Rail 36C: N N/A or not required |
| Lanes on 28A: Unknown Lanes Under 28B: 9 Detour Length 19; 0.0 km | Bridge Rail 36A: N N/A or not required Approach Rail 36C: N N/A or not required Transition 36B: N N/A or not required Approach Rail Ends 36D: N N/A or not required |
| ADT 29: 178,900 Truck ADT 109: 4 % Year of ADT 30: 2005 | Str. Evaluation 67: N Deck Geometry 68: N Not applicable (NE |
| GEOMETRIC DATA | Underclearance, Vertical and Horizontal 69: 4 Tolerable |
| Length Max Span 48: 22.20 m Structure Length 49: 49.30 m | Waterway Adequacy 71: N Not applicable Approach Alignment 72: Not Applicable |
| Curb/Sdwlk Wdth L 50A: Curb/Sidewalk Width R 50B: | Scour Critical 113: Not Applicable (P) |
| Width Curb to Curb 51: 2.10 m Width Out to Out 52: Approach Roadway Width 32: 44.30 m Median 33: Unknown (NBI) | PROPOSED IMPROVEMENTS |
| (w/ shoulders) | Bridge Cost 94: \$ 0 Type of Work 75: 35 Rehabilitate-gen |
| Deck Area: Skew 34; -1.00 * Structure Flared 35; Unknown (NBI) | Roadway Cost 95: \$0 Length of Improvement 76: 00.00 m |
| Minimum Vertical Clearance Over Bridge 53; | Total Cost 96: \$ 42,115 Future ADT 114: 216,469 |
| Minimum Vertical Underclearance Reference 54A: H Hwy beneath struct | Year of Cost Estimate 97: 2014 Year of Future ADT 115: 2020 |
| Minimum Vertical Underclearance 548: 04.64 m | NAVIGATION DATA |
| Minimum Lateral Underclearance Reference R 55A: H Hwy beneath struct | Navigation Control 38: Unknown (NBI) |
| Minimum Lateral Undrolearance R 55: 03.30 m | Vertical Clearance 39: Horizontal Clearance 40: |
| Minimum Lateral Undrolearance L 56: 02.60 m | Pier Protection 111: Not Applicable (P) Lift Bridge Vertical Clearance 116: |
| ELEMENT CONDITION STATE DATA BRIDGE NOTES | |
| NSP002_Inspect_Report_Metric Agency | ID: 009601 Wed 4/23/2014 14:25: |

| | | Bridge Maintenan |
|---|--|---|
| | Bridge Inspection | Report |
| PAST INSPECTION | | |
| nspection Date: 04/15/2014 | Type: 1 Regular NBI | |
| nspector: -1 | Pontis User Key: Pontis - | Pontis Poi |
| Scope: | | |
| NBI: ✓ Othe | | |
| Underwater: Frac | cture Critical: | |
| NSPECTION NOTES | | |
| RAILINGS. RAMPS RAILINGS W WITH EXPOSED REINFORCED S | TITH BROKEN SECTIONS FROM SUPP STEEL DUE TO TRAFFIC IMPACT AT | TION ALONG THE WEARING SURFACE AND PORTS AND MOVEMENT. LARGE SPALLINGS BEAMS OF SECOND SPAN OVER ROUTE ONTAL CRACK AT PIER CAP (EAST SIDE). |
| NODE OTOD WORK CANDIDATE | |) |
| NSPECTOR WORK CANDIDATES | 5 | |
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| NSP002_Inspect_Report_Metric | Agency ID: 00 | Wed 4/23/2014 14:25:0 |

| Team Leader: Arturo Cáceres |
|--|
| Bridge Inspector: Micky Santiago |
| Bridge Evaluator: Arturo Cáceres |
| Assistants: John Dávila |
| Driver: Juan C. Otero |
| Inspection date: Abril-15-2014 |
| Weather Conditions: Sunny |
| Amount of Time on Inspection: 0.5 Hours |
| Equipment: X Bus or Van _ Underwater _ Ladders _ Snooper X Camera _ Boat |
| _ Other: |
| Bridge Number: 0960 |
| Road on Structure: N/A Number or Name: _ Km |
| Road Under Structure: State Highway Number or Name: PR-18 Km. 1.7 |
| Ident. Plaque: No Num |
| 36. Traffic Safety Features: |
| Bridge railings: not applicable or safety not reuired |
| Transitions: not applicable or safety not reuired |
| Approach Guardrail: not applicable or safety not reuired |
| Approach Guardrail Ends: not applicable or safety not reuired |
| 41. Posting: Condition: A - Open Sign Type: Posting Load: |
| COMMENTS AND/OR RECOMMENDATIONS: |
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| (ME started |
| Inspection by Michael Sentions |
| Inspection by: Micky Santiago Revised and Approved by: Arturo Cáceres |
| Bridge Inspector Bridge Evaluator |
| RP_0060 |

58. DECK

58.1 Wearing Surface: Material: Concrete

Condition: 5

Thickness

cm.

Deterioration: 0 to 10 %

Drainage: Adequate

Ponding: No

Safety: Yes

58.2 Slab or Plate: Material: Concrete

Condition: 6

cm.

Cracking: Fine (0.0 to 0.5 mm)

Spalling: Top: Small

Bottom: No

Scaling: Top: Light

Bottom: No

Efflorescence: No

Exudation: No Rust Stains: Yes

Corrosion: Moderate

58.3 Movement:

Deck to backwall:

Deck to approach slab:

| | Material | Cond. Rating | Height Loss (cm) | Joints | Drainage | Alignment | Corrosion | Paint | Safety | Cracking | Spalling | Scaling |
|-------------------|----------|-----------------|------------------------|--------|----------|-----------|-----------|-------|--------|----------|----------|---------|
| 58.4 Curb | N/A | | | | - | | | - | | _ | | - |
| 58.5 Median | N/A | | | | _ | | - | - | | | | |
| 58.6 Sidewalks | N/A | | | - | - | | - | - | | - | | |
| 58.7 Parapets | N/A | | | - | - | - | - | - | - | - | - | - |
| 58.8 Railing | Steel | 4 | | _ | Good | Poor | - | - | No | - | | - |

58.9 Lighting Standards: Material: N/A

Condition: N/A

Functioning: N/A

58.10 Utilities:

Type:

Size:

Safety: _

Type:

Size:

Safety:

Type:

Size:

Safety: _

58.11 Joints: Condition: N/A

Type: Expansion

Functioning: No

Leaking: N/A Cracking: N

Spalling: N

Armor: No

Type: N/A

Functioning: N/A

Leaking: N/A Cracking: N

Spalling: N

Armor: No

58.12 Drains and Scuppers:

Material: Other Condition: N

Functioning: N/A

Comments:

58.1- Superficie con desprendimientos del resanado, leve "scaling", grietas finas y medianas transversales. Rampas de acceso mas bajas que la superficie del puente, escalon no es apropiado para uso de impedidos. Huecos en la superfice sobre area de pilastras y mucha vegetación sobre la estructura y "railings".

58.8- "Railing" en area de las rampas con secciones partidas de sus bases e inclinadas hacia el interior de la rampa, mucha vegetación sobre el "railing".

BR-0960

59. SUPERSTRUCTURE

59.1 Bearing Devices: Type: Fixed/Mov.

Out of Plumb: No

Paint: None

Condition: 6

59.2 Bridge seats, pedestal, grout pads, abutments or pier seat where beams bear directly on conc.

Condition: 6

Cracking: No

Spalling: None Scaling: None

Crushing: No

59.3 Steel beams: N/A Type: N/A

Condition: N

Corrosion: None

Paint: None

59.4 Concrete: T-beams

Type: Cont.

Condition: 4

Cracking: Medium (0.5 to 1.0 mm)

Spalling: Large Scaling: None

Members: N/A

59.5 Truss: N/A

59.6 Drainage: Type:

Paint: None Corrosion: None

Condition: N Functioning: No

59.7 Hinges: Condition: N

Functioning: N/A

Movement: N/A

59.8 Deflection: Normal 59.9 Vibrations: Minimal 60.0 SUBSTRUCTURE:

| | | | Material | Cond. Rating | Cracking | Spalling | Scaling | Corrosion | Paint | Movement | Erosion | Undermining |
|-----------------|--------|---------------------|----------|-----------------|----------|----------|---------|-----------|-------|----------|---------|-------------|
| | 60.1.1 | Wingwalls | N/A | N | - | _ | _ | _ | _ | - | - | - |
| Abutments | 60.1.2 | Breast- Backwall | Concrete | 5 | М | Small | L | - | Fair | No | No | . No |
| but | 60.1.3 | Footing | N/A | N | | | | | | | - | |
| ⋖ | 60.1.4 | Piles | N/A | N | | - | - | - | | | - | |
| Sale | 60.2.1 | Caps | Concrete | 5 | F | Small | L | | | No | No | No |
| or Non Bents | 60.2.2 | Bracing | N/A | N | | | | | | | - | - |
| P e | 60.2.3 | Columns | Concrete | 6 | F | Small | L | | - | No | No | No |
| Piers Pile | 60.2.4 | Footing | N/A | N | | - | | | | | - | - |
| _ | 60.2.5 | Piles | N/A | N | | | - | | | | - | |
| <u>.</u> | 60.3.1 | Caps | N/A | N | - | - | | - | | - | - | |
| Rocker Bents | 60.3.2 | Bracing | N/A | N | | | _ | - | - | | - | - |
| ě m | 60.3.3 | Piles | N/A | N | | | | | | - | _ | - |
| | 60.4.1 | Caps | N/A | N | - | - | - | _ | - | - | - | |
| Pile Bents | 60.4.2 | Bracing | N/A | N | | - | | - | - | - | | |
| В | 60.4.3 | Piles | N/A | N | | | _ | - | | | | |

Comments:

59.4- Vigas sobre ruta @ Caguas y carril reversible impactadas, "spallings" grandes y mucho acero expuesto en vigas "span" #2 (sobre carril reversible), otros "spallings" en vigas sobre carriles @ Caguas, fuertes impactos, "spallings" y acero expuesto.

60.2- Grieta mediana horizontal en "cap" de pilastra lado este.

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61. CHANNEL AND PROTECTION Condition: N

61.1 Channel Scour: N/A

61.2 Embankment Erosion: N/A

| | | Туре | Material | Condition Rating | Functioning |
|------|---------------------|------|----------|---------------------|-------------|
| 61.3 | Protective Device | 1202 | N/A | N | - |
| 61.4 | Fender System | | N/A | N | - |
| 61.5 | Rip Rap | | N/A | N | |
| 61.6 | Spur Dikes, Jetties | | N/A | N | |

61.7 Obstruction: N/A

61.8 Channel Change: N/A Detrimental: N/A

61.9 Adequate Waterway: N/A

61.10 Surrounding Area:

Flooding: N/A if yes explain:

Erosion: N/A if yes explain:

61.11 Location of piers and/or abutment detrimental: N/A

if yes explain:

61.12 Other features that may affect structure:

Comments:

62. CULVERT AND RETAINING WALL

| | Material | Condition Rating | Functioning | Cracking | Spalling | Scaling | Corrosion | Settlement | Alignment | Scour |
|---------------------|----------|------------------|-------------|----------|----------|---------|-----------|------------|-----------|-------|
| 62.1 Barrel | N/A | N | | | | | - | | | - |
| 62.2 Head Walls | N/A | N | - | | - | - | - | | _ | _ |
| 62.3 Cut-off wall | N/A | N | | | | | | | - | - |
| 62.4 Retaining wall | N/A | N | | | | | _ | | | |

Comments:

BR-0960

71. WATER ADEQUACY:

N/A

N/A

72. APPROACH ROADWAY

72.1 Alignment: 6

72.2 Slab or Pavement

Condition: N Material: Other

Cracking: No

Spalling: None Scaling: None Uneven: No

Rough: No

Settlement: No Movement: Approach slab-backwall: No Breaking up: No

Excessive deformation: No

Safety:

Hazardous: No

Drainage:

72.4 Joints: No

Inadequate: No

Movement: Embankment: Condition: N

Pavement-approach slab: No

Functioning: Yes Erosion: No

Integrity impaired: No

Construction: Flimsy: No

72.3 Undesirable Impact: No

Type: None

Inadequate: N/A

Satisfactory Alignment: N/A

72.5 Guardrail Type: None

Material: N/A

Functioning: N/A

Condition: N

Alignment Horizontal: N/A

Vertical: N/A

Joints Functioning: N/A Safety Securely Attached: N/A Pedestrian Hazards: N/A

Comments:

90. INSPECTION DATE: Abril-15-2014

93. CRITICAL FEATURE INSPECTION DATE

Fracture Critical:

Underwater:

Other Special Inspection:

102. DIRECTION OF TRAFFIC: Highway traffic not carried

106. YEAR RECONSTRUCTED:

107. DECK STRUCTURE TYPE: Concrete Cast-in-Place

108. WEARING SURFACE/PROTECTIVE SYSTEM

Type wearing surface: Concrete

Type Membrane: None Deck protection: None

111. PIER OR ABUTMENT PROTECTION (FOR NAVIGATION): N/A

113. SCOUR CRITICAL BRIDGES: N

116. MINUMUM NAVIGATION VERTICAL CLEARANCE:

AUXILIARY ITEMS

Signs: Type: Route Orientation

Material: Alum.

Condition: 6

Type: N/A

BR-0960

RATING ITEM 58 TO 60:

- N: Not applicable
- 9: Excellent Condition
- 8: Very Good Condition: no problem noted.
- 7: Good Condition: some minor problems.
- 6: Satisfactory Condition: structural element show some minor deterioration.
- 5: Fair Condition: all primary structural elements are sound but may have minor section loss, cracking, spalling, or scour.
- 4: Poor condition: advanced section loss, deterioration, spalling, or scour.
- 3: Serious condition: loss of section, deterioration, spalling, or scour have seriously affected primary structural components. Local failures are possible. Fatigue cracks in steel or shear cracks in concrete may be present.
- 2: Critical condition: advanced deterioration of primary structural elements. Fatigue cracks in steel or shear cracks in concrete may be present or scour may have removed substructure support. Unless closely monitored it may be necessary to close the bridge until corrective action is taken.
- 1: "Imminent" failure condition: major deterioration or section loss present in critical structural components or obvious vertical or horizontal movement affecting structure stability. Bridge is closed
- 0: Failed condition: out of service: beyond corrective action.

RATING ITEM 61:

- N: Not applicable. Use when bridge is not over a waterway (channel)
- 9: There are no noticeable noteworthy deficiencies which affect the condition of the channel
- 8: Banks are protected or well vegetated. River control devices such as spur dikes and embankment protection are not required or are in a stable condition.
- 7: Bank protection is in need of minor repairs. River control devices and embankment protection have a little minor damage. Banks and/or channel have minor amounts of drift.
- **6:** Bank is beginning to slump. River control devices and embankment protection have widespread minor damage. There is minor stream bed movement evident. Debris is restricting the channel slightly.
- 5: Bank protection is being eroded. River control devices and/or embankment have major damage. Trees and brush restrict the channel
- 4: Bank and embankment protection is severely undermined. River control devices have severe damage. Large deposits of debris are in the channel.
- **3:** Bank protection has failed. River control devices have been destroyed. Stream bed aggradations, degradation, or lateral movement has changed the channel to now threaten the bridge and/or approach roadway.
- 2: The channel has changed to the extent the bridge is near a state of collapse.
- 1: Bridge closed because of channel failure. Corrective action may put back in light service.
- 0: Bridge closed because of channel failure. Replacement necessary.

RATING ITEM 62:

- N: Not applicable. Use if structure is not a culvert.
- 9: No deficiencies.
- 8: No noticeable or noteworthy deficiencies which affect the condition of the culvert. Insignificant scrape marks caused by drift.
- 7: Shrinkage cracks, light scaling, and insignificant spalling which does not expose reinforcing steel. Insignificant damage caused by drift with no misalignment and not requiring corrective action. Some minor scouring has occurred near curtain walls, wingwalls, or pipes. Metal culverts have a smooth symmetrical curvature with superficial corrosion and no pitting.
- 6: Deterioration or initial disintegration, minor chloride contamination, cracking with some leaching, or spalls on concrete or masonry walls and slabs. Local minor scouring at curtain walls, wingwalls, or pipes. Metal culverts have a smooth curvature, non-symmetrical shape, significant corrosion, or moderate pitting.
- 5: Moderate to major deterioration or disintegration, extensive cracking and leaching, or spalls on concrete or masonry walls and slabs. Minor settlement or misalignment. Noticeable scouring or erosion at curtain walls, wingwalls, or pipes. Metal culverts have significant distortion and deflection in one section, significant corrosion, or deep pitting.
- 4: Large spalls, heavy scaling, wide cracks, considerable efflorescence, or opened construction joint permitting loss of backfill.

 Considerable settlement or misalignment. Considerable scouring or erosion at curtain walls, wingwalls, or pipes. Metal culverts have significant distortion and deflection throughout, extensive corrosion or deep pitting.
- 3: Any condition described in Code 4 but which is excessive in scope. Severe movement or differential settlement of the segments, or loss of fill. Holes may exist in walls or slabs. Integral wingwalls nearly severed from culvert. Severe scour or erosion at curtain walls, wingwalls, or pipes. Metal culverts have extreme distortion and deflection in one section, extensive corrosion, or deep pitting with scattered perforations.
- 2: Integral wingwalls collapsed severe settlement of roadway due to loss of fill. Section of culvert may have failed and can no longer support embankment. Complete undermining at curtain walls and pipes. Corrective action required to maintain traffic. Metal culverts have extreme distortion and deflection throughout with extensive perforations due to corrosion.
- 1: Bridge closed. Corrective action may put back in light service.
- 0: Bridge closed. Replacement necessary.

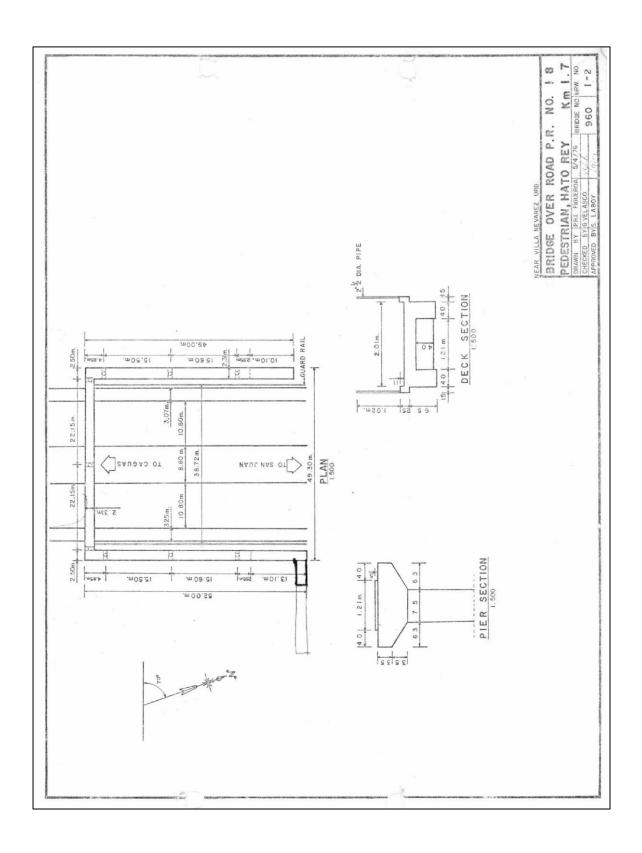
RATING ITEM 113:

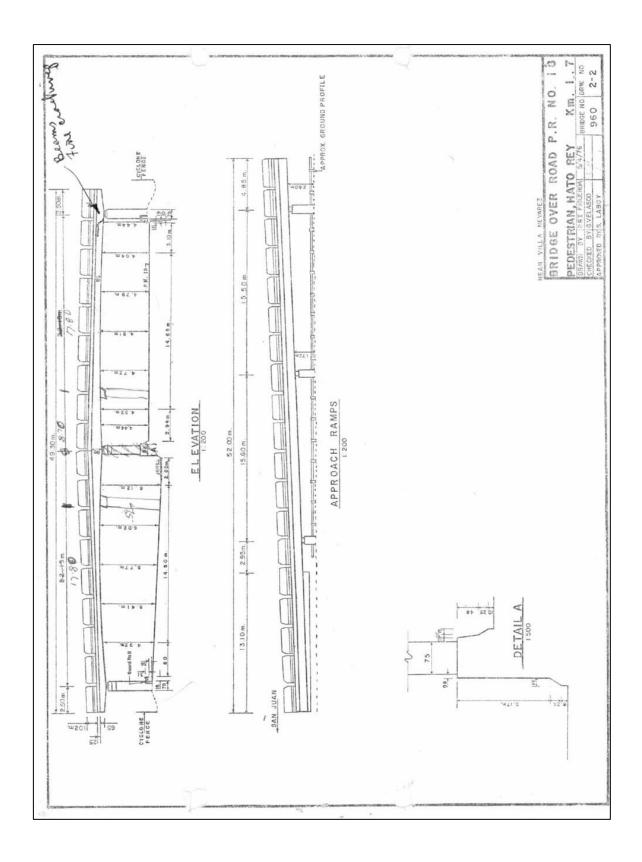
- N: Bridge not over waterway.
- U: Bridge with "unknown" foundation that has not been evaluated for scour. Until risk can be determined, a plan of action should be developed and implemented to reduce the risk to users from a bridge failure during and immediately after a flood event (see HEC 23).
- T: Bridge over "tidal" waters that has not been evaluated for scour, but considered low risk. Bridge will be monitored with regular inspection cycle and with appropriate underwater inspections until an evaluation is performed ("Unknown" foundations in "tidal" waters should be coded U.)
- 9: Bridge foundations (including piles) on dry land well above flood water elevations.
- 8: Bridge foundations determined to be stable for assessed or calculated scour conditions. Scour is determined to be above top of footing. (Example A) by assessment i.e., bridge foundation are on rock formations that have been determined to resist scour within the service life of the bridge), by calculation or by installation of properly designed countermeasures (see HEC 23).
- 7: Countermeasures have been installed to mitigate an existing problem with scour and to reduce the risk of bridge failure during a flood event. Instructions contained in a plan of action have been implemented to reduce the risk to users from a bridge failure during or immediately after a food event.
- 6: Scour calculation/evaluation has not been made. (Use only to describe case where bridge has not yet been evaluated for scour potential.)
- 5: Bridge foundations determined to be stable for assessed or calculated scour conditions. Scour is determined to be within the limits of footing or piles (Exam. B) By assessment i.e., bridge foundations are on rock formations that have been determined to resist scour within the service life of the bridge), by calculations or by installation of properly designed countermeasures (see HEC 23).
- 4: Bridge foundations determined to be stable for assessed or calculated scour conditions; field review indicates action is required to protect exposed foundation (see HEC 23).
- 3: Bridge is scour critical; bridge foundations determined to be unstable for assessed or calculated scour conditions: Scour within limits of footing or piles. (Example B) or Scour below spread-footing base or piles tips. (Example C)
- 2: Bridge is scour critical; field review indicates that extensive scour has occurred at bridge foundations, which are determined to be unstable by: (a comparison of calculated scour and observed scour during the bridge inspection) or (an engineering evaluation of the observed scour condition reported by the bridge inspector in Item 60)
- 1: Bridge is scour critical; field review indicates that failure of piers/abutments is imminent. Bridge is closed to traffic. Failure is imminent based on: (a comparison of calculated scour and observed scour during the bridge inspection) or (an engineering evaluation of the observed scour condition reported by the bridge inspector in Item 60).
- 0: Bridge is scour critical. Bridge has failed and is closed to traffic.

| | Core Elements | | | | | | | | | | | | |
|--------------|----------------------|--------------|--------|-------------------|-------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|-------------------------|--|--|
| Elem. No. | Elements Description | P a g. | E n v. | State Quantity | Units | Quantity Condition State 1 | Quantity Condition State 2 | Quantity Condition State 3 | Quantity Condition State 4 | Quantity Condition State 5 | Total State Quantity | | |
| | | | 3 | | | | | | | | 0 | | |
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| Non Core Elements | | | | | | | | | | | |
|-------------------|----------------------|--------------|--------------|-------------------|-------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|-------------------------|
| Elem. No. | Elements Description | P a g. | E n v. | State Quantity | Units | Quantity Condition State 1 | Quantity Condition State 2 | Quantity Condition State 3 | Quantity Condition State 4 | Quantity Condition State 5 | Total State Quantity |
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| | | | 3 | | | | | | | | 0 |

| Smart Flags | | | | | | | | | | | |
|--------------|----------------------|--------------|--------------|-------------------|-------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|-------------------------|
| Elem. No. | Elements Description | P a g. | E n v. | State Quantity | Units | Quantity Condition State 1 | Quantity Condition State 2 | Quantity Condition State 3 | Quantity Condition State 4 | Quantity Condition State 5 | Total State Quantity |
| | | | 3 | | | | | | | | 0 |
| | | | 3 | | | | | | | | 0 |
| | | | 3 | | | | | | | | 0 |
| | | | 3 | | | | | | | | 0 |
| | | | 3 | | | | | | | | 0 |
| | | | 3 | | | | | | | | 0 |
| | | | 3 | | | 0 | | | | | 0 |











0960-Apr.-15-2014-002.jpg



0960-Apr.-15-2014-003.jpg



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0960-Apr.-15-2014-010.jpg



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0960-Apr.-15-2014-015.jpg



0960-Apr.-15-2014-017.jpg



0960-Apr.-15-2014-018.jpg

C.2 August 12, 2002

| ourState Department of Transportation | Bureau of Bridges and Structure Bridge Maintenance |
|---|---|
| Bridge Ir | spection Report |
| Bridge Key: 009601 Agend | |
| IDENTIFICATION | INSPECTION Frequency 91: 24 months Inspection Date 90: 8/12/2002 Next Inspection: 08/12/2004 FC Frequency 92A: NA FC Inspection Date 93A: NA Next FC Inspection: NA UW Frequency 92B: NA UW Inspection Date 93B: NA Next UW Inspection: NA SI Frequency 92C: NA SI Date 93C: NA Next SI: NA Element Frequency: 24 months Element Inspection Date: 08/12/2002 Next Elem: Insp. Oue: 08/12/2004 |
| Feature Intersected 6: PEDESTRIAN WALKWAY Lathude 16: 18d 23' 24" Longitude 17: 088d 04' 36" Border Bridge Code 98: Unknown (P) Border Bridge Number 90: NA STRUCTURE TYPE AND MATERIALS | CLASSIFICATION Defense Highway 100: 2 Overfunder STRAHNET Parallel Structure 101: No bridge exists Direction of Traffic 102: 0 Not hwy traffic Temporary Structure 103: Unknown (NBI) Highway System 104: 0 Not on NHS NBIS Length 112: Long Enough Toll Facility 20: 3 On free road Functional Class 26: 12 Urban Fwy/Expwy Historical Significance 37: 5 Not eligible for NRHP Owner 22: 0101 State Highway Agency |
| Number of Approach Spans 48: 0 Number of Spans Main Unit 45: 2 Main Span Material/Design 43A/B: 2 Concrete Continuous 04 | Custodian 21: 01 01 State Highway Agency CONDITION Deck 58: 6 Satisfactory Super 59: 5 Fair Sub 60: 6 Satisfactory Culvert 62: N N/A (NBI) Channel/Channel Protection 61: N N/A (NBI) |
| Deck Type 107: | LOAD RATING AND POSTING Inventory Rating Method 85: 2 AS Allowable Stress Operating Rating Method 63 2 AS Allowable Stress Inventory Rating 86: MS44.4 Operating Rating 84: MS44.4 Design Load 31: 7 Pedestrian Posting 70: 5 Al/Above Legal Loads Posting status 41: A Open, no restriction |
| Type of Service on 42A: 3 Pedestrian-bicyte Type of Service under 42B: 1 Highwey Lanes on 28A: Unknown ADT 29: 178,900 Truck ADT 109: 4 % Year of ADT 30: 2000 GEOMETRIC DATA | APPRAISAL Bridge Rail 36A: N N/A or not required Approach Rail 36C: N N/A or not required Transition 36B: N N/A or not required Approach Rail Ends 36D: N N/A or not required Str. Evaluation 67: Unknown (NBI) Deck Geometry 68: Unknown (NBI) Underdearance, Vertical and Hortzontal 69: Unknown (NBI) Waterway Adequacy 71: N Not applicable Approach Alignment 72: 6 Equal Min Criteria Soour Critical 113: N Not Over Waterway |
| Width Curb so Curb 51: 2.10 m Width Out to Out 52: 2.30 m Approach Roadway Width 32: 44.30 m (or shoulders) Deck Area: Skew 34: 0.00 * Structure Flared 35: 0 No flare Minimum Vertical Clearance Over Bridge 53: 99.99 m Minimum Vertical Underclearance Reference 54A: H Hwy beneath struct Minimum Vertical Underclearance 54B: 94.44 m | PROPOSED IMPROVEMENTS Bridge Cost 94: \$ 0 Type of Work 75: 35 Rehabilitate-gen. Roadway Cost 95: \$ 0 Length of Improvment 76: 49.30 m Total Cost 96: \$ 12.000 Future ADT 114: 216.469 Year of Cost Estimate 97: 2000 Year of Future ADT 115: 2020 NAVIGATION DATA |
| Minimum Lateral Underclearance Reference R 55A: H Hwy beneath struct Minimum Lateral Undrolearance R 55: 03.30 m Minimum Lateral Undrolearance L 56: 02.60 m | Navigation Control 38: N NA-no waterway Vertical Clearance 39: 0.00 m Horizontal Clearance 40: 0.00 m Pier Protection 111: Unknown (NBI) Lift Bridge Vertical Clearance 118: |
| ELEMENT CONDITION STATE DATA Str Unit Elm/Env Description Units Total Cty % in 1 2 12/3 Bare Concrete Deck sq.m. 1.533 0 % 2 110/3 R/Conc Open Girder m. 98 91 % 2 210/3 R/Conc Pier Wall m. 18 100 % 2 234/3 R/Conc Cap m. 26 100 % 2 358/3 Deck Cracking SmFlag ea. 1 100 % | 90 9% 9 0% 0 0% 0 0% 0 16 0% 0 0% 0 0% 0 0% 0 0 |
| INSP002_Inspect_Report_Metric Agency | ID: 009601 Mon 10/7/2002 11:16:19 |

| | | ation Bureau of Bridges a | and Structures e Maintenance |
|---|-------------------------------|--|---------------------------------|
| | | Bridge Inspection Report | , mainte |
| Str Unit Flem | | Element Notes | |
| 2 12/3 | | | |
| 2 110 | | eal | |
| 2 210/ | 3 Reinforced Conc Pier Wall | | |
| 2 234/ | | | |
| 2 358/ | 3 Deck Cracking | | |
| BRIDGE N | NOTES | | |
| CULVER | T | | |
| | | | |
| | | | 1 |
| | | | |
| PAST INS | PECTION | | |
| nspection | | Type: 1 Regular NBI | |
| • | | The state of the s | |
| Inspector: | Pontis | Pontis User Key: Pontis - Pontis Por | |
| Scope: | | _ | |
| N | BI: Other: | ☐ Element: ✓ | |
| Ur | nderwater: Fractur | re Critical: | |
| NSPECT | ION NOTES | _ | |
| | | | |
| | | | |
| | PECTION | | |
| PAST INS | | - 4 Desider MDI | |
| | | Type: 1 Regular NBI | |
| nspection | Date: 02/01/2000 | Type: 1 Regular NBI Pontis User Key: Pontis - Pontis Po | |
| PAST INS Inspection Inspector: | Date: 02/01/2000 | | |
| nspection nspector: Scope: NE | Date: 02/01/2000 -1 Bl: | Pontis User Key: Pontis - Pontis Po | |
| nspection nspector: Scope: NE Ur | Date: 02/01/2000 -1 Bl: | Pontis User Key: Pontis - Pontis Pol Element: | |
| nspection nspector: Scope: NE | Date: 02/01/2000 -1 BI: | Pontis User Key: Pontis - Pontis Pol Element: | |
| nspection nspector: Scope: NE Ur | Date: 02/01/2000 -1 BI: | Pontis User Key: Pontis - Pontis Pol Element: | |
| nspection nspector: Scope: NE Ur | Date: 02/01/2000 -1 BI: | Pontis User Key: Pontis - Pontis Pol Element: | |
| nspection nspector: Scope: NI Ur | Date: 02/01/2000 -1 BI: | Pontis User Key: Pontis - Pontis Pol Element: | |
| nspection nspector: Scope: NE Ur | Date: 02/01/2000 -1 BI: | Pontis User Key: Pontis - Pontis Pol Element: | |
| nspection nspector: Scope: NE Ur | Date: 02/01/2000 -1 BI: | Pontis User Key: Pontis - Pontis Pol Element: | |
| nspection nspector: Scope: NE Ur | Date: 02/01/2000 -1 BI: | Pontis User Key: Pontis - Pontis Pol Element: | |
| nspection nspector: Scope: NE Ur | Date: 02/01/2000 -1 BI: | Pontis User Key: Pontis - Pontis Pol Element: | |
| nspection nspector: Scope: Ni Ur NSPECTI | Date: 02/01/2000 -1 Bi: | Pontis User Key: Pontis - Pontis Pol Element: | |
| nspection nspector: Scope: Ni Ur NSPECTI | Date: 02/01/2000 -1 BI: | Pontis User Key: Pontis - Pontis Pol | 0/7/2002 11:16 |

C.3 February 9, 2000

| 1 March 19 10 | | | | PAGE 1 OF 7 |
|---|---------------------|-------------------------|-------------|-------------------------|
| ENGINEER: HERIBERTO GONZALEZ | PUERTO RICO HIG | | E | QUIPMENT |
| SISTANTS: LUIS QUINONEZ | | EVALUATION OFFICE | BUS X | LADDERS |
| | BRIDGE REINSPECTION | & EVALUATION REPORT | BOAT | CAMERA X |
| : ALFREDO ERAZO | | | UNDERWATER | SNOOPER # |
| : RAMON RODRIGUEZ | BRIDGE No.: 00960 | FEDERAL SYSTEM | SNOOPER OPE | RATOR |
| : JAIME RIVAS | 1 2 | | | LAQUE ID |
| to a company | ROAD No.: PR 18 | KM. No.: 0001.700 | | NO No. |
| ALUATION DATE: 09-FEB-2000 | | | FILM | 10.70 NO. |
| | IDENTIFICA | ATION | | |
| | | | | 721 |
| - STATE : | | Commonwealth of Pue | rto kico | 01 |
| - HIGHWAY AGENCY DISTRICT : | | | AN JUAN | 127 |
| - COUNTY (PARISH) CODE : | | SAN J | JAN | 76770 |
| - PLACE CODE : | | . SAN JUAN URBAN ZONE | | 221100001 |
| - INVENTORY ROUTE : | | 2-1-1 | -00001-0 | EDESTRIAN WALKWAY |
| - FEATURES INTERSECTED : | | PEDESTRIAN WALKWA | , , | PR 18 |
| - FACILITY CARRIED BY STRUCTURE . | | P.R 18 | | 009601 |
| - STRIPTIRE NIMBER . | | BRIDGE 960 | 1 OF 1 | .5 KM N INT PR21 & PR18 |
| LOCATION . | | 0.5 KM N INT PR21 | & PAIO | .5 KM N INT PR21 & PR10 |
| - THURNTORY POINTS MINIMUM VERTICAL | TEARANCE : | 4.44 MT (14 | - , , | 0001700 |
| - KILOMETERPOINT : | | | 1.70 | 1 |
| - BASE HIGHWAY NETWORK : | | | | 00000001800 |
| - LRS INVENTORY ROUTE, SUBROUTE NUMB | | | | 18232400 |
| - LATITUDE : | 18 | DEGREES 23.4 MINUTES | | 066043600 |
| - LATITUDE : | | DEGREES 04.6 MINUTES | | 066043600 |
| - LONGITUDE : | | STRUCTURE OVER HIGH | YAWI | 000 |
| | | | | |
| | CLASSIFICA | ATION====== | | |
| | | DOLL BOAD | | |
| - TOLL : | ON F | REE ROLL | | 0: |
| PERSONNELLITY : | D. T. P. W. | | | 01 |
| | D.I.F.M. | OWN TO | | 1: |
| - OWNER : | TE : INIBRS | SIRIS | | |
| | AGE AND SE | | | |
| | | | | |
| - YEAR BUILT : | | | 1967 | 196 |
| - YEAR BUILT : | | 0 LANES ON / 9 LANES UN | DER | 000 |
| - LANES ON AND UNDER STRUCTURE : | | 169,700 | | 16970 |
| - LANES ON AND UNDER STRUCTURE : | | | 1998 | 199 |
| - A.D.T. OF INVENTORY ROUTE : | | | | |
| | STRUCTURE D | ATA | | |
| - DESIGN LOAD : | | РЕ | DESTRIAN | |
| - DESIGN LOAD : | | 44.30 MT (145 | .30 FT) | 044 |
| - APPROACH ROADWAY WIDTH : | | NONE | | |
| - BRIDGE MEDIAN : | | NO | | C |
| - SKEW ANGLE : | | | NO | |
| CTDICTIRE PLANES | | | N-N-N-N | NN |
| - TRAFFIC SAFETY FEATURES : | | | 5 | |
| - HISTORICAL SIGNIFICANCE : | | | N/A | |
| CONTROL : | | | NT/A | 000 |
| WASTICATION VERTICAL CLEARANTE | | | N/A | 0000 |
| NAVIGATION HORIZONTAL CHEST | | | . OPEN | |
| CTRUCT, OPEN, POSTED OR CESTED | DEDECTRIAN O | VER HIGHWAY | | |
| - TYPE OF SERVICE : | CONCRETE CONTINUOS | TEE BEAMS | | 2 |
| TYPE, MAIN : | | | | |
| TYPE APPR. | | | _ | 0 |
| - NUMBER OF SPAN IN MAIN UNIT | | | NONE | 0 |
| - STRUCTORS - NUMBER OF SPAN IN MAIN UNIT : NUMBER OF APPROACH SPAN : | | | | 00 |
| Recorded to the second | | | | |
| | | | | |

| | | | 0.143 | |
|--|--|--|---|------------------------|
| AL SYSTEM | | | | PAGE 2 OF 7 |
| | | PUERTO RICO HIGHWA | | PAGE 2 OF |
| ADGE No.: 00960 | | BRIDGE STUDIES AND EV | | |
| | BR | IDGE REINSPECTION & E | VALUATION REPORT | ·~ O 1 |
| 47- INV. ROUTE, TOTAL HORIZ. CL | | 17.80mt | | 178 K |
| 48- LENGTH OF MANAGES CL | EARANCE : | | MT (68.36 FT) | 200-0 |
| 48- LENGTH OF MAXIMUM SPAN : | | 22.15 MT | (72.65 FT) | 00222 |
| 49- STRUCTURE LENGTH : | | 49.30 MT | (161.70 FT) | 000493 |
| 50- CURB OR SIDEWALK WIDTHS : . | • | N/A | | 000000 |
| 40 | | | | |
| | | STRUCTURE DATA | | |
| 51- BRIDGE ROADWAY WIDTH, CURB | TO CURB : | | 2.10 MT (6.59 FT) | 0021 |
| 52- DECK WIDTH, OUT TO OUT : | | | 2.31 MT (7.58 FT) | 0023 |
| 53- MI. VERT. CLEAR. OVER BRIDG | E ROADWAY : | | INLIMITED | 9999 |
| 54- MINIMUM VERTICAL UNDERCLEAR | ANCE . | | 4 44 MT (14' - 7") | H0444 |
| 55- MINIMUM LATERAL UNDERCLEARA | NCE ON PICUT | | 3 25 MT (10 8 FT) | нозз |
| 56- MINIMUM LATERAL UNDERCLEARA | MCB ON A DOM | | 3.25 MI (10.6 FI) | 026 |
| THE CHERCLEAN | NCE ON LEFT : | | 2.55 MT (8.36 F1) | |
| | | | | |
| | **** | =========CONDITION== | *********** | |
| ER DOOR THE | | | | |
| 58- DECK: FAIR CONDITION | RATING: 6 | | DECK COMMENTS: | THE PERSONNELLE SC |
| 58.1 WEARING SURFACE: MATERI | AL: CONCRETE | CONDITION : 5 | | PLASTER DETACHMENT, SC |
| THICKNESS: | | | ALING AND FINE T | |
| DETERIORATION: X YES N | O DRAINAGE: X A | DEQUATE INADEQUATE | | AL CRACKS. THERE ARE 4 |
| PONDING: YES X NO S | AFETY: X YES NO |) | PERFORATIONS (2 | O CMS. DIAM.),TWO |
| 58.2 SLAB OR PLATE: MATERIAL | : CONCRETE | CONDITION 6 | OVER EACH NEW PI | ER THAT NEED TO BE SEA |
| X CRACKING: X FINE | MEDIUM OPEN | | | N ACCIDENT. HANDICAP |
| TOP BOTTOM | | | | DECK SURFACE MAKING IM |
| SPALLING: X S | < 1 in. DEEP x 6 i | n. & L > 1 in. x 6 | | ON WHEELCHAIR. NORTH- |
| SCALING : X L | to x in., M x in. | - % in., H % in 1 | in., S > 1 EAST RAMP DISPLA | CED 10 CMS., ALSO RAIL |
| L | | | ING INCLINED TOW | ARD DECK. |
| XEFFLORESCENCE EXUDATION | RUST STAINS CO | RROSION: LIGHT MOD | ERATE SEVERE | |
| 58.3 MOVEMENT: DECK TO BACKWA | | CK TO APPROACH SLAB | cm. | |
| B | | | | |
| | 1(58.4) (58.5) | (58.6) (58.7) | (58.8) | |
| | | SIDEWALKS PARAPETS | | |
| | | | 1 | |
| | i | i i | G/STEEL | |
| MATERIAL CONDITION RATING | | | | |
| Control of the Contro | | i i | i i | |
| HEIGHT LOSS (Cm) | | | ··ii | |
| JOINTS | | | I OK I | |
| DRAINAGE ALIGNMENT | 1 1 | | P0 | |
| | 1 | | | |
| CORROSION (L-M-S) PAINT:G-GOOD,F-FAIR, | !! | | 1 37 | |
| | | | | |
| PAINT: G-GOOD, F-FAIR, | | | 1 | |
| P-POOR, N-NONE | 1 1 | | 1 1 | |
| P-POOR, N-NONE | 1 1 | - 1 | | |
| P-POOR, N-NONE | 1 1 | | - NO | |
| P-POOR, N-NONE U-USELESS TO PAINT SAFETY | | | i | |
| P-POOR, N-NONE U-USELESS TO PAINT SAFETY | | | i | |
| P-POOR,N-NONE U-USELESS TO PAINT SAFETY CRACKING (F-M-O) SPALLING (S-L) | | | i | |
| P-POOR, N-NONE U-USELESS TO PAINT SAFETY | | | i | |
| P-POOR, N-NONE U-USELESS TO PAINT SAFETY CRACKING (F-M-O) SPALLING (S-L) SCALING (L-M-H-S) | | | | |
| P-POOR, N-NONE U-USELESS TO PAINT SAFETY CRACKING (F-M-O) SPALLING (S-L) SCALING (L-M-H-S) | | CONDITION: | i | o |
| P-POOR, N-NONE U-USELESS TO PAINT SAFETY | | | | o |
| P-POOR, N-NONE U-USELESS TO PAINT SAFETY CRACKING (F-M-O) SPALLING (S-L) SCALING (L-M-H-S) 58.9 LIGHTING STANDARDS: MAT 58.10 UTILITIES: TYPE: | TERIAL: | CONDITION: | | o |
| P-POOR, N-NONE U-USELESS TO PAINT SAFETY CRACKING (F-M-O) SPALLING (S-L) SCALING (L-M-H-S) 58.9 LIGHTING STANDARDS: MAT 58.10 UTILITIES: TYPE: 58.11 JOINTS: EXPANSION LENKING: YES NO | TERIAL: SIZE: CONSTRUCTION CC CRACKING: FINE | CONDITION: SAFETY: | FUNCTIONING: YES N | o |
| P-POOR, N-NONE U-USELESS TO PAINT SAFETY CRACKING (F-M-O) SPALLING (S-L) SCALING (L-M-H-S) 58.9 LIGHTING STANDARDS: MAT 58.10 UTILITIES: TYPE: 58.11 JOINTS: EXPANSION LENKING: YES NO | TERIAL: SIZE: CONSTRUCTION CC CRACKING: FINE | CONDITION: SAFETY: | FUNCTIONING: YES NO | o |
| P-POOR, N-NONE U-USELESS TO PAINT SAFETY | TERIAL: SIZE: CONSTRUCTION CC CRACKING: FINE | CONDITION: SAFETY: INDITION: MEDIUM OPEN | FUNCTIONING: YES NO FUNCTIONING: YES NO SPALLING: SMALL LARGE | o |
| P-POOR, N-NONE U-USELESS TO PAINT SAFETY | TERIAL: SIZE: CONSTRUCTION CC CRACKING: FINE | CONDITION: SAFETY: INDITION: MEDIUM OPEN | FUNCTIONING: YES NO FUNCTIONING: YES NO SPALLING: SMALL LARGE | 0 |

PAGE 3 OF 7 L SYSTEM PUERTO RICO HIGHWAY AUTHORITY

SUPERSTRUCTURE COMMENTS:

ACHMENTS OF CONCRETE DUE TO TRUCK IMPA

BRIDGE STUDIES AND EVALUATION OFFICE BRIDGE REINSPECTION & EVALUATION REPORT

59- SUPERSTRUCTURE: FAIR CONDITION RATING: 5

MOVABLE OUT OF PLUMB BEAMS TOWARD CAGUAS LANES WITH BIG DET 59.1 BEARING DEVICES: TYPE: 6 FIXED PAINT: GOOD FAIR POOR NONE USELESS TO PAINT FUNCTIONING: YES NO CONDITION:

59.2 BRIDGE SEATS, PEDESTAL, GROUT PADS, ABUTMENTS OR PIER SEATS WHERE BEAMS BEAR DIRECTLY ON CONCRETE

CRACKING: X F M O SPALLING: X S L CONDITION: 6

SCALING: L M H S CRUSHING: 59.3 STEEL-BEAMS: TYPE: DIMENSIONS(height; width; thickness):

CORROSION: L M S PAINT: G F P N U

59.4 CONCRETE-BOX BEAMS, I-BEAMS, SLAB, T-BEAM, TYPE: T-BEAM CONDITION: 5 CRACKING: X F M O SPALLING: S X L SCALING: L M H S

CORROSION: L M S 59.5 TRUSSES: TYPE: CONDITION: DAMAGE: DEFORMATION: PAINT: G F P N U

A=TRUSS B=UPPER & LOWER LATERAL BRACING C=PORTALS D=FLOOR BEAMS E*=STRINGERS

FUNCTIONING: YES NO 59.6 DRAINAGE: TYPE: CONDITION:

FUNCTIONING: YES NO MOVEMENT: YES NO 59.7 HINGES: CONDITION: ALIGNMENT: GOOD BAD PAINT: G F P N U
59.8 DEFLECTIONS: X NORMAL EXCESSIVE Cms.

59.9 VIBRATIONS: X MINIMAL MODERATE EXCESSIVE

60- SUBSTRUCTURE: SATISFACTORY RATING: 6

PIERS OR NON PILES BENTS----->|<-----PILES BENTS----->| _____ABUTMENTS----->|<----60.1.1 | 60.1.2 | 60.1.3 | 60.1.4 | 60.2.1 | 60.2.2 | 60.2.3 | 60.2.4 | 60.2.5 | 60.4.1 | 60.4.2 | 60.4.3 | |WINGWALL|BREAST & FOOTING | PILES | CAPS |BRACING |COLUMNS |FOOTINGS | PILES | CAPS |BRACING | PILES | |BACKWALL| 1 CONCRETE CONCRETE CONDITION RATING |---- --- --- --- |---- 5--- |---- 6--- |---- 6--- |---- |---- 6--- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---- |----- |---- |---- |---- |---- |---- |---- |---- |---- |---- |---1 -1 --|--- --|--- --|--- NO --|--- --|---NO --|---PAINT (G-F-P-N-U) MOVEMENT ----- |---| NO | 1 1 | NO |

60- SUBSTRUCTURE COMMENTS:

EAST PIER CAP HAS MEDIUM HORIZONTAL CRACK.

| SYSTEM | | PUERTO RICO HIGHWAY AUTHORITY | | PAGE 4 OF 7 |
|---|---|--|-------------------|--|
| | | | | ASSAULT STATE OF THE STATE OF T |
| GE NO.: 00960 | | DGE STUDIES AND EVALUATION OF | | |
| | BRIDG | E REINSPECTION & EVALUATION R | EPORT | |
| 61. CHANNEL & CHANNEL PROTE | OTT CO. | | | |
| | | RATING : N | CHANNEL COMMENTS: | |
| 61.1 CHANNEL SCOUR (EXTENT | | | | |
| 61.2 EMBANKMENT EROSION (E | XTENT) : | | | |
| | | | | |
| | | | | |
| | i i im | NDITION FUNCTIONING | | |
| | · · · · · · · · · · · · · · · · · · · | 45 CO 10 CONTROL 10 CONTROL | | |
| | TYPE MATERIAL R | | | |
| | ! ! ! | YES NO | | |
| | | | | |
| 61.3 PROTECTIVE DEVICE | 1 1 1 | 1 1 1 | | |
| 61.4 FENDER SYSTEM | | | | |
| 61.5 RIP RAP | 1 1 1 | 1 1 1 | | |
| 61.6 SPUR DIKES, JETTIES | l i i | | | |
| | <u> </u> | | | |
| | | | | |
| 61.7 OBSTRUCTION (DEBRIS | CROWNIC) | | | |
| 61.8 CHANNEL CHANGE: Y | | | | |
| | | | | |
| DETRIMENTAL: YES | | | | |
| 61.9 ADEQUATE WATERWAY: | | AIN | | |
| 61.10 SURROUNDING AREA: | FLOODING: YES NO | IF YES, EXPLAIN | | |
| 1 | EROSION: YES NO II | F YES, EXPLAIN | | |
| 61.11 LOCATION OF PIERS A | ND/OR ABUTMENTS: DETRIME | ENTAL: YES NO | | |
| IF YES, EXPLAIN | | | | |
| 61.12 OTHER FEATURES THAT | MAY AFFECT STRUCTURE: | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | no service and any | | |
| 62- CULVERT AND RETAINING WA | | RATING :N | CULVERT COMMENTS: | |
| 62- CULVERT AND RETAINING W | | | CULVERT COMMENTS: | |
| 62- CULVERT AND RETAINING W | | | CULVERT COMMENTS: | |
| _ 4x | ALLS :N/A | | CULVERT COMMENTS: | |
| _ 4x | ALLS :N/A | RATING :N | CULVERT COMMENTS: | |
| _ 4x | ALLS :N/A | RATING :N | CULVERT COMMENTS: | |
| 62.1BA | ALLS : N/A RREL 62.2HEADWALL 62.3CUI | RATING :N | CULVERT COMMENTS: | |
| 62.1BAI | ALLS : N/A RREL 62.2HEADWALL 62.3CUI | RATING :N | CULVERT COMMENTS: | |
| MATERIAL CONDITION RATING FUNCTIONING (Y-N) | ALLS :N/A | RATING :N | CULVERT COMMENTS: | |
| MATERIAL CONDITION RATING FUNCTIONING (Y-N) CRACKING (F-M-O) | ALLS :N/A | RATING :N | CULVERT COMMENTS: | |
| MATERIAL CONDITION RATING FUNCTIONING (Y-N) CRACKING (F-M-O) SPALLING (S-L) | ALLS : N/A RREL 62.2HEADMALL 62.3CUI | RATING :N | CULVERT COMMENTS: | |
| MATERIAL CONDITION RATING FUNCTIONING (Y-N) CRACKING (F-M-O) SPALLING (S-L) SCALING (L-M-H-S) | ALLS : N/A RREL 62.2HEADMALL 62.3CUI | RATING :N | CULVERT COMMENTS: | |
| MATERIAL CONDITION RATING FUNCTIONING (Y-N) CRACKING (F-M-O) SPALLING (S-L) SCALING (L-M-H-S) | ALLS : N/A RREL 62.2HEADWALL 62.3CUI | RATING :N | CULVERT COMMENTS: | |
| MATERIAL CONDITION RATING FUNCTIONING (Y-N) CRACKING (F-M-O) SPALLING (S-L) SCALING (L-M-H-S) | ALLS : N/A RREL 62.2HEADWALL 62.3CUI | RATING :N | CULVERT COMMENTS: | |
| MATERIAL CONDITION RATING FUNCTIONING (Y-N) CRACKING (F-M-O) SPALLING (S-L) SCALING (L-M-H-S) | ALLS : N/A RREL 62.2HEADWALL 62.3CUI | RATING :N | CULVERT COMMENTS: | |
| MATERIAL CONDITION RATING FUNCTIONING (Y-N) CRACKING (F-M-O) SPALLING (S-L) SCALING (L-M-H-S) CORROSION (L-M-S) SETTLEMENT (Y-N) | ALLS : N/A RREL 62.2HEADWALL 62.3CUI | RATING :N | CULVERT COMMENTS: | |
| MATERIAL CONDITION RATING | ALLS : N/A RREL 62.2HEADWALL 62.3CUI | RATING :N | CULVERT COMMENTS: | |
| MATERIAL CONDITION RATING | ALLS : N/A RREL 62.2HEADWALL 62.3CUI | RATING :N | CULVERT COMMENTS: | |
| MATERIAL CONDITION RATING | ALLS : N/A RREL 62.2HEADMALL 62.3CUI | RATING :N | CULVERT COMMENTS: | |
| MATERIAL CONDITION RATING | ALLS :N/A RREL 62.2HEADWALL 62.3CUI | RATING :N | | 2 |
| MATERIAL CONDITION RATING | ALLS :N/A RREL 62.2HEADWALL 62.3CUT | RATING :N | | 2 800 |
| MATERIAL CONDITION RATING | RREL 62.2HEADMALL 62.3CUI | RATING :N | | 2 800 2 |
| MATERIAL CONDITION RATING | RREL 62.2HEADMALL 62.3CUI | RATING :N | | 2 |
| MATERIAL CONDITION RATING | RREL 62.2HEADMALL 62.3CUI | RATING :N | | |
| MATERIAL CONDITION RATING | RREL 62.2HEADMALL 62.3CUI | RATING :N | | 2 |
| MATERIAL CONDITION RATING | RREL 62.2HEADMALL 62.3CUI | RATING :N | | 2 |
| MATERIAL CONDITION RATING | RREL 62.2HEADMALL 62.3CUI | RATING :N | | 2 |
| MATERIAL CONDITION RATING | RREL 62.2HEADMALL 62.3CUI | RATING :N | | 2 |
| MATERIAL CONDITION RATING | RREL 62.2HEADMALL 62.3CUI | RATING :N | | 2 |

FRTEM PAGE 5 OF 7 PUERTO RICO HIGHWAY AUTHORITY BRIDGE STUDIES AND EVALUATION OFFICE No.: 00960 BRIDGE REINSPECTION & EVALUATION REPORT WEARING SURFACE HAS DETACHMENT OF CONCRETE PLASTER. THERE ARE 4 PERFORATION 20 CMS. DIAM. ON DECK THAT NEED TO BE SEALED. ACCESS RAMP LOWER THAN DECK SURFACE. RAMP RAILING BROKEN FROM BASE AND INCLINED TOWARD DECK. 68- DECK GEOMETRY : 69- UNDERCLEARANCE, VERTICAL & HORIZONTAL : MEETS MINIMUM TOLERABLE LIMITS TO BE LEFT IN PLACE AS IS. REMOTE - GREATER THAN 100 YEARS. SLIGHT - 11 TO 100 YEARS. OCASSIONAL - 3 TO 10 YEARS. FREQUENT - LESS THAN 3 YEARS. INSIGNIFICANT - MINOR INCONVENIENCE. HIGHWAY PASSABLE IN A MATTER OF HOURS. SIGNIFICANT - TRAFFIC DELAYS OF UP TO SEVERAL DAYS SEVERE - LONG TERM DELAYS TO TRAFFIC WITH RESULTING HARDSHIP N/A. MATERIAL : RAMPS CONDITION : 72.2 SLAB OR PAVEMENT CRACKING: F N O SPALLING: L S SCALING: L M X H S UNNEVEN: YES NO ROUGH: YES NO SETTLEMENT: YES NO MOVEMENT: APPROACH SLAB-BACKWALL: YES NO BREAKING UP: EXCESSIVE DEFORMATION: SAPETY: HAZARDOUS YES NO DRAINAGE: INADEQUATE: YES NO PONDING: YES NO MOVEMENT: PAVEMENT-APPROACH SLAB: YES NO EMBANKMENT: CONDITION:
FUNCTIONING: YES NO EROSION: YES NO IF YES, EXPLAIN YES NO CONSTRUCTION: FLIMSY: INTEGRITY IMPAIRED: YES NO IF YES, EXPLAIN 72.4 JOINTS: TYPE: INADEQUATE: YES NO SATISFACTORY ALIGNMENT: YES NO 72.5 GUIAPIPRALI. TYPE: MATERIAL. FUNCTIONING: YES NO 72.5 GUARDRAIL: TYPE: ALIGNMENT: HORIZONTAL: GOOD BAD VERTICAL: GOOD BAD JOINTS: FUNCTIONING: YES SAFETY: SECURELY ATTACHED: YES NO PEDESTRIAN HAZARDS: YES NO 72 - APPROACH ROADWAY - COMMENTS:

| AL SYSTEM | PUERTO RICO HIGHWAY AUTHORITY | PAGE 6 OF 7 |
|--|--|-------------|
| | BRIDGE STUDIES AND EVALUATION OFFICE | |
| NO. :00960 | BRIDGE REINSPECTION & EVALUATION REPORT | |
| artics. | | |
| | ======PROPOSED IMPROVEMENT====== | |
| | | |
| TYPE OF WORK : | REHABILITATION | 352 |
| 76- LENGTH OF STRUCTURE IMPROVEMENT | C: 49.30 MT (161.70 FT) | 000493 |
| 76- — | | |
| | =========INSPECTIONS========= | |
| | | |
| eg. RESERVED | | 0200 |
| | FEBRUARY-09-2000 | 24 |
| | Y : 24 MONTHS | N N N |
| | N/A. | N N |
| | N/A | |
| FRACTURE CRITICAL | UNDERWATER OTHER | |
| | | |
| | =======IMPROVEMENT COST======= | |
| | | 800000 |
| 94- BRIDGE IMPROVEMENT COST : | N/A | 200000 |
| 95- ROADWAY IMPROVEMENT COST : | N/A | 000012 |
| 96- TOTAL PROJECT COST : | | 2000 |
| 97- YEAR OF IMPROVEMENT COST ESTIM | ATED : 2000 | |
| | | |
| | CLASSIFICATION AND STRUCTURE DATA | |
| | | |
| 98- BORDER BRIDGE : | DEEDNER HIGHWAY | x 82 |
| | DEPENDE | N |
| | | |
| | | |
| | | 0 |
| THE THUENTO | RY ROUTE : | 0 |
| 104- HIGHWAY SYSTEM OF THE THREE 105- FEDERAL LANDS HIGHWAYS : | | 0000 |
| 105- FEDERAL DECONSTRUCTION : | NO RECONSTRUCTION CONCRETE CAST IN PLACE | 1 |
| | | 100 |
| 108- WEARING SURF. / PROTECT. SYSTE | M : CONCRETE NONE NONE | 04 |
| 109- AVERAGE DAILY TRUCK TRAFFIC : | M : | 0 |
| 110 - DESIGNATED NATIONAL NETWORK : | N/A | |
| 111- PIER OR ABUT, PROTECTION (NAV | TGRITORY TYPES | Y |
| 112- NBIS BRIDGE LENGTH : | BRIDGE OVER HIGHWAY | N |
| 113- SCOUR CRITICAL BRIDGE : | 239,277 | 239277 |
| 114- FUTURE AVERAGE DAILY TRAFFIC | 2018 | 2018 |
| 115- YR. OF FUTURE A.D.T. : | | |
| 116- MINIM. NAVIG. VERT. CLEARNING | | |
| VERTICAL LIFT BRIDGE : | | • |
| 117- SUFFICIENCY RATING | | |
| 125- PRIORITY RATING | | 020900 |
| 127- EVALUATION DATE | : | |
| | | |
| ENGINEER : HERIBERTO GONZALEZ | | |
| partition of | | |
| | | |
| | | |

SYSTEM PAGE 7 OF 7 PUERTO RICO HIGHWAY AUTHORITY BRIDGE STUDIES AND EVALUATION OFFICE DGE NO. :00960 BRIDGE REINSPECTION & EVALUATION REPORT AUXILIARY ITEMS 1-SIGNS TYPE: MATERIAL: CONDITION: REMARKS: THE REHABILITATION CONSIST IN REPAIR ALL DEFICIENCIES DESCRIBED ON THE ITEM #67.

C.4 March 20, 1998

| ENGINEED, UPDIO | PUERTO, RICO HIG | HWAY AUTHORITY | | PAGE 1 OF 7 |
|--|---|---------------------------|----------------|----------------------|
| ENGINEER: HERIBERTO GONZALEZ | BRIDGE STUDIES AND | EVALUATION OFFICE | EQU | PMENT |
| ASSISTANTS: LUIS QUINONEZ | BRIDGE REINSPECTION | 6 EVALUATION REPORT | BUS X | LADDERS |
| : ALFREDO ERAZO | | | BOAT | CAMERA X |
| | BRIDGE No.: 00960 | FEDERAL SYSTEM | UNDERWATER | SNOOPER # |
| | | (90) | SNOOPER OPERAT | TOR |
| | ROAD No.: PR 18 | KM. No. : 0001.700 | PLAC | DUE ID |
| EVALUATION DATE: MAR-20-1998 | | | YES NO | No. |
| | | | FILM NO |). |
| | IDENTIFICAT | TION | | |
| 1. STATE . | | | | 721 |
| 1- STATE : | • | Commonwealth of Puer | to Rico | 01 |
| 2- HIGHWAY AGENCY DISTRICT : | • | SA | N JUAN | 127 |
| 3- COUNTY (PARISH) CODE : | • | SAN JU | AN | 76770 |
| 4- PLACE CODE : | • | . SAN JUAN URBAN ZONE | | 211000010 |
| 5- INVENTORY ROUTE : | | | | STRIAN WALKWAY |
| 6- FEATURES INTERSECTED : | | | PEDE | PR 18 |
| 7- FACILITY CARRIED BY STRUCTURE : | | | OF 1 | 009601 |
| 8- STRUCTURE NUMBER : | | | | KM N INT PR21 & PR18 |
| 9- LOCATION : | | | | 0444 |
| 10- INVENTORY ROUTE, MINIMUM VERTICAL C | | | | 0001700 |
| 11- KILOMETERPOINT : | | | 1.70 | 1 |
| 12- BASE HIGHWAY NETWORK : | | | | 000000001800 |
| 13- LRS INVENTORY ROUTE, SUBROUTE NUMBE | | PROPERC 23 4 MINUTES | | 18232400 |
| | | | | 066043600 |
| 17- LONGITUDE : | | | WAY | 000 |
| 19- BYPASS, DETOUR LENGTH (NEAREST KILO | METER) : | SIRUCIURE OVER III III | | |
| | CLASSIFICAT | 10N | | |
| | | | | |
| 20- TOLL : | ON FR | EE ROAD | | 3 |
| 21- MAINTENANCE RESPONSABILITY : | D.T.P.W. | | | 01 |
| 22- OWNER : | D.T.P.W. | | | 01 |
| 26- FUNCTIONAL CLASS. OF INVENTORY ROUT | : INTERST | ATE | | 11 |
| | AGE AND SER | VICE | | |
| | | | | |
| 27- YEAR BUILT : | | | 1967 | 1967 |
| THE ON AND INDER STRUCTURE : | | O LANES ON / F LANES UNDI | ER | 4009 |
| OF INDENTORY POUTE : | | 169,700 | | 169700 |
| 10- YEAR OF A.D.T. : | | | 1996 | 1996 |
| | STRUCTURE DA | TA | | |
| 1- DESIGN LOAD : | | PEDI | ESTRIAN | 7 |
| TOTAL TOTAL BONDONS WITH THE STATE OF THE ST | | 44.30 MT (145. | 30 FT) | 044 3 |
| | | NONE | | 0443 |
| - OURS ANOTE . | | NO | | 00 |
| | | NO |) | 0 |
| 6- TRAFFIC SAFETY FEATURES : | | | N-N-N-N | NNNN |
| THE PERSON NAMED OF THE PERSON NAMED IN THE PE | | | 5 | 5 |
| | | | N/A | N |
| CI PADANCE : | | | N/A | 0000 |
| TEADANCE ! | | | . N/A | 00000 |
| TO TR | AFF. : | | OPEN | A |
| | PEDESTRIAN OVE | ER HIGHWAY | | 31 |
| MAIN : | CONCRETE CONTINUOS TE | EE BEAMS | | 204 |
| | NUNE | | | 000 |
| THE METH INIT ! | | | 2 3 | 1000.00 |
| 5- NUMBER OF SPAN IN FAITH SHIP 6- NUMBER OF APPROACH SPAN : | | | . NONE | 902 00 |
| 6- NUMBER OF STREET | | | | 0000 |
| | | | | |

| FEDERAL SYSTEM | P | JERTO RICO HIGHWAY AUT | THORITY | PAGE 2 OF 7 |
|--|--------------------|---|---------------------|-----------------------------|
| All and the second | BRID | GE STUDIES AND EVALUAT | TION OFFICE | |
| BRIDGE No.: 00960 | BRIDGE | REINSPECTION & EVALUA | ATION REPORT | |
| 47- INV. ROUTE, TOTAL HORIZ. CLE | ARANCE . | | | 208 |
| 48- LENGTH OF MAXIMUM SPAN : | | 20.84 MT | (68.36 FT) | 002217 |
| 49- STRUCTURE LENGTH : | | 40.30 MM | (72.65 FT) | 00049/30 |
| 50- CURB OR SIDEWALK WIDTHS : | | 49.30 MT | (161.70 FT) | 000000 |
| | | . N/A | | 55555 |
| | ****** | ====STRUCTURE DATA==== | | 10 |
| 51- BRIDGE ROADWAY WIDTH, CURB T | O CURB : | | 2.10 MT (6.59 FT) | 002/1/20 |
| 52- DECK WIDTH, OUT TO OUT : | | • | 2.31 MT (7.58 FT) | 0023 |
| 53- MI. VERT. CLEAR. OVER BRIDGE | ROADWAY : | • | UNLIMITED | 9999 |
| 54- MINIMUM VERTICAL UNDERCLEAR | NCE : | · · · · · · · · · · · · · · · · · · · | 4.44 MT (14' - 7") | H0444 |
| 55- MINIMUM LATERAL UNDERCLEARAN | CE ON RIGHT : | | 3.25 MT (10.8 FT) | н033 |
| 56- MINIMUM LATERAL UNDERCLEARAN | ICE ON LEFT : | • | 2.55 MT (8.36 FT) | 026 |
| | | =====CONDITION===== | | |
| | | CONDITION | | |
| 58- DECK: SATISFACTORY | RATING: 6 | | DECK COMMEN | TTS: |
| 58.1 WEARING SURFACE: MATERIA | | ONDITION: 6 | | OF CONCRETE WITH EXPOSED RE |
| THICKNESS: | | | INFORCEMENT | , FINE |
| DETERIORATION: X YES NO | DRAINAGE: ADEQ | UATE INADEQUATE | TRANSVERSAL | CRACKS WITH EFFLORESCENCES |
| PONDING: YES X NO SA | AFETY: YES NO | | | |
| 58.2 SLAB OR PLATE: MATERIAL | CONCRETE | CONDITION | 6 | |
| X CRACKING: X FINE | MEDIUM OPEN | | | |
| TOP BOTTOM | | | | |
| - 10 10 10 10 10 10 10 10 10 10 10 10 10 | | & L > 1 in. x 6 in. | | |
| SCALING : X L | o % in., M % in % | in., H % in 1 in., | S > 1 | |
| | DUM AMERICA OCCUPA | CION- LIGHT HOPETA | PP CEUEDE | |
| | | SION: LIGHT MODERAT TO APPROACH SLAB | Cm. | |
| 58.3 MOVEMENT: DECK TO BACKWA | GIII. DECK | 10 AFFRONCE SUND | | |
| | 1 (58.4) (58.5) | (58.6) (58.7) | (58.8) | |
| | | IDEWALKS PARAPETS | | |
| | | | | |
| MATERIAL | i i i | 1 1 | G/STEEL | |
| CONDITION RATING | .jjj | j j- | 7 | |
| HEIGHT LOSS (cm) | 1 1 1 | 1 1 | Ī | |
| JOINTS | | | OK | |
| DRAINAGE | 1 1 1 | 1 1 | l l | |
| ALIGNMENT | | | OK | |
| CORROSION (IM-S) | 1 1 1 | 1 1 | r | |
| PAINT:G-GOOD, F-FAIR, | | | F | |
| P-POOR, N-NONE | 1 1 1 | 1 1 | 1 | |
| U-USELESS TO PAINT | 1 1 1 | 1 1 | 1 | |
| SAFETY | | | YES | |
| THE CHARLES (F. M. O.) | | 1 1 | 1 | |
| SPALLING (S-L) | | | | |
| SCALING (L-M-H-S) | 1 1 1 | 1 1 | 1 | |
| | L | | | |
| | PEDIAL. | CONDITION: | FUNCTIONING: YE | S NO |
| 58.9 LIGHTING STANDARDS: MA | SIZE: | SAFETY: | TOMOTIONING: YE | S NO |
| 58.10 UTILITIES: TYPE: | CONSTRUCTION CONE | | UNCTIONING: YES NO | |
| 58.11 JOINTS. | CRACKING: FINE | | ALLING: SMALL LARGE | |
| LEAKING: 155 | | CONDITION: | FUNCTIONING: YES | |
| 58.12 DRAINS AND SCUPPERS: M | | | TOWELLOWING: YES | NO |
| | | | | |
| | | | | |

ERAL SYSTEM PUERTO RICO HIGHWAY AUTHORITY PAGE 3 OF 7 BRIDGE STUDIES AND EVALUATION OFFICE IDGE No.: 00960 BRIDGE REINSPECTION & EVALUATION REPORT - SUPERSTRUCTURE: SATISFACTORY RATING: 6 59,1 BEARING DEVICES: TYPE FIXED MOVABLE SUPERSTRUCTURE COMMENTS: PAINT: GOOD FAIR POOR NONE OUT OF PLUMB BEAMS TOWARD CAGUAS LANES WITH BIG DET USELESS TO PAINT ACHMENTS OF CONCRETE DUE TO TRUCK IMPA FUNCTIONING: YES NO 59.2 BRIDGE SEATS, PEDESTAL, GROUT PADS, ABUTMENTS OR PIER SEATS WHERE BEAMS BEAR DIRECTLY ON CONCRETE CRACKING: X F M O SPALLING: X S L SCALING: L M H S CRUSHING: 59.3 STEEL-BEAMS: TYPE: DIMENSIONS (height; width; thickness): CONDITION: CORROSION: L M S PAINT: G F P N U 59.4 CONCRETE-BOX BEAMS, I-BEAMS, SLAB, T-BEAM, TYPE: T-BEAM CONDITION: 5 CRACKING: X F M O SPALLING: S X L SCALING: L M H S 59.5 TRUSSES: TYPE: CONDITION: CORROSION: L M S DEFORMATION: PAINT: G F P N U A=TRUSS B=UPPER & LOWER LATERAL BRACING C-PORTALS D=FLOOR BEAMS E*=STRINGERS 59.6 DRAINAGE: TYPE: CONDITION: CONDITION: FUNCTIONING: YES NO FUNCTIONING: YES NO MOVEMENT: YES NO 59.7 HINGES: CONDITION: ALIGNMENT: GOOD BAD PAINT: G F P N U 59.8 DEFLECTIONS: X NORMAL EXCESSIVE cms. 59.9 VIBRATIONS: X MINIMAL MODERATE EXCESSIVE 60- SUBSTRUCTURE: SATISFACTORY RATING: 6 --- ABUTMENTS----> <---| 60.1.1 | 60.1.2 | 60.1.3 | 60.1.4 | 60.2.1 | 60.2.2 | 60.2.3 | 60.2.4 | 60.2.5 | 60.4.1 | 60.4.2 | 60.4.3 | | WINGWALL BREAST & FOOTING | PILES | CAPS | BRACING | COLUMNS | FOOTINGS | PILES | CAPS | BRACING | PILES | BACKWALL 1 1 CONCRETE CONCRETE MATERIAL | S | | F | 1 CRACKING (F-M-O) SCALING (L-M-H-S) | F | | F | 1 PAINT (G-F-P-N-U) 1 --|--- --|--- --|---NO --|----- ---NO -- --MOVEMENT ----- |----- --- -- -- -- -- ----- |---1 1 l NO I EROSION UNDERMINING ---- |--- --|--- --|--- --|--- --|--- --|--- --|--- --|--- --|--- --| 60- SUBSTRUCTURE COMMENTS:

| FAL SYSTEM | PUERTO RICO HIGHWAY AUTHORITY | | PAGE 4 OF 7 |
|---|---|-------------------|-------------|
| | BRIDGE STUDIES AND EVALUATION OFFICE | | 10770000000 |
| ADGE No.: 00960 | BRIDGE STUDIES AND EVALUATION OFFICE | | |
| ALC: | BRIDGE REINSPECTION & EVALUATION REPORT | | |
| CHANNEL & CHANNEL PROTECTION : N/A | | | |
| AL CHANNED & COURT PROTECTION : N/A | RATING : N | CHANNEL COMMENTS: | |
| 61.1 CHANNEL SCOUR (EXTENT) : | | | |
| 61.2 EMBANKMENT EROSION (EXTENT) : | | | |
| | | | |
| | | | |
| i i | | | |
| | CONDITION FUNCTIONING | | |
| TYPE | MATERIAL RATING | | |
| | YES NO | | |
| | | | |
| 61.3 PROTECTIVE DEVICE | 1 1 1 1 1 | | |
| 61.4 FENDER SYSTEM | i iiii | | |
| 61.5 RIP RAP | 1 1 1 | | |
| 61.6 SPUR DIKES, JETTIES | 1 1 1 1 | | |
| 61.0 | | | |
| | | | |
| | | | |
| 61.7 OBSTRUCTION (DEBRIS, GROWTHS): | | | |
| 61.8 CHANNEL CHANGE: YES NO | | | |
| DETRIMENTAL: YES NO IF | YES, EXPLAIN | | |
| 61.9 ADEQUATE WATERWAY: YES NO | IF NO, EXPLAIN | | |
| 61.10 SURROUNDING AREA: FLOODING: | | | |
| | | | |
| 961259 202000 2020 | YES NO IF YES, EXPLAIN | | |
| 61.11 LOCATION OF PIERS AND/OR ABUTH | ENTS: DETRIMENTAL: YES NO | | |
| IF YES, EXPLAIN | | | |
| 61.12 OTHER FEATURES THAT MAY AFFECT | STRUCTURE: | | |
| | | | |
| | | | |
| and a second second | | | |
| | | | |
| 62 CHLUEPT AND PETAINING WALLS : N/A | RATING :N | CULVERT COMMENTS: | |
| 62- CULVERT AND RETAINING WALLS :N/A | RATING :N | CULVERT COMMENTS: | |
| 62- CULVERT AND RETAINING WALLS :N/A | RATING :N | CULVERT COMMENTS: | |
| 100 111 01 | | CULVERT COMMENTS: | |
| 100 111 01 | RATING :N RADWALL 62.3CUT-OFFWALL 62.4RETAINING WALL | CULVERT COMMENTS: | |
| 100 111 01 | | CULVERT COMMENTS: | |
| 100 111 01 | | CULVERT COMMENTS: | |
| 62.1BARREL 62.2HE | PADWALL 62.3CUT-OFFWALL 62.4RETAINING WALL | CULVERT COMMENTS: | |
| 62.1BARREL 62.2HE | PADWALL 62.3CUT-OFFWALL 62.4RETAINING WALL | CULVERT COMMENTS: | |
| 62.1BARREL 62.2HE MATERIAL | PADWALL 62.3CUT-OFFWALL 62.4RETAINING WALL | CULVERT COMMENTS: | |
| 62.1BARREL 62.2HE MATERIAL | PADWALL 62.3CUT-OFFWALL 62.4RETAINING WALL | CULVERT COMMENTS: | |
| 62.1BARREL 62.2HE MATERIAL | PADWALL 62.3CUT-OFFWALL 62.4RETAINING WALL | CULVERT COMMENTS: | |
| 62.1BARREL 62.2HI MATERIAL | PADWALL 62.3CUT-OFFWALL 62.4RETAINING WALL | CULVERT COMMENTS: | |
| 62.1BARREL 62.2HE MATERIAL CONDITION RATING | PADWALL 62.3CUT-OFFWALL 62.4RETAINING WALL | CULVERT COMMENTS: | |
| 62.1BARREL 62.2HE MATERIAL CONDITION RATING | PADWALL 62.3CUT-OFFWALL 62.4RETAINING WALL | CULVERT COMMENTS: | |
| 62.1BARREL 62.2HE MATERIAL | PADWALL 62.3CUT-OFFWALL 62.4RETAINING WALL | CULVERT COMMENTS: | |
| 62.1BARREL 62.2HE MATERIAL CONDITION RATING | PADWALL 62.3CUT-OFFWALL 62.4RETAINING WALL | CULVERT COMMENTS: | |
| 62.1BARREL 62.2HE MATERIAL | PADWALL 62.3CUT-OFFWALL 62.4RETAINING WALL | CULVERT COMMENTS: | |
| 62.1BARREL 62.2HE MATERIAL | PADWALL 62.3CUT-OFFWALL 62.4RETAINING WALL | CULVERT COMMENTS: | |
| 62.1BARREL 62.2HE MATERIAL CONDITION RATING FUNCTIONING (Y-N) CRACKING (F-M-O) SPALLING (S-L) SCALING (L-M-H-S) CORROSION (L-M-S) SETTLEMENT (Y-N) ALIGNMENT (Y-N) PAINT (G-F-P-N-U) 63. METHOD USED TO DETERMINE OPERATING | PADWALL 62.3CUT-OFFWALL 62.4RETAINING WALL | CULVERT COMMENTS: | 2 |
| 62.1BARREL 62.2HE MATERIAL CONDITION RATING | PEDESTRIAN | CULVERT COMMENTS: | 2 800 |
| 62.1BARREL 62.2HE MATERIAL CONDITION RATING | RADWALL 62.3CUT-OFFWALL 62.4RETAINING WALL | CULVERT COMMENTS: | 0.000000 |
| 62.1BARREL 62.2HE MATERIAL CONDITION RATING | RADWALL 62.3CUT-OFFWALL 62.4RETAINING WALL | CULVERT COMMENTS: | 800 |
| 62.1BARREL 62.2HE MATERIAL CONDITION RATING | RADWALL 62.3CUT-OFFWALL 62.4RETAINING WALL | CULVERT COMMENTS: | 800 2 |
| 62.1BARREL 62.2HE MATERIAL CONDITION RATING | RADWALL 62.3CUT-OFFWALL 62.4RETAINING WALL | CULVERT COMMENTS: | 800 2 |
| 62.1BARREL 62.2HE MATERIAL CONDITION RATING | RADWALL 62.3CUT-OFFWALL 62.4RETAINING WALL | CULVERT COMMENTS: | 800 2 |
| 62.1BARREL 62.2HE MATERIAL CONDITION RATING | RADWALL 62.3CUT-OFFWALL 62.4RETAINING WALL | CULVERT COMMENTS: | 800 2 |
| 62.1BARREL 62.2HE MATERIAL CONDITION RATING | RADWALL 62.3CUT-OFFWALL 62.4RETAINING WALL | CULVERT COMMENTS: | 800 2 |
| 62.1BARREL 62.2HE MATERIAL CONDITION RATING | RADWALL 62.3CUT-OFFWALL 62.4RETAINING WALL | CULVERT COMMENTS: | 800 2 |
| 62.1BARREL 62.2HE MATERIAL CONDITION RATING | RADWALL 62.3CUT-OFFWALL 62.4RETAINING WALL | CULVERT COMMENTS: | 800 2 |
| 62.1BARREL 62.2HE MATERIAL CONDITION RATING | RADWALL 62.3CUT-OFFWALL 62.4RETAINING WALL | CULVERT COMMENTS: | 800 2 |

| LAL SYSTEM | PUERTO RICO HIGHWAY ANTHORYTY PAGE 5 OF 7 |
|---|---|
| LAL SIGNAL | PUERTO RICO HIGHWAY AUTHORITY BRIDGE STUDIES AND EVALUATION OFFICE |
| No.: 00960 | BRIDGE REINSPECTION & EVALUATION REPORT |
| TOOS NO. | ENGINEERION & EVALUATION REPORT |
| STRUCTURAL EVALUATION : | |
| WEARING SURFACE HAY | VE CONCRETE LOSE WITH EXPOSED STEEL. BOTTOM SLAB HAVE |
| FINE TRANSVERSAL CE | RACKS WITH EFFLORECENCES. BEARING HAVE LIGHT CORROSION. |
| BEAMS AT CAGUAS WAY | Y HAVE BIG SPALLING WITH EXPOSED STEEL BY IMPACT. RAMP AT |
| | E HAVE LARGE SPALLING WITH EXPOSED STEEL. |
| | |
| | |
| | |
| | |
| | |
| | |
| 68- DECK GEOMETRY : | |
| | |
| n/A. | |
| | |
| 69- UNDERCLEARANCE, VERTICAL | & HORIZONTAL : |
| | |
| MEETS MINIMUM TOLE | RABLE LIMITS TO BE LEFT IN PLACE AS IS. |
| | N/A |
| 70- BRIDGE POSTING : | |
| | |
| 71- WATERWAY ADEQUACY : | |
| | |
| N/A. | FREQUENT - LESS THAN 3 YEARS. |
| CREATER THAN 1 | 00 YEARS. SLIGHT - 11 TO 100 YEARS. OCASSIONAL - 3 TO 10 YEARS. FREQUENT - LESS THAN 3 YEARS. |
| TOTAL | NCONVENIENCE. HIGHWAI PASSALLE IN |
| EDUPPE - LONG TERM DELA | YS TO TRAFFIC WITH RESULTING HARDSHIP |
| | N |
| 72- APPROACH ROADWAY ALIGNME | NT : |
| 72 700 | |
| N/A. | |
| | DAMPS |
| 72.2 SLAB OR PAVEMENT | CONDITION: L M X H S UNNEVEN: YES NO ROUGH: YES NO |
| CRACKING: F N O | SPALLING UP: EXCESSIVE DEFORMATION: |
| SETTLEMENT: | TOTAL TIME OUNTE: YES NO PONDING: IES |
| | CONTITION: |
| MOVEMENT: PAVEMENT-AP | PROACH SEAD. VES NO EROSION: YES NO IF YES, EXPLAIN |
| FUNCTION | YES NO |
| CONSTRUCTION: FLIMSY | TY IMPAIRED: YES NO IF YES, EXPLAIN |
| | ATTC NO |
| 72.3 UNDESIRABLE IMPACT: | INADEQUATE: YES NO SATISFACTORY ALIGNMENT: 125 NO |
| 72.4 JOINTS: TYPE: 72.5 GUARDRAIL: TYPE: | MATERIAL: CONDITION. VPC NO. |
| BLICHMENT: HORIZONTA | L: GOOD BAD VENTAGE VES NO |
| SAFETY: SECURELY ATT | ACHED: YES NO PEDESTRIAN HAZARDS: YES NO |
| | |
| 72 - APPROACH ROADWAY - COMME | NTS: |
| | |
| | |
| | |

| <i>‡</i> | DIEDRO DZGG WARRANG | C OF 7 |
|--|---|---|
| EN. | PUERTO RICO HIGHWAY AUTHORITY | PAGE 6 OF 7 |
| S421 | BRIDGE STUDIES AND EVALUATION OFFICE | |
| -0950 | BRIDGE REINSPECTION & EVALUATION REPORT | |
| gr. :00960 | | |
| | ======PROPOSED IMPROVEMENT======= | |
| | | |
| | | 352 |
| OF WORK | VEMENT : 49.30 MT (161.70 FT) | 00049/3 |
| OF STRUCTURE INFRO | VEMENT: | ' U |
| | | |
| | INSPECTIONS | |
| | | (44) |
| | MBPCH-20-1998 | 0398 |
| PESSECTION DATE : | MARCH-20-1998 CCHENCY: 24 MONTHS | 24 |
| INSPECTION FRE | CCUENCY: | n n n |
| 1 DESIGNATED THE INSPECTI | N/A | N N N |
| 12- CRITICAL PERTON INSPECT I | DATE: N/A | |
| COTTICAL FEAT. INSPECT. | UNDERWATER OTHER | |
| FRACTURE CRITICAL | ORDERWATER OTHER | |
| | ========IMPROVEMENT COST======= | |
| | ESSESSION COST | |
| | | 000009 |
| 94 - BRIDGE IMPROVEMENT COST : | : | 000000 |
| TOOT THE PART OF T | N/A | 000012 |
| | (49.30X2.31X\$1035X104)=\$11775 | 1998 |
| OT. YEAR OF IMPROVEMENT COST | ESTIMATED : | |
| ,, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | | |
| | ==CLASSIFICATION AND STRUCTURE DATA== | |
| | | ** |
| 98- BORDER BRIDGE : | | 2- |
| | | 1 |
| OO STRANNET HIGHWAY DESIGNA | NUMBER: DEFENSE HIGHWAY ATION: NO PARALLEL STRUCTURE | »of |
| DAPALLEL STRUCTURE DESI | ATION : NO PARALLEL STRUCTURE GNATION : TRAFFIC NOT CARRIED | 20 K |
| 102 DIRECTION OF TRAFFIC : | GNATION : TRAFFIC NOT CARRIED | 0 |
| | | 1 |
| | | 0 |
| TAE PERENT LANDS HIGHWAYS | : NO RECONSTRUCTION | 0000 |
| TOS PEDERAL PRODUCTION : . | NO RECONSTRUCTION CONCRETE CAST IN PLACE | 1 |
| 105- IEAR RECONSTRUCTIVE TYPE : . | CONCRETE CAST IN PLACE CONCRETE NONE NONE | 100 |
| 100 WEARING SIDE / PROTECT. | SYSTEM : CONCRETE NONE NONE 4 % | 04 |
| 100- AUFPAGE DAILY TRUCK TRA | SYSTEM: 4 % FFIC: NOT PART OF NETWORK | 0 |
| | | |
| 111- PIER OR ABUT. PROTECTIO | N (NAVIGATION): N/A YES | Y |
| 112- NRIS BRIDGE LENGTH : | N (NAVIGATION): YES BRIDGE OVER HIGHWAY | й |
| 113- SCOUR CRITICAL BRIDGE : | BRIDGE OVER HIGHWAY 239,277 | 00-00-00-00-00-00-00-00-00-00-00-00-00- |
| 114- FITTIRE AVERAGE DAILY TR | AFFIC: | 239277 |
| 115- YR. OF FUTURE A.D.T. : | AFFIC: | 2016 |
| 116- MINIM, NAVIG. VERT. CLE | ARANCE : N/A | |
| | | |
| | | 2 |
| | | Section 19 |
| 7002 | PAR-20-1998 | 032098 |
| 130- CRITICAL FRACTURE INSP. | DATE : | |
| | | |
| ENGINEER : HERIBERTO GON | COMMING. | |
| | | A. |
| | | |
| | | |

AL SYSTEM PUERTO RICO HIGHWAY AUTHORITY PAGE 7 OF 7 BRIDGE STUDIES AND EVALUATION OFFICE NO. :00960 BRIDGE REINSPECTION & EVALUATION REPORT AUXILIARY ITEMS 1-SIGNS TYPE: MATERIAL: CONDITION: REMARKS: THE REHABILITATION CONSIST IN REPAIR ALL DEFICIENCIES DESCRIBED ON THE

C.5 March 15, 1996

| | PUERTO RICO HIGHWAY AUTHORITY | PAGE 1 OF 3 |
|--|---|--------------------------|
| | BRIDGE STUDIES AND EVALUATION OFFICE | DATE : 03/15/9 |
| | BRIDGE REPORT | TIME : 09:56:5 |
| FEDERAL SYSTEM | BRIDGE NO. : 00960 - ROAD NO. : PR 18 - RM. NO. | : 001.700 |
| | IDENTIFICATION | |
| 1- STATE : | | 72 |
| 2- STATE HIGHWAY DEPARTMENT : | Commonwealth of Puerto Rico | ,, |
| 3- COUNTY (PARISH) CODE : | SAN JUAN SAN JUAN | 12 |
| 4- PLACE CODE : | SAN JUAN URBAN ZONE | 7677 |
| 5- INVENTORY ROUTE : | SAN SUAN URBAN ZONE | 21100001 |
| 6- FEATURES INTERSECTED : | PEDESTRIAN WALKWAY | PEDESTRIAN WALKWAY |
| 7- FACILITY CARRIED BY STRUCTURE | : P.R 18 | PR 18 |
| 8- STRUCTURE NUMBER : | | 00960 |
| | | 0.5 KM N INT PR21 & PR18 |
| | i) :4.44 MT (14' - 7") | 140 |
| | | 00170 |
| | | 1823 |
| | 66 DEGREES 04.6 MINUTES | 06604 |
| | MILE) : STRUCTURE OVER HIGHWAY | 0 |
| | CLASSIFICATION | |
| 0- TOLL : | ON FREE ROAD | |
| 1- MAINTENANCE RESPONSABILITY : | | 0 |
| 2- OWNER : | | 0 |
| | ROUTE: INTERSTATE | 1 |
| | AGE AND SERVICE | |
| 27- YEAR BUILT : | | 196 |
| 8- LANES ON AND UNDER STRUCTURE : | 0 LANES ON / 9 LANES UNDER | 000 |
| 9- A.D.T. OF INVENTORY ROUTE : | | 22280 |
| 30- YEAR OF A.D.T. : | | 9: |
| | STRUCTURE DATA | |
| 31- DESING LOAD : | PEDESTRIAN | 145 |
| 32- APPROACH ROADWAY WIDTH : | 44.30 MT (145.30 FT) | (4: |
| 33- BRIDGE MEDIAN : | NONE | 00 |
| 34- SKEW ANGLE : | NO NO | |
| 35- STRUCTURE FLARED : | NO N-N-N-N | NNN |
| 36- TRAFFIC SAFETY FEATURES : | N-N-N-N 5 | |
| 37- HISTORICAL SIGNIFICANCE : | 5 N/A | 1 |
| 38- NAVIGATION CONTROL : | | 000 |
| 39- NAVIGATION VERTICAL CLEARANCE | : | 0000 |
| 40- NAVIGATION HORIZONTAL CLEARANC | TO TRAFF. : | |
| 41- STRUCT. OPEN, POSTED OR CLOSED | PEDESTRIAN OVER HIGHWAY | 3. |
| 42- TYPE OF SERVICE : | | 204 |
| | | 000 |
| 44- STRUCTURE TYPE APPR. : | | 00 |
| on approach chan | | 000 |
| THE PARTY OF THE P | ANCE | 684 |
| | | 007 |
| A CONTRACTOR OF THE PARTY OF TH | 49.30 MI | 00016 |
| 50- CURB OR SIDEWALK WIDTHS : | | 000000 |
| 50- CURB OR SIDEWALL WILDING | | |

| | BRIDGE STUDIES AND EVA | AUTHORITY | PAGE 2 OF 3 |
|---|---|------------------------------|---|
| | CHOOL DIGDIES WAS EAST | moniton office | |
| FEDERAL SYSTEM | BRIDGE NO. : 00960 - ROAD N | O. : PR 18 - KM. NO. : 001.7 | 00 |
| | | | |
| 1- BRIDGE ROADWAY WIDTH CIRRY M | STRUCTURE | DATA | |
| 2- DECK WIDTH, OUT TO OUT : | O CURB : | 2.10 MT (6.59 FT) | 0066 |
| 3- MI. VERT. CLEAR. OVER BRIDGE | ROADWAY : | 2.31 MT (7.58 FT) | 0076 |
| - MINIMUM VERTICAL UNDERCLEARA | NCE : | | 9999 |
| S STATISTICAL TRAILED ON THE CHENKANC | E ON RIGHT : | | H1407 |
| 6- MINIMUM LATERAL UNDERCLEARAN | CE ON LEFT : | 3.25 MT (10.8 FT) | H108 |
| | | 2.35 MT (0.36 FT) | 084 |
| | CONDIT | ON | |
| | MATERIAL | CONDITION ANALYSIS | |
| 8- DECK | | | |
| 9- SUPERSTRUCTURE | CONCRETE | SATISFACTORY | 6 |
| 0- SUBSTRUCTURE | CONCRETE | SATISFACTORY | 6 |
| 1- CHANNEL & CHANNEL PROTECTION | N/A | SATISFACTORY | 6 |
| 2- CULVERT | N/A | N/A | N |
| 4- OPERATING RATING : | ••••• | N/A | N |
| 6- INVENTORY RATING : | | DEDESTRIAN PEDESTRIAN | 800 |
| | | | 800 |
| | | | |
| | | | |
| | | | |
| 780-7 | | | |
| | | | |
| 68- DECK GEOMETRY : | | | n |
| 58- DECK GEOMETRY : | | | N |
| 68- DECK GEOMETRY : | | | N |
| 68- DECK GEOMETRY : | | | |
| 68- DECK GEOMETRY : | | | |
| 68- DECK GEOMETRY: | HORIZONTAL : | | |
| 68- DECK GEOMETRY: | | | |
| 68- DECK GEOMETRY: | HORIZONTAL : | S N/A. | |
| 68- DECK GEOMETRY: | HORIZONTAL : | S N/A. | |
| 68- DECK GEOMETRY: N/A. 69- UNDERCLEARANCE, VERTICAL & F MEETS MINIMUM TOLERABI 70- BRIDGE POSTING: 71- WATERWAY ADEQUACY: | HORIZONTAL : | S N/A. | |
| N/A. 69- UNDERCLEARANCE, VERTICAL & : MEETS MINIMUM TOLERABI 70- BRIDGE POSTING : | HORIZONTAL : | 5 N/A. | |
| 68- DECK GEOMETRY: N/A. 69- UNDERCLEARANCE, VERTICAL & : MEETS MINIMUM TOLERABI 70- BRIDGE POSTING: 71- WATERWAY ADEQUACY: N/A. | HORIZONTAL : LE LIMITS TO BE LEFT IN PLACE AS IS | S N/A. | P. M. |
| N/A. N/A. N/A. N/A. N/A. NEETS MINIMUM TOLERABI O- BRIDGE POSTING: N/A. | HORIZONTAL : LE LIMITS TO BE LEFT IN PLACE AS IS | 5 N/A. | |
| N/A. 69- UNDERCLEARANCE, VERTICAL & F MEETS MINIMUM TOLERABI 70- BRIDGE POSTING: 71- WATERWAY ADEQUACY: N/A. 72- APPROACH ROADWAY ALIGMENT: | HORIZONTAL : LE LIMITS TO BE LEFT IN PLACE AS IS | S N/A. | P. M. |
| 68- DECK GEOMETRY: N/A. 69- UNDERCLEARANCE, VERTICAL & : MEETS MINIMUM TOLERABI 70- BRIDGE POSTING: 71- WATERWAY ADEQUACY: N/A. | HORIZONTAL : LE LIMITS TO BE LEFT IN PLACE AS IS | S N/A. | P. M. |
| N/A. 59- UNDERCLEARANCE, VERTICAL & F MEETS MINIMUM TOLERABI 70- BRIDGE POSTING: 71- WATERWAY ADEQUACY: N/A. 72- APPROACH ROADWAY ALIGMENT: N/A. | HORIZONTAL : LE LIMITS TO BE LEFT IN PLACE AS IS | 3 N/A | P. M. |
| N/A. N/A. N/A. N/A. N/A. N/A. NEETS MINIMUM TOLERABI O- BRIDGE POSTING: N/A. N/A. N/A. N/A. T2- APPROACH ROADWAY ALIGMENT: N/A. | HORIZONTAL : LE LIMITS TO BE LEFT IN PLACE AS IS | OVEMENT | P. M. |
| N/A. 59- UNDERCLEARANCE, VERTICAL & P. MEETS MINIMUM TOLERABI 70- BRIDGE POSTING: N/A. 72- APPROACH ROADWAY ALIGMENT: N/A. 75- TYPE OF WORK: | HORIZONTAL : LE LIMITS TO BE LEFT IN PLACE AS IS | OVEMENT | RX: |
| N/A. 59- UNDERCLEARANCE, VERTICAL & P. MEETS MINIMUM TOLERABI 70- BRIDGE POSTING: N/A. 72- APPROACH ROADWAY ALIGMENT: N/A. 75- TYPE OF WORK: | HORIZONTAL : LE LIMITS TO BE LEFT IN PLACE AS IS | OVEMENT | # N N N N N N N N N N N N N N N N N N N |
| N/A. 69- UNDERCLEARANCE, VERTICAL & P. MEETS MINIMUM TOLERABI 70- BRIDGE POSTING: N/A. 72- APPROACH ROADWAY ALIGMENT: N/A. 75- TYPE OF WORK: | HORIZONTAL : LE LIMITS TO BE LEFT IN PLACE AS IS | OVEMENT | # N N N N N N N N N N N N N N N N N N N |

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|------------------------------|---|-------------|
| | PUERTO RICO HIGHWAY AUTHORITY | PAGE 3 OF 3 |
| | BIRDGE STUDIES AND EVALUATION OFFICE | |
| FEDERAL SYSTEM | DBTD/ID NO | |
| | BRIDGE NO. : 00960 - ROAD NO. : PR 18 - KM. NO. : 001.700 | |
| | INSPECTIONS | |
| 89- RESERVED | | |
| 90- INSPECTION DATE : | MARCH 1996. | 0396 |
| 91- DESIGNATED INSPECTION FR | ECUENCY: 24 MONTHS | 24 |
| 92- CRITICAL FEATURE INSPECT | TON : N/A. | N N N |
| 93- CRITICAL FEAT. INSPECT. | DATE: N/A | |
| | | |
| | IMPROVEMENT COST | |
| 94- BRIDGE IMPROVEMENT COST | : | 000009 |
| | : | 000000 |
| | (49.30x2.31x\$1035x10%)=\$11,787 | 000012 |
| | ESTIMATED : 1996 | 96 |
| ,, 124 of 2410-74411 COD. | MOLIPALED | |
| | ==CLASSIFICATION AND STRUCTURE DATA== | |
| | -CLASSIFICATION AND SIROCIONE DATA- | |
| 66 BORDER BRIDGE . | | |
| | NUMBER : | |
| | TION: DEFENSE HIGHWAY | 1 |
| 100- DEFENSE HIGHWAY DESIGNA | GNATION: NO PARALLEL STRUCTURE | N |
| 101- PARALLEL STRUCTURE DESI | CNATION : TRAFFIC NOT CARRIED | 3 |
| 102- DIRECTION OF TRAFFIC : | IGNATION: N/A | |
| 103- TEMPORARY STRUCTURE DES | INVENTORY ROUTE: | 1 |
| 104- HIGHWAY SYSTEM OF THE I | NVENTORY ROUTE : | |
| 105- RESERVED | NO RECONSTRUCTION | 0000 |
| 106- YEAR RECONSTRUCTION : . | CONCRETE CAST IN PLACE | 1 |
| 107- DECK STRUCTURE TYPE : . | CONCRETE NONE NONE | 100 |
| 108- WEARING SURF./ PROTECT. | SYSTEM : CONCRETE NONE NONE FPIC : | 04 |
| 109- AVERAGE DAILY TRUCK TRA | WORK: NOT PART OF NETWORK | 0 |
| 110- DESIGNATED NATIONAL NET | WORK : | |
| 111- PIER OR ABUT. PROTECTIO | N (NAVIGATION): | Y |
| 112- NBIS BRIDGE LENGTH : | BRIDGE OVER HIGHWAY | N |
| 113- SCOUR CRITICAL BRIDGE : | | 369900 |
| 114- FUTURE AVERAGE DAILY TR | AFFIC: | 12 |
| 115- YR. OF FUTURE A.D.T. : | ARANCE : | |
| 116- MINIM. NAVIG. VERT. CLE | 031396 | • |
| 117- SUFFICIENCY RATING : | | 031396 |
| 126- FIELD INSPECTION DATE : | | 031396 |
| 127- INSPECTION EVAL. DATE : | DATE: | |
| | | |
| 131- EVALUATOR ENGINEER : | & Jeman | de |
| REMARKS: | | 1 |
| | | 70 |
| | SIST IN REPAIR ALL DEFICIENCIES DESCRIBED ON THE | |
| | DIGI AN AMARINA | |
| ITEM #67. | | |

C.6 September 30, 1992

| | | PAGE 1 UF 3 |
|--|---|----------------------------|
| | PUERTO RICO HIGHWAY AUTHORITY | DATE: 09/30/93 |
| | HIGHWAY SYSTEM ADMINISTRATION OFFICE | 20.47 |
| | | TIME : 08:43:47 |
| FEDERAL SYSTEM | BRIDGE NO. : 00960 - ROAD NO. : PR 18 - KM. N | 0. : 0.04400 |
| TEDERAL STSTER | ERIDGE NU.: 00980 - KURD NU.: PR 18 | 0 001111 |
| | =======IDENT1FICATION====== | |
| 1- STATE : | | CO 721 |
| 2- STATE HIGHWAY DEPARTMENT : | SAN JUA | N VI |
| | SAN JUAN | 127 |
| 4- PLACE CODE : | | 76770 |
| 5- INVENTORY ROUTE : | 2-1-1-00001 | -0 211000010 |
| | PEDESTRIAN WALKWAY | PEDESTRIAN WALKWAY |
| | | PR 18 |
| 8- STRUCTURE NUMBER : | BRIDGE 960 i OF i | 009601 |
| 9- LOCATION : | 0.5 KM N INT PR21 & PRI | 8 0.5 KM N INT PK21 & PK10 |
| 11- MILEPOINT : | 4.4 | 0 . 004400 |
| 16- LATITUDE : | | 5 10234 |
| 17- LONGITUDE : | 66 DEGREES 04.6 MINUTE | 5 066046 |
| 98- BORDER BRIDGE : | | |
| 99- BORDER BRIDGE STRUCTURE MIMBER | | |
| | | |
| | =====STRUCTURE TYPE AND MATERIAL====== | |
| 43- STRUCTURE TYPE, MAIN : | CONCRETE CONTINUOS TEE BEAMS | 204 |
| MA CTEATTINE TYPE APPR . | MONE | 000 |
| 45- MIMBER OF SPAN IN MAIN INIT : | 2 | 002 |
| AL_ MIMDED OF APPROACH SPAN | NU | VE 0000 |
| 107- DECK STRUCTURE TYPE : | CONCRETE CAST IN FLACT | • |
| 108- WEARING SURF. / PROTECT. SYSTEM | : CONCRETE NONE NONE | 100 |
| | ====================================== | |
| EL (49NO) 1900 | ========AGE AND SERVICE========== | 00 |
| 19- BYPASS, DETOUR LENGTH (NEAREST | MILE): | |
| 27- YEAR BUILT : | A LANCE ON 7 PLANCE INDEE | 0009 |
| 28- LANES ON AND UNDER STRUCTURE :. | 0 LANES ON / 9 LANES UNDER | 200100 |
| 29- A.D.T. OF INVENTORY ROUTE: . | | |
| 30- YEAR OF A.D.T. : | PENERATION DUED HIGHMAY | 31 |
| 42- TYPE OF SERVICE : | PEDESTRIAN OVER HIGHWAY NO RECONSTRUCTION | 0000 |
| 106- YEAR RECONSTRUCTION : | NO RECONSTRUCTION 4 % | 04 |
| 109- AVERAGE DAILY TRUCK TRAFFIC: | | - |
| | GEOMETRIC DATA | |
| | 4.44 MI ()4' - /" | 1407 |
| | 44.30 MT (145.30 FT |) 145 |
| | | 0 |
| | | 00 |
| | | 0 |
| TOTAL UNDIT IT FARM | W.F | 6 84 |
| | | 0073 |
| THE THE PROPERTY OF THE PARTY O | 49.30 MT (161.70 FT) | 000162 |
| | | 000000 |
| | | 0066 |
| | | 6076 |
| 57- MIN. VERT. CLEAR. OVER BRIDGE RI | DADWAY: | 9999 |
| 54- MINIMUM VERTICAL UNDERCLEARANCE | ###################################### | H1407 |
| 55- MINIMUM LATERAL UNDERCLEARANCE | 3.25 MT (10.8 FT) | H108 |
| 56- MINIMUM LATERAL UNDERCLEARANCE (| N RIGHT : | 084 |
| vicinities (vicinities) | | |
| | | |
| | | |

| | PUERTO RICO HIGHWAY | / AUTHORITY | PAGE 2 0F 3 |
|---|-----------------------------------|-------------------------------|---------------|
| | HIGHWAY SYSTEM ADMINIS | STRATION OFFICE | 1 HGC 2. U1 3 |
| | | | |
| FEDERAL SYSTEM | BRIDGE NO. : 00960 - ROAD N | 10 pp | |
| | 2012002 NO. : 00760 - KUAU I | W. : PR 18 - KH. NO. : 004400 | |
| | ======CLASS1FICA | AT10N======== | |
| 70- TOLL : | ON FRE | 77 0040 | |
| | | E RUAD | |
| | | | 01 |
| C . C. C. LOS COLOGO OF INVENTION I | 4017E . | ATE. | 01 |
| | | | 11 |
| 00- DEFENSE HIGHWAY DESIGNATION : | | DEFENCE HIGHWAY | Ę |
| | | | h |
| | | | . I' |
| | | | , |
| | | | 3 |
| | | | ć |
| 12- NBIS BRIDGE LENGTH : | | YES | |
| | ==========================WATERWA | | |
| | | | |
| 8- NAVIGATION CONTROL: | | N/A | t |
| 9- NAVIGATION VERTICAL CLEARANCE : | | N/A | 000 |
| O- NAVIGATION HORIZONTAL CLEARENCE 111- PIER OR ABUT. PROTECTION (NAVI | CATTON | N/A | 0000 |
| 16- MINIM. NAVIG, VERT. CLEARANCE | 6411UN): N/A | | |
| THE PERSON NEWS CELERAPICE | · ····· | N/A | |
| | ======PROPOSED IMPR | ROVEMENT====== | |
| | | | |
| 75- TYPE OF WORK : | | . REHABILITATION | 350 |
| 76- LENGTH OF STRUCTURE IMPROVEMENT | |) HT (161.70 FT) | 00016 |
| 4- BRIDGE IMPROVEMENT COST: | | | 00000 |
| 5- ROADWAY IMPROVEMENT COST: 6- TOTAL PROJECT COST: | | NO 74 VARRENANNA ARI TAN | 000000 |
| 7- YEAR OF IMPROVEMENT COST ESTIMA | | | 00000 |
| 14- FUTURE AVERAGE DAILY TRAFFIC : | | | 93 |
| 15- YR. OF FUTURE A.D.T. : | | | 30214 |
| | DAD DATTME AN | | 10 |
| | COND INTINO HE | 40 L0211/40 | |
| SI- DESIGN LOAD : | | PENECTOTAL | |
| 1- STRUCT. OPEN. POSTED OR CLOSED | | | |
| 4- DPERATING RATING : | | | 00 |
| 6- INVENTORY RATING : | | | 80 |
| 70- BRIDGE POSTING : | | | 804 |
| | =======CONDIT | [GN========== | |
| | CONDITI | | |
| | MATERIAL | CONDITION ANALYSIS | |
| 58- DECK | | SATISFACTURY | |
| 59- SUPERSTRUCTURE | | SATISFACTORY | • |
| 60- SUBSTRUCTURE | CONCRETE | SATISFACTURY | |
| 61- CHANNEL & CHANNEL PROTECTION | N/A | N/A | |
| 62- CULVERT | N/A | N/A | |
| | | | |
| | | | |
| | | | |
| | | | |

PAGE 3 OF 3 PUERTO RICO HIGHWAY AUTHORITY HIGHWAY SYSTEM ADMINISTRATION OFFICE FEDERAL SYSTEM - KM. ND. : 004400 BRIDGE NO. : 00960 - RDAD NO. : PR 18 WEARING SURFACE HAVE CONCRETE LOSE WITH EXPOSED STEEL. BOTTOM SLAB HAVE FINE TRANSVERSAL CRACKS WITH EFFLORECENCES. CYCLONE FENCE PROTECTION IN ALL THE STRUCTURE. BEARING HAVE LIGTH CORROSION. BEAMS HAVE IMPACTS OVER THE CAGUAS WAY. RAMP AT MEDICAL CENTER SIDE HAVE LARGE SPALLING WITH EXPOSED N/A. MEETS MINIMUM TOLERABLE LIMITS TO BE LEFT IN PLACE AS IS. N/A. MINN N =======ADDITIONAL COMMENTS:====== 89- RESERVED 90- INSPECTION DATE : SEPTEMBER 3, 1993. 0993 91- DESIGNATED INSPECTION FRECUENCY: 24 MONTHS 24 93- CRITICAL FEAT. INSPECT. DATE: N/A 105- RESERVED 117- SUFFICIENCY RATING: 126- FIELD INSPECTION DATE: 090393 090393 090393 130- CRITICAL FRACTURE INSP. DATE : 131- EVALUATOR ENGINEER : REMARKS: THE REHABILITATION CONSIST IN REPAIR ALL DEFICIENCIES DESCRIBED ON THE ITEM #67.

Appendix D Inspection by PRHTA of PB 1137

D.1 May 15, 2017

| | | INSPE | CTION REPO | RT SUMM | ARY 8 | & QC S | HEET | | | |
|---|---|---|-------------------------------|---------|-------|--------|---------------------------|------|----------|---|
| RIDGE: // | 37 | | | | | | | | | |
| EAM LEADE | R. ANDE | 1 Cope | 4 | | | | | | | |
| LAW LLAD | 15 me | | | | | | | | | |
| ISP. DATE: | 15 mc | 40201 | 7 | | | | | | | |
| | Type and D | | | | | | | | | |
| BI | Тур | e | Performed? (Yes / No / NA) | | 200 | | ous Insp. D ONTH/YEAR) | | Next Ins | |
| EM 90 | Routine Ins | | Yes | | | | m 201 | | | - |
| EM 93 A | FC Inspecti | on | | | | | | 54 | _ | |
| EM 93 B | Underwate | | | | | | | | | |
| EM 93 C | Other: | | | | | 7 | | | | |
| | | Item 58 | | Item 60 | Ite | m 61 | Item 62 | Iten | n 113 | |
| evious Ins | pection | 5 | 5 | 6 | | _ | _ | _ | | |
| urrent Insp | ection | 4 | 5 | 5 | - | | _ | | - | |
| ther Check | s: (Y, N, NA |) | | Re | view | Comme | ents: | | | |
| AASHTO C Smart Flag fire damag Channel Pl FC & Unde Asphalt Ov Drawings Photos Critical Fin | rofile/Cleara rwater Mem erlay Thickr | CD consi eel plate, nce Table abers Tabl ness | es | | | | | | | |
| eviewer: | X | <u> </u> | 2// 2// | | | | | | | |

Structure Inventory and Appraisal Sheet

| INSPECTION |
|---|
| Frequency 91: 24 months Inspection Date 90: 5/15/2017 Next Inspection: 05/15/201 |
| FC Frequency 92A: NA FC Inspection Date 93A: NA Next FC Inspection: NA |
| |
| UW Frequency 92B: NA UW Inspection Date 93B: NA Next UW Inspection: NA |
| SI Frequency 92C: NA SI Date 93C: NA Next SI: NA |
| Element Frequency: 24 months Element Inspection Date: 01/01/1901 Next Elem. Insp. Due: 01/01/19 |
| |
| CLASSIFICATION |
| Defense Highway 100: 0 Not a STRAHNET hwy Parallel Structure 101: No bridge exists |
| Objection of Traffic 102: 0 Not hwy traffic Temporary Structure 103: Unknown (NBI) Highway System 104: 0 Not on NHS NBIS Length 112: Unknown (NBI) |
| Toll Facility 20: 3 On free road Functional Class 26: 14 Urban Other Princ |
| Historical Significance 37: Unknown (NBI) |
| Owner 22: -1 Unknown (P) |
| Oustodian 21: -1 Uoknown (P) |
| CONDITION |
| Deck 58; 4 Poor Super 59; 5 Fair Sub 60: 5 Fair |
| Culvert 62; N N/A (NBI) Channel/Channel Protection 61; N N/A (NBI) |
| LOAD BATIMO AND DOCTING |
| LOAD RATING AND POSTING [Inventory Rating Method 65: Unknown (NBI) Operating Rating Method 65: Unknown (NBI) |
| |
| Inventory Rating 66: MS-6 Operating Rating 64: MS-0.6 |
| Design Load 31: 7 Pedestrien Poeting 70: Unknown (NBI) Posting status 41: A Open, no restriction |
| Posting status 41: A Open, no restriction |
| APPRAISAL |
| Bridge Rail 36A; N N/A or not required Approach Rail 36C; N N/A or not required |
| Transition 36B: N N/A or not required Approach Rail Ends 35D: N N/A or not required |
| Str. Evaluation 67: Unknown (NBI) Deck Geometry 68: Unknown (NBI) |
| Underclearance, Vertical and Horizontal S9: Unknown (NBI) |
| Wisterway Adequacy 71: N Not applicable Approach Alignment 72: 6 Equal Min Criteria Scour Critical 113: N Not Over Waterway |
| Gudi Cinica 113. |
| PROPOSED IMPROVEMENTS |
| Bridge Cost 94: NA Type of Work 75: Unknown (P) |
| Readway Cost 95: Unknown Length of Improvement 76: Total Cost 96: Unknown Future ADT 114: 92,073 |
| Total Cost 96; |
| |
| NAVIGATION DATA Navigation Control 38: Unknown (NBI) |
| Vertical Clearance 39: Horizontal Clearance 40: |
| Pfer Protection 111: Unknown (NBI) Lift Bridge Verileal Clearance 116: |
| |

BRIDGE INVENTORY MANAGEMENT OFFICE

| INFRASTRUCTURE DI | RECTORY |
|---|---|
| PRHTA | |
| Team Leader: Angel T. López | |
| Bridge Inspector: Angel T. López | |
| Bridge Evaluator: Manuel Coll | |
| Assistants: José R. Vázquez | |
| Driver: José A. Ortíz | |
| Inspection date: May, 15, 2017 | |
| Weather Conditions: Sunny | |
| Amount of Time on Inspection: 1 Hours | |
| Equipment: X Bus or Van _ Underwater _ Ladders Other: | Snooper X Camera _ Boat |
| Bridge Number: 1137 | |
| EP CAN AND AND AND AND AND AND AND AND AND A | n. |
| Road Under Structure: State Highway Number or Name: PR- | |
| Ident. Plaque: No Num. | 20 14.1 |
| 36-Traffic Safety Features: | * |
| Bridge railings: not applicable or safety not reuired | |
| Transitions: not applicable or safety not reuired | |
| Approach Guardrail: not applicable or safety not reuired | |
| Approach Guardrail Ends: not applicable or safety not reuired | |
| | |
| 41- Posting: Condition: A-Open Sign type: _ Pos Type of Inspection: Regular/routine inspection | ting Load: |
| COMMENTS AND/OR RECOMMENDATIONS: | |
| | |
| (61.00mts de largo) | |
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| | |
| Colo | B 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 |
| Inspection by: Angel T. López | Revised and Approved by: Manauel Coll |
| Bridge Inspector | Bridge Evaluator |
| | |
| R-1137 | 1 |

BRIDGE INVENTORY MANAGEMENT OFFICE INFRASTRUCTURE DIRECTORY **PRHTA**

58. DECK

58.1 Wearing Surface: Material: Steel

Condition: 4

Condition: 4

Thickness

cm.

Deterioration: 50 to 75 %

Drainage: Inadequate

Ponding: No

Safety: No

58.2 Slab or Plate: Material: Steel

Cracking: None

Spalling: Top: No

Bottom: No

Scaling: Top: No Efflorescence: No

Bottom: No

Exudation: No

Rust Stains: No

Corrosion: Severe

58.3 Movement:

Deck to backwall:

Deck to approach slab:

cm.

| ::2 | Material | Cond. Rating | Height Loss (cm) | Joints | Drainage | Alignment | Corrosion | Paint | Safety | Cracking | Spalling | Scaling |
|-------------------|----------|-----------------|------------------------|--------|----------|-----------|---------------|-------|--------|----------|----------|----------------|
| 58.4 Curb | N/A | | | - | | | | | | | | _ |
| 58.5 Median | N/A | - | | - | | - | _ | _ | - | - | - | _ |
| 58.6 Sidewalks | N/A | 122 | | | | | * <u>==</u> * | - | | 122 | | (2 <u>20</u>) |
| 58.7 Parapets | N/A | | | | - | | - | - | | | | |
| 58.8 Railing | Steel | 5 | 4 | Good | Good | Good | Severe | Poor | Yes | | | - |

58.9 Lighting Standards: Material: N/A Condition: N/A

Functioning: N/A

58.10 Utilities:

Type:

Size:

Safety: _

58.11 Joints:

Condition: N/A

Type: N/A

Functioning: N/A Leaking: N/A Cracking: N Spalling: N

Armor: No

58.12 Drains and Scuppers:

Material: None Condition: N

Functioning: N/A

Comments:

58.1- Hay moderada y severa corrosión en la súperficie, hay varias perforaciones grandes por corrosión en las tolas, hay una sección grande con la esquina suelta e inclinada formando un hueco, grandes parchos para reparar secciones corroídas, hay varias secciones de las tolas que están sueltas de sus puntos de soldaduras, varias de los parchos que son en aluminio tiene los tornillos de anclajes sueltos, esto puede causar accidente. Muchas de las secciones fueron pintadas con óxido rojo para protección del acero, la superficie de la estructura está en pobres condiciones.

BR-1137

BRIDGE INVENTORY MANAGEMENT OFFICE INFRASTRUCTURE DIRECTORY PRHTA

59. SUPERSTRUCTURE

59.1 Bearing Devices: Type: Fixed/Mov.

Out of Plumb: No

Paint: None

Condition: 5

59.2 Bridge seats, pedestal, grout pads, abutments or pier seat where beams bear directly on conc.

Condition: N Cracking: No

Spalling: None

Scaling: None

Crushing: No

59.3 Steel beams: N/A Type: N/A

Condition: N/A

Corrosion: N/A

Paint: N/A

59.4 Concrete: N/A

Type: N/A

Conditión: N Cracking: No

Spalling: Small

Scaling: None

59.5 Truss: Ped, Bailey Condition: 5

Paint: Fair Corrosion: Moderate

Members: N/A

59.6 Drainage: Type: N/A

Condition: N/A Functioning: N/A

Movement: N/A

59.7 Hinges: Condition: N/A

Functioning: N/A

and and and

59.8 Deflection: N/A 59.9 Vibrations: N/A 60.0 SUBSTRUCTURE:

| | | | Material | Cond. Rating | Cracking | Spalling | Scaling | Corrosion | Paint | Movement | Erosion | Undermining |
|----------------------|----------------|---------------------|----------|-----------------|----------|----------|---------------------|-----------|----------|--------------|---------|-------------|
| 5190 | 60.1. 1 | Wingwalls | N/A | N | | | | | - | <u> </u> | 19220 | |
| Abutments | 60.1.2 | Breast- Backwall | N/A | N | | | - | - | - | - | | = |
| but | 60.1.3 | Footing | N/A | N | | - | _ | | - | _ | | |
| ď | 60.1.4 | Piles | N/A | N | | - | 10 73 10 | - | 100 | | - | - |
| <u>0</u> | 60.2.1 | Caps | N/A | N | | - | - | | - | | | |
| or Non Pile Bents | 60.2.2 | Bracing | N/A | N | | | | | | | | - |
| r No ents | 60.2.3 | Columns | Steel | 5 | | | | Severe | Poor | No | No | No |
| Pierso B | 60.2.4 | Footing | Concrete | 7 | F | Small | | | - | No | No | No |
| ğ | 60.2.5 | Piles | N/A | N | | | 74 <u></u> 2 | - | - | | | |
| L | 60.3.1 | Caps | N/A | N | u | | | LL | | - | 15.55 | - |
| Rocker Bents | 60.3.2 | Bracing | N/A | N | | | 7427 | 144 | | -12 | | |
| Ω m | 60.3.3 | Piles | N/A | N | | | - | | 122 | | 1022 | |
| | 60.4.1 | Caps | N/A | N | | | | | Mis. | _ | | - |
| Pile Bents | 60.4.2 | Bracing | N/A | N | - | | | - | - | | | |
| - 6 | 60.4.3 | Piles | N/A | N | | | | | u | | | |

Comments:

59.5- Varios de los componentes laterales de los "bracing" tienen ligera, moderada y severa corrosión y pérdida de sección, algunas secciones en el "upper chord" tienen moderada pérdida de sección por corrosión,

60.2.3- Columnas en acero en buenas condiciones, ligera corrosión.

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BRIDGE INVENTORY MANAGEMENT OFFICE INFRASTRUCTURE DIRECTORY **PRHTA**

61. CHANNEL AND PROTECTION

Condition: N

61.1 Channel Scour: N/A

61.2 Embankment Erosion: N/A

| | 10 48 | Туре | Material | Condition Rating | Functioning |
|------|---------------------|------|----------|---------------------|----------------|
| 61.3 | Protective Device | | N/A | N | / - |
| 61.4 | Fender System | | N/A | N | *** |
| 61.5 | Rip Rap | | N/A | N | |
| 61.6 | Spur Dikes, Jetties | | N/A | N | |

61.7 Obstruction: N/A

61.8 Channel Change: N/A

Detrimental: N/A

61.9 Adequate Waterway: N/A

61.10 Surrounding Area:

Flooding: N/A if yes explain:

Erosion: N/A if yes explain:

61.11 Location of piers and/or abutment detrimental: N/A if yes explain:

61.12 Other features that may affect structure:

Comments:

62. CULVERT AND RETAINING WALL

| | Material | Condition Rating | Functioning | Cracking | Spalling | Scaling | Corrosion | Settlement | Alignment | Scour |
|---------------------|----------|------------------|-------------|----------|----------|---------|-----------|------------|-----------|-------|
| 62.1 Barrel | N/A | N | | | - | 122 | - | | roun | 89226 |
| 62.2 Head Walls | N/A | N | - | | _ | | - | | - | _ |
| 62.3 Cut-off wall | N/A | N | _ | - | | | - | | - | - |
| 62.4 Retaining wall | N/A | N | | | _ | | | | | _ |

Comments:

BR-1137

BRIDGE INVENTORY MANAGEMENT OFFICE INFRASTRUCTURE DIRECTORY PRHTA

71. WATER ADEQUACY:

N/A

N/A

72. APPROACH ROADWAY

72.1 Alignment: 6

72.2 Slab or Pavement Condition: N

Material: Other

Cracking: No

Spalling: None

Scaling: None

Uneven: No

Rough: No

Settlement: No

Movement: Approach slab-backwall: No

Breaking up: No

Excessive deformation: No

Safety: Drainage: Hazardous: No Inadequate: No

Movemént:

Pavement-approach slab: No

Embankment: Condition: N

Functioning: Yes

Erosion: No

Construction: Flimsy: No

Integrity impaired: No

72.3 Undesirable Impact: No

72.4 Joints: No

Type: None Inadequate: N/A

Satisfactory Alignment: N/A

72.5 Guardrail Type: None Condition: N Aligr Material: N/A

Functioning: N/A

Alignment Horizontal: N/A

Vertical: N/A

Joints Functioning: N/A Safety Securely Attached: N/A Pedestrian Hazards: N/A

Comments:

90. INSPECTION DATE: May, 15, 2017

93. CRITICAL FEATURE INSPECTION DATE

Fracture Critical:

Underwater:

Other Special Inspection:

102. DIRECTION OF TRAFFIC: Highway traffic not carried

106. YEAR RECONSTRUCTED:

107. DECK STRUCTURE TYPE: Steel Plate (includes orthotropic)

108. WEARING SURFACE/PROTECTIVE SYSTEM

Type wearing surface: Other

Type Membrane: None

Deck protection: None

111. PIER OR ABUTMENT PROTECTION (FOR NAVIGATION): N/A

113. SCOUR CRITICAL BRIDGES: N

116. MINUMUM NAVIGATION VERTICAL CLEARANCE:

AUXILIARY ITEMS

Signs:

Type: Route Orientation

Material: Alum.

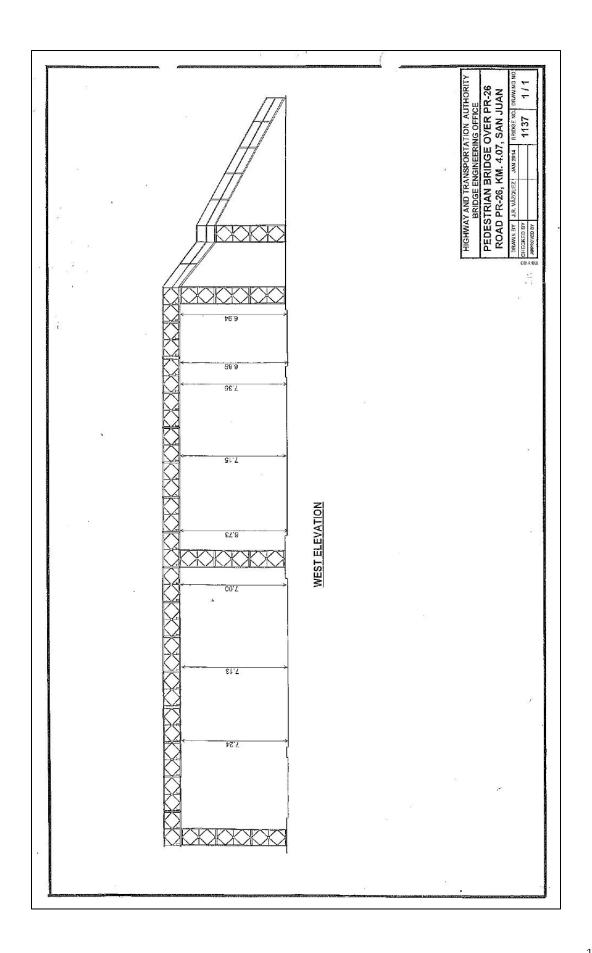
Condition: 5

BR-1137

BRIDGE INVENTORY MANAGEMENT OFFICE INFRASTRUCTURE DIRECTORY PRHTA

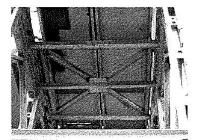
| | Core Elements | | | | | | | | | | | |
|--------------|----------------------|--------------|--------|-------------------|-------|--|----------------------------------|----------------------------------|----------------------------------|----------------------------------|-------------------------|--|
| Elem. No. | Elements Description | P a g. | E n v. | State Quantity | Units | Quantity Condition State 1 | Quantity Condition State 2 | Quantity Condition State 3 | Quantity Condition State 4 | Quantity Condition State 5 | Total State Quantity | |
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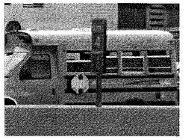




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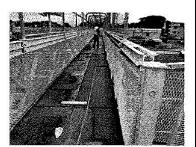
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D.2 January 23, 2014

| BRIDGE: 1 | 137 (| Pedes | tion repor trun | T SUMMAI | RY & QC SI | HEET | | | | | | |
|--|-----------------------|------------|--------------------|----------|------------|---------------------|---------------|--|--|--|--|--|
| TEAM LEADE | R: Eng. Artu | ro Cáceres | s Febus | | | | | | | | | |
| INSP. DATE: | 1/2 | 13/14 | | | | | | | | | | |
| 1. Inspection Type and Dates: | | | | | | | | | | | | |
| NBI Type Performed? Freq Previous Insp. DATE (MONTH/YEAR) Next Insp. DATE (MONTH/YEAR) | | | | | | | | | | | | |
| ITEM 90 | 26 12/10/2000 1/22/10 | | | | | | | | | | | |
| ITEM 93 A FC Inspection | | | | | | | | | | | | |
| ITEM 93 B Underwater Insp. | | | | | | | | | | | | |
| ITEM 93 C Other: | | | | | | | | | | | | |
| | | | | <u> </u> | | | | | | | | |
| 2. NBI Condi | tion Rating S | Summary: | | | | | | | | | | |
| | | Item 58 | Item 59 | Item 60 | Item 61 | Item 62 Ite | m 113 | | | | | |
| Previous Insp | ection | 5 | 5 | 6 | N | $ \mathcal{U}_{i} $ | N | | | | | |
| Current Inspe | ection | 5 | 5 | 6 | N | N | \mathcal{N} | | | | | |
| Other Check | s: (Y, N, NA) | | | Revi | ew Comme | ents: | | | | | | |
| ∠ Scour Critical (items 113 & 60) ∠ AASHTO Core's & NBI CD consistent Smart Flags (scour, steel plate, fire damage, etc) ∠ Channel Profile/Clearance Table ∠ FC & Underwater Members Tables ∠ Asphalt Overlay Thickness ∠ Drawings ∠ Photos ∠ Critical Finding Inspector & Team Leader Signature | | | | | | | | | | | | |
| Reviewer: | 7 1011 | | | | | | | | | | | |

Bridge Inspection Report

| Bridge Key: 011371 Agenc | cy ID: 011371 Sufficiency Rating: -1.0 |
|---|--|
| IDENTIFICATION | INSPECTION |
| State 1: 72 Puerto Rico Struc Num 8: 011371 | Frequency 91: 24 months Inspection Date 90: 1/23/2014 Next Inspection: 01/23/201 |
| Facility Carried 7: PR 26 Location 9: BALDORIOTY DE CASTRO AVE. | FC Frequency 92A: NA FC Inspection Date 93A: 1/23/2014 Next FC Inspection: NA |
| Rte. (On/Under)5A: One Route Under Rte. Signing Prefix 5B: 2 U.S. Numbered | UW Frequency 92B: NA UW Inspection Date 93B: NA Next UW Inspection: NA |
| Level of Service 5C: 1 Mainline Rte. Number 5D: 00026 | SI Frequency 92C: NA SI Date 93C: NA Next SI: NA |
| Directional Suffix 5E: 0 N/A (NBI) | Element Frequency: 24 months Element Inspection Date: 01/01/1901 Next Elem. Insp. Due: 01/23/20 |
| SHD District 2: SAN JUAN County Code 3: SAN JUAN Place Code 4: SAN JUAN ZONA Kilometer Post 11: 04:1 km | |
| URBANA | CLASSIFICATION |
| Feature Intersected 6: PEDESTRIAN WALKWAY | Defense Highway 100: 0 Not a STRAHNET hwy Parallel Structure 101: No bridge exists Direction of Traffic 102: 0 Not hwy traffic Temporary Structure 103: Not Applicable (P) |
| Latitude 16: 18d 27' 18" Longitude 17: 066d 03' 18" | Direction of Traffic 102: 0 Not hwy traffic Temporary Structure 103: Not Applicable (P) Highway System 104: 0 Not on NHS NBIS Length 112: Long Enough |
| Border Bridge Code 98: Unknown (P) | Toll Facility 20: 3 On free road Functional Class 26: 14 Urban Other Princ |
| Border Bridge Number 99: Unknown | Historical Significance 37: 5 Not eligible for NRHP |
| STRUCTURE TYPE AND MATERIALS | Owner 22: 01 State Highway Agency |
| Number of Approach Spans 48: 0 Number of Spans Main Unit 45: 2 | Custodian 21: 01 State Highway Agency |
| Main Span Material/Design 43A/B: 3 Steel 09 | CONDITION |
| 3 Steel 09 | Deck 58: 5 Fair Super 59: 5 Fair Sub 60: 6 Satisfactory |
| | Culvert 62: N N/A (NBI) Channel/Channel Protection 61: N N/A (NBI) |
| Deck Type 107: 5 Steel Plate | LOAD RATING AND POSTING |
| Wearing Surface 108A: 9 Other | Inventory Rating Method 65: Unknown (NBI) Operating Rating Method 63:Unknown (NBI) |
| Membrane 108B: 0 None | |
| Deck Protection 108C: None | Inventory Rating 66: MS6 Operating Rating 64: MS-0.6 |
| AGE AND SERVICE | Design Load 31: 7 Pedestrian Posting 70: Unknown (NBI) |
| Year Built 27: 1968 Year Reconstructed 106: Unknown | Posting status 41: Unknown (NBI) |
| Type of Service on 42A: 3 Pedestrian-bicyle | APPRAISAL |
| Type of Service under 42B: 1 Highway | Bridge Rail 38A: Unknown (NBI) Approach Rail 38C: Unknown (NBI) |
| Lanes on 28A: Unknown Lanes Under 28B: 5 Detour Length 19: 0.0 km | Transition 36B: Unknown (NBI) Approach Rail Ends 36D: Unknown (NBI) |
| ADT 29: 67,300 Truck ADT 109: 4 % Year of ADT 30: 2005 | Str. Evaluation 67: Unknown (NBI) Deck Geometry 68: Unknown (NBI) |
| GEOMETRIC DATA | Underclearance, Vertical and Horizontal 69: Unknown (NBI) |
| Length Max Span 48: 24.37 m Structure Length 49: 53.14 m | Waterway Adequacy 71: N Not applicable Approach Alignment 72: Unknown (NBI) |
| Curb/Sidewalk Width L 50A: 0.00 m Curb/Sidewalk Width R 50B: 0.00 m | Scour Critical 113: Unknown (NBI) |
| Width Curb to Curb 51; 1.64 m Width Out to Out 52; 2.84 m Approach Roadway Width 32: 24.60 m Median 33; 0 No median | PROPOSED IMPROVEMENTS |
| (w/ shoulders) | Bridge Cost 94: NA Type of Work 75: Unknown (P) |
| Deck Area: 150.92 m² Skew 34: 0.00 * Structure Flared 35: 0 No flare | Roadway Cost 95: Unknown Length of Improvment 76: |
| Minimum Vertical Clearance Over Bridge 53: 99.99 m | Total Cost 96: Unknown Future ADT 114: 92,073 |
| Minimum Vertical Underclearance Reference 54A: H Hwy beneath struct | Year of Cost Estimate 97: Unknown Year of Future ADT 115: 2020 |
| Minimum Vertical Underclearance 548: 06.73 m | NAVIGATION DATA |
| Minimum Lateral Underclearance Reference R 55A: H Hwy beneath struct | Navigation Control 38: N NA-no waterway |
| Minimum Lateral Undrolearance R 55: 01.20 m | Vertical Clearance 39: 0.00 m Horizontal Clearance 40: 0.00 m |
| Minimum Lateral Undrclearance L 56: 02.20 m | Pier Protection 111: Unknown (NBI) Lift Bridge Vertical Clearance 116: 0.00 m |
| ELEMENT CONDITION STATE DATA BRIDGE NOTES | |
| NSP002_Inspect_Report_Metric Agency | ID: 011371 Mon 2/24/2014 16:20: |

| YourState Department of Transportation | on | Bure | eau of Bridges and Structures Bridge Maintenance |
|--|---------------------|-------------------|---|
| | Bridge Inspecti | on Report | |
| PAST INSPECTION | | | |
| Inspection Date: 01/23/2014 | Type: 1 Regular NBI | | |
| Inspector: -1 | Pontis User Key: Po | ntis - Pontis Poi | |
| Scope: | | | |
| NBI: ✓ Other: Underwater: Fracture 0 | ☐ Element: | | |
| 10 mm | Situcal. 💽 | | |
| INSPECTION NOTES | | Н | |
| LIGHT TO MODERATE CORROSION A OF BRACINGS SHOWS LIGHT TO MO CORROSION AT UPPER CHORDS. | | | |
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| INCORPORATION INVOICE CAMPINATES | | | |
| INSPECTOR WORK CANDIDATES | | | |
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| INSP002_Inspect_Report_Metric | Agency ID: | 011371 | Mon 2/24/2014 16:20:51 Page 2 of 2 |

| | | | PI | RHTA | | | | |
|--------------------|-----------------|---------------|----------------------|--------------|-----------|---------------|----------|--------|
| Team Leader: Art | turo Cáceres | | | | | | | |
| Bridge Inspector | | auez | | | | | | |
| Bridge Evaluator | | M-55 | | | | | | |
| Assistants: Juan | | 100 | | | | | | |
| Driver: Gabriel Di | | | 8 -1 2 35 | - | | | | |
| Inspection date: | | | | | | | | |
| Weather Condition | | | | | | | | |
| | | as 4 Hauma | | | | | | |
| Amount of Time | | | | C | | ¥ C | Doot | |
| | Bus or Van | _ Underwa | ter _ Ladde | rs _Sno | oper | X Camera | _ Boat | |
| | Other: | | | | | | | |
| Bridge Number: | 1137 | | | | | | | |
| Road on Structur | re: N/A | | Number or I | Name: | Km. | | | |
| Road Under Stru | ıcture: State F | Highway | Number or i | Name: PR-26 | Km. 4.0 | 07 | | |
| Ident. Plaque: No | o | Num. | | | | | | |
| Traffic Safety Fea | atures: | | | | | | | |
| Bridge railing | gs: not applica | ble or safety | not reuired | | | | | |
| Transitions: | not applicable | e or safety n | ot reuired | | | | | |
| Approach G | uardrail: not a | applicable or | safety not rea | uired | | | | |
| Approach G | uardrail Ends: | not applica | ble or safety | not reuired | | | | |
| 41- Posting: Con | | | type: _ | Posting | Load: | | | |
| Type of Inspection | | 550 | | Ū | ,, | | | |
| COMMENTS AND | | | | | | | | |
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| 4 | Min Xu | 1 | | | | | Poli | JAM) |
| Inspection by: | · / · | | | R | evised an | d Approved by | | aceres |
| В | Bridge Inspect | tor | | | | Tean | n Leader | |
| BR-1137 | | | | | | | | 1 |

58. DECK

58.1 Wearing Surface: Material: Steel

Condition: 5 Thickness

Ponding: Yes

cm.

Deterioration: 10 to 25 %

Drainage: Inadequate

Safety: Yes

58.2 Slab or Plate: Material: Steel

Condition: 5

Cracking: None

Spalling: Top: No

Bottom: No

Scaling: Top: No

Bottom: No

Efflorescence: No

Exudation: No

Rust Stains: No

Corrosion: Moderate

58.3 Movement:

Deck to backwall:

cm. Deck to approach slab:

cm.

| | Material | Cond. Rating | Height Loss (cm) | Joints | Drainage | Alignment | Corrosion | Paint | Safety | Cracking | Spalling | Scaling |
|-------------------|----------|-----------------|------------------------|--------|----------|-----------|-----------|-------|--------|----------|----------|---------|
| 58.4 Curb | N/A | - | | | - | - | _ | _ | _ | - | _ | _ |
| 58.5 Median | N/A | - | | - | - | - | - | - | _ | - | _ | - |
| 58.6 Sidewalks | N/A | 1 | | - | - | | - | - | - | - | - | - |
| 58.7 Parapets | N/A | y | | | - | | - | - | - | - | - | - |
| 58.8 Railing | Steel | 6 | | Good | Good | Good | Moderate | - | Yes | - | - | |

58.9 Lighting Standards: Material: N/A

Condition: N/A

Functioning: N/A

58.10 Utilities:

Type:

Size:

Safety: _

58.11 Joints: Condition: N/A

Type: N/A

Functioning: N/A

Leaking: N/A Cracking: N

Spalling: N

Armor: No

58.12 Drains and Scuppers:

Material: None Condition: N

Functioning: N/A

Comments:

58.1- Ligera y moderada corrosión en superficie, algunas pequeñas perforaciones por corrosión en las tolas.

BR-1137

59. SUPERSTRUCTURE

59.1 Bearing Devices: Type: Fixed/Mov.

Out of Plumb: No

Paint: None

Condition: 5

59.2 Bridge seats, pedestal, grout pads, abutments or pier seat where beams bear directly on conc.

Condition: N Cracking: No

Spalling: None

Scaling: None

Crushing: No

59.3 Steel beams: N/A Type: N/A

Condition: N/A

Corrosion: N/A

Paint: N/A

59.4 Concrete: N/A Type: N/A

Condition: N Cracking: No

Spalling: Small

Scaling: None

59.5 Truss: Ped. Bailey

Condition: 5 Paint: Fair

Corrosion: Moderate

Members: N/A

59.6 Drainage: Type: N/A

Condition: N/A

Functioning: N/A

59.7 Hinges: Condition: N/A

Functioning: N/A

Movement: N/A

59.8 Deflection: N/A 59.9 Vibrations: N/A 60.0 SUBSTRUCTURE:

| | | | Material | Cond. Rating | Cracking | Spalling | Scaling | Corrosion | Paint | Movement | Erosion | Undermining |
|----------------------------|--------|---------------------|----------|-----------------|----------|----------|---------|-----------|-------|----------|---------|-------------|
| | 60.1.1 | Wingwalls | N/A | N | _ | - | _ | - | - | - | _ | |
| Abutments | 60.1.2 | Breast- Backwall | N/A | N | - | _ | - | - | - | - | _ | - |
| but | 60.1.3 | Footing | N/A | N | - | - | - | - | - | - | - | - |
| ∢ | 60.1.4 | Piles | N/A | N | - | - | - | - | - | - | - | - |
| | 60.2.1 | Caps | N/A | N | | _ | | - | - | - | _ | - |
| Non | 60.2.2 | Bracing | N/A | N | - | - | _ | - | - | - | - | - |
| Piers or Non Pile Bents | 60.2.3 | Columns | Steel | 6 | - | - | - | Moderate | - | No | No | No |
| | 60.2.4 | Footing | Concrete | 7 | F | Small | - | - | - | No | No | No |
| - | 60.2.5 | Piles | N/A | N | - | - | - | - | 1-1 | - | - | - |
| . . | 60.3.1 | Caps | N/A | N | _ | _ | _ | - | - | - | _ | - |
| Rocker Bents | 60.3.2 | Bracing | N/A | N | - | - | - | - | - | - | - | - |
| <u>~</u> = | 60.3.3 | Piles | N/A | N | - | - | - | - | - | - | - | - |
| | 60.4.1 | Caps | N/A | N | _ | _ | - | | - | - | - | - |
| Pile Bents | 60.4.2 | Bracing | N/A | N | - | - | - | - | - | - | - | - |
| - 6 | 60.4.3 | Piles | N/A | N | - | _ | - | - | - | - | _ | - |

Comments:

59.5- Varios de los componentes laterales de los "bracing" tienen ligera, moderada corrosión y pérdida de sección, algunas secciones en el "upper chord" tienen moderada pérdida de sección por corrosión.

BR-1137

61. CHANNEL AND PROTECTION

Condition: N

61.1 Channel Scour: N/A

61.2 Embankment Erosion: N/A

| | | Туре | Material | Condition Rating | Functioning |
|------|---------------------|------|----------|---------------------|-------------|
| 61.3 | Protective Device | | N/A | N | _ |
| 61.4 | Fender System | | N/A | N | - |
| 61.5 | Rip Rap | | N/A | N | - |
| 61.6 | Spur Dikes, Jetties | | N/A | N | - |

61.7 Obstruction: N/A

61.8 Channel Change: N/A

Detrimental: N/A

61.9 Adequate Waterway: N/A

61.10 Surrounding Area:

Flooding: N/A if yes explain:

Erosion: N/A if yes explain:

61.11 Location of piers and/or abutment detrimental: N/A

if yes explain:

61.12 Other features that may affect structure:

Comments:

62. CULVERT AND RETAINING WALL

| | Material | Condition Rating | Functioning | Cracking | Spalling | Scaling | Corrosion | Settlement | Alignment | Scour |
|---------------------|----------|------------------|-------------|----------|----------|---------|-----------|------------|-----------|-------|
| 62.1 Barrel | N/A | N | _ | - | - | - | - | _ | - | _ |
| 62.2 Head Walls | N/A | N | - | - | - | - | - | - | - | - |
| 62.3 Cut-off wall | N/A | N | - | _ | _ | _ | - | - | | |
| 62.4 Retaining wall | N/A | N | - | - | - | _ | - | - | - | - |

Comments:

BR-1137

71. WATER ADEQUACY:

N/A

N/A

Spalling: None

72. APPROACH ROADWAY

72.1 Alignment: 6

72.2 Slab or Pavement

Condition: N Material: Other

Scaling: None

Uneven: No

Cracking: No Rough: No

Settlement: No

Movement: Approach slab-backwall: No

Breaking up: No

Excessive deformation: No

Safety:

Hazardous: No

Type: None

Drainage:

Inadequate: No

Movement:

Pavement-approach slab: No

Embankment: Condition: N

Functioning: Yes

Erosion: No

Construction: Flimsy: No

Integrity impaired: No

72.3 Undesirable Impact: No

72.4 Joints: No

Inadequate: N/A Material: N/A

Functioning: N/A

72.5 Guardrail Type: None Condition: N

Alignment Horizontal: N/A

Vertical: N/A

Joints Functioning: N/A Safety Securely Attached: N/A Pedestrian Hazards: N/A

Satisfactory Alignment: N/A

Comments:

90. INSPECTION DATE: Jan 23, 2014

93. CRITICAL FEATURE INSPECTION DATE

Fracture Critical:

Underwater:

Other Special Inspection:

102. DIRECTION OF TRAFFIC: Highway traffic not carried

106. YEAR RECONSTRUCTED:

107. DECK STRUCTURE TYPE: Steel Plate (includes orthotropic)

108. WEARING SURFACE/PROTECTIVE SYSTEM

Type wearing surface: Other Type Membrane: None Deck protection: None

111. PIER OR ABUTMENT PROTECTION (FOR NAVIGATION): N/A

113. SCOUR CRITICAL BRIDGES: N

116. MINUMUM NAVIGATION VERTICAL CLEARANCE:

AUXILIARY ITEMS

Signs:

Type: Route Orientation

Material: Alum.

Condition: 5

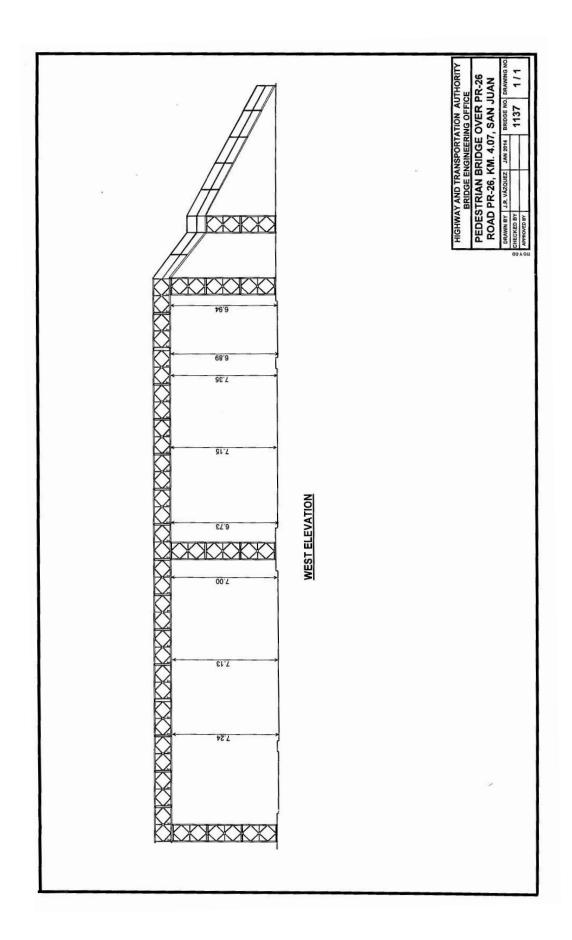
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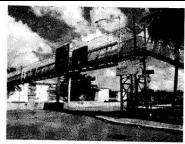
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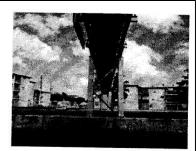




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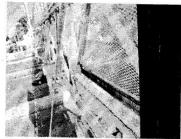
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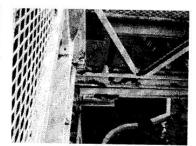
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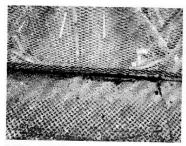
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D.3 June 29, 2001

| *** | | | | |
|---|--|---|---|---|
| | PUERTO RICO HI | GHWAY AUTHORITY | | PAGE 1 OF 7 |
| ENGINEER: EDUARDO MARQUEZ | BRIDGE STUDIES AN | D EVALUATION OFFICE | EQUIPM | |
| ASSISTANTS: M. SANTIAGO | | & EVALUATION REPORT | BUS X | LADDERS |
| : JAINE RIVAS | | | BOAT | CAMERA X |
| : JUAN OTERO | BRIDGE No · 01137 | FEDERAL SYSTEM | UNDERWATER | SNOOPER # |
| : JORGE VIERA | BRIDGE NO.: 01137 | PROBLEM SIDILM | SNOOPER OPERATOR | |
| . SORGE VIERA | ROAD No.: PR 26 | TOT 11: 0001 000 | | |
| | ROAD NO.: PR 26 | KM. No.: 0004.070 | PLAQUE | |
| EVALUATION DATE: 29/JUNE/01 | | | YES X NO | No. |
| | | | FILM No. | |
| | ======IDBNTIFIC | ATION======= | | |
| | | | | Si managan |
| 1- STATE : | | | | 721 |
| 2- HIGHWAY AGENCY DISTRICT : | | | | 01 |
| 3- COUNTY (PARISH) CODE : | | | AN | 127 |
| 4- PLACE CODE : | | | | 76770 |
| 5- INVENTORY ROUTE : | | | | 221000030 |
| 6- FEATURES INTERSECTED : | | | PEDEST | RIAN WALKWAY |
| 7- FACILITY CARRIED BY STRUCTURE : | | | | PR 26 |
| 8- STRUCTURE NUMBER : | • | 1137 (1 OF 1) | | 011371 |
| 9- LOCATION : | | | RO AVE. BALDOR | IOTY DE CASTRO AVE. |
| 10- INVENTORY ROUTE, MINIMUM VERTICAL | CLEARANCE : ,,,, | 5.11m(16'-9") | | 0510 |
| 11- KILOMETERPOINT : | | | 4.07 | 0004070 |
| 12- BASE HIGHWAY NETWORK : | | | | o |
| 13- LRS INVENTORY ROUTE, SUBROUTE NUMB | ER : | | | |
| 16- LATITUDE : | 1 | 8 DEG 27.3 MIN | | 18271800 |
| 17- LONGITUDE : | 6 | 6 DEG 03.3 MIN | | 066031800 |
| 19- BYPASS, DETOUR LENGTH (NEAREST KIL | OMETER) : | STRUCTURE OVER HWY. | | 000 |
| 20- TOLL: 21- MAINTENANCE RESPONSABILITY: 22- OWNER: 26- FUNCTIONAL CLASS, OF INVENTORY ROU | D.T.P.W. | | | 3 01 01 14 |
| | *======AGE AND S | n managanan di Jawa na danan da da danan da danan da | | |
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| 27- YEAR BUILT : | | | | |
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| 29- A.D.T. OF INVENTORY ROUTE : | | . 00 ON ; 05 UNDER | | |
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| 29- A.D.T. OF INVENTORY ROUTE : | | . 00 ON ; 05 UNDER | | 0005 067300 |
| 29- A.D.T. OF INVENTORY ROUTE : | STRUCTURE | . 00 ON ; 05 UNDER 67,300 | 1999 | 0005 067300 |
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| 29- A.D.T. OF INVENTORY ROUTE: | TRAFF: PEDESTRIAN STEEL TRUSS DECK NONE | . 00 ON ; 05 UNDER | 1999 BESTRIAN ON-N-N-N 5 N/A NO OPEN | 0005 067300 1999 7 0246 0 00 0 NNNN 5 N 0000 00000 A 31 |
| 29- A.D.T. OF INVENTORY ROUTE: 30- YEAR OF A.D.T.: 31- DESIGN LOAD: 32- APPROACH ROADMAY WIDTH: 33- BRIDGE MEDIAN: 34- SKEW ANGLE: 35- STRUCTURE FLARED: 36- TRAPFIC SAPETY FEATURES: 37- HISTORICAL SIGNIFICANCE: 38- NAVIGATION CONTROL: 39- NAVIGATION CONTROL: 40- NAVIGATION HORIZONTAL CLEARANCE: 41- STRUCT. OPEN, POSTED OR CLOSED TO 42- TYPE OF SERVICE: 43- STRUCTURE TYPE, MAIN: 44- STRUCTURE TYPE, MAIN: | TRAFF: PEDESTRIAN STEEL TRUSS DECK NONE | . 00 ON ; 05 UNDER | 1999 BETRIAN N-N-N-N 5 N/A NO OPEN | 0005 067300 1999 7 0246 0 00 0 NNNN 5 N 0000 00000 A 31 |

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|--|--|-----------------------------|--|---|
| FEDERAL SYSTEM | | PURRTO RICO HIGHWAY | AUTHORITY | PAGE 2 OF 7 |
| | | RIDGE STUDIES AND EVAL | | 8 |
| BRIDGE No.: 01137 | BRI | DGE REINSPECTION & EVA | ~ / // | 7 |
| | Name of the second of | 15 10000 10000 | 18.4 mt P | |
| 47- INV. ROUTE, TOTAL HORIZ, CLB. 48- LENGTH OF MAXIMUM SPAN : | | | (77.39ft) R=23.6m(77,4ft) | 184 |
| 49- STRUCTURE LENGTH: | | and in the same of the same | | 00236 |
| 50- CURB OR SIDEWALK WIDTHS : | | | | 000521 |
| SO COLD ON DEPRINANT WEDING | | NOM | | ccodd |
| | ==== | ======STRUCTURE DATA= | | |
| 51- BRIDGE ROADWAY WIDTH, CURB TO | | | | 0016 |
| 52- DECK WIDTH, OUT TO OUT : | | | 2.00m(6.56ft) | 0020 |
| 53- MI. VERT. CLEAR. OVER BRIDGE | ROADWAY : | | UNLIMITED | 9999 |
| 54- MINIMUM VERTICAL UNDERCLEARA | NCE : | | 5.11m(16'-9") | H0511 |
| 55- MINIMUM LATERAL UNDERCLEARAN | CE ON RIGHT : | | 1.19m(3.9ft) | H012 |
| 56- MINIMUM LATERAL UNDERCLEARANG | CE ON LEFT : | | 2.22m(7.28ft) | 022 |
| , | | | | |
| | ==== | =======CONDITION=== | | |
| E production of the second | | | ACCURATE TO A CONTRACTOR OF THE CONTRACTOR OF TH | |
| 58- DECK: FAIR CONDITION | RATING: 5 | terrocontent C o | DECK COMM | STREET, AND |
| 58.1 WEARING SURFACE: MATERIAL | L: STEEL | CONDITION: 5 | 58.1 LITE THE STRU | AND MODERATE CORROSION IN ALL |
| THICKNESS: DETERIORATION: YES X NO | DESTRICE. V S | DEQUATE INADEQUATE | THE STRU | Croks. |
| | FETY: X YES NO | | | |
| 58.2 SLAB OR PLATE: MATERIAL: | | CONDITION 5 | * | |
| | RDIUM OPEN | | | |
| TOP BOTTOM | OVERACLE SHIPS SHI | | | |
| SPALLING: S < | 1 in. DEEP x 6 i | n. & L > 1 in. x 6 | in. & | |
| SCALING : L to | o % in., M % in. | - ½ in., H ½ in 1 i | n., S > 1 | |
| | | 35. 35 | | |
| EFFLORESCENCE EXUDATION | RUST STAINS XCO | RROSION: XLIGHT MODE | rate severe | |
| 58.3 MOVEMENT: DECK TO BACKWALL | L cm. DE | CK TO APPROACH SLAB | cm. | |
| | | 1 | 1 | |
| | | (58.6) (58.7) | | |
| | CURBS MEDIAN | SIDEWALKS PARAPETS | RAILING | |
| Married Tar | | | STEEL | |
| MATERIAL CONDITION RATING | | l l I | 10 N | |
| HEIGHT LOSS (cm) | ; | | 1 1 | |
| JOINTS | | | - oK | |
| DRAINAGE | | i i | I ok I | |
| ALIGNMENT | | | - ok | |
| CORROSION (L-M-S) | i i | i i | T. | |
| PAINT: G-GOOD, F-FAIR, | | | - F | |
| P-POOR, N-NONB | l I | 1 . 1 | 1 | |
| U-USELESS TO PAINT | 1 | 1 1 | 1 | |
| SAFETY | | | - YE3 | |
| CRACKING (F-M-O) | 1 | 1 | I I | |
| SPALLING (S-L) | | | | |
| SCALING (L-M-H-S) | 1 1 | | 1 | |
| | • | • | | |
| 58.9 LIGHTING STANDARDS: MAT | ERIAL: NO | CONDITION: | FUNCTIONING: Y | ES NO |
| 58.10 UTILITIES: TYPE: NO | SIZE: | | | |
| | CONSTRUCTION C | | FUNCTIONING: YES NO | |
| | CRACKING: FINE | | | |
| 58.12 DRAINS AND SCUPPERS: MA | TERIAL: | CONDITION: | FUNCTIONING: YE | s No |
| | | | | |

FEDERAL SYSTEM PUBRTO RICO HIGHWAY AUTHORITY PAGE 3 OF 7 BRIDGE STUDIES AND EVALUATION OFFICE BRIDGE No.: 01137 BRIDGE REINSPECTION & EVALUATION REPORT 59- SUPERSTRUCTURE: FAIR CONDITION RATING: 5 SUPERSTRUCTURE COMMENTS: BEARING DEVICES: TYPE: FIXED MOVABLE OUT OF PLUMB 59.5 LITE ABRASION BY CORROSION.

PAINT: GOOD FAIR POOR NONE USELBSS TO PAINT 59.1 BEARING DEVICES: TYPE: FUNCTIONING: YES NO 59.2 BRIDGE SEATS, PEDESTAL, GROUT PADS, ABUTMENTS OR PIER SEATS WHERE BEAMS BEAR DIRECTLY ON CONCRETE CRACKING: F M O SPALLING: S L CONDITION: SCALING: L M H S CRUSHING: 59.3 STEEL-BEAMS: TYPE: DIMENSIONS (height, width, thickness):

CONDITION: CORROSION: L M S PAINT: G F P N U 59.4 CONCRETE-BOX BEAMS, I-BEAMS, SLAB, T-BEAM, TYPE: CONDITION: CRACKING: F M O SPALLING: S L SCALING: 'L M H S
59.6 TRUSSES: TYPE: BAILEY CONDITION: 5 CORROSION: X L X M S DAMAGE: DEFORMATION: PAINT: G F P N U A=TRUSS B=UPPER & LOWER LATERAL BRACING C=PORTALS D=FLOOR BEAMS E*=STRINGERS 59.6 DRAINAGE: TYPE: CONDITION:
59.7 HINGES: CONDITION: FUNCTION FUNCTIONING: YES NO FUNCTIONING: YES NO MOVEMENT; YES NO ALIGNMENT: GOOD BAD PAINT: G F P N U cms. 59.8 DEFLECTIONS: X NORMAL EXCESSIVE 59.9 VIBRATIONS: X MINIMAL MODERATE EXCESSIVE 60- SUBSTRUCTURE: SATISFACTORY COND. RATING: 6 [60.1.1 | 60.1.2 | 60.1.3 | 60.1.4 | 60.2.1 | 60.2.2 | 60.2.3 | 60.2.4 | 60.2.5 | 60.4.1 | 60.4.2 | 60.4.3 | |WINGWALL BREAST & FOOTING | PILES | CAPS | BRACING | COLUMNS | FOOTINGS | PILES | CAPS | BRACING | PILES | BACKWALL MATERIAL STEEL | CONCRETE | CRACKING (F-M-O) l h SCALING (L-M-H-S) - 1 I L | F | F | PAINT (G-F-P-N-U) | NO | NO | BROSTON 1 - 1 1 UNDERMINING --- |-- --|-- --|-- --|-- --|-- --|--- --|---NO --|-- --|-- --|-- --|-- --| 60- SUBSTRUCTURE COMMENTS:

207

| FEDERAL SYSTEM | PUERTO RICO HIGHWAY AUTHORITY BRIDGE STUDIES AND EVALUATION OFFICE | | PAGE 4 OF 7 |
|--|---|-------------------|----------------------|
| BRIDGE No.: 01137 | BRIDGE REINSPECTION & EVALUATION REPORT | | |
| 61- CHANNEL & CHANNEL PROTECTION : N/1 61.1 CHANNEL SCOUR(EXTENT) : 61.2 EMBANKMENT EROSION(EXTENT) : | RATING : N | CHANNEL COMMENTS: | |
| 61.3 PROTECTIVE DEVICE 61.4 PENDER SYSTEM 61.5 RIP RAP 61.6 SPUR DIKES, JETTIES | CONDITION FUNCTIONING MATERIAL RATING YES NO | | |
| 61.7 OBSTRUCTION (DEBRIS, GROWTHS): 61.8 CHANNEL CHANGE: YES NO DETRIMENTAL: YES NO IF 61.9 ADEQUATE WATERWAY: YES NO 61.10 SURROUNDING AREA: FLOODING: EROSION: 61.11 LOCATION OF PIERS AND/OR ABUTN IF YES, EXPLAIN 61.12 OTHER FEATURES THAT MAY AFFECT | YES, EXPLAIN IF NO, EXPLAIN YES NO IF YES, EXPLAIN YES NO IF YES, EXPLAIN ENTS: DETRIMENTAL: YES NO | | e v |
| 62- CULVERT AND RETAINING WALLS :N/A | RATING :N | CULVERT COMMENTS: | |
| MATERIAL CONDITION RATING | | | |
| SETTLEMENT(Y-N) | RATING ALLOWABLE STRESS PEDESTRIAN (RATING ALLOWABLE STRESS | | 2 800 2 800 |
| | | | |

FEDERAL SYSTEM PUERTO RICO HIGHWAY AUTHORITY PAGE 5 OF 7 BRIDGE STUDIES AND EVALUATION OFFICE BRIDGE No.: 01137 BRIDGE REINSPECTION & EVALUATION REPORT 67- STRUCTURAL EVALUATION : 5 SEVERE CORROSION & LIGHT SECTION LOSS AT WEARING SURFACE DUE TO PONDING. FINE CRACKS, SMALL SPALLINGS & LIGHT SCALINGS AT COLUMNS FOOTINGS, PONDING AT STAIRS & REST AREA. 69- UNDERCLEARANCE, VERTICAL & HORIZONTAL:

(5.11 W.H.) (1.19W.H., 223 M.H.)

(BASICALLY INTOLERABLE REQUIRING HIGH PRIORET OF CORRECTIVE ACTION. REMOTE - GREATER THAN 100 YEARS. SLIGHT - 11 TO 100 YEARS. OCASSIONAL - 3 TO 10 YEARS. FREQUENT - LESS THAN 3 YEARS. INSIGNIFICANT - MINOR INCONVENIENCE. HIGHWAY PASSABLE IN A MATTER OF HOURS. SIGNIFICANT - TRAFFIC DELAYS OF UP TO SEVERAL DAYS SEVERE - LONG TERM DELAYS TO TRAFFIC WITH RESULTING HARDSHIP N/A SLAB OR PAVEMENT CONDITION: MATERIAL:

CRACKING: F N O SPALLING: L S SCALING: L M H S UNNEVEN: YES NO ROUGH: YES NO 72.2 SLAB OR PAVEMENT SETTLEMENT: YES NO MOVEMENT: APPROACH SLAB-BACKWALL: YES NO BREAKING UP: EXCESSIVE DEFORMATION: SAFETY: HAZARDOUS YES NO DRAINAGE: INADEQUATE: YES NO PONDING: YES NO MOVEMENT: PAVEMENT'-APPROACH SLAB: YES NO EMBANKMENT: CONDITION: FUNCTIONING: YES NO BROSION: YES NO IF YES, EXPLAIN YES NO CONSTRUCTION: FLIMSY: INTEGRITY IMPAIRED: YES NO IF YES, EXPLAIN 72.4 JOINTS: TYPE: INADEQUATE: YES NO SATISFACTORY ALIGNMENT: YES NO 72.5 GUARDRAIL: TYPE: MATERIAL. GUARDRAIL: TYPE: MATERIAL: CONDITION:
ALIGNMENT: HORIZONTAL: GOOD BAD VERTICAL: GOOD BAD FUNCTIONING: YES NO JOINTS: FUNCTIONING: YES NO SAFETY: SECURELY ATTACHED: YES NO PEDESTRIAN HAZARDS: YES NO 72 - APPROACH ROADWAY - COMMENTS:

| 20 | | |
|--|---|-------------|
| FEDERAL SYSTEM | PUERTO RICO HIGHWAY AUTHORITY | PAGE 6 OF 7 |
| | BRIDGE STUDIES AND EVALUATION OFFICE | |
| BRIDGE NO. :01137 | BRIDGE REINSPECTION & EVALUATION REPORT | |
| 16 | | |
| 1 | ======PROPOSED IMPROVEMENT======= | |
| 14 (5) | | |
| CONTROL TO A CONTROL OF THE TABLE OF THE CONTROL OF | REHABILITATION NERDED | 352 |
| 76- LENGTH OF STRUCTURE IMPROVEM | ENT : 52.14 MTS.(171.01 PT.) | 000521 |
| n w | ====================================== | |
| # A | ************************************** | |
| 89- RESERVED | | |
| | | 0601 |
| The state of the s | NCY : BVERY-24-MONTHS | 24 |
| | : NOT NEEDED | N N N |
| | N/A | 900 SON SON |
| PRACTURE CRITICAL | UNDERWATER OTHER | |
| | | |
| Ü. | EEEEEEEIMPROVEMENT COST | |
| *0 | * | |
| 94~ BRIDGE IMPROVEMENT COST : | N/A | 000000 |
| 95- ROADWAY IMPROVEMENT COST : . | N/A | 000000 |
| 96- TOTAL PROJECT COST : | (2.00) (52.14) (825) (0.15) =\$12,905 | 000013 |
| 97- YEAR OF IMPROVEMENT COST EST | IMATED : 2001 | 2001 |
| | | |
| | ==CLASSIFICATION AND STRUCTURE DATA== | |
| | | |
| | | - 34 AA |
| | BR : | 0 |
| CONTROL SOCIAL SOCIAL PROPERTY AND SOCIAL SO | ION : | N N |
| | NOT CARRIED TRAFFIC | .N |
| AND THE PERSON OF THE PERSON O | FION: | |
| | TORY ROUTE : NHS | 0 |
| | | 0 |
| PRODUCT CONTROL CONTRO | | 0000 |
| | STREL PLATE | 5 |
| 108- WEARING SURF./ PROTECT. SYST | | 000 |
| 109- AVERAGE DAILY TRUCK TRAFFIC | ; 4% (EST) | 04 |
| 110- DESIGNATED NATIONAL NETWORK | PART OF NNT | 1 |
| 111- PIER OR ABUT. PROTECTION (N | avigation) : n/A | |
| 112- NBIS BRIDGE LENGTH : | YES | Y |
| 113- SCOUR CRITICAL BRIDGE : | | N |
| 114- PUTURE AVERAGE DAILY TRAFFI | C : 92,073 | 092073 |
| EMPRIS AND REGIONAL PROGRAMME AND PROGRAMMENT AND RECOGNIZED TO THE RECOGNIZED TO THE RECOGNIZED THE RECOGNIZED TO THE RECOGNIZED THE RECOGNI | 2018 | 2018 |
| (CLASSICAL) TATELORISONOLO CO PROPRIO DELL'ARCO PER PROPRIO DI SECULIARE DI SECULIA | CB : N/A | |
| VERTICAL LIFT BRIDGE : | | |
| | | |
| Indicated Indicated and Control of Control o | 00 (WDW) (44 | 062901 |
| A STATE OF THE PROPERTY OF THE | | 062901 |
| 130- CRITICAL FRACTURE INSP. DAT | B : | |
| ENGINEER : EDUARDO MAROUEZ | | |
| ENGINEER : EDUARDO MARQUEZ | | |
| | | |

| FEDERAL SYSTEM | PUERTO RICO HIGHWAY AUTHORITY | PAGE 7 OF 7 |
|-------------------|--|-------------|
| | BRIDGE STUDIES AND EVALUATION OFFICE | |
| BRIDGE NO. :01137 | BRIDGE REINSPECTION & EVALUATION REPORT | |
| AUXILIARY ITEMS | | |
| 1-SIGNS | | |
| TYPE: | | |
| MATERIAL: | | |
| CONDITION: | | |
| | | |
| * E | | |
| REMARKS: | | |
| | S ON REPAIRING THE DEFICIENCIES DISCUSSED ON | |
| ITEM 67. | | |

D.4 March 11, 1999

| | PUERTO RICO HIG | HWAY AUTHORITY | | PAGE 1 OF 7 |
|---|---------------------|----------------------|------------------|----------------------|
| ENGINEER: HERIBERTO GONZALEZ | BRIDGE STUDIES AND | EVALUATION OFFICE | EQUIPA | IENT |
| ASSISTANTS: LUIS QUINONEZ | BRIDGE REINSPECTION | & EVALUATION REPORT | BUS X | LADDERS |
| : JAIME RIVAS | | | BOAT | CAMERA X |
| ; ALFREDO ERAZO | BRIDGE No.: 01137 | FEDERAL SYSTEM | UNDERWATER | SNOOPER # |
| 4 | | | SNOOPER OPERATOR | L. |
| | ROAD No.: PR 26 | KM. No.: 0004.070 | PLAQUE | ID ID |
| EVALUATION DATE: 11-MAR-1999 | | | YES X NO | No. |
| | | | FILM No. | |
| | ======IDENTIFICA | rion======== | | |
| | | | | |
| 1- STATE : | | Commonwealth of Puer | to Rico | 721 |
| 2 - HIGHWAY AGENCY DISTRICT : | | SA | N JUAN | 01 |
| 3 - COUNTY (PARISH) CODE : | | SAN JU | AN | 127 |
| 47 PLACE CODE : | | . SAN JUAN URBAN 2 | | 2 76770 1 |
| 5- INVENTORY ROUTE : | | 2- / -1- | 00003-0 | 2/1000030 |
| 6- FEATURES INTERSECTED : | | PEDESTRIAN WALKWAY | PEDEST | RIAN WALKWAY |
| 7- FACILITY CARRIED BY STRUCTURE : | | PR 26 | | PR 26 |
| 8- STRUCTURE NUMBER : | | | | 011371 |
| 9- LOCATION : | | BALDORIOTY DE CAST | RO AVE. BALDOF | TIOTY DE CASTRO AVE. |
| 10- INVENTORY ROUTE, MINIMUM VERTICA | AL CLEARANCE : | 5.11m(16'~9") | | 0510 |
| 11- KILOMETERPOINT : | | | 4.07 | 0004070 |
| 12- BASE HIGHWAY NETWORK : | | | . 1 . | 1 |
| 13- LRS INVENTORY ROUTE, SUBROUTE NO | MBER : | | bla | n/ _000000002600 |
| 16- LATITUDE : | | DEG 27.3 MIN | | 18271800 |
| 17- LONGITUDE : | 66 | DEG 03.3 MIN | | 066031800 |
| 19- BYPASS, DETOUR LENGTH (NEAREST I | CILOMETER) : | STRUCTURE OVER HWY. | | 000 |
| | | | | |
| | =======CLASSIFICA | TION====== | | |
| | | | | |
| 20- TOLL : | ON F | REE ROAD | | 3 |
| 21- MAINTENANCE RESPONSABILITY : | D.T.P.W. | | | 01 |
| 22- OWNER : | D.T.P.W. | | | 01 |
| 26- FUNCTIONAL CLASS, OF INVENTORY B | ROUTE : URBAN | INTERSTATE | | 11 |
| | ========AGE AND SE | RVICE | | |
| | | | | |
| 27- YEAR BUILT : | | | 1968 | 1968 |
| 28- LANES ON AND UNDER STRUCTURE : | | 00 ON ; 05 UNDER | | 0005 |
| 29- A.D.T. OF INVENTORY ROUTE : | | 67,300 | | 067300 |
| 30- YEAR OF A.D.T. : | | | 1996 | 1996 |
| | Ti | | | |
| 31- DESIGN LOAD : | STRUCTURE D | | POTET AN | 7 |
| 31- DESIGN LOAD : | | | BOIRIAN | 024/6/6 |
| 32- APPROACH ROADWAY WIDTH : | | | | 0 |
| 33- BRIDGE MEDIAN : | | | | 00 |
| | | | | 199 |
| 35- STRUCTURE FLARED : | | | | O NNNN |
| | | | N-N-N | INNIN |
| 37- HISTORICAL SIGNIFICANCE : | | | D | 5 N |
| 38- NAVIGATION CONTROL : | | | | |
| 39- NAVIGATION VERTICAL CLEARANCE : | | | | 0000 |
| 40- NAVIGATION HORIZONTAL CLEARANCE | | | | 00000 |
| 1- STRUCT. OPEN, POSTED OR CLOSED | | | OPEN | A |
| 42- TYPE OF SERVICE : | | VER HWY. | | 31 |
| | STEEL TRUSS DECK | | | 309 |
| | 20000 | | | |
| 44- STRUCTURE TYPE APPR. : | | | | 000 |
| 43- STRUCTURE TYPE, MAIN: 44- STRUCTURE TYPE APPR.: 45- NUMBER OF SPAN IN MAIN UNIT: 46- NUMBER OF APPROACH SPAN: | | | | 000 002 0000 |

PUERTO RICO HIGHWAY AUTHORITY PAGE 2 OF 7 FEDERAL SYSTEM BRIDGE STUDIES AND EVALUATION OFFICE BRIDGE REINSPECTION & EVALUATION REPORT BRIDGE No.: 01137 18.4 L=23.59m(77.39ft) R=23.6m(77.4ft) A 184 47- INV. ROUTE, TOTAL HORIZ. CLEARANCE : 002336 000521 49- STRUCTURE LENGTH : 52.14m(171.01ft) 50- CURB OR SIDEWALK WIDTHS : NONE 000000 0016 0020 9999 H0510 H012 022 58- DECK: PAIR CONDITION RATING: 5 DECK COMMENTS: STRUCTURE WAS PAINTED. STEEL SHOWS LIGH 58.1 WEARING SURFACE: MATERIAL: STEEL CONDITION : THICKNESS: T TO MODERATE DETERIORATION: YES X NO DRAINAGE: X ADEQUATE INADEQUATE PONDING: YES X NO SAFETY: X YES NO CONDITION 58.2 SLAB OR PLATE: MATERIAL: STEEL CRACKING: FINE MEDIUM OPEN TOP BOTTOM SPALLING: | S < 1 in. DEEP x 6 in. & L > 1 in. x 6 in. & SCALING : |L to % in., M % in. - % in., H % in. - 1 in., S > 1 | EFFLORESCENCE EXUDATION RUST STAINS XCORROSION: XLIGHT MODERATE SEVERE 58.3 MOVEMENT: DECK TO BACKWALL cm. DECK TO APPROACH SLAB [(58.4) | (58.5) | (58.6) | (58.7) | (58.8) | |CURBS | MEDIAN | SIDEWALKS | PARAPETS | RAILING | MATERIAL CONDITION RATING ---------HEIGHT LOSS (cm) JOINTS -----DRAINAGE ALIGNMENT -----------CORROSION (L-M-S) L PAINT: G-GOOD, F-FAIR, ---P-POOR, N-NONE U-USELESS TO PAINT | SAFETY ----- |--CRACKING (F-M-O) SPALLING (S-L) -----SCALING (L-M-H-S) 58.9 LIGHTING STANDARDS: MATERIAL: NO CONDITION: FUNCTIONING: YES NO 58.10 UTILITIES: TYPE: NO SIZE: SAFETY: 58.11 JOINTS: EXPANSION CONSTRUCTION CONDITION: FUNCTIONING: YES NO LEAKING: YES NO CRACKING: FINE MEDIUM OPEN SPALLING: SMALL LARGE 58.12 DRAINS AND SCUPPERS: MATERIAL: CONDITION: FUNCTIONING: YES NO

FEDERAL SYSTEM PUERTO RICO HIGHWAY AUTHORITY PAGE 3 OF 7 BRIDGE STUDIES AND EVALUATION OFFICE BRIDGE REINSPECTION & EVALUATION REPORT BRIDGE No.: 01137

SUPERSTRUCTURE COMMENTS:

59- SUPERSTRUCTURE: FAIR CONDITION RATING: 5

59.1 BEARING DEVICES: TYPE: FIXED MOVABLE OUT OF PLUMB
PAINT: GOOD FAIR POOR NONE USELESS TO PAINT
CONDITION: FUNCTIONING: YES NO

59.2 BRIDGE SEATS, PEDESTAL, GROUT PADS, ABUTMENTS OR PIER SEATS WHERE BEAMS BEAR DIRECTLY ON CONCRETE

CRACKING: F M O SPALLING: S L CONDITION: CONDITION: CRACKING: F M O SPALLING: S L

SCALING: L M H S CRUSHING:

59.3 STEEL BEAMS: TYPE: DIMENSIONS (height, width, thickness):

CONDITION: CORROSION: L M S PAINT: G F P N U

59.4 CONCRETE-BOX BEAMS, I-BEAMS, SLAB, T-BEAM, TYPE:

CONDITION: CRACKING: F M C SPALLING: S L SCALING: L M H S

59.5 TRUSSES: TYPE: BAILEY CONDITION: 5 CORROSION: X L X M S DAMAGE: DEFORMATION: PAINT: G F P N U

A=TRUSS B=UPPER & LOWER LATERAL BRACING C=PORTALS D=FLOOR BEAMS E*=STRINGERS FUNCTIONING: YES NO

59.6 DRAINAGE: TYPE: CONDITION: 59.7 HINGES: CONDITION: FUNCTION FUNCTIONING: YES NO MOVEMENT: YES NO ALIGNMENT: GOOD BAD PAINT: G F P N U

SOURCE OF STREET O

60- SUBSTRUCTURE: SATISFACTORY COND. RATING: 6

| | < | ABUT | MENTS | > | <- | ——PIERS C | R NON PIL | LES BENTS- | > | [<i< th=""><th>TLES BENT</th><th>S></th></i<> | TLES BENT | S> |
|-----------------|-----------------------|------|--------------------|-------------------|------------------|-----------|--------------------|-----------------------|-----|---|--------------------|-----------------------------|
| | | | 60.1.3 FOOTING | 60.1.4 PILES | 60.2.1 CAPS | | 60.2.3 COLUMNS | 60.2.4 FOOTINGS | | 60.4.1 CAPS | 60.4.2 BRACING | e vicios i any consultation |
| MATERIAL | 1 | | | | | | STEEL | CONCRETE | *** | | | |
| CONDITION RATIN | g | | | | | . | 6 | 6 | | | | |
| CRACKING (F-M-O | 1 | | l | 1 | 1 | 1 | 1 | F | | I | 1 | l |
| SPALLING (S-L) | - 1 | | | | | - | . | - S | | | | |
| SCALING (L-M-H- | s) [| | ľ | 1 | 1 |] | 1 | L | | 1 | 1 | 1 |
| CORROSION (L-M- | 8) / | | | | | - | | | | | [| |
| PAINT (G-F-P-N- | U) | 1 | 1 | 1 | l | 1 | F | F | | l | 1 | |
| MOVEMENT | - | | | | | | NO | NO | | | | J |
| EROSION | 1 | | L | 1 | 1 | | NO | NO | | ſ | 1 | 1 |
| UNDERMINING | - | | | | | | NO | NO | | | | |
| | 1 Locations - process | 1 | 1 | 1 | land the second | 1 | 1 | | | I | 1 | 1 |

60- SUBSTRUCTURE COMMENTS:

PAGE 4 OF 7 FEDERAL SYSTEM PUERTO RICO HIGHWAY AUTHORITY BRIDGE STUDIES AND EVALUATION OFFICE BRIDGE REINSPECTION & EVALUATION REPORT BRIDGE No.: 01137 51- CHANNEL & CHANNEL PROTECTION : N/A RATING : N CHANNEL COMMENTS: 61.1 CHANNEL SCOUR (EXTENT) : 61.2 EMBANKMENT EROSION (EXTENT) : | CONDITION | FUNCTIONING | TYPE | MATERIAL | RATING | . [] L YES I NO I 61.3 PROTECTIVE DEVICE 61.4 FENDER SYSTEM ---- | |---- ---|-- --|-- ---| 61.5 RIP RAP 61.6 SPUR DIKES, JETTIES | 61.7 OBSTRUCTION (DEBRIS, GROWTHS): 61.8 CHANNEL CHANGE: YES NO DETRIMENTAL: YES NO IF YES, EXPLAIN
61.9 ADEQUATE WATERWAY: YES NO IF NO, EXPLAIN 61.10 SURROUNDING AREA: FLOODING: YES NO IF YES, EXPLAIN EROSION: YES NO IF YES, EXPLAIN 61.11 LOCATION OF PIERS AND/OR ABUTMENTS: DETRIMENTAL: YES NO IF YES, EXPLAIN 61.12 OTHER FEATURES THAT MAY AFFECT STRUCTURE: 62 - CULVERT AND RETAINING WALLS : N/A RATING : N CULVERT COMMENTS: 62.1BARREL 62.2HEADWALL 62.3CUT-OFFWALL 62.4RETAINING WALL MATERIAL. CONDITION RATING PUNCTIONING (Y-N) CRACKING (F-M-O) |-----|-----|------|------| SPALLING (S-L) SCALING(L-M-H-S) |-----|-----|-----|-----| CORROSION(L-M-S) SETTLEMENT (Y-N) |---- ----ALIGNMENT (Y-N) 63- METHOD USED TO DETERMINE OPERATING RATING ... 64- OPERATING RATING : PEDESTRIAN 800 65- METHOD USED TO DETERMINE INVENTORY RATING .. 2 66- INVENTORY RATING : PEDESTRIAN

FEDERAL SYSTEM PUERTO RICO HIGHWAY AUTHORITY BRIDGE STUDIES AND EVALUATION OFFICE BRIDGE No.: 01137 BRIDGE REINSPECTION & EVALUATION REPORT SEVERE CORROSION & LIGHT SECTION LOSS AT WEARING SURFACE DUE TO PONDING. FINE CRACKS, SMALL SPALLINGS & LIGHT SCALINGS AT COLUMNS FOOTINGS PONDING AT STAIRS & REST AREA. 69- UNDERCLEARANCE, VERTICAL & HORIZONTAL: BASICALLY INTOLERABLE REQUIRING HIGH PRIORITY OF CORRECTIVE ACTION. 70- BRIDGE POSTING : N/A N/A REMOTE - GREATER THAN 100 YEARS. SLIGHT - 11 TO 100 YEARS. OCASSIONAL - 3 TO 10 YEARS. FREQUENT - LESS THAN 3 YEARS. INSIGNIFICANT - MINOR INCONVENIENCE. HIGHWAY PASSABLE IN A MATTER OF HOURS. SIGNIFICANT - TRAFFIC DELAYS OF UP TO SEVERAL DAYS SEVERE - LONG TERM DELAYS TO TRAFFIC WITH RESULTING HARDSHIP N/A MATERIAL : 72.2 SLAB OR PAVEMENT CONDITION : CRACKING: F N O SPALLING: L S SCALING: L M H S UNNEVEN: YES NO ROUGH: YES NO SETTLEMENT: YES NO MOVEMENT: APPROACH SLAB-BACKWALL: YES NO BREAKING UP: EXCESSIVE DEFORMATION: SAFETY: HAZARDOUS YES NO DRAINAGE: INADEQUATE: YES NO PONDING: YES NO MOVEMENT: PAVEMENT-APPROACH SLAB: YES NO EMBANKMENT: CONDITION: FUNCTIONING: YES NO EROSION: YES NO IF YES, EXPLAIN N: FLIMSY: YES NO INTEGRITY IMPAIRED: YES NO IF YES, EXPLAIN CONSTRUCTION: FLIMSY: 72.3 UNDESIRABLE IMPACT: YES NO 72.4 JOINTS: TYPE: INADEQUATE: YES NO SATISFACTORY ALIGNMENT: 72.5 GUARDRAIL: TYPE: MATERIAL: CONDITION: 5 GUARDRAIL: TYPE: MATERIAL: CONDITION: FUNCTIONING: YES NO ALIGNMENT: HORIZONTAL: GOOD BAD VERTICAL: GOOD BAD JOINTS: FUNCTIONING: YES NO SAFETY: SECURELY ATTACHED: YES NO PEDESTRIAN HAZARDS: YES NO 72 - APPROACH ROADWAY - COMMENTS:

| | | , |
|--|--|---------------|
| FEDERAL SYSTEM PUB | RTO RICO HIGHWAY AUTHORITY | PAGE 6 OF 7 |
| BRIDGE | STUDIES AND EVALUATION OFFICE | |
| BRIDGE NO. :01137 BRIDGE R | EINSPECTION & EVALUATION REPORT | |
| | | |
| ======PR | OPOSED IMPROVEMENT======= | |
| | | 223 |
| 75- TYPE OF WORK : | | 352 000521 |
| 76- LENGTH OF STRUCTURE IMPROVEMENT : | 52.14 MTS.(171.01 FT.) | 000521 |
| | ===INSPECTIONS========= | |
| | INSPECTIONS | |
| 89- RESERVED | | |
| 90- INSPECTION DATE : | | 0399 |
| 91- DESIGNATED INSPECTION FRECUENCY : | | 24 |
| 92- CRITICAL FEATURE INSPECTION : | | N N N |
| 93- CRITICAL FEAT. INSPECT. DATE: | | |
| FRACTURE CRITICAL UNDERWATER | OTHER | |
| - The state of the | | |
| | =IMPROVEMENT COST======= | |
| vali Aeri | | |
| 94- BRIDGE IMPROVEMENT COST : | N/A | 000000 |
| 95- ROADWAY IMPROVEMENT COST : | N/A | 000000 |
| 96- TOTAL PROJECT COST : | (2.00) (52.14) (825) (0.15) = \$12,905 | 0000193 |
| 97- YEAR OF IMPROVEMENT COST ESTIMATED : | | 1999 |
| | | V |
| ==CLASSIFI | CATION AND STRUCTURE DATA== | |
| 98- BORDER BRIDGE : | | |
| 99- BORDER BRIDGE STRUCTURE NUMBER : | | |
| 100- STRAHNET HIGHWAY DESIGNATION : | IS A DH | 1 |
| 101- PARALLEL STRUCTURE DESIGNATION : | | N |
| 102- DIRECTION OF TRAFFIC : | NOT CARRIED TRAFFIC | 0 |
| 103- TEMPORARY STRUCTURE DESIGNATION : | N/A | |
| 104- HIGHWAY SYSTEM OF THE INVENTORY ROUTE : | NHS | 20 |
| 105- FEDERAL LANDS HIGHWAYS : | | 0 |
| 106- YEAR RECONSTRUCTION : | | 0000 |
| 107- DECK STRUCTURE TYPE : | STEEL PLATE | 5 |
| 108- WEARING SURF. / PROTECT. SYSTEM : N | ONE | 000 |
| 109- AVERAGE DAILY TRUCK TRAFFIC : | 4% (EST) | 04 |
| 110- DESIGNATED NATIONAL NETWORK : | PART OF NNT | 1 |
| 111- PIER OR ABUT. PROTECTION (NAVIGATION) : | N/A | |
| 112- NBIS BRIDGE LENGTH : | | Y |
| 113- SCOUR CRITICAL BRIDGE : | | N |
| 114- FUTURE AVERAGE DAILY TRAFFIC : | | 092073 |
| 115- YR. OF FUTURE A.D.T. : | | 2016 |
| 116- MINIM. NAVIG. VERT. CLEARANCE : | N/A | |
| VERTICAL LIFT BRIDGE : | | |
| 117- SUFFICIENCY RATING : | | |
| 125- PRIORITY RATING: | | 021100 |
| | 11-MAR-1999 | 031199 |
| 130- CRITICAL FRACTURE INSP. DATE: | | |
| ENGINEER :HERIBERTO GONZALEZ | | |
| INGINIAL THEREDORIES CONGRESS | | |
| | | |

| FEDERAL SYSTEM | PUERTO RICO HIGHWAY AUTHORITY BRIDGE STUDIES AND EVALUATION OFFICE | PAGE 7 OF 7 |
|-------------------------|--|-------------|
| BRIDGE NO. :01137 | BRIDGE REINSPECTION & EVALUATION REPORT | |
| AUXILIARY ITEMS | | |
| TYPE: | n | |
| MATERIAL: CONDITION: | | |
| | | in. |
| REMARKS: | | |
| REHABILITATION CO | UNSISTS ON REPAIRING THE DEFICIENCIES DISCUSSED ON | |
| ITEM 57. | | |
| | | |

D.5 August 19, 1996

| PUERTO RICO HIGHWAY AUTHORITY | PAGE 1 OF 3 |
|---|---------------------------|
| BRIDGE STUDIES AND EVALUATION OFFICE | DATE: 08/19/96 |
| BRIDGE REPORT | TIME: 13:59:19 |
| | |
| FEDERAL SYSTEM BRIDGE NO.: 01137 - ROAD NO.: PR 26 - KM. NO. | : 004.070 |
| | |
| ************************************** | |
| 1- STATE : | 721 |
| 2- STATE HIGHWAY DEPARTMENT: SAN JUAN | 01 |
| 3- COUNTY (PARISH) CODE: | 127 |
| 4- PLACE CODE : SAN JUAN URBAN | 76770 |
| 5- INVENTORY ROUTE : | 211000030 |
| 6- FEATURES INTERSECTED : PEDESTRIAN WALKWAY | PEDESTRIAN WALKWAY |
| 7- FACILITY CARRIED BY STRUCTURE : | PR 26 |
| 8+ STRUCTURE NUMBER : | 011371 |
| 9- LOCATION : BALDORIOTY DE CASTRO AVE. | BALDORIOTY DE CASTRO AVE. |
| 10- INV. ROUTE, MIN. CLEAR. (0.01m): | 1609 |
| 11- MILEPOINT : | 004070 |
| 16- LATITUDE : | 18273 |
| 17- LONGITUDE : 66 DEG 03.3 MIN | 066033 |
| 19- EYPASS, DETOUR LENGTH (NEAREST MILE) : | 00 |
| AT LANTING EVAL | |
| 20- TOLL : ON FREE ROAD | 3 |
| 21- MAINTENANCE RESPONSABILITY: D.T.P.W. | 01 |
| 22- OWNER: D.T.P.W. | 01 |
| 26- FUNCTIONAL CLASS. OF INVENTORY ROUTE : URBAN INTERSTATE | 11 |
| Ze- FUNCTIONAL CLASS. OF INVENTURY ROUTE: ORBAN INTERSTRIE | ••• |
| ======AGE AND SERVICE======= | |
| p i | |
| 27- YEAR BUILT : | 1968 |
| 28- LANES ON AND UNDER STRUCTURE : | 0005 |
| 29- A.D.T. OF INVENTORY ROUTE : | 114900 |
| 30- YEAR OF A.D.T. : | 95 |
| ====================================== | |
| 31- DESING LOAD : | 7 |
| 32 APPROACH ROADWAY WIDTH : | 081 |
| 33- BRIDGE MEDIAN : NONE | 0 |
| 34- SKEW ANGLE: NO | 00 |
| 35- STRUCTURE FLARED : NO | 0 |
| 36- TRAFFIC SAFETY FEATURES : | NNNN |
| 37- HISTORICAL SIGNIFICANCE : | 5 |
| 38- NAVIGATION CONTROL : | N |
| 39 NAVIGATION VERTICAL CLEARANCE : NO | 000 |
| 40- NAVIGATION HORIZONTAL CLEARANCE : NO | 0000 |
| 41- STRUCT. OPEN, POSTED OR CLOSED TO TRAFF.: | A |
| 42- TYPE OF SERVICE : PEDESTRIAN OVER HWY. | 31 |
| 43- STRUCTURE TYPE, MAIN : STEEL TRUSS DECK | 309 |
| 44- STRUCTURE TYPE APPR.: | 000 |
| 45- NUMBER OF SPAN IN MAIN UNIT : | 002 |
| 46- NUMBER OF APPROACH SPAN: | 0000 |
| 47- INV. ROUTE, TOTAL HORIZ. CLEARANCE: L=23.59m(77.39ft) R=23.6m(77.4ft) | 774 |
| 48- LENGTH OF MAXIMUM SPAN : | 0077 |
| 49- STRUCTURE LENGTH: | 000171 |
| 50- CURB OR SIDEWALK WIDTHS: | 000000 |
| | |
| | |

| PUERTO RICO HIGHWAY AUTHOR | ייייע איייע | PAGE 2 OF 3 |
|--|---------------------------------------|-------------|
| BRIDGE STUDIES AND EVALUATION | | FAGE 2 OF 3 |
| The state of the s | 90 (100 E006) | |
| FEDERAL SYSTEM BRIDGE NO. : 01137 - ROAD NO. : PR | R 26 - KM. NO.: 004.070 | |
| STRUCTURE DATA | | |
| 51- BRIDGE ROADWAY WIDTH, CURB TO CURB : | 1.64m(5.37ft) | 0054 |
| 52- DECK WIDTH, OUT TO OUT: | 2.00m(6.56ft) | 0066 |
| 53- MI. VERT. CLEAR. OVER BRIDGE ROADWAY: | | 9999 |
| 54- MINIMUM VERTICAL UNDERCLEARANCE : | 5.11m(16'-9") | H1609 |
| 55- MINIMUM LATERAL UDERCLEARANCE ON RIGHT : | 1.19m(3.9ft) | н039 |
| 56- MINIMUM LATERAL UNDERCLEARANCE ON LEFT : | 2.22m(7.28ft) | 073 |
| 8 G. | | |
| CONDITION | | |
| MATERIAL | CONDITION ANALYSIS | |
| 58- DECK STEEL | FAIR CONDITION | 5 |
| 59- SUPERSTRUCTURE STEEL | FAIR CONDITION | 5 |
| 60- SUBSTRUCTURE STEEL | SATISFACTORY COND. | 6 |
| 61- CHANNEL & CHANNEL PROTECTION | N/A | N |
| 62- CULVERT | N/A | N N |
| 64- OPERATING RATING : | 234.23 | 800 |
| 66- INVENTORY RATING : | | 800 |
| THE THE PART WAS A STREET OF THE PART OF T | · · · · · · · · · · · · · · · · · · · | 000 |
| | | |
| 68- DECK GEOMETRY: | | |
| 69- UNDERCLEARANCE, VERTICAL & HORIZONTAL: | | 3 |
| BASICALLY INTOLERABLE REQUIRING HIGH PRIORITY OF CORRECTIVE ACT | TION. | |
| 70- BRIDGE POSTING : | /A | fexes |
| 71- WATERWAY ADEQUACY : | | N N |
| N/A | | |
| 72- APPROACH ROADWAY ALIGMENT : | | N |
| N/A | | |
| =====PROPOSED IMPROVEMENT: | ******* | |
| 75- TYPE OF WORK : REHAI | BILITATION NEEDED | 352 |
| 76- LENGTH OF STRUCTURE IMPROVEMENT: | 171.01 FT.) | 000171 |

PUERTO RICO HIGHWAY AUTHORITY PAGE 3 OF 3 BIRDGE STUDIES AND EVALUATION OFFICE FEDERAL SYSTEM BRIDGE NO. : 01137 - ROAD NO. : PR 26 - KM, NO.: 004.070 89= RESERVED 0896 91- DESIGNATED INSPECTION FRECUENCY : EVERY-24-MONTHS 24 92- CRITICAL FEATURE INSPECTION: NOT NEEDED 93- CRITICAL FEAT. INSPECT. DATE: N/A =======IMPROVEMENT COST====== 000000 000000 000016 96 ==CLASSIFICATION AND STRUCTURE DATA=== 98- BORDER BRIDGE : 99- BORDER BRIDGE STRUCTURE NUMBER : 1 N 0 105- RESERVED 0000 107- DECK STRUCTURE TYPE : STEEL PLATE 5 108- WEARING SURF./ PROTECT. SYSTEM : NONE 000 109- AVERAGE DAILY TRUCK TRAFFIC: 4%(EST) 04 110- DESIGNATED NATIONAL NETWORK : PART OF NNT 1 112- NBIS BRIDGE LENGTH: YES Y 136100 12 117- SUFFTCIENCY RATING: 081696 081696 130- CRITICAL FRACTURE INSP. DATE: 131- EVALUATOR ENGINEER : REMARKS: REHABILITATION CONSISTS ON REPAIRING THE DEFICIENCIES DISCUSSED ON

TTEM 67

D.6 December 22, 1994

| PUERTO RICO HIGHWAY AUTHORITY | PAGE 1 OF 3 |
|--|--|
| HIGHWAY SYSTEM ADMINISTRATION OFFICE | DATE: 12/22/94 |
| BRIDGE REPORT | TIME : 18:46:21 |
| | TIME : (6:46:2) |
| FEDERAL SYSTEM BRIDGE NO. : 01137 ~ ROAD NO. : PR 26 - KM. NO. | : 004.070 |
| | |
| ====================================== | ¥2 |
| 1- STATE : Commonwealth of Puerto Rico | 721 |
| 2- STATE HIGHWAY DEPARTMENT: SAN JUAN | 01 |
| 3- COUNTY (PARISH) CODE: SAN JUAN | 127 |
| 4- PLACE CODE : SAN JUAN URBAN | 76770 |
| 5- INVENTORY ROUTE : | 211000030 |
| 6- FEATURES INTERSECTED : PEDESTRIAN WALKWAY | PEDESTRIAN WALKWAY |
| 7- FACILITY CARRIED BY STRUCTURE: | PR 26 |
| 8- STRUCTURE NUMBER : | 011371 |
| 9- LOCATION : BALDORIOTY DE CASTRO AVE. | BALDORIOTY DE CASTRO AVE. |
| 10- INV. ROUTE, MIN. CLEAR. (0.01m) : | 1609 |
| 11- MILEPOINT : | 004070 |
| 16- LATITUDE : 18 DEG 27.3 MIN | 18273 |
| 17- LONGITUDE : | 066033 |
| 19- BYPASS, DETOUR LENGTH (NEAREST MILE) : STRUCTURE OVER HWY. | 00 |
| 2 | |
| 20- TOLL: ON FREE ROAD | 3 |
| 21- MAINTENANCE RESPONSABILITY: D.T.P.W. | 01 |
| 22- OWNER: D.T.P.W. | 01 |
| 26- FUNCTIONAL CLASS. OF INVENTORY ROUTE : URBAN INTERSTATE | 11 |
| TO THE PARTY OF TH | 1.1 |
| ==cmpmm=====AGE AND SERVICE======= | |
| | |
| 27- YEAR BUILT: | 1968 |
| 28- LANES ON AND UNDER STRUCTURE : | 0005 |
| 29- A.D.T. OF INVENTORY ROUTE : | 109500 |
| 30- YEAR OF A.D.T. : | 93 |
| ========STRUCTURE DATA======== | |
| 31- DESING LOAD : PEDESTRIAN | 7 |
| 32- APPROACH ROADWAY WIDTH : | DB1 |
| 33- BRIDGE MEDIAN : | 0 |
| 34- SKEW ANGLE : | 00 |
| 35- STRUCTURE FLARED: NO | 0 |
| | |
| 36- TRAFFIC SAFETY FEATURES: | NNNN |
| | NNNN 5 |
| 36- TRAFFIC SAFETY FEATURES : | |
| 36- TRAFFIC SAFETY FEATURES: N-N-N-N-N 37- HISTORICAL SIGNIFICANCE: 5 | 5 |
| 36- TRAFFIC SAFETY FEATURES: N-N-N-N 37- HISTORICAL SIGNIFICANCE: 5 38- NAVIGATION CONTROL: N/A | 5 ท |
| 36- TRAFFIC SAFETY PEATURES: N-N-N-N 37- HISTORICAL SIGNIFICANCE: 5 38- NAVIGATION CONTROL: N/A 39- NAVIGATION VERTICAL CLEARANCE: NO | 5 N 000 |
| 36- TRAFFIC SAFETY PEATURES: N-N-N-N 37- HISTORICAL SIGNIFICANCE: 5 38- NAVIGATION CONTROL: N/A 39- NAVIGATION VERTICAL CLEARANCE: NO 40- NAVIGATION HORIZONTAL CLEARANCE: NO | 5 N 000 0000 |
| 36- TRAFFIC SAFETY FEATURES: N-N-N-N 37- HISTORICAL SIGNIFICANCE: 5 38- NAVIGATION CONTROL: N/A 39- NAVIGATION VERTICAL CLEARANCE: NO 40- NAVIGATION HORIZONTAL CLEARANCE: NO 41- STRUCT. OPEN, POSTED OR CLOSED TO TRAFF: OPEN | 5 N 000 0000 A |
| 36- TRAFFIC SAFETY FEATURES: N-N-N-N 37- HISTORICAL SIGNIFICANCE: 5 38- NAVIGATION CONTROL: N/A 39- NAVIGATION VERTICAL CLEARANCE: NO 40- NAVIGATION HORIZONTAL CLEARANCE: NO 41- STRUCT. OPEN, POSTED OR CLOSED TO TRAFF: OPEN 42- TYPE OF SERVICE: PEDESTRIAN OVER HWY. | 5 N 000 0000 A 31 |
| 36- TRAFFIC SAFETY FEATURES: 37- HISTORICAL SIGNIFICANCE: 38- NAVIGATION CONTROL: 39- NAVIGATION VERTICAL CLEARANCE: 40- NAVIGATION HORIZONTAL CLEARANCE: 41- STRUCT. OPEN, POSTED OR CLOSED TO TRAFF: 42- TYPE OF SERVICE: 43- STRUCTURE TYPE, MAIN: STEEL TRUSS DECK | 5 N 000 0000 A 31 309 |
| 36- TRAFFIC SAFETY PEATURES: 37- HISTORICAL SIGNIFICANCE: 38- NAVIGATION CONTROL: 39- NAVIGATION VERTICAL CLEARANCE: 40- NAVIGATION HORIZONTAL CLEARANCE: 41- STRUCT: OPEN, POSTED OR CLOSED TO TRAFF: 42- TYPE OF SERVICE: 43- STRUCTURE TYPE, MAIN: 44- STRUCTURE TYPE APPR: NONE NONE NONE | 5 N 000 0000 A 31 309 |
| 36- TRAFFIC SAFETY PEATURES: 37- KISTORICAL SIGNIFICANCE: 38- NAVIGATION CONTROL: 39- NAVIGATION VERTICAL CLEARANCE: 40- NAVIGATION HORIZONTAL CLEARANCE: 50- NAVIGATION HORIZONTAL CLEARANCE: 50- NO 41- STRUCT: OPEN, POSTED OR CLOSED TO TRAFF: 42- TYPE OF SERVICE: 43- STRUCTURE TYPE, MAIN: 44- STRUCTURE TYPE APPR: 50- NUMBER OF SPAN IN MAIN UNIT: | 5 N 000 0000 A 31 309 000 |
| 36- TRAFFIC SAFETY PEATURES: N-N-N-N 37- HISTORICAL SIGNIFICANCE: 5 38- NAVIGATION CONTROL: N/A 39- NAVIGATION VERTICAL CLEARANCE: NO 40- NAVIGATION HORIZONTAL CLEARANCE: NO 41- STRUCT. OPEN, POSTED OR CLOSED TO TRAFF: OPEN 42- TYPE OF SERVICE: PEDESTRIAN OVER HWY. 43- STRUCTURE TYPE, MAIN: STEEL TRUSS DECK 44- STRUCTURE TYPE APPR: NONE 45- NUMBER OF SPAN IN MAIN UNIT: 002 46- NUMBER OF SPAN IN MAIN UNIT: NONE | 5 N DOO DODO A 31 309 DOO DOO |
| 36- TRAFFIC SAFETY PEATURES: N-N-N-N 37- HISTORICAL SIGNIFICANCE: 5 38- NAVIGATION CONTROL: N/A 39- NAVIGATION VERTICAL CLEARANCE: NO 40- NAVIGATION HORIZORIAL CLEARANCE: NO 41- STRUCT. OPEN, POSTED OR CLOSED TO TRAFF. OPEN 42- TYPE OF SERVICE: PEDESTRIAN OVER HWY. 43- STRUCTURE TYPE, MAIN: STEEL TRUSS DECK 44- STRUCTURE TYPE APPR.: NONE 45- NUMBER OF SPAN IN MAIN UNIT: OOZ 46- NUMBER OF APPROACH SPAN: NONE | 5 N 000 0000 A 31 309 000 002 0000 |
| 36- TRAFFIC SAFETY FEATURES: N-N-N-N 37- HISTORICAL SIGNIFICANCE: | 5 N 000 0000 A 31 309 000 002 0000 774 |

| | PUERTO RICO HIGHWAY AUT | PHORITY | PAGE 2 OF 3 |
|--|--------------------------|-----------------------------|-------------|
| нт | GHWAY SYSTEM ADMINISTRAT | | |
| , ni | GINNI SISIEM ADMINISIAN | | |
| | NO 04427 DOID NO . | : PR 26 - KM. NO. : 004.070 | |
| · FEDERAL SYSTEM BRIDGE | NO. : 01137 - ROAD NO. : | : PR 26 - RM. NO 004.070 | |
| | | | |
| | STRUCTURE DATA | | |
| 51- BRIDGE ROADWAY WIDTE, CURB TO CURB : | | 1.64m(5.37ft) | 0054 |
| 52- DECK WIDTH, OUT TO OUT : | | 2.00m(6.56ft) | 0066 |
| 53- MI. VERT. CLEAR. OVER BRIDGE ROADWAY : | | UNLIMITED | 9999 |
| 54- MINIMUM VERTICAL UNDERCLEARANCE : | | | H1609 |
| 55- MINIMUM LATERAL UDERCLEARANCE ON RIGHT : | | | ноз9 |
| 56- MINIMUM LATERAL UNDERCLEARANCE ON LEFT: | | | 073 |
| 56- MINIMUM LATERAL UNDERCLEARANCE ON LEFT : . | | D.Dom(/, 2012) | |
| | | | |
| | CONDITION- | | |
| | MATERIAL | CONDITION ANALYSIS | |
| , " | | | |
| 58- DECK | STEEL | FAIR CONDITION | 5 |
| 59- SUPERSTRUCTURE | STEEL | FAIR CONDITION | 5 |
| 60- SUBSTRUCTURE | | SATISFACTORY COND. | 6 |
| 61- CHANNEL & CHANNEL PROTECTION | | N/A | N |
| | | N/A | N |
| 62- CULVERT | | 17050-77 | 800 |
| 64- OPERATING RATING : | | | 800 |
| 66- INVENTORY RATING : | | PEDESTRIAN | 800 |
| | | | |
| 68- DECK GEOMETRY : | •••• | | <i>N</i> |
| N/A | | | |
| | | | |
| 69- UNDERCLEARANCE, VERTICAL & HORIZONTAL : . | | | 3 |
| BASICALLY INTOLERABLE REQUIRING HIG | H PRIORITY OF CORRECTIVE | E ACTION. | |
| 70- BRIDGE POSTING : | | N/A | N |
| 71- WATERWAY ADEQUACY : | | | N |
| N/A | | | |
| 72- APPROACH ROADWAY ALIGMENT : | | | p |
| n/A | | | 3 |
| = | ======PROPOSED IMPROVE | ment======= | |
| 75- TYPE OF WORK : | 1 | REHABILITATION NEEDED | 352 |
| 76- LENGTH OF STRUCTURE IMPROVEMENT : | | | 000171 |
| | | | |

PUERTO RICO HIGHWAY AUTHORITY PAGE 3 OF 3 HIGHWAY SYSTEM ADMINISTRATION OFFICE FEDERAL SYSTEM BRIDGE NO. : 01137 - ROAD NO. : PR 26 - KM. NO.: 004.070 ---s----INSPECTIONS-----89- RESERVED 90- INSPECTION DATE : DECEMBER 1994 1294 91- DESIGNATED INSPECTION FRECUENCY: EVERY-24-MONTHS 24 N N N ========IMPROVEMENT COST======= 000000 000000 000013 94 ==CLASSIFICATION AND STRUCTURE DATA== 98- BORDER BRIDGE : 99- BORDER BRIDGE STRUCTURE NUMBER : 101- PARALLEL STRUCTURE DESIGNATION : N/A 0 105- RESERVED 0000 108- WEARING SURF./ PROTECT. SYSTEM : NONE 5 000 04 1 111- PIER OR ABUT. PROTECTION (NAVIGATION) : N/A 112- NBIS BRIDGE LENGTH : YES Y M 136100 12 117- SUPFICIENCY RATING : 121294 121294 130- CRITICAL FRACTURE INSP. DATE : 131- EVALUATOR ENGINEER : REHABILITATION CONSISTS ON REPAIRING THE DEFICIENCIES DISCUSSED ON ITEM 67.

D.7 February 24, 1993

| FUERTO BRIDGE S | RICO HIGHWAY AUTHORITY | FABE | 1 OF T |
|---|--------------------------------------|-------------------|-------------------------------|
| SKIIAE : | SECTION DESCRIPTION OFFICE | ĎA. | TE : 02/24/93 E : 12:16:09 |
| | SKIDDE PERUK! | iji | E + 12:16:09 |
| | | | |
| FEDERAL SYSTEM BRIDGE NO. 1 | 01137- ROAD NO. : PR 26 | -KM, MG, : 004070 | |
| | | | |
| is a superior on | | | |
| 1- STATE : | Commonwealth of Puerto Rico | | - 72 |
| 2- STATE HIGHWAY DEPARTMENT : | SAN JUAN | | Ü |
| - 3- COLANTY (PARISH) CODE ; | SAN JUAN | | 12 |
| #- PLACE CODE: 10 10 | SAN JUAN URBAN | | 7677 |
| / 5- INVENTORY ADDIE I, | 2-1-1-00003-0 | | 21100003 |
| 6- FEASURES INTERSECTED 1 | PEDESTRIAN WALWAY | | FEDESTRIAN WALKERY |
| 7- FACILITY CARRIED BY STRUCTURE : | PR 24 | | Pf. 25 |
| 5- STRUCTURE NUMBER : | 1137 (1 OF 1) | | 01157 |
| 77 ECLECTION 1 | BALDORIOTY DE CASTRO AVE. | | PALDORTUTY DE CASTRO AVI. |
| TOT CHAS ROUTE, PLIN. VERT. ULEAK. (0.01p) ; | 3.11f(10 ~7") | | (40) |
| is milefolm; | 4,07 to the do a set | | 90497 |
| 1- STATE: 2- STATE HIGHWAY DEPARTMENT: 3- COLATY (PARISH) CODE: A- PLACE CODE: | IN INC Z/LO MIN | | (92/ |
| 17 LONDITUDE : 19- RYPASS - DETONS LEMBIU (NEASTET MELE) : | STONETHISE DUES LAW | | 95603 |
| Son This | THE EDGE COAN | | U |
| 21- MAINTENANCE RESPONSABILITY : | 5 T P U | | , · |
| ZZ- OWNER : | D.T.P.N. | | 0 |
| Zo- FUNCTIONAL CLASS, OF INVENTORY ROUTE: | IRBAN INTERSTATE | | 1 |
| 27- YEAR BUILT : | 1968 | | 196 |
| 17- BYTHOD, GETOUR LEWSTH UNEMMEST MILE); 20- TOLL; 21- MAINTENANCE RESPONSABILITY; 22- OWNER; 23- FUNCTIONAL CLASS, OF INVENTORY ROUTE; 27- YEAR BUILT; 28- LAMES ON AND UNDER STRUCTURE; 29- A. D. T. OF INVENTORY ROUTE; 30- YEAR OF A. D. T.; | 00 ON ; OS UNDER | | 900: |
| 29- A. D. T. OF INVENTORY ROUTE : | 95, 400 | | 09547 |
| JO- YEAR OF A, D. T. : | 1990 | | P(|
| 29- A. D. T. OF INVENTORY ROUTE : 30- YEAR OF A. D. T. : 31- DESIGN LORD : 32- APPROACH ROADWAY MIDTH : 33- BRIDGE MEDIAN : 34- SKEN : 35- STRUCTURE FLARED : 35- TRASTIL SAPETY FERTUREE : 35- HASTIRICAL SIGNIFICANSE : 35- MAVIGATION CONTROL : 39- NAVIGATION VERTICAL CLEARANCE : 40- NAVIGATION MOSIZONTAL CLEARANCE : | PEDESTRIAN | | |
| 32- APPROACH ROADWAY WIDTH ; | 24.59m(80.65ft) | | ŏ8. |
| 33- BRIDGE NEDIAN ; | NOXE | | 33 |
| 34- SKEW : | NO | | i) |
| 35- STRUCTURE FLARED : | 140 | | (|
| 36- IRAFFIL SAFE)Y FEATUMES : | N-N-N-N | | WWW |
| 57- RISKATORE SIERIFICANCE (| D West | | i |
| PO SAVIONIES UCHTOS SECONOCI. | 197.41 | | , l |
| OF MAYIGATION MOSIZONTAL CLEARENCE : | . No | | ÚÚ |
| At. OTPHRY DOEN EMOTED OF GLOCK IN THESE | . mmmu | | (A) (A) |
| 10- TYPE OF SERVICE : | FRESTRIAN NUCL NAV | | # 51 |
| N3- STRUCTURE TYPE. MAIN : | SIFFI TRUSS DECK | | W. |
| 19- STAUCTURE TYPE ASPR. : | Market Constitution and Constitution | | |
| 12- TYPE OF SERVICE: 13- TYPE OF SERVICE: 14- STRUCTURE TYPE APPR.: 15- NUMBER OF SPAN IN HAIN UNIT: 15- NUMBER OF APPROACH SPAN: 17- INV. ROUTE, TOTAL HORIZ. CLEARANCE: | 002 | | W. |
| 16- NUMBER OF APPROACH SPAN : | NONE | | 850X |
| 47- INV. ROUTE, TOTAL HORIZ. CLEARANCE: | L=23.59m(77.39ft) R=23.6m(77. | A+t: | 7/4 |
| 48- LENGTH OF MAXIMUM SPAN ; | 23.6m(77.4ft) | | 0073 |
| 49- STRUCTURE LENGTH : | 52.14m(171.01ft) | | 000171 |
| O- CURB OF SIDEWALK WIDTHS : | NDME | | 300000 |
| 51- BRIDGE RDADWAY WIDTM, CURB-TO-CURB : | 1.64m(5.37ft) | | 0054 |
| 2- DECK WIDTH, SUT-10-GUT : | 2.00m(6.56ft) | | 0068 |
| 53- MIN. VERT. CLEAR. OVER BRIDGE ROADWAY: | UMLISITED | | 9999 |
| 4- MINIMUM VERTICAL UNDERGLEARANCE : | 5.11m(16'-9") | | 41609 |
| 55- HINIMUM LATERAL UNDERCLEARANCE EN RIGHT : | 7 - 1974 (S. 99%) | | H034 |

| 5 FORESTS | STOR INTO UNION DATABASET | Name of the O | |
|---|---|--|------------------|
| | RICO HIGHWAY AUTHORITY QDISS AND EVALUATION OFFICE | FAME 2 OF 3 | |
| 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | BRIDGE REPORT | | |
| we w | | | |
| FEDERAL SYSTEM BRIDGE NO. : 0 | 1:37- F04D NO. : FA 23 | -KM. NG. : 00407U | |
| | | | |
| S 10 10 10 10 10 10 10 10 10 10 10 10 10 | MATERIAL | CONDITION ANALYSIS | |
| | 13713 L31.2 F3L | DENDETION PAPELOGO | 42 |
| 59- DSCK | STEEL | SATISHAUTOWY COMO. | 5 |
| 54- SUPERSTRUCTURE 60- SUBSTRUCTURE | STEEL | SATISFACTORY COMS. SATISFACTORY COMO. | 5 6 |
| 61- CHANNEL & CAHRREL PROTECTION | WA | N/A | Ŋ |
| 62- CULVERT | 1/A | MZA | þį |
| 64- OPERATING 66- INVENTORY RATING | PEDESTRIAN PEDESTRIAN | PEDESTRIAN PEDESTRIAN | 600 600 |
| NA ATTENDED HER ATTA | : PMP UTUN | , Editivities | 0.00 |
| 67- STRUCTURAL EVALUATION: DEFLECTION IN FIRST LEVEL. ON MALKWAI TURE ARE FAINTED AND IN ACSPTABLE OR | | I STAIR HAS A LITTLE | Ś |
| ž | | | |
| \$8- DEDK BEOMETRY : | | | Ŋ |
| N/R | | | |
| 69- UNDERGLEARANCE, VERTICAL & HORIZONTAL : | | | Š |
| RASICALLY INTOLERABLE REQUIRING HIGH | PRIORITY OF CORRECTIVE ACTION. | | |
| 70- BRIDGE PROTING : | * | | И |
| We | | | |
| 71- HATTSANAY ACEDUACY : | | | Ņ |
| N/E | | | |
| 72- APPROACH ROADWAY ALIGNMENT I | | | · · |
| N/6 | | | |
| IS- TYPE IF WEST : | NO IMPROVEMENT MESOED | | (M)(j |
| 76- LENKTH OF STRUCTURE IMPROVEMENT : 89- NESSRVED | NO IMPROVEMENT NEEDED N/A | | 00 /156 6 |
| PO- INSPECT ON PAIR : | FERGURAY-24-1973 | | 0273 |
| 91- SESIENATED INSPECTION FRECHENCY : | EVERY-29-HONTHS | | 24 |
| | ROT MEEDELN N/A | | H H K |
| vo seasooms for conclusion and 3 | 292.dt | | |

PUERTO RICO HIGHWAY AUTHORITY 1908 3 OF 5 ERINGE STUDIES AND EVALUATION DEFICE SRIDGE KEPUST FEDERAL BYSTEM BRIDGE MUL : 01137- RDAD MUL : FR 25 - HDM, MG. : 004070 94- BRIDGE IMPROVEMENT COST : 95- KOADNAY IMPROVEMENT COST : 090000 000000 95- TOTAL PROJECT COST : 090000 , 97- YEAR OF IMPROVEMENT COST ESTIMATED : ()O 98- BORDÉR BRIDGE : / 99~ BORGER BRIDGE STRUCTURE WUMBER : 100- DEFENSE HIGHWAY DESIGNATION: 19 A DY 101- PARALLEL STRUCTURE DESIGNATION: N/A 102- DIRECTION OF TRAFFIC: MOT CAR 103- TERFORARY STRUCTURE DESIGNATION: N/A 19 A DH i NOT CARRIED TRAFFIC 0 104- HIGHWAY SYSTEM OF THE INVENTORY ROUTE : INTERSTATE 105- RESERVED 106- YEAR RECONSTRUCTED : REHABILITATE IN 1992 1992 107- DECK STRUCTURE TYPE : STEEL PLATE 108- WEARING BURF. / PROTECT. SYSTEM : MUNE 000 109- AVERAGE DAJLY TRUCK TRAFFIC : 6% 04 110- DESIGNATED NATIONAL MSTWORK : PART OF MY Ţ 111- PIER OR ABUT, PROTECTION (MAVIGATION): N/A 112- MBIS BRIDGE LEMBTH : YE9 113- SCOUR CRITICAL BRIDGES : N/A 114- FUTURE AVERAGE DAILY TRAFFIC : [43, 990 143950 115- YR. OF FUTURE A.D.T. : 2010 3.0 116- MINIM, NAVIG. VERT. CLEARANCE : N/A 117- SUFFICIENCY RATING : 126- FIELD IMSPECTION DATE : 021293 021293 127- INSPECTION EVAL. DATE : 022493 130- CRITICAL FRACTURE IMSP. DATE : 131- EVALUATOR ENGINEER: REMARKS: THIS BRIDGE WAS REMASSILITATED LAST YEAR(1992) AND NO IMPROVEMENT IS MEEDED.

COMMONWEALTH OF PUERTO RICO HIGHWAY AUTHORITY BRIDGE STUDIES AND EVALUATION OFFICE

APPRAISAL OF ITEM 68

| BRIDGE NO | ROAD NO. PR -26_ | KM. NO4.07 |
|-----------|------------------|------------|

| Year | ADT | Sec. | TW | T W Adequate or Inadequate | T W Inadequate By | TW + SH | TW + SH Adequate or Inadequate | TW + SH Inadequate By |
|------|-----------------|------|--------------------|----------------------------------|-------------------------|---------|--------------------------------------|-----------------------------|
| 1990 | 70.000000 00000 | X | Actual = | X | \times | | \times | \times |
| 1950 | -95,400 | | For ADT = | | | | | |
| | | | N/A | Te | Destr's | : au | | |
| 2010 | 143,990 | | Reqd. For ADT = | | | 1 | | |
| | 19139110 | | Rec. PRHA = | | | | | |

√ Adequate x Inadequate

D.8 June 18, 1991

| BRIDGE STUDIES AND EVALUATION OFFICE |
|--|
| PUERTO RICO HIGHWAY AUTHORITY |
| Page 1 of 5 |
| 1 1 3 7 0 0 2 6 0 0 4 0 7 Bridge No. Road No. Km.No. |
| Bridge 140. Road 146. Km.140. |
| |
| BRIDGE INVENTORY |
| |
| |
| IDENTIFICATION |
| Code Position |
| 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 |
| 1. State Code Commonwealth of Puerto Rico 7 2 1 |
| 2. State Highway Department District San Jugar [0] |
| 3. County (Parish) Code San Juan / 2.7 |
| 4. Place Code Urban. 7 6 7 7 0 |
| 5. Inventory Route 2-1-1-00003-0 2110000030 |
| 6. Features Intersected Pedestrian Walkung |
| Pedestrian walkmay |
| 7. Facility Carried by Structure \tag{\mathcal{P.R-26}} |
| PR 26 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 |
| 8. Structure Number 1137 1961 000000000011371 |
| 9. Location <u>Baldonioly de Castro avenue</u> |
| Balldor OTY De Castro AVE |
| 10. Inventory Route, Minimum Vertical Clearance (0.01 m) 5. 1/m(1676) 1609 |
| 11. Milepoint 4.07 0 4 0 7 0 |
| 16. Latitude / 8 Degrees 27.3 Minutes / 8 2 7 3 |
| 17. Longitude 66 Degrees 03.3 Minutes 0 6 0 3 3 1 19. By Pass, Detour Length (Nearest mile) Structure Over Richway 0 0 |
| 19. By Pass, Detour Length (Nearest mile) Structure Over Aughway 0 |
| |
| CLASSIFICATION |
| 20. Toll Lold Liee 3 |
| 21. Maintenance Responsibility D. L. P. W. 01 |
| 22. Owner State Highway Dept. Of |
| 26. Functional Classification of Inventory Route Wrban Interstated [1] |
| |

| | BRI | DGE STUDIES AND EVALUATION OFFICE | Page 2 of 5 |
|----|-------------------|--|-------------|
| | | g · | |
| | | ¥ | 6 5 4 3 2 1 |
| | AG | E AND SERVICE | |
| | 27 | Year Built 1968 | 1968 |
| | 28. | Lanes on the Structure and Under the Structure | |
| | 29. | Average Daily Traffic 93,500 | 033500 |
| | 30. | Year of Average Daily Traffic | 89 |
| | e j _{ee} | | |
| | STR | UCTURE DATA | |
| 10 | 31. | Production . | Ting . |
| | 32. | Approach Roadway Width 24.59%. (80.65) | |
| | 33. | Bridge Median None Open Octobed Closed N | |
| | 34. | Skew | |
| | 35. | Structure Flared Yes No | |
| | 36. | Traffic Safety Features | MNIMM |
| | 37. | Historical Significance | |
| | 38. | Navigation Control Yes No No | |
| | 39. | Navigation Vertical Clearance Yes No | 000 |
| | 40. | Navigation Horizontal Clearance Yes No | 0000 |
| | 41. | Structure, Open, Posted, or Closed to Traffic | |
| | 42. | Type of Service Pedestrian cover Highway | |
| | 43. | Structure Type, Main Steel Louis 19.00 0 | - FAQ |
| | 44. | Structure Type, Approach Spans | 4 00 |
| | 45. | Number of Spans in Main Unit | |
| | 46. | Number of Approach Spans | 2000 |
| | 47. | Inventory Route, Total Horizontal Clearance 'L=23.59\(\frac{1}{2}\)\(\frac{1}{2}\ | 10) 774 |
| | 48. | Length of Maximum Span 23,60m, (77,40) | |
| | 49. | Structure Length 52.34 m.([7].0]) | 000171 |
| | 50. | Curb or Sidewalk Widths L= None R= None | 000000 |
| | 51. | Bridge Roadway Width, Curb-to-Curb / (64 m (537) | 0054 |
| | 52. | Deck Width, Out-to-Out 2.00 m (6.56) | 0066 |
| | 53. | Minimum Vertical Clearance Over Bridge Roadway Unlimited | 9999 |
| | 54. | | N H 1609 |
| | 55. | Minimum Lateral Underclearance on Right H 1.19 m (3.904) R | N 4039 |
| | 56. | Minimum Lateral Underclearance on Left 2.22%(マスタ) | _ 073 |
| | | | |

| 7 | | ž | | |
|-------|---------------------------------------|-----------------------------|--|---|
| BRI | DGE STUDIES AND EVALUAT | ION OFFICE | 10, 344 | Page 3 of 5 |
| | 3 2 | | | 3 2 1 |
| CON | DITIONS RATINGS | | | |
| w w a | 1 . | | | |
| | | Material | Condition | |
| | | · 1 0 | and the second s | |
| | Deck | <u> </u> | Fau Ording | <u> </u> |
| | Superstructure | <u> </u> | MOUNT CAY IS THE | |
| | Substructure | 5leel a Curc. | YOUR CANDINGS | |
| | Channel and Channel Protection | | AHA | |
| | Culverts | Condo | 3 6.71 Car | |
| | Operating Rating Inventory Rating | | L. C. Caix | <u> </u> |
| 00. | miventory Katting | <u> </u> | ** Section No. A. C. | <u> </u> |
| | Ni si | | | |
| APP | RAISAL RATING | | | |
| | | Deficiencies | | |
| | | * | | |
| 67. | Structural Evaluation | Q QPO'SE BOY B | lotorist in Odl and | 3 |
| i. | Kennahad Don | min caund our | 10 6236 - 1233 W | `r: ₂₄ |
| | a wa On A Box, Br | 55 | UKIR Chungaszar. | #. T |
| | Daringal col | 2012-1-64 7 771 1 7 9 | <u> 21 Service (16 1971 de le 1621)</u> c | |
| | · · · · · · · · · · · · · · · · · · · | | | |
| | | | | 200 |
| | - | | | es e |
| | | | | |
| | | | | 3 10 11 |
| | | | | |
| 69 | Deck Geometry | λ 1/ | N The state of the | |
| oa. | Deck Geometry | | | [|
| 69 | Underclearances, Vertical and Ho | prizontal (Vivo do) (277 | Now your that there are to be | 7 |
| | Marine | | | |
| -70. | Bridge Posting | | 1. | 囚 |
| | | h l | <i>A</i> | 14 |
| 71. | Waterway Adequacy | | | \square |
| ¥., . | waterway Accquacy | | | |
| | Approach Roadway Alignment _ | | f===0028 | N |
| | | | 1 | |
| | | | , | |

| BRIDGE STUDIES AND EVALUATION OF | | Page 4 of 5 7 6 5 4 3 2 1 |
|---|---|--|
| PROPOSED IMPROVEMENTS | | |
| 75. Type of Work | (0 h 0 0 8 8 1 0 0 2000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 352 |
| 76. Length of Structure Improvement | 52.14 10 (271.0186) | 000171 |
| e ^E trans | | , |
| | F (4) | * |
| INSPECTIONS | | |
| 89. (Reserved) | June 18, 1991 | Numer |
| | | 0697 |
| 91. Designated Inspection Frequency | . All broundly | 24 |
| 92. Critical Feature Inspection | | |
| A. Fracture Critical Details | | N I I |
| B. Underwater Inspection | | <i>k</i> ' |
| C. Other Special Inspection | · · · · · · · · · · · · · · · · · · · | he |
| 93. Critical Feature Inspection Date | w at | |
| A. Fracture Critical Details B. Underwater Inspection | | |
| B. Underwater Inspection | | |
| C. Other Special Inspection | PV () | |
| | 8 | |
| | | |
| IMPROVEMENT COSTS | * | |
| 94. Bridge Improvement Cost | un' | O 1 2 8 6 6 6 |
| | | |
| 96. Total Project Cost | \$ 10,000 | |
| 97. Year of Improvement Cost Estimated | 1991 | |
| | 3 | |
| CLASSIFICATION AND STRUCTURE DAT | 'A | ACC - 100 CO |
| 98. Border Bridge | | = 2 . 5 |
| 99. Border Bridge Structure Number | | |
| 100. Defense Highway Designation | DH | |
| 101. Parallel Structure Designation | | |
| 102. Direction of Traffic | D x (1) 300 1 3 3 1 2 5 | · "/ |
| 103. Temporary Structure Designation | | |
| 104. Highway System of the Inventory Route | 0 0 0 0 0 1 1 1 1 0 DV | 1 |
| 105. (Reserved) | No comments | (m) |
| | | |

| BRIDGE STUDIES AND EVALUATION OFFICE | Page 5 of 5 6 5 4 3 2 1 |
|--|--------------------------|
| CLASSIFICATION AND STRUCTURE DATA (Cont.) 106. Year Reconstructed | |
| 107. Deck Structure Type Sheel Plate 108. Wearing Surface/Protective System | <u>5</u> |
| 109. Average Daily Truck Traffic 40% 110. Designated National Network PDNN | 04. |
| 111. Pier or Abutment Protection (for Navigation) | |
| 113. Scour Critical Bridges | [V] |
| 115. Year of Future Average Daily Traffic | 10 |
| Vertical Lift Bridge | t-months and |
| Remains. | |
| The reliable to said of the Both of the 101 | ey ; |
| <u>«</u> | , |

| BRIDGE NO | . 1136 | | | | 2 11, 14 | . N. F.A | | 8 |
|-------------|------------------|------|-----------------|-----------------------|------------------|----------|----------------|-----------------------------|
| ROAD NO. | -2 | | км. <u>9-07</u> | | A 100 | MISAL | OF : | |
| ** | | | | | | | | |
| 39 | | | | | | | | |
| n 2 | | | | | | | | |
| 6: | 8 | | | | | î | | |
| | Zi. | | | | | | | |
| | | | BRIDGE | STUDIES | AND | | | |
| • 2 | T. | | EVALUA | TION OF | FFICE | | | 81. |
| - 27 | 3 . | | | | | | | |
| | . 4 | | | | | | | |
| | | | | | | | | |
| · · · · · · | | | | | ~ | | | · |
| YEAR | ADT | Sec. | T W | T W Adequate Or | T W Ina dequa | TW+ SH | Adequate Or | TW + SH Inadequate By |
| 1985 | | X | Actua! ≡ | Indidequale | - By | 1- | Inadequate | Ву |
| 1965 | 34 | | For ADT = | | | | | |
| | | | \$4 93 3\$C 2 | | | Ī | | |
| | | | <u> </u> | | | | | |
| 1995 | | | Regd. For | | + | | | |
| .555 | JP . | | Rec. PRHA E | | | | | |
| | | | | | | | <u></u> | |
| / 4 | J | | 為 | | | p•: | | |
| | dequat e | | | | | | | |
| X in | adequ ate | | | | | | | |

BRIDGE STUDIES AND EVALUATION OFFICE PUERTO RICO HIGHWAY AUTHORITY GENERAL EVALUATION This bridge is basically in structural condition excellent 4 fair very poor adequate 3 poor The load carrying capacity is 3 minimally adequate adequate 2 | inadequate 1 not required (don't print) 0 The recommended modifications will make it adequate 2 minimally adequate 1 | no required (don't print) 0 0 when previous is The bridge should be replaced. Yes (print) 1 not required (don't print) 0 It requires routine inspection every 24 months frequent inspection every B months to monitor (A) = 2 (B) = 24abnormal and/or suspected deficiencies (B) = months frequent inspection every B months to determine the cause of and remedies for existing defects $(A) = 0 \quad (B) = months$ It requires routine maintenance 2 minor repairs and routine maintenance urgent repairs to prevent further costly deterioration and/or the development of a dangerous condition and rountine maintenance emergency repairs to eliminate danger to the public and routine maintenance 0 The deck geometry is For present ADT, the travelled way is For future (2010) ADT, the travelled way is Present Future PRHA Present Future PRHA Deck For PRHA (2010) recommendations, the travelled way is For present ADT, the shoulders are Travelled way Shoulders The future (2010) ADT, the shoulders are For PRHA (2010) recommendations, the shoulders are satisfactory 3 unsatisfactory 2 cannot be evaluated because of lack of information 1 not required (don't print) 1 The A approach alignment is B 00 vertical 1 horizontal 0 horizontal and vertical 2 satifactory minimally tolerable 2 poor and represents a danger to the public 1 not required (don't print) 0 Load Post for inventory rating shown in Item 64 0 Yes I No (don't print) Post for vertical underclearance shown in Items 54 and 69 0 I No (don't print) FOR "REMARKS" SEE BRIDGE FILE. PERSONNEL By Date Structural Inspection Review of Field Data Transfers of Data Condition Analysis

Appraisal

D.9 June 23, 1989

| | Page 1 of 5 | | | |
|-------|---|--|---------------------------------------|--|
| 62.00 | PUERTO RICO HIGHWAY AUTHORITY | m | 11137 | विवयव |
| | 1BM-370 AND 1BM MT/SC ELECTRONIC DATA STORAGE | Card No. | Bridge No. | Road No. |
| | BRIDGE INV | ENTORY | | Km. No. 4.09 |
| IDE | NTIFICATION | | Co | de Positions |
| | 252423222120 | 19 18 17 16 15 14 1 | 3 12 11 10 9 8 | 7 6 5 4 3 2 1 |
| 1. | State | Commonwealth | | 18 (|
| 2. | Highway District | The state of the s | | |
| 3. | Municipality | June | | AL 18 THAT SO DE ADMINISTRAÇÃO DO COMO |
| 4. | City/Town | - (000003- | () 22/21/11 | 100030 |
| 5. | Inventory Route | 1 1 1 al Priva | <i>i</i> | 10000030 |
| 6. | Features Intersected | Carrier 1 | 7 | |
| | "DIEIDIEIST | - 2-6 | 3 12 12 VV 14 1 X 1 | |
| 7. | Facility Carried by Structure 56. | | | 74011132-1 |
| 8. | Structure No. | 5 1000 | In Anie | nul |
| 9. | Location 10 | J act | · · · · · · · · · · · · · · · · · · · | |
| | | | | '°05011 |
| | Inventory Route, Minimum Vertical Clearance (0.01 m | ı) | . 12 | 1400407 |
| 11. | Kilometer Point (0.01 km) | | 25 | • • • |
| 12. | Road Section Number (DOD) | 11575 | | 24F 7 |
| 13. | Bridge Description | | | |
| 14. | Defense Milepoint (0.01 ml) | | 110 | 30081 |
| 15. | Defense Section Length (miles) (0.1 mile) | ٠ ک | | 337789742 |
| 16. | Latitude: | | | * 066033 |
| 17. | Longitude: 6.6. Degrees | Minutes. D | wa. | 44 4 |
| 18. | Physical Vulnerability | Tature Que | r Suprie | 4500 |
| 19. | By Pass, Detour Length (Nearest mile) | | Sie G. | 47個 |
| 20. | Toli | 111 | P.W | 48 1 |
| 21. | Custodian | | | |
| 22. | F.A.P. No. ⁵⁰ | Menicu | meta | |
| - 23. | P.A.P. No. | / (4/5/5/5/5 | | |
| ("1 4 | SSIFICATION | / | | |
| 24. | Unlessale | Urban | | ় ' া তা ক্র |
| 25. | Administrative Adole | | | 12 |
| 26. | Functional Interstate | - Lurbon | | |
| | | | | |

| | 7 | BRIDGE STUDIES AND EVALUATION OFFICE | | |
|---|-------|--|---------------------------------------|--------------------|
| | ATT D | PROTECTION TO THE A COLD | Page 2 of 5 | 49.63 |
| | SIK | UCTURE DATA | 987654 | [3]2[1] |
| | | Year Built | 18 6 | 1800 |
| | 27. | Year Built Lanes on Str | | 005 |
| | 28. | ADT - Inventory Rouse 100,000 (sslimuted). | 23/100 | 1000 |
| | 29. | | · · · · · · · · · · · · · · · · · · · | 20 8 5 |
| | 30. | | | 313 |
| | 31. | Design Load | 32 | 246 |
| | 32. | Approach Roadway width including shoulders (0.01 m) | Closed | California Deviced |
| | 33. | | Closed | 36 00 |
| è | 34. | Skew hand | | 38 |
| | 35. | Structure Flared Yes No | 39 77 | <u> </u> |
| | 36. | Traffic Safety Features | | |
| | 37. | Historical Significance | | , [5] |
| | 38. | Navigation Control Yes No | | (S) 84 |
| | 39. | Navigation Vertical Clearance (0.1 m) Yes Mo | | (000 |
| | 40. | Navigation Horizontal Clearance (0.1 m) Yes No | | <u>ा ा ा</u> |
| | 41 | Structure, Open or Closed to Traffic | | 84 4 |
| | 42. | Type Service fally way . The | use J | ** 311 |
| | 43. | Structure Type-Main | | 3019 |
| | 44. | Structure Type-Approach Spans | | 000 |
| | 45. | No. of Spans-Main | | (CE) 0° |
| | 46. | No. of Spans-Approaches | | 000 |
| | 47. | Total Horizontal Clearance (0.01 m)L= 7.3.5.9. R.= 2.3:60 M | | 121316 |
| | 48. | Max. Span Length (0.01 m) 2.3.60 M | | 736 |
| | 49. | Structure Length (0.01 m) 5.7.14 m. | · · · · · · · · · · · · · · · · · · · | गुंहार्र । |
| | 50. | Sidewalk Widths (0.01 m) Left | ³⁰ 006 | |
| | 51. | Bridge Roadway Width (curb-curb) (0.01 m) | | 1016 |
| | 52. | 1 (III W) | , | 1020 |
| | 53. | Vertical Clearance over Bridge Roadway-Minimum (0.01 m)Mumuled | ′ | 1999 |
| | 54. | Vertical Underclearance - Minimum (0.01 m) | IM | |
| | 55. | Lateral Underclearance on Right (Outer) Sides - Minimum (0.01 m) L # 1.2.7 R | =. !:!?® | |
| | 56. | Lateral Underclearance on Laft (Inne) Sides - Minimum (0.01 m) La 7/2.2 R | = 2.19 | 022 |
| | 57. | Wearing Surface Steel | | 00 团 |
| | | | | j |

| | BRIDGE STUDIES AND EVAL | UATION OFFICE | P 2 65 |
|---|--|---|--|
| CON | NDITION | | Page 3 of 5 |
| 58. 59. 60. 61. 62. 63. 64. | Deck | Condition Analysis Fair Condition 11 11 11 10 10 10 10 10 10 1 | 66 5 4 3 2 1 59 6 60 6 61 6 62 N 63 N 64 7 0 69 N 70 8 0 0 0 |
| APP | RAISAL | D.C. | |
| | Structural Condition Ponding holes or men Seure corression at angles. Mes members. Mederate corresion at est light scalings at footings. Stories will Deck Geometry P. | Verate corrarion at pour | of plates 10 00 mp structural positives when the words |
| | Underclearances-Vert. & Lateral 5:11m). Condition | a equal to present of | lesirable 128 |
| 70. | Safe Load Capacity | <i>f</i> | |
| 71. | Waterway Adequacy | <i>[]</i> | |
| 72. | Approach Alignment | · [] · · · · · · · · · · · · · · · · · · | |
| | | | |
| PRO | POSED IMPROVEMENTS | 0.41.0 | |
| 73. | Year Needed | .1989 | 16 3 9 |
| | Completed | | |
| | Described | ·0. · /- · · · · · · · · · · · · · · · · · · · | |
| 74. | Type of Service | Cil Vilian | 1931912 |
| 75. | | 1 | 000000 |
| | Improvement Length (0.1 m) | | 28 6 |
| | | | |

| | BRIDGE STUDIES AND EVALUATION OFFICE Roadway Width (0.01m) Number of Lanes ADT Year of Estimated ADT Year of Proposed Adjacent Roadway Improvements Prop. Adj. Rdwy Improvements-Type | Page 1 of 5 9 8 7 6 5 4 3 2 1 29 0 0 0 0 20 0 21 3 0 5 8 0 49 5 1 |
|-------------------|---|--|
| co | Total (dollars)\$ | "(বগ্ৰহ) |
| SU | MMARY OF IMPROVEMENT COSTS | |
| 85. | | |
| 86. | Demolition Cost (Dollars) | |
| 87. | Substructure (Dollars) | "[O]O O O O |
| 88. | Superstructure (Dollars) | |
| 89. 90. 91. | Blank | 99 •• @R/\ZK9 • |
| 92. | | "[0]0]0 |
| 93. | | (DIOIO) |
| 3 | Approach Embankment (Dollars) Approach Pavement (Dollars) Approach Guardrail (Dollars) *(Code to nearest thousand dollars) | |
| RE | MARKS The schabilitation consists on repo all deficiencies discussed on item 67 | aur |

| | BRIDGE STUDIES AND EVALUATION OFFICE | Page 5 of 5 |
|----|--|--|
| | GENERAL EVALUATION | |
| | This bridge is basically in structural condition | 18 2 |
| | excelent 4 fair 2 very poor 0 | |
| L | good 3 poor 1 | |
| - | To be described in the control of th | 176 |
| | The load carrying capacity is adequate 3 minimally adequate 2 inadequate 1 not required (don't print) 0 | |
| | | 18 7 |
| | The recommended modifications will make it | |
| L | adequate 2 multiplicary adequate 1 | |
| | 0 when provious is 2 | |
| | | 190 |
| - | The bridge should be replaced. | . |
| L | Yes (print) 1 Not required (don't print) 0 | |
| | 2771 | 20214 |
| 10 | It requires | |
| 3 | routine inspection every $\frac{14}{4}$ months $\boxed{(A) = 2 \mid (B) = 24}$ | (A) (B) |
| | frequent inspection every \textcircled{B} months to $(A) = 1 (B) = \text{months}$ | |
| | momor aphornia and/or suspected deficiences | |
| | frequent inspection every (B) months to determine the cause of and remedies for existing defects (A) = 0 (B) = months | |
| | the cause of and remedies for existing defects [A] = 0 [B] = months | |
| | 1- | 23 2 |
| | It requires | |
| | routine maintenance | |
| | minor repairs and routine maintenance | |
| | urgent repairs to prevent further costly deterioration and/or the development | |
| | of a dangerous condition and routine maintenance emergency repairs to eliminate danger to the public and routine maintenance | |
| | emergency repairs to eliminate danger to the public and touthe mannerable | |
| | The deals geometry in | |
| | The deck geometry is For present ADT, the travelled way is | |
| | For future (1995) ADT, the travelled way is | ************************************** |
| | For PRHA (1995) recommendations, the travelled way is 24 Deck Present Future PRHA Present Future | PRHA |
| | For present ADT, the shoulders are | ජ |
| | | |
| | For PRHA (1995) ADT, the shoulders are Travelled way Shoulders _ | |
| | | |
| | satisfactory 3 unsatisfactory 2 cannot be evaluated because of lack of information 1 | |
| ĺ | not required (don't print) 0 | |
| | The Wanning of slivement is | 31 00 |
| | The Estappioner angular | (A)(B) |
| | C The second of | (O)(E) |
| | satisfactory 3 minimally tolerable 2 poor and represents a danger to the public 1 not required (don't print) 0 | |
| | not required (don't print) 0 | |
| j | Load Post for inventory rating shown in Item 64 | 33 |
| * | Yes 1 No (don't print) 0 | |
| | To 1 To (dan eparaty) | TAFI |
| | Post for vertical underclearance shown in Items 54 & 69 | 34 |
| | Yes 1 No (don't print) 0 | |
| | | |
| | For "Remarks" see bridge file. | |
| | PERSONNEL By / Date | Date / |
| | Structural Inspection (12) Condition Analysis / Figure 2 | 12 -8/18/39 |
| | Review of Field Data Appraisa | |
| | Fransfer of Data IBM MT/SC file | |
| | IBM - 370 fle | |
| | | (4.4) |

| ANDGE NO | 1137 | | | | APPR | NISAL | OF I | TEM 6 |
|-------------|---------|------|---------------------------------|------------------------------|---------------------------|----------|---------------------------------------|------------|
| ROAD NO. | 2-6 | 1 | KM. 4.07 | | | Y | | |
| 12 2 2 2 | | | | | | | | |
| 1 | E 10 | | * | | | | | |
| | | | O CONTROL DANS POST OF PROPERTY | | | | | |
| ** | | | BRIDGE ST | | | | | |
| | | | EVALUATION | UN UN | FIUE. | | | |
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| | Ĭ | | | | | | | |
| | | | | | €6 | | | |
| YEAR | ADT | Sec. | TW | T W Adequate Inedsauch | T W I na dequate By | TW+SH | TW+SH Adequate or Incdequate | Inadecuate |
| 1005 | 17/1 | X | Actual # | X | \times | | X | $>\!\!<$ |
| 1985 | WIA | | For ADT = | | | ~ | | N-2-4 |
| | | | | 1 | | | | |
| | | | | | | | | |
| 1005 | 13/1 | | Read. For . | | | go, a | | |
| 1995 | 10/10 | | Rec. PRHA B | | , mare | | gentlen v | enter no |
| | | | <u> </u> | | | <u> </u> | | , |
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| | stoupeb | | | | | | | 95 gt |

D.10 July 28, 1987

| | - REC | (3, | | |
|---|---|---------------------------------------|--|--|
| | BRIDGE STUDIES AND EN | VALUATION OF | FICE | Page 1 of 5 |
| | PUERTO RICO HIGHWAY AUTHORITY IBM370 AND IBM MT/SC | | 1137 | 0026 |
| | ELECTRONIC DATA STORAGE | 4 No. | Bridge No. | Road No. |
| | BRIDGE INVE | NTORY | ő | Km. No. 4.07 |
| IDE | NTIFICATION | | Co | de Positions |
| | 252423222120 | 19 8 7 6 5 4 | 3 12 11 10 3 8 | 7 6 5 4 3 2 1 |
| 1. | State | Commonwealth | of Puerto Rice | 10 7 2 1 |
| 2. | Highway District Lan Juon | | | 13 0 / |
| . 3. | Municipality | | | 3063 |
| 4. | City/Town | | 92 | 180063 |
| | Inventory Route | 103-0 115-1211111 | | 1000030 |
| 6. | Features Intersected | acres of | | |
| | PEDEST. | | ALKWAY | |
| 7. | Facility Carried by Structure ⁵⁶ | | | 74 |
| 5000 | Structure No | A A maked | / | 7°011131711 |
| 9. | Location 10 | ce Casera c | ruenue | |
| | | | | 10 0 0 0 0 |
| 10. | Inventory Route, Minimum Vertical Clearance (0.01 m) | · · · · · · · · · · · · · · · · · · · | ? * // | '°05777 |
| 11. | Kilometer Point (0.01 km) | | | 100407 |
| 12. | Road Section Number (DOD) | | .) | '! <u> </u> |
| 13. | Bridge Description | | $\overset{\circ}{,}\overset{,}\overset{\circ}{,},$ | |
| 14. | Defense Milepoint (0.01 mł) | | اج | |
| 15. | Defense Section Length (miles) (0.1 mile) | / / | | 131.121.21.21 |
| 16. | Latitude: | . Minutes | | 30 01/10/018/21 |
| | Longitude: | | | |
| 18. | Physical Vulnerability | Trusting of | P. Chiefin | |
| 19. | -,,,,,,,,, | Toll has | | 473 |
| 20. | Toll | 10 7 0 11 | | ************************************** |
| 21. | | | | |
| 22. | Owner Stat | e riighway Depari | | |
| · 23. | F.A.P. No | | | |
| CL | ASSIFICATION | | | |
| 100000000000000000000000000000000000000 | | Urban | | 1002 |
| 25 | Administrative | | | 10 (77) |
| 26 | Fed. Aid System Administrative Functional Administrative Administrative Functional | | | 134/ |
| 20. | A MARKON MARKET A R. S. | | | |

| | BRIDGE STUDIES AND EVALUATION OFFICE | |
|------|---|--------------------|
| | | Page 2 of 5 |
| К | RUCTURE DATA | 1911 9 3 4 3 2 1; |
| 2.7. | Year Built | 100800 |
| 28. | Lanes on Str | 180005 |
| | 100,000 (aslimated) | 23 100000 |
| 30 | Year Design Load 24.5 9 M | 28 8 5 |
| 31. | Design Load Pollstran | |
| 32. | Approach Roadway width including shoulders (0.01 m) | Larie |
| 33. | Median None Open | Closed |
| 34. | Skew | 36 00 |
| 35. | Structure Flared Yes No | |
| 36. | Traffic Safety Features | ³⁹ NNNN |
| 37. | | |
| 38. | Navigation Control Yes No | |
| 39. | Transpacion / Transpacion | 47000 |
| 40. | | ⁸⁰ 0000 |
| 41 | Structure, Open or Closed to Traffic | |
| 42. | Type Service | |
| 43. | | |
| 44. | Structure Type-Approach Spans | |
| 45. | | 130000 |
| 46. | No. of Spans-Approaches | |
| 47. | Total Horizontal Clearance (0.01 m) L = .23.59 m. R = 23.60 m . | 20 02 36 |
| 48. | Max. Span Length (0.01 m) 23.60 m face to face. Structure Length (0.01 m) 52.14m | 84000621 |
| 49. | Structure Length (0.01 m) | 3000000 |
| 50. | 1.64 m | 300076 |
| 51. | Bridge Roadway Width (curb-curb) (0.01 m) | 400620 |
| 52. | Deck Width (out-out) (0.01 m) | / |
| 53. | | n •• 05/1/ |
| 54. | | |
| 55. | Lateral Underclearance on Right (Outer) Sides - Minimum (0.01 m) L # .127.11. R # | , |
| 56. | New | |
| 57. | . Wearing Surface | المسكسا ويبيونون |

| | BRIDGE STUDIES AND EVAL | LUATION OFFICE | Dono 2 +55 |
|-----|--|--|--|
| JI. | NDITION | | Page 3 of 5 |
| | Material | Condition Analysis | 987654321 |
| 58. | Deck Steel | Fair cond | ation 596 |
| 59. | Superstructure . Atech | . Javr con | dition 606 |
| | Substructure Steel | Gandrally Good | Condition 812 |
| 61. | Channel & Channel Protection J. J. | J. /!.J/ | 62 |
| 62. | Culvert & Retaining Walls | C.M | 63 🕢 |
| 63. | Estimated Remaining Life | 10 years | ······································ |
| 64. | Operating Rating | Pedeolrian | 66 800 |
| 65. | Approach Alignment | NA | |
| 66. | Inventory Rating | Padestran. | 70 PO P |
| | | | |
| APP | PRAISAL | | 200 |
| | , a | Deficiencies | |
| 67. | Structural Condition Synt corneron at steel | plate. The struct | tive was pointed 10 Z |
|) | recently. Fine crackings, small spellings o | ind light consider at | factings and |
| | adjusted repectively | .,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | |
| 68. | Deck Geometry | J | |
| | | Y. O | 1 |
| 69. | Underclearances-Vert. & Lateral . (5:11m). Condulum. | equal to present d | lasurable 12 8 |
| | Ordera | | |
| 70. | Safe Load Capacity | | |
| | | k (f) | |
| 71. | Waterway Adequacy | | |
| | | · · · · · · · · · · · · · · · · · · · | |
| 72. | Approach Alignment | · · · J · · / / / / / / / / / / / · · · · | |
| | | O. Toucasa. | |
| | · | | |
| PRC | POSED IMPROVEMENTS | 1987 | 16[2] |
| 73. | Year Needed | | |
| | Completed | • • • • • • • • • • • • | |
| | Described | Jan de la companya della companya della companya de la companya della companya de | |
| | Type of Service | abelitation | 19 3 7 2 |
| 75. | Type of work | j / Comment | |
| 76. | Improvement Length (0.1 m) | 11·1/2·14···· | 28 0 0 0 0 0 |
| 77. | Design Loading | $\mathcal{A}, \mathcal{A}, \mathcal{U}, \dots$ | |

| | BRIDGE STUDIES AND EVAL | LUATION OFFICE | Pa | ige kot⇒ | |
|------|---|--|---|-------------|--|
| | | | [9] 8] 7] 6 [5] | 4] 3[2]1] | |
| | 7 | 100 | | 00000 | |
| | , Roadway Width (0.01m) | 10 00 | | **C***T**** | |
| 79 | | | | | |
| 80 | ADT | 1995 | | *10151 | |
| 81 | Year of Estimated ADT | 7 | NJI | | |
| . 82 | 2 | overneats | c 18 | | |
| 83 | Prop. Adj. Rdwy Improvements-Type | | | "[2] | |
| CO | ST OF IMPROVEMENTS | | 100 | | |
| | 1 | // | | * | |
| 84 | Total (dollars)\$ | \$3,000.00 | ••ি | 0003 | |
| | Estimated Design Time (months) | | | | |
| | | 32 | 2 | ** | |
| SU | MMARY OF IMPROVEMENT COSTS | | | .5% | |
| | a g | | | | |
| 85 | Preliminary Engineering (Dollars) | | | **[D[0] · | |
| 86 | Demolition Cost (Dollars) | | ******************* | * 000 0 | |
| 87 | Substructure (Dollars) | | 57 💽 | 0000 | |
| 88 | Superstructure (Dollars) | The same of the sa | ** O |) [0] 0] • | |
| 89 | 200 Ta | | | 67 | |
| 90. | Date of Last Inspection | august 25 | 1987 1981 | 21518151 • | |
| 91. | Rehabilitate Existing Structure (Dollars) | \$3,00 | 10.0 | ग्गावाडा । | |
| 92. | | | *************************************** | 77 [0] 0] 0 | |
| 93. | Approaches (Dollars) | | ************************************** | •0 6010 | |
| | Approach Embankment (Dollars) | ., | | (alata) | |
| | Approach Pavement (Dollars) | | ********* | | |
| 20 | Approach Guardrail (Dollars) | | | | |
| | *(Code to nearest thousand dollars) | | | | |
| | | | | | |
| RE | MARKS TO DATA | · · | · 41. | 26 | |
| | deficiencias described on | compres in repo | in the | 12 | |
| | defectancing described on | clem no 63 | <i>6</i> | | |
| | U | ······ | *********** | | |
| | | | *********** | | |
| | | ····· | | | |
| | | 100 | | | |

| € IDGE STUDIES AND EVALUATION € FICE GENERAL EVALUATION | Page 5 of 5 |
|--|--|
| this bridge is basically in . 3 structural condition excelent 4 fair 2 very poor 6 good 3 poor 1 | 18[3] |
| The load carrying capacity is | 7 |
| The recommended modifications will make it O adequate 2 minimally adequate 1 not required (don't print) 0 0 when provious is 2 | 19 0 |
| The bridge should be replaced. Yes (print) 1 Not required (don't print) 0 | 19 |
| It requires . LCL | 20 2 2 (4) |
| routine inspection every 24 months $\bigcirc = 2 \bigcirc = 24$ | |
| frequent inspection every (f) months to monitor abnormal and/or suspected deficiencies (A) = 11(b) = months | (A) (B) |
| frequent inspection every (B) months to determine | |
| the cause of and remedies for existing defects [A = 0]05 = months | |
| It requires | -23[2] |
| routine muintenance | - Com |
| minor repairs and routine maintenance | |
| urgent repairs to prevent further costly deterioration and/or the development | |
| of a dangerous condition and routine maintenance emergency repairs to eliminate danger to the public and routine maintenance | |
| The state of the s | CONSIDERATION AND THE CONTRACTOR OF THE CONTRACT |
| The deck geometry is | • |
| For present ADT, the travelled way is O For future (1995) ADT, the travelled way is | |
| For PRHA (1995) recommendations, the travelled way is 24 Deck Present Parket Present Future | TPRHA] |
| For present ADT, the shoulders are | G |
| For luture (1995) ADT, the shoulders are | |
| For PRHA (1995) recommendations, the shouldors are | com-universal |
| satisfactory 3 unsatisfactory 2 cannot be evaluated because of lack of information 1 not required (don't print) 0 | |
| The Aapproach alignment is | 31 00 |
| O vertical 1: horizontal 0 bonzontal and sertical 2 | am |
| B satisfactory 3 minimally tolerable 2 poor and represents a danger to the public 1 not required (don't print) 0 | 0 |
| | |
| Load Post for inventory rating shown in Item 6.4 Yes 1 No (don't print) 0 | 33 [0] |
| Post for vertical underclearance shown in literas 54 & 69 | 34 5 |
| Yes 1. No (don't print) 0 | Bossessel |
| For "Remarks" see bridge file. | oblika Polisiaka kalikalia Beratura ngkaperanta ka Pirentikalia |
| PERSONNEL (). 30 \ / Base | D. Chr. T. The Month of Walders |
| Structural Inspection Condition Analysis 7/28/87 Condition Analysis | Don's |
| Review of Field Data Organization Approximated | 8/25/87 |
| HOW PAS/NU THE | t a a new has the endurate international process of a management of the second |
| 184-370 Mg | AND THE PROPERTY OF THE PROPER |
| | |

| | ROAD NO. | | 26 | км. 4.07 | | b21 1 1 | AISAL | W/- | I EW | • |
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| | * | a i | | BRIDGE S | | | | | | |
| | N v | | | EVALUAT | ION O | FFICE | | | | |
| | • | 9 E | | | | | | | | |
| | | ı | | EF. | | | | | | |
| | | Notes | | | | | | | | |
| | YEAR | ADT | Sec. | TW | T W Adequate | T W Inadequate | W. C. | TWASH | TWYSH | |
| - | ······································ | | | C+Bitment management problems and the property of the property | moderande | Ву | a Tan | Incassure | Indoedrate | ים יאין |
| | 1985 | N.A. | | Actual 3 | | | | \geq | | 1 |
| ŀ | | | | For ADTE | | | | | | |
| | | N.A. | | | | | | | A To prince of manufacture of the contract of | 1 |
| L | | 70070- | | | | | | | | |
| | 1995 | 110 | | Regd. For ADT = | | State and the state of the stat | | Ī | September 10 and 10 | |
| | | N.A. | | Rec. PRHA 5 | | *************************************** | | | | • |
| | | A CONTRACTOR OF THE PROPERTY O | the state of the s | A CONTRACT OF THE PROPERTY OF | 1 | *************************************** | | The same of the sa | | ĺ |

D.11 April 21, 1986

| | BRID | GE STUDIES AND EV | ALUATION OF | FICE | Page 1 of 5 |
|----------|---|---|---------------------------------------|---|---------------------|
| er er oa | PUERTO RICO HIGHW IBM—370 AND IBM M ELECTRONIC DATA S | r/sc | | ZZZ Bridge No. | 0026 Road No. |
| | | BRIDGE INVEN | TORY | | Km. No. <u>4.07</u> |
| IDE | NTIFICATION | | | Co | de Positions |
| IDE. | NHERATION | 25242322212019 | 18171615141 | | |
| | State | E O E TIE O I E O I E | Commonwealth | of Puerto Rice | 10721 |
| 3 | Highway District | JAN JURIE | | | 13 0 / |
| 3. | Municipality | SHA JUNI | | | |
| 4. | City/Town | - 10 mm & 1 11 21 10 | | | 18 0 0 6 3 |
| 5. | Inventory Route | | az-a | 22 2 / | 700030 |
| 5. 6. | Features Intersected | a supplier of | w. 18 M/k | CONY. | |
| u. | | | 12 11 10 | ALKUAY | |
| 7. | n 6 : 11 61 56 | gh fle - Land | P | | |
| 0 | Cteniatura Ma | 1/0/ | 4 / | .,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | 740//37/ |
| 9. | Location 10. ZALDEA | 19.74. P.C. CA | iárrio | A. CENUE | |
| | | NO. NO. AND ADDRESS OF THE CONTROL OF T | | | |
| 10. | Inventory Route, Minimum Verti | cal Clearance (0.01 m) | | <i>(. (</i> | |
| 11. | Kilometer Point (0.01 km) | | | | 0 09 012 |
| 12. | Road Section Number (DOD) . | | | | 00/2/5/- |
| 13. | Bridge Description | DH N575 | | | تلتا"، |
| 14. | Defense Milepoint (0.01 ml) | | | | 0262 |
| 15. | Defense Section Length (miles) (|),1 mile) | 2.4 | | |
| 16. | Latitude: /8 | Degrees 27.3 | Minutes | | · * V 8 2 7 3 |
| 17. | Longitude: 66 | Degrees . 9.3.3 | . Minutes | | 066000 |
| 18. | Physical Vulnerability | I 7 e e/ | 14105 | | |
| 19. | By Pass, Detour Length (Nearest | mile) Traverte | ie dre | Allow from | |
| 20. | Toll | 1 8 6 hours 1 7 1 | $C \subset C$ | | |
| 21. | | | | | |
| 22. | Owner | State | Highway Depar | rtment | |
| 23. | F.A.P. No. 50 | (BA) N | | | |
| | | | | ie. | |
| CL | ASSIFICATION | Turren stor | () () () () () () | 82 el al | 1002 |
| 24. | ASSIFICATION Fed. Aid System Administrative | the state | | ¥777 | 12/ |
| 25. | Administrative | Town one | · · · · · · · · · · · · · · · · · · · | | 13/7/ |
| 26. | Functional | ent = 1. s. f. S. S. S. S. | 47 | | |
| | | | | | |

| | BRIDGE STUDIES AND EVALUATION OFFICE |
|------|---|
| STR | UCTURE DATA Page 2 of 5 |
| 3110 | 9 8 7 6 5 4 3 2 I |
| 27. | Year Built 166800 |
| 28. | Lanes on Str |
| 29. | ADT – Inventory Rouse |
| 30. | Year |
| 31, | Design Load |
| 32. | Approach Roadway width including shoulders (0.01 m) |
| 33. | Median |
| 34. | Skew |
| 35. | Structure Flared |
| 36. | Traffic Safety Features |
| 37. | Historical Significance |
| 38. | Navigation Control |
| 39. | Navigation Vertical Clearance (0.1 m) |
| 40. | Navigation Horizontal Clearance (0.1 m) |
| 41 | Structure, Open or Closed to Traffic |
| 42. | Type Service Here 3.7 21000 Gut B. highway |
| 43. | Structure Type-Main |
| 44. | Structure Type-Approach Spans |
| 45. | No. of Spans-Main |
| 46. | No. of Spans-Approaches |
| 47. | Total Horizontal Clearance (0.01 m)L= . 2.007. R= |
| 48. | Max. Span Length (0.01 m) 23.60 f.ACE 76 f.ACE |
| 49. | Structure Length (0.01 m) |
| 50. | Sidewalk Widths (0.01 m) Left Right |
| 51. | Bridge Roadway Width (curb-curb) (0.01 m) |
| 52. | Deck Width (out-out) (0.01 m) |
| 53. | Vertical Clearance over Bridge Roadway-Minimum (0.01 m) UNG INCOME ** [2] [2] |
| 54. | Vertical Underclearance - Minimum (0.01 m) |
| 55. | Lateral Underclearance on Right (Outer) Sides - Minimum (0.01 m) L = |
| 56. | Lateral Underclearance on Left (Innex) Sides - Minimum (0.01 m) L 7 |
| 57. | Wearing Surface |
| | |

| Page 3 of 5 | | BRIDGE STUDIES AND EVAL | UATION OFFICE | |
|--|---------|--|---------------------|--------------------|
| Material See Deck Condition Analysis See Neuroly Good Condition 55 Superstructure Superstructure Superstructure Condition Analysis See Neuroly Good Condition 55 Superstructure Supe | CON | NDITION | | Page 3 of 5 |
| 58. Deck 59. Superstructure 60. Substructure 61. Channel & Channel Protection 62. Culvert & Retaining Walls 63. Estimated Remaining Life 64. Operating Rating 65. Approach Alignment 66. Inventory Rating 67. Structural Condition 70. Substructure 68. Deck Geometry 69. Underclearances-Vert. & Lateral Condition 70. Safe Load Capacity 71. Waterway Adequacy 72. Approach Alignment 73. Year Needed Completed Described 74. Type of Service 75. Superstructure 66. Inventory Rating 77. Service 78. Service 78. Service 79. Service | COI | | Condition Analysis | 9 8 7 6 5 4 3 2 1 |
| 59. Superstructure 60. Substructure 61. Channel & Channel Protection 62. Culvert & Retaining Walls 63. Estimated Remaining Life 64. Operating Rating 65. Approach Alignment 66. Inventory Rating 67. Structural Condition 67. Structural Condition 68. Deck Geometry 69. Underclearances-Vert. & Lateral Condition 69. Underclearances-Vert. & Lateral Condition 70. Safe Load Capacity 71. Waterway Adequacy 72. Approach Alignment 73. Year Needed 74. Type of Service 74. Type of Service 75. Service 76. Service 76. Service 77. Service 77. Service 78. Service 79. Servi | 58. | 2-5-1 | | col Constiller 597 |
| 60. Substructure 61. Channel & Channel Protection 62. Culvert & Retaining Walls 63. Estimated Remaining Life 64. Operating Rating 65. Approach Alignment 66. Inventory Rating 67. Structural Condition 68. Deck Geometry 68. Deck Geometry 69. Underclearances-Vert. & Lateral Condition 70. Safe Load Capacity 71. Waterway Adequacy 72. Approach Alignment 73. Year Needed 74. Type of Service 74. Type of Service 75. Culvert & Channel Condition 76. Structural Condition 76. Service Service 76. Structural Condition 77. Structural Condition 78. Structural Condition 79. Safe Load Capacity 70. Safe Load Capacity 71. Waterway Adequacy 72. Approach Alignment 73. Year Needed 74. Type of Service | 59. | Superstructure | | // // 60 7 |
| 61. Channel & Channel Protection 62. Culvert & Retaining Walls 63. Estimated Remaining Life 64. Operating Rating 65. Approach Alignment 66. Inventory Rating 67. Structural Condition 68. Deck Geometry 68. Deck Geometry 69. Underclearances-Vert. & Lateral Condition 69. Underclearances-Vert. & Latera | | AND THE PROPERTY OF THE PROPER | | |
| 62. Culvert & Retaining Walls 63. Estimated Remaining Life 64. Operating Rating 65. Approach Alignment 66. Inventory Rating 67. Structural Condition 68. Deck Geometry 69. Underclearances-Vert. & Lateral Condition 69. Underclearances-Vert. & Lateral Con | | and the second s | | 62 |
| 63. Estimated Remaining Life 64. Operating Rating 65. Approach Alignment 66. Inventory Rating 66. Inventory Rating 67. Structural Condition 68. Deck Geometry 69. Underclearances-Vert. & Lateral Condition 70. Safe Load Capacity 71. Waterway Adequacy 72. Approach Alignment 73. Year Needed 74. Type of Service 74. Type of Service 75. Approach Structural Condition 76. Completed 76. Deck Geometry 76. Deck Geometry 77. Proposed Improvements 78. Year Needed 78. Completed 78. Deck Geometry 79. Completed 79. Deck Geometry 70. Safe Load Capacity 71. Value was proposed for the condition of | | 1 6 8 | | 63 |
| 64. Operating Rating 65. Approach Alignment 66. Inventory Rating 66. Inventory Rating 67. Structural Condition 67. Structural Condition 68. Deck Geometry 68. Deck Geometry 69. Underclearances-Vert. & Lateral 69 | | | ····/5. | 4.6 P.R.L. 64 715 |
| 65. Approach Alignment 66. Inventory Rating APPRAISAL 67. Structural Condition Manager and property is perfectly and property 68. Deck Geometry 69. Underclearances-Vert. & Lateral Condition about to Pressure property 70. Safe Load Capacity 71. Waterway Adequacy 72. Approach Alignment 15. PROPOSED IMPROVEMENTS 73. Year Needed Completed Described. 74. Type of Service 68. Deck Geometry 19. 10. | 460 200 | The state of the s | Peberraini | 66 8 00 |
| APPRAISAL 67. Structural Condition Almer Management is Deficiencies 68. Deck Geometry 69. Underclearances-Vert. & Lateral Conditions about to Prosperty Described and Structural Conditions and Stru | | | | 69 |
| APPRAISAL 67. Structural Condition Medical Manual Temperature is Deficiencies 68. Deck Geometry Mid pountains 69. Underclearances-Vert. & Lateral Conditions & | | | | 70@ 85 |
| Deficiencies 67. Structural Condition First D. Meretrong, 1947 from the first planter is from the control of the formula of the formula of the formula of the formula of the first planter of the fi | | , | | |
| 68. Deck Geometry 69. Underclearances-Vert. & Lateral Conditions about to Present Decimes and Partial 2 70. Safe Load Capacity 71. Waterway Adequacy 72. Approach Alignment 13 PROPOSED IMPROVEMENTS 73. Year Needed Completed Described 74. Type of Service | APP | RAISAL | | |
| 68. Deck Geometry 69. Underclearances-Vert. & Lateral Condition a world to Present de contract anné àvol 2 70. Safe Load Capacity 71. Waterway Adequacy 72. Approach Alignment 15 PROPOSED IMPROVEMENTS 73. Year Needed Completed Described. 74. Type of Service | | Section Control Contro | Deficiencies | |
| 68. Deck Geometry 69. Underclearances-Vert. & Lateral Condition a world to Present de contract anné àvol 2 70. Safe Load Capacity 71. Waterway Adequacy 72. Approach Alignment 15 PROPOSED IMPROVEMENTS 73. Year Needed Completed Described. 74. Type of Service | 67. | Structural Condition MINION NININTEMAN | ct is ne doing | <i>U</i> |
| 69. Underclearances-Vert. & Lateral Condition about to Present Described 2018 113 12 13 12 14 14 15 15 15 16 16 16 16 17 18 18 18 18 18 18 18 18 18 18 18 18 18 | | SHUD blacking MAIN MOLINTING. | | |
| 69. Underclearances-Vert. & Lateral Condition about to Present Described 2018 113 12 13 12 14 14 15 15 15 16 16 16 16 17 18 18 18 18 18 18 18 18 18 18 18 18 18 | | | | |
| 69. Underclearances-Vert. & Lateral Condition about to Present Described 2018 113 12 13 12 14 14 15 15 15 16 16 16 16 17 18 18 18 18 18 18 18 18 18 18 18 18 18 | 68. | Deck Geometry | /H | "2 |
| 70. Safe Load Capacity 71. Waterway Adequacy 72. Approach Alignment PROPOSED IMPROVEMENTS 73. Year Needed Completed Described. 74. Type of Service | | | | |
| 70. Safe Load Capacity 71. Waterway Adequacy 72. Approach Alignment PROPOSED IMPROVEMENTS 73. Year Needed Completed Described. 74. Type of Service | 69. | Underclearances-Vert. & Lateral Conditions Chu. | al to passery does | MARKE CAMERINIEZ |
| 71. Waterway Adequacy 72. Approach Alignment PROPOSED IMPROVEMENTS 73. Year Needed Completed Described. 74. Type of Service | | | | |
| 71. Waterway Adequacy 72. Approach Alignment PROPOSED IMPROVEMENTS 73. Year Needed Completed Described. 74. Type of Service | 70. | Safe Load Capacity | | |
| PROPOSED IMPROVEMENTS 73. Year Needed Completed Described. 74. Type of Service | | | | |
| PROPOSED IMPROVEMENTS 73. Year Needed Completed Described. 74. Type of Service | 71. | Waterway Adequacy | , f. A | ¹⁴ 位 |
| PROPOSED IMPROVEMENTS 73. Year Needed | | | x. x. f. x. x. x. i | N |
| PROPOSED IMPROVEMENTS 73. Year Needed | 72. | Approach Alignment | . / | |
| 73. Year Needed 1984 16 16 16 16 16 16 16 16 16 16 16 16 16 | | · | | |
| 73. Year Needed 1984 16 16 16 16 16 16 16 16 16 16 16 16 16 | | | | |
| Completed Described. 74. Type of Service Type of Service | | | and a second of | |
| Described. 74. Type of Service | 73. | Year Needed | 1.9.8.4 | 1680 |
| 74. Type of Service | | Completed | | |
| 74. Type of Service | | Described | | |
| 75. Type of Work | 74. | Type of Service | 47.48 | 18 |
| | 75. | Type of Work | 72.4.760 L | |
| 76. Improvement Length (0.1 m) | 76. | Improvement Length (0.1 m) | /. <u>./.l.</u> | 220000000 |
| 77. Design Loading | 77. | Design Loading | T. ! | 28 |

| B B | | |
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| BRIDGE STUDIES AND EVALUATION OFFICE | Page 1 of 5 | |
| | 987654321 | |
| X A | 29 0 P C | |
| 78., Roadway Width (0.01m) | n and | |
| 79. Number of Lanes | | |
| 80. ADT | শহর | |
| 81. Tear of Estimated AD1 | | 100 |
| 82. Year of Proposed Adjacent Roadway Improvements | 43 E | 10 |
| 83. Prop. Adj. Rdwy Improvements-Type | 3 | |
| COST OF IMPROVEMENTS | | 40 |
| 100000 | 46(1) | |
| 84 Total (dollars)\$ / C. CO O - GO | | |
| Estimated Design Time (months) | | |
| SUMMARY OF IMPROVEMENT COSTS | e e | |
| 85. Preliminary Engineering (Dollars) | 31 <u>///</u> | • |
| 86 Demolition Cost (Dollars) | 54 2 2 | * |
| 87. Substructure (Dollars) | 57 @ \$ | * |
| 88. Superstructure (Dollars) | •2 7 8 8 8 C | |
| 89. Blank | .67 | • |
| OO Dete of Last Ingression | 60 06/01/01 | ·09-06-86 |
| 01 Pahabilitata Existing Structure (Dollars) | •t•@Z@ | • |
| 92 Detour and Traffic Maintenance (Dollars) | | |
| 93. Approaches (Dollars) | <u>্বেল্</u> | |
| Approach Embankment (Dollars) | W () | |
| Approach Pavement (Dollars) | | |
| Approach Guardrail (Dollars) | | |
| *(Code to nearest thousand dollars) | | |
| 5 | 35 | |
| REMARKS | | |
| RENNICITATION CONCINT of | | |
| MAINTEHANCE, SHAD GENETING HELD, | 2 <u>M.E.C. (1</u> 7995) | |
| 1 | | |
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| BRIDGE N | o. | 1000 | | | C. alban M. et al. | | |
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| ROAD NO. | | <u> </u> | KM, | | APF. AISAL | . OF | ITEM S |
| n | | | | | | | |
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| | 13 | | BRIDGE | | | | 1 |
| | " II | | EVALUA | TION OF | FFICE | | |
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| ž • | 2 " | | | | | | |
| | | | | | | | |
| | | T | <u> </u> | (TW | τw | Trw+3 | HITW + SH] |
| YEAR | ADT | Sec. | ΤW | Adequate or inackersale | Ina dequate TW + SH By | Adequa | ie Inacequate ce By |
| 1985 | | X | Actual ≡ | X | | X | |
| 1960 | na | | For ADT = | | | | |
| | | | | | | 1 | |
| | | | | | E | | S. Committee |
| 1995 | -ua | | Regd. For ADT ≡ | | | | |
| 1555 | 8100 | | Rec.PRHA = | | | Ì. | THE SECTION AND ADDRESS AT CO. |
| <u>-</u> | | | | | | | |
| / a | | | 196 | | | | 10 |
| | dequate | | | 65 | | | |
| X Ir | adequate | | | | | | |

| GAIDGE STUDIES AND EVALUATION GENERAL EVALUATION | Page 5 of 5 |
|---|--|
| This bridge is basically in structural condition excelent 4 fair 2 very poor 0 good 3 poor 1 | 16 3 |
| The load carrying capacity is | 170 |
| The recommended modifications will make it adequate 2 minimally adequate 1 not required (don't print) 0 0 when previous is 2 | '● Ø |
| The bridge should be replaced. Yes (print) 1 Not required (don't print) 0 | i • 👩 |
| routine inspection every 24 months frequent inspection every (B) months to monitor abnormal and/or suspected deficiencies frequent inspection every (B) months to determine | **2 <u>21</u> 4 A B |
| the cause of and remedies for existing defects [A) = 0 [B] = months | |
| routine maintenance minor repairs and routine maintenance urgent repairs to prevent further costly deterioration and/or the development of a dangerous condition and routine maintenance emergency repairs to eliminate danger to the public and routine maintenance | 23 |
| The deck geometry is | PRHA 31 D AVB |
| Load Post for inventory rating shown in Item 64 Yes 1 No (don't print) 0 | 53 🕝 |
| Post for vertical underclearance shown in Items 54 & 69 Yes 1 No (don't print) 0 | 34 |
| For "Remarks" see bridge file. | |
| PERSONNEL Structural Inspection Review of Field Data Transfer of Data | Date () () () () () () () () () (|

| et so | BRIDO | GE STUDIES AND E | VALUATION | OFFICE | Page 1 of 1 |
|--------------|--|----------------------|----------------|------------------|----------------------|
| | PUERTO RICO HIGHWAY IBM — 370 AND IBM MT/S ELECTRONIC DATA STO | SC | Card No | b. Bridge | No. Road No. |
| | | ROUTE UNDER S | TRUCTURE | | Km. No |
| | | | | Cod | le Positions |
| IDENTIFICA | ATION | 25 24 23 22 2 | 120 19 18 17 1 | 5 5 4 3 2 1 | 10 9 8 7 6 5 4 3 2 1 |
| 5. Invento | ry Route | | | | 10 0 |
| 6. Feature | s Intersected | | | | |
| * | | 9 | | | |
| 8. Structu | re No | | | | 440 |
| 10. Invento | ry Route, Minimum Vertica | al Clearance (0.01 m |) | | 50 |
| 11. Kilome | ter Point (0.01 km) | ***** | | | 54 |
| 12. Road S | ection Number (DOD) | | | | 59 |
| 13. Bridge | Description | | | | |
| 14. Defense | Milepoint (0.01 m) | | | | 6.6 |
| 15. Defense | Section Length (miles) (0. | 1 mile) | | | 70 |
| 19. By Pass | , Detour Length (Nearest m | ile) | | | |
| CLASSIFICA | ATION | | | | |
| | d System | | | | 75 |
| | strative | | | | وسينم ودود |
| 26. Function | onal | | | | 78 |
| | | | | | |
| STRUCTUR | E DATA | | | | |
| 29. ADT – | Inventory Route | | | | 10 0 |
| | | | | | |
| | orizontal Clearance (0.01 m | | | | |
| | , | | | | |

D.12 July 16, 1975

| | The state of the s | | Averages a sensitive and a sensitive | |
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| | BRIDGE STUDIES AND E | VALUATION OF | FICE | Page 1 of 5 |
| | PUERTO RICO HIGHWAY AUTHORITY 1BM-370 AND IBM MT/SC | | 7/37 | 0000 |
| | ELECTRONIC DATA STORAGE | Card No. | Bridge No. | Road No. |
| | BRIDGE INVE | ENTORY | 12 | Km. No. n.a. |
| IDE | NTIFICATION | | Co | de Positions |
| | 252423222120 | | | |
| 1. | State | Commonwealth | of Puerto Rico | |
| | Highway District | | | |
| | Municipality | James | | |
| 4. 5 | City/Town | <i>to</i> | 22 / 8 | 000000 |
| 5. 6. | Features Intersected | | | |
| 0. | 31 PR 26 | | | |
| 7. | Facility Carried by Structure 56 Pedentsian. | . Walkgray | | |
| 8. | Structure No | e of dr | re | · 10///31/7/2 |
| 9. | Location 10 Baldonioty & Co | natio Ale | | |
| | | , / | | |
| 10. | Inventory Route, Minimum Vertical Clearance (0.01 m) | Unlie | mited | '°2992 |
| 11. | Kilometer Point (0.01 km) | · · · Mra. | | 19 0 0 0 0 |
| 12. | Road Section Number (DOD) | | | |
| 13. | Bridge Description | | | |
| 14. | Defense Milepoint (0.01 ml) | D.H | | 30 1 |
| 15. | Defense Section Length (miles) (0.1 mile) | 4.H | | 33/18/22/3 |
| 16. | Latitude: | 7. Minutes | | 38 0 6 6 6 6 7 8 8 9 8 9 8 9 8 9 8 9 8 9 8 9 8 9 8 9 |
| 17. | Physical Vulnerability | Minutes | | 44 🔀 |
| 18. | By Pass, Detour Length (Nearest mile) | Acres He | sheery . | |
| 19. 20. | Toll No. tall. for | road o | m bridge | 473 |
| 21. | Custodian DTP44 | | | 48 |
| | Owner | | tment | 49 |
| 23. | F.A.P. No. 50 | | | |
| | | | | |
| CLA | SSIFICATION | , | | |
| 24. | Fed. Aid System Fed. March. | . curlance | | |
| 25. | Administrative STATE Functional Library R | | · · · · ingj · · · · · · · · · · · · · · · · · · · | |
| 26. | Functional | 11457425. | colonal. | |
| | | | | |

| BRIDGE STUDIES AND EVALUATION OFFICE | |
|--|--|
| | Page 2 of 5 |
| STRUCTURE DATA | 9 8 7 6 5 4 3 2 1 |
| 27 Van Pailt 1968 | 15 68 00 |
| 27. Year Built | The state of the s |
| 28. Lanes on Str | 23 000000 |
| 29. ADT – Inventory Route | 2900 |
| 30. Year | 31 |
| 31. Design Load Pedestrian | |
| 32. Approach Roadway width including shoulders (0.01 m) | Closed |
| 33. Median | |
| 34. Skew None | 38 |
| 33. Structure Plated | . 20 [. 7 . 7 . 7 . 7 . 7 |
| 36. Traffic Safety Features | |
| 37. Blank | |
| 38. Navigation Control | |
| 39. Navigation Vertical Clearance (0.1 m) | |
| 4() Navigation Horizontal Clearance (0.1 iii) | |
| 41. Structure, Open or Closed to Traffic | |
| 42. Type Service Pedestrian oner Highum | |
| 43. Structure Type-Main Steel Types Deck | |
| 44. Structure Type-Approach Spans | |
| 45. No. of Spans-Main | |
| 46. No. of Spans-Approaches | |
| 47. Total Horizontal Clearance (0.01 m)L=/.62.R= | 2002#3 |
| 48. Max. Span Length (0.01 m) | |
| 49. Structure Length (0.01 m) | 30 00000 |
| 50. Sidewalk Widths (0.01 m) Left Right | |
| 51. Bridge Roadway Width (curb-curb) (0.01 m) | |
| 52. Deck Width (out-out) (0.01 m) | |
| 53. Vertical Clearance over Bridge Roadway-Minimum (0.01 m) | · · · · · · · · · · · · · · · · · · · |
| 54 Vertical Underclearance — Minimum (0.01 m) | 77 |
| 55 Lateral Underclearance on Right (Outer) Sides – Minimum (0.01 m) L = 1.24. | R= /:/9 |
| 56. Lateral Underclearance on Right (Outer) Sides – Minimum (0.01 m) L = 1.32. | R = ./ ./3 |
| 57. Wearing Surface S. T. cel . H. Jalo | |
| | |

| 32 | BRIDGE STUDIES AND EVAL | UATION OFFICE |
|------------------------------|---|--|
| CONDITIO | N. | Page 3 of 5 |
| | Material | 9 8 7 6 5 4 3 2 1 Condition Analysis |
| | # F. O., | Good land NE N 598 |
| 59 Supers | tructure Heel., | Man 2 614 60 7 |
| 60. Substr | ucture 5/66/ | Marie . A. J. 16 f 6 1 |
| | el & Channel Protection | |
| 62. Culver | t & Retaining Walls | 63W |
| 63. Estima | ted Remaining Life | 15.48.015 |
| 64. Operat | ing Rating | Coffeen Walkway 66 800 |
| 65. Appro. | ach Alignment | Caleston Company and a service of the Company of th |
| 66. Invent | ory Rating | Getinge Markenay "0000 |
| | 25 E | |
| APPRAISA | L | |
| 107 | 7 -7 | Deficiencies |
| 67. Structi | ural Condition Moderath. corressen a | |
| | | |
| | Geometry | |
| | 8 | |
| | clearances-Vert. & Lateral (5:19.74) Superior. | to precent desirable criteria 12 19 |
| | clearances-Vert. & Lateral (2:11.76) 3.4 greener. | |
| 70 0-6-1 | oad Capacity | N A 13 M |
| | oad Capacity | |
| 71 Weter | way Adequacy | N. 4. |
| /I. Water | vay Auequacy | <u> </u> |
| 72 Annro | ach Alignment | 1/1/ |
| 72. Applo | dell Alignment | |
| | | |
| PROPOSEI | IMPROVEMENTS | |
| 73 Year N | Needed | |
| Comp | leted | |
| | | |
| 74. Type o | be | way |
| 75. Type o | of Work Reliabilitation | 19272 |
| | vement Length (0.1 m) | |
| | Loading | |

| | BRIDGE STUDIES AND EVALUATION OFFICE | Page 4 of 5 |
|-------|--|---------------------------------------|
| | A second | 987654321 |
| 78. I | Roadway Width (0.01 m) | 290000 3300 |
| 70 1 | Sumber of Lones | |
| 90 | ADT | |
| 81 | Year of Estimated ADT | 43[5] |
| 82. | Year of Proposed Adjacent Roadway Improvements | 4500 |
| 83. | Prop. Adj. Rdwy Improvements-Type | · · · · · · · · · · · · · · · · · · · |
| | | |
| COST | OF IMPROVEMENTS | 46 0 0 0 0 5 * |
| 84. | Total (dollars) \$ 3,000 | |
| | Estimated Design Time (months) | |
| | | |
| SUM | MARY OF IMPROVEMENT COSTS | 51000 * |
| 85. | Preliminary Engineering (Dollars) | 54000 * |
| 86 | Demolition Cost (Dollars) | 57222222 |
| 87. | Substructure (Dollars) | 620000 * |
| 88. | Superstructure (Dollars) | 67[8] * |
| 89. | Blank | 68 003 * |
| 90. | Rehabilitate Existing Structure (Dollars) . 3, 900 | 71000 * |
| 91. | Detour and Traffic Maintenance (Dollars) | 74 0 0 0 * |
| 92. | Approaches (Dollars) | |
| | Approach Embankment (Dollars) | |
| | Approach Pavement (Dollars) | |
| 81 | Approach Guardrail (Dollars) | |
| | (* Code to nearest thousand dollars) | 10071675 |
| 93. | (* Code to nearest thousand dollars) Date of Last Inspection | |
| | and the second s | |
| RE | MARKS | |
| 1 | Rehabilitation (Item so) should includes; a) Romaco. structual stool by means of wine brush or. muthat and the motodian of it with pai | 1. 14. 195 ton 1.11. |
| | stroggent stool by means of wind brush or | any in the vertices |
| • | . milket and the protocol of so westing | , y . y . y . x . x y . |
| | . D. any strodulal clearly, of were | |
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| | . 9 | maxamadise est |
| ¥" | *************************************** | |

| BR. JE STUDIES AND | EVALUATION OF E | Page 5 of 5 |
|--|---|--------------------------------------|
| GENERAL EV | | rage 5 cm |
| This bridge is basically in structural condition excelent 4' fair 2 very poor 0 | | 16 |
| good 3 poor 1 | | |
| The load carrying capacity is | | 170 |
| | not required (don't print) 0 | |
| ni ded different milledge it | | 180 |
| The recommended modifications will make it | lon't print) 0 | |
| 0 when previous | us is 2 | |
| The bridge should be replaced. | | 190 |
| Yes (print) 1 Not required (don't print) 0 | | |
| t requires | | 20//2 |
| routine inspection every 24 months | | |
| frequent inspection every (B) months to | (A) = 1 (B) = months | (A) (B) |
| monitor abnormal and/or suspected deficiencies frequent inspection every (B) months to determine | A) - I [W] - months | |
| the cause of and remedies for existing defects | (A) = 0 (B) = months | |
| 14 manuface 2 | | 23 Z |
| routine maintenance | 3 | |
| minor repairs and routine maintenance | | |
| urgent repairs to prevent further costly deterioration and/or the of a dangerous condition and routine maintenance | development | |
| emergency repairs to eliminate danger to the public and routine | maintenance | |
| The deck geometry is | Deck Present Future PRHA Present F Travelled way Shoulders cause of lack of information 1 | Outure PRHA |
| | | 31 00 |
| (A) vertical 1 horizontal 0 horiz | contal and vertical 2 | (A)(B) |
| B = satisfactory 3 minimally tolerable 2 poor not required (don't print) 0 | and represents a danger to the public 1 | |
| Load Post for inventory rating shown in Item 66 Yes 1 No (don't print) 0 | | 33 0 |
| 1 540.60 | | 340 |
| Post for vertical underclearance shown in Items 54 & 69 Yes I No (don't print) 0 | | |
| For "Remarks" see bridge file. | 30 | |
| PERSONNEL. Structural Inspection Review of Field Data Transfer of Data Transfer of Data Transfer of Data | Condition Analysis Appraisal IBM MT/SC file | 1-15-76 sco 1-26-26 no 3-30-76 |

| BRIDGE NO. | N 1000-100-100-100-100-100-100-100-100-10 | | «M | | APPR | ISAL | OF I | TEM (|
|------------|---|--------------------|--------------------|----------------------------|-------------------------|-------|--------------------------------------|-----------------------------|
| ROAD NO. | 10 | · | (W | | | | | |
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| | ű. | BRIDGE STUDIES AND | | | | | | |
| YEAR A | * 7 | | EVALUATION | | | | | |
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| , | E | | | | 8 | | | |
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| / | 1 | ÷ 5. | | | | | | |
| YEAR | ADT | Sec. | тw | T W Adequate or Inadequate | T W Inadequate By | TW+SH | TW+SI- Adequate or Inadequa | TW + SH Inadequate By |
| 1970 | | \boxtimes | Actual ≡ | \times | \times | 0 W | \times | \geq |
| 13.0 | N: #3 | 58 | For ADT≡ | | | 000 | 48 | n |
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| 1990 | | | Regd. For ADT ≡ | | | | | |
| | | | Rec. PRHA ≣ | | | | | |
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| W28 | | | 2 | | | | | |
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| | BRIDG | E STUDIES AND EV | ALUATION OFF | ICE | Page 1 of 1 |
|---|---|------------------|---|--|------------------|
| 級 | PUERTO RICO HIGHWAY IBM 370 AND IBM MT/S ELECTRONIC DATA STOR | C | Card No. | Bridge No. | 0026 Road No. |
| 55. | | ROUTE UNDER ST | RUCTURE | * 1 | Km. No. 4.07 |
| ٠. | | | | Code Positio | ns |
| 110 | NTIFICATION | 25/24/23/22/21 | ومايم العال عالماله | 4 3 2 1 10 9 8 1 | 7 6 5 4 3 2 1 |
| | Inventory Route . P.R. 26 | | | | 000260 |
| | Features Intersected P. | | | | |
| O. | reatures intersected | 19 18 17 17 16 | E 1113 4 | | 11111 |
| 8 | Structure No. | | une of or | 4 | 40//37/ |
| 10. | Inventory Route, Minimum Vertical | | 1/ | | |
| 11. | Kilometer Point (0.01 km) | | The same and the same and the same of the | Month to the the total and the state of the second | 5400407 |
| 12. | Road Section Number (DOD) | | | | 5900255 |
| 13. | Bridge Description | | | | 64 22 6 |
| 14. | Defense Milepoint (0.01 m) | | | | 660262 |
| 15. | Defense Section Length (miles) (0.1 | 1,50 | | | 70081 |
| 19. | By Pass, Detour Length (Nearest mil | | | | |
| | | 10 10 00 NO | 6 | | |
| CL. | ASSIFICATION | | No. | | |
| 24. | Fed. Aid System | Fed and a | e-Cear | | 75 / |
| 25. | Administrative | | F | | |
| 26. | Functional Uk | ban. Inla | 1.000. Av. | Torical | 7843 |
| | e e | 15 9 | | · · · · · · · · · · · · · · · · · · · | 12 |
| 100000000000000000000000000000000000000 | RUCTURE DATA | 10.0 | | 92 | |
| | ADT - Inventory Route | | | | 086550 |
| | Year | | | | 16 70 |
| 47. | Total Horizontal Clearance (0.01 m) | L=/0: | 6 R ; | · | 18073 |
| | | | | | 2 |
| | | | | | 18 |

D.13 November 13, 1972

| e Sp. 188 | | HARRIS IB | OMMONWEALTH IGHWAY AUTHO M-370 AND IBM LECTRONIC DAT | RITY MT/SC | | | Card No. | Page 1 of /// 3 7 Bridge No | Z. P. 14C | 由 |
|--------------|-------------|--|---|---------------|-------------|-------|-----------|-------------------------------|---------------|---------------|
| | | | BRID | GE INVE | NTORY | | | | Km. No | 5. 春本 |
| | IDE | NTIFICATIO | N . | | | | | | Code Positio | |
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| 1 | | | trict | | | | | | | |
| | | Company of the Compan | trict | | | | | | 15 | 063 |
| | | | | | | | | | 18 | |
| 11 | 4. | City/Town | oute | 1000 | D. /. | HAD. | 15850 5 | 1 25 g q q q | | + 1 + 1 + 1 o |
| | | | ersected P.K | | | | | | I O TO TO TO | 1000 |
| | 6. | Features Inte | ersected / A | < | | 71 1 | · · · · · | · · · · · · | · · · · · · · | · · · · |
| | _ | | 150 | Pada | two is | 16. | | | | |
| | | 14-15-15-16-16-16-16-16-16-16-16-16-16-16-16-16- | ried by Structure | | 10140 N. 91 | | | | 74 0 / | / 27 / |
| Perch | | | 1 By Gem | | | | | | / | 431/1/ |
| Cecco | - 9. | | | / / | | | | D9/01/01/01.9 | de . C45.// | ۵., |
| 11 | 24.0 | | oute, Minimum Ve | | | | | tal | 10 | 9999 |
| (act) | | | oute, Minimum Vo | | | | | 11,784 | - American | 6 10 16 16 |
| | | | n Number (DOD) | | | | | | | COOP |
| | | | n Number (DOD) | | | | | | | 1 5 5 |
| | | | aption | | 1 | 1 ' | 2 | | 7/ | 0000 |
| | | | epoint (0.01 m) . tion Length (miles | | - | / 1 | , , | | 30 | 000 |
| 17 | | | De | | | | | , | | 8270 |
| | | | De | | | | | | | 6.031 |
| | | | nerability . 5.7 | | | | | | | 1 4 |
| | | | our Length (Near | | | | | | | 00 |
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| | | F.A.P. No. | | | | | | | | |
| | | SSIFICATIO | | | | | | | | |
| | 24. | Fed. Aid Sys | stem | | NA. | | | | | . 10 16 |
| | 25. | Administrati | ive | <i>e</i> | | , | | 20 120 120 120 12 15 C | | A |
| | 26. | Functional | (Pede | STOVAN | . walk | (way) | N.A | h | | 13 6 6 |
| | | | | | | | | | | |

| | 11376 | Page 2 of 4 |
|-------------|--|--|
| STR | CUCTURE DATA (3) - 1137(| 9 8 7 6 5 4 3 2 1 |
| 27. | Year Built | 156800 |
| 28. | Lanes on Str | 190008 |
| 29. | ADT - Inventory Route. N.A | 23 4 6 6 6 6 |
| 30. | Year | |
| 31. | Design Load Pedestaian | |
| 32. | Approach Roadway width including shoulders (0.01 m) . MA | |
| 33. | | Closed |
| 34. | Skew | |
| 35. | | |
| 36. | | |
| 3 7. | | |
| 38. | THE SAME SAME STATE OF THE SAM | |
| . 39. | | 42 00 0 |
| 40. | | 45 0000 |
| 41. | Relief Structures | |
| 42. | Type Service Pedestoian . area highway | |
| 43. | Structure Type-Main Steel deck Truss | |
| 44. | Structure Type-Approach Spans Nan E | |
| 45. | No. of Spans—Main | · · · · · · · · · · · · · · · · · · · |
| 46. | No. of Spans-Approaches | |
| 47. | Total Horizontal Clearance (0.01 m) L.= | |
| 48. | Max. Span Length (0.01 m) | |
| 49. | Structure Length (0.01 m) | |
| 50. | Sidewalk Widths (0.01 m) Left Right | |
| 51. | Bridge Roadway Width (curb-curb) (0.01 m) | |
| 52. | Deck Width (out-out) (0.01 m) | · · · · · · · · |
| | and the second s | 48 05 19 |
| | Vertical Underclearance – Minimum (0.01 m) | |
| | Lateral Underclearance on Right (Outer) Sides – Minimum (0.01 m) L= ./2 Lateral Underclearance on Left (Median) Sides – Minimum (0.01 m) L= ./2 | The state of the s |
| | Wearing Surface | |
| 37. | weating Surface | |
| | • | |
| | | |
| | | |
| | H SAN COLOR OF THE | • |

| | m.11 | | Page 3 of 4 |
|---|---|--------------------|--|
| CONDITION | | | 9 8 7 6 5 4 3 2 1 |
| Material | | Condition Analysis | |
| 58. Deck 5 tea/ | | MINOR I. F.M. | of 59 7 |
| 59. Superstructure . Tee/ | | Minar Ism | £ |
| 60. Substructure Stee/ | | GCNRN. | |
| 61. Channel & Channel Protection / A. | | | 62 |
| 62. Culvert & Retaining Walls . NA | | | 63 [// |
| 63. Estimated Remaining Life | /oars | | 64 20 |
| 64. Operating Rating Peoo | ESTRIAN LO | ADING | 66 8 0 0 |
| 65. Approach Alignment | | | 69 // |
| 66. Inventory Rating | STRIPH LOND | DING | 70 8 0 0 |
| | | | 4 |
| APPRAISAL | 9 | | |
| 67. Structural Condition . Meeds . p. | | | Deficiencies |
| Some Jaiot | 1 1d and 1 | | |
| | | | <i>39</i> · · · · · · · · · · |
| 68. Deck Geometry | | ΝΑ- | |
| os. Deck decimenty | | | |
| 69. Underclearances-Vert. & Lateral $\%$ = 5. | | 111011100 | |
| equals. recommended (PA | HA) (100.7 | Section | enc. wiath. |
| 70. Safe Load Capacity | (III.) (I.7.9.6.). | , Jer (1941 . W) 2 | 13147 |
| 29 | | | The second secon |
| 71 Watarway Adagagay | | | THE ATTENDED TO THE |
| 71. Waterway Adequacy | | | |
| 72 Approach Alimmant | | | |
| 72. Approach Alignment | | | |
| | * | | |
| PROPOSED IMPROVEMENTS | 170 | | 10 |
| 73. Year Needed | | | |
| Completed | | | |
| Describe | 4 | | |
| 74. Type of Service Pede | SUSON. | | 18 3 |
| 75. Type of Work Rely | | | |
| 76. Improvement Length (0.1 m) | 0 / / | | |
| 77. Design Loading | Medestrica | | |
| 9 | | | |
| HARRIS | | | |

| | 1 | Page 4 of 4 |
|-----|-----|---|
| | | 987654321 |
| | 78. | Roadway Width (0.01 m) |
| | 79. | Number of Lanes |
| | 80. | ADT |
| | 81. | Year of Estimated ADT |
| | 82. | |
| | 83. | Prop. Adj. Rdwy Improvements—Type |
| | | |
| | | T OF IMPROVEMENTS |
| , | 84. | Total (dollars) \$ |
| 5 | SUM | MARY OF IMPROVEMENT COSTS |
| 8 | 85. | Preliminary Engineering (Dollars) |
| 8 | 86. | Demolition Cost (Dollars) |
| . 8 | 87. | Substructure (Dollars) |
| 8 | 88. | Superstructure (Dollars) |
| 8 | 89. | Priority Letter |
| 9 | 90. | Rehabilitate Existing Structure (Dollars) |
| • | 91. | Detour and Traffic Maintenance (Dollars) |
| 9 | 92. | Approaches (Dollars) |
| | | Approach Embankment (Dollars) |
| | | Approach Pavement (Dollars) |
| | | Approach Guardrail (Dollars) |
| | | (*Code to nearest thousand dollars) |
| | Re | emarks |
| | • | Rehabilitation should include replacing |
| | m | issing bolts & sabety pins and also painting. |
| | * | |
| | ٠ | |
| | • . | |
| ı | | |
| | | ERSONNEL By Date By Date |
| | St | ructural Inspection 5. M. Rodgers . 11/13/72 . Condition Analysis K. Sheh . 3/29/33 |
| | | opographic Survey |
| | | eview of Field Data |
| | Tr | ansier of Data |
| | | |

| | 100 | | | | |
|--|--|---|---|-----------------|----------------------------|
| REMARKS- | | | | | |
| LEMINICIO | | | | | |
| | | | | | |
| | | | | | |
| , a | | | | | |
| Roadway (including shoulders) narrow for present (1920) ADT by and for future ENERAL EVALUATION conclude the structural condition of the stru | | | | | |
| | ay narrow for present (1970) ADT by Narrow for future (1990) ADT by ded section by (1990) ADT by and for future PRHA recommended section by JATION excellent cally in structural condition. poser very poor | | | | |
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| | - N | | | | |
| · · · · · · · · · · · · · · · · · · · | | | | | |
| | | | | | |
| | ADT by and for future PRHA recommended section by N excellent tage structural condition. good poor very poor y is minimally adequate inadequate cations will make it minimally adequate. aced. routine inspection (every 2 years). trequent inspection (every months) to determine the cause of and remedies for existing defects. frequent inspection (every months) to monitor abnormal and/or suspected deficiencies. routine maintenance. minor repairs and routine maintenance, emergency repairs to eliminate danger to the public, our or on the public, our open to repairs to prevent further costly deterioration and/or | | | | |
| | | | | | |
| | | | | | |
| | | | | DI . | |
| | 2 - 20 - 20 C.D 10 - 20 C.B. 10 C.B | | | | |
| - | | | | | |
| | | 46 | * | | |
| | | 101 | | | |
| | | | | | |
| Translad seems | . for present 71070\-4.Pl | or t | | ADD-Innoversity | |
| his bridge is basically in | (good) | aral condition. | ¥ | | |
| | | | | | |
| | very poor | | | | a a |
| e load carrying capacity | f | ste inademiste | | | |
| , 0, | is minimally adequi | are madequate | | - × | |
| 7/ 5/ 5 | ā | | 9 | 3 · * | |
| 7/ 5/ 5 | ā | | 5 | . * | |
| ne recommended modific | ations will make it minit | | 5. E | | |
| e recommended modific | ations will make it mininged. | mally adequate. | . P | | 93 93 |
| ne recommended modific ne bridge should be replac | ations will make it mininged. routine inspection (e | mally adequate. | and a termine the cause of | | |
| ne recommended modific ne bridge should be replac | ations will make it minic ed. routine inspection (ed. Affection to the section of the section | mally adequate. very 2 years). | o determine the cause o | ef. | el . |
| ne recommended modific ne bridge should be replac | ations will make it minit ced. routine inspection (e frequent inspection (and remedies for exis | wery 2 years). everymonths) to | | | 95 93 |
| ne recommended modific ne bridge should be replac | routine inspection (entire inspe | wery 2 years). everymonths) to the great gr | | | al a |
| ne recommended modific ne bridge should be replac | routine inspection (entire inspe | wery 2 years). everymonths) to the great gr | | | |
| re recommended modific re bridge should be replac requires | routine inspection (et frequent inspection (et and remedies for exist frequent inspection (and/or suspected defineroutine maintenance. | wery 2 years). every 2 months) to thing defects. every months) to the control of | | | e F |
| re recommended modific re bridge should be replac requires | routine inspection (entreguent inspection (entreguent inspection (entreguent inspection (entreguent inspection (entreguent inspected definition maintenance, minor repairs and routine maintenance, | wery 2 years). every 2 years). everymonths) to ting defects. everymonths) to iciencies. | o monitor abnormal | | |
| re recommended modific re bridge should be replac requires | routine inspection (et frequent inspection (et and remedies for exis frequent inspection (and/or suspected definition maintenance, minor repairs and rouemergency repairs to | wery 2 years). everymonths) to ting defects. everymonths) to icioncies. time maintenance, eliminate danger to 1 | o monitor abnormal | | |
| re recommended modific re bridge should be replac requires | routine inspection (et frequent inspection (et and/or suspected definition or routine maintenance, minor repairs and routine maintenance, where the previous repairs to previous entergency entergency entergency entergency entergency entergency enter | wery 2 years). every 2 months) to thing detects. every months) to the maintenance, eliminate danger to to the turther costly de | o monitor abnormal the public, terioration and/or | | |
| ne recommended modific ne bridge should be replac requires | routine inspection (et frequent inspection (et and remedies for exis frequent inspection (and/or suspected defiroutine maintenance, minor repairs and routingent repairs to prey the development of a | wery 2 years). every 2 months) to the defects. every months) to the defects. every months) to the defect existence and the danger to 1 cent further costly deducerous conditions. | o monitor abnormal the public, terioration and/or | | |
| re recommended modific re bridge should be replac requires | routine inspection (et frequent inspection (et and remedies for exis frequent inspection (and/or suspected defiroutine maintenance, minor repairs and routingent repairs to prey the development of a | wery 2 years). every 2 months) to the defects. every months) to the defects. every months) to the defect existence and the danger to 1 cent further costly deducerous conditions. | o monitor abnormal the public, terioration and/or | | e e |
| PRHA recommended section by (Rogaldway including aboulders) narrow for present (1970) ADT by Narrow for future (1990) ADT by and for future PRHA recommended section by GENERAL EVALUATION This bridge is basically in section: Secti | | | | | |
| ne recommended modific ne bridge should be replace requires requires | routine inspection (et frequent inspection (et frequent inspection (and remedies for exis frequent inspection (and/or suspected defiroutine maintenance, minor repairs and routine mergent repairs to prevale development of a Non-urgent programmatisfactory. The travelled | wery 2 years). everymonths) to the fing detects. everymonths) to the fine maintenance, eliminate danger to the further costly deduced repairs. | o monitor abnormal the public, terioration and/or y for present requireme | | nsatisfactory |
| ne recommended modific ne bridge should be replace requires requires | routine inspection (et frequent inspection (et frequent inspection (and remedies for exis frequent inspection (and/or suspected defiroutine maintenance, minor repairs and routine mergent repairs to prevale development of a Non-urgent programmatisfactory. The travelled | wery 2 years). everymonths) to the fing detects. everymonths) to the fine maintenance, eliminate danger to the further costly deduced repairs. | o monitor abnormal the public, terioration and/or y for present requireme | | nsatisfact ö ry |
| ne recommended modific he bridge should be replace requires requires requires requires requires requires requires requires | routine inspection (et drequent inspection (et drequent inspection (et and/or suspected definand/or suspected definand/or suspected definand/or repairs and routine maintenance, minor repairs and routine repairs to previble development of a Nonsurgent programmatisfactory. The travelled factory for future (1990) | very 2 years). every months) to thing defects. every months) to the maintenance. eliminate danger to the dangerous condition med repairs. I way is unsatisfactor (b) () requirement | o monitor abnormal the publicaterioration and/or the publication and/or the present requirements | | nsatisfactöry |
| ne recommended modific ne bridge should be replace requires requires requires requires retravelled way is unsatistate shoulders are unsatistate | routine inspection (et frequent inspection (et and or suspection (and or suspection (and or suspection (and or suspected defined in the frequent inspection (and or suspected defined in the frequent repairs and rougent repairs to urgent repairs to prevalte development of a Non-urgent programs tisfactory. The travelled factory for future (1990) | very 2 years). every months) to thing defects. every months) to the maintenance. eliminate danger to the dangerous condition med repairs. I way is unsatisfactor (b) () requirement | o monitor abnormal the publicaterioration and/or the publication and/or the present requirements | | nsatisfactöry |
| ne recommended modific ne bridge should be replace requires requires requires requires requires retravelled way is unsatis the shoulders are unsatisfa- | routine inspection (et frequent inspection (et and/or suspected defiroutine maintenance, minor repairs and routine maintenance, minor repairs and routine maintenance, minor repairs to previble development of a Non-urgent programm tisfactory. The travelled factory for future (1990) (satisfactory. | very 2 years). every months) to thing defects. every months) to the maintenance. eliminate danger to the dangerous condition med repairs. I way is unsatisfactor (b) () requirement | o monitor abnormal the publicaterioration and/or the publication and/or the present requirements | | nsatisfactöry |
| he recommended modific he bridge should be replace requires requires he dock geometry is unsatisfa- te shoulders are unsatisfa- | routine inspection (et frequent inspection (et and/or suspected defiroutine maintenance, minor repairs and routine maintenance, minor repairs and routine maintenance, minor repairs to previble development of a Non-urgent programm tisfactory. The travelled factory for future (1990) (satisfactory. | very 2 years). every months) to the fing defects. every months) to the fine maintenance. eliminate danger to to the further costly defects. I way is unsatisfactor () requirements. | o monitor abnormal the publicaterioration and/or the publication and/or the present requirements | | nsatisfactöry |

| 1 | | The later of | | |
|---------|---|---------------------|--|--------------|
| | COMMONWEALTH OF PUERTO RICO HIGHWAY AUTHORITY | 6-4- | Page 1 of 1 | |
| | IBM-370 AND IBM MT/SC | | 11/37 | 0026 |
| r - r | HARRIS ELECTRONIC DATA STORAGE | Card No. | Bridge No. | Road No. |
| -37 | ROUTE UNDER STRUCTO | URE | | Km. No. 4.07 |
| | | | Code Positi | ons |
| IDE | NTIFICATION 25 24 23 22 21 20 19 18 17 16 | 5 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |
| 5. | Inventory Route , P.R 26 2. 5. 3 5 1. 5 | | | 1-1-1-1-1 |
| | Features Intersected . Podestown walkwa | | | |
| 1 | 19 PED WALK C | | c 1 0 1 | |
| 0 | Structure No 1./.3.7 1.0Pl. | 1 1 1 1 1 1 1 1 1 1 | | |
| 1000000 | | | TO THE THE PARTY PROPERTY OF THE PARTY OF TH | 7/3// |
| 10. | Inventory Route, Minimum Vertical Clearance (0.01 m | | | 0519 |
| 11. | Kilometer Point (0.01 km) . 4.0.7 | | | 00407 |
| 12. | Road Section Number (DOD) | | | 00625 |
| . 13. | Bridge Description . $NDHODHNS$ | 75 P | | 69 [5]5 |
| 14. | Defense Milepoint (0.01 m) | | 60 | 50109 |
| 15. | Defense Section Length (miles) (0.1 mile) | | | 70.017 |
| 19. | By Pass, Detour Length (Nearest mile) . Marg. 11 | polroad | | 73 01 |
| CI | agyyra i myo y | | | |
| - 1 | ASSIFICATION | | 1/ | 75 04 |
| | Fed. Aid System . Other . Federal . Aid, . | primary | ALAGA. | 73 |
| 25. | Administrative | | , | . // |
| 26. | Functional | p.a.l. arten | al | . 18 4 3 |
| | | | Con | d 2 |
| STF | CUCTURE DATA | | | |
| 29. | | | | 36550 |
| 30. | Year | | | |
| 47. | Total Horizontal Clearance (0.01 m) | 61. R. 73 | 0 | 18 073 |
| | | | | |
| - 12 | | | | |

Appendix E Inspection by PRHTA of PB 1307

E.1 May 15, 2017

| BRIDGE: | 307 | | | | 8 | | | | |
|----------------------------------|--|-------------|-------------------------------|----------------|--------|--------|----------------------------|-------|-------------------------------|
| EAM LEAD | ER: A Nge | 1 Lop | et | | | | | | |
| NED DATE | ER: Ange | 40 201 | 17 | | | | | | |
| 5 | | | • | | | | | | |
| Inspectio | n Type and D | ates: | | | | | | | |
| IBI | Тур | e | Performed? (Yes / No / NA) | Freq (MONTI | 250 | | OUS Insp. DA ONTH/YEAR) | 27.40 | ext Insp. DATE MONTH/YEAR) |
| TEM 90 | Routine Ins | pection | 405 | _ | | Tan | 2014 | | |
| TEM 93 A | FC Inspection | on | | | | | | - | |
| TEM 93 B | Underwate | r Insp. | | | 9 | | | i.i. | |
| TEM 93 C | Other: | | | | | 2. | | | |
| revious Ins | | 5 | 5 | 5 | | _ | _ | _ | |
| | s: (Y, N, NA) | | | Per | dow/ | Comme | nto | | |
| | | | | Kev | view (| Jonnie | nts. | | |
| AASHTO (| cal (items 11 Core's & NBI gs (scour, ste e, etc) | CD consis | tenţ | | | | | | |
| Channel P | rofile/Clearar erwater Mem | nce Table | s | | ý. | | | | |
| Asphalt Ov Drawings Photos | erlay Thickn | ess | × | ** | | | | 77 | |
| Critical Fin | ding & Team Lead | ler Signatu | re | | | | | | |
| | | | 11 | | | | | | |

| | 013071 | Ű | Agenc | y ID: 01 | 3071 | | Suffi | ciency Rating | g: -1.0 |
|---|--------------------------------------|--------------------------------------|------------------------|---|---------------|--|---|----------------------------|-----------------|
| | IDENTIFI | CATION | | Y | . 35 | INSPI | ECTION | | |
| State 1: | 72 Puerto Rico | Struc Num 5: | 013071 | Frequency 91: | 24 months | Inspection Date 90: | | 7 Next Inspection: | 05/15/20 |
| Facility Carried 7: | PR 26 | | DORIOTY DE TRO AVE. | FC Frequency 92A: | NA | FC inspection Date | 93A: NA | Next FO Inspection | nt NA |
| Rte.(On/Under)5A: | One Route Under | Rte. Signing Prefix 58 | 3: 2 U.S. Numbered | UW Frequency 92B; | NA | UW Inspection Date | 93B: NA | Next LIW Inspectio | n: NA |
| Level of Service 50: | 1 Maintine | Rte. Number 5D: | 00003 | SI Frequency 92C: | NA | SI Date 93C: | NA | Next Si: | NA |
| | 0 N/A (NBI) | % Responsibility: | NA | Element Frequency; | 24 months | Element Inspection | Date: 01/01/19 | 01 Next Elem. Insp. I | Oue: 01/01/19 |
| SHD District 2: Place Code 4: | Unknown 76770 | County Cade 3: Kliometer Post 11: | San Juan 04,5 km | | | and the state of t | 200. | or more contained. | |
| | | | U4,5 KMI | | | | FICATION | | |
| | | | | Defense Highway 1 | | a STRAHNET hwy | | | |
| Latitude 16: | 18d 27° 18° | Longitude 17: | 0654 03, 06, | Direction of Traffic Highway System 10 | | t hwy traffic t on NHS | Temporary Struct NBIS Length 112 | | |
| Border Bridge Code 98; | Unknown (P) | 46 | | Toll Facility 20; | 3 On fre | | Functional Class | | Fwy/Expwy |
| Border Bridge Number 9 | 99; Uniknown | | | Historia | on Significan | ce 37: Unknown | (NBI) | | |
| | JCTURE TYPE | | | Owner | | -1 Unknot -1 Unknot | | | |
| Number of Approach Spa Main Span Material/D | | mber of Spans Main Un | it 45: -1 | | adi 21. | -1 Olikiko | wii (r) | | |
| wan i Span Materiali. 3 Steel | Design 43AVB. | 09 | | ſ | | | NOITIC | | |
| | | | | Deck 58: 5 Fair | | Super 59: 5 F | | 9ub 60: 5 Fai | r |
| | | | | Curvert 62: N N/A | NBI) | Channel/Cl | hannel Protection | 61: N N/A (NBI) | |
| Deck Type 107: | Unknown (NBI) | | | ſ | L | OAD RATING | AND POS | TING | |
| Wearing Surface 108A: | | | | Inventory Rating | Method 65: | Unknown (NBI) | Operating Ratio | ng Method 63: Unknow | n (NBI) |
| Membrane 1088: | Unknown (NBI) | | | Inventory Rating | 66: MS | 6 | Operating Ratio | ng 64: MS-0.6 | |
| Deck Protection 108C: | Unknown (NBI) | 2000 | | Design Load 31: | 7 Pe | destrian | Posting 70: | Linknow | n (NIBI) |
| | AGE AND | SERVICE | | Posting status 41 | A Op | en, no restriction | | | |
| Year Built 27: | 1906 | | ed 106; Unknown | <u></u> | | | | | |
| Type of Service on 42A: Type of Service under 42 | 3 Pedestrian-bicyle 2B: 1 Highway | a | | r | | APPE | RAISAL | | |
| Lanes on 28A: Unknow | | 8 Detout | Length 19: 0,0 km | Bridge Rail 36A: | N N/A or | not required | Approach Rail : | 36C: N NFA | of not require |
| ADT 29: 65,300 | Truck ADT 189; | | FADT 30: 2002 | Transition 36B: | | not required | Approach Rail I | | or not require |
| | | | | Str. Evaluation 67: Underclearance, V | | | Deck Geemetry | y 68; Unkno | ewn (NBI) |
| Length Max Span 48: | GEOMETR 21.70 m St | RIC DATA tructure Length 49: | 50. 25 m | Waterway Adequa | | | newn (NSI) Appreach Align | ment 72° 8 Fau | al Min Criteria |
| Curb/Sdwik Wath L 50A: | | urb/Sidewalk Width R 5 | | Scour Critical 113: | | t Over Waterway | . ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | | ar morronicona |
| Width Curb to Curb 51: | | idth Out to Out 52: | | | | | | | |
| Approach Roadway Widt (w/ shoulders) | th 32: 29.30 m | Median | 33: Unknown (NBI) | | P | ROPOSED IM | | | |
| Deck Area: | | | | Bridge Cost 94: Roadway Cost 95: | | NA Unknown | Type of Wo | | own (P) |
| Skew 34: -1.90 ° | Structure Flared | 35: Unknown | (NBI) | Total Cost 96: | | Unknown | Future ADT | provment 76: 114: 92,70 | 3 |
| Minimum Vertical Cleara Minimum Vertical Unders | | 44° H Harris | neath struct | Year of Cost Estim | ate 97: Unk | помп | Year of Futu | re ADT 115: 2020 | |
| Minimum Vertical Under | | 05.21 m | TOTAL SCOOL | \succ | - 200 | NAMOAT | ION DATA | | mari. |
| Minimum Lateral Underd | | 55A: H Hwy ber | neath struct | Navigation Control 3 | 38 | Unknown (NBI) | ION DATA | | |
| Minimum Lateral Undrole | earance R 55: | 01.70 m | 19 | Vertical Clearance 3 | 19: | | Horizontal Clear | rance 40: | |
| | oarance L 56: | 01.50 m | | Pier Protection 111: | Unk | mown (NBI) | Lift Bridge Verti | cal Clearance 116: | |

| | INFRAS | TRUCTURE DIRE | CTORY | | |
|---------------------------|-----------------------------|-------------------------------|-----------------------|----------|---|
| T | | PRHTA | | | |
| Team Leader: Angel T. | | | | | |
| Bridge, Inspector: Angel | | | | | |
| Bridge Evaluator: Manu | | | | x. | |
| Assistants: José R. Váz | rquez | | | | |
| Driver: José A. Ortíz | | | | | |
| Inspection date: _ May, | | | | | |
| Weather Conditions: Su | inny | | | | |
| Amount of Time on Insp | pection: 1.5 Hours | | | | |
| Equipment: X Bus of | or Van _ Underwater | _ Ladders _ Snoo | oper X Camera | Boat | |
| · _ Other | : | | | | |
| Bridge Number: 130 | 7 | | | | |
| | , | | | | |
| Road on Structure: N/A | | Km | | | |
| | State Highway Number | or Name: _26 Km4 | 4.6 | | |
| Ident. Plaque: No | Num | | | | |
| 36-Traffic Safety Featur | | | | | |
| | applicable or safety not r | | | | |
| | pplicable or safety not reu | | | | |
| | ail: not applicable or safe | | | | |
| | ail Ends: not applicable o | r safety not reuired | | | |
| COMMENTS AND/OR F | RECOMMENDATIONS: | | | (4) | |
| (50.25mts largo) | | | | | |
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| 12 | | | 7/ | IM | |
| dec | | NAME OF A STATE OF THE PARTY. | <u>/</u> | 141 | |
| Inspection by: Angel T. L | | Revised and Ap | proved by: Manuel Co | 1 / 4 | + |
| Bridge Inspecto | or | Brid | oproved by: Manuel Co | 30 may 2 | |
| | | | | | |
| BR-1307 | | | | | 1 |

BRIDGE IVENTORY MANAGEMENT OFFICE INFRASTRUCTURE DIRECTORY **PRHTA**

58. DECK

58.1 Wearing Surface: Material: Steel

Condition: 5

Thickness

cm.

Deterioration: 50 to 75 %

Drainage: Adequate

Exudation: No Rust Stains: Yes

Ponding: No

Safety: Yes

58.2 Slab or Plate: Material: Steel

Condition: 5

Cracking: None

Spalling: Top: No

Bottom: No

Scaling: Top: No

Bottom: No

Efflorescence: No

Corrosion: Severe

58.3 Movement:

Deck to backwall:

Deck to approach slab: cm.

cm.

| | Material | Cond. Rating | Height Loss (cm) | Joints | Drainage | Alignment | Corrosion | Paint | Safety | Cracking | Spalling | Scaling |
|-------------------|----------|-----------------|------------------------|--------|----------|-----------|-----------|-------|--------|----------|----------|---------|
| 58.4 Curb | N/A | | | | | - | - | - | | | - | |
| 58.5 Median | N/A | | 5 | | - | | | - | | | | _ |
| 58.6 Sidewalks | N/A | | | | - | - | _ | - | | ab M | | _ |
| 58.7 Parapets | N/A | | | - | - | - | 1- | - | | | - | |
| 58.8 Railing | Steel | 5 | | Fair | | Fair | Severe | Poor | Yes | | | - |

58.9 Lighting Standards: Material: N/A Condition: N/A

Functioning: N/A

58.10 Utilities:

Type:

Size:

Safety:

Type:

Size:

Safety: _

Type:

Size:

Safety: _

58.11 Joints: Condition: N/A

Type: N/A

Functioning: N/A

Leaking: N/A Cracking: N Spalling: N

Armor: No

Type: N/A

Functioning: N/A

Leaking: N/A Cracking: N

Spalling: N

Armor: No

58.12 Drains and Scuppers:

Material: None Condition: N

Functioning: N/A

Comments:

58.1- Superficie de acero con corrosión severa, pérdidas leves de secciones y leves perforaciones en los laterales de la superficie de las tolas. Varias tolas están sueltas de sus puntos de soldadura, grandes secciones fueron reparadas aunque hay secciones en pobres condiciones, varios huecos pequeños por corrosión y secciones de las de tolas soldadas que dejan un ligero huerco entre ellas.

58.8- Corrosión severa con mallas de protección, varias de ellas están sueltas de sus puntos de apollo. En el área de las escaleras hay varios verticales que están sueltos de sus soldaduras.

BR-1307

BRIDGE IVENTORY MANAGEMENT OFFICE INFRASTRUCTURE DIRECTORY **PRHTA**

59. SUPERSTRUCTURE

59.1 Bearing Devices: Type: Fixed

Out of Plumb: No

Paint: None

Condition: 5

59.2 Bridge seats, pedestal, grout pads, abutments or pier seat where beams bear directly on conc.

Condition: 5

Cracking: No

Spalling: None Scaling: None

Crushing: No

59.3 Steel beams: N/A Type: N/A

Condition: N

Condition: N

59.5 Truss: Bailey Pedestrian

Corrosion: None

Paint: None

59.4 Concrete: N/A

Type: N/A

Cracking: No

Corrosion: Severe

Spalling: None Scaling: None

Members: Stringers Condition: 5

59.6 Drainage: Type:

Paint: Poor Condition: N

Functioning: No

59.7 Hinges: Condition: N

Functioning: N/A

Movement: N/A

59.8 Deflection: Normal

59.9 Vibrations: Minimal 60.0 SUBSTRUCTURE:

| | | | Material | Cond. Rating | Cracking | Spalling | Scaling | Corrosion | Paint | Movement | Erosion | Undermining |
|----------------------|--------|---------------------|----------|-----------------|----------|----------|---------|-----------|-------|----------|-------------|-------------|
| | 60.1.1 | Wingwalls | N/A | N | _ | _ | - | _ | | | | _ |
| Abutments | 60.1.2 | Breast- Backwall | N/A | N | | _ | - | - | _ | _ | | |
| \bq | 60.1.3 | Footing | N/A | N | | | | _ | | - | | |
| 4 | 60.1.4 | Piles | N/A | N | 25-02 | | - | | | | | |
| ie | 60.2.1 | Caps | Steel | 5 | - | | - | Moderate | Poor | No | No | No |
| E " | 60.2.2 | Bracing | Steel | 5 | | | - | Moderate | Poor | No | No | No |
| or Non Pite Bents | 60.2.3 | Columns | Steel | 5 | | | _ | Moderate | Poor | No | No | No |
| Piers o | 60.2.4 | Footing | Concrete | 6 | F | Small | L | | | No | No | No |
| ñ. | 60.2.5 | Piles | N/A | N | | - | | - | | | _ | |
| 5 (0 | 60.3.1 | Caps | N/A | N | _ | - | | | | | | |
| Rocker Bents | 60.3.2 | Bracing | N/A | N | - | | | - | | | 7 <u></u> 2 | |
| ск m | 60.3.3 | Piles | N/A | N | | _ | _ | | | | | |
| | 60.4.1 | Caps | N/A | N | | | | | | | | |
| Pile Bents | 60.4.2 | Bracing | N/A | N | - | | | | | | | |
| — m | 60.4.3 | Piles | N/A | N | | 10.00 | | | | | | |

59.5- Corrosión moderada y severa en todos los miembros inferiores de la estructura. Hay perforaciones con pérdida de secciones. Las escaleras tienen corrosión severa y perforaciones con pérdidas de secciones, Hay "railings" que tienen corrosión severa en los anclajes ó bases, tienen movimientos laterales.

BR-1307

BRIDGE IVENTORY MANAGEMENT OFFICE INFRASTRUCTURE DIRECTORY PRHTA

61. CHANNEL AND PROTECTION

Condition: N

61.1 Channel Scour: N/A

61.2 Embankment Erosion: N/A

| | | Туре | Material | Condition Rating | Functioning |
|------|---------------------|------|----------|---------------------|-------------|
| 61.3 | Protective Device | | N/A | N | - |
| 61.4 | Fender System | | N/A | N | |
| 61.5 | Ríp Rap | | N/A | N | |
| 61.6 | Spur Dikes, Jetties | | N/A | N | |

61.7 Obstruction: N/A

61.8 Channel Change: N/A

61.9 Adequate Waterway: N/A

61.10 Surrounding: Flooding: N/A

if yes explain:

Erosion: N/A

if yes explain:

61.11 Location of piers and/or abutment detrimental: N/A

if yes explain:

61.12 Other features that may affect structure:

Comments:

62. CULVERT AND RETAINING WALL

| | Material | Condition Rating | Functioning | Cracking | Spalling | Scaling | Corrosion | Settlement | Alignment | Scour |
|---------------------|----------|------------------|-------------|----------|----------|---------|-----------|------------|-----------|-------|
| 62.1 Barrel | N/A | N | - | | _ | | | - | | |
| 62.2 Head Walls | N/A | N | | | 1-0 | 1 | | - | | |
| 62.3 Cut-off wall | N/A | N | | | | | | | - | _ |
| 62.4 Retaining wall | N/A | N | | | _ | | - | _ | _ | |

Comments:

BR-1307

BRIDGE IVENTORY MANAGEMENT OFFICE INFRASTRUCTURE DIRECTORY PRHTA

71. WATER ADEQUACY:

N/A

N/A

72. APPROACH ROADWAY

72.1 Alignment: 6

72.2 Slab or Pavement Condition: N Material: Other

Cracking: No

Spalling: Small Scaling: None Uneven: No

Rough: No

Settlement: No Movement: Approach slab-backwall: No Breaking up: No

Excessive deformation: No

Safety:

Hazardous: No

Drainage:

Inadequate: No

Movement:

Pavement-approach slab: No

Embankment: Condition: N

Functioning: No

Erosion: No

Construction: Flimsy: No

Integrity impaired: No

72.3 Undesirable Impact: No

72.4 Joints: No

Type: None

Inadequate: N/A

Satisfactory Alignment: N/A

72.5 Guardrail Type: None

Material: N/A

Functioning: N/A

Condition: N A

Alignment Horizontal: N/A

Vertical: N/A

Joints Functioning: N/A Safety Securely Attached: N/A Pedestrian Hazards: N/A

Comments:

90. INSPECTION DATE: _ May, 15, 2017

93. CRITICAL FEATURE INSPECTION DATE

Fracture Critical:

Underwater:

Other Special Inspection:

102. DIRECTION OF TRAFFIC: Highway traffic not carried

106. YEAR RECONSTRUCTED:

107. DECK STRUCTURE TYPE: Steel Plate (includes orthotropic)

108. WEARING SURFACE/PROTECTIVE SYSTEM

Type wearing surface: Steel
Type Membrane: None

Deck protection: None

111. PIER OR ABUTMENT PROTECTION (FOR NAVIGATION): N/A

113. SCOUR CRITICAL BRIDGES: N

116. MINUMUM NAVIGATION VERTICAL CLEARANCE:

AUXILIARY ITEMS

Signs:

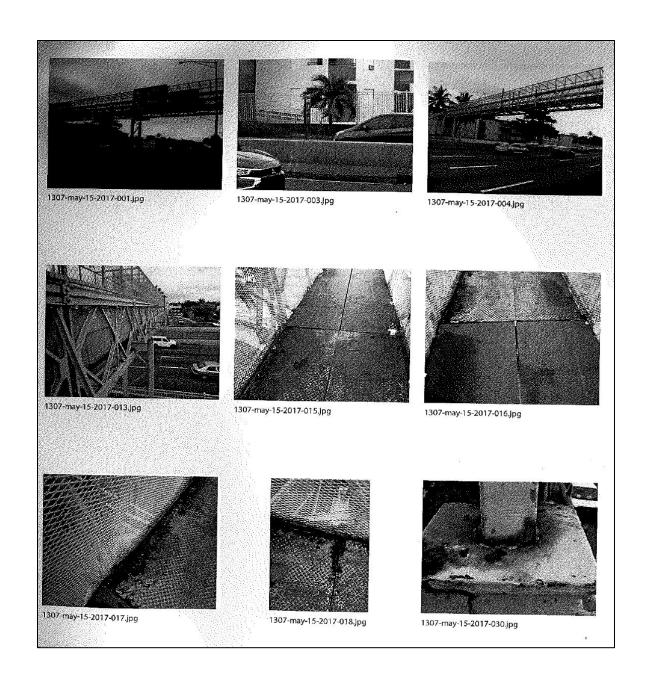
Type: Height Limits 18'-6"

Material: Alum.

Condition: 7

Type: N/A

BR-1307



E.2 January 24, 2014

| | | INSPEC | TION REPOR | RT SUMMA | RY | & QC SI | HEET | | |
|---|---|--|-------------------------------|----------------|-----|---------|--------------|------|----------------------------------|
| BRIDGE: | 13016 | Pedis | trian) | | | | | | |
| TEAM LEAD | ER: Eng. Artu | ro Cáceres | Febus | | | | | | |
| INSP. DATE: | 1/2 | 4/14 | | | | | | | |
| 1. Inspection | n Type and D | ates: | | | | | | | |
| NBI | Туре | | Performed? (Yes / No / NA) | Freq (MONTH | | | OUS INSP. DA | ATE | Next Insp. DATE (MONTH/YEAR)/ |
| ITEM 90 | Routine Ins | pection | yes | 24 | | 6 | 130/20 | 80 | 1/24/10 |
| ITEM 93 A | FC Inspection | on | N | _ | | | - | | _ |
| ITEM 93 B | Underwate | r Insp. | N | - | - | | _ | | |
| ITEM 93 C | Other: | | N | | _ | | - | | |
| | | | | | | | | | |
| 2. NBI Cond | ition Rating S | | | | | | | | |
| | | Item 58 | Item 59 | Item 60 | Ite | m 61 | Item 62 | 1000 | m 113 |
| Previous Ins | pection | 5 | 2 | 5 | | N, | 10 | un | Known |
| Current Insp | ection | 5 | 5 | 5 | | N | N | / | U |
| Other Check | s: (Y, N, NA) | | | Rev | iew | Comme | nts: | | |
| ZAASHTO (Z Smart Flag fire damag Channel P FC & Unde Z Asphalt Ov Drawings Photos Critical Fin | rofile/Clearar erwater Memi verlay Thickn | CD consising plate, and plate, an | S | | | | | | |
| Reviewer: Safety Eng.: | 7 | f a | <u>//</u> | | | | | | |

Bridge Inspection Report

| Bridge Key: | 01307 | 1 | Agenc | y ID: 01 | 3071 | | Suffici | ency Rating: | -1.0 |
|--|---|--|----------------------------------|---|---------------|--|-------------------------------|-----------------------------|--------------|
| | IDENTIF | ICATION | | | | INSPECT | ION | | |
| State 1: | 72 Puerto Rico | Struc Num 8: 0 | 13071 | Frequency 91: | 24 months | Inspection Date 90: | 1/24/2014 | Next Inspection: | 01/24/201 |
| Facility Carried 7: | PR 26 | Location 9; BALDO CASTE | PRIOTY DE RO AVE. | FC Frequency 92A: | NA | FC Inspection Date 93A: | 1/24/2014 | Next FC Inspection: | NA |
| Rte.(On/Under)5A: | One Route Under | Rte, Signing Prefix 5B: | 3 State Hwy | UW Frequency 92B: | NA | UW Inspection Date 93B: | NA | Next UW Inspection: | NA |
| evel of Service 5C: | 1 Mainline | Rte. Number 5D: | 00026 | SI Frequency 92C: | NA | SI Date 93C: | NA | Next SI: | NA |
| Directional Suffix 5E: | 0 N/A (NBI) | % Responsibility: | NA | Element Frequency: | 24 months | Element Inspection Date: | 01/01/1901 | Next Elem. Insp. Due | 01/24/201 |
| SHD District 2: Place Code 4: | SAN JUAN ZONA | County Code 3: Kilometer Post 11: | SAN JUAN 04.5 km | | | | rac level of the | | |
| | URBANA | | | Defense Highway 10 | 30: 0.86 | CLASSIFIC at a STRAHNET hwy Para | | 101: No bridge e | ulete |
| Feature Intersected 6: | PEDESTRIAN WALK | Longitude 17: | 066d 03' 06" | Direction of Traffic 1 | | | orary Structu | | |
| Border Bridge Code 98; | Not Applicable (F | | | Highway System 10 | | | Length 112: | Long Enough | |
| Border Bridge Number (| | | | Toll Facility 20: | 3 On fre | | tional Class 2 | 6: 12 Urban Fw | y/Expwy |
| | | | $\overline{}$ | Historic Owner: | al Significar | nce 37: 5 Not eligible for 01 State Highway | | | |
| STRU Number of Approach Sp | | E AND MATERIA Imber of Spans Main Unit | | Custodi | | 01 State Highw | | | |
| Main Span Material/ | | | 9850 SQ. | | | CONDITI | ON | | |
| Steel | | 09 | | Deck 58; 5 Fair | | CONDITI Super 59: 5 Fair | ON | Sub 60: 5 Fair | |
| | | | | Culvert 62: N N/A (f | NBI) | Channel/Channe | el Protection 6 | | |
| Deck Type 107: | 5 Steel Plate | | | | 941 | 04D D4==== | D DOS | | |
| Wearing Surface 108A | | | | Inventory Rating | | OAD RATING AN | | ING Method 63:Unknown (f | JRI\ |
| Membrane 1088: | 0 None | | | -0.7780388302.7783020311 | | | | | NDI) |
| Deck Protection 108C | None | | | Inventory Rating (Design Load 31: | | | erating Rating | 64: MS-0.6 Unknown (f | (DI) |
| | AGE AND | SERVICE | | Posting status 41: | | pen, no restriction | sting 70: | Onknown (r | NBI) |
| /ear Built 27: | 1968 | Year Reconstructed | 106: Unknown | | 0.000 | | | | |
| Type of Service on 42A. | | yle | | | | APPRAIS | SAL | | |
| ype of Service under 4 | | | | Bridge Rail 36A: | N N/A or | | proach Rail 36 | iC: N N/A or | not required |
| Lanes on 28A; Unknow ADT 29: 65,300 | vn Lanes Under 28B Truck ADT 109: | 5% Year of | ength 19: 0.0 km ADT 30: 2000 | Transition 36B: | N N/A or | not required Ap | proach Rail Er | nds 36D: N N/A or | not required |
| | 101101111111111111111111111111111111111 | | | Str. Evaluation 67: | Unknow | | ck Geometry 6 | 58: Unknown | (NBI) |
| | | RIC DATA | | Underclearance, Vi | | | | ant 72: EFaul | I a Calenda |
| Length Max Span 48: Curb/Sdwlk Wdth L 50/ | | Structure Length 49: Curb/Sidewalk Width R 50 | 43.01 m B: 0.00 m | Scour Critical 113: | | ot Over Waterway | oreach Alignm | ent /2. 6 Equal r | Ain Criteria |
| Width Curb to Curb 51: | | Width Out to Out 52: | 2.82 m | | 50 | | | | |
| Approach Roadway Wil (w/ shoulders) | dth 32. 29,30 m | Median 3 | 3: Unknown (NBI) | | Р | ROPOSED IMPR | | | |
| Deck Area: 121 29 m | | | | Bridge Cost 94: Roadway Cost 95: | | | Type of Work Length of Imp | | n (P) |
| Skew 34: 0.00 * Minimum Vertical Clear | Structure Flared | 1 35: 0 No flare 99.99 m | | Total Cost 96 | | | Future ADT 11 | | |
| Minimum Vertical Unde | | | eath struct | Year of Cost Estima | ate 97: Unk | nown | Year of Future | ADT 115: 2020 | |
| Minimum Vertical Unde | | 07.16 m | | | | NAVIGATION | DATA | | |
| Minimum Lateral Under | clearance Reference i | R 55A: H Hwy ben | eath struct | Navigation Control 3 | | NA-no waterway | | | |
| | | 01.70 m | | Vertical Clearance 3 | | | izontal Cleara | | |
| withinum Lateral Undro | rearance L 56 | U1.50 M | | Pier Protection 111: | 1 N | tot required Lift | endge Vertica | er Clearance 116: 0.00 | m |
| Minimum Lateral Undro Minimum Lateral Undro | learance L 56: | 01.50 m | | Vertical Clearance 3 Pier Protection 111: | | | | nce 40: 0.00 | |
| ELEMENT CO | | IL DAIA | | | | | | | |
| BRIDGE NOTE | ES | | | | | | | | |
| CULVERT | | | | | | | | | |
| | | | | | | | | | |
| | ect_Report_M | | | | | | - | Mon 2/24/2014 | |

| YourState Department of Transport | аиоп | | Bureau of Bridges Brid | and Structure ge Maintenanc |
|---|---------------------------|--------------------|---------------------------|--------------------------------|
| | Bridge Inspecti | on Report | | |
| PAST INSPECTION | | | | |
| Inspection Date: 01/24/2014 | Type: 1 Regular NBI | | | |
| nspector: -1 | Pontis User Key: Por | itis - Pontis Po | | |
| Scope: NBI: Other: | □ Flament | | | |
| | ☐ Element: | | | |
| INSPECTION NOTES | | | | |
| SEVERE CORROSION, SECTION I LOOSE FROM WELDING SUPPOR LOOSE VERTICALS, SEVERE COC | TS. SEVERE CORROSION AT W | VIRE MESH AND LOOS | SE FROM WELDING | SUPPORTS. |
| NSPECTOR WORK CANDIDATES | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| NSP002_Inspect_Report_Metric | Agency ID: | 013071 | Mon 2/24 | 1/2014 16:27:58 Page 2 of 2 |

PRHTA Team Leader: Arturo Cáceres Bridge Inspector: Angel T. López Bridge Evaluator: Arturo Cáceres Assistants: Juan C. Otero José R. Vázquez Driver: Gabriel Díaz Inspection date: _ Jan, 24, 2014 Weather Conditions: Sunny Amount of Time on Inspection: 1.5 Hours X Bus or Van _ Underwater _ Ladders Equipment: X Camera _ Snooper _ Boat _ Other: Bridge Number: 1307 Road on Structure: N/A Number or Name: __ Road Under Structure: State Highway Number or Name: _26 Km. _4.5 Ident. Plaque: No Num. Traffic Safety Features: Bridge railings: not applicable or safety not reuired Transitions: not applicable or safety not reuired Approach Guardrail: not applicable or safety not reuired Approach Guardrail Ends: not applicable or safety not reuired COMMENTS AND/OR RECOMMENDATIONS:

Inspection by: Angel T. López

Bridge Inspector

Revised and Approved by: Arturo Cáceres

Team Leader

58. DECK

58.1 Wearing Surface: Material: Steel

Condition: 5

Thickness

cm.

Deterioration: 50 to 75 %

Drainage: Adequate

Ponding: No

Safety: Yes

58.2 Slab or Plate: Material: Steel

Condition: 5

cm.

Cracking: None

Spalling: Top: No

Bottom: No

Scaling: Top: No

Bottom: No

Efflorescence: No

Exudation: No Rust Stains: Yes

Corrosion: Severe

58.3 Movement:

Deck to backwall:

Deck to approach slab:

cm.

| | Material | Cond. Rating | Height Loss (cm) | Joints | Drainage | Alignment | Corrosion | Paint | Safety | Cracking | Spalling | Scaling |
|-------------------|----------|-----------------|------------------------|--------|----------|-----------|-----------|-------|--------|----------|----------|---------|
| 58.4 Curb | N/A | | | | | | - | | | | _ | - |
| 58.5 Median | N/A | - | | | | | - | | - | | | |
| 58.6 Sidewalks | N/A | - | | - | | - | | | - | | - | - |
| 58.7 Parapets | N/A | - | | - | - | - | - | - | - | - | | - |
| 58.8 Railing | Steel | 5 | | Fair | | Fair | Severe | Poor | Yes | | | |

58.9 Lighting Standards: Material: N/A Condition: N/A

Functioning: N/A

58.10 Utilities:

Type:

Size:

Safety: _

Type:

Size:

Safety: _

Туре:

Size:

Safety: _

58.11 Joints: Condition: N/A

Type: N/A

Functioning: N/A

Leaking: N/A Cracking: N

Spalling: N

Armor: No

Type: N/A

Functioning: N/A

Leaking: N/A

Cracking: N Spalling: N

Armor: No

58.12 Drains and Scuppers:

Material: None Condition: N

Functioning: N/A

Comments:

58.1- Superficie de acero con corrosión severa, pérdidas leves de secciones y leves perforaciones en los laterales de la superficie de las tolas. Varias tolas están sueltas de sus puntos de soldadura.

58.8- Corrosión severa con mallas de protección, varias están sueltas de sus puntos de apollo. En el área de las escaleras hay varios verticales que están sueltos de sus soldaduras.

59. SUPERSTRUCTURE

59.1 Bearing Devices: Type: Fixed Out of Plumb: No Paint: None

Condition: 5

59.2 Bridge seats, pedestal, grout pads, abutments or pier seat where beams bear directly on conc.

Condition: 5 Cracking: No Spalling: None Scaling: None

Crushing: No

59.3 Steel beams: N/A Type: N/A

Condition: N

Paint: None

59.4 Concrete: N/A

Type: N/A

Cracking: No

Condition: N 59.5 Truss: Bailey Pedestrian Paint: Poor

Spalling: None Scaling: None Corrosion: Severe Members: Stringers Condition: 5

59.6 Drainage: Type:

Condition: N

Functioning: No

59.7 Hinges: Condition: N

Functioning: N/A

Corrosion: None

Movement: N/A

59.8 Deflection: Normal 59.9 Vibrations: Minimal 60.0 SUBSTRUCTURE:

| | | | Material | Cond. Rating | Cracking | Spalling | Scaling | Corrosion | Paint | Movement | Erosion | Undermining |
|----------------------|--------|---------------------|----------|-----------------|----------|----------|---------|-----------|-------|----------|---------|-------------|
| - 2 | 60.1.1 | Wingwalls | N/A | N | | | | _ | | - | | _ |
| Abutments | 60.1.2 | Breast- Backwall | N/A | N | - | - | | | | | | - |
| put | 60.1.3 | Footing | N/A | N | | | | - | | - | | - |
| ٩ | 60.1.4 | Piles | N/A | N | | - | | | | - | - | - |
| <u>e</u> | 60.2.1 | Caps | Steel | 5 | - | - | - | Moderate | Poor | No | No | No |
| I L | 60.2.2 | Bracing | Steel | 5 | - | - | 1 | Moderate | Poor | No | No | No |
| or Non Pile Bents | 60.2.3 | Columns | Steel | 5 | | | | Moderate | Poor | No | No | No |
| Piers o | 60.2.4 | Footing | Concrete | 6 | F | Small | L | | | No | No | No |
| P | 60.2.5 | Piles | N/A | N | | | | | | | | - |
| <u>-</u> | 60.3.1 | Caps | N/A | N | - | | | | | - | - | - |
| Rocker Bents | 60.3.2 | Bracing | N/A | N | | - | | | | - | - | - |
| <u>ж</u> ш | 60.3.3 | Piles | N/A | N | | | | - | - | | | - |
| | 60.4.1 | Caps | N/A | N - | | - | | | | _ | - | - |
| Pile Bents | 60.4.2 | Bracing | N/A | N | | - | - | _ | | | - | - |
| — m | 60.4.3 | Piles | N/A | N | | - | | - | | - | - | |

Comments:

59.5- Corrosión moderada y severa en todos los miembros inferiores de la estructura. Hay perforaciones con perdida de secciones. Las escaleras tienen corrosión severa y perforaciones con perdidas de secciones.

61. CHANNEL AND PROTECTION

Condition: N

61.1 Channel Scour: N/A

61.2 Embankment Erosion: N/A

| | | Туре | Material | Condition Rating | Functioning |
|------|---------------------|------|----------|---------------------|-------------|
| 61.3 | Protective Device | | N/A | N | 22 |
| 61.4 | Fender System | | N/A | N | |
| 61.5 | Rip Rap | | N/A | N | |
| 61.6 | Spur Dikes, Jetties | | N/A | N | |

61.7 Obstruction: N/A

61.8 Channel Change: N/A

61.9 Adequate Waterway: N/A

61.10 Surrounding: Flooding: N/A

if yes explain:

Erosion: N/A

if yes explain:

61.11 Location of piers and/or abutment detrimental: N/A

if yes explain:

61.12 Other features that may affect structure:

Comments:

62. CULVERT AND RETAINING WALL

| | Material | Condition Rating | Functioning | Cracking | Spalling | Scaling | Corrosion | Settlement | Alignment | Scour |
|---------------------|----------|------------------|-------------|----------|----------|---------|-----------|------------|-----------|-------|
| 62.1 Barrel | N/A | N | - | | _ | | | | | |
| 62.2 Head Walls | N/A | N | | /** | - | - | | | | |
| 62.3 Cut-off wall | N/A | N | - | | - | | | | | |
| 62.4 Retaining wall | N/A | N | _ | - | _ | _ | | | _ | |

Comments:

71. WATER ADEQUACY:

N/A

N/A

72. APPROACH ROADWAY

72.1 Alignment: 6

72.2 Slab or Pavement Condition: N Material: Other

Cracking: No Spalling: Small Scaling: None Uneven: No

Rough: No Settlement: No Movement: Approach slab-backwall: No Breaking up: No

Excessive deformation: No

Safety: Drainage: Hazardous: No Inadequate: No

Movement:

Pavement-approach slab: No

Embankment: Condition: N

Functioning: No Erosion: No

Construction: Flimsy: No

Integrity impaired: No

72.3 Undesirable Impact: No

72.4 Joints: No 1

Type: None

Inadequate: N/A

Satisfactory Alignment: N/A

72.5 Guardrail Type: None

None Material: N/A

Functioning: N/A

Condition: N Alignment Horizontal: N/A

Vertical: N/A

Joints Functioning: N/A Safety Securely Attached: N/A Pedestrian Hazards: N/A

Comments:

90. INSPECTION DATE: _ Jan, 24, 2014

93. CRITICAL FEATURE INSPECTION DATE

Fracture Critical:

Underwater:

Other Special Inspection:

102. DIRECTION OF TRAFFIC: Highway traffic not carried

106. YEAR RECONSTRUCTED:

107. DECK STRUCTURE TYPE: Steel Plate (includes orthotropic)

108. WEARING SURFACE/PROTECTIVE SYSTEM

Type wearing surface: Steel
Type Membrane: None

Deck protection: None

111. PIER OR ABUTMENT PROTECTION (FOR NAVIGATION): N/A

113. SCOUR CRITICAL BRIDGES: N

116. MINUMUM NAVIGATION VERTICAL CLEARANCE:

AUXILIARY ITEMS

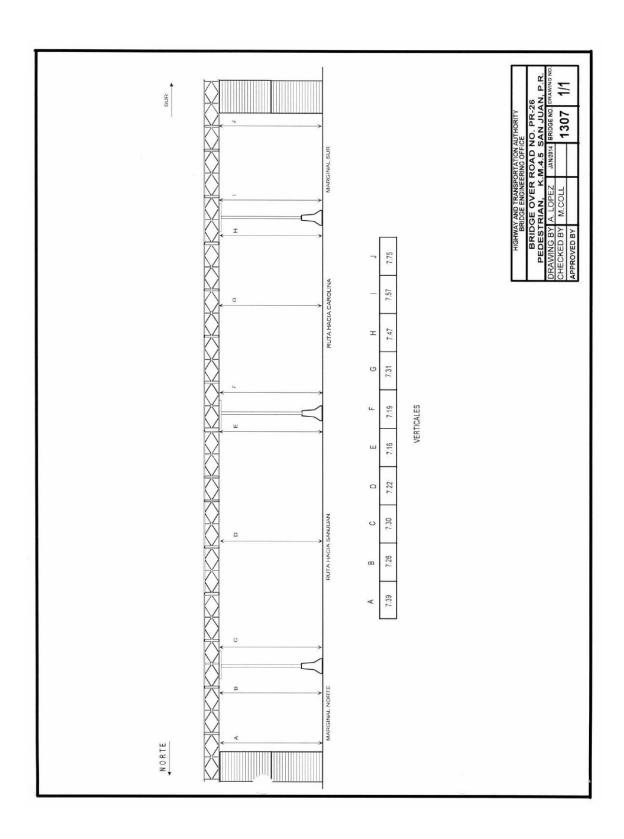
Signs: Type: Height Limits 18'-6" Material: Alum. Condition: 7

Type: N/A

| | | _ | _ | | | re Eleme | ents | | | | |
|--------------|----------------------|--------------|--------------|-------------------|-------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|-------------------------|
| Elem. No. | Elements Description | P a g. | E n v. | State Quantity | Units | Quantity Condition State 1 | Quantity Condition State 2 | Quantity Condition State 3 | Quantity Condition State 4 | Quantity Condition State 5 | Total State Quantity |
| | | | | | | | | | | | 0 |
| | | | | | | | | | | | 0 |
| | | | | | | | | | | | 0 |
| | | | | | | | | | | | 0 |
| | | | 3 | | | | | | | | 0 |
| | | | 3 | | | | | | | | 0 |
| | | | 3 | | | | | | | | 0 |
| | | T | 3 | | | | | | | | 0 |
| | | | 3 | | | | | | | | 0 |
| | | | 3 | | | | | | | | 0 |
| | | | 3 | | | | | | | | 0 |
| | | | 3 | | | | | | | | 0 |
| | | | 3 | | | | | | | | 0 |
| | | Т | 3 | | | | | | | | 0 |
| | | Т | 3 | | | | | | | | 0 |
| | | | 3 | | | | | | | | 0 |
| | | T | 3 | | | | | | | | 0 |

| | | | | | Non | Core Ele | ments | | | | |
|--------------|----------------------|--------------|--------------|-------------------|-------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|-------------------------|
| Elem. No. | Elements Description | P a g. | E n v. | State Quantity | Units | Quantity Condition State 1 | Quantity Condition State 2 | Quantity Condition State 3 | Quantity Condition State 4 | Quantity Condition State 5 | Total State Quantity |
| | | | П | | | | | | | | 0 |
| | | | | | = 10 | | | | | | 0 |
| | | | 3 | | | | | | | | 0 |
| | | | 3 | | | | | | | | 0 |
| | | | 3 | | | | | | | | 0 |
| | | | 3 | | | | | | | | 0 |
| | | | 3 | | | | ==== | | | | 0 |

| | | _ | | | | Smart Fla | gs | | | | |
|--------------|----------------------|--------------|--------------|-------------------|-------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|-------------------------|
| Elem. No. | Elements Description | P a g. | E n v. | State Quantity | Units | Quantity Condition State 1 | Quantity Condition State 2 | Quantity Condition State 3 | Quantity Condition State 4 | Quantity Condition State 5 | Total State Quantity |
| | | | | | | | | | | | 0 |
| | | | | | | | | | | | 0 |
| | | | 3 | | | | | | | | 0 |
| | | | 3 | | | | | | | | 0 |
| | | | 3 | | | | | | | | 0 |
| | | | 3 | | | | | | | | 0 |
| | | | 3 | | | | | | | | 0 |





1307-jan-24-2014-001.JPG



1307-jan-24-2014-002.JPG



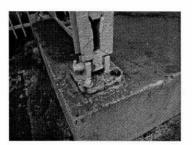
1307-jan-24-2014-003.JPG



1307-jan-24-2014-006.JPG



1307-jan-24-2014-007.JPG



1307-jan-24-2014-011.JPG



1307-jan-24-2014-017.JPG



1307-jan-24-2014-036.JPG



1307-jan-24-2014-037.JPG

E.3 June 30, 2008

ENGINNERING SERVICE AREA Team Leader: Mayra I. Zayas Bridge Inspector: Angel T. López Bridge Evaluator: Mayra I. Zayas Assistants: Ramón Rodriguez José R. Vázquez Driver: Jorge L. Viera Inspection date: _ 30 JUNIO 2008 Weather Conditions: Sunny Amount of Time on Inspection: 1.5 Hours _ Boat Equipment: X Bus or Van _ Underwater _ Ladders _ Snooper X Camera _ Other: Bridge Number: _1307 Number or Name: _ Km. _ Road on Structure: N/A Road Under Structure: State Highway Number or Name: _26 Km. _4.5 Ident. Plaque: No Num._ Traffic Safety Features: Bridge railings: not applicable or safety not reuired Transitions: not applicable or safety not reuired Approach Guardrail: not applicable or safety not reuired Approach Guardrail Ends: not applicable or safety not reuired COMMENTS AND/OR RECOMMENDATIONS: Revised and Approved by: Mayra I. Zayas Inspection by: Angel T. López Team Leader **Bridge Inspector**

NRIDGE ENGINEERING OFFICE **ENGINNERING SERVICE AREA**

58. DECK

58.1 Wearing Surface: Material: Steel

Condition: 5

Thickness

cm.

Deterioration: 50 to 75 %

Drainage: Adequate

Exudation: No Rust Stains: No

Safety: Yes

58.2 Slab or Plate: Material: Steel

Condition: 5

Cracking: None

Spalling: Top: No

Bottom: No

Scaling: Top: No

Bottom: No

Efflorescence: No

58.3 Movement:

Deck to backwall:

Deck to approach slab:

Ponding: No

Corrosion: Severe

cm.

Height Loss Cond. Material Joints Drainage Alignment Corrosion Paint Safety Cracking Spalling Scaling Rating (cm) 58.4 Curb N/A _ --__ ----N/A --

cm.

58.5 Median 58.6 N/A -----__ Sidewalks 58.7 N/A ---Parapets 58.8 5 Fair Fair Severe Poor Yes Steel Railing

58.9 Lighting Standards: Material: N/A

Condition: N/A

Functioning: N/A

58.10 Utilities:

Type:

Size:

Safety: _

Type:

Size:

Safety: _

Type:

Size:

Safety: _

58.11 Joints: Condition: N/A

Type: N/A

Functioning: N/A

Leaking: N/A Leaking: N/A Cracking: N

Spalling: N

Armor: No

Type: N/A Functioning: N/A

Spalling: N Cracking: N

Armor: No

58.12 Drains and Scuppers:

Material: None Condition: N

Functioning: N/A

Comments:

58.1- Corrosión severa con pérdidas de secciones y perforaciones en los laterales de la superfície de las tolas. Varias

tolas están sueltas de sus puntos de apollo.

58.8- Corrosión severa con mallas de protección sueltas de sus puntos de apollo.

BRIDGE ENGINEERING OFFICE ENGINNERING SERVICE AREA

59. SUPERSTRUCTURE

Out of Plumb: No 59.1 Bearing Devices: Type: Fixed

Cracking: No

Condition: 5

59.2 Bridge seats, pedestal, grout pads, abutments or pier seat where beams bear directly on conc.

Condition: 5

Spalling: None Scaling: None

Paint: None

Crushing: No

59.3 Steel beams: N/A Type: N/A

Condition: N

Corrosion: None

Paint: None

59.4 Concrete: N/A Condition: N

Type: N/A Cracking: No

Spalling: None Scaling: None

59.5 Truss: Bailey Pedestrian Paint: Poor

Corrosion: Severe

Members: Stringers Condition: 5

59.6 Drainage: Type:

Condition: N Functioning: No

Functioning: N/A

Movement: N/A

59.8 Deflection: Normal 59.9 Vibrations: Minimal 60.0 SUBSTRUCTURE:

59.7 Hinges: Condition: N

| | | | Material | Cond. Rating | Cracking | Spalling | Scaling | Corrosion | Paint | Movement | Erosion | Undermining |
|-----------------|--------|---------------------|----------|-----------------|----------|----------|---------|-----------|--------|----------|------------|-------------|
| | 60.1.1 | Wingwalls | N/A | N | | | | | | 230 | - | _ |
| Abutments | 60.1.2 | Breast- Backwall | N/A | N | - | | - | = | - | | - | - |
| but | 60.1.3 | Footing | N/A | Ν | - | | | - | - | - | L u | |
| < | 60.1.4 | Piles | N/A | N | | | | - | 100000 | 570 | - | - |
| | 60.2.1 | Caps | Steel | 5 | ~~ | ** | *** | Moderate | Poor | No | No | No |
| or Non Bents | 60.2.2 | Bracing | Steel | 5 | | | | Moderate | Poor | No | No | No |
| P G | 60.2.3 | Columns | Steel | 5 | - | - | - | Moderate | Poor | No | No | No |
| Piers Pile I | 60.2.4 | Footing | Concrete | 6 | F | Small | L | 7 | 70227 | No | No | No |
| - | 60.2.5 | Piles | N/A | N | | | - | | | | - | |
| <u> </u> | 60.3.1 | Caps | N/A | N | | | | | | | | - |
| Rocker Bents | 60.3.2 | Bracing | N/A | N | | 227 | 220 | | 7425 | 251 | | |
| ğπ | 60.3.3 | Piles | N/A | N | | | | - | | - | - | |
| | 60.4.1 | Caps | N/A | N | | - | | | | - | - | - |
| Pile Bents | 60.4.2 | Bracing | N/A | N | - | 20 | | | | | - | 11-12-1 |
| - 60 | 60.4.3 | Piles | N/A | N | | 221 | | | 774-87 | | | _ |

Comments: 59.5- Corrosión moderada y severa en todos los miembros inferiores de la estructura. Hay perforaciones con mucha perdida de secciones. Las escaleras tienen corrosión severa y perforaciones con perdidas de secciones.

BRIDGE ENGINEERING OFFICE ENGINNERING SERVICE AREA

61. CHANNEL AND PROTECTION

Condition: N

61.1 Channel Scour: N/A

61.2 Embankment Erosion: N/A

| | 200000000000000000000000000000000000000 | Туре | Material | Condition Rating | Functioning |
|------|---|------|----------|---------------------|-------------|
| 61.3 | Protective Device | | N/A | N | - |
| 61.4 | Fender System | | N/A | N | |
| 61.5 | Rip Rap | | N/A | N | |
| 61.6 | Spur Dikes, Jetties | | N/A | N | |

61.7 Obstruction: N/A

61.8 Channel Change: N/A

61.9 Adequate Waterway: N/A

61.10 Surrounding: Flooding: N/A

if yes explain:

Erosion: N/A

if yes explain:

61.11 Location of piers and/or abutment detrimental: N/A

if yes explain:

61.12 Other features that may affect structure:

Comments:

62. CULVERT AND RETAINING WALL

| | Material | Condition Rating | Functioning | Cracking | Spalling | Scaling | Corrosion | Settlement | Alignment | Scour |
|---------------------|----------|------------------|-------------|----------|----------|---------|-----------|------------|-----------|-------|
| 62.1 Barrel | N/A | N | - | | | - | | | " | |
| 62.2 Head Walls | N/A | N | - | | | | | | | |
| 62.3 Cut-off wall | N/A | N | | - | | | | | | |
| 62.4 Retaining wall | N/A | N | - | _ | 1221 | | | 22 | | |

Comments:

PBRIDGE ENGINEERING OFFICE **ENGINNERING SERVICE AREA**

71. WATER ADEQUACY:

N/A

N/A

72. APPROACH ROADWAY

72.1 Alignment: 6

72.2 Slab or Pavement

Condition: N Material: Other

Cracking: No

Spalling: Small Scaling: None Uneven: No

Erosion: No

Rough: No

Settlement: No Movement: Approach slab-backwall: No Breaking up: No

Excessive deformation: No

Safety:

Hazardous: No

Drainage: Movement: Inadequate: No

Embankment: Condition: N

Pavement-approach slab: No

Functioning: No

Construction: Flimsy: No

Integrity impaired: No

72.3 Undesirable Impact: No

72.4 Joints: No

Type: None

Inadequate: N/A

Satisfactory Alignment: N/A

72.5 Guardrail Type: None

Material: N/A

Functioning: N/A

Alignment Horizontal: N/A Condition: N

Vertical: N/A

Joints Functioning: N/A Safety Securely Attached: N/A Pedestrian Hazards: N/A

Comments:

90. INSPECTION DATE: _ 30 JUNIO 2008

93. CRITICAL FEATURE INSPECTION DATE

Fracture Critical:

Underwater:

Other Special Inspection: 30 JUNIO 2012

102. DIRECTION OF TRAFFIC: Highway traffic not carried

106. YEAR RECONSTRUCTED:

107. DECK STRUCTURE TYPE: Steel Plate (includes orthotropic)

108. WEARING SURFACE/PROTECTIVE SYSTEM

Type wearing surface: Steel Type Membrane: None Deck protection: None

111. PIER OR ABUTMENT PROTECTION (FOR NAVIGATION): N/A

113. SCOUR CRITICAL BRIDGES: N

Type: N/A

116. MINUMUM NAVIGATION VERTICAL CLEARANCE:

AUXILIARY ITEMS

Signs:

Type: Height Limits 18'-6"(5.46mts)

Material: Alum.

Condition: 7

E.4 March 14, 2003

| | | E | Bridge | Inspe | ction | Rep | oort | | Brid | ge Maintena | ance |
|---|--|---|---|----------------|---|-------------|---------------------------|--------------------------------|-----------------|---------------------|------|
| Bridge Key: | 013071 | | Age | ncy ID: | 0130 |)71 | | Suffic | iency R | ating: -1.0 | |
| | IDENTIFI | CATION | | | | | INSPE | CTION | | | = |
| State 1: | 72 Puerto Rico | Struc Num 8: | 013071 DORIOTY DE | Frequenc | / 91: 24 | months | Inspection Date 90: | 3/14/2003 | Next Inspec | tion: 03/14/2 | 1005 |
| Facility Carried 7: | PR 26 | Location 9: BAI CA: | STRO AVE. | FC Frequ | ency 92A: NA | | FC Inspection Date | 03A: NA | Next FC Ins | pection: NA | |
| Rte.(On/Under)5A: | One Route Under | Rte. Signing Prefix : | B: 2 U.S. Number | ed UW Frequ | iency 92B: NA | | UW Inspection Date | 93B: NA | Next UW In: | spection: NA | |
| Level of Service 5C: | 1 Mainline | Rte. Number 5D: | 00003 | SI Freque | ncy 92C: NA | | SI Date 93C: | NA | Next SI: | NA | |
| Directional Suffix 5E: | 0 N/A (NBI) | % Responsibility: | NA | Element F | requency: 24 | months | Element Inspection | Date: 03/14/200 | 3 Next Elem. | Insp. Due: 03/14/2 | 2005 |
| SHD District 2: Place Code 4: | SAN JUAN 76770 | County Code 3: Kilometer Post 11: | San Juan 04.5 km | \searrow | | | | | | | = |
| | | | *************************************** | Defeat | Lieb 100 | 0.01-4 | CLASSIF a STRAHNET hwy | ICATION | 101: No | bridge exists | |
| Feature Intersected 6: Latitude 16: | 18d 27' 18" | WAY Longitude 17: | 066d 03" 06" | | Highway 100: n of Traffic 102: | | | Temporary Struct | | known (NBI) | |
| Border Bridge Code 98: | Unknown (P) | conglidate in | 0000 00 | | y System 104: | | | NBIS Length 112: | | ng Enough | |
| Border Bridge Number 9 | | | | Toll Fa | N/C 15 - 15 - 15 - 15 - 15 - 15 - 15 - 15 | 3 On free | | Functional Class: | 28: 12 | Urban Fwy/Expwy | |
| | | AND MATE | DIALE | \prec | Historical S Owner 22: | Significano | | ble for NRHP Highway Agency | , | | |
| STRU Number of Approach Sp | ICTURE TYPE ens 46: 0 Nur | AND MATER The moder of Spans Main U | | | Custodian | 21: | | e Highway Agenc | | | |
| Main Span Material/ | Design 43A/B: | | | | | | CONF | OITION | | | = |
| 3 Steel | | 09 | | Deck 58 | 7 Good | | Super 59: 6 S | | Sub 60; | 6 Satisfactory | |
| | | | | Culvert | 32: N N/A (NBI |) | Channel/Cl | annel Protection | 61: N N/A | (NBI) | |
| Deck Type 107: | 5 Steel Plate | | | | | 1.0 | AD RATING | AND POS | TING | | = |
| Wearing Surface 108A | 9 Other | | | Inver | tory Rating Met | | AS Allowable Stres | | | AS Allowable Stre | 188 |
| Membrane 108B: | 0 None | | | Inver | tory Rating 66: | MS44 | 4 | Operating Ratin | g 64: N | 1544.4 | |
| Deck Protection 108C: | None | | | Desig | n Load 31: | 7 Ped | estrian | Posting 70: | 5 | At/Above Legal Lo | ads |
| | AGE AND | | | Posti | ng status 41: | A Ope | n, no restriction | | | | |
| rear Built 27: Type of Service on 42A: | 3 Pedestrian-bicy | | ted 106; Unknown | \vdash | | | 20114-20 | 70 (CECTED) | | | = |
| Type of Service under 4 | | | | Bridge | Rail 36A: | N N/A or a | APPF not required | AISAL Approach Rail 3 | iec. | N N/A or not requi | irad |
| Lanes on 28A: Unknow ADT 29: 65,300 | n Lanes Under 28B: Truck ADT 109: | | of ADT 30: 2000 | n II | | | not required | Approach Rail E | | N N/A or not requi | |
| ADT 29: 65,300 | TIBOR ADT 109. | 5 % Teal | 01 AD 1 30. 2000 | Str. Ev | aluation 67: | Unknown | (NBI) | Deck Geometry | 68: | Unknown (NBI) | |
| | GEOMETE | | | 02000 | clearance, Vertic | | | own (NBI) | ment 72t | 6 Equal Ma Cales | da |
| Length Max Span 48: Curb/Sdwlk Wdth L 50/ | | tructure Length 49: urb/Sidewalk Width R | 55,60 m 50B: 0,00 m | | vay Adequacy 7 Critical 113: | | Over Waterway | Approach Alignr | ment /2: | 6 Equal Min Criteri | ia |
| Width Curb to Curb 51: | 1.60 m V | /kdth Out to Out 52: | 2.80 m | \geq | | | OBODED III | DD0\/EL45 | NEO | | = |
| Approach Roadway Wid (w/ shoulders) | th 32: 29.30 m | Media | n 33: 0 No median | | Cost 94: | PK | OPOSED IN | Type of Wor | | 35 Rehabilitate-ge | 00 |
| Deck Area: Skew 34: 0.00 " | Structure Flared | 35: 0 No fla: | e. | 1,000,000 | ay Cost 95: | | \$ 0 | | provment 76: | 55,60 m | JII. |
| Minimum Vertical Clear | | 99,99 m | | | Cost 95: f Cost Estimate | 07. 2002 | \$ 21,000 | Future ADT 1 | | 92,703 2020 | |
| Minimum Vertical Unde | rclearance Reference 5 | i4A: H Hwy b | eneath struct | reard | Cost Estimate | 97: 2003 | · | Year of Futur | e ALT 115: | 2020 | = |
| Minimum Vertical Under Minimum Lateral Under | | 05.21 m | eneath struct | Navina | ion Control 38: | N | NAVIGAT NA-no waterway | ION DATA | | | |
| Minimum Lateral Undro Minimum Lateral Undro | | 01.70 m | | Same resident | Clearance 39: | 0,00 | | Horizontal Clear | ance 40: | 0.00 m | |
| Minimum Lateral Undro | | 01.50 m | | Pier Pro | tection 111: | Unkr | rown (NBI) | Lift Bridge Vertic | cal Clearance 1 | 118: | |
| ELEMENT CO | NDITION STA | TE DATA | | | | | | | | | |
| Str Unit Elm/Env | Description | on Unit | - | n 1 Qty. St. 1 | | - | 6 in 3 Qty. St. 3 | | _ | Qty. St. 5 | |
| | S Conc Stringer | m. | | 0% 0 | 60 % | 133 | 0% 0 | 40 % | 90 0 % | 0 | |
| 2000000 | Stl Thru Truss/Bot Stl Thru Truss/Top | m. | | 0% 0 | 100.00 | 78 102 | 0% 0 | 30 % 9 % | 10 0 % | 0 | |
| . 385 | int Stl Floor Beam | m. | | 0% | 26 % | 12 | 0% 0 | 74 % | 34 0 % | 0 | |
| | int Stl Column | ea. | | 0% | | 3 | 0% 0 | 0 % | 0 0% | o | |
| | | | | | | | | | | N= 10 | |
| | | | | | | | | | | | |

| | Department of Transportation | | Bureau of Bridges and Structur Bridge Maintenan |
|---|--|--|--|
| | | Bridge Inspection Report | |
| Str Unit Elem/ | | Element Notes | |
| 2 115/3 | | | |
| 2 121/3 | | | |
| 2 126/3 2 152/3 | | | |
| 2 202/3 | | orion in leurer and of the sale | |
| | Turnes ottor ottoria bi File Exteriori | caron in tower part of the country. | 100.00 |
| BRIDGE N | | | |
| CULVERT | | | |
| | | | |
| | | | |
| | | | |
| PAST INSF | PECTION | | |
| nspection | a Palak | T 15 115 | |
| | | Type: 1 Regular NBI | |
| nspector: | Pontis | Pontis User Key: Pontis - Pontis Por | |
| Scope: | N | | |
| NB | t: ✓ Other: | ☐ Element: ✓ | |
| Und | derwater: Fracture Crit | ical: | |
| NSDECTIO | ON NOTES | | |
| | | | |
| | | | |
| AST INSP | ECTION | | |
| PAST INSP | | Type: 1 Regular NBI | |
| nspection [| Pate: 05/01/1998 | Type: 1 Regular NBI | |
| nspection [| | Type: 1 Regular NBI Pontis User Key: Pontis - Pontis Por | |
| nspection [nspector; cope: | Pate: 05/01/1998 1 | Pontis User Key: Pontis - Pontis Por | |
| nspection Enspector: cope: | Oate: 05/01/1998 -1 Other: | Pontis User Key: Pontis - Pontis Por | , |
| nspection I nspector: scope: NBI Und | oate: 05/01/1998 -1 : ✓ Other: erwater: □ Fracture Critic | Pontis User Key: Pontis - Pontis Por | |
| nspection I rispector; cope; NBI Und | oate: 05/01/1998 -1 : ✓ Other: erwater: □ Fracture Critic | Pontis User Key: Pontis - Pontis Por | |
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| nspection E rispector: cope: NBI Und | Oate: 05/01/1998 -1 : ✓ Other: erwater: □ Fracture Critic | Pontis User Key: Pontis - Pontis Por | |
| Ispection E Ispector: cope: NBI Und ISPECTIO | oate: 05/01/1998 -1 : ✓ Other: erwater: □ Fracture Critic | Pontis User Key: Pontis - Pontis Por | Thu 4/24/2003 08:46:18 |

E.5 November 17, 2000

| * | PUBRTO RICO HIGH | YTTROHTUA YAWE | | PAGE 1 OF 7 |
|--|---|--------------------------|----------------|------------------------|
| ENGINEER: HERIBERTO GONZALEZ | BRIDGE STUDIES AND | | 30117 | PMENT |
| ASSISTANTS: RAUL VAZQUEZ | BRIDGE REINSPECTION 8 | | BUS X | LADDERS |
| : JULIO DE HOSTOS | | | BOAT | CAMERA X |
| LUIS CACHO | BRIDGE No.: 01307 | FEDERAL SYSTEM | UNDERWATER | SNOOPER # |
| | ล์ล์ล์ล์ล์ล์ล์ล์ล์ล์ล์ล์ล์ล์ | | SNOOPER OPERAT | OR |
| t . | ROAD No.: PR 26 | KM. No.: 0004.500 | PLAC | D BUB |
| SVALUATION DATE: 17-NOV-2000 | 2 | | YES X NO | No. |
| | | | FILM No | . 135 |
| | ========IDENTIFICAT | PION===== | | |
| 76 | | | | ¥ |
| 1- STATE : | | | | 721 |
| 2- HIGHWAY AGENCY DISTRICT : 3- COUNTY (PARISH) CODE : | | | | 01 |
| 4- PLACE CODE : | | | JAN | 127 75770 |
| 5- INVENTORY ROUTE : | | | -000020 | 221000030 |
| 6- FEATURES INTERSECTED : | | | | STRIAN WALKWAY |
| 7- FACILITY CARRIED BY STRUCTURE : | | | FADE | PR 26 |
| 8- STRUCTURE NUMBER': | | | 1 OF 1 | 013071 |
| 9- LOCATION : | | | | DORIOTY DE CASTRO AVE. |
| 0- INVENTORY ROUTE, MINIMUM VERTICAL C | | | | 052 |
| 1- KILOMETERPOINT : | | | | 0004500 |
| 2- BASE HIGHWAY NETWORK : | | | | 0001300 |
| 3- LRS INVENTORY ROUTE, SUBROUTE NUMBER | | | | |
| 6- LATITUDB : | | DEGREES 27.3 MINUTES | | 18271800 |
| 7- LONGITUDE : | 66 | DEGREES 03.1 MINUTES | | 066030600 |
| 9- BYPASS, DETOUR LENGTH (NEAREST KILO | METER) : | STRUCTURE OVER HIGH | HWAY | 000 |
| | ========CLASSIFICA | PION========= | | |
| | 100000000000000000000000000000000000000 | Position Children | | |
| 20- TOLL : | | REE ROAD | | 3 |
| 21- MAINTENANCE RESPONSABILITY : | | | | 01 |
| 22- OWNER : | | | | 01 |
| e-6- PUNCTIONAL CLASS. OF INVENTORY ROUT | B : URBAN : | INTERSTATE | | . 12 |
| | AGE AND SE | RVICE===== | | |
| 7- YEAR BUILT : | ******************* | | 1968 | 1968 |
| 8- LANES ON AND UNDER STRUCTURE : | | C LANES ON / 8 LANES UNI | DER | 0008 |
| 9- A.D.T. OF INVENTORY ROUTE : | | 67,300 | | 067300 |
| 00- YEAR OF A.D.T. : | | | 1999 | 1999 |
| | ========STRUCTURE DA | ATA======== | | |
| 1- DESIGN LOAD : | | PBI | DESTRIAN | 7 |
| 2- APPROACH ROADWAY WIDTH : | | 29.29 MT (96.0 | 07 FT) | 0293 |
| 3- BRIDGE MEDIAN : | | NONB | | O |
| 4- SKEW ANGLE : | | NONE | | 00 |
| 5- STRUCTURE FLARED : | | 1 | NC | o |
| 6- TRAFFIC SAFETY FEATURES : | • | | N-N-N-N | NNNN |
| 7- HISTORICAL SIGNIFICANCE : | | | | 5 |
| 8- NAVIGATION CONTROL : | | | | N |
| 9- NAVIGATION VERTICAL CLEARANCE : | | | | 0000 |
| 0- NAVIGATION HORIZONTAL CLEARANCE : . | | | | 00000 |
| 1- STRUCT. OPEN, POSTED OR CLOSED TO T | | | . OPEN | A |
| 2- TYPE OF SERVICE : | | VBR HIGHWAY | | 31 |
| 3- STRUCTURE TYPE, MAIN : | | | | 309 |
| 4- STRUCTURE TYPE APPR. : | NONE | | | 000 |
| The service of the se | | | | |
| 45- NUMBER OF SPAN IN MAIN UNIT : | | | | 002 0000 |

| AL SYSTEM | POR | RTO RICO HIGHWAY AUTHORITY | | PAGE 2 OF 7 |
|--|---------------------------------------|--|---------------------------------------|-----------------|
| | ERIDGE | STUDIES AND EVALUATION OFFI | CE | |
| JDGB No.: 01307 | BRIDGE R | EINSPECTION & EVALUATION REP | ORT | |
| 7- INV. ROUTE, TOTAL HORIZ. | CLEARANCE : | 10.82 MT.(35.49 FT) | | 108 |
| 8- LENGTH OF MAXIMUM SPAN : | | | | 00217 |
| 9- STRUCTURE LENGTH : | | | | 000556 |
| 0- CURB OR SIDEWALK WIDTHS | | AND STATE OF THE S | | 000000 |
| ONLY ON DIDENSELV MIDILIO | | nona. | | 00000 |
| | | ==STRUCTURE DATA====== | | |
| | | 1.64 | | 0016 |
| | | | | 0028 |
| | | | | 9999 |
| | | 5.21 | | H0521 |
| | | 1.68 | Commence of the second | H017 |
| 6- MINIMUM LATERAL UNDERCLE | ARANCE ON LEFT : | 1.50 | MT. (4.92 FT) | 015 |
| | | ====CONDITION============ | × | |
| | | | | |
| 8- DECK: FAIR | RATING: 3 | DIETON | DECK COMMENTS: | 0410V AV |
| 58.1 WEARING SURFACE: MAT | RKIAL: STERF COM | DITION: 3 | DECK SURFACE SEVERE COR | COSTON ON FLOOR |
| THICKNESS: | | | STEEL PLATES, PER- | |
| | NO DRAINAGE: X ADEQUA | TE INADEQUATE | FORATIONS DUE CORROSION | |
| PONDING: YES X NO | | \$2500 MO TO PAGE 1 | DERATED TO SEVERE CORRO | SION ON MANY |
| 58.2 SLAB OR PLATE: MATER | | ITION 3 | RAILING COMPONENTS. | |
| CRACKING: FINE | | | (2) | |
| | | AAAAAAAAAAAAAAA AAAAAAAAAAAAAAAA | ¢ | |
| | | L > 1 in. x 6 in. & | • | |
| | | n., H * in 1 in., S > 1 | | |
| | | <u> </u> | | |
| | | ON: LIGHT MODERATE SEVE | RE | |
| 58.3 MOVEMENT: DECK TO BAC | | APPROACH SLAB cm. | | |
| | | <i>aaaaaaa</i> aaaaaaaa6aaaaaaa | | |
| | | 8.6) ° (58.7) ° (58.8) | | |
| | | EWALKS · PARAPETS · RAILING | | |
| | | ááááááááááááááá ááááááááá | ¢ | |
| | 0 0 0 | o STEEL | 0 | |
| MATERIAL | | | | |
| | | 5 | | |
| CONDITION RATING HBIGHT LOSS (cm) | • • • • | o • | • | |
| CONDITION RATING HBIGHT LOSS (cm) | • • • • | ° | • | |
| CONDITION RATING HEIGHT LOSS (cm) JOINTS DRAINAGE | • • • • | o o | • | |
| CONDITION RATING HEIGHT LOSS (cm) JOINTS DRAINAGE | • • • • | o • | • | |
| CONDITION RATING HEIGHT LOSS (cm) JOINTS DRAINAGE ALIGNMENT CORROSION (L-M-S) | 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | • • • • • • • • • • • • • • • • • • • | | |
| CONDITION RATING HEIGHT LOSS (cm) JOINTS DRAINAGE ALIGNMENT CORROSION (L-M-S) | 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | OK | | |
| CONDITION RATING HEIGHT LOSS (cm) JOINTS DRAINAGE ALIGNMENT CORROSION (L-M-S) | 0 0 0 | • • • • • • • • • • • • • • • • • • • | | |
| CONDITION RATING HBIGHT LOSS (cm) JOINTS DRAINAGE ALIGNMENT CORROSION (L-M-S) PAINT:G-GOOD,F-FAIR, | | o o n | | |
| CONDITION RATING HEIGHT LOSS (cm) JOINTS DRAINAGE ALIGNMENT CORROSION (L-M-S) PAINT:G-GOOD,F-FAIR, P-POOR,N-NONE | 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | o o o | | |
| CONDITION RATING HEIGHT LOSS (Cm) JOINTS DRAINAGE ALIGNMENT CORROSION (L-M-S) PAINT:G-GOOD,F-FAIR, P-POOR,N-NONE U-USELESS TO PA SAFETY CRACKING (F-M-O) | 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | o o o N | | |
| CONDITION RATING HEIGHT LOSS (Cm) JOINTS DRAINAGE ALIGNMENT CORROSION (L-M-S) PAINT:G-GOOD,F-FAIR, P-POOR,N-NONE U-USELESS TO PA SAFETY CRACKING (F-M-O) | 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | • • • • • • • • • • • • • • • • • • • | | |
| CONDITION RATING HBIGHT LOSS (Cm) JOINTS DRAINAGE ALIGNMENT CORROSION (L-M-S) PAINT:G-GOOD,F-FAIR, P-POOR,N-NONE U-USELESS TO PA SAFETY CRACKING (F-M-O) | 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | o o N | | |
| CONDITION RATING HBIGHT LOSS (Cm) JOINTS DRAINAGE ALIGNMENT CORROSION (L-M-S) PAINT:G-GOOD,F-FAIR, P-POOR,N-NONE U-USELESS TO PA SAFETY CRACKING (F-M-O) SPALLING (S-L) | o o o o o o o o o o o o o o o o o o o | o o N | | |
| CONDITION RATING HBIGHT LOSS (Cm) JOINTS DRAINAGE ALIGNMENT CORROSION (L-M-S) PAINT:G-GOOD,F-FAIR, P-POOR,N-NONE U-USELESS TO PA SAFETY CRACKING (F-M-O) SPALLING (S-L) | O O O O O O O O O O O O O O O O O O O | | | |
| CONDITION RATING HEIGHT LOSS (cm) JOINTS DRAINAGE ALIGNMENT CORROSION (L-M-S) PAINT:G-GOOD,F-FAIR, P-POOR,N-NONE U-USELESS TO PA SAFETY CRACKING (F-M-O) SPALLING (S-L) SCALING (L-M-H-S) | O O O O O O O O O O O O O O O O O O O | | | |
| CONDITION RATING HBIGHT LOSS (cm) JOINTS DRAINAGE ALIGNMENT CORROSION (L-M-S) PAINT:G-GOOD, F-FAIR, P-POOR, K-NONE U-USELESS TO PA SAFETY CRACKING (F-M-O) SPALLING (S-L) SCALING (L-M-H-S) 58.9 LIGHTING STANDARDS: 58.10 UTILITIES: TYPE: | O O O O O O O O O O O O O O O O O O O | | o o o o o o o o o o o o o o o o o o o | |
| CONDITION RATING HBIGHT LOSS (cm) JOINTS DRAINAGE ALIGNMENT CORROSION (L-M-S) PAINT:G-GOOD, F-FAIR, P-POOR, N-NONE U-USELESS TO PA SAFETY CRACKING (F-M-O) SPALLING (S-L) SCALING (L-M-H-S) 58.9 LIGHTING STANDARDS: 58.10 UTILITIES: TYPE: 58.11 JOINTS: EXPANSION | SIZE: CONSTRUCTION CONDIT. | | C: YES NO | |
| CONDITION RATING HBIGHT LOSS (cm) JOINTS DRAINAGE ALIGNMENT CORROSION (L-M-S) PAINT:G-GOOD, F-FAIR, P-POOR, K-NONE U-USELESS TO PA SAFETY CRACKING (F-M-O) SPALLING (S-L) SCALING (L-M-H-S) 58.9 LICHTING STANDARDS: 58.10 UTILITIES: TYPE: | MATERIAL: CO | | C: YES NO | |

PAGE 3 OF 7 PUERTO RICO HIGHWAY AUTHORITY BRIDGE STUDIES AND EVALUATION OFFICE (DGR No.: 01307 BRIDGE REINSPECTION & EVALUATION REPORT RATING: 5 SUPERSTRUCTURE COMMENTS: 59- SHDERSTRUCTURE: FAIR 59.1 BEARING DEVICES: TYPE: MOVABLE MODERATE TO SEVERE CORROSION ON SEVERA FIXED OUT OF PLUMB POOR NONE USELESS TO PAINT PAINT: GOOD FAIR L BRIDGE COMPONENTS. FUNCTIONING: YES NO CONDITTION: 59.2 BRIDGE SRATS, PEDESTAL, GROUT PADS, ABUTMENTS OR PIER SRATS WHERE BEAMS BRAR DIRECTLY ON CONCRETE CRACKING: F M O SPALLING: S L CONDITION: 5 scaling: L M H S CRUSHING: 59.3 STEEL-BEAMS: TYPE: DIMENSIONS(height; width; thickness): CORROSION: L M S PAINT: G F P N U CONDITION: 59.4 CONCRETE-BOX BEAMS, I-BEAMS, SLAE, T-BEAM, TYPE: CRACKING: F M O SPALLING: S L SCALING: L M H S 59.5 TRUSSES: TYPE: BAILEY PED CONDITION: 5 CORROSION: L X M X S DAMAGE: DEFORMATION: PAINT: G X F X P N U A=TRUSS B=UPPER & LOWER LATERAL BRACING C=PORTALS D=FLOOR BEAMS E*=STRINGERS CONDITION: FUNCTIONING: YES NO 59.6 DRAINAGE: TYPE: 59.7 HINGES: CONDITION: FUNCTIONING: YES NO MOVEMENT: YES NO ALIGNMENT: GOOD BAD PAINT: G F P N U 59.8 DEFLECTIONS: X NORMAL EXCESSIVE 59.9 VIBRATIONS: X MINIMAL MODERATE EXCESSIVE RATING: 5 60- SUBSTRUCTURE: FAIR · 60.1.1 · 60.1.2 · 60.1.3 · 60.1.4 · 60.2.1 · 60.2.2 · 60.2.3 · 60.2.4 · 60.2.5 · 60.4.1 · 60.4.2 · 60.4.3 · ** OWINGWALL** BREAST & FOOTING ** PILES ** CAPS ** OBTACING ** COLUMNS ** FOOTINGS ** PILES ** CAPS ** OBTACING ** PILES ** 0 0 • • 0 °BACKWALL° 0 . CONDITION RATING 0 • F • CRACKING (F-M-O) ° SPALLING (S-L) . 0---- ---0---- ---0---- ---0-----SCALING (L-M-H-S) 0 9 0 o opopo o o PAINT (G-F-P-N-U) * MOVEMENT ------ 0--- --0--- --0--- --0--- NO --0---NO --0---NO --0--- --0--- --0--- --0--- --0 • ۰ 0 • UNDERMINING --- 0--- ----- -----__0___ __0___ __0___ __0 60- SUBSTRUCTURE COMMENTS:

AL SYSTEM PUBRIC RICO HIGHWAY AUTHORITY PAGE 4 OF 7 BRIDGE STUDIES AND EVALUATION OFFICE CDGE No.: 01307 BRIDGE REINSPECTION & EVALUATION REPORT 61- CHANNEL & CHANNEL PROTECTION : N/A RATING : N CHANNEL COMMENTS: 61.1 CHANNEL SCOUR (EXTENT) : 61.2 EMBANKMENT EROSION(EXTENT) : Odádádádádádádádádádán odádádádádádádádá CONDITION*FUNCTIONING • TYPE • MATERIAL• RATING QAAAAAAAAAA · · · · YES · NO · 61,3 PROTECTIVE DEVICE ° ° ° ° ° ° 61.4 FRNDER SYSTEM --- ° ° ° --- --- ° ---61.7 OBSTRUCTION (DEBRIS, GROWTHS): 61.8 CHANNEL CHANGE: YES NO DETRIMENTAL: YES NO IF YES, EXPLAIN 61.9 ADEQUATE WATERWAY: YES NO IF NO, EXPLAIN 61.10 SURROUNDING AREA: FLOODING: YES NO IF YES, EXPLAIN EROSION: YES NO IF YES, EXPLAIN 61.11 LOCATION OF PIERS AND/OR ABUTMENTS: DETRIMENTAL: YES NO IF YES, EXPLAIN 61.12 OTHER FEATURES THAT MAY AFFECT STRUCTURE: 62 - CULVERT AND RETAINING WALLS : N/A RATING : N CULVERT COMMENTS: °62.1BARREL°62.2HBADWALL°62.3CUT-OFFWALL°62.4RETAINING WALL° 0 FUNCTIONING (Y-N) ° ° ° CRACKING (F-M-O) O-----SPALLING (S-L) ° CORROSION(L-M-S) º SETTLEMENT (Y-N) O----- ----O-----ALIGNMENT (Y-N) ° 63 - METHOD USED TO DETERMINE OPERATING RATING . 64- OPERATING RATING : PEDESTRIAN 800 65- METHOD USED TO DETERMINE INVENTORY RATING ... 2 66- INVENTORY RATING : PEDESTRIAN 800

CAL SYSTEM PUBRTO RICO HIGHWAY AUTHORITY PAGE 5 OF 7 BRIDGE STUDIES AND EVALUATION OFFICE .IDGE No.: 01307 BRIDGE REINSPECTION & EVALUATION REPORT MODERATE & SEVERE CORROSION AT STEEL PLATES, RAILINGS, UPPER CHORD & STRIN-GERS.MODERATE CORROSION AT BRACINGS & BETWEEN LOWER CHORDS & FLOORBEAMS. LIGHT CORROSION AT STEEL COLUMNS & STAIRS, MODERATE CORROSION AT REST AREA. 68- DBCK GEOMETRY: 69- UNDERCERARANCE, VERTICAL & HORIZONTAL:

(5.2mt) (150mt)

(gual to present minimum criteria. 70- BRIDGE POSTING : N/A. N/A. REMOTE - GREATER THAN 100 YEARS. SLIGHT - 11 TO 100 YEARS. OCASSIONAL - 3 TO 10 YEARS. FREQUENT - LESS THAN 3 YEARS. INSIGNIFICANT - MINOR INCONVENIENCE, HIGHWAY PASSABLE IN A MATTER OF HOURS. SIGNIFICANT - TRAFFIC DELAYS OF UP TO SEVERAL DAYS SEVERE - LONG TERM DELAYS TO TRAFFIC WITH RESULTING HARDSHIP MATERIAL : 72.2 SLAB OR PAVEMENT CONDITION : CRACKING: F N O SPALLING: L S SCALING: L M H S UNNEVEN: YES NO ROUGH: YES NO SETTLEMENT: YES NO MOVEMENT: APPROACH SLAB-BACKWALL: YES NO BREAKING UP: EXCESSIVE DEFORMATION: SAFETY: HAZARDOUS YES NO DRAINAGE: INADBQUATE: YES NO FONDING: YES NO MOVEMENT: PAVEMENT-APPROACH SLAB: YES NO EMBANKMENT: CONDITION: FUNCTIONING: YES NO BROSION: YES NO IF YES, EXPLAIN YES NO CONSTRUCTION: FLIMSY: INTEGRITY IMPAIRED: YES NO IF YES, EXPLAIN 72.3 UNDESIRABLE IMPACT: YES NO INADEQUATE: YES NO SATISFACTORY ALIGNMENT: YES NO 72.4 JOINTS: TYPE: GUARDRAIL: TYPE: MATERIAL: CONDITION: FUNCTIONING: YES ALIGNMENT: HORIZONTAL: GOOD BAD VERTICAL: GOOD BAD JOINTS: FUNCTIONING: YES 72.5 GUARDRAIL: TYPE: FUNCTIONING: YES NO SAFETY: SECURELY ATTACHED: YES NO PEDESTRIAN HAZARDS: YES NO 72 - APPROACH ROADWAY - COMMENTS:

| «AL SYSTEM | NYTONE LEVEL NEW YORK AND | | | | | |
|------------------------------------|---|--|--|--|--|--|
| 120 1320 | PUBRIO RICO HIGHWAY AUTHORITY | PAGE 6 OF 7 | | | | |
| (IDGE NO. :01307 | BRIDGE STUDIES AND EVALUATION OFFICE | | | | | |
| | BRIDGE REINSPECTION & BVALUATION REPORT | | | | | |
| -======PROPOSED IMPROVEMENT======= | | | | | | |
| 75- TYPE OF WORK : | REMABILITATION | 352 | | | | |
| 76- LENGTH OF STRUCTURE IMPROVEM | MENT : 55.63 MT.(182.47 FT) | 000556 | | | | |
| | | | | | | |
| | INSPECTIONS | 94 | | | | |
| 89- RESERVED | | | | | | |
| 90- INSPECTION DATE : | NOVEMBER-17-2000 | ************************************** | | | | |
| 91- DESIGNATED INSPECTION FRECUE | RNCY : 24 MONTES | 1100 | | | | |
| 92- CRITICAL FEATURE INSPECTION | : | 24 | | | | |
| 93 - CRITICAL FEAT, INSPECT, DATE | 3: | иии | | | | |
| FRACTURE CRITICAL | UNDERWATER OTHER | | | | | |
| 9 | OTHER. | | | | | |
| E | ========IMPROVEMENT COST========= | | | | | |
| | | | | | | |
| 94- BRIDGE IMPROVEMENT COST : | N/A | 000000 | | | | |
| 95- ROADWAY IMPROVEMENT COST : . | | 999999 | | | | |
| 96- TOTAL PROJECT COST : | (55.63X2.84X\$1315X10%)=\$20,776 | 000021 | | | | |
| 97- YEAR OF IMPROVEMENT COST EST | (55.63X2.84X\$1315X10\$)=\$20,776 2000 | 2000 | | | | |
| | | 2000 | | | | |
| | ==CLASSIFICATION AND STRUCTURE DATA== | | | | | |
| | | | | | | |
| 98- BORDER BRIDGE : | | | | | | |
| 99- BORDER BRIDGE STRUCTURE NUMBER | BR ; | | | | | |
| 100- STRAHNET HIGHWAY DESIGNATION | N : DEFENSE HIGHWAY | 2 | | | | |
| 101- PARALLEL STRUCTURE DESIGNATI | ION : NO PARALLEL STRUCTURE | N | | | | |
| 102- DIRECTION OF TRAFFIC : | TRAPFIC NOT CARRIED | 0 | | | | |
| 103 - TEMPORARY STRUCTURE DESIGNAT | TION: | | | | | |
| 104- HIGHWAY SYSTEM OF THE INVENT | TORY ROUTE ; N.H.S. | 0 | | | | |
| | | 0 | | | | |
| 106- YEAR RECONSTRUCTION : | NO RECONSTRUCTION | 0000 | | | | |
| 107- DECK STRUCTURE TYPE : | STEBL PLATE | 5 | | | | |
| 108- WEARING SURF. / PROTECT. SYST | TEM : OTERR - NONE - NONE | 900 | | | | |
| 109- AVERAGE DAILY TRUCK TRAFFIC | 1 5 % | 05 | | | | |
| 110- DESIGNATED NATIONAL NETWORK | : PART OF NETWORK | 1 | | | | |
| 111- PIER OR ABUT. PROTECTION (NA | WIGATION) : N/A | # T | | | | |
| 112- NBIS BRIDGE LENGTH : | YES | Y | | | | |
| 113 - SCOUR CRITICAL BRIDGE : | | и | | | | |
| 114- FUTURE AVERAGE DAILY TRAFFIC | 2 : 94,893 | 094893 | | | | |
| 115- YR. OF FUTURE A.D.T. : ,, | 2019 | 2019 | | | | |
| 116- MINIM. NAVIG. VERT. CLEARANC | 'E : N/A | | | | | |
| VERTICAL LIFT BRIDGE : | 9 | | | | | |
| 117- SUFFICIENCY RATING : , | | | | | | |
| 125- PRIORITY RATING: | | | | | | |
| 127- EVALUATION DATE : | | 111700 | | | | |
| 130- CRITICAL FRACTURE INSP. DATE | · | | | | | |
| | | | | | | |
| ENGINEER : HERIBERTO GONZALEZ | | | | | | |

RAL SYSTEM PUBRIO RICO HIGHWAY AUTHORITY PAGE 7 OF 7

BRIDGE STUDIES AND EVALUATION OFFICE

RIDGR NO. :01307

BRIDGE REINSPECTION & EVALUATION REPORT

AUXILIARY ITEMS

1-SIGNS

TYPE: ORIENTACION "SAN JUAN - BAXAMON - RIO PIEDRAS"

MATERIAL: ALUMINIO

CONDITION: 7

REMARKS:

THE REHABILITATION CONSIST IN REPAIR ALL DEFICIENCIES DESCRIBED ON THE

ITEM #67.

E.6 May 8, 1998

| s16.66H | \$:: | & :. | 7 P | |
|---|---|-----------------------|---------------------|--------------------------------------|
| | PUERTO RICO HIGH | WAY AUTHORITY | | PAGE 1 OF 7 |
| ENGINEER: INEABELLE VELEZ | BRIDGE STUDIES AND | EVALUATION OFFICE | EQU | IPMENT |
| ASSISTANTS: L.QUIÑONES | BRIDGE REINSPECTION & | EVALUATION REPORT | BUS X | LADDERS |
| : ERAZO | | | BOAT | CAMERA X |
| ¥ :: | BRIDGE No.: 01307 | FEDERAL SYSTEM | UNDERWATER | SNOOPER # |
| ŧ | - N | | SNOOPER OPERA | TOR |
| : | ROAD No.: PR 26 | XM. No.: 0004.500 | PLA | QUE ID |
| EVALUATION DATE: 8-MAYO-98 | | | YES X NO | No. |
| | | (e | FILM N | o. 135 |
| | IDENTIFICA | TION | | |
| 1- STATE : | | Commonwealth of Pue | rto Rico | . 721 |
| 2- HIGHWAY AGENCY DISTRICT : | | s | AN JUAN | 01 |
| 3- COUNTY (PARISH) CODE : | | SAN J | UAN | 127 |
| 4- PLACE CODE : | | . SAN JUAN URBAN ZONE | | 76770 |
| 5- INVENTORY ROUTE : | | 2-1-1 | -00003-0 | 211000030 |
| 6- FEATURES INTERSECTED : | | PEDESTRIAN WALKWA | Y PED | ESTRIAN WALKWAY |
| 7- FACILITY CARRIED BY STRUCTURE : | | P.R 26 | | PR 26 |
| 8- STRUCTURE NUMBER : | | BRIDGE 1307 | 1 OF 1 | 013071 |
| 9- LOCATION : | | BALDORIOTY DE CAS | TRO AVE. BAL | DORIOTY DE CASTRO AVE. |
| 10- INVENTORY ROUTE, MINIMUM VERTICA | L CLEARANCE : | 5.21 MT (17 | ' - 1") | 0520 |
| 11- KILOMETERPOINT : | | | . 4.50 | 0004500 |
| 12- BASE HIGHWAY NETWORK : | 5 P | | | 1 |
| 13- LRS INVENTORY ROUTE, SUBROUTE NU | MBER : | | | 000000002600 |
| 16- LATITUDE : | | DEGREES 27.3 MINUTES | | 18271800 |
| 17- LONGITUDE : | | | | 066030600 |
| 19- BYPASS, DETOUR LENGTH (NEAREST K | | | HWAY | 000 |
| ,, | | | | |
| | =======CLASSIFICA | FION | | |
| 20- TOLL : | ON F | REE ROAD | | 3 |
| 21- MAINTENANCE RESPONSABILITY : | D.T.P.W. | | | . 01 |
| 22- OWNER : | D.T.P.W. | | | 01 |
| 26- FUNCTIONAL CLASS. OF INVENTORY R | COUTE : URBAN : | INTERSTATE | | 11 |
| | BEREITE AGE AND SE | RVICE | | |
| 27- YEAR BUILT : | | | .,, 1968 | 1968 |
| 28- LANES ON AND UNDER STRUCTURE : | | | | 8000 |
| 29- A.D.T. OF INVENTORY ROUTE : | | | | 065300 |
| 30- YEAR OF A.D.T.: | | | 1996 | 1996 |
| | ======STRUCTURE DA | ΔTA | | |
| 31- DESIGN LOAD : | | | DESTRIAN | 7 |
| 32- APPROACH ROADWAY WIDTH : | | | | 0293 |
| 33- BRIDGE MEDIAN : | | | , | 0 |
| 33- BRIDGE MEDIAN : | | | 8 | 00 |
| | | | | 0 |
| | | | | NANA |
| 35- STRUCTURE FLARED: | | | | DODE |
| 36- TRAFFIC SAFETY FEATURES : | | | | E |
| 36- TRAFFIC SAFETY FEATURES : 37- HISTORICAL SIGNIFICANCE : | •••••• | | 5 | 5 N |
| 36- TRAFFIC SAFETY FEATURES : 37- HISTORICAL SIGNIFICANCE : 38- NAVIGATION CONTROL : | | | 5 | N |
| 36- TRAFFIC SAFETY FEATURES: 37- HISTORICAL SIGNIFICANCE: 38- NAVIGATION CONTROL: 39- NAVIGATION VERTICAL CLEARANCE: | | | 5 N/A NO | N 0000 |
| 36- TRAFFIC SAFETY FEATURES: 37- HISTORICAL SIGNIFICANCE: 38- NAVIGATION CONTROL: 39- NAVIGATION VERTICAL CLEARANCE: 40- NAVIGATION HORIZONTAL CLEARANCE | | | 5 N/A NO | N 0000 00000 |
| 36- TRAFFIC SAFETY FEATURES: 37- HISTORICAL SIGNIFICANCE: 38- NAVIGATION CONTROL: 39- NAVIGATION VERTICAL CLEARANCE: 40- NAVIGATION HORIZONTAL CLEARANCE 41- STRUCT. OPEN, POSTED OR CLOSED 7 | : O TRAFF : | | 5 N/A NO | N 0000 00000 A |
| 36- TRAFFIC SAFETY FEATURES: 37- HISTORICAL SIGNIFICANCE: 38- NAVIGATION CONTROL: 39- NAVIGATION VERTICAL CLEARANCE: 40- NAVIGATION HORIZONTAL CLEARANCE 41- STRUCT, OPEN, POSTED OR CLOSED 74 42- TYPE OF SERVICE: | : O TRAFF : PEDESTRIAN O | | 5 N/A NO | N 0000 00000 A 31 |
| 36- TRAFFIC SAFETY FEATURES: 37- HISTORICAL SIGNIFICANCE: 38- NAVIGATION CONTROL: 39- NAVIGATION VERTICAL CLEARANCE: 40- NAVIGATION HORIZONTAL CLEARANCE 41- STRUCT, OPEN, POSTED OR CLOSED 442- TYPE OF SERVICE: 43- STRUCTURE TYPE, MAIN: | : O TRAFF : PEDESTRIAN O' STEEL TRUSS DECK | | 5 N/A NO | N 0000 00000 A 31 309 |
| 36- TRAFFIC SAFETY FEATURES: 37- HISTORICAL SIGNIFICANCE: 38- NAVIGATION CONTROL: 39- NAVIGATION VERTICAL CLEARANCE: 40- NAVIGATION HORIZONTAL CLEARANCE TRUCT. OPEN, POSTED OR CLOSED TALE TYPE OF SERVICE: 43- STRUCTURE TYPE, MAIN: 44- STRUCTURE TYPE APPR: | : O TRAFF: PEDESTRIAN O' STEEL TRUSS DECK | VER HIGHWAY | 5 N/A NO NO OPEN | N 0000 00000 A 31 309 |
| 36- TRAFFIC SAFETY FEATURES: 37- HISTORICAL SIGNIFICANCE: 38- NAVIGATION CONTROL: 39- NAVIGATION VERTICAL CLEARANCE: 40- NAVIGATION HORIZONTAL CLEARANCE 41- STRUCT. OPEN, POSTED OR CLOSED 4 42- TYPE OF SERVICE: 43- STRUCTURE TYPE, MAIN: | : O TRAFF : PEDESTRIAN O' STEEL TRUSS DECK NONE | VER HIGHWAY | 5 N/A NO NO NO OPEN | N 0000 00000 A 31 309 |

| | | | | | PAGE 2 OF 7 | | | |
|--|------------------------|------------------------|---------------|-------------------------------|--------------|--|--|--|
| XAL SYSTEM | MANUAL | PUERTO RICO HIGHWAY A | | | PAGE 2 OF / | | | |
| Salari Contra | | IDGE STUDIES AND EVALU | | | | | | |
| IDGE No.: 01307 | BRID | GE REINSPECTION & EVAL | UATION REPORT | | 1400 k | | | |
| | ····· | 4.40 act | /25 40 PM | | 100 | | | |
| 47- INV. ROUTE, TOTAL HORIZ. CLE | | | (35.49 FT) | | 002142 | | | |
| 48- LENGTH OF MAXIMUM SPAN : | | | | | 00259/10 | | | |
| 49- STRUCTURE LENGTH : | | | , | | 000000 | | | |
| 50- CURB OR SIDEWALK WIDTHS: NONE | | | | | | | | |
| | | | | | | | | |
| STATES STATES STATES AND ADDRESS STATES STAT | | STRUCTURE DATA== | | /E 30 Pm) | 0016 | | | |
| 51- BRIDGE ROADWAY WIDTH, CURB T | O CURB : | ***************** | 2.64 M | (0.30 FI) | 0028 | | | |
| 52- DECK WIDTH, OUT TO OUT : | | | UNIT | MIMPO | 9999 ./ | | | |
| 53- MI. VERT. CLEAR. OVER BRIDGE 54- MINIMUM VERTICAL UNDERCLEARA | ROADWAY: | | 5 21 M/P | (17' - 1") | H052#1 | | | |
| 54- MINIMUM VERTICAL UNDERCLEARAN | | | | | но17 | | | |
| | | | | | 015 | | | |
| 56- MINIMUM LATERAL UNDERCLEARAN | ICE ON LEFT : | | 1.50 MI. | 17.72 11/ | | | | |
| 9 | Strengthy #4 2260 | CONDITION | | | | | | |
| | | CONDITION | | | | | | |
| to brown parts | RATING: 5 | | | DECK COMMENTS: | | | | |
| 58- DECK: FAIR 58.1 WEARING SURFACE: MATERIA | | CONDITION :5 | | 58.1 Y 58.2) TOLES DE ACERO O | CON LEVE COR | | | |
| THICKNESS: - | d; STEEL | CONDITION .5 | | ROSION. | | | | |
| DETERIORATION: X YES NO | DEATMACE- V M | SPAUGGGANT STANGE | | 58.8) RAILING CON LEVE CORROS | SION, MODERA | | | |
| 34 | AFETY: X YES NO | | | DA CORROSION EN LAS SECCIONE | | | | |
| 58.2 SLAB OR PLATE: MATERIAL: | | CONDITION 5 | | Y #11 LADO OESTE. | | | | |
| | MEDIUM OPEN | CONDITION | | | | | | |
| TOP BOTTOM | dedich CPEA | | | | | | | |
| 1.0 | 1 in DEEP x 6 is | n. & L > 1 in. x 6 i | n. & | | | | | |
| TO A CONTRACT OF THE PARTY OF T | | - e in., H e in 1 ir | | | | | | |
| SCALLING: | .0 11 111.) 21 11 111. | V 2, 2 V 2 | | | | | | |
| EFFLORESCENCE EXUDATION | RUST STAINS COL | RROSION: LIGHT MODE | ATE SEVERE | | | | | |
| 58.3 MOVEMENT: DECK TO BACKWAI | | CK TO APPROACH SLAB | cm. | | | | | |
| 30,3 Novinii 2000 10 District | | | | | | | | |
| | (58.4) (58.5) | (58.6) (58.7) | (58.8) | | | | | |
| | | SIDEWALKS PARAPETS | | | | | | |
| | <u> </u> | | | | | | | |
| MATERIAL | i i | i i | STEEL | | | | | |
| CONDITION RATING | -ii | | - [5] | | | | | |
| HEIGHT LOSS (cm) | i i | i i | i - I | | | | | |
| JOINTS | | | - | 8 | | | | |
| DRAINAGE | | | [G [| | | | | |
| ALIGNMENT | | | - G | | | | | |
| CORROSION (L-M-S) | i i | 1 | M | | | | | |
| PAINT: G-GOOD, F-FAIR, | | | - | | | | | |
| P-POOR, N-NONE | 1 | 1 | 1 | | | | | |
| U-USELESS TO PAINT | | 1 | 1 | | | | | |
| SAFETY | | - | - YES | | | | | |
| CRACKING (F-M-O) | 1 | | - 1 | | | | | |
| SPALLING (S-L) | | | - [] | | | | | |
| SCALING (L-M-H-S) | 1 1 | 1 | - | | | | | |
| 200 | L | <u> </u> | | | | | | |
| | | | | | | | | |
| 58.9 LIGHTING STANDARDS: MA | TERIAL: - | CONDITION: - | FUNCT | IONING: YES NO | | | | |
| 58.10 UTILITIES: TYPE: | - SIZE: | SAFETY: | | | | | | |
| 58.11 JOINTS: EXPANSION | CONSTRUCTION C | ONDITION: | FUNCTIONING: | | | | | |
| LEAKING: YES NO | CRACKING: FINE | MEDIUM OPEN | SPALLING: SM | | | | | |
| 58.12 DRAINS AND SCUPPERS: M | MATERIAL: | CONDITION: | FUNCTI | ONING: YES NO | | | | |
| | | 20 | | ि | | | | |

AAL SYSTEM PUERTO RICO HIGHWAY AUTHORITY PAGE 3 OF 7

1DGE No.: 01307

BRIDGE STUDIES AND EVALUATION OFFICE BRIDGE REINSPECTION & EVALUATION REPORT

59- SUPERSTRUCTURE: FAIR RATING: 5

59.1 BEARING DEVICES: TYPE: FIXED MOVABLE OUT OF PLUMB
PAINT: GOOD FAIR POOR NONE USELESS TO PAINT
CONDITION: FUNCTIONING: YES NO

59.2 BRIDGE SEATS, PEDESTAL, GROUT PADS, ABUTMENTS OR PIER SEATS WHERE BEAMS BEAR DIRECTLY ON CONCRETE

CONDITION: 6 CRACKING: F M O SPALLING: S L SCALING: L M H S CRUSHING:

59.3 STEEL-BEAMS: TYPE: DIMENSIONS(height; width; thickness):

CONDITION: CORROSION: L M S PAINT: G F P N U

59.4 CONCRETE-BOX BEAMS, I-DEAMS, SLAB, T-DEAM, TYPE:
CONDITION: CRACKING: F M O SPAILING: S L

SCALING: L M H S

59.5 TRUSSES: TYPE: BALLEY CONDITION: 5 CORROSION: L M S

DAMAGE: DEPORMATION: PAINT: G X F P N U

A-TRUSS B-UPPER & LOWER LATERAL BRACING C-PORTALS D-FLOOR BEAMS E*-STRINGERS

59.6 DRAINAGE: TYPE: CONDITION: FUNCTIONING: VES NO

59.7 HINGES: CONDITION: FUNCTIONING: YES NO MCVEMENT: YES NO ALIGNMENT: COOD BAD PAINT: C F P N U

59.8 DEFLECTIONS: X NORMAL EXCESSIVE cms.

59.9 VIBRATIONS: X MINIMAL MODERATE EXCESSIVE

SUPERSTRUCTURE COMMENTS:

OUT OF PLUMB 59.5) UPPER CHORD TIENE LEVE Y MODERADA
S TO PAINT CORRO SION.MODERADA CORROSION EN LO
S PANELES #9,#10 Y #11 DE SUR A NORTE
RE BEAMS BEAR .LADO OESTE.

MODERADA CORROSION EN EL LOWER
CHORD EN AREA DESCANSO DE FLOOR BEAM.F
LOOR BEAM TIENE MODERADA CORROSION EN
UNION AL LOWER CHORD.

STRINGERS CON MODERADA CORROSION
(EN EL 40% DE ELLOS).

60- SUBSTRUCTURE: FAIR RATING: 5

| | < | ABUT | MENTS- | > | ļ < | PIERS C | R NON PIL | ES BENTS- | > | <p< th=""><th>ILES BENTS</th><th>5></th></p<> | ILES BENTS | 5> |
|-------------------|------------|------|---------|-------------------|----------------|--------------------------------|--------------------|-----------|-----------------|--|--------------------|-------------------|
| | WINGWALL | 1 | FOOTING | 60.1.4 PILES | * WOMEN COME A | A CONTRACTOR OF THE CONTRACTOR | 60.2.3 COLUMNS | 60.2.4 | 60.2.5 PILES | 60.4.1 CAPS | 60.4.2 BRACING | 60.4.3 PILES |
| MATERIAL | | | | | STEEL | STEEL | STEEL | CONCRETE | | | 1 | |
| CONDITION RATING | | | | | 6 | 5 | 6 | 6 | | | | |
| CRACKING (F-M-O) | 1 | ł | I | Ι . | - | 1 - | - | - 1 | | 1 | 1 | İ |
| SPALLING (S-L) - | | | | | | | | | | | | |
| SCALING (L-M-H-S) | 1 | į. | I | 1 | - | - | - | - | | I | 1 | J |
| CORROSION (L-M-S) | ļ | | l | | L | M | L | | | | | |
| PAINT (G-F-P-N-U) | 1 | l | | l | F | F | [- | - | | 1 | | 1 |
| MOVEMENT | | | | | N | N | N | N | | | | 555 G |
| EROSION | 1 | l | I | i | N | N | N | N | | 1 | 1 | I |
| UNDERMINING | | | | ļ | N | N | N | N | | | | |
| | | L | L | 1 | L | | 1 | 1 | | <u> </u> | 1 | Ĭ |

60- SUBSTRUCTURE COMMENTS:

60.2.2) MODERADA CORROSION CON PERDIDA DE SEC CIONS EN LOS BRACING.

60.2.3) PILASTRA TIENE COLUMNAS CON LEVE CORROSION.

ESCALERAS CON LEVE CORROSION.

60.2.4) FOOTING EN BUENAS CONDICIONES.

MODERADA CO

RROSION EN AREA DE DESCANSO.

| | 1// | | | |
|--|---------------------------------------|--|-------------------|-------------|
| | | PUERTO RICO HIGHWAY AUTHORI | my | PAGE 4 OF 7 |
| AAL SYSTEM | | | | |
| | | BRIDGE STUDIES AND EVALUATION | | |
| fDGE No.: 01307 | BF | RIDGE REINSPECTION & EVALUATION | REPORT | |
| | | | | |
| 61- CHANNEL & CHANNEL PROTE | | RATING : N | CHANNEL COMMENTS: | |
| 61.1 CHANNEL SCOUR (EXTENT | ') : | | | |
| 61.2 EMBANKMENT EROSION (E | EXTENT) : | | | |
| | | | 10 | |
| | | | 31 | |
| | i i | CONDITION FUNCTIONING | | |
| | TYPE MATERIAL | RATING | | |
| | 1 1 | YES NO | | _ |
| * | | 1 1 1 | | |
| | | 1 | | |
| 61.3 PROTECTIVE DEVICE | 1 | | | |
| 61.4 FENDER SYSTEM | 1 | | | |
| 61.5 RIP RAP | | | | |
| 61.6 SPUR DIKES, JETTIES | | | | |
| | L | | | |
| 19 | | | | |
| 61.7 OBSTRUCTION (DEBRIS | GROWTHS): | | | |
| 61.8 CHANNEL CHANGE: 3 | | | | |
| DETRIMENTAL: YES | | ATN | | |
| 61.9 ADEQUATE WATERWAY: | | | | |
| | | | | |
| 61.10 SURROUNDING AREA: | | | | |
| | EROSION: YES NO | IF YES, EXPLAIN | | |
| 61.11 LOCATION OF PIERS A | AND/OR ABUTMENTS: DE | TRIMENTAL: YES NO | | |
| IF YES, EXPLAIN | | | | |
| II IBD Dittamin | | | | |
| 61.12 OTHER FEATURES THAT | MAY AFFECT STRUCTURE | Ξ: | | |
| | MAY AFFECT STRUCTUR | Σ: | | |
| | T MAY AFFECT STRUCTURE | 2: | | |
| | F MAY AFFECT STRUCTUR | S: | | |
| 61.12 OTHER FEATURES THA | | E: RATING :N | CULVERT COMMENTS: | |
| | | | CULVERT COMMENTS: | |
| 61.12 OTHER FEATURES THA | | | CULVERT COMMENTS: | |
| 61.12 OTHER FEATURES THAT | WALLS :N/A | RATING :N | 7 | |
| 61.12 OTHER FEATURES THAT | WALLS :N/A | | 7 | |
| 61.12 OTHER FEATURES THAT | WALLS :N/A | RATING :N | 7 | |
| 61.12 OTHER FEATURES THAT | WALLS :N/A ARREL 62.2HEADWALL 62 | RATING :N | 7 | |
| 61.12 OTHER FEATURES THAT | WALLS :N/A ARREL 62.2HEADWALL 62 | RATING :N | 7 | |
| 61.12 OTHER FEATURES THAT | WALLS :N/A ARREL 62.2HEADWALL 62 | RATING :N | 7 | |
| 61.12 OTHER FEATURES TRANS 62- CULVERT AND RETAINING N [62.13.] MATERIAL CONDITION RATING | NALLS :N/A ARREL 62.2HEADWALL 62 | RATING :N | 7 | |
| 61.12 OTHER FEATURES THAT 62- CULVERT AND RETAINING TO THE SECOND TO THE SECOND THE SEC | NALLS :N/A ARREL 62.2HEADWALL 62 | RATING :N .3CUT-OFFWALL 62.4RETAINING WAL | 7 | |
| 61.12 OTHER FEATURES THAM 62- CULVERT AND RETAINING 1 62.1B. MATERIAL CONDITION RATING FUNCTIONING (Y-N) CRACKING (F-M-O) SPALLING (S-L) | NALLS :N/A ARREL 62.2HEADWALL 62 | RATING :N | 7 | |
| 61.12 OTHER FEATURES THAM 62- CULVERT AND RETAINING TO THE SECOND TO THE SECOND TO THE SECOND THE | NALLS :N/A ARREL 62.2HEADWALL 62 | RATING :N .3CUT-OFFWALL 62.4RETAINING WAL | 7 | |
| 61.12 OTHER FEATURES THAM 62- CULVERT AND RETAINING N 62.1B. MATERIAL CONDITION RATING FUNCTIONING (Y-N) CRACKING (F-M-O) } SPALLING (S-L) SCALING (L-M-H-S) CORROSION (L-M-S) | NALLS :N/A ARREL 62.2HEADWALL 62 | RATING :N | 7 | |
| 61.12 OTHER FEATURES THAM 62- CULVERT AND RETAINING N 62.1B. MATERIAL CONDITION RATING FUNCTIONING (Y-N) CRACKING (F-M-O) SPALLING (S-L) SCALING (L-M-E-S) CORROSION (L-M-S) SETTLEMENT (Y-N) | NALLS :N/A ARREL 62.2HEADWALL 62 | RATING :N | 7 | |
| 62.12 OTHER FEATURES THAM 62- CULVERT AND RETAINING (62.18. MATERIAL CONDITION RATING (FUNCTIONING (Y-N) CRACKING (F-M-O) SPALLING (S-L) SCALING (L-M-H-S) CORROSION (L-M-S) SETTLEMENT (Y-N) | WALLS :N/A ARREL 62.2HEADWALL 62 | RATING :N | 7 | |
| 61.12 OTHER FEATURES THAM 62- CULVERT AND RETAINING N 62.1B. MATERIAL CONDITION RATING FUNCTIONING (Y-N) CRACKING (F-M-O) SPALLING (S-L) SCALING (L-M-E-S) CORROSION (L-M-S) SETTLEMENT (Y-N) | WALLS :N/A ARREL 62.2HEADWALL 62 | RATING :N | 7 | |
| 62.12 OTHER FEATURES THAM 62- CULVERT AND RETAINING (62.18. MATERIAL CONDITION RATING (FUNCTIONING (Y-N) CRACKING (F-M-O) SPALLING (S-L) SCALING (L-M-H-S) CORROSION (L-M-S) SETTLEMENT (Y-N) | WALLS :N/A ARREL 62.2HEADWALL 62 | RATING :N | 7 | |
| 61.12 OTHER FEATURES THAM 62- CULVERT AND RETAINING V [62.1B.] MATERIAL CONDITION RATING FUNCTIONING (Y-N) CRACKING (F-M-O) SPALLING (S-L.) SCALING (L-M-H-S) CORROSSION (L-M-S) SETTLEMENT (Y-N) PAINT (G-F-P-N-U) | NALLS:N/A | RATING :N | 7 | |
| 61.12 OTHER FEATURES TRAM 62- CULVERT AND RETAINING V [62.1B.] MATERIAL CONDITION RATING FUNCTIONING (Y-N) CRACKING (F-M-O) SPALLING (S-L) SCALING (L-M-H-S) CORROSION (L-M-S) SETTLEMENT (Y-N) PAINT (G-F-P-N-U) 63- METEOD USED TO DETERMI | NALLS :N/A ARREL 62.2HEADWALL 62 | RATING :N | 7 | 2 |
| 61.12 OTHER FEATURES THAM 62- CULVERT AND RETAINING V [62.1B.] MATERIAL CONDITION RATING FUNCTIONING (Y-N) CRACKING (F-M-O) SPALLING (S-L.) SCALING (L-M-H-S) CORROSSION (L-M-S) SETTLEMENT (Y-N) PAINT (G-F-P-N-U) | NALLS :N/A ARREL 62.2HEADWALL 62 | RATING :N | 7 | 800 |
| 61.12 OTHER FEATURES TRAM 62- CULVERT AND RETAINING V [62.1B.] MATERIAL CONDITION RATING FUNCTIONING (Y-N) CRACKING (F-M-O) SPALLING (S-L) SCALING (L-M-H-S) CORROSION (L-M-S) SETTLEMENT (Y-N) PAINT (G-F-P-N-U) 63- METEOD USED TO DETERMI | NAILS :N/A ARREL 62.2HEADWALL 62 | RATING :N .3CUT-OFFWALL 62.4RETAINING WAL | 7 | 800 2 |
| 61.12 OTHER FEATURES TRAM 62- CULVERT AND RETAINING V [62.1B.] MATERIAL CONDITION RATING FUNCTIONING (Y-N) CRACKING (F-M-O) SPALLING (S-L) SCALING (L-M-H-S) CORROSION (L-M-S) SETTLEMENT (Y-N) PAINT (G-F-P-N-U) 63- METEOD USED TO DETERMI 64- OPERATING RATING: | WALLS :N/A ARREL 62.2HEADWALL 62 | RATING :N | 7 | 800 |
| 61.12 OTHER FEATURES THAM 62- CULVERT AND RETAINING W 62.1B. MATERIAL CONDITION RATING FUNCTIONING (Y-N) CRACKING (F-M-O) SPALLING (S-L) SCALING (L-M-H-S) CORROSION (L-M-S) SETTLEMENT (Y-N) PAINT (G-F-P-N-U) 63- METHOD USED TO DETERMING 64- OPERATING RATING : 65- METHOD USED TO DETERMING 65- METHOD USED TO DETERMING | WALLS :N/A ARREL 62.2HEADWALL 62 | RATING :N | 7 | 800 2 |

PUERTO RICO HIGHWAY AUTHORITY PAGE 5 OF 7 BRIDGE STUDIES AND EVALUATION OFFICE IDGE No.: 01307 BRIDGE REINSPECTION & EVALUATION REPORT 67- STRUCTURAL EVALUATION : LIGHT TO MODERATE CORROSION AT STEEL PLATES, RAILINGS, UPPER CHORD & STRIN-GERS.MODERATE CORROSION AT BRACINGS & BETWEEN LOWER CHORDS & FLOORBEAMS. LIGHT CORROSION AT STEEL COLUMNS & STAIRS.MODERATE CORROSION AT REST AREA. 68- DECK GEOMETRY ; N/A. 69- UNDERCLEARANCE, VERTICAL & HORIZONTAL : EQUAL TO PRESENT MINIMUM CRITERIA. 70- BRIDGE POSTING : N/A. REMOTE - GREATER THAN 100 YEARS. SLIGHT - 11 TO 100 YEARS. OCASSIONAL - 3 TO 10 YEARS. FREQUENT - LESS THAN 3 YEARS. INSIGNIFICANT - MINOR INCONVENIENCE. HIGHWAY PASSABLE IN A MATTER OF HOURS. SIGNIFICANT - TRAFFIC DELAYS OF UP TO SEVERAL DAYS SEVERE - LONG TERM DELAYS TO TRAFFIC WITH RESULTING HARDSHIP 72- APPROACH ROADWAY ALIGNMENT :.... 72.2 SLAB OR PAVEMENT CONDITION : MATERIAL : CRACKING: F N O SPALLING: L S SCALING: L M H S UNNEVEN: YES NO ROUGH: YES NO SETTLEMENT: YES NO MOVEMENT: APPROACH SLAB-BACKWALL: YES NO BREAKING UP: EXCESSIVE DEFORMATION: SAFETY: HAZARDOUS YES NO DRAINAGE: INADEQUATE: YES NO PONDING: YES MOVEMENT: PAVEMENT-APPROACE SLAB: YES NO EMBANKMENT: CONDITION: FUNCTIONING: YES NO EROSION: YES NO IF YES, EXPLAIN YES NO CONSTRUCTION: FLIMSY: INTEGRITY IMPAIRED: YES NO IF YES, EXPLAIN 72.3 UNDESTRABLE IMPACT: YES NO INADEQUATE: YES NO SATISPACTORY ALIGNMENT: YES 72.4 JOINTS: TYPE: 72.5 GUARDRAIL: TYPE: MATERIAL: CONDITION: FUNCTIONING: YES ALIGNMENT: HORIZONTAL: GOOD BAD VERTICAL: GOOD BAD JOINTS: FUNCTIONING: YES NO SAFETY: SECURELY ATTACHED: YES NO PEDESTRIAN HAZARDS: YES NO 72- APPROACH ROADWAY - COMMENTS:

| RAL SYSTEM | |
|--|----------------------|
| FORKIO RICO HIGHWAY AUTHORITY | PAGE 6 OF 7 |
| BRIDGE STUDIES AND EVALUATION OFFICE LIDGE NO. :01307 RELIGE RETAINING TO A THANKS OF THE PROPERTY OF THE PROP | |
| BRIDGE REINSPECTION & EVALUATION REPORT | |
| =====PROPOSED IMPROVEMENT======== | |
| TE THOSE OF HOME | |
| 75- TYPE OF WORK : | 352 |
| 76- LENGTH OF STRUCTURE IMPROVEMENT: | 00055/6/6 |
| ====================================== | |
| 89- RESERVED | |
| 90- INSPECTION DATE: MAY 8,1998. | |
| 91- DESIGNATED INSPECTION FRECUENCY : | 0598 |
| 92- CRITICAL FEATURE INSPECTION : | 24 |
| 93- CRITICAL FEAT. INSPECT. DATE: N/A | N N N |
| FRACTURE CRITICAL UNDERMATER OTHER | |
| 3.1.DA | |
| | |
| 94- BRIDGE IMPROVEMENT COST : | → 98.3xx7900 95 to 8 |
| 95- ROADWAY IMPROVEMENT COST : | 000000 |
| 96- TOTAL PROJECT COST: (55.63X2.84X\$1315X10%)=\$20,776 | 000000 |
| 97- YEAR OF IMPROVEMENT COST ESTIMATED : | 000021 |
| | 1998 |
| ==CLASSIFICATION AND STRUCTURE DATA== | |
| | |
| 98- BORDER BRIDGE : | |
| 99- BORDER BRIDGE STRUCTURE NUMBER : | |
| 100- STRAINET HIGHWAY DESIGNATION : DEFENSE HIGHWAY | -2 h |
| 101- PARALLEL STRUCTURE DESIGNATION: NO PARALLEL STRUCTURE | 7 3 1 |
| 102- DIRECTION OF TRAFFIC : TRAFFIC NOW CAPPIED | N V |
| 103- TEMPORARY STRUCTURE DESIGNATION : | |
| 104- HIGHWAY SYSTEM OF THE INVENTORY ROUTE: | - le |
| 105- FEDERAL LANDS HIGHWAYS : | 10pm |
| 106- YEAR RECONSTRUCTION : NO PECONCULOUS | , o |
| 107- DECK STRUCTURE TYPE : | 0000 * |
| 108- WEARING SURF./ PROTECT. SYSTEM: OTHER - NONE - NONE | 5 |
| 109- AVERAGE DAILY TRUCK TRAFFIC : | 900 |
| 110- DESIGNATED NATIONAL NETWORK: PART OF NETWORK | 05 |
| 111- PIER OR ABUT. PROTECTION (NAVIGATION): | 1 |
| 112- NBIS ERIDGE LENGTH : | |
| 113- SCOUR CRITICAL BRIDGE : | Y |
| 114- FUTURE AVERAGE DAILY TRAFFIC : | N OD 370 J |
| 115- YR. OF FUTURE A.D.T. : | 092703 |
| 116- MINIM. NAVIG. VERT. CLEARANCE : | 2016 |
| VERTICAL LIFT BRIDGE : | |
| 117- SUPFICIENCY RATING : | |
| 125- PRIORITY RATING: | 8 |
| 127- EVALUATION DATE : | 050000 |
| 130- CRITICAL FRACTURE INSP. DATE : | 050898 |
| | |
| ENGINEER : INEABELLE VELEZ | |
| | : |
| | |

PUERTO RICO HIGHWAY AUTHORITY

BRIDGE STUDIES AND EVALUATION OFFICE

LIDGE NO. :01307

BRIDGE REINSPECTION & EVALUATION REPORT

AUXILIARY ITEMS

1-SIGNS'

TYPE: ORIENTACION "SAN JUAN - BAYAMON - RIO PIEDRAS"

MATERIAL: ALUMINIO

CONDITION: 7

REMARKS:

THE REHABILITATION CONSIST IN REPAIR ALL DEFICIENCIES DESCRIBED ON THE

ITEM #67.

E.7 September 24, 1993

| . PUERTO RICO HIGHWAY AUTHORITY | PAGE 1 OF 3 |
|--|---------------------------|
| . HIGHWAY SYSTEM ADMINISTRATION DEFICE | DATE : 09/30/93 |
| BRIDGE REPORT | TIME: 10:49:44 |
| security and one of the security of the securi | |
| FEDERAL SYSTEM BRIDGE MU. : 01307 - ROAD MU. : PR 26 - KM. MO. : | 004500 |
| ======IDENTIFICATION========= | |
| 1- STATE : Commonwealth of Puerto Rico | **** |
| 2- STATE HIGHWAY DEPARTMENT : SAN JUAN | . 721 01 |
| 3- COUNTY (PARTSH) CODE : SAN JUAN | 127 |
| 4- FLACE CODE : SAN JUAN URBAN ZONE | 76770 |
| 5- INVENTORY ROUTE : | 211000030 |
| 6- FEATURES INTERSECTED : PEDESTRIAN WALKWAY | PEDESTRIAN WALKWAY |
| 7- FACILITY CARRIED BY STRUCTURE : | PR 26 |
| 9- STRUCTURE NUMBER: BRIDGE 1307 1 OF 1 | 013071 |
| 9- LOCATION; BALDORIOTY DE CASTRO AVE. | BALDORIOTY DE CASTRO AVE. |
| 11- MILEPOINT : 4.50 | 004500 |
| 16- LATITUDE ; 18 DECREES 27.3 MINUTES 17- LONGITUDE ; 66 DEGREES 03.1 MINUTES | 18273 |
| 98- BORDER BRIDGE: | 066031 |
| 99- BORDER BRIDGE STRUCTURE NUMBER : | ar he |
| CO NOTION OF THE PROPERTY OF T | |
| =====STRUCTURE TYPE AND MATERIAL ====== | |
| 43- STRUCTURE TYPE. MAIN: STEEL TRUSS DECK | 309 |
| 44- STRUCTURE TYPE APPR.: NONE | 0 00 |
| 45- NUMBER OF SPAN IN MAIN UNIT: | 002 |
| 46- NUMBER OF APPROACH SPAN ; | 0000 |
| 107- DECK STRUCTURE TYPE : | 5 |
| 108- WEARING SURF. / PROTECT. SYSTEM : OTHER - NONE - NOME | 900 |
| AND GERVICE | |
| 19- BYPASS, DETOUR LENGTH (MEAREST MILE) : | 00 |
| 27- YEAR BUILT: | 1968 |
| 28- LAMES ON AND UNDER STRUCTURE : | 8990 |
| 27- A.D.T. OF INVENTORY ROUTE : | 095400 |
| 30- YEAR OF A.D.T. (1970 | 70 |
| 42- TYPE OF SERVICE: PEDESTRIAN OVER HIGHMAY | 31 |
| 105- YEAR RECONSTRUCTION: NO RECONSTRUCTION 109- AVERAGE DAILY TRUCK TRAFFIC: 4 % | 0000 04 |
| AV DVENDU MORE) INCOM HIR LAG a storing section reconstruction of the | 04 |
| | |
| 10- INV. ROUTE, MIN. CLEAR. (0.01m): | = 1701 |
| 32- APPROACH ROADWAY WIDTH: | 095 |
| 33- BRIDGE MEDIAN : NONE | 0 |
| 34- SKEM ANGLE : | 00 |
| 35- STRUCTURE FLARED: | () Fu |
| 47- INV. ROUTE, TOTAL HURIZ. CLEARANCE: | 354 0071 |
| 49- STRUCTURE LENGTH: | 000193 |
| 50- CURB OR SIDEMALK NIDTHS : | 000000 |
| 51- BRIDGE ROADWAY WIDTH, CURB TO CURB: | 0054 |
| 52- DECK WIDTH, OUT TO OUT : | 0093 |
| 53- MIN. VERT. CLEAR. OVER BRIDGE ROADMAY: | 9999 |
| 54- MINIMUM VERTICAL UNDERCLEARANCE: | H1701 |
| SS- MINIMUM LATERAL UNDERCLEARANCE ON RIGHT: 1.68 MT (5.51 FT) 56- MINIMUM LATERAL UNDERCLEARANCE ON LEFT: 1.50 MT (4.92 FT) | H055 |
| 56- MINIMUM LATERAL UNDERCLEARANCE ON LEFT : | 045 |
| | · · |

| 70 | | | |
|--|--|---|--------------|
| 9 | PUERTO RICO HIGHWA | Y AUTHORITY | PAGE 2 OF 3 |
| *1 | HIGHWAY SYSTEM ADMINI | STRATION OFFICE | |
| | | | |
| FEDERAL SYSTEM | BRIDGE NO. : 01307 - ROAD | NO. : PR 26 - FM. NO. : (| AA#\$AA |
| LENEUHE SISTEM | on tude No. : VISU/ - NOAD | NUL E CR 20 CRD RD E NUL E N | 00-88/0 |
| | =======CLASSIFID | AT10N========= | |
| | danied da | ******* | |
| 20- TOLL : | ON FF | EE ROAD | 2 |
| 21- MAINTENANCE RESPONSABILITY : | B.T.F.W. | | ΕO |
| 22- OWNER: | | | 01 |
| 26- FUNCTIONAL CLASS, OF INVENTORY R | | | 11 |
| 37- HISTORICAL SIGNIFICANCE: | | | S |
| 100- DEFENSE HIGHWAY DESIGNATION : . | | | i |
| 101- PARALLEL STRUCTURE DESIGNATION | | | M |
| 102- DIRECTION OF TRAFFIC: 103- TEMPORARY STRUCTURE DESIGNATION | | | 0 |
| 104- HIGHWAY SYSTEM OF THE INVENTORY | | | 1 |
| 110- DESIGNATED NATIONAL METWORK : . | | | 1 |
| 112- MBIS BRIDGE LENGTH: | | | Ÿ |
| TIZ WELD DUIDDE CEMBERS CIPRISIONS | *************************************** | 2282023626362229882362223335 (122 | - |
| | ========WATERW | KiY==================================== | |
| | | | |
| 38- NAVIGATION CONTROL: | | | N |
| 39- NAVIGATION VERTICAL CLEARANCE: | | | 000 |
| 40- NAVIGATION HORIZONTAL CLEARENCE | | ************************************** | 0000 |
| 111- PIER OR ABUT, PROTECTION (NAVIG | | 32.10 | |
| 116- HINIM. NAVIG. VERT. CLEARANCE : | > 4 x = 2 f d x x x x x 4 4 x x 5 5 5 5 5 5 5 5 5 5 7 5 7 7 7 7 7 | тавинетовкопонскатава М/А | |
| | =======PROPOSED IMP | ROVEPIENT====== | |
| | | | |
| 75- TYPE OF WORK : | | REHABILITATION | 352 |
| 76- LENGTH OF STRUCTURE IMPROVEMENT | The state of the s | 3 MT (182.47 FT) | \$21000 |
| 94- BRIDGE IMPROVEMENT COST: | | | 000000 |
| 95- ROADWAY IMPROVEMENT COST: | | | 000000 |
| 96- TOTAL PROJECT COST: | | | 800000 |
| 97- YEAR OF IMPROVEMENT COST ESTIMAT | | | 93 saznoo |
| 114- FUTURE AVERAGE DAILY TRAFFIC: 115- YR. OF FUTURE A.D.T.: | | | 143990 10 |
| HUT IN. OF FUTURE H.D. I. 2 | ======= _OAD_RATING_A | | 10 |
| | | NO 1 001 INC | |
| 31- DESIGN LOAD : | | PEDESTRIAN | 7 |
| 41- STRUCT, OPEN, POSTED OR CLOSED T | | | A |
| 64- OPERATING RATING : | ************** | PEDESTRIAN | 800 |
| 66- INVENTORY RATING : | | PEDESTRIAN | 900 |
| 70- BRIDGE FOSTING: | > 0 k + 0 k b w = = = = = = = = = = = = = = = = = = | N/A. | Ĥ |
| | Amen va | 276 | |
| | ====================================== | 10k==================================== | |
| | MATERIAL | CONDITION ANALYSIS | |
| el ²⁴ | | | |
| 58- DECK | .v STEEL | SATISFACTORY | 6 |
| 59- SUPERSTRUCTURE | | 6000 | 7 |
| 60- SUBSTRUCTURE | | 6000 | 7 |
| 51- CHANNEL & CHANNEL PROTECTION 62- CULVERT | | N/A | · N |
| Q4 PATACE 14 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | *********** N/A | N/A | N |
| | | | |

| e ig | PUERTO RICO HIGHWAY AUTHORITY HIGHWAY SYSTEM ADMINISTRATION OFFICE | PAGE 3 OF 3 |
|--|---|--|
| , FEDERAL SYSTEM B | RIDGE MO. : 01307 - ROAD MO. : FR 26 | - KH. NO. : 004500 |
| 67- STRUCTURAL EVALUATION: STEEL PLATES, RAILLINGS AND FLO CORROSION IN THE STAIRS. | DOR BEAMS HAVE LIGHT CORROGION, MODERATE | |
| J. | | |
| 58- DECK GEOMETRY; | | N |
| N/A, | | |
| | . 7 | ************ b |
| EQUAL TO PRESENT MINIMUM CRITER | | |
| 71- WATERWAY ADEQUACY: | 772242174777777777777777777777777777777 | 232CC23C023222CC6AD4020424A44744244444 |
| N/A. | | |
| 72- APPROACH ROADWAY ALIGNMENT: | 711723444477931111111111111134444444444444444 | ************************************** |
| N/A. | | |
| 36- TRAFFIC SAFETY FEATURES : | | , 14-N-N-N N |
| w wastern | ADDITIONAL COMMENTS: | |
| 90- INSPECTION DATE: 91- DESIGNATED INSPECTION FREQUENCY: 92- CRITICAL FEATURE INSPECTION: 93- CRITICAL FEAT. INSPECT, DATE: | SEPTEMBER : 24 MG | 24, 1993. 0993 NTHS 24 N N N |
| 117- SUFFICIENCY RATING : | | ,, 092493 092493 |
| REMARKS: | | |
| THE REHABILITATION CONSIST IN REPAIL ITEM #57. | R ALL DEFICIENCIES DESCRIBED ON THE | |

E.8 February 28, 1991

| | | BRIDO | GE STUDIES AND | EVALUATION OF | TICE | |
|-----|-------------------|------------------------|--------------------|-----------------------|----------------|-------------|
| | | Pt | JERTO RICO HIGH | WAY AUTHORITY | 7 | |
| | | | | | | |
| | | | | | • | Page 1 of 5 |
| 2 | | | | | | |
| | | | | 1 3 0 7 Bridge No. | 0026 | 00430 |
| | | | | Bridge No. | Road No. | Km.No. |
| á | | | | | | |
| | | | BRIDGE IN | VENTORY | | |
| 21. | | | | | | |
| 107 | | | | | | |
| IDE | NTIFICATION | | | | | 4.4.4 |
| | · · | | | Code Position | | |
| | • | 25 24 23 22 21 | 1 20 19 18 17 16 | 5 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |
| | 27 | | | | | |
| | State Code | | | Commonwealth | of Puerto Rico | 7 2 1 |
| 2. | State Highway I | Department District | Dan Jeran | | | 01 |
| 3. | County (Parish) | Code | Jan Juan | | | 122 |
| 4. | Place Code | (8 | | 7) | | 26770 |
| | Inventory Route | | -1-00003- | 0 | 2/10 | 00030 |
| 6. | Features Intersec | ted <u>Pedestria</u> | in Walkway | | | 20 Zi |
| | | PEDes | | WALK | WAY | |
| 7. | Facility Carried | by Structure | R.26 | | | |
| | | | PR | 26 | | |
| | Structure Number | | 10/21 | | 00000 | 13071 |
| 9. | Location 3 | aldorioty De | Castro aver | ml_ | | • |
| | A | BA72 0 | RIOTS | 3 E C | ASTRO | AUE |
| 10. | Inventory Route | Minimum Vertical C | Clearance (0.01 m) | 4.80 (| (57 1/) | 1509 |
| 11. | Milepoint | place to the second | | 4.30 | . 0 | 0 4 3 0 0 |
| 16. | Latitude | | | Degrees 2-7-3 | Minutes | 18273 |
| 17. | Longitude | | | Degrees 0.3 · / | Minutes 0 | 66031 |
| 19. | By Pass, Detour | Length (Nearest mile |) Structure | - over Highw | ref | 00 |
| | | | | 0 | | |
| | | | and the second | | | |
| CL | ASSIFICATION | el unt | | | | |
| 20. | Toll | Joll on | ll | | | 3 |
| 21. | Maintenance Res | | T. P.W. | Language of | | 6/ |
| 22. | Owner | State High | Kway Dapa | | | <u>a</u> 7 |
| 26. | Functional Class | ification of Inventory | Route | forben Infer | stro | |
| | | | | | | |

| BRIDGE STUDIES AND EVALUATION OFFICE | Page 2 of 5 |
|---|-------------|
| | 6 5 4 3 2 1 |
| | |
| AGE AND SERVICE | |
| 27 Year Built 1968 | 1968 |
| 28. Lanes on the Structure and Under the Structure | |
| 29. Average Daily Traffic /00,000 | 100000 |
| 30. Year of Average Daily Traffic | 82 |
| | |
| | |
| STRUCTURE DATA | |
| 31. Design Load Sedestrian | |
| 32. Approach Roadway Width 24.80m (3/34) | |
| 33. Bridge Median None Open Closed Closed | INM O |
| 34. Skew Three | 00 |
| 35. Structure Flared Yes L No | 0 |
| 36. Traffic Safety Features N-N-N-N | NANA |
| 37. Historical Significance | |
| 30. Navigation Connor | NA NA |
| 39. Navigation Vertical Clearance Yes 4 No | 000 |
| 40. Navigation Horizontal Clearance Yes No | 0000 |
| 41. Structure, Open, Posted, or Closed to Traffic Open | |
| 42. Type of Service Edestrian over Highwar | 3 / |
| 43. Structure Type, Main Attel truss Dack | 309 |
| 44. Structure Type, Approach Spans | 000 |
| 45. Number of Spans in Main Unit 2 | 002 |
| 46. Number of Approach Spans 72 one | 0000 |
| 47. Inventory Route, Total Trollzonial excatance 12 - 2017-11 | K7.2) 3 8 / |
| 48. Length of Maximum Span 20.46 (67 //) | 0062 |
| 49. Structure Length 43.02-7 (14/11) | 000141 |
| 50. Curb or Sidewalk Widths \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ | 000000 |
| 51. Bridge Roadway Width, Curb-to-Curb 1.62 M. (5.31) | 0053 |
| 52. Deck Width, Out-to-Out 2.62 m. (9.25.) | 0093 |
| 53. Minimum Vertical Clearance Over Bridge Roadway Unlimited | 9999 |
| 54. Minimum Vertical Underclearance H 48m (15174) R | N H 1509 |
| 55. Minimum Lateral Underclearance on Right H 1369 (446) R | N H045 |
| 56. Minimum Lateral Underclearance on Left | 028 |
| | |

| BRIDGE STUDIES AND I | EVALUATION OFFICE | | Page,3 of 5 |
|--|----------------------|--|-------------|
| CONDITIONS RATINGS | | | 3 2 1 |
| • | b.fd.d | | |
| | Material | Condition | |
| 58. Deck | Del | Pag | A |
| 59. Superstructure | | To-or | 4 |
| 60. Substructure61. Channel and Channel | Protection N / A | 1,000 | . [2] |
| 62. Culverts | N/V | dina | |
| 64. Operating Rating | Pulastine | A | 800 |
| 66. Inventory Rating | <u>- Pedisli</u> | P. Drawer | 800 |
| | | | |
| APPRAISAL RATING | | | 5 |
| | Deficienc | ies | |
| | A A A A | \cdot Ω Ω \cdot \cdot \cdot | |
| 67. Structural Evaluation | Dark is dule | moral Canasia | . 41 |
| Tuest. | Jan Deel and in | The Alexander | ,, |
| Pording | i occurring o | The bear all | |
| ; spling | when payor | continue has | |
| South Seal | | shift rus alex | |
| L. D. | are to the | The state of the s | |
| للكندين | T. Falling all | The severe cars | |
| Sity am | I wearing for | was who tell it tops, | . (|
| and the | The . Upper a | not bure later |) (survey) |
| 68. Deck Geometry | 114 | | N |
| 69. Underclearances, Ver | tical and Horizontal | in belte. Van | 7 |
| y Land | 2 mountain | L San Land | Th. |
| 70. Bridge Posting | No poeta, is | <u>Linguen</u> | \$ |
| | N. 1 | ASS WALLS | [[5] |
| 71. Waterway Adequacy | All to south | may minister with | [N] |
| 72. Approach Roadway A | lignment With Rad | estra | N |
| | | | بنا |
| | | | |

| BRIDGE STUDIES AND EVALUATION OFFICE | Page 4 of 5 |
|--|--|
| 15 14 13 12 11 10 9 8 | 7 6 5 4 3 2 1 |
| PROPOSED IMPROVEMENTS | 381 |
| 75. Type of Work | 1000141 |
| 76. Length of Structure improvement | e or given a |
| | |
| INSPECTIONS | |
| 89. (Reserved) | |
| INSPECTIONS 89. (Reserved) 90. Inspection Date | [IPSO] |
| 91. Designated Inspection Frequency 24 Mean | टा म |
| 92. Critical Feature Inspection | |
| A. Fracture Critical Details | |
| B. Underwater Inspection | NT |
| C. Other Special Inspection | P |
| 93. Critical Feature Inspection Date | £ |
| A. Fracture Critical Details | Marian Commence of Subsection Commence of Sub |
| B. Underwater Inspection | Agricon and the second of the |
| C. Other Special Inspection | Commission Control of |
| | |
| D CDD OVER CENTER COSTS | |
| IMPROVEMENT COSTS 94. Bridge Improvement Cost | 00005 |
| 94. Bridge Improvement Cost | |
| 96. Total Project Cost | |
| 97. Year of Improvement Cost Estimated 1991 | 9 |
| | |
| | |
| CLASSIFICATION AND STRUCTURE DATA | |
| 98. Border Bridge | garranteniara/mas partitiran tabiqualmaniaraya.g |
| 99. Border Bridge Structure Number | ness process and the second se |
| 100. Defense Highway Designation | - <u> </u> |
| 101. Parallel Structure Designation | . <u>N</u> |
| 102. Direction of Traffic Human Safety | 凹 |
| 103. Temporary Structure Designation | 믐 |
| 104. Highway System of the Inventory Route | 빌 |
| 105. (Reserved) | |
| | BE 18. 및 BESE BUILDING 및 11 18 18 1 |

| BRIDGE STUDIES AND EVALUATION OFFICE | Page 5 of 5 |
|---|--|
| | 6 5 4 3 2 1 |
| | |
| CLASSIFICATION AND STRUCTURE DATA (Cont.) | |
| 106. Year Reconstructed | 0000 |
| 107. Deck Structure Type | 5 |
| 108. Wearing Surface/Protective System | NDO |
| 109. Average Daily Truck Traffic | P 1 |
| 110. Designated National Network 20 | |
| 111. Pier or Abutment Protection (for Navigation) | New Street, Control |
| 112. NBIS Bridge Length V | N |
| 113. Scour Critical Bridges | . 1 |
| 114. Future Average Daily Traffic | 130000 |
| 115. Year of Future Average Daily Traffic | 07 |
| 116. Minimum Navigation Vertical Clearance | experience for a production of production of |
| Vertical Lift Bridge | |
| el Haddiesenie, apposed on I | the following |
| | |

E.9 December 3, 1991

| * | BRIDGE STUDIES AND EVALUATION OFFICE |
|--------|---|
| | PUERTO RICO HIGHWAY AUTHORITY |
| | |
| • | Page 1 of 5 |
| | 7307 0076 00450 Bridge No. Road No. Km.No. |
| | |
| | BRIDGE INVENTORY |
| | |
| | |
| IDE | NTIFICATION |
| | Code Position |
| 80 | 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 |
| | |
| 1. | State Code Commonwealth of Puerto Rico 7 2 1 |
| 2. | State Highway Department District |
| 3. | |
| 4. | |
| 5. | Inventory Route 2-1-1-00003-0 2 7 1 000 3 0 |
| 6. | Features Intersected Yeldlybrian Wallway |
| | PENCSTIZIANI WALKIWAY |
| 7. | Facility Carried by Structure PR-26 |
| | pa-26 |
| 8. | Structure Number 1307 1941 1 1 1 1 1 1 3 0 7 1 |
| 9. | Location & Scherically de Castrio Guerne |
| | BALDORNOTY DE CASTRO AVE |
| 10. | Inventory Route, Minimum Vertical Clearance (0.01 m) 5/2/m (17.09')(17'-01") 17 0 |
| | Milepoint 4.50 0 4500 |
| 16. | Latitude 8 Degrees 27, 3 Minutes 1821 |
| 17. | Longitude Degrees Day Minutes 06603/ |
| 19. | By Pass, Detour Length (Nearest mile) Structure Could Villa |
| | |
| | |
| CL | ASSIFICATION A CE CD. A |
| | Toll Un Die Vene |
| | Maintenance Responsibility |
| | Owner |
| | Functional Classification of Inventory Route |
| 701055 | |

| BRII | OGE STUDIES AND EVALUATION OFFICE | Page 2 of 5 |
|-------------|--|--|
| | | 6 5 4 3 2 1 |
| | | |
| AGE | AND SERVICE | 1 37 49 6 7 7 7 |
| 27 | Year Built 1968 | 1908 |
| 28. | Lanes on the Structure and Under the Structure | |
| 29. | Average Daily Traffic 95,400 | |
| 30. | Year of Average Daily Traffic 1990 | |
| | | |
| | | |
| STR | UCTURE DATA Participant | [] |
| 31. | Design Load Value (29.29m (96.07') | |
| 32. | Approach Roadway Wildii | _ [0]9[6] |
| 33. | Bridge Median None Open Closed Closed N | M O |
| 34. | Skew | |
| 35. | Structure Flared Yes VNo | |
| 36. | Traffic Safety Features | |
| 37. | Historical Significance | |
| 38. | Navigation Control Yes No N. | |
| 39. | Navigation Vertical Clearance Yes V | 000 |
| 40. | Navigation Horizontal Clearance Yes No | |
| 41. | Structure, Open, Posted, or Closed to Traffic | |
| 42. | Type of Service People from Sugar Su | 7 31 |
| 43. | Structure Type, Main | |
| 44. | Structure Type, Approach Spans | |
| 4 5. | Number of Spans in Main Unit | |
| 46. | Number of Approach Spans \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\ | |
| 47. | Inventory Route, Total Horizontal Clearance | 3514 |
| 48. | Length of Maximum Span | |
| 49. | | -[0]0]0]1[8]3 |
| 50. | Curb or Sidewalk Widths View L= R= | |
| 51. | Bridge Roadway Width, Curb-to-Curb 1.64 M (5.38') | - <u> </u> |
| 52. | FINE 100 (1.71 A.) | _ [001913] |
| 53. | | <u> </u> |
| 54. | | N [# //7]0/ |
| 55. | | N H 055 |
| 56. | Minimum Lateral Underclearance on Left 150m (4.92) | |
| | | |

| BRIDGE STUDIES AND EVALUATION | OFFICE | | Page 3 of 5 |
|--|------------------------------------|----------------------|-------------|
| f | | | 3 2 1 |
| CONDITIONS RATINGS | | | |
| successive. | Material | Condition | |
| N S-argrines | 0 4 0 | 11 | |
| 58. Deck | | | <u>Z</u> . |
| 59. Superstructure | ATTOM I | $\frac{4-m_0}{4}$ | Z |
| 60. Substructure | CHULL | 1000 | LŽ |
| 61. Channel and Channel Protection | AND I | 1 1 1/4/1 | [/V] |
| 62. Culverts | | | |
| 64. Operating Rating | | DDDDD | 8100 |
| 66. Inventory Rating | W A | | 800 |
| | | | |
| APPRAISAL RATING | 10 | | |
| APPRAISAL RATING | Deficiencies | | |
| | A 1. | A | |
| 67. Structural Evaluation Sounts of Slams Show he for Sent Munimus | or leading of Comments of Comments | Alian helto than | |
| U | | | |
| | | 1. 1. 1. 1 | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | ± •=== |
| 60 5-16 | A V | | M |
| 68. Deck Geometry | (W) | //8 to | ואא |
| 69. Underclearances, Vertical and Hori | zontal 17-09"(V.U.) | 5.51 (LUR). Basnow | 9 3 |
| intolerable, requiren | & high priority | of corrective active | M == |
| 70. Bridge Posting (| 1 0 V g 10 | | M |
| 71. Waterway Adequacy | 2011 | IA B | M |
| | MY | MATTER | |
| 72. Approach Roadway Alignment | | AV W | |
| | | | |

| BRIDGE STUDIES AND EVALUATION OFFICE | Page 4 of 5 |
|--|------------------------------|
| 15 14 13 12 1 | 1 10 9 8 7 6 5 4 3 2 1 |
| | |
| PROPOSED IMPROVEMENTS Rehabitating | |
| | 362 |
| 76. Length of Structure Improvement 55.63m 182.4 | 471 0001183 |
| * | |
| | ra e |
| INSPECTIONS | Proposa |
| 89. (Reserved) | 17 1001 |
| 90. Inspection Date /// Children Childr | 21/4/03/60 |
| 91. Designated Inspection Frequency | 14 money of |
| 92. Critical Feature Inspection | |
| A. Fracture Critical Details | |
| B. Underwater Inspection | |
| C. Other Special Inspection | |
| 93. Critical Feature Inspection Date | |
| A. Fracture Critical Details | |
| B. Underwater Inspection | |
| C. Other Special Inspection | |
| | |
| | |
| IMPROVEMENT COSTS | |
| 94. Bridge Improvement Cost | |
| 95. Roadway Improvement Cost 96. Total Project Cost 55.63 × 2.84 × 900 × 03 ≈ 54.05 | |
| 96. Total Project Cost 33 80 x 2 v 7 7 7 2 9 1 9 1 9 9 | 1 |
| 97. Year of Improvement Cost Estimated | <u></u> |
| 이 가는 기계를 받는 것이 되었다. 그 기에 되었다. 그 기계를 받는 것이 되었다. 그 기에 되 | ži. |
| | |
| CLASSIFICATION AND STRUCTURE DATA | and the second second second |
| 98. Border Bridge | |
| 99. Border Bridge Structure Number | |
| 100. Defense Highway Designation | |
| 101. Parallel Structure Designation 102. Direction of Traffic 103. Direction of Traffic | et ourised. |
| | A. A. B. |
| 103. Temporary Structure Designation 104. Highway System of the Inventory Route | WIND WAS TI |
| 104. Inghway System of the Artenday States | |
| 105. (Reserved) | |

| BRIDGE STUDIES AND EVALUATION OFFICE | Page 5 of 5 |
|---|---------------|
| \$ \$500,000 B | 6 5 4 3 2 1 |
| 1 | |
| CLASSIFICATION AND STRUCTURE DATA (Cont.) | |
| 106. Year Reconstructed Muy success | 9000 |
| 107. Deck Structure Type | 5 |
| 108. Wearing Surface/Protective System | 900 |
| 109. Average Daily Truck Traffic 4/0 (0) | 64 |
| 110. Designated National Network | |
| 111. Pier or Abutment Protection (for Navigation) | |
| 112. NBIS Bridge Length | . g |
| 113. Scour Critical Bridges | ĪŃ |
| 114. Future Average Daily Traffic | 143990 |
| 115. Year of Future Average Daily Traffic | 70 |
| 116. Minimum Navigation Vertical Clearance | 000 |
| Vertical Lift Bridge | |
| Remerks Rehabilitation exwitted on repr | wring Deno |
| Remerks Rehabilitation experience on represent all defections execused on 67. This pedentron walking be relocated to the 4.50 and | painted. |
| | ٧ |

COMMONWEALTH OF PUERTO RICO HIGHWAY AUTHORITY BRIDGE STUDIES AND EVALUATION OFFICE

APPRAISAL OF ITEM 68

BRIDGE NO. 1307 ROAD NO. 26 KM. NO. 450

| Year | ADT | Sec. | тw | T W Adequate or Inadequate | T W Inadequate By | TW+SH | TW + SH Adequate or Inadequate | TW + SH Inadequate By |
|------|-----|------|--------------------|----------------------------------|-------------------------|-------|--------------------------------------|-----------------------------|
| 1990 | | X | Actual = | \times | \times | 1 | \geq | \times |
| | | | For ADT = | | | | | |
| | | | 1/02 | 1/4 | Apg. | dera | (b) | |
| 2010 | | | Reqd. For ADT = | | ' V | | | |
| 2010 | 9 | | Rec. PRHA = | 14.14° | | | | |

√ Adequate x Inadequate

| BRIDGE STUDIES AND EVALUATION OFFICE PUERTO RICO HIGHWAY AUTHORITY | |
|--|--------------------|
| TOURING MONWAI ANIHUKIIY | |
| GENERAL EVALUATION | |
| This bridge is basically in structural condition | 3 |
| excellent 4 fair 2 very poor 0 | Large |
| adequate 3 poor 1 | |
| The load carrying capacity is | |
| adequate 3 minimally adequate 2 inadequate 1 not required (de- | on't print\ 01 |
| | outpint) 0 |
| The recommended modifications will make it adequate 2 minimally adequate 1 no required (don't print) 0 | |
| 0 when previous is 2 | |
| The bridge should be replaced. | [O] |
| Yes (print) 1 not required (don't print) 0 | 123 |
| It requires 2 /a) 2 (b) | |
| routine inspection every $\underline{24}$ months $(A) = 2 (B) = 24$ | 7-1-4 |
| frequent inspection every (B) months to monitor | ക്ക |
| abnormal and/or suspected deficiencies (A) = 1 (B) = months | Ø. |
| frequent inspection every (B) months to determine the cause of and remedies for existing defects (A) = 0 (B) = months | |
| the cause of and remedies for existing defects (A) = 0 (B) = months | |
| t requires | [A] |
| routine maintenance | 2 |
| minor repairs and routine maintenance | |
| urgent repairs to prevent further costly deterioration and/or the development of | |
| a dangerous condition and rountine maintenance | |
| CIDEFPENCY FERRITE to eliminate demonstrate and the mobile and the second | |
| emergency repairs to eliminate danger to the public and routine maintenance | |
| | |
| The deck geometry is | |
| The deck geometry is or present ADT, the travelled way is or future (2010) ADT, the travelled way is | resent Future PRHA |
| The deck geometry is for present ADT, the travelled way is for future (2010) ADT, the travelled way is for PRHA (2010) recommendations, the travelled way is | 24 |
| The deck geometry is Or present ADT, the travelled way is Or present ADT, the travelled way is Or PRHA (2010) recommendations, the travelled way is Or present ADT, the shoulders are | 2 0 0 |
| The deck geometry is | 24 |
| The deck geometry is | O Ö Ö Ö Ö |
| The deck geometry is | O Ö Ö Ö Ö |
| The deck geometry is | O O |
| The deck geometry is | O O |
| The deck geometry is | O O |
| The deck geometry is | O Ö Ö Ö Ö |
| The deck geometry is for present ADT, the travelled way is for future (2010) ADT, the travelled way is for PRHA (2010) recommendations, the travelled way is for present ADT, the shoulders are the future (2010) ADT, the shoulders are for PRHA (2010) recommendations, the shoulders are satisfactory satisfactory satisfactory approach alignment is approach al | O O |
| The deck geometry is for present ADT, the travelled way is for future (2010) ADT, the travelled way is for PRHA (2010) recommendations, the travelled way is for present ADT, the shoulders are the future (2010) ADT, the shoulders are the future (2010) ADT, the shoulders are satisfactory satisfactory 3 unsatisfactory 2 cannot be evaluated because of lack of infor not required (don't print) 1 the A approach alignment is A spiroach alignment is B vertical satifactory 3 minimally tolerable 2 poor and represents a danger to the public not required (don't print) 0 | O Ö Ö Ö Ö |
| The deck geometry is for present ADT, the travelled way is for PRHA (2010) recommendations, the travelled way is for PRHA (2010) recommendations, the travelled way is for present ADT, the shoulders are the future (2010) ADT, the shoulders are satisfactory 3 unsatisfactory 2 cannot be evaluated because of lack of information required (don't print) the A approach alignment is asiffactory 3 minimally tolerable vertical 1 horizontal 0 horizontal and vertical 2 poor and represents a danger to the public not required (don't print) oad Post for inventory rating shown in Items 64 Yes 1 No (don't print) Oat for vertical underclearance shown in Items 54 and 69 | O O |
| The deck geometry is for present ADT, the travelled way is for PRHA (2010) recommendations, the travelled way is for PRHA (2010) recommendations, the travelled way is for present ADT, the shoulders are the future (2010) ADT, the shoulders are satisfactory satisfactory satisfactory approach alignment is wertical hereast Future PRHA Present Future PRHA Pr | O O |
| The deck geometry is for present ADT, the travelled way is for PRHA (2010) recommendations, the travelled way is for present ADT, the shoulders are the future (2010) ADT, the shoulders are the future (2010) ADT, the shoulders are satisfactory 3 unsatisfactory 2 cannot be evaluated because of lack of informot required (don't print) the A approach alignment is B vertical 1 horizontal 0 horizontal and vertical 2 poor and represents a danger to the public not required (don't print) oad Post for inventory rating shown in Item 64 Yes 1 No (don't print) O ost for vertical underclearance shown in Items 54 and 69 Yes 1 No (don't print) | O O |
| The deck geometry is for present ADT, the travelled way is for present ADT, the travelled way is for PRHA (2010) recommendations, the travelled way is for present ADT, the shoulders are the future (2010) ADT, the shoulders are the future (2010) ADT, the shoulders are satisfactory satisfactory aumanisfactory cor PRHA (2010) recommendations, the shoulders are satisfactory aumanisfactory cor PRHA (2010) recommendations, the shoulders are satisfactory aumanisfactory cor PRHA (2010) recommendations, the shoulders are satisfactory aumanisfactory cor PRHA (2010) recommendations, the shoulders are satisfactory aumanisfactory cor PRHA (2010) recommendations, the shoulders are satisfactory aumanisfactory cor PRHA (2010) recommendations, the shoulders are satisfactory aumanisfactory cor PRHA (2010) recommendations, the shoulders are satisfactory aumanisfactory cor PRHA (2010) recommendations, the shoulders are cor PRHA | mation I |
| The deck geometry is For present ADT, the travelled way is For present ADT, the travelled way is For PRHA (2010) recommendations, the travelled way is For present ADT, the shoulders are For present ADT, the shoulders are For PRHA (2010) ADT, the shoulders are For PRHA (2010) recommendations, the shoulders are For PRHA (2010) recommendations, the shoulders are Satisfactory Sumsatisfactory Sumsatisfact | O O |
| The deck geometry is For present ADT, the travelled way is For PRHA (2010) ADT, the travelled way is For PRHA (2010) recommendations, the travelled way is For present ADT, the shoulders are For PRHA (2010) ADT, the shoulders are For PRHA (2010) ADT, the shoulders are For PRHA (2010) recommendations, the shoulders are Satisfactory Satisfactor | mation I |
| The deck geometry is for present ADT, the travelled way is for future (2010) ADT, the travelled way is for PRHA (2010) recommendations, the travelled way is for PRHA (2010) recommendations, the travelled way is for PRHA (2010) ADT, the shoulders are the future (2010) ADT, the shoulders are for PRHA (2010) recommendations, the shoulders are satisfactory 3 unsatisfactory 2 cannot be evaluated because of lack of informative required (don't print) 1 The A approach alignment is B evertical 1 horizontal 0 horizontal and vertical 2 satisfactory 3 minimally tolerable 2 poor and represents a danger to the public not required (don't print) 0 ond Post for inventory rating shown in Item 64 Yes 1 No (don't print) 0 onst for vertical underclearance shown in Items 54 and 69 Yes 1 No (don't print) 0 OR "REMARKS" SEE BRIDGE FILE. ERSONNEL invertural Inspection eview of Field Data ransfers of Data | mation I |
| The deck geometry is For present ADT, the travelled way is For future (2010) ADT, the travelled way is For PRHA (2010) recommendations, the travelled way is For PRHA (2010) recommendations, the shoulders are For PRHA (2010) recommendations, the shoulders are For PRHA (2010) recommendations, the shoulders are satisfactory 3 unsatisfactory 2 cannot be evaluated because of lack of infor not required (don't print) 1. The A approach alignment is B vertical 1 horizontal 0 horizontal and vertical 2 satisfactory 3 minimally tolerable 2 poor and represents a danger to the public not required (don't print) 0. For PRHA (2010) recommendations, the shoulders are satisfactory 3 unsatisfactory 2 cannot be evaluated because of lack of infor not required (don't print) 1. Fine A approach alignment is B vertical 1 horizontal 0 horizontal and vertical 2 satisfactory 3 minimally tolerable 2 poor and represents a danger to the public not required (don't print) 0. For PRHA (2010) recommendations, the shoulders are satisfactory 3 unsatisfactory 2 cannot be evaluated because of lack of infor not required (don't print) 1. Fine A approach alignment is B vertical 1 horizontal 0 horizontal and vertical 2 poor and represents a danger to the public not required (don't print) 0. For PRHA (2010) recommendations, the shoulders are satisfactory 3 unsatisfactory 2 cannot be evaluated because of lack of infor not required (don't print) 1. Fine A approach alignment is B vertical 2 poor and represents a danger to the public not required (don't print) 0. Fine A approach alignment is B vertical 2 poor and represents a danger to the public not required (don't print) 0. Fine A approach alignment is B vertical 2 poor and represents a danger to the public not required (don't print) 0. Fine A approach alignment is B vertical 2 poor and represents a danger to the public not required (don't print) 0. Fine A approach alignment is B vertical 2 poor and represents a danger to the public not required (don't print) 0. Fine A approach alignme | mation I |

E.10 November 17, 1988

| | BRIDGE STUDIES AND EVALUATION OFFICE Page 1 of 5 |
|------|--|
| Yeu. | PUERTO RICO HIGHWAY AUTHORITY IBM-370 AND IBM MT/SC ELECTRONIC DATA STORAGE 1 No. Bridge No. Road No. |
| | BRIDGE INVENTORY Km. No. <u>430</u> |
| IDE | NTIFICATION Code Positions |
| שעו | 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 3 8 7 6 5 4 3 2 1 |
| 1 | State |
| 2. | Highway District Sgas June 1307 |
| 3. | Municipality San Juan 19063 |
| 4. | City/Town San Juan 100063 |
| 5. | Inventory Route 9-1-1-0003-0 |
| 6. | Features Intersected Lechatrian . Walkutef |
| | "PEDESTELAW WALKWAY! |
| 7. | Facility Carried by Structure 58. PL-26. Structure No. 1307 Dry of one. 74012011 |
| 8. | Shucture No. |
| 9. | Location 10 DA Colorioty Sollastro. Henre. |
| | |
| 10. | Inventory Route, Minimum Vertical Clearance (0.01 m) |
| 11. | Kilometer Point (0.01 km) 4.30 |
| 12. | Road Section Number (DOD) |
| 13. | Bridge Description |
| 14. | Defense Milepoint (0.01 ml) |
| 15. | Defense Section Length (miles) (0.1 mile) 8, /0 |
| 16. | Latitude: 18 Degrees . 273 . Minutes |
| 17 | Longitude: |
| 18. | Physical Vulnerability |
| 19. | by rass, betout bength (realest mae) |
| 20. | Toll |
| 21. | Custodian |
| 22. | |
| 23. | F.A.P. No. 80 |
| | |
| | ASSIFICATION (Legger Tarley State) |
| | Fed. Aid System |
| | Administrative |
| 26. | Functional |

| | | BRIDGE STUDIES AND EVALUATION OFFICE | Page 2 of 5 |
|-----------------|--------------|--|---------------------------------------|
| S | rr' | UCTURE DATA | 987654321 |
| 5 | • • • | | |
| 2 | ; | Year Built | |
| 2 | 8. | Lanes on Str | |
| 2 |) . | ADT - Inventory Rouse 100,000 (estimate | (a.) |
| 3 | O. | Year | |
| 3 | 1. | Design Load | · · · · · · · · · · · · · · · · · · · |
| 3 | 2. | Approach Roadway width including shoulders (0.01 m) | |
| 3 | 3. | Median | |
| 3 | 4. | Skew mone | |
| 3 | 5. | Structure Flared Yes No | |
| 350 | 6. | Traffic Safety Features | |
| 3 | 7. | Historical Significance | . |
| | 8. | Navigation Control Yes No | |
| 3 | 9. | Navigation Vertical Charance (0.1 m) Yes No | |
| 4 | 0. | Navigation Horizontal Clearance (0.1 m) Yes No | |
| 4 | 1 | Structure, Open or Closed to Traffic | ·/···· |
| 4 | 2. | Type Service Pecket, wasp. good sug | hary |
| 4 | 3. | Structure Type-Main Dleel hust - De | CAL "1310120" |
| 4 | 4. | Structure Type-Approach Spans | |
| 4 | 5. | No. of Spans-Main | |
| 4 | 6. | No of Spane Approaches | 130000 |
| 2 | 7. | Total Horizontal Clearance (0.01 m) L = 20.40.7/R.= | 17912 |
| 2 | 18. | Max Span Langth (0.01 m) 20, 40 m con lever full for | of about 200105 |
| | 19. | Structure Length (0.01 m) 430 02. m. aut. 10. M | out |
| | 50. | Sidewolk Widths (0.01 m) Left Right Right | |
| | 51. | Bridge Roadway Width (curb-curb) (0.01 m) | **0000 |
| | 52. | Dack Width (outsout) (0.01 m) | 1. J |
| | 53. | Vertical Clearance over Bridge Roadway-Minimum (0.01 m) | |
| | 54. | Market Mademing on Minimum (0.01 m) | 77 |
| | 55. | I atasel I Indercharance on Right (Outer) Sides - Minimum (0.01 m) L 7 5 | :2/9 R = . /: 90.77. " [0] 2 |
| | 56. | Lateral Underclearance on Lift (Irine) Sides - Minimum (0.01 m) LT? | 85. R 0.86 m [0] 0 [2] |
| MATERIAL STREET | | Wearing Surface | ············ |
| | | | |

| BRIDGE STUDIES AND | EVALUATION OFFICE | |
|---|--|---------------------|
| CONDITION | | Page 3 of 5 |
| Material . | Condition Analysis | 987654321 |
| 58. Deck | 1.411. Con. ch. C | ton 59 💪 |
| 59. Superstructure | Tall goods | . Tigo , 60 □ |
| 60. Substructure | Penerally ga | ad corpition 61 |
| 61. Channel & Channel Protection \ | V | / ⁶² N |
| 62. Culvert & Retaining Walls | | 63 📈 |
| 63. Estimated Remaining Life | Pirin 10. YEAR | S |
| 64. Operating Rating | COCSTRUM. | |
| 65. Approach Alignment | 772-1-14 Mg | |
| 66. Inventory Rating | 1:40C5TRIAN | |
| | | |
| *PFRAISAL | | |
| 67. Structural Condition Deck with m | derate Corresion | |
| at corners. Clbu | 7 | 10 - 1 |
| | I small spall in | ees. |
| 68. Deck Geometry | VIIN TO THE | <i>₹</i> . ``` "[7] |
| | NH_0 | T. |
| 69. Underclearances-Vert. & Lateral (A. 80m.) | dition better that | m busent "Z |
| menimum) critce | ii) | |
| 70. Safe Load Capacity | | ¹³⊘ |
| [| | |
| 71. Waterway Adequacy | . . | |
| | \ \ | |
| 72. Approach Alignment | · \ | |
| | | ., |
| | | |
| PROPOSED IMPROVEMENTS | 1900 | |
| 73. Year Needed | | |
| | • | |
| Described | 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1 | |
| 74. Type of Service | PATE | 183 |
| 75. Type of Work | 14 grans | 193/2/2 |
| 76. Improvement Length (0.1 m) | ·//- | 22000000 |
| 77. Design Loading | .14 - 1 | |

| 80. ADT | Page 1 of 5 9 8 7 6 5 4 3 2 1 "10[0]00 "2[0 "2[0 "2[0] "2[0] "2[0] "2[0] "2[0] "2[0] |
|--|--|
| COST OF IMPROVEMENTS 84 Total (dollars)S Estimated Design Time (months) SUMMARY OF IMPROVEMENT COSTS | |
| 85. Preliminary Engineering (Dollars). 86. Demolition Cost (Dollars). 87. Substructure (Dollars). 88. Superstructure (Dollars). 89. Blank. 90. Date of Last Inspection. 91. Rehabilitate Existing Structure (Dollars). 92. Detour and Traffic Maintenance (Dollars). Approaches (Dollars). Approach Embankment (Dollars). Approach Pavement (Dollars). Approach Guard. 2.1 (Dollars). *(Code to neares: thousand dollars). | |
| REMARKS Se ha for filtien consists in ref all se gi ciències descri sed los elements de f. | <i>a:/</i> |

| | 74 |
|--|--------------|
| BFM E STUDIES AND EVALUATION OF TO SERVE STUDIES AND EVALUATION | Page 5 of 5 |
| <i>B</i> | |
| This bridge is basically in structural condition excelent 4 fair 2 very poor 0 | 18 2 |
| good 3 poor 1 | |
| The load carrying capacity is | 170 |
| adequate 3 minimally adequate 2 inadequate 1 not required (don't print) 0 | |
| The recommended modifications will make it | ' * 2 |
| adequate 2 minimally adequate 1 not required (don't print) 0 0 when previous is 2 | |
| The bridge should be replaced. | 190 |
| Yes (print) 1 Not required (don't print) 0 | ۷ |
| It requires 2024 | 10222 |
| routine inspection every 24 months frequent inspection every (B) months to | |
| monitor abnormal and/or suspected deficiencies frequent inspection every months to determine | (A) (B) |
| the cause of and remedies for existing defects (A) = 0 (B) = months | |
| It requires Z | -23[2] |
| routine maintenance minor repairs and routine maintenance | |
| urgent repairs to prevent further costly deterioration and/or the development | |
| of a dangerous condition and routine maintenance emergency repairs to eliminate danger to the public and routine maintenance | |
| The deck geometry is O | |
| For present ADT, the travelled way is | |
| For future (1995) ADT, the travelled way is | |
| For present ADT, the shoulders are | PRHA |
| For future (1995) ADT, the shoulders are | |
| satisfactory 3 unsatisfactory 2 cannot be evaluated because of lack of information 1 | |
| not required (don't print) 0 | |
| The A approach alignment is A vertical 1: horizontal and vertical 2 | 31 00 |
| B = satisfactory 3 minimally tolerable 2 poor and managements denses to the public 1 | (A)(B) |
| not required (don't print) 0 | |
| Load Post for inventory rating shown in Item 64 | 33 0 |
| Yes 1 No (don't print) 0 | CORPOLARY |
| Post for vertical underclearance shown in Items 54 & 69 Ves 1 No (don't print) 0 | 3.0 |
| | |
| For "Remarks" see bridge file. | 455756 |
| PERSONNEL Structural Inspection Type Oures 11-1-1-1 Condition Analysis | Ziere |
| Appraisal 1. 700 bto | 12-08-88 |
| IBM MT/SC file | |
| | |

E.11 October 23, 1986

| | BRIDGE STUDIES AND E | VALUATION OF | FICE | Page 1 of 5 |
|-----|---|-----------------|---|----------------|
| | PUERTO RICO HIGHWAY AUTHORITY | | | rage 1 01 1 |
| | IBM-370 AND IBM MT/SC ELECTRONIC DATA STORAGE | | [1307] | 0026 |
| | ELECTRONIC DATA STORAGE | A No. | Bridge No. | Road No. |
| | BRIDGE INVE | ENTORY | | Km. No4.30 |
| ID | ENTIFICATION | | · C | ode Positions |
| 8 | 252423222120 | 9 8 7 6 5 4 | 3 2 11 10 9 8 | 7 6 5 4 3 2 1 |
| 1. | State | Commonwealth | of Puerto Rico | 10721 |
| 2. | Highway District | an. | | 1307 |
| 3. | Municipality | gan | | 063 |
| 4. | City/Town | wan . | | 180063 |
| 5. | Inventory Route | 10.11 |) ²² [Z[7 | 1000030 |
| 6. | Features Intersected | on Walk | wog | **** |
| 2 | "IPIEIDIEISITII | RIANIMA | 4/LIKIWAY | |
| | Facility Carried by Structure 56 | | | |
| 8. | 12 1/1 4 | W. J. C. | | 14013071 |
| 9. | Location 16 Daldorioly Nel (| asino cu | ienue. | |
| 10 | | | 061. | 10 |
| | Inventory Route, Minimum Vertical Clearance (0.01 m) | | .80 M | 100480 |
| 11. | | 26 | 1.20 | |
| 12. | Road Section Number (DOD) | STC | DC | 190025 |
| | Bridge Description WH N | | $r > \dots$ | |
| 14. | | 0 1.0 | • | 0637 |
| 15. | Defense Section Length (miles) (0.1 mile) Latitude: /8 Degrees 273 | | | 300817 |
| 17. | Longitude: 66 Degrees 03.1 | | | 3°[/[8]2]7[3] |
| 18. | Physical Vulnerability Degrees | Minutes Luss | | ** 01616101317 |
| 19. | By Pass, Detour Length (Nearest mile) | urtiesas ou | es Chishur | •• প্র প্র |
| 20. | Toll | ell tree | | (173 |
| 21. | Custodian / | 7.7 PW | | · •• |
| 22. | | Highway Donasta | | |
| | Owner State F.A.P. No. 50 Unknown | Highway Departr | neat | U |
| | | | • • • • • • • • • | |
| CLA | SSIFICATION 1 4 4 1 | | | |
| | Fed. Aid System Interstate, with | an | | 1002 |
| 25. | Administrative . State | | | 12[/] |
| 26. | Functional Interstate | | | 13[4] |
| | | | | |

| | BRIDGE STUDIES AND EVALUATION OFFICE | Page 2 of 5 |
|-----|---|--|
| ST | RUCTURE DATA | 987654321 |
| | | |
| 27 | . Year Built | 1.6800 |
| 28 | Lanes on Str O . Under | 0007 |
| 29 | | 23 //0/0/0/0 |
| 30 |). Year | ** (<u>P</u> [5] |
| 31 | | ···· |
| 32 | . Approach Roadway width including shoulders (0.01 m) | |
| 33 | | Closed |
| 34 | 20 4 T 3 2 3 2 3 2 3 4 3 4 3 4 3 4 3 4 3 4 4 4 4 | * oo |
| 35 | | 50 D |
| 36 | | · · · · · · · · · · · · · · · · · · · |
| 37 | | · • • • • • • • • • • • • • • • • • • • |
| 38 | | |
| 39 | | |
| 40 | 0.0040 | |
| 41 | Structure, Open or Closed to Traffic | •• A |
| 42 | | ₩ |
| 43 | | 6/3/0/9 |
| 44 | Structure Type-Approach Spans | • বিতাত |
| 45 | V M O | |
| 46 | No. of Spans-Approaches | 130000 |
| 47 | Total Horizontal Clearance (0.01 m)L = | |
| 48 | 8. Max. Span Length (0.01 m) | ** 10 2 0 5 |
| 46 | | |
| 50 | | 000000 |
| 5 | Bridge Roadway Width (curb-curb) (0.01 m) | ····· |
| 52 | | **OIOZ8 |
| 53 | 3. Vertical Clearance over Bridge Roadway-Minimum (0.01 m) | 117999 |
| 54 | | 1 |
| 5.5 | 5. Lateral Underclaarance on Right (Outer) Sides – Minimum (0.01 m) L 🛊 🖯 🦓 🖡 | 1. 7.7077 |
| 56 | | 0.86m 0009 |
| 5 | | ^{8•} \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\ |
| | | |

| | BRIDGE STUDIE | S AND EVALUATION OFFICE | Page 3 of 5 |
|-----|---|--|---------------------------------------|
| COI | NDITION . | To the state of th | 9 8 7 6 5 4 3 2 1 |
| 7 | Muterial | Condition Analysis, // | 1 1-4 |
| 58. | Deck Sleet A. | Squarally Laws | greeyou 59 7 |
| 59. | Superstructure | Llenerally Stage 1 | Challen 60 Z |
| 60. | Substructure | Senerally Hold | Condition 612 |
| 61. | Channel & Channel Protection | | 62 <u>//</u> |
| 62. | Culvert & Retaining Walls | 1010 | 63 ✓ |
| 63. | Estimated Remaining Life | 15.4 | CAN 64 15 |
| 64. | Operating Rating | Pedesly | n. 66 800 |
| 65. | Approach Alignment | | |
| 66. | Inventory Rating | Pelseri | M |
| - 1 | | | |
| APF | RAISAL | | |
| | and #1. It I | its been repaired and pa | +1. +11 |
| 67. | Structural Condition all the Structure | e us been repaired and pa | ned actually 10 2 |
| | | | |
| - | | | · · · · · · · · · · · · · · · · · · · |
| 68. | Deck Geometry | ···· | " " <u>//</u> |
| | | 1. 10 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. | 4 |
| 69. | Underclearances-Vert. & Lateral (.4.180m) | . Condition better Than | present 12 0 |
| | minimum) orderi | a | · · · · · · · · · · · · · · · · · · · |
| 70. | Safe Load Capacity | <u>. </u> | |
| | ika ka mana mana mana mana mana mana mana | | |
| 71. | Waterway Adequacy | /1./ | ! ¹ [] |
| | | - V. Y. i.V. B | |
| 72. | Approach Alignment | ~ 1/24: · · · · · · · | '"⊠ |
| | | $\mathcal{L}\mathcal{U}_{-}\mathcal{U}_{-}\mathcal{U}_{-}\mathcal{U}_{-}$ | |
| | | | |
| | POSED IMPROVEMENTS Vant Nandad | ement not needed | 16(2) |
| 73. | Teal Needed | | |
| | Completed | III | • • • • • • • • • |
| | Described | Pedestran | |
| | Type of Service | ニー・ブラ カグラナー・・・・ | 19[3] |
| | Type of Work | · · · · · · · · · · · · · · · · · · · | |
| | Improvement Length (0.1 m) | ··· ; ··/(·/.·(o·/¬), `····· | 22 0 0 0 0 0 0 |
| 77. | Design Loading | | 2.60 |
| | | | |

| RRIDGE STUDIES AND EVALUATION OFFI | E.gc Unit |
|--|--|
| BRIDGE STUDIES AND EVALUATION OF THE STATE O | 9 8 7 6 5 4 3 2 1, |
| 1/9 | (0000) |
| 78 Roadway Width (0.01m) | "[p] o |
| 79 Number of Lanes 130.0 | ************************************** |
| 130,0 80. ADT 130,0 | 5 |
| 81 Year of Estimated AD1 | 1/9/ 100 |
| 82. Year of Proposed Adjacent Roadway Improvements | 1/(/0 |
| 83. Prop. Adj. Rdwy Improvements-Type | |
| | |
| COST OF IMPROVEMENTS | |
| <u> </u> | " OOOOO |
| 84 Total (dollars)\$ | |
| Estimated Design Time (months) | and the second s |
| 2 | |
| SUMMARY OF IMPROVEMENT COSTS | |
| | 3160G · |
| 85. Preliminary Engineering (Dollars) | 34000 |
| 86. Demolition Cost (Dollars) | "Olo lolo a ' |
| 87. Substructure (Dollars) | - তিত্তিত্তিক। - |
| | |
| 89. Blank | 1986 |
| 90. Date of Last Inspection | 711/28/2 |
| 91. Rehabilitate Existing Structure (Dollars) | |
| 92. Detour and Traffic Maintenance (Dollars) | (Ob io) |
| 93. Approaches (Dollars) | **(0 0,0 |
| Approach Embankment (Dollars) | *************************************** |
| Approach Pavement (Dollars) | |
| Approach Guardrail (Dollars) *(Code to nearest thousand dollars) | |
| *(Code to nearest thousand doubles) | |
| . 82 | 2 1 1-4 |
| REMARKS This budge is in good struct | ural concliteons. |
| | |
| | |
| | |
| | 35 35 35 35 |
| | |

| | BRIDGE STUDIES AND EVALUATION OFFICE GENERAL EVALUATION | Page 5 of 5 |
|-------------|--|-------------|
| E | This bridge is basically in | " 3 |
| | The load carrying capacity is | ''@ |
| E | The recommended modifications will make it | '• Ø |
| | The bridge should be replaced. Yes (print) 1 Not required (don't print) 0 | 0 |
| | It requires routine inspection every 24 months frequent inspection every (B) months to monitor abnormal and/or suspected deficiencies frequent inspection every (B) months to determine the cause of and remedies for existing defects [A] = 2 [B] = 24 [A] = 1 [B] = months [A] = 0 [B] = months | (A) (B) |
| | trequires | 3 |
| I I I | The deck geometry is | |
| S | satisfactory 3 unsatisfactory 2 cannot be evaluated because of lack of information 1 | 45 |
| G | The Dapproach alignment is | (<u>00</u> |
| a 1. | .oad Post for inventory rating shown in Item 64 Yes 1 No (don't print) 0 | 30 |
| P | 'ost for vertical underclearance shown in Items 54 & 69 Yes 1 No (don't print) 0 | • <u>a</u> |
| F | or "Remarks" see bridge file. | |
| S: | PERSONNEL Situatural Inspection Review of Field Data ransfer of Data Review of Field | 1/2/86 |

| j. | BRIDGE N | 130 |)ナ_ | | | | ong Panaga | in the same of | |
|----|----------|----------|------|-------------------|-----------|------------|----------------|--|-----------------------------------|
| | ROAD NO. | 2 | h | KM 430 | | ۲,72% ۱ | A!SAL | OF :7 | EA OU |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | E) | | 22 | | | | |
| | | · * | | | | | | | |
| | | | | BRIDGE S | TUDIF | 5 18.5 | | | |
| | | | | EVALUAT | | | | | |
| | 7 | | | | | | | | |
| 8 | 1 | | • | | | | | | |
| | | | | | 8 | | | | |
| | YEAR | ADT | Sec. | ΤW | TW | T W | | TW+OH!TW | 1954 |
| } | | | 000 | | inachagua | Эу | TW+ SH | Artinosto (inc | । (कार्यक्राव्यक्रम कुल () |
| | 1985 | NA | | Actua! ≅ | \times | \times | | | <u> </u> |
| | | 7070 | | For ADTE | <u> </u> | | | | |
| - | | NA | | | | | | | ; |
| | | 1070 | | | | | (Kali) primari | | |
| | 1995 | r1A | | Read For ADT = | | | | 1 | |
| L | | NA | | Rec. PRHA E | | | | | |
| | all this | | | | | | | | |
| | / A | dequate | | | | | | | |
| | X 11 | adequate | | | | | | | |
| | | | | | | | | | |

E.12 February 2, 1984

| | BRIDGE STUDIES AND EVALUATION OFFICE Page 1 of 5 | |
|-----|---|---|
| | PUERTO RICO HIGHWAY AUTHORITY IBM-370 AND IBM MT/SC ELECTRONIC DATA STORAGE Card No. Bridge No. Road No. | |
| | BRIDGE INVENTORY Km. No. <u>429</u> | |
| IDE | VTIFICATION Code Positions | |
| | 25/24/23/22/21/20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 | |
| 1. | State | j |
| 2 | Highway Dietrict San man | |
| 3. | Municipality San Juan 180101613 | 1 |
| | | |
| 5. | Inventory Route . 2-1-1-00003-0 | l |
| 6. | Features Intersected . Fidestrial Walnumy | |
| | 31/PEDESTRIAM WALKWAY | |
| | Facility Carried by Structure 56 | |
| 8. | Structure No /307 | |
| 9. | Location 10. Baldorioty De Castro dorence | 8 |
| | | |
| | Inventory Route, Minimum Vertical Clearance (0.01 m) | |
| | Kilometer Point (0.01 km) | |
| | Road Section Number (DOD) | |
| | Bridge Description DH | |
| 14. | Defense Milepoint (0.01 ml) | |
| 15. | Defense Section Length (miles) (0.1 mile) |] |
| 16. | Latitude: | 1 |
| 17. | Longitude: | |
| 18. | Physical Vulnerability |] |
| 19. | By Pass, Detour Length (Nearest mile) | 1 |
| 20. | Toll April Arie |] |
| 21. | Custodian |] |
| 22. | Owner | _ |
| 23. | F.A.P. No. 60 Volknown | |
| CLA | SSIFICATION | |
| 24. | SSIFICATION Fed. Aid System Interstate, when 10012 Administrative State 127 Functional Interstate 13 717 | j |
| 25. | Administrative State , , , 12 |] |
| 26. | Functional Interstate |] |
| | | |

| | BRIDGE STUDIES AND EVALUATION OFFICE | |
|--------|--|---------------------|
| STI | RUCTURE DATA | Page 2 of 5 |
| 200000 | | 987654321 |
| 27. | Year Built | 18 6 8 00 |
| 28. | Lanes on Str | 190007 |
| 29. | ADT - Inventory Rouse 6.7, 600 | 23 06 7600 |
| 30. | Year | |
| 31. | Design Load | ···· |
| 32. | Approach, Roadway width including shoulders (0.01 m) ? 6:8/m | 32 268 |
| 33. | Median None Den | |
| 34. | Skew | 36 0 0 |
| 35. | Structure Flared Yes No | 58 6 |
| 36. | Traffic Safety Features | |
| 37. | Historical Significance | |
| 38. | Navigation Control Yes I No | 48 [0] |
| 39. | Navigation Vertical Clearance (0.1 m) Yes No | 47000 |
| 40. | Navigation Horizontal Clearance (0.1 m) Yes No | 800000 |
| 41. | Structure, Open or Closed to Traffic | |
| 42. | Type Service Redestria, over lighway. | |
| 43. | Structure Type-Main | 9 |
| 44. | Structure Type-Approach Spans | 60 000 |
| 45. | No. of Spans-Main | ¹⁰ 002 |
| 46. | No. of Spans-Approaches | 130000 |
| 47. | Total Horizontal Clearance (0.01 m)La . 20: 46 m R.a 19:16-m. | |
| 48. | Max. Span Length (0.01 m) | 2002015 |
| 49. | Structure Length (0.01 m) | · • • • • • • 430 |
| 50. | Sidewalk Widths (0.01 m) Left Right | |
| 51. | Bridge Roadway Width (curb-curb) (0.01 m) . / . / . ? | |
| 52. | Deck Width (out-out) (0.01 m) | |
| 53. | Vertical Clearance over Bridge Roadway-Minimum (0.01 m) | 44 [9.7] 9] 9] |
| 54. | Vertical Underclearance - Minimum (0.01 m) | |
| 55. | Lateral Underclearance on Right (Outer) Sides - Minimum (0.01 m) L * 5.2/2 | R. J. 7.90m . " OSE |
| 56. | Lateral Underclearance on Left (Inne) Sides - Minimum (0.01 m) Lまで何つ | |
| 57, | Wearing Surface | ···· |
| 1.7 | | |

| | BRIDGE STUDIES AND | EVALUATION OFFICE | Page 3 of 5 |
|-----|--|--|-------------------|
| COl | NDITION | | 9 8 7 6 5 4 3 2 1 |
| | Material | Condition Analysis | |
| | Deck 5 Tes C | Generally I | ind Condita 59 7 |
| | Superstructure | Homenally & | |
| 60. | Substructure | Benerally 2 | |
| 61. | Channel & Channel Protection / / | · · · · · · · · · · · · · · · · · · · | |
| 62. | Culvert & Retaining Walls | ::/V | .\63 |
| | Estimated Remaining Life | | 64/25 |
| | Operating Rating | | |
| | Approach Alignment | | |
| 66. | Inventory Rating | Ledes Eria | 70800 |
| | 11 (8 | | |
| API | PRAISAL | | |
| | | Deficienc | |
| 67. | Structural Condition Sand Harting and part base | felr applied regarily | |
| | | | |
| | | | |
| 68. | Deck Geometry | NA | " \\ <u>\</u> |
| | | , , | |
| 69. | Underclearances-Vert. & Lateral . Condition . 29 | ial to present mini | morn culcus. 126 |
| | | · · · · · · · · · · · · · · · · · · · | |
| 70. | Safe Load Capacity | , | |
| | | anang (manangangangangan) | |
| 71. | Waterway Adequacy | | |
| | | ekantan kali. Najabar Mandalah bahasan Angala da da da 📐 | |
| 72. | Approach Alignment | terration for the contractivity of the Artist Contraction of the Contr | |
| | | | 1, |
| | | | |
| PRO | DPOSED IMPROVEMENTS | | |
| 73. | Year Needed | | |
| | Completed | | |
| | Describe | aglian. | |
| 74. | Type of Service | وورون المستوالية والمراس المستوالية | 16 - |
| 75. | Type of Work | | |
| | | | 2810101010 |
| 76. | Improvement Length (0.1 m) | ·/· ·/· × · · · · · · · · · · · · | 28 |

| BRIDGE STUDIES AND EVALUATION OFFICE | Page 4 of 5 |
|--|---|
| | 9 8 7 6 5 4 3 2 1 |
| | |
| 78., Roadway Width (0.01m) | 33[-]-[-] |
| 80. ADT /30,080 | |
| 81. Year of Estimated ADT. 1275 | |
| | |
| 82. Year of Proposed Adjacent Roadway Improvements | |
| 83. Ftop. Auj. Ruwy Improvements-Type | ** o |
| COST OF IMPROVEMENTS | |
| COST OF IMPROVEMENTS | |
| 84 Total (dollars)\$ | 4600000 |
| Estimated Design Time (months) | |
| Estimated Design Time (months) | |
| SUMMARY OF IMPROVEMENT COSTS | |
| SOMMART OF IMEROTEMENT GOSTS | 35. · · · · · · · · · · · · · · · · · · · |
| 85. Preliminary Engineering (Dollars) | 51 0 0 0 |
| 86. Demolition Cost (Dollars) | |
| 87. Substructure (Dollars) | De Cada Voleni Harris Maria (Albania Albania Albania) |
| 88. Superstructure (Dollars) | |
| | <u> </u> |
| | |
| 90. Date of Last Inspection func 13 1983 | ****************** |
| 91. Rehabilitate Existing Structure (Dollars). | 01010 |
| 92. Detour and Traffic Maintenance (Dollars) | |
| 93. Approaches (Dollars) | 0 0 0 4 |
| Approach Embankment (Dollars) | |
| Approach Guardrail (Dollars) | |
| *(Code to nearest thousand dollars) | |
| (Code to hearest thousant donars) | ****** |
| REMARKS | |
| This bridge is good structural condition | |
| $\sigma = \sigma$ | |
| | |
| | |
| | •••• |
| | |
| | |

| BWOGE STUDIES AND EVALUATION OF ICE GENERAL EVALUATION | Page 5 of 5 |
|---|--------------------|
| This bridge is basically in structural condition excelent 4 fair 2 very poor 0 good 3 poor 1 | 16 🗷 |
| The load carrying capacity is | '70 |
| The recommended modifications will make it adequate 2 minimally adequate 1 not required (don't print) 0 0 when previous is 2 | 18 💽 |
| The bridge should be replaced. Yes (print) 1 Not required (don't print) 0 | la 💿 |
| It requires 2 6 7 7 7 8 9 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | *° [2]/ (A) (B) |
| It requires | 23[7] |
| The deck geometry is For present ADT, the travelled way is For future (1995) ADT, the travelled way is For PRHA (1995) recommendations, the travelled way is For present ADT, the shoulders are For future (1995) ADT, the shoulders are For PRHA (1995) recommendations, the shoulders are For PRHA (1995) recommendations, the shoulders are | PRHA |
| satisfactory 3 unsatisfactory 2 cannot be evaluated because of lack of information 1 not required (don't print) 0 | |
| The A approach alignment is B vertical 1 horizontal 0 horizontal and vertical 2 S satisfactory 3 minimally tolerable 2 poor and represents a danger to the public 1 not required (don't print) 0 | 31 [] (A)(B) |
| Load Post for inventory rating shown in Item 64 Yes 1 No (don't print) 0 | 33 🕝 |
| Post for vertical underclearance shown in Items 54 & 69 Yes 1 No (don't print) 0 | 390 |
| For "Remarks" see bridge file, | |
| PERSONNEL Structural Inspection Review of Field Data Transfer of Data Date Condition Analysis Appraisal IBM MT/SC file IBM-370 file | Date FEBRY |

| BRIDGE N | 0. 1307 | (| км. <u>4-29</u> | e. | APP | AISAL | OF | days the first | 68 |
|----------------|------------------|------|--|------------------------------------|---|---|--------------------|--|--|
| 12 14 | | | | | | | | | |
| e ^r | | | | | | | | | 8 |
| | | | BRIDGE ST | | | | | | |
| 7 | | | EVALUATI | ON OF | FICE | | | | |
| | | | | | | | | | |
| E 5 | | | | | | | | | |
| £) | | | | | | | | | |
| | | î | CONTROL OF THE PROPERTY OF THE | I we are | (ANNUA DO ANNO DO DESCRIPTION DE COMPANSA | | | to an engineer contract contract to be expensed to be expensed. | unitary. |
| YEAR | ADT | Sec. | TW | T W Adsquara po incompara | 7 W Indeequate | TW + SH | Adagaa O' | MITW + SA P Indoequo By | Na |
| | | \z | Actual E | | Ey | om mindennes que a a caq. | | | |
| 1982 | | | | | | Jan (dar (daman) y Kallan Nibers) Y fine of the following | | | in the state of th |
| | | | For ADTE | | | SAME TO LOCAL DECISION AND AND AND AND AND | ne promise prise a | | - |
| | NA | | | | | | Williams | The state of the s | |
| 1995 | | | Regd. For ADT = | 100 Magrica (N.) (100) Ango | ANTARAMENTAL ANTARAMENTARAMENTAL ANTARAMENTAL ANTARAMENTAR | Priduce de El Grécole continue y | | | |
| | | | Rec.PRHA E | | | | Service Company | | of the last of the |
| / A | \dequat e | | | Material Company and | de Nicolatical schools consuceroesco | | | ngan mga causasasanan ain suurga g | 20 d |
| X 1: | nadequate | | | | | | | * | |

E.13 June 18, 1975

| | BRIDGE STUDIES AND EVALUATION OFFICE Page | 1 of 5 |
|-----|---|--|
| | 1BM = 370 AND 1BM M1/SC | d No. |
| | BRIDGE INVENTORY Km | . No. N. A |
| IDE | ENTIFICATION Code Pos | itions |
| | 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 | 5 4 3 2 1 |
| 1. | . State | . 10 7 2 1 |
| 2. | Highway District | |
| 3. | Municipality San Juan | . 15063 |
| 4. | City/Town and warm | 1.0000131 |
| 5. | . Inventory Route | 50000 |
| 6. | Features Intersected | |
| | 31/PR 26 | |
| 7. | Facility Carried by Structure 56 Pedes Islan welk well | 72 127 |
| 8. | Structure No | 13071 |
| 9. | Location 10 East of Be, m. Shapping lentor. | |
| | Balderinty de Castor Hume | 1000000 |
| 10. | Inventory Route, Minimum Vertical Clearance (0.01 m) | |
| 11. | . Kilometer Point (0.01 km) | |
| 12. | Road Section Number (DOD) | 24 7 7 |
| 13. | Bridge Description | 26 |
| 14. | | 30000 |
| 15. | 5. Defense Section Length (miles) (0.1 mile) | 10000 |
| 16. | 5. Latitude: | 66031 |
| 17. | | 44 7 |
| 18. | 3. Physical Vulnerability | |
| 19. | 9. By Pass, Detour Length (Nearest mile) | 473 |
| 20. | D. Toll No tell fin road on bulg | The state of the s |
| 21. | 1. Custodian D.T.P.M. | 49 |
| 22. | 2. Owner State Highway Department | |
| 23. | 3. F.A.P. No. 50 | |
| CL | LASSIFICATION 4. Fed. Aid System | 1000 |
| 24 | 4. Fed. Aid System | 12 7 |
| 25 | 5 Administrative | 1300 |
| 26 | 6. Functional | |

| | BRIDGE STUDIES AND EVALUATION OFFICE | Page 2 of 5 |
|----|---|--|
| ST | RUCTURE DATA | 987654321 |
| | | |
| 27 | Year Built | |
| 28 | Lanes on Str | |
| 29 | . ADT – Inventory Route | 23 00 000 |
| 30 | Year | 2900 |
| 31 | Design Load | |
| 32 | . Approach Roadway width including shoulders (0.01 m) | |
| 33 | Median None Open | Closed |
| 34 | . Skew None | 36 00 |
| 35 | | 38 2 |
| 36 | | and the second of the second o |
| 37 | | 43 666 |
| 38 | . Navigation Control | |
| 39 | | |
| 40 |). Navigation Horizontal Clearance (0.1 m) Yes Wo | 50 |
| 41 | . Structure, Open or Closed to Traffic | 54 |
| 43 | Type Service | 7. 4. 1 |
| 43 | | 57300 |
| 44 | | 60 00 |
| 4 | 5. No. of Spans-Main | 10002 |
| 40 | 5. No. of Spans-Approaches | 130000 |
| 4 | | 2017 |
| 4 | 3. Max. Span Length (0.01 m) | 24/10/24/30 |
| 4 | | 70 |
| 5 | O. Sidewalk Widths (0.01 m) Left Right | |
| 5 | 1. Bridge Roadway Width (curb-curb) (0.01 m) | 3600 |
| 5 | 2. Deck Width (out-out) (0.01 m) | 4000/6 |
| 5 | 3. Vertical Clearance over Bridge Roadway-Minimum (0.01 m) | 44 79 79 |
| 5 | 4 Vertical Underclearance — Minimum (0.01 m) | |
| 5 | 5. Lateral Underclearance on Right (Outer) Sides – Minimum (0.01 m) L = 1/1 | 7. Rs. 7,29 ** [7] |
| 5 | 6. Lateral Underclearance on Right (Outer) Sides – Minimum (0.01 m) L = ? . | 3. R.≓. : →</th |
| 5 | 7. Wearing Surface | |

| | BRIDGE STUDIES AND EVAL | UATION OFFICE | Page 3 of 5 |
|------|---|--|-------------------|
| CON | DITION | | 987654321 |
| | Material | Condition Analysis | , |
| 58. | Deck Steel | Thinks . J.M. | ∱ |
| 59. | Superstructure . ** | | |
| | Substructure | | 6'D |
| | Channel & Channel Protection | <i>M.H</i> | 62 N |
| 62. | Culvert & Retaining Walls | <i>MH</i> | 64[7] |
| 63. | Estimated Remaining Life | - 1.5 4.5 · · · · · · · | 64 7 5 |
| 64. | Operating Rating Production 400 | 11.17 | 65 🛇 🕡 |
| 65. | Approach Alignment | | 70 800 |
| 66. | Inventory Rating | ************************************** | [8] [2] [2] |
| | | | |
| APPI | RAISAL | D.C | 8 |
| | 0 1 1 | Deficiencies | s laints are 10 Z |
| 67. | Structural Condition Porday Lection of past | t rives burning | Aires etc |
| | Teaking High comonin on a | 1. 1. March Street Sugar 1. 2 | -11.1.9 9 |
| | Deck Geometry | $\cdots NN$ | |
| 68. | Deck Geometry | 🗸 🌾 ././ | |
| | Underclearances-Vert. & Lateral (4:28.20) Equal 7 | to expected assessor | um criteria 12 6 |
| 69. | Underclearances-Vert. & Lateral | | |
| 70 | | i.i.i | 13 |
| 70. | Sale Loau Capacity | | |
| 71 | Waterway Adequacy | | 14[// |
| / 1. | Waterway Audquaby | | |
| 72 | Approach Alignment | | |
| , 4. | | | |
| | | | |
| PRC | OPOSED IMPROVEMENTS | | 1660 |
| 73. | OPOSED IMPROVEMENTS Year Needed | | 6. (104. 1686 |
| | Completed | | |
| | Describe | | |
| 74. | Type of Service Pedestalance | | 18 |
| 75. | Type of Work | itation | 19 372 |
| 76. | Improvement Length (0.1 m) | ····/////// | 2200000 |
| 77. | Design Loading | /. // / . / | |
| | | | |

| | BRIDGE STUDIES AND EVALUATION OFFICE | Page 4 of 5 |
|-----|--|---------------------|
| | | 987654321 |
| 78 | 3. Roadway Width (0.01 m) | 29 0 0 0 0 |
| 70. | O. Number of Lanes | |
| 80 | D. ADT | 35 O 0 0 0 0 0 |
| 81. | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 4100 |
| 82 | 2. Year of Proposed Adjacent Roadway Improvements | |
| | | |
| 05. | | |
| COS | OST OF IMPROVEMENTS | Δ |
| 84. | 4. Total (dollars) \$. 7, 40 4 . (Breek in 1976 . Com.) Greek | 46000008 |
| | Estimated Design Time (months) | |
| | al en age | |
| SUN | UMMARY OF IMPROVEMENT COSTS | 51 (0 (0 (0) * |
| 85. | | 54@@@* |
| 86. | 6. Demolition Cost (Dollars) | 57/21/21/21/21 * |
| 87. | | 6200000 |
| 88. | | 67 = 1 * |
| 89. | 9. Blank | |
| 90. | | |
| 91. | The Till III III and a contract of the contrac | 74000 * |
| 92. | 2. Approaches (Dollars) | iiiiii |
| | Approach Embankment (Dollars) | |
| | Approach Pavement (Dollars) | |
| | Approach Guardrail (Dollars) | |
| 400 | (* Code to nearest thousand dollars) | 10651110154 |
| 93. | (* Code to nearest thousand dollars) 3. Date of Last Inspection | <u>WYL/WI</u> |
| | | |
| | REMARKS | |
| | i Reliabilitation (Item 90) consist fr. | |
| | NO TO STATE OF THE | |
| | by I'm provement of drawage systems. | まささウ・・・・・ 5 ウェール |
| | b) Removal of rast that sypean in the here | Ge by say I bushing |
| 25 | | |
| | | |
| • | | |
| | | |

| BR. GE STUDIES AND EVALUATION OF CE | Page 5 of 5 |
|---|-------------|
| GENERAL EVALUATION | |
| This bridge is basically in structural condition | 16 |
| excelent 4' fair 2 very poor 0 good 3 poor 1 | |
| | 170 |
| The load carrying capacity is adequate 3 minimally adequate 2 inadequate 1 not required (don't print) 0 | |
| The recommended modifications will make it | 18 |
| adequate 2 minimally adequate 1 not required (don't print) 0 0 when previous is 2 | |
| The bridge should be replaced. | 19 0 |
| Yes (print) 1 Not required (don't print) 0 | |
| It requires 1:12 | 20 1 12 |
| routine inspection every $\underline{24}$ months frequent inspection every \underline{B} months to | (A) (B) |
| monitor abnormal and/or suspected deficiencies (A) - 1 (B) - monitor | |
| frequent inspection every <u>B</u> months to determine the cause of and remedies for existing defects (A) = 0 (B) = months | 1 -1 7 1 |
| 2 | 232 |
| routine maintenance | |
| minor repairs and routine maintenance urgent repairs to prevent further costly deterioration and/or the development | |
| of a dangerous condition and routine maintenance emergency repairs to eliminate danger to the public and routine maintenance | |
| emergency repairs to cumulate danger to the public and reduction many repairs to | |
| The deck geometry is For present ADT, the travelled way is | |
| For future (1990) ADT, the travelled way is | PRHA |
| For PRHA (1990) recommendations, the travelled way is 24 Deck Present Future PRHA Present Future Future PRHA Present Future PRHA Present Future | 0 |
| For future (1990) ADT, the shoulders are Travelled way Shoulders | |
| For PRHA (1990) recommendations, the shoulders are satisfactory 3 unsatisfactory 2 cannot be evaluated because of lack of information 1 | |
| satisfactory 3 unsatisfactory 2 cannot be evaluated because of lack of information 1 not required (don't print) 0 | |
| | 31 00 |
| horizontal and vertical 2 | AB |
| B satisfactory 3 minimally tolerable 2 poor and represents a danger to the public 1 not required (don't print) 0 | |
| | 33 0 |
| Load Post for inventory rating shown in Item 66 Yes 1 No (don't print) 0 | |
| | 340 |
| Post for vertical underclearance shown in Items 54 & 69 Yes 1 No (don't print) 0 | |
| For "Remarks" see bridge file. | |
| PERSONNEL By Date 18/75 Condition Analysis G. 18/75 | Date 5/76 |
| Structural Inspection Proving of Field Data T. Company of Field Data Appraisal | a 1971 |
| Transfer of Data | 176 |
| IDIN-570 III | |

| OAD NO. | | | км | | | | |
|----------------|-----|---------------|--------------------|----------------------------|---------------------------------------|------------------------------|-----------------------|
| (8) | | | | | | | |
| | | | | | | | |
| | | | E | | 40.00g | | |
| | | | | | | | |
| | 2 0 | | BRIDGE | | | | |
| | | R 8 | EVALUA' | I ION OF | FICE | | |
| , | | | | | | | |
| 3 | £ 3 | e e | | | | | |
| | | | | | | | |
| YEAR | ADT | Sec. | тw | T W Adequate or Inadequate | T W Inadequate TW+S | TW+SH Adequate or Inadequate | TW + SH inadequate |
| # 1865 2894 | | $\overline{}$ | Actual ≡ | Inadequate | Ву | Inadequat | Ву |
| 1970 | | | de la constant | \rightarrow | | \rightarrow | |
| | | | For ADT ≡ | | | | |
| | | | | | | | |
| | | | | Vers | | | |
| 1990 | | | Regd. For ADT = | | | | |
| | | | Rec.PRHA≡ | | | | |
| | | | | | · · · · · · · · · · · · · · · · · · · | | |
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| | | BRIDGE STUDIES AND EV | ALUATION OFFI | CE | |
|-----|---------------------------------|-----------------------------|----------------------|-----------------|--|
| | | | | | Page I of I |
| | PUERTO RICO HI | GHWAY AUTHORITY | | | |
| | IBM - 370 AND II | | | 1307 | 0026 |
| | ELECTRONIC DA | TA STORAGE | Card No. | Bridge No. | Road No. |
| | | ROUTE UNDER ST | TRUCTURE | | Km. No. <u>4.29</u> |
| | | | | Code Positio | ons |
| IDE | NTIFICATION | 2524232221 | 20 19 18 17 16 15 14 | 13 12 11 10 9 8 | 7 6 5 4 3 2 1 |
| | Inventory Route | , , , | | 7975 | 1000260 |
| | | Pedrotaia | | • | |
| | | | TRIAK | ALKWAV | |
| 8. | | | 1307 . 0 | acestricity (| 140/30/27 |
| | | vertical Clearance (0.01 m) | | 15 0 | 500485 |
| 11. | (5) | | | A | 5400429 |
| 12. | | DD) | garage garage | | 59 0 256 |
| 13. | | | | | 64 8 8 |
| 14. | ~ . |) <i></i> | 4 20 4 | | |
| 15. | | iles) (0.1 mile) | ch . | | and the state of t |
| 19. | | earest mile) | APPROVE. | 16 | 7300 |
| 12. | 2) 1 400, 2 1 to at 2011gar (1) | | | | |
| CLA | SSIFICATION | | | 7 | |
| | | 27118. E. F.M F | EN CHARLEY S | urban | 75 0 1/2 |
| | | | | | |
| 26. | Functional | Hr. born | Primer 20 | L. Artani | re |
| | | | | | |
| STR | UCTURE DATA | 0.5 | | | |
| 29. | ADT – Inventory Route | 5 | 0540 | | 10 8 5 2 5 6 0 |
| 30. | Year | | 1990 | | 16 2 |
| 47. | Total Horizontal Clearance | (0.01 m) L = / | <i>.32</i> R≓ | /4,35 | 18 |
| | | | | | |

E.14 November 13, 1972

| | | COMMONWEALTH OF PUERTO RICO HIGHWAY AUTHORITY IBM—370 AND IBM MT/SC ELECTRONIC DATA STORAGE COMMONWEALTH OF PUERTO RICO Page 1 of 4 C. Providencia I 3 07 Bridge No. Road No. |
|-------|-------------|--|
| | | BRIDGE INVENTORY Km. No. ——— |
| | IDE | Code Positions VTIFICATION 25 24 23 2 2 2 1 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 |
| | 1. | 19 |
| | 2. | |
| | 3. | |
| | 4. | City/Town |
| | | Inventory Route . C. Proxidencia. Pedestrian. walkway. 22 [180] biblio |
| | 6. | Features Intersected . P.R 26 |
| | | |
| | | Facility Carried by Structure Pedestrian . Wolkway C. Providencia. |
| Park | 4 | Structure No. 13.07 1.01 |
| Carry | 4 9. | Location ast. of Gem. Shopping . center, Are Baldoriste . d. Castro |
| | 2 | 11/2 +1 10 0499 |
| and. | | Inventory Route, Minimum Vertical Clearance (0.01 m) |
| | | Kilometer Point (U.U1 km) , W |
| | | Road Section Number (DOD) |
| | | Bridge Description |
| | | Defense Milepoint (0.01 m) Not. defense highway 26 0000 Defense Section Length (miles) (0.1 mile) Not. Lefense highway 30 000 |
| | | Latitude: /. & Degrees . 2.7. Ø Minutes |
| | | Longitude: . 6.6 Degrees . 0.3. 0. Minutes |
| | 17. | Physical Vulnerability Steel. Truss. |
| | 18. | walt across high year 45 |
| | 19. 20. | Toll No tall for road or hadge 47 |
| | 20. | Custodian |
| | 22. | Owner |
| | 22. | F.A.P. No. 50. |
| | | |
| | | ASSIFICATION Fed. Aid System |
| | | 12 / |
| | | Administrative |
| | 26. | Functional Pedestoran walkway N. A |
| | | |

| B 130° | Page 2 of 4 |
|--|--|
| RUCTURE DATA | 7 6 5 4 3 2 1 |
| | 156800 |
| Lanes on Str Q Under . G | 190006 |
| | |
| | |
| Design Load Pedestrian | 31 7 |
| Approach Roadway width including shoulders (0.01 m) . M.A | 32 466 |
| Median None Open Closed | |
| Skew | 36 0 0 |
| Structure Flared Yes No | |
| Hydraulic Structure Yes No | |
| Report Available Yes Yes No | |
| Navigation Control Yes No | 41亿 |
| | |
| | |
| | Name of the Control o |
| | |
| Structure Type-Main Steel deck. Tenss , Bailey Bridge | 53 309 |
| Structure Type-Approach Spans | 56 000 |
| | |
| | |
| | |
| | |
| | |
| Sidewalk Widths (0.01 m) Left QPP Right QPP | 30 000000 |
| | |
| | |
| | 48 0 4 8 5 T |
| Vertical Oliderclearance – Minimum (0.01 m) | |
| Lateral Underclearance on Right (Outer) Sides – Minimum (0.01 m) . L= / 30 . R=. | 5 7-0 |
| Lateral Underclearance on Left (Median) Sides – Minimum (0.01 m) L=.0.9.5 . R=. | 59 7 |
| Wearing Surface | I |
| H | |
| | Year Built Lanes on Str. O Under A Year Inventory Route ADT — Inventory Route Year Design Load Approach Roadway width including shoulders (0.01 m) Median None Open Closed Skew Structure Flared Hydraulic Structure Report Available Navigation Control Navigation Vertical Clearance (0.1 m) Navigation Horizontal Clearance (0.1 m) Navigation Horizontal Clearance (0.1 m) Navigation Horizontal Clearance (0.1 m) Navigation Vertical Clearance (0.1 m) |

| | | 10 10404 1 |
|-------|---|-------------------|
| | @ CD.1307 @ | Page 3 of 4 |
| CO | NDITION | 9 8 7 6 5 4 3 2 1 |
| | Material Condition Analysis | |
| | Deck Steel Minor Irm.t. | |
| | Superstructure . Steel | 607 |
| 60. | Substructure Stee/ Miner . Irmf : | 61 7 |
| 61. | Channel & Channel Protection N.A | 62 |
| 62. | Culvert & Retaining Walls VA | 63 // |
| | Estimated Remaining Life 2 D. Years | 64 2 0 |
| 64. | Operating Rating Proestrian honoring | 66 8 00 |
| | Approach Alignment M.A | |
| 66. | Inventory Rating Proestran Loading | |
| A DI | PRAISAL | |
| ALI | RAISAL | Deficiencies |
| . 67. | Structural Condition | 1.09 |
| | ************************************** | |
| | ************* | |
| 68. | Deck Geometry | |
| | | |
| 69. | Underclearances-Vert. & Lateral Y = 4.85 m; Lateral underch | |
| | equals recommended CPR.H.A.) (1990) section wid | |
| 70. | Safe Load Capacity | |
| | | |
| 71. | Waterway Adequacy | |
| h | | |
| 72. | Approach Alignment | |
| | • | |
| PRO | POSED IMPROVEMENTS | |
| 73. | Year Needed | |
| | Completed | |
| | Describe | |
| 74. | Type of Service | |
| 75. | Type of Work | |
| 76. | Improvement Length (0.1 m) | |
| 77. | Design Loading | 28 |
| | HARRIS | |

| 18720000PV | |
|---|---|
| | Page 4 of 4 9 8 7 6 5 4 3 2 1 |
| | Roadway Width (0.01 m) |
| 79. | Number of Lanes |
| 80. | ADT |
| 81. | Year of Estimated ADT |
| 82. | Year of Proposed Adjacent Roadway Improvements . N.A. 43 DD |
| 83. | Prop. Adj. Rdwy Improvements—Type |
| | |
| | T OF IMPROVEMENTS |
| 84. | Total (dollars) \$ |
| | |
| | MARY OF IMPROVEMENT COSTS |
| | Preliminary Engineering (Dollars) |
| | Demolition Cost (Dollars) |
| | Substructure (Dollars) |
| | Superstructure (Dollars) |
| | Priority Letter |
| | Rehabilitate Existing Structure (Dollars) |
| | Detour and Traffic Maintenance (Dollars) * |
| | Approaches (Dollars) |
| | Approach Embankment (Dollars) |
| | Approach Pavement (Dollars) |
| | Approach Guardrail (Dollars) |
| (| *Code to nearest thousand dollars) |
| Rei | narks VERUVICO |
| | narks Rehabilitation I should include s. Fainiting |
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| 10 - 10 - 10 - 10 - 10 - 10 - 10 - 10 - 10 | |
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| | RSONNEL By Date By Date |
| | actural Inspection SMR Radgers 11/13/72 Condition Analysis |
| Top | ographic Survey Appraisal |
| | iew of Field Data |
| Tra | nsfer of Data |
| | |

| | | G. 930 | 7 |
|---|--|---------------------------|----------------------------------|
| REMARKS ——— | | | |
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| | Contraction of the Article Art | | |
| | | 84 | |
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| | W. S. Constitution of the | | |
| | | | 120 |
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| | | | |
| This bridge is basically in The load carrying capacity | good poor yesppoor is minimally adequate inadequate | | |
| The recommended modific | rations will make it minimally adequate. | | at p |
| The bridge should be repla | | | |
| It requires | routine inspection (every 2 years). dequent inspection (every months) and concelles for existing defects. | to determine the cause of | |
| | frequent inspection (every months) and/or enspected deficiencies. | to monitor abnormal | E. |
| It requires | routine maintenance, minor repairs and routine maintenance, emergency repairs to eliminate danger to orgent repairs to prevent further coally d the development of a dangerous condition | eterioration and/or | |
| The deck gebinetry is mass for present requirements. The travelled way is unsatis The shoulders are unsatisfas | | pts. | The shoulders are unsatisfactory |

| COMMONWEALTH OF PUERTO RICO HIGHWAY AUTHORITY IBM-370 AND IBM MT/SC ELECTRONIC DATA STORAGE | Card No. | Page 1 of 1 //3 07 Bridge No. | QQQ6 Road No. |
|--|--|---------------------------------|------------------|
| ROUTE UNDER STRUCTU | RE | | Km. No. 4,29 |
| | | Code Positi | ions |
| IDENTIFICATION 25 24 23 22 21 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |
| 5. Inventory Route . PR 26 . 28 3 6 18 0 | 0002650. | 10 2 3 / 0 | 00260 |
| 6. Features Intersected Pedestrian. walk. way. | C. Provide | encia | |
| , 19 PED WALK C | The state of the s | | 1 A |
| 8. Structure No ! 3 0 7 ! ! | | 4.4 0 | |
| 10. Inventory Route, Minimum Vertical Clearance (0.01 m) | 1. 4.85 | 5 | 0.0485 |
| 11. Kilometer Point (0.01 km) | | 5.4 | 0041219 |
| 12. Road Section Number (DOD) 6.2 | | 59 | 00628 |
| 13. Bridge Description | 15/3 . P | | 64 |
| 14. Defense Milepoint (0.01 m) / 2.3 | | 6 | 70 0 1 7 |
| 15. Defense Section Length (miles) (0.1 mile)/. 7. | | | 70.07 |
| 19. By Pass, Detour Length (Nearest mile) / mi/s | | | |
| CLASSIFICATION | | | |
| 24. Fed. Aid System . Other. Federal Aid,. | Primary. | urban. | 75 04 |
| . (24.4 | | | |
| 25. Administrative | 1 arterial | | 78 4.3 |
| 20. I diletional 1.1. | | | 0 1 |
| STRUCTURE DATA | | (6 F | Card 2 |
| 29. ADT - Inventory Route 36,550 | | /.0 | 3 6 3 5 6 |
| 30. Year | | | 18 10 4 |
| 47. Total Horizontal Clearance (0.01 m) | 12.10 | 23 | .78 |
| | | | |
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Appendix F Inspection by PRHTA of PB 2336

F.1 April 16, 2014

| TEAM LEAD | ER: Eng. Artu | ro Cácei | res Febus | | | | | | | | | | | |
|--|---|--|------------------------------|----------------|----|-------|--------------|---|-----------------------------|--|--|--|--|--|
| INSP. DATE: | 4/16 | 14 | | | | | | | | | | | | |
| 1. Inspection | n Type and D | ates: | | | | | | | | | | | | |
| NBI | Туре | 9 | Performed? (Yes) No / NA) | Freq (MONTH | 5) | | OUS INSP. DA | | t Insp. DATE DN/TH/YEAR) | | | | | |
| ITEM 90 | Hen 110 may 10/11/19 | | | | | | | | | | | | | |
| ITEM 93 A | FC Inspection | on | N | _ | | | _ | | | | | | | |
| ITEM 93 B | Underwate | r Insp. | N, | _ | - | | | | | | | | | |
| ITEM 93 C | Other: | | N | _ | | | _ | - | | | | | | |
| Other Check | s: (Y, N, NA) | 4 | , | Do: | io | Comme | inte: | | _ | | | | | |
| Scour Critical Scour Critical Smart Flag fire damage Channel P FC & Under Asphalt Or Drawings Photos Critical Fire | cal (items 11 Core's & NBI gs (scour, ste le, etc) (rofile/Clearar erwater Memi verlay Thickn | 3 & 60) CD cons el plate, nce Tabl bers Tab ess | e oles | | | | | | | | | | | |
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Bureau of Bridges and Structures Bridge Maintenance

Bridge Inspection Report

| 04/16/2018 |
|----------------|
| NA |
| NA |
| NA |
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| | | n | Bureau of Bridges and Structur Bridge Maintenan |
|------------------|--------------------|---|--|
| | | Bridge Inspection Report | t |
| PAST INSPECTIO | N | | |
| Inspection Date: | 04/16/2014 | Type: 1 Regular NBI | |
| Inspector: | -1 | Pontis User Key: Pontis - Pontis Po | |
| Scope: | V | ALIEN ALIEN | |
| NBI: | ✓ Other: | Element: | |
| Underwate | r: Fracture C | ritical: | |
| INSPECTION NOT | res | | |
| SURFACE. SOME | E HOLES AT CYCLONE | AL CRACKS, EXPOSED AGGREGATES AND E FENCE OF RAILINGS. | |
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| Team Leader: Arturo Cáceres | |
|--|--|
| Bridge Inspector: Micky Santiago | |
| Bridge Evaluator: Arturo Cáceres | |
| Assistants: John Dávila | |
| Driver: Juan C. Otero | |
| Inspection date: Abril-16-2014 | |
| Weather Conditions: Sunny | |
| Amount of Time on Inspection: 1 Hours | |
| Equipment: X Bus or Van _ Underwater _ Ladders | _ Snooper X Camera _ Boat |
| _ Other: | |
| Bridge Number: 2336 | |
| Road on Structure: N/A Number or Name: _ Km | |
| Road Under Structure: State Highway Number or Name: PR-1 | 7 Km. 8.2 |
| Ident. Plaque: No Num | |
| 36. Traffic Safety Features: | |
| Bridge railings: not applicable or safety not reuired | |
| Transitions: not applicable or safety not reuired | |
| Approach Guardrail: not applicable or safety not reuired | |
| Approach Guardrail Ends: not applicable or safety not reuire | ed |
| 41. Posting: Condition: A - Open Sign Type: Posting | Load: _ |
| COMMENTS AND/OR RECOMMENDATIONS: | |
| Actualmente se está trabajando en la estructura, construcción de | un "span" adicional en lado sur, por construcción de |
| rampa de acceso a la PR-17. | |
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| MIGHT | acF = 4/23/14 |
| Inspection by: Micky Santiago | Revised and Approved by: Arturo Cáceres |
| Bridge Inspector | Bridge Evaluator |

BR-2336

58. DECK

58.1 Wearing Surface: Material: Concrete

Condition: 6

Thickness

cm.

Deterioration: 0 to 10 %

Drainage: Adequate

Ponding: Yes

Safety: Yes

58.2 Slab or Plate: Material: Concrete

Condition: 7

Cracking: None

Spalling: Top: Small

Scaling: Top: Light

Bottom: No Bottom: No

Exudation: No Rust Stains: No

Corrosion: No

Efflorescence: No 58.3 Movement:

Deck to backwall:

cm. Deck to approach slab:

cm.

| | Material | Cond. Rating | Height Loss (cm) | Joints | Drainage | Alignment | Corrosion | Paint | Safety | Cracking | Spalling | Scaling |
|-------------------|------------|-----------------|------------------------|--------|----------|-----------|-----------|-------|--------|----------|----------|---------|
| 58.4 Curb | N/A | | | _ | - | _ | _ | | _ | _ | - | - |
| 58.5 Median | N/A | - | | - | - | | - | | | | - | - |
| 58.6 Sidewalks | N/A | | | | | - | | | | _ | | - |
| 58.7 Parapets | Concrete | 7 | | Good | Good | Good | | Good | Yes | Fine | | |
| 58.8 Railing | Galvanized | 7 | | Good | Good | Good | - | Good | Yes | | - | _ |

58.9 Lighting Standards: Material: Aluminium Condition: 7

Functioning: Yes

58.10 Utilities:

Type:

Size:

Safety: _

Type:

Size:

Safety: _

Type:

Size:

Safety: _

58.11 Joints: Condition: 6

Type: Expansion

Functioning: Yes

Leaking: Yes Cracking: N

Spalling: N

Armor: No

Type: N/A

Functioning: N/A

Leaking: N/A Cracking: N

Spalling: N

Armor: No

58.12 Drains and Scuppers:

Material: Other Condition: N

Functioning: N/A

58.1- Superficie con algunas grietas finas transversales y longitudinales, agregados expuestos y pequeños "spallings".

58.8- Algunos huecos en las mallas de protección del "railing".

BR-2336

59. SUPERSTRUCTURE

59.1 Bearing Devices: Type: Elastometric Out of Plumb: No

of Plumb: No Paint: None

Condition: 7

59.2 Bridge seats, pedestal, grout pads, abutments or pier seat where beams bear directly on conc.

Condition: 7 Cracking: No

Spalling: None Scaling: None

Crushing: No

59.3 Steel beams: N/A Type: N/A

Condition: N

Corrosion: None

Paint: None

59.4 Concrete: Slab Type: Prest.

Condition: 7 Cracking: No

Spalling: None Scaling: None

59.5 Truss: N/A

Paint: None

Members: N/A

59.6 Drainage: Type:59.7 Hinges: Condition: N

Condition: N Functioning: No

Corrosion: None

Functioning: N/A

Movement: N/A

59.8 Deflection: Normal59.9 Vibrations: Minimal60.0 SUBSTRUCTURE:

| | | | Material | Cond. Rating | Cracking | Spalling | Scaling | Corrosion | Paint | Movement | Erosion | Undermining |
|-----------------|--------|---------------------|----------|-----------------|----------|----------|---------|----------------|-------|----------|---------|-------------|
| | 60.1.1 | Wingwalls | N/A | N | | | - | - | _ | | - | _ |
| Abutments | 60.1.2 | Breast- Backwall | N/A | N | - | - | - | | - | | | |
| but | 60.1.3 | Footing | N/A | N | | - | - | - | | | - | |
| ∢ | 60.1.4 | Piles | N/A | N | | | - | | _ | | | - |
| | 60.2.1 | Caps | Concrete | 7 | F | | - | - | Good | No | | - |
| or Non Bents | 60.2.2 | Bracing | N/A | N | - | - | _ | _ | | | | |
| | 60.2.3 | Columns | Concrete | 7 | F | | | | Good | No | No | No |
| Piers Pile | 60.2.4 | Footing | N/A | N | | | _ | - | - | - | | |
| _ | 60.2.5 | Piles | N/A | N | - | | - | | | | | - |
| 7 | 60.3.1 | Caps | N/A | N | _ | - | - | 7 <u>150</u> 1 | | | | |
| Rocker Bents | 60.3.2 | Bracing | N/A | N | | 1942 | - | | | | | |
| ğ Π | 60.3.3 | Piles | N/A | N | | | | | | | | - |
| " | 60.4.1 | Caps | N/A | N | - | | | 1 <u>=1</u> | | | | - |
| Pile Bents | 60.4.2 | Bracing | N/A | N | - | (221) | - | | | - | | |
| — m | 60.4.3 | Piles | N/A | N | | | | | | | | - |

Comments:

BR-2336

61. CHANNEL AND PROTECTION

Condition: N

61.1 Channel Scour: N/A

61.2 Embankment Erosion: N/A

| | | Туре | Material | Condition Rating | Functioning |
|------|---------------------|------|----------|---------------------|-------------|
| 61.3 | Protective Device | | N/A | N | |
| 61.4 | Fender System | | N/A | N | |
| 61.5 | Rip Rap | | N/A | N | |
| 61.6 | Spur Dikes, Jetties | | N/A | N | - |

61.7 Obstruction: N/A

61.8 Channel Change: N/A Detrimental: N/A

61.9 Adequate Waterway: N/A

61.10 Surrounding Area: Flooding: N/A if yes explain:

Erosion: N/A if yes explain:

61.11 Location of piers and/or abutment detrimental: N/A

if yes explain:

61.12 Other features that may affect structure:

Comments:

62. CULVERT AND RETAINING WALL

| | Material | Condition Rating | Functioning | Cracking | Spalling | Scaling | Corrosion | Settlement | Alignment | Scour |
|---------------------|----------|------------------|-------------|----------|----------|---------|-----------|------------|-----------|-------|
| 62.1 Barrel | N/A | N | | | | - | | | | |
| 62.2 Head Walls | N/A | N | - | | | - | - | | | |
| 62.3 Cut-off wall | N/A | N | | | | - | | | | - |
| 62.4 Retaining wall | N/A | N | | - | | _ | | | 10-2 | |

Comments:

BR-2336

71. WATER ADEQUACY:

N/A

N/A

72. APPROACH ROADWAY

72.1 Alignment: 6

72.2 Slab or Pavement

Condition: N Material: Other

Cracking: No

Spalling: None Scaling: None Uneven: No

Rough: No

Settlement: No Movement: Approach slab-backwall: No Breaking up: No

Excessive deformation: No

Safety:

Hazardous: No

Drainage:

Inadequate: No

Movement:

Pavement-approach slab: No Functioning: Yes

Erosion: No

Embankment: Condition: N Construction: Flimsy: No

Integrity impaired: No

72.3 Undesirable Impact: No

72.4 Joints: No

Type: None

Inadequate: N/A

Satisfactory Alignment: N/A

72.5 Guardrail Type: None

Material: N/A

Functioning: N/A

Condition: N Alignment Horizontal: N/A Vertical: N/A

Joints Functioning: N/A Safety Securely Attached: N/A Pedestrian Hazards: N/A

Comments:

90. INSPECTION DATE: Abril-16-2014

93. CRITICAL FEATURE INSPECTION DATE

Fracture Critical:

Underwater:

Other Special Inspection:

102. DIRECTION OF TRAFFIC: Highway traffic not carried

106. YEAR RECONSTRUCTED:

107. DECK STRUCTURE TYPE: Concrete Cast-in-Place

108. WEARING SURFACE/PROTECTIVE SYSTEM

Type wearing surface: Concrete Type Membrane: None

Deck protection: None

111. PIER OR ABUTMENT PROTECTION (FOR NAVIGATION): N/A

113. SCOUR CRITICAL BRIDGES: N

116. MINUMUM NAVIGATION VERTICAL CLEARANCE:

AUXILIARY ITEMS

Signs: Type: Route Orientation

Material: Alum.

Condition: 7

Type: N/A

BR-2336

RATING ITEM 58 TO 60:

- N: Not applicable
- 9: Excellent Condition
- 8: Very Good Condition: no problem noted.
- 7: Good Condition: some minor problems.
- 6: Satisfactory Condition: structural element show some minor deterioration.
- 5: Fair Condition: all primary structural elements are sound but may have minor section loss, cracking, spalling, or scour.
- 4: Poor condition: advanced section loss, deterioration, spalling, or scour.
- 3: Serious condition: loss of section, deterioration, spalling, or scour have seriously affected primary structural components. Local failures are possible. Fatigue cracks in steel or shear cracks in concrete may be present.
- 2: Critical condition: advanced deterioration of primary structural elements. Fatigue cracks in steel or shear cracks in concrete may be present or scour may have removed substructure support. Unless closely monitored it may be necessary to close the bridge until corrective action is taken.
- 1: "Imminent" failure condition: major deterioration or section loss present in critical structural components or obvious vertical or horizontal movement affecting structure stability. Bridge is closed
- 0: Failed condition: out of service: beyond corrective action.

RATING ITEM 61:

- N: Not applicable. Use when bridge is not over a waterway (channel)
- 9: There are no noticeable noteworthy deficiencies which affect the condition of the channel
- 8: Banks are protected or well vegetated. River control devices such as spur dikes and embankment protection are not required or are in a stable condition.
- 7: Bank protection is in need of minor repairs. River control devices and embankment protection have a little minor damage. Banks and/or channel have minor amounts of drift.
- 6: Bank is beginning to slump. River control devices and embankment protection have widespread minor damage. There is minor stream bed movement evident. Debris is restricting the channel slightly.
- 5: Bank protection is being eroded. River control devices and/or embankment have major damage. Trees and brush restrict the
- 4: Bank and embankment protection is severely undermined. River control devices have severe damage. Large deposits of debris are in the channel.
- 3: Bank protection has failed. River control devices have been destroyed. Stream bed aggradations, degradation, or lateral movement has changed the channel to now threaten the bridge and/or approach roadway.
- 2: The channel has changed to the extent the bridge is near a state of collapse.
- 1: Bridge closed because of channel failure. Corrective action may put back in light service.
- 0: Bridge closed because of channel failure. Replacement necessary.

RATING ITEM 62:

- N: Not applicable. Use if structure is not a culvert.
- 9: No deficiencies.
- 8: No noticeable or noteworthy deficiencies which affect the condition of the culvert. Insignificant scrape marks caused by drift.
- 7: Shrinkage cracks, light scaling, and insignificant spalling which does not expose reinforcing steel. Insignificant damage caused by drift with no misalignment and not requiring corrective action. Some minor scouring has occurred near curtain walls, wingwalls, or pipes. Metal culverts have a smooth symmetrical curvature with superficial corrosion and no pitting.
- 6: Deterioration or initial disintegration, minor chloride contamination, cracking with some leaching, or spalls on concrete or masonry walls and slabs. Local minor scouring at curtain walls, wingwalls, or pipes. Metal culverts have a smooth curvature, non-symmetrical shape, significant corrosion, or moderate pitting.
- 5: Moderate to major deterioration or disintegration, extensive cracking and leaching, or spalls on concrete or masonry walls and slabs. Minor settlement or misalignment. Noticeable scouring or erosion at curtain walls, wingwalls, or pipes. Metal culverts have significant distortion and deflection in one section, significant corrosion, or deep pitting.
- 4: Large spalls, heavy scaling, wide cracks, considerable efflorescence, or opened construction joint permitting loss of backfill.

 Considerable settlement or misalignment. Considerable scouring or erosion at curtain walls, wingwalls, or pipes. Metal culverts have significant distortion and deflection throughout, extensive corrosion or deep pitting.
- 3: Any condition described in Code 4 but which is excessive in scope. Severe movement or differential settlement of the segments, or loss of fill. Holes may exist in walls or slabs. Integral wingwalls nearly severed from culvert. Severe scour or erosion at curtain walls, wingwalls, or pipes. Metal culverts have extreme distortion and deflection in one section, extensive corrosion, or deep pitting with scattered perforations.
- 2: Integral wingwalls collapsed severe settlement of roadway due to loss of fill. Section of culvert may have failed and can no longer support embankment. Complete undermining at curtain walls and pipes. Corrective action required to maintain traffic. Metal culverts have extreme distortion and deflection throughout with extensive perforations due to corrosion.
- 1: Bridge closed. Corrective action may put back in light service.
- 0: Bridge closed. Replacement necessary.

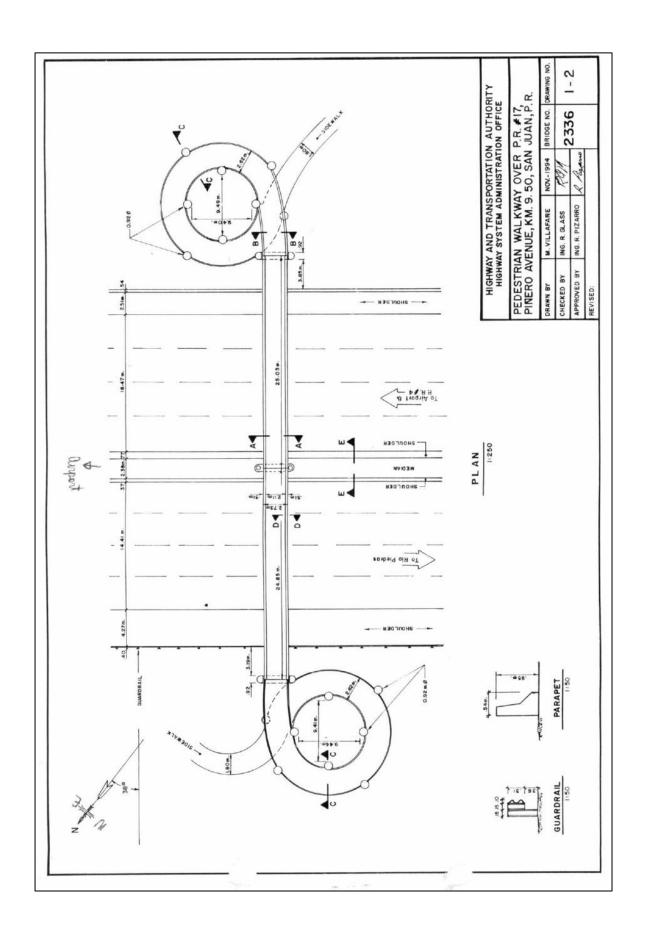
RATING ITEM 113:

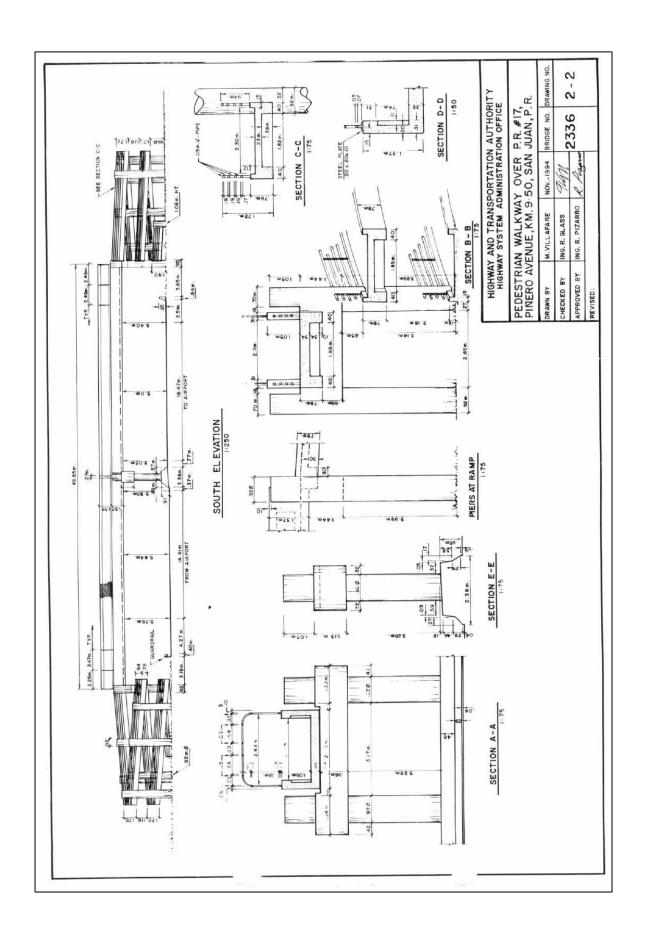
- N: Bridge not over waterway.
- U: Bridge with "unknown" foundation that has not been evaluated for scour. Until risk can be determined, a plan of action should be developed and implemented to reduce the risk to users from a bridge failure during and immediately after a flood event (see HEC 23).
- T: Bridge over "tidal" waters that has not been evaluated for scour, but considered low risk. Bridge will be monitored with regular inspection cycle and with appropriate underwater inspections until an evaluation is performed ("Unknown" foundations in "tidal" waters should be coded U.)
- 9: Bridge foundations (including piles) on dry land well above flood water elevations.
- 8: Bridge foundations determined to be stable for assessed or calculated scour conditions. Scour is determined to be above top of footing. (Example A) by assessment i.e., bridge foundation are on rock formations that have been determined to resist scour within the service life of the bridge), by calculation or by installation of properly designed countermeasures (see HEC 23).
- 7: Countermeasures have been installed to mitigate an existing problem with scour and to reduce the risk of bridge failure during a flood event. Instructions contained in a plan of action have been implemented to reduce the risk to users from a bridge failure during or immediately after a food event.
- 6: Scour calculation/evaluation has not been made. (Use only to describe case where bridge has not yet been evaluated for scour potential.)
- 5: Bridge foundations determined to be stable for assessed or calculated scour conditions. Scour is determined to be within the limits of footing or piles (Exam. B) By assessment i.e., bridge foundations are on rock formations that have been determined to resist scour within the service life of the bridge), by calculations or by installation of properly designed countermeasures (see HEC 23)
- 4: Bridge foundations determined to be stable for assessed or calculated scour conditions; field review indicates action is required to protect exposed foundation (see HEC 23).
- 3: Bridge is scour critical; bridge foundations determined to be unstable for assessed or calculated scour conditions: Scour within limits of footing or piles. (Example B) or Scour below spread-footing base or piles tips. (Example C)
- 2: Bridge is scour critical; field review indicates that extensive scour has occurred at bridge foundations, which are determined to be unstable by: (a comparison of calculated scour and observed scour during the bridge inspection) or (an engineering evaluation of the observed scour condition reported by the bridge inspector in Item 60)
- 1: Bridge is scour critical; field review indicates that failure of piers/abutments is imminent. Bridge is closed to traffic. Failure is imminent based on: (a comparison of calculated scour and observed scour during the bridge inspection) or (an engineering evaluation of the observed scour condition reported by the bridge inspector in Item 60).
- 0: Bridge is scour critical. Bridge has failed and is closed to traffic.

| | | | | | Co | re Eleme | ents | | | | |
|--------------|----------------------|--------------|--------|-------------------|-------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|-------------------------|
| Elem. No. | Elements Description | P a g. | E n v. | State Quantity | Units | Quantity Condition State 1 | Quantity Condition State 2 | Quantity Condition State 3 | Quantity Condition State 4 | Quantity Condition State 5 | Total State Quantity |
| | | | 3 | | | | | | | | 0 |
| | | | 3 | | | | | | | | 0 |
| | | | 3 | | | | | | | | 0 |
| | | П | 3 | | | | | | | | 0 |
| | | | 3 | | | | | | | | 0 |
| | | П | 3 | | | | | | | | 0 |
| | | | 3 | | | | | | | | 0 |
| | | | 3 | | | | | | | | 0 |
| | | Г | 3 | | | | | | | | 0 |
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| | | | 3 | | | | | | | | 0 |
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| | | | 3 | | | | | | | | 0 |
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| | | | 3 | | | | | | | | 0 |
| | | | 3 | | | | | | | | 0 |
| | | | 3 | | | | | | | | 0 |

| | Non Core Elements | | | | | | | | | | | |
|--------------|----------------------|--------------|--------------|-------------------|-------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|-------------------------|--|
| Elem. No. | Elements Description | P a g. | E n v. | State Quantity | Units | Quantity Condition State 1 | Quantity Condition State 2 | Quantity Condition State 3 | Quantity Condition State 4 | Quantity Condition State 5 | Total State Quantity | |
| | | | 3 | | | | | | | | 0 | |
| | | | 3 | | | | | | | | 0 | |
| | | | 3 | | | | | | | | 0 | |
| | | | 3 | | | | | | | | 0 | |
| | | | 3 | | | | | | | | 0 | |
| | | | 3 | | | | | | | | 0 | |
| | | | 3 | | | | | | | | 0 | |

| | Smart Flags | | | | | | | | | | |
|--------------|----------------------|--------------|--------------|-------------------|-------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|-------------------------|
| Elem. No. | Elements Description | P a g. | E n v. | State Quantity | Units | Quantity Condition State 1 | Quantity Condition State 2 | Quantity Condition State 3 | Quantity Condition State 4 | Quantity Condition State 5 | Total State Quantity |
| | | | 3 | | | | | | | | 0 |
| | | | 3 | | | | | | | | 0 |
| | | | 3 | | | | | | | | 0 |
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| | | T | 3 | | | | | | | | 0 |







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2336-Apr.-16-2014-012.jpg

Improving Transportation Infrastructure Resilience Against Hurricanes, Other Natural Disasters, and Weathering: Part II - Analysis of Pedestrian Bridges Failures Due to Hurricane Maria

Volume 2

FINAL REPORT August 2021

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1 Introduction

On September 20, 2017, Puerto Rico was impacted by Hurricane Maria, causing devastation across the island. After Hurricane Maria, Puerto Rico was left with its communication, electrical power, potable water, and transportation infrastructure severely affected. While for some sectors the restoration of services took days, in other areas it took several months. The damages caused by Hurricane Maria in Puerto Rico and the Virgin Islands was about \$90 billion, making it the third most expensive hurricane in the history of the United States (Pasch, Penny, & Berg, 2019). Utilities services were not the only ones affected. Among the irreparable damaged were structures such as houses, buildings, roads, and bridges.

This research project focuses on a pedestrian bridge that used to be located at kilometer 4.1 of the Román Baldorioty de Castro Expressway in San Juan, Puerto Rico. After Hurricane Maria, it was observed that the bridge experienced permanent lateral deflections. Based on preliminary observations, it was theorized that the plastic lateral deflection was the result of the pressure generated by the strong winds on guide signs that were installed on the bridge at some point after the bridge was constructed.

The objective of this project is to assess if the presence of the signs played a key role in the resulting inelastic lateral deflections. To that end, the bridge's general information (geometry and material properties) was obtained in order to develop a structural model of the bridge. This model was subjected to lateral loads consistent with those of the winds cause by Hurricane Maria. Two cases were considered in the analysis of the model: with and without the presence of the guide signs that were present on the bridge during the hurricane. When the results of both cases were compared, it was determined that the signs

were an important factor in the lateral deflection of the bridge. There were also other factors observed that may have contributed to the large lateral deflections. Conclusions and recommendations on the impacts of placing signs on pedestrian bridges are presented, together with suggestions that can be considered as preventive measures.

2 Literature Review

To develop the case study, relevant background information was collected, focusing on bridge types and characteristics, bridge modeling, wind loads modelling, steel material behavior (plastic deformations, corrosion), bridge inspection and condition assessment procedures, and bridge design. In this chapter, the topics mentioned were synthesized into two sections. The first section covers the issues of failures and how to identify them, while the second section focuses on pedestrian bridge design.

2.1 Structural Failures on Steel Members

A structure can react in different ways, depending on its current conditions. Therefore, this section covers topics relevant to the structural failure of steel bridges (plastic deformations and corrosion in structural members) and bridge inspection procedures to help identify these and other failures.

2.1.1 Plastic Deformation

When materials are exposed to loads, they suffer deformations. Most of these deformations are in the elastic range and the material returns to its original form when unloaded, but this is not always the case. Materials can also deform in the plastic range, in which the material does not return to its original form when unloaded. In this section, basic concepts of mechanics of materials are reviewed to further explained the subject of plastic deformations.

Stress is a measure of how a force applied to a body is distributed over a particular area. In the case of an axially loaded bar, normal stress is computed with the following equation:

$$\sigma = \frac{P}{A} \tag{1}$$

where:

 σ = normal stress

P =axial load

A =cross sectional area of the bar

Typically, a positive sign is used for tensile loads, while a negative sign is used for compressive loads. When using the United States Customary System (USCS), stress is most typically measured in pounds per square inch (psi).

When a body experiences stress, it will generally cause deformations. For an axially loaded bar, a positive normal stress will cause the member to stretch in its longitudinal direction. If the normal stress is negative, the bar will contract in its longitudinal direction. This deformation in the material is known as normal strain and it can be computed using the following formula:

$$\varepsilon = \frac{\delta}{L} \tag{2}$$

where:

 ε = normal strain

 δ = change in length of the bar

L =length of the bar before it is deformed by being loaded

The interaction between stress and strain in an axially loaded bar can be analyzed to understand the behavior of the material. This interaction is best represented with the stress vs. strain diagram. In the diagram, the vertical axis represents the normal stress of the bar, while the horizontal axis represents the normal strain of the bar.

Figure 2.1 is an illustration of a typical stress vs. strain diagram for steel. The first section of the diagram is known as the linear elastic region. In the linear region, the material will suffer a deformation as the stress is applied, but once the stress is removed, the material will return to its original shape with no permanent deformations. In this section, the stress is proportional to the strain. The slope of the line in this linear elastic region is known as the modulus of elasticity of the material, and has the same stress units, since the strain is dimensionless.

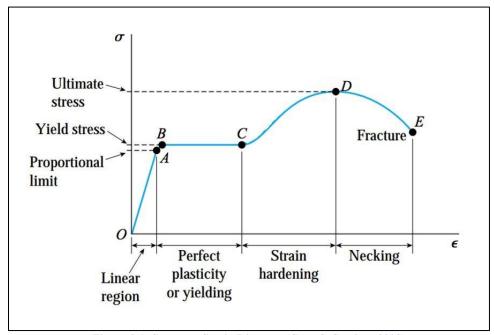


Figure 2.1: Stress vs. Strain Diagram (Gere & Goodno, 2008)

If the stress is continued to be increased, it will reach the proportional limit, and then the material enters the next region which is known as the perfect plasticity or yielding region. In this region, the material's deformation stops being proportional to the stress. The deformation rate increases until reaching the yield point, where the slope becomes practically zero and the material continues its deformation without any increase in stress.

Once the material reaches this region, if the stress is removed, the material does not return to its original shape, therefore a permanent deformation is created.

The following region in the stress vs. strain diagram is known as the strain hardening zone, where the material undergoes changes in its structure, resulting in increased strength resistance. This increase in resistance continues until the ultimate stress point is reached, where the material loses the ability to resist further load. During this process, a necking in the material is observed while it continues to deform until finally reaching the point of fracture.

In terms of the response of a bar element to lateral loads, the idealized elastic-perfectly plastic model for the material stress-strain behavior can be used, in conjunction with the Bernoulli-Navier hypothesis of beam behavior, to obtain the member plastic moment M_p . As presented in the Figure 2.2, M_p is the moment required to produce full plasticization of the cross section, that is to say, all the cross-section points are working at yielding stress.

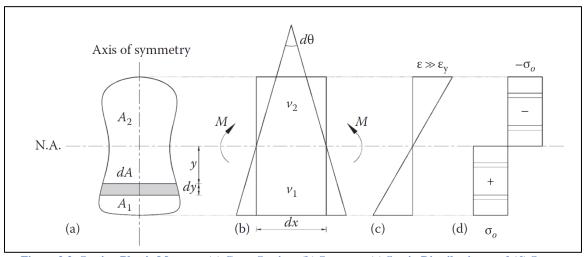


Figure 2.2: Section Plastic Moment: (a) Cross Section; (b) Segment; (c) Strain Distribution; and (d) Stress Distribution (Chen & El-Metwally, 2011)

In this model of concentrated plasticity, it is considered that, once this condition is reached, a plastic hinge is developed at the location of the cross section where M_p is acting, and that the element reached its maximum moment capacity, and the structure could start experiencing large plastic displacements and/or exhibiting failure mechanisms behavior due the plastic hinge formation.

This plastic moment M_p is the maximum moment capacity considered in steel design (that may be reduced due to lateral torsional buckling). It is included as the nominal moment capacity M_n in the interaction equations used for combined actions in beam-column members analysis. Thus, the use of this design equations is an indirect way of observing if such full plasticization condition, due to high strength demands imposed by the loading, is close to be reached in a particular member.

2.1.2 Corrosion in Structural Elements

Corrosion is the destructive attack of metal caused by it reacting to its environment (Roberge, 1999). Corrosion may cause failures to any steel structure to which an adequate maintenance has not been given. These failures may turn into costly damages and may threaten the safety of the public. Corrosion can be present in different environments. For example, steel can experience corrosion while being in direct contact with the atmosphere, with fresh water, with seawater, with soils, with reinforced concrete or with biofilms (Roberge, 1999). This section describes atmospheric corrosion, how it affects the structures, how to identify it, and how to control it.

Atmospheric corrosion occurs when a corrosive material is exposed to air and its contaminants (Roberge, 1999). For this electrochemical corrosion to take place in the atmosphere, the presence of an electrolyte is required, which, having free ions, is a good

electrical conductor and allows balancing between the anode and cathode reactions. An anode is an electrode that is positively charged, and a cathode is an electrode that is negatively charged. During the balancing of the reactions the metal loses electrodes in the balancing of the reactions, starting the corrosion process.

According to the damage it produces, corrosion can be classified into three groups (Roberge, 1999):

- Group 1 Identifiable by visual inspection
- Group 2 Identifiable with special inspection tools
- Group 3 Identifiable by microscopic examination

Figure 2.3 presents these three groups, with examples of different types of damages that may occur in each category.

Group 1 consists of uniform corrosion, pitting, crevice corrosion, and galvanic corrosion. Uniform corrosion is characterized by being uniformly distributed on the surface of the material and the material starts thinning until it reaches failure. Pitting is characterized by being in a specific area where cavities form on the surface. This type of corrosion is more difficult to identify; therefore, it is more dangerous than uniform corrosion. Crevice corrosion, in the same way, is a corrosion characterized by being in a specific area. This type of corrosion is formed when there is a stationary solution creating a microenvironment favorable to corrosion. Examples of areas where crevice corrosion can occur are in gaskets, washers, insulating material, surface deposits, loose coatings, threads, and clamps. Finally, the galvanic corrosion occurs when two metals are put in contact with an electrolyte in between. The metal with the noblest corrosion potential then becomes the cathode, while the less noble material is consumed in the anodic solution (Roberge, 1999).

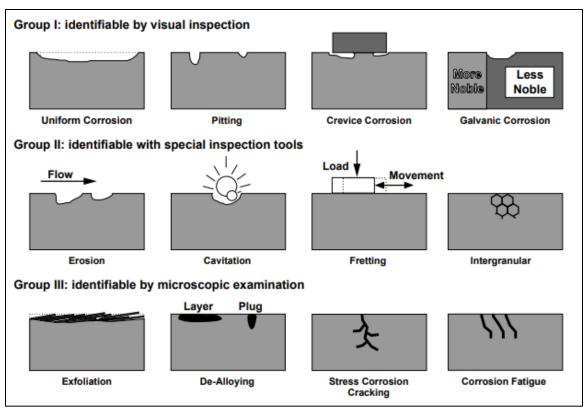


Figure 2.3: Principal Forms of Corrosion (Roberge, 1999)

The modes of failure of Groups 2 and 3 are not discussed here since they are out of the scope of this research because they cannot be identified visually and require additional methods of examination.

To avoid corrosion, it is essential that good prevention methods are carried out. For the prevention of corrosion there are five methods (Roberge, 1999):

- Switch to a more suitable material.
- Modify the material's environment.
- Use protective coatings.
- Apply cathodic or anodic protection.
- Design modifications to the system or component.

However, it is important to remember that the best protection against corrosion is to take it into consideration during the design process. Designs should take into consideration low points where the water accumulates, provide good ventilation and drainage, avoid absorbent materials, provide a good preparation of surface before installing any protective material, and implement a plan of inspection and maintenance.

2.1.3 Bridge Inspection

To facilitate bridge inspection, the *Manual for Bridge Element Inspection* (AASHTO, 2013) can be used as a reference. This manual includes a list of the elements that can be found in bridges with the different types of defects that they may experience. These elements should be evaluated during inspections to determine the condition of the bridge. This manual was used in this research as a reference to make a list of the items to be inspected in order to identify the areas where the bridge defects were located.

The manual divides the elements found in a bridge into two categories. The first is the National Bridges Elements (NBE). This category includes all the structural elements that make up a bridge and are the main elements that support the loads, e.g., columns, beams, trusses, among others. The second is the category Bridge Management Elements (BME). This category focuses on joints, surfaces with wear, and protective layers of materials.

To determine the condition of a bridge, AASHTO (2013) identifies different defects that the components of the NBE and MBE categories may have. For example, a beam can have signs of cracking, corrosion, and loose connections, among others. To evaluate a component being inspected, all the conditions found are rated using a scale of 1 to 4, where 1 represents good and 4 represents severe condition. All these defects are to be evaluated

during the field inspection. AASHTO (2013) defines the defects and indicates how to rate their severity. Examples of these are shown in Table 2-1 and Table 2-2.

Table 2-1: Example of Defect Definitions (AASHTO, 2013)

| Defect Name (Number) | Used to Report | Materials |
|--|---|---------------------------------|
| Crack (Wearing Surface) (3220) | Cracking in wearing surface elements. | Wearing Surfaces |
| Effectiveness (Wearing Surface) (3230) | Loss of effectiveness in the protection provided to the deck by the wearing surface elements. | Wearing Surfaces |
| Chalking (Steel Protective Coatings) (3410) | Chalking in metal protective coatings. | Steel/Metal Protective Coatings |
| Peeling/Bubbling/Cracking (Steel Protective Coatings) (3420) | Peeling, bubbling, or cracking in metal protective coatings. | Steel/Metal Protective Coatings |

Table 2-2: Example of Defect Rating (AASHTO, 2013)

| | | Condition | States | |
|---|--|--|---|---------------------------------|
| | 1 | 2 | 3 | 4 |
| Defects | GOOD | FAIR | POOR | SEVERE |
| Delamination/Spall/ Patched Area/Pothole (Wearing Surfaces) (3210) | None. | Delaminated. Spall less than 1 in. deep or less than 6 in. diameter. Patched area that is sound. Partial depth pothole. | Spall 1 in. deep or greater or 6 in. diameter or greater. Patched area that is unsound or showing distress. Full depth pothole. | The wearing |
| Crack (Wearing Surface) (3220) | Width less than 0.012 in. or spacing greater than 3.0 ft. | Width 0.012–0.05 in. or spacing of 1.0–3.0 ft. | Width of more than 0.05 in. or spacing of less than 1.0 ft. | surface is no longer effective. |
| Effectiveness (Wearing Surface) (3230) | Fully effective. No evidence of leakage or further deterioration of the protected element. | Substantially effective. Deterioration of the protected element has slowed. | Limited effectiveness. Deterioration of the protected element has progressed. | |

To carry out the inspection, it is necessary to define all the components of the bridge and their quantities. For this is important to have available the drawings of the bridge, or an initial field visit may be required to quantify the different elements. Once all the elements and their quantities are defined, it can be proceeded to identify all the faults found in the bridge components by a site inspection.

2.2 Design and Modeling of Pedestrian Bridges

The topic of pedestrian bridge design was researched in order to have the necessary knowledge to perform adequate modeling of this type of structure. This section discusses modular bridges, the design loads of pedestrian bridges, the installation of signs on these structures, and modeling a bridge using a finite element program.

2.2.1 Modular Bridges

Modular bridges are bridges that are designed to be prefabricated and easy to install on site. These bridges are designed with prefabricated concrete or steel, in controlled environments. These bridges can be installed temporarily or permanently. One of the most famous bridges of this type is the Bailey Modular Bridge.

The Bailey Bridge was designed by the British engineer Donald Coleman Bailey during the Second World War. The safe, quick, and efficient way to assemble the bridge gave it the recognition of being the preferred bridge for military use. Once the Second World War ended, other adaptations for urban and rural use for the bridge were found. Currently, there are improved versions of the bridge like the Acrow Bridge in USA and the Mabey Bridge in Great Britain.

The Bailey bridge consists of two principal beams composed of trusses. Perpendicularly to the two main beams there are also transverse beams which reinforce the bridge. The deck rests on the upper part of the transverse beams. For additional horizontal reinforcement, diagonal bars are installed between the two main beams. In the same way, other reinforcing bars are installed between the transverse beams and the trusses to keep the trusses in vertical position. A main beam could consist of one, two or three trusses that

are mounted side by side. One can also add additional truss floors to increase the reach or load capacity. Figure 2.4 shows an example of the Bailey bridge.

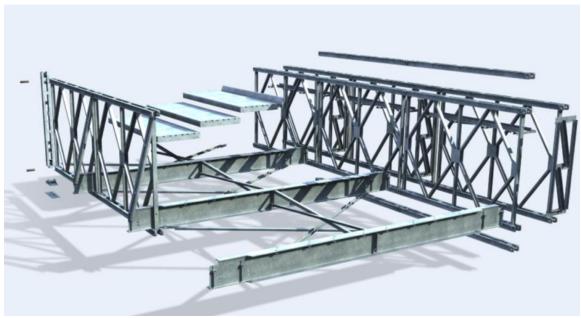


Figure 2.4: Bailey Bridge Model by Mabey (Mabey Bridge, 2019)

2.2.2 Pedestrian Bridge Design

For the design of pedestrian bridges, AASHTO developed the *LRFD Guide* Specifications for the Design of Pedestrian Bridges (AASHTO, 2009). The guide summarizes the design process for pedestrian bridges by citing other design books from AASHTO, the American Welding Society, the American Steel Construction Institute, and others.

Chapter 3 of this guide indicates the loads on the deck of the pedestrian bridge. The first load that is identified is the pedestrian live load of 90 psf. This load is distributed evenly over the length of the pedestrian bridge, and the contemplated load must be for a bridge width equal to or greater than 2 ft.

The guide continues with the vehicular load that must be contemplated in the design of a pedestrian bridges when access to vehicles is not blocked with a permanent structure, such as concrete pedestals, or that the width of the bridge does not allow access of a vehicle. For this project's case study, the vehicular live load is not contemplated since the bridge does not have access for vehicles, not is it wide enough.

The next live load that is identified in the guide is the patch load for equestrian traffic.

This patch load has a magnitude of 1,000 pounds distributed over a 4-in by 4-in square.

The next loads discussed in the guide are the ones related to wind. For wind loads, the guide refers directly to the *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals* (AASHTO, 2015), in particular to articles 3.8 and 3.9, which covers wind loads and their effects on structures. These two sections will be discussed in the next section.

Likewise, for wind loads, the guide refers to section 3.8.2 of the *LRFD Bridge Design Specifications* (AASHTO, 2020) which indicates that the design of a pedestrian bridge must contemplate the vertical wind load on a quarter of the bridge on the windward side. The vertical load to be contemplated is 200 psf multiplied by the width of the bridge.

Table 2-3 presents the combination of loads specified in the *LRFD Bridge Design Specifications* (AASHTO, 2020), where:

DD = negative surface friction

DC = dead load of structural components and non-structural accessories

DW =dead load of wear surfaces and utilities

EH = horizontal earth pressure load

EL = cumulative effects of blocked force resulting from the construction process, including secondary forces of post-tensioning

ES = additional ground load

EV = vertical pressure of dead load of landfill

BR = vehicle braking force

CE = vehicular centrifugal force

CR = creep

FR = friction

IM = vehicle dynamic load tolerance

LL = vehicular live load

LS = surcharge for live load

PL = pedestrian live load

SH = contraction

TU = uniform temperature

WA = water load and current pressure

WL =wind live load

WS = wind load in the structure

Regarding Table 2-3, the combinations Strength II, Strength IV and Strength V do not apply according to the *Manual for Bridge Element Inspection* (AASHTO, 2013).

Table 2-3: Load Combinations and Load Factors (AASHTO, 2020)

| Load Combination Limit State | DC DD DW EH EV ES EL | LL IM CE BR PL LS | WA | ws | WL | FR | TU CR SH |
|------------------------------------|--|----------------------------------|------|------|-----|------|----------------|
| STRENGTH I (unless noted) | γ_{p} | 1.75 | 1.00 | _ | _ | 1.00 | 0.50/1.20 |
| STRENGTH II | γ_p | 1.35 | 1.00 | _ | _ | 1.00 | 0.50/1.20 |
| STRENGTH III | γ_p | _ | 1.00 | 1.40 | _ | 1.00 | 0.50/1.20 |
| STRENGTH IV | γ_{p} | _ | 1.00 | _ | _ | 1.00 | 0.50/1.20 |
| STRENGTH V | γ_p | 1.35 | 1.00 | 0.40 | 1.0 | 1.00 | 0.50/1.20 |
| EXTREME EVENT I | γ_p | γEQ | 1.00 | | _ | 1.00 | _ |
| EXTREME EVENT II | γ_p | 0.50 | 1.00 | _ | | 1.00 | _ |
| SERVICE I | 1.00 | 1.00 | 1.00 | 0.30 | 1.0 | 1.00 | 1.00/1.20 |
| SERVICE II | 1.00 | 1.30 | 1.00 | _ | _ | 1.00 | 1.00/1.20 |
| SERVICE III | 1.00 | 0.80 | 1.00 | _ | _ | 1.00 | 1.00/1.20 |
| SERVICE IV | 1.00 | _ | 1.00 | 0.70 | _ | 1.00 | 1.00/1.20 |

2.2.3 Installation of Road Signs

For the installation of road signage in existing structures, a specific design must be developed for the structure that will hold the sign in place. For this purpose, AASHTO developed specifications for structures supporting signs, traffic signals and luminaires (AASHTO, 2015). As mentioned in the previous section, these specifications must be used for the calculation of wind loads on pedestrian bridges, even if the bridge is not supporting signs, traffic signals or luminaries. These specifications consider dead loads (*DL*), ice loads, wind loads (*W*) and fatigue loads. The combinations for these loads are presented in Table 2-4.

 $Table\ 2-4: Load\ Combinations\ for\ Structures\ Supporting\ Signs\ (AASHTO, 2015)$

| | | Percentage of |
|------------|---------------------------------|-------------------------------|
| Group Load | Load Combination ^a | Allowable Stress ^b |
| I | DL | 100 |
| II | DL + W | 133 |
| III | $DL + Ice + \frac{1}{2}(W)^{c}$ | 133 |
| IV | Fatigue | d |

Regarding wind loads, the design wind pressure is calculated as follows:

$$P_z = 0.00256K_z K_d G V^2 C_d (3)$$

where:

 P_z = design wind pressure in pounds per square feet (psf)

 K_z = height and exposure factor

 K_d = directionality factor

G = gust effect factor

V =basic wind speed, expressed as a 3-s gust wind speed, at 33 ft above the ground in open terrain, in miles per hours (mph)

 C_d = drag coefficient

Equation (3) is based on the formulation developed for and presented in the ASCE/SEI 7 Standard. The AASHTO specifications indicate how to calculate or determine the different parameters of Equation (3).

2.2.4 Bridge Modeling

There are several finite element programs that may be used to model bridges. Among the programs with commercial licenses are Abaqus, ANSYS, LUSAS, Midas, CSiBridge, and SAP2000. These programs include tutorials that help the user to understand how to perform the modeling of bridges.

However, at the time of modeling, a limiting factor is the availability and accessibility of the program. For this reason, open-source programs are also an option. There are different open-source programs to perform non-linear analyzes such as Elmer and OpenSEES.

For the current project, due to its robustness and availability, SAP2000 v21 was selected to perform the comparative analysis of the bridge response to wind loads.

3 Methodology

A brief description of the steps followed to develop this research project is presented in this chapter. Also, some additional considerations to the methodology are mentioned.

3.1 General Procedure

The following list briefly describes the process followed in this project to achieve the research objective:

- 1. Perform a literature review on the type of bridges to be analyzed.
- Collect background information and available data on the specific bridge to be studied.
- 3. Develop an inspection list using the *Manual for Bridge Element Inspection* (AASHTO, 2013).
- 4. Perform a field visual inspection of the bridge in the field to determine the condition of the elements of the bridge and confirm that there are no existing failures that influenced the bridge deformation. This inspection was carried out using the list that was made in step 3.
- 5. Obtain the geometry of the bridge performing a detail survey. A total station and a drone survey (that obtains high-quality, orthorectified images) were used.
- 6. Select a finite element program for the structural analysis. The program selected was SAP2000 v21.
- 7. With the field data that was obtained, develop a finite element model using the program that was chosen in step 6.

- 8. Model the bridge without the signage and observe the behavior of the pedestrian bridge to see if it fails when the wind pressures, equivalent to those produced by Hurricane Maria, are applied.
- 9. Model the bridge with the signage and observe the behavior of the pedestrian bridge to see if it fails when the wind pressures, equivalent to those produced by Hurricane Maria, are applied.
- 10. Compare the behaviors of the bridge obtained in steps 8 and 9. With the comparison of these results, assess if the signs presence was the main reason for the inelastic deformation that had occurred.
- 11. Offer recommendations regarding the installation of signs on modular pedestrian bridges.

3.2 Additional Considerations

The condition observed in the pedestrian bridge during the inspection (such as the large amount of corrosion in several elements) and other findings (such as bridge support details, and signs support details) that may have played a role in the lateral deflections are also described in the results analysis and conclusions.

This research will help future assessments to be carried out on different bridges around Puerto Rico to which road signs were added without the proper reinforcement of the original structure.

4 Bridge Information and Previous Studies

During this research phase, the Puerto Rico Highway and Transportation Authority (PRHTA) of the Puerto Rico Department of Transportation and Public Works (PRDOT) was visited to obtain all the available information on the bridge being studied. It was found that the bridge is identified as Pedestrian Bridge (PB) 1137 and that it was constructed in 1968, The following sections include information about its location, and the recovered drawings and inspection reports.

4.1 Location

PB 1137 was located at kilometer 4.1 of the Roman Baldorioty de Castro Expressway, San Juan, Puerto Rico. The bridge connected the Norte Shopping Center and the Luis Lloréns Torres public housing complex located north of the expressway with the Villa Palmeras sector south of the expressway.

Figure 4.1 presents an aerial view of the area. In the figure, the area north of the expressway, that includes the Norte Shopping Center and the Luis Lloréns Torres complex, are shaded blue. The area south of the expressway that includes the sector Villa Palmeras is shaded yellow. The bridge has been shaded red and finally the expressway is marked with a green line.

Figure 4.2 presents a view of the bridge from March 2016, while Figure 4.3 presents a view of the bridge after the damages produced by Hurricane Maria. Notice that at some point between March 2016 and the passage of Hurricane Maria in September 2017, a sign on the bridge was replaced with multiple signs. At the time of the field visit, all the signs had been removed.



Figure 4.1: Aerial View of the Bridge Location (Source: Google Maps)

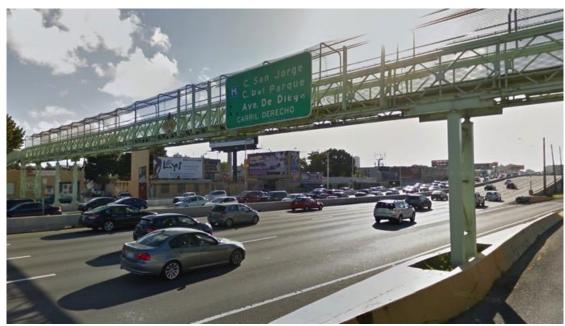


Figure 4.2: Image of the Bridge from March 2016 (Source: Google Maps)



Figure 4.3: Image of the Bridge from September 2018 (Provided by PRHTA)

4.2 Drawings Recovered from Puerto Rico Department of Transportation

During the visits that were performed to the Department of Transportation, copies of two different set of drawings were obtained. The first set of drawings obtained was from 1976, and the second set of drawings acquired was from 2001. The 2001drawings are presented in Appendix A. Since the bridge was built in 1968, based on the inspection reports, both sets of drawings are as-builts.

The set of drawings from 2001 includes one drawing for the existing condition, one drawing for the proposed layout and one drawing for the sections and details. Since one of the drawings is a proposed layout, is understood that this set of drawings was for a remodeling of the bridge. Even though this set of drawings is for a remodeling of the bridge, the existing condition drawing is still different from the existing condition drawing of 1976. Meaning that between 1976 and 2001 there might had been another bridge remodeling for which information was not obtained.

Comparing the existing layout of the 1976 drawings with the one from the 2001 drawings, the bridge was extended from 52.140 meters to 59.585 meters. Additionally, the proposed layout modifications of the 2001 drawing were confirmed to be completed during the site inspections.

4.3 Previous Inspections from Puerto Rico Department of Transportation

During the visits that were done to the Puerto Rico Department of Transportation, copies of different inspection reports of the bridge were obtained. The inspection reports date from 1972 to the most recent of May 2017, just a few months before Hurricane Maria made landfall in Puerto Rico. A total of 13 reports were obtained. There are two major gaps of inspection reports, either because the reports were not saved or because the report was never prepared. These gaps are from 1975 to 1986 and from 2001 to 2014. Outside of these major gaps, the time between reports ranged from one to three years.

The inspection reports have the structural information of the bridge and the evaluation of the condition of three mayor areas: the deck, the superstructure, and the substructure. The evaluation is based on a 0 to 9 scale system, where 9 represents the best evaluation and 0 represents the poorest evaluation. In addition to the condition evaluation, the inspection also consisted in appraising the structural condition of the structure with the same point system. The inspection reports end with recommendations based on the findings. Table 4-1 summarizes the findings of reports that where recovered. In this table, Item 58 represents the deck, Item 59 represents the superstructure, Item 60 represents the substructure and Item 67 represents the structural condition.

Table 4-1: Summary of Previous Inspection Reports

| Year | 58 | 59 | 60 | 67 | ble 4-1: Summary of Previous Inspection Reports Remarks (as included in the reports) |
|-------|----|----|----|----|---|
| 1 cai | | 37 | | | Rehabilitation should include replacing missing bolts and safety pins |
| 1972 | 7 | 7 | 8 | 7 | and also painting |
| 1975 | 8 | 7 | 7 | 7 | Rehabilitation should include: (a) Removal of rust from structural steel by means of wire brush or any other acceptable method and the protection of it with paint; (b) The replacement of any structural element if necessary |
| 1986 | 7 | 7 | 7 | 7 | Rehabilitation consists of Maintenance, sand blasting and painting |
| 1987 | 6 | 6 | 7 | 7 | Rehabilitation consists of repairing light corrosion at steel plate. The structure was painted recently. Fine cracking, small spalling and light corrosion at footing and columns respectfully. |
| 1989 | 6 | 6 | 6 | 6 | Rehabilitation consists of repairing ponding, holes, and rust stains at deck steel plates. Severe corrosion at angles. Moderate corrosion at some structural members. Moderate Corrosion at columns. Fine crack, small spalling, and light scaling at footings. Stair railings are broken due to moderate corrosion. |
| 1991 | 5 | 5 | 5 | 5 | Severe Corrosion |
| 1993 | 6 | 6 | 6 | 6 | This bridge was rehabilitated last year (1992), and no improvement is needed |
| 1994 | 5 | 5 | 6 | 5 | Rehabilitation consists of repairing severe corrosion and light section loss at wearing surface due to ponding. Fine cracks, small spallings and light scaling at columns footings. Ponding at stairs and rest area. |
| 1996 | 5 | 5 | 6 | 5 | Rehabilitation consists of repairing light corrosion and light section loss. Bridge was painted |
| 1999 | 5 | 5 | 6 | 5 | Rehabilitation consists of repairing severe corrosion and light section loss at wearing surface due to ponding. Fine cracks, small spallings and light scaling at columns footings. Ponding at stairs and rest area. |
| 2001 | 5 | 5 | 6 | 5 | Rehabilitation consists of repairing severe corrosion and light section loss at wearing surface due to ponding. Fine cracks, small spallings and light scaling at columns footings. Ponding at stairs and rest area. |
| 2014 | 5 | 5 | 6 | / | Light to moderate corrosion and some holes by corrosion at steel plates. Lateral components of bracings show light to moderate corrosion and section loss. Moderate section loss by corrosion at upper chords. |
| 2017 | 4 | 5 | 5 | / | There is moderate and severe corrosion on the deck surface, including several large perforations. The deck surface of the structure is in poor condition. Several of the lateral components of the "bracing" have light, moderate and severe corrosion, and loss of section. Some sections in the upper chord have moderate loss due to corrosion. Steel columns in good condition, light corrosion |

From Table 4-1 it may be appreciated that the substructure was, in the most cases, considered in a better condition that the deck and the superstructure. It is also appreciated

that, as the years passed, the condition of the structure for the three major areas kept on deteriorating. In the recommendations, in 1987 and 1993, the inspection reports mentioned that the bridge was recently rehabilitated. Nonetheless, with the exception of the report of 1993, all the other reports mentioned that corrosion was present, and that it needed to be repaired.

The corrosion emphasis grew per report and, starting with the report of 1994, the section loss due to corrosion was evident. The final report had the deck condition set as 4 and the superstructure and substructure set as 5, which meant that the bridge was in poor condition.

5 Visual Inspection and Condition Evaluation

In this chapter, the performed visual inspections are described and the corresponding findings are discussed. For the condition evaluation, the lateral deformation of the bridge was not considered.

5.1 Site Visits

As part of the inspection of the bridge, different site visits were conducted. On the first visit it was observed that the bridge was closed to pedestrians because of its poor structural condition. An expanded metal mesh was welded against the steel frames of the bridge and a banner indicating the bridge was closed was installed, as shown in Figure 5.1 and Figure 5.2. During this visit, different photos of the bridge were taken and the dimensions of the elements that were accessible were measured. In addition, a Total Station (shown in Figure 5.3 and Figure 5.4) was used to take points along the bridge to delineate the bridge's lateral displacement. When the points taken were traced in AutoCAD, no significant deflection was observed, thus not enough points during the measuring process were collected to capture the deformation. Since the deflection was not captured with the Total Station, it was decided that another method had to be used.



Figure 5.1: Metal Mesh Used to Close Pedestrian Bridge



Figure 5.2: Sign Indicating Pedestrian Bridge is Closed



Figure 5.3: Total Station



Figure 5.4: Total Station Positioned to Measure Bridge

During the second inspection, a DJI PHANTOM drone (as shown in Figure 5.5) was used to take aerial photos. The photos taken during this visit (an example is shown in Figure 5.6) were of low quality probably because the drone flight was done rapidly because of security concerns. It was decided that another flight was needed.



Figure 5.5: Drone Operation at Beginning of Flight



Figure 5.6: Aerial Photograph of the Pedestrian Bridge

For the third site visit, the Administration of the Public Housing Residency was visited, and permission was asked to enter the area and to stay several hours. Security was offered during the site inspection. During this final site visit, another drone flight was made, and a series of high quality and high-definition photographs were taken. Also, closer images were taken so that the structural elements could be analyzed for their condition assessment directly from the photos. Every picture taken up-close included two to three truss panels. An example of this is presented in Figure 5.7. More photos taken of the bridge are presented in Appendix B.



Figure 5.7: Up-close Photo of the Bridge

The series of aerial photos that were taken were orthorectified, meaning that the photos were geometrically corrected so that the scale of the photo is uniform. After this procedure, the photos that were taken were assembled to form a map and real measurements were obtained from the aerial photos.

5.2 Form creation for bridge condition evaluation

Using as a basis the *Manual for Bridge Element Inspection* (AASHTO, 2013), a checklist form was created with the elements that could be found in the pedestrian bridge that was being evaluated. The inspection manual also includes different failures that may occur per structural elements, and they were also taken into consideration.

The elements that were to be inspected were determined from Chapter 2 of the manual. The first element that was determined to be inspected was obtained from Table 2.1.1 of the manual, reprinted in this report as Table 5-1. From this table, the steel deck was the only element that was determined to be inspected. In the manual, this element has the identification number 30 and is measured in square feet.

Table 5-1: Decks and Slabs (AASHTO, 2013)

| Element | Units | Decks | Slab | Other |
|--|-----------------------|-------|------|-------|
| Reinforced Concrete Deck/Slab | area, ft ² | 12 | 38 | |
| Prestressed Concrete Deck | area, ft ² | 13 | | |
| Prestressed Concrete Top Flange | area, ft ² | 15 | | |
| Reinforced Concrete Top Flange | area, ft ² | 16 | | |
| Steel Deck—Open Grid | area, ft² | 28 | | |
| Steel Deck—Concrete Filled Grid | area, ft ² | 29 | | |
| Steel Deck—Corrugated/ Orthotropic/Etc. | area, ft ² | 30 | | |
| Timber Deck/Slab | area, ft ² | 31 | 54 | |
| Other Material Deck/Slab | area, ft ² | 60 | 65 | |

The second, third and fourth elements that were determined were obtained from Table 2.1.3 of the manual, reprinted in this report as Table 5-2. From this table, the trusses, the floor beams, and the pins were determined. In the manual the truss and the floor beams are measured by length and their identifications numbers are 120 and 152, respectively. The

pins identification number is 161 and they are quantified by the total number of units the bridge contains.

Table 5-2: Superstructure (AASHTO, 2013)

| Element | Units | Steel | Prestressed Concrete | Reinforced Concrete | Timber | Masonry | Other |
|--|------------|-------|-------------------------|------------------------|--------|---------|-------|
| Girder/Beam | length, ft | 107 | 109 | 110 | 111 | | 112 |
| Closed Web/Box Girder | length, ft | 102 | 104 | 105 | | | 106 |
| Stringer | length, ft | 113 | 115 | 116 | 117 | | 118 |
| Truss | length, ft | 120 | | | 135 | | 136 |
| Arch | length, ft | 141 | 143 | 144 | 146 | 145 | 142 |
| Floor Beam | length, ft | 152 | 154 | 155 | 156 | | 157 |
| Cable—Primary | length, ft | 147 | | | | | |
| Cable—Secondary | each | 148 | | | | | 149 |
| Gusset Plate | each | 162 | | | | | |
| Pin, Pin and Hanger Assembly, or Both | each | 161 | | | | | |

The fifth and sixth elements that were determined to be inspected were obtained from Table 2.1.5 of the manual, reprinted in this report as Table 5-3. From this table the columns and the column tower were determined to be inspected. The columns identification number is 202 and the number of units quantify it. The column tower identification number is 207 and they are measured by height.

Table 5-3: Substructure (AASHTO, 2013)

| Element | Units | Steel | Prestressed Concrete | Reinforced Concrete | Timber | Masonry | Other |
|------------------------|------------|-------|-------------------------|------------------------|--------|---------|-------|
| Columns | each | 202 | 204 | 205 | 206 | | 203 |
| Column Tower (Trestle) | length, ft | 207 | | | 208 | | |
| Pier Wall | length, ft | | | 210 | 212 | 213 | 211 |
| Abutment | length, ft | 219 | | 215 | 216 | 217 | 218 |
| Pile | each | 225 | 226 | 227 | 228 | | 229 |
| Pier Cap | length, ft | 231 | 233 | 234 | 235 | | 236 |
| Pile Cap/Footing | length, ft | | | 220 | | | |

Finally, the seventh and eighth elements that were determined were obtained from Table 2.2.3 of the manual, reprinted here as Table 5-4. From this table, the wearing surfaces and steel protective coating were determined to be inspected. In the manual these elements have the identification numbers 510 and 515, respectively, and are measured in square feet.

Table 5-4: Wearing Surfaces and Protective Coatings (AASHTO, 2013)

| Element | Units | Element Number |
|--|-----------------------|-------------------|
| Wearing Surfaces | area, ft ² | 510 |
| Steel Protective Coating | area, ft ² | 515 |
| Concrete Reinforcing Steel Protective System | area, ft² | 520 |
| Concrete Protective Coating | area, ft² | 521 |

After determining the elements that were to be inspected, Chapter 3 of the manual was used to choose the conditions for which each element would be evaluated. The conditions chosen, with their corresponding identification numbers, where the following: corrosion (1000), connection (1020), distortion (1900), damage (7000), chalking (3410) and effectiveness (3440). These conditions are evaluated in a point system going from 1 to 4, where 1 is good and 4 is severe. An example of this evaluation may be seen in Table 5-5, which illustrates the different defects and how they are categorized. Note that this scale is different from the one used in previous inspections reports presented in the section 4.3, where the evaluation is done from 0 to 9 where, 0 is bad and 9 is very good.

With all the elements and conditions established, a table based on the Table B3.3 of the manual was developed.

Table 5-6 includes all the elements that were decided to be evaluated.

Table 5-5: Condition State Definitions for Steel Deck (AASHTO, 2013)

| | | Condition | States | |
|----------------------|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| Defects | GOOD | FAIR | POOR | SEVERE |
| Corrosion (1000) | None. | Freckled rust. Corrosion of the steel has initiated. | Section loss is evident or pack rust is present but does not warrant structural review. | The condition warrants a structural review to |
| Cracking (1010) | None. | Crack that has self- arrested or has been arrested with effective arrest holes, doubling plates, or similar. | Identified crack that is not arrested but does not warrant structural review. | determine the effect on strength or serviceability of the element or bridge; OR a |
| Connection (1020) | Connection is in place and functioning as intended. | Loose fasteners or pack rust without distortion is present but the connection is in place and functioning as intended. | Missing bolts, rivets, or fasteners; broken welds; or pack rust with distortion but does not warrant a structural review. | structural review has been completed and the defects impact strength or serviceability of the element or bridge. |
| Damage (7000) | Not applicable. | The element has impact damage. The specific damage caused by the impact has been captured in Condition State 2 under the appropriate material defect entry. | The element has impact damage. The specific damage caused by the impact has been captured in Condition State 3 under the appropriate material defect entry. | The element has impact damage. The specific damage caused by the impact has been captured in Condition State 4 under the appropriate material defect entry. |

Table 5-6: Element Quantity and Condition State Summary

| Element Type | Area | Element Number | Element Description | Unit of Measure | Total Quantity | Condition State 1 | Condition State 2 | Condition State 3 | Condition State 4 | Defect # |
|-----------------------------------|---------------------------------|-------------------|--------------------------|--------------------|-------------------|----------------------|----------------------|----------------------|----------------------|----------|
| | | 30 | Steel Deck | area, ft^2 | | | | | | |
| | Decks and Slabs | 1000 | Corrosion | area, ft^2 | | | | | | |
| | | 1020 | Connection | area, ft^2 | | | | | | |
| | | 120 | Truss | length, ft | | | | | | |
| | | 1000 | Corrosion | length, ft | | | | | | |
| | | 1020 | Connection | length, ft | | | | | | |
| | | 1900 | Distortion | length, ft | | | | | | |
| | | 7000 | Damage | length, ft | | | | | | |
| North and Building | Superstructure | 152 | Floor Beam | length, ft | | | | | | |
| National Bridge Elements (NBS) | | 1000 | Carrosion | length, ft | | | | | | |
| Lienients (Nos) | | 1020 | Connection | length, ft | | | | | | |
| | | 161 | Pin | each | | | | | | |
| | | 1000 | Corrosion | each | | | | | | |
| | | 1020 | Connection | each | | | | | | |
| | | 202 | Columns | each | | | | | | |
| | | 1020 | Connection | each | | | | | | |
| | Substructure | 207 | Column Tower | length, ft | | | | | | |
| | | 1000 | Carrosion | length, ft | | | | | | |
| | | 1020 | Connection | length, ft | | | | | | |
| | | 510 | Wearing Surfaces | area, ft^2 | | | | | | |
| Bridge Management | Wearing Surfaces and Protective | 515 | Steel Protective Coating | area, ft^2 | | | | | | |
| Elements (BMS) | Coatings | 3410 | Chalking | area, ft^2 | | | | | | |
| | | 3440 | Effectiveness | area, ft^2 | | | | | | |

5.3 Assessment

To complete the form presented on

Table 5-6, all the elements had to be quantified and visually given a value condition from 1 to 4. To determine the quantity of the elements, the following computations were made:

Deck

- o The deck is composed of steel plates.
- Steel Deck (Element 30): Quantity 204 ft (in length) x 5.5 ft (in width)
 = 1.122 ft²

• Superstructure

- The superstructure is composed of trusses, floor beams and pins.
- Truss (Element 120) Quantity: 9 ft (in length) x 2 truss (per span) x
 20 (spans) = 360 ft
- Floor Beam (Element 152) Quantity: 9 ft (in length) x 1 beam (per span) x 20 (spans) = 180 ft
- o Pins (Element 161) Quantity: 8 (pins per span) x 20 (spans) = 160 pins

• Substructure

- o The substructure is composed of columns and columns towers.
- o Columns (Element 202) Quantity: 4 in total
- o Column Towers (Element 207) Quantity: 2 in total

• Protective Coating

o The surface of the structure is completely painted.

- Steel Protective Coating (Element 515) Quantity: (Calculated from "as-built" drawings presented in Appendix A) = 8,490 ft²
- o To determine the area of the structure, Table 5-7 was created.

Table 5-7: Surface Area

| | | | | Total Qty | From Drawin | ıg | Surface | Total | Total | Total | Total |
|-------|-------------------------------|-----|----------|--------------|--------------------|----------------|---------|-----------------|-------------------|-------------------|-----------|
| Group | Element | Qty | Sections | | Nominal Size | Length [in] | [in] | Surface [in] | Area [sq. in.] | Area [sq. ft.] | [sq. ft.] |
| | Longitudinal Channel Top 1 | 2 | 40 | 80 | 4" x 2" x 1/4" | 116 | 8 | 16 | 1856 | 12.89 | 1031.11 |
| | Longitudinal Channel Top 2 | 2 | 40 | 80 | 4" x 2" x 1/4" | 116 | 8 | 16 | 1856 | 12.89 | 1031.11 |
| | Longitudinal Channel Bottom 1 | 2 | 40 | 80 | 4" x 2" x 1/4" | 116 | 8 | 16 | 1856 | 12.89 | 1031.11 |
| | Longitudinal Channel Bottom 2 | 2 | 40 | 80 | 4" x 2" x 1/4" | 116 | 8 | 16 | 1856 | 12.89 | 1031.11 |
| Truss | Vertical Channel | 3 | 40 | 120 | 3" x 1" x 1/8" | 57 | 5 | 10 | 570 | 3.96 | 475.00 |
| Panel | Diagonal Channel | 2 | 40 | 80 | 3" x 1-1/2" x 1/8" | 41 | 6 | 12 | 492 | 3.42 | 273.33 |
| ranei | Diagonal Channel | 2 | 40 | 80 | 3" x 1-1/2" x 1/8" | 41 | 6 | 12 | 492 | 3.42 | 273.33 |
| | Diagonal Channel | 2 | 40 | 80 | 3" x 1-1/2" x 1/8" | 41 | 6 | 12 | 492 | 3.42 | 273.33 |
| | Diagonal Channel | 2 | 40 | 80 | 3" x 1-1/2" x 1/8" | 41 | 6 | 12 | 492 | 3.42 | 273.33 |
| | Reinforcing Plate | 1 | 40 | 40 | 9" x 9" | 9 | 9 | 18 | 162 | 1.13 | 45.00 |
| | Reinforcing Plate | 2 | 40 | 80 | 9" X 4-1/2" | 4.5 | 9 | 18 | 81 | 0.56 | 45.00 |
| | Transverse Beam | 1 | 20 | 20 | 10" x 5" x 5/16" | 108 | 20 | 40 | 4320 | 30.00 | 600.00 |
| | Diagonal Bracing Channel | 2 | 20 | 40 | 3" x 1-1/2" x 1/8" | 51.5 | 6 | 12 | 618 | 4.29 | 171.67 |
| Floor | Transverse Bracing Channel | 4 | 20 | 80 | 4" x 1-1/2" x 1/8" | 75 | 7 | 14 | 1050 | 7.29 | 583.33 |
| 11001 | Longitudinal Channel | 4 | 20 | 80 | 4" x 1-1/2" x 1/4" | 116 | 7 | 14 | 1624 | 11.28 | 902.22 |
| | Transverse Angle Bracing | 2 | 20 | 40 | 3" x 3" x 1/8" | 75 | 6 | 12 | 900 | 6.25 | 250.00 |
| | Longitudinal Angle Bracing | 2 | 20 | 40 | 3" x 3" x 1/8" | 60 | 6 | 12 | 720 | 5.00 | 200.00 |
| | | | · | · | _ | | | • | | Total | 8490.00 |

With the quantities established, the bridge was evaluated. The results from the evaluation are presented in Table 5-8. Following is a discussion of how these results were obtained.

Table 5-8: Element Quantity and Condition State Summary Evaluate

| Element Type | Area | Element Number | Element Description | Unit of Measure | Total Quantity | Condition State 1 | Condition State 2 | Condition State 3 | Condition State 4 | Defect # |
|---|--------------------|-------------------|--------------------------|--------------------|-------------------|----------------------|----------------------|----------------------|----------------------|----------|
| National Bridge Elements (NBS) | Decks and Slabs | 30 | Steel Deck | area, ft^2 | 1,122 | | | | | 4 |
| | | 1000 | Corrosion | area, ft^2 | 1,122 | | | | 1,122 | 4 |
| | | 1020 | Connection | area, ft^2 | 1,122 | | | | 1,122 | 4 |
| | Superstructure | 120 | Truss | length, ft | 360 | | | | | 4 |
| | | 1000 | Corrosion | length, ft | 360 | | | 198 | 162 | 3,4 |
| | | 1020 | Connection | length, ft | 360 | | 198 | 162 | | 2,3 |
| | | 1900 | Distortion | length, ft | 360 | 148 | | | 212 | 1,4 |
| | | 7000 | Damage | length, ft | 360 | 360 | | | | 1 |
| | | 152 | Floor Beam | length, ft | 180 | | | | | 2 |
| | | 1000 | Corrosion | length, ft | 180 | 117 | 63 | | | 1,2 |
| | | 1020 | Connection | length, ft | 180 | 144 | 36 | | | 1,2 |
| | | 161 | Pin | each | 160 | | | | | 1 |
| | | 1000 | Corrosion | each | 160 | 160 | | | | 1 |
| | | 1020 | Connection | each | 160 | 160 | | | | 1 |
| | Substructure | 202 | Columns | each | 4 | | | | | 1 |
| | | 1020 | Connection | each | 4 | 4 | | | | 1 |
| | | 207 | Column Tower | length, ft | 27 | | | | | 4 |
| | | 1000 | Corrosion | length, ft | 27 | | 27 | | | 2 |
| | | 1020 | Connection | length, ft | 27 | | | | 27 | 4 |
| Bridge | Wearing | 510 | Wearing Surfaces | area, ft^2 | 8,490 | | | | | N/A |
| Management | Surfaces and | 515 | Steel Protective Coating | area, ft^2 | 8,490 | | | | | 3 |
| Elements | Protective | 3410 | Chalking | area, ft^2 | 8,490 | | 8,490 | | | 2 |
| (BMS) | Coatings | 3440 | Effectiveness | area, ft^2 | 8,490 | | | 8,490 | | 3 |

To evaluate the pedestrian bridge, it is important to understand the points system. This is summarized as follows (AASHTO, 2013):

- 1 Good No observation is made.
- 2 Fair Corrosion has initiated, loose fasteners, distortion not requiring mitigation, the surface is substantially effective.
- 3 Poor Section loss is evident, missing elements, distortion that requires mitigation, the surface has limited effectiveness.
- 4 Severe The condition warrants a structural review to determine the effect on strength or serviceability of the element or bridge.

Based on this points system, the following overall condition was given to the structure:

Deck - Condition State 4 - It was evaluated in this condition due to the corrosion along the complete deck, causing some holes. Also due to corrosion, some bracing elements had fallen off. Falling elements are a major threat to safety since the bridge is located above a principal roadway of Puerto Rico. Figure 5.8 shows that corrosion had already eaten up part of the steel deck surface (as appreciated by the sunlight passing through the deck) and that diagonal bracings have fallen off. The type of diagonal bracing that is missing in Figure 5.8, can be somewhat appreciated in Figure 5.9, which itself shows an incomplete set of diagonals.



Figure 5.8: Loss of Decking due to Corrosion and Missing Bracing Elements



Figure 5.9: Missing Bracing Elements

• Superstructure - Condition State 4 - Even though the superstructure consists of three different items (the truss, the floor beam, and the pins), the overall condition given to this item was 4 due to the evident corrosion along the truss elements, including section loss. Since the truss was determined in condition

state 4, the whole superstructure was determined as this state. This determination was based on if a truss element fails, it will compromise the integrity of the whole structure. In Figure 5.10, Figure 5.11 and Figure 5.12 the uniform corrosion along the truss may be seen. Going even further, in Figure 5.11 and Figure 5.12 some areas have holes in the channel of the truss due to the corrosion. Because of this level of corrosion, the channels were given a condition state 4. In Figure 5.13 and Figure 5.14 a uniform corrosion may be seen on top of the beam and crevice corrosion may be seen where the beam is in contact with the channel. It is evident that corrosion is present, but since the bridge was closed at the time of the inspection, a closer observation was not possible. From afar, section loss of the beams was not evident, so they were evaluated as condition state 2.

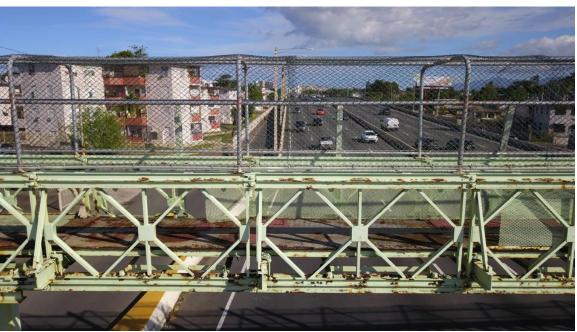


Figure 5.10: Corrosion in Truss Element (Example 1)



Figure 5.11: Corrosion in Truss Element (Example 2)



Figure 5.12: Corrosion in Truss Element (Example 3)



Figure 5.13: Corrosion in Floor Beams (Example 1)



Figure 5.14: Corrosion in Floor Beams (Example 2)

• Substructure - Condition State 4 - The substructure consists of the columns and the column tower. Even though the columns were found in good condition, the column towers were missing connections. Due to the missing connections the overall condition given to the substructure was 4, as in the case of the superstructure. In Figure 5.15 and Figure 5.16 a loose connection and a section loss due to corrosion are presented, respectively.



Figure 5.15: Loose Connection at Column Tower



Figure 5.16: Section Loss due to Corrosion at Column Tower

• Wearing Surfaces - Condition State 3 - This item was evaluated in the condition state 3 because of the limited effectiveness the paint has, due to the evident corrosion in the structure, as it may be appreciated in Figure 5.17.



Figure 5.17: Painting Effectiveness in Corrosion

Appendix E of the element inspection manual indicates different actions that may be taken given a state condition, as follows:

- 1 Good Do nothing; Protect.
- 2 Fair Do nothing; Protect; Repair.
- 3 Poor Do nothing; Protect; Repair; Rehabilitate; Replace.
- 4 Severe Do nothing; Protect; Repair; Rehabilitate; Replace.

Based on these indications, it was determined that for the deck, replacement would be the best action due to the section loss of the steel deck, the pedestrian safety could not be assured. On the other hand, it is evident that the superstructure merits a structural review. Once a structural review has been carried out, if the pedestrian bridge may still be used, repair or replacement of the compromised sections would be required. For the substructure, repair and rehabilitation would be needed. Finally, for the wearing surfaces, it would be necessary to repair by removing the corrosion and rehabilitation by application of a new layer of protective coating.

5.4 Comparing Results

With the evaluation of the bridge condition completed, the values obtained were compared with those presented in the latest inspection report recovered from the Department of Transportation of Puerto Rico dated May 2017. To be able to carry the comparison, a relationship needed to be established between the 1-to-4-point system used in this report with the 0-to-9 scale used in PRDOT inspection reports. The relationship established between the two systems is presented in Table 5-9. For example, it was determined that a Good Condition corresponding to the number 1 on the 1-to-4 scale corresponds to a value on 7 to 9 in the 0-to-9 scale.

Table 5-9: Equivalency Between Current and PRDOT Condition State Criteria

| Condition | Current Inspection | PRDOT Inspection |
|-----------|---------------------------|------------------|
| Good | 1 | 9 - 7 |
| Fair | 2 | 6 - 5 |
| Poor | 3 | 4 - 3 |
| Severe | 4 | 2 - 0 |

Having established the relationship between the different rating systems, Table 5-10 presents a comparison between the assessment of the May 2017 inspection report by PRDOT and the evaluation carried out for this project in 2018. It can be seen that for the 2017 inspection the condition state given to the bridge was poor, while for this project the condition state was determined to be sever. It is apparent that the degradation of the bridge due to corrosion was accelerating, and although the current evaluation could have been too strict, it is evident that immediate action was required for the bridge.

Table 5-10: Condition State Comparison

| Inspection | Deck | Superstructure | Substructure |
|--------------------|------------|----------------|--------------|
| 2017 (Previous) | 4 (Poor) | 5 (Fair) | 5 (Fair) |
| 2018 (Current) | 4 (Severe) | 4 (Severe) | 4 (Severe) |

6 Assessment of Bridge Deflected Geometry

The surveying of the bridge was performed with a DJI Phantom Drone, as mentioned in Chapter 5. The following two sections will describe how the surveying of the bridge was done using the drone.

6.1 Procedure

The use of drones for surveying has become more practical due to the advancement in image processing and GIS/Mapping software. Aerial mapping is now done with the use of drones and the orthorectified images obtained gives accurate surveying dimensions. For the surveying of the pedestrian bridge, a DJI Phantom Drone was used (see Figure 6.1). Using the software PIX4D, first the area in which the mapping will be done must be selected. The selection is done directly from the smart device that is used to fly the drone. Once the area is selected, the photo mapping starts.



Figure 6.1: DJI Phantom Drone (Source: DJI)

During the mapping, the drone flew over the pedestrian bridge taking pictures of the bridge every few feet. Approximately 100 pictures were taken overall. These pictures were then processed with PIX4D software. The software overlayed the pictures taken, creating a map of the area. Then, the same software orthorectifies their dimension creating an

accurately dimensioned map. Figure 6.2 illustrates the result of the orthorectified-mapping image obtained from PIX4D.

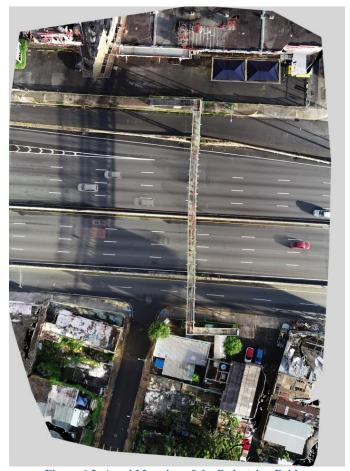


Figure 6.2: Areal Mapping of the Pedestrian Bridge

6.2 Outcomes

With the image obtained from the aerial mapping, measurements of the bridge may be obtained. First, the image was compared to the aerial image that was retrieved from Google Maps. In Figure 6.3, the image from Google Maps is compared to the one obtained from the survey. A red line was overlaid on both images to make the lateral deformation of the bridge after Hurricane Maria more noticeable. To accurately determine the lateral deformation of the bridge, the image obtained from the survey was imported to AutoCAD.

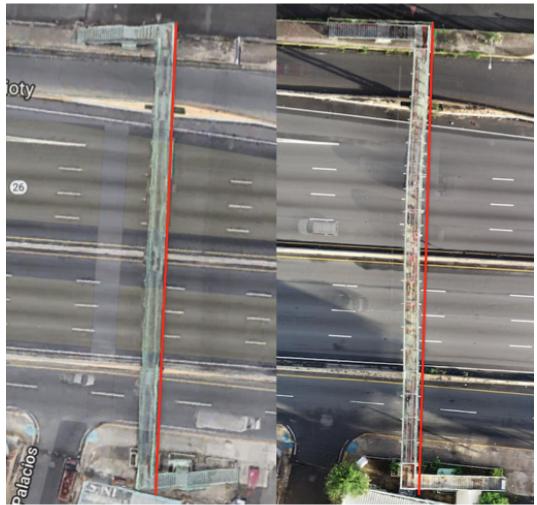


Figure 6.3: 2016 (Google Earth) and 2018 (Drone Survey) Bridge Geometry Comparison

Using Google Earth, the dimension of the bridge was verified, as illustrated in Figure 6.4. The length obtained from Google Earth was 202 ft. Considering that the bridge has a length equivalent to 20 truss panels, and every truss panel measures approximately 10 ft, the distance obtained from Google Earth is considered accurate. The distance of 10 feet of the truss panel was verified in the field, and it is also the same length indicated in an old manual for the Bailey Bridge (U.S. War Department, 1943). With the surveyed image imported to AutoCAD, it was scaled to measure the same distance measured using Google Earth. As illustrated in Figure 6.5, the length of the pedestrian bridge was scaled to measure 2,424 inches (202 feet).



Figure 6.4: Google Earth Dimension Verification

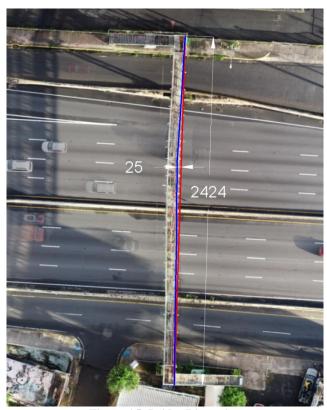


Figure 6.5: Bridge Dimension

In addition to the bridge length, the deflection was also measured. For this, two colored lines were drawn in AutoCAD and the distance between them was measured (as presented in Figure 6.5 and Figure 6.6). The first line drawn was the red line, which runs straight from north to south of the bridge. The second line drawn was the blue line, which follows the contour of the bridge. Then an offset was given to the red line so that it touched the tangent of the blue line. In the intersection of the tangent point, the distance between the original red line and the blue line measured 25 inches, as illustrated in Figure 6.6. With this dimension, it is understood that the bridge had an approximate lateral deflection of 25 inches in its most critical point. In addition, looking closely, it can be appreciated that this point corresponds to the location of the second to last structural beam that supported the signs.



Figure 6.6: Bridge Maximum Plastic Deflection (in inches)

7 Laboratory Testing of Bridge Fragments

Due to its condition, the pedestrian bridge was demolished. This permitted the collection of fragments of the bridge to be tested for determining material strength. This chapter presents information on how the bridge was demolished, how the fragments were recovered and tested, and what were the results of the tests.

7.1 Bridge Demolition and Sample Procurement

The bridge was constructed to cross over the expressway Roman Baldorioty de Castro, one of the main roads of the San Juan Metropolitan Area. This meant that, for the bridge demolition, the expressway had to be closed and traffic redirected. The Puerto Rico Department of Transportation granted permission for the demolition, and it was scheduled to start on March 10, 2019, at midnight, and to last 12 hours.

The demolition started as scheduled. For the demolition, the bridge was moored with two cranes. Figure 7.1 illustrates the rigging of the bridge. The bridge consisted of three spans from which the middle span was the first section to be moored. After the middle span was secured with the cranes, using a man lift that section was cut out with oxyacetylene. After the middle section was completely cut out (as shown in Figure 7.2), it was lowered to the street. Once it was laying in the street it was cut into smaller sections and loaded to a flatbed for final transportation to its disposal facility, as shown in Figure 7.3. This procedure was repeated with the other sections.

After the bridge had been removed and transported to a yard (see Figure 7.4), the company in charge of the demolition was contacted. A formal letter from the Polytechnic University of Puerto Rico (see Appendix C) was submitted to the demolition contractor requesting bridge fragments to be tested to determine mechanical properties of the bridge

elements. After several months of negotiations, on April 26, 2019, the contractor handed the fragments presented in Figure 7.5.



Figure 7.1: Bridge Rigging



Figure 7.2: Bridge Being Removed



Figure 7.3: Transportation of Demolished Bridge



Figure 7.4: Demolished Bridge at Junkyard (April 26, 2019)



Figure 7.5: Bridge Fragments Recovered

7.2 Applicable ASTM Standard

The standard applied to the testing of the recovered bridge fragments was ASTM E8

– Standard Test Methods for Tension Testing of Metallic Materials (2016). The purpose of following this ASTM is to perform tension tests to determine the yield strength of the fragments of the bridge that were recovered.

When conducting the tension test, it is important the specimen is held in a position where the load is transmitted axially through the whole cross-sectional area. For this, special care must be taken during the gripping of the specimen in the testing machine. Once the specimen is ready to start the load test, special attention also must be made for the speed of testing. The speed shall not be greater than that at which the lectures can be accurately recorded. When determining yield properties, the speed of testing shall be between 10,000 and 100,000 psi/min.

The specimens used in the tension tests must have the appropriate dimensions. For this project, the specimens were prepared following the ASTM requirements for a Rectangular Tension Test Specimen, as presented in Figure 7.6. The dimensions established from the figure are the following:

• Gauge Length (G): 2.000 ± 0.005 in

• Width (W): $1\frac{1}{2} + \frac{1}{8}$ in

• Thickness (T): Thickness of material

• Radius of fillet, min (R): ½ in

• Overall length, min (L): 8 in

• Reduced section (A); 2¹/₄ in

• Length of Grip Section (B): 2 in

• Width of Grip Section (C): 2 in

Once the specimen has been cut, gauge marks have to be placed on it to determine the elongation. This marks may be painted, scribed, or drawn.

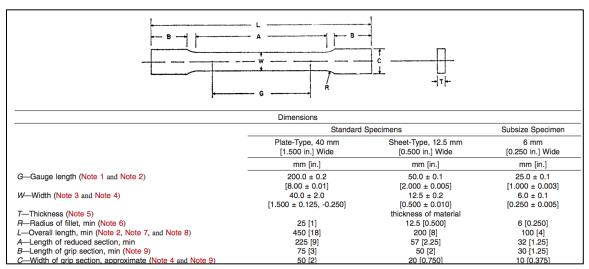


Figure 7.6: Dimensions of Rectangular Tension Test Specimens (ASTM E8, 2016)

7.3 Specimen Preparation and Test Procedure

The recovered fragments of the pedestrian bridge were taken to a metal workshop where a water-jet cutter (shown in Figure 7.7) was used to cut out the specimens to be tested. The specimens were specifically cut out from a C3x5 section used as a diagonal. The water-jet cutter was used so that the properties of the material were not altered by heat. Since deformations and heating by welding, or cutting may affect the properties of the material, special attention was taken to avoid areas of the channel that could have been affected during the demolition of the bridge.



Figure 7.7: Water-jet Cutter

Figure 7.8 illustrates four specimens that were ready to be tested. Prior to testing, the specimens were measured to assure that they had the dimensions required by the ASTM standard, as shown in Figure 7.9 and Figure 7.10.



Figure 7.8: Testing Specimens

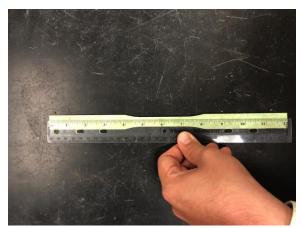


Figure 7.9: Specimen Cut Verification (1 of 2)



Figure 7.10: Specimen Cut Verification (2 of 2)

To determine the cross-sectional area in which the load for the tensile stress would be applied a Mitutoyo Digital Caliper was used. Using the caliper, three different measurements were taken for the thickness and the width of the specimen as illustrated in Figure 7.11 and Figure 7.12. Then the average of these measurements was calculated and used to compute the cross-sectional area of the specimen.



Figure 7.11: Measurement of Specimen Thickness



Figure 7.12: Measurement of Specimen Width

The tensile tests on the specimens were conducted at Construction Materials

Laboratory of the Polytechnic University of Puerto Rico, San Juan Campus. The apparatus

that was used to conduct the tests was an Instron 300DX shown in Figure 7.13. A total of six specimens were tested and the results will be discussed in the following section.



Figure 7.13: Tensile Testing Apparatus

7.4 Results

Initially, only two specimens were tested for equipment verification, procedures verification, grip adjustment, and calibration purposes. After these two run tests, the other four specimens were tested, and the results were within expected ranges for the material strength. Table 7-1 illustrates the measurements that were obtained from those four specimens with respect to their width and thickness. With their width and thickness their corresponding area was determined, and this information was used with the tensile testing apparatus.

Table 7-1: Measurements of Specimens

| Sample | Width | Average Width | Thickness | Average Thickness | Area |
|--------|--------|------------------|-----------|----------------------|--------|
| | 0.4690 | | 0.1740 | | |
| 1 | 0.4690 | 0.4690 | 0.1745 | 0.1743 | 0.0818 |
| | 0.4690 | | 0.1745 | | |
| | 0.5020 | | 0.1665 | | |
| 2 | 0.5030 | 0.5033 | 0.1670 | 0.1670 | 0.0841 |
| | 0.5050 | | 0.1675 | | |
| | 0.5055 | | 0.1695 | | |
| 3 | 0.5045 | 0.5057 | 0.1680 | 0.1690 | 0.0855 |
| | 0.5070 | | 0.1695 | | l |
| | 0.5040 | | 0.1740 | | |
| 4 | 0.5020 | 0.5030 | 0.1750 | 0.1728 | 0.0869 |
| | 0.503 | | 0.1695 | | |

Figure 7.14 presents the stress vs. strain diagrams that were obtained from the tension tests. Table 7-2 illustrates the results obtained from each curve. From these results, an average yield strength of 56.58 ksi, was obtained, as presented in Table 7-3. Given the results of the testing tests, it is suspected that the steel used for the construction of the bridge was A572. Still, the average yield stress of 56.6 ksi was used when modeling the bridge to evaluate the impact of wind loads.

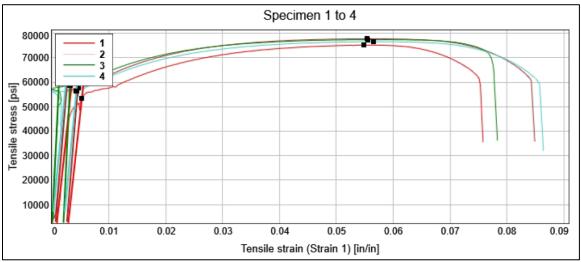


Figure 7.14: Stress vs. Strain Diagrams

Table 7-2: Tensile Tests Results

| | UTS [ksi] | Peak Load [lbf] | YTS [ksi] | Elongation after fracture [%] |
|---|--------------|--------------------|--------------|-------------------------------------|
| 1 | 75.22 | 6149 | 53.46 | 26.25 |
| 2 | 77.83 | 6537 | 57.85 | 26.02 |
| 3 | 77.47 | 6621 | 58.70 | 20.42 |
| 4 | 76.62 | 6660 | 56.30 | 24.12 |

Table 7-3: Yield Strength Average

| Curve | Yield Strength (ksi) | Average (ksi) | |
|-------|-------------------------|---------------|--|
| 1 | 53.46 | | |
| 2 | 57.85 | 56.58 | |
| 3 | 58.70 | 50.58 | |
| 4 | 56.30 | | |

8 Bridge Analytical Model and Results

A model was developed to analyze the expected performance of pedestrian bridge PB-1137 when subjected to wind loads similar to those of Hurricane Maria. This chapter presents a description of the analytical model generated and the steps followed to that end. Afterwards, it presents the results obtained when the model was analyzed considering two cases: the bridge with no signs attached to it and the bridge with the signs it had attached when it underwent Hurricane Maria.

8.1 Analytical Model

Using the Bailey Bridge Drawings and the field inspection results, an element list table was created in Excel. With the element list table and the drawings, the total quantities of elements in the bridge were determined. A partial view of the table is presented in Table 8-1.

Table 8-1: Elements List Table

| Group | ID | Element | Qty | Sections | Total Qty | From Drawing | |
|------------------|------|--------------------------------|-----|----------|-----------|--------------------|-------------|
| Group II | טו | Liement | Qty | Sections | Total Qty | Nominal Size | Length [in] |
| | LC1 | Longitudinal Channel | 1 | 21 | 21 | 4" x 2" x 1/4" | 116 |
| | LC2 | Longitudinal Channel | 1 | 21 | 21 | 4" x 2" x 1/4" | 116 |
| | LC3 | Longitudinal Channel | 1 | 21 | 21 | 4" x 2" x 1/4" | 116 |
| | LC4 | Longitudinal Channel | 1 | 21 | 21 | 4" x 2" x 1/4" | 116 |
| | VC1 | Vertical Channel | 3 | 21 | 63 | 3" x 1" x 1/8" | 57 |
| Panel | DCP1 | Diagonal Channel Parralel | 2 | 21 | 42 | 3" x 1-1/2" x 1/8" | 41 |
| | DCP2 | Diagonal Channel Parralel | 2 | 21 | 42 | 3" x 1-1/2" x 1/8" | 41 |
| | DCP3 | Diagonal Channel Parralel | 2 | 21 | 42 | 3" x 1-1/2" x 1/8" | 41 |
| | DCP4 | Diagonal Channel Parralel | 2 | 21 | 42 | 3" x 1-1/2" x 1/8" | 41 |
| | RP1 | Reinforcing Plate | 1 | 21 | 21 | 9" x 9" | 9 |
| | RP2 | Reinforcing Plate | 2 | 21 | 42 | 9" X 4-1/2" | 4.5 |
| | TB1 | Transverse Beam | 1 | 21 | 21 | 10" x 5" x 5/16" | 108 |
| Floor TBC DBC | DCP5 | Diagonal Channel Perpendicular | 1 | 21 | 21 | 3" x 1-1/2" x 1/8" | 51.5 |
| | TBC | Transverse Bracing Channel | 2 | 21 | 42 | 4" x 2" x 1/4" | 75 |
| | DBC1 | Diagonal Bracing Channel | 1 | 21 | 21 | 3" x 1-1/2" x 1/8" | 89.2 |
| | DBC2 | Diagonal Bracing Channel | 1 | 21 | 21 | 3" x 1-1/2" x 1/8" | 89.2 |

Using the element list table created with the drawings, another excel table was developed, identifying the location of every member using XYZ coordinates. A partial

view of this table in presented in Table 8-2. The locations identified in the table were used to develop a grid mesh in SAP2000 v21, the program adopted for the analysis.

Table 8-2: Elements Location Table

| Х | | | | |
|--------|--------|---------------------------------|----|--|
| meters | inches | Description | ID | |
| 0 | 0 | Truss Start | а | |
| 0.05 | 2 | 1st Vertical Bar | b | |
| 0.177 | 7 | Transverse Beam | С | |
| 0.7375 | 29 | 1st Bracing Center | d | |
| 1.019 | 40 | 1st Horizontal Frame Connection | е | |
| 1.475 | 58 | 2nd Vertical Bar | f | |
| 2.2125 | 87 | 2nd Bracing Center | g | |
| 2.543 | 100 | 2nd Horizontal Frame Connection | h | |
| 2.9 | 114 | 3rd Vertical Bar | i | |
| 2.95 | 116 | Truss Finnish | j | |

| Υ | | | | |
|--------|--------|-------------------------|----|--|
| meters | inches | Description | ID | |
| 0 | 0 | Column Start | 1 | |
| 0.71 | 28 | 1st Bracing | 2 | |
| 2.41 | 95 | 2nd Bracing | 3 | |
| 4.11 | 162 | 3rd Bracing | 4 | |
| 4.41 | 174 | Column Finnish | 5 | |
| 4.82 | 190 | Truss Start | 6 | |
| 4.87 | 192 | 1st Channel | 7 | |
| 4.97 | 196 | 2nd Channel | 8 | |
| 5.147 | 203 | Transverse Beam | 9 | |
| 5.6925 | 224 | Center of Truss | 10 | |
| 6.365 | 251 | Transverse Beam Bracing | 11 | |
| 6.415 | 253 | 3rd Channel | 12 | |
| 6.465 | 255 | 4th Channel | 13 | |

| Z | | | | |
|--------|----------------------|---------------------------|----|--|
| meters | inches Description I | | ID | |
| 0 | 0 | Transverse Beam Start | k | |
| 0.45 | 18 | 1st Column | 1 | |
| 0.55 | 22 | 1st Horizontal Bracing | m | |
| 1.4119 | 56 | Half of Pedestrian Bridge | n | |
| 2.2238 | 88 | 2nd Horizontal Bracing | 0 | |
| 2.3738 | 93 | 2nd Column | р | |
| 2.8238 | 111 | Transverse Beam Finnish | q | |

To build the model, a grid mesh system was created, as presented in Figure 8.1. For this, the dimensions known of the bridge either by site inspection or obtained from drawings or from the War Department Technical Manual 5-277, were taken into consideration. The supports of the bridge extreme towers were modeled as pin supports (as per the detail shown in Figure 8.2 and Figure 8.3).

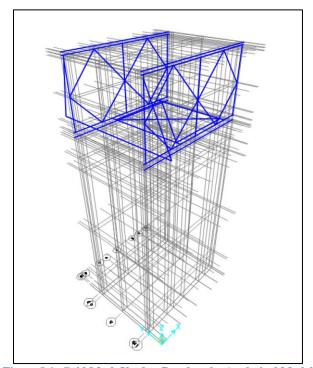


Figure 8.1: Grid Mesh Used to Develop the Analytical Model



Figure 8.2: Frame Connection of Pedestrian Bridge with Column (1 of 2)

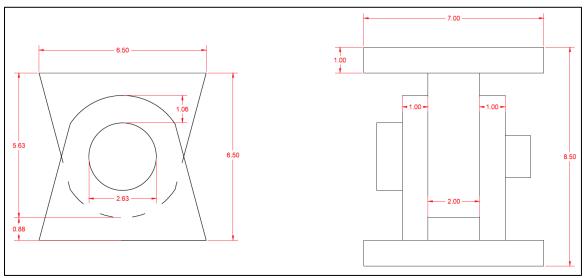


Figure 8.3: Frame Connection of Pedestrian Bridge with Column (2 of 2)

Figure 8.4 presents the simplified finite element model developed. The structural model adopted was a simplified bar element assembly, allowing 3D behavior. The model did not consider eccentricities, the effect of the bars used to support the security netting on top of the bridge, or the decking as a rigid diaphragm. All the bar elements have the shape obtained from the inspection and construction drawings. The main idea of the analysis was to propose a simple model and apply wind loads according to AASHTO specifications considering that the signs are not present, and then apply wind loads considering the presence of the signs. By comparing analysis results, it could be determined if the presence

of the signs produced a significant increase on members strength demand on the elements located in the area that experienced plastic lateral deflections, by comparing interaction equation results in both cases (without and with signs).

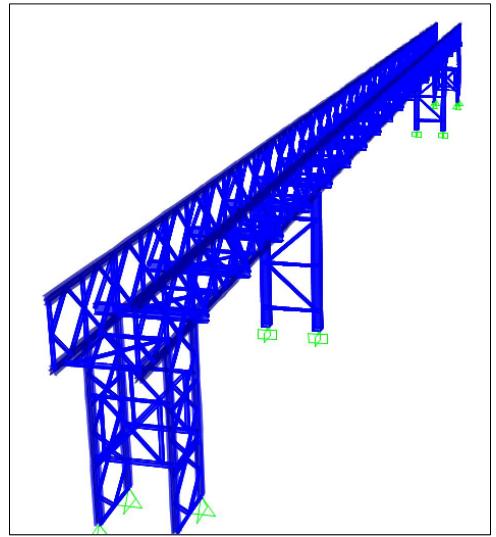


Figure 8.4: Simplified Finite Element Model

8.2 Analysis Without Signage

The first model analyzed was assuming no signage was installed in the pedestrian bridge, to determine the behavior of the bridge in its neutral state (previous to the installation of traffic signs).

Regarding wind loads, the *LRFD Guide Specification for the Design of Pedestrian Bridges* (AASHTO, 2009) refers to the AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaries, and Traffic Signals* for the calculation of wind loads. Therefore, wind loads were calculated according to the *LRFD Specifications for Structural Supports for Highway Signs, Luminaries, and Traffic Signals*, 1st edition (2015), with interim revisions of 2017 to 2020.

Considering a wind gust speed of 135 mph, the computations presented in Figure 8.5 summarize the computations to obtain the pressure over truss elements, which resulted in 106.4 psf.

| Loads on truss elements | |
|--|---|
| Basic wind speed (mph): V:= 135 | This value was arbitrarily selected. |
| Height and exposure factor: Kz := 1.0 | AASHTO Signs Specifications suggests establishes that a Kz = 1.0 may conservatively be assumed for structures with a height of less than 33 ft. |
| Directionality factor: Kd := 1.0 | This factor accounts for "the reduced probabilty that the design event wind direction aligns with the most aerodynamically vulnerable direction of the structurethe owner may elect to use Kd = 1.0" |
| Gust effect factor: G:= 1.14 | This is the minimum value established by the AASHTO Signs Specifications. Is also the value used in the example presented in the AASHTO Pedestrian Bridge Specifications. For a more exact value, the equations of ASCE/SEL7 have to be used. |
| Drag coefficient Cd := 2.0 | Value taken from AASHTO Sign Specifications, Table 3.8.7-1. Value is also used in the example presented in the AASHTO Pedestrian Bridge Specifications. |
| $Pz := 0.00256 \cdot Kz \cdot Kd \cdot V^2 \cdot G \cdot Cd$ | |
| laterally. For each m determine the corres to both trusses (wind | square feet (psf) that has to be applied to the members of the truss ember, this load shall be multiplied by the projected width to ponding load in pounds per foot (lb/ft). This load should be applied dward and leeward), according to the example presented in the Bridge Specifications. |

Figure 8.5: Summary of Computations for Wind Pressure over Truss Elements

Figure 8.6 presents an image of the resulting lateral deflections due to wind action, while Figure 8.7 presents the results of the design check, showing that the interaction equation results in most of the elements in the plastic deflected area working at low stress demand.

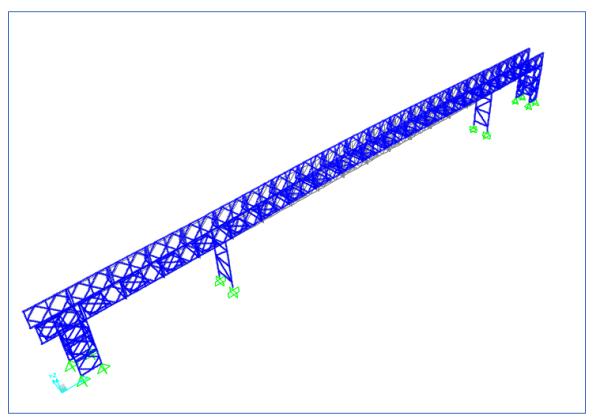


Figure 8.6: Lateral Deflections due to Wind - Without Signs

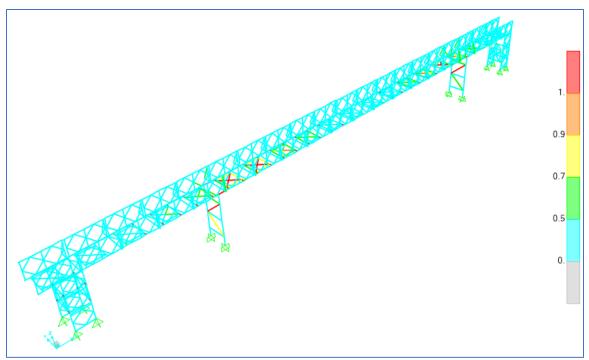


Figure 8.7: Interaction Equation (Strength Demand) Results - Without Signs

8.3 Analysis with Signage

The second model that was created was of the pedestrian bridge with the signage installed. With this model, the bridge can be analyzed to understand the implications that the signage brought to the bridge. Figure 8.8 illustrates the signage that was installed on the bridge at the time Hurricane Maria made landfall in Puerto Rico. Figure 8.9 through Figure 8.11 illustrate the structure that held the signage in place. From Figure 8.11 it was determined that the structure that held the signage in place had 5 vertical beams, and from Figure 8.10 it is evident that the beams were attached to the truss vertical channels with U-bolts in two points.



Figure 8.8: Signage Installed at the Pedestrian Bridge



Figure 8.9: Signage Support Structure (1 of 3)



Figure 8.10: Signage Support Structure (2 of 3)



Figure 8.11: Signage Support Structure (3 of 3)

Since the transportation signs had been removed previous to the moment of inspection, the dimensions of the signs were estimated from previous photos as 35-ft wide ad 10-ft in height. It was assumed that the distribution of loads to the supporting beams was by tributary areas, and that each beam, in turn, distributed half the load to each support. To evaluate an overall response, instead of a local response, these support loads were applied directly to the top and bottom chord in the connection of the vertical elements to the chord.

Figure 8.12 presents an image of the resulting lateral deflections due to wind action. It can be appreciated that the general behavior observed on the bridge, with the plastic deformation, is captured.

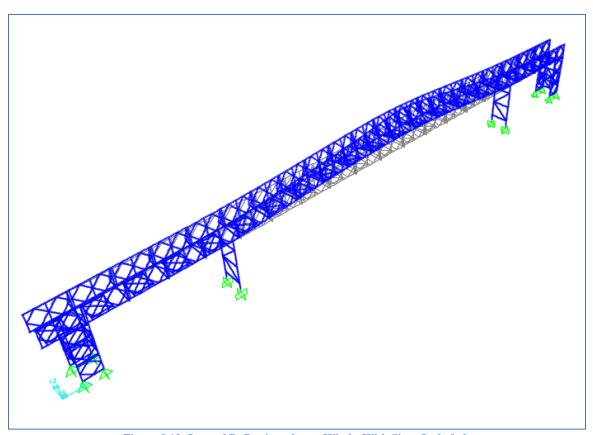


Figure 8.12: Lateral Deflections due to Wind - With Signs Included

Figure 8.13 displays the results of the design check, showing that the interaction equation results in most of the elements in the plastic deflected area working with a much higher stress demand that the previous analysis. This leads to the conclusion that the installation of the signs had an important role in the lateral inelastic deformations.

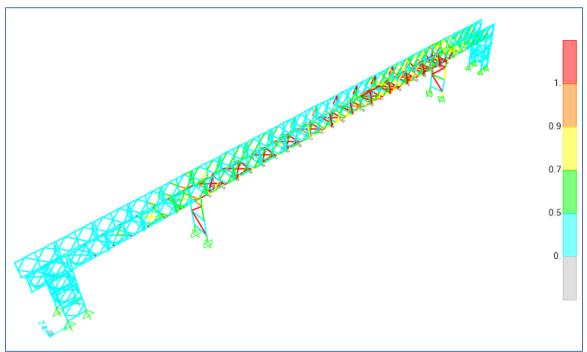


Figure 8.13: Interaction Equation (Strength Demand) Results - With Signs Included

8.4 Results analysis

The simplified FE analysis proposed demonstrated that large signs may impose significant overstress in bridge elements, and that the signs should have played a major role in the inelastic lateral deflections that the bridge experienced due to Hurricane Maria.

In addition to the presence of the signs, the resulting inelastic lateral deflections that actually occurred in the bridge may have been aggravated by: (a) the presence of many corroded elements and connections, (b) the detail of hinge support (explained below), and (c) the detail of sign connection to the truss (also explained below).

Figure 8.14 displays that the hinge support plate appeared to have experienced lateral deflection, resulting in twisting of the upper beam. This situation may be probably due to eccentricity between the lateral load applied by chords on top of the beam and the hinge location. Figure 8.15 presents other view of this situation. This condition requires further study to assess a proper design and may be an extension of current project.



Figure 8.14: Eccentricity of Pin-Plate and Lateral Load



Figure 8.15: Twisted Pin-Plate and Supporting Beam

Due to their layout (see Figure 8.16), sign supports applied significant load to the top chord (with lateral bracing trough transverse beams and diagonals) that may be responsible of the resulting twisting of the truss panel displayed in Figure 8.17.



Figure 8.16: Location of the Signs Support



Figure 8.17: Twist of the Truss Panel

9 Conclusions and Recommendation

The main conclusions and recommendations of the project are the following:

- The visual inspection revealed advanced corrosion in almost all components of the bridge, that presented loss of section, loose connections, and some missing elements.
- The condition assessment based on the visual inspection resulted in a severe condition for all the components evaluated.
 - The bridge would have been probably dismantled despite the inelastic lateral deflections.
 - It was also a significantly old bridge (1968), 49 years old at the time
 of Hurricane Maria, probably near its expected service live.
- The simplified FE analysis performed demonstrated that large signs may impose significant overstress in bridge elements. This leads to the conclusion that the installation of the signs had an important role in the lateral inelastic deformations experienced by the bridge during Hurricane Maria.
- In addition to the presence of the transportation signs, the resulting inelastic lateral deflections that actually occurred in the bridge may have been aggravated by:
 - The presence of corroded elements and connections.
 - The details of truss hinge support.
 - The details of sign connection to the bridge elements.
- Placing signs on existing bridges should be avoided without the proper:
 - o Analysis to determine if reinforcement of the structure is required.

o Design (and maintenance) of the sign support.

The analysis and design should be performed according to current codes (treated as a retrofit), to assure resilience under current design loads and state of the practice.

References

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Appendix A - Bridge Drawings 2001

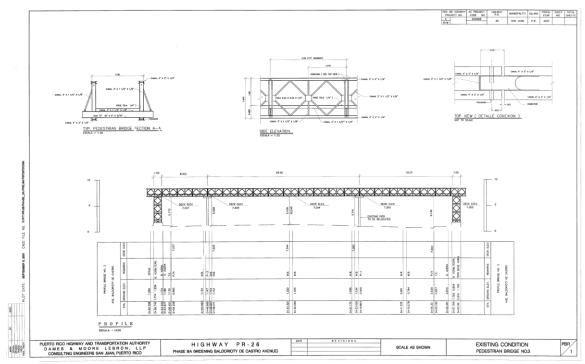


Figure A - 1: Bridge Drawings 2001 – Sheet 1

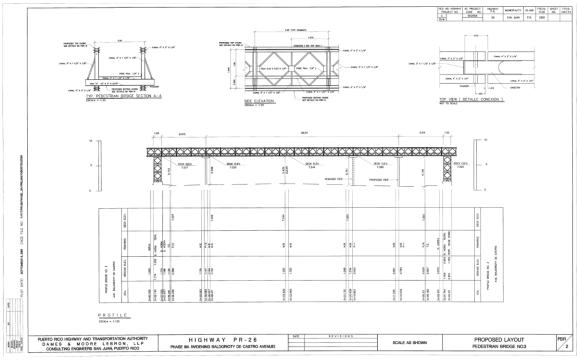


Figure A - 2: Bridge Drawings 2001 – Sheet 2

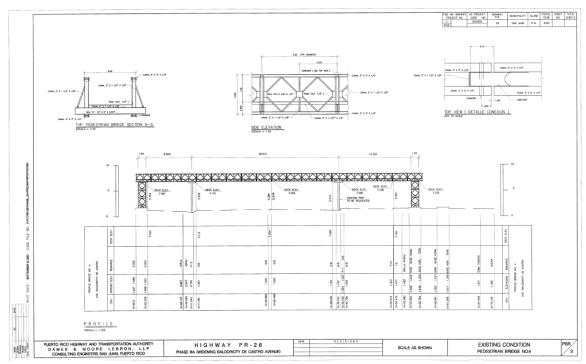


Figure A - 3: Bridge Drawings 2001 – Sheet 3

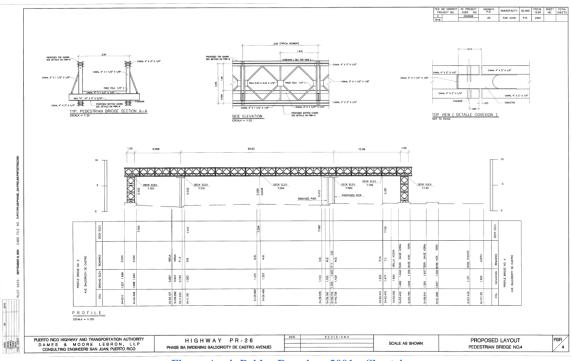


Figure A - 4: Bridge Drawings 2001 – Sheet 4

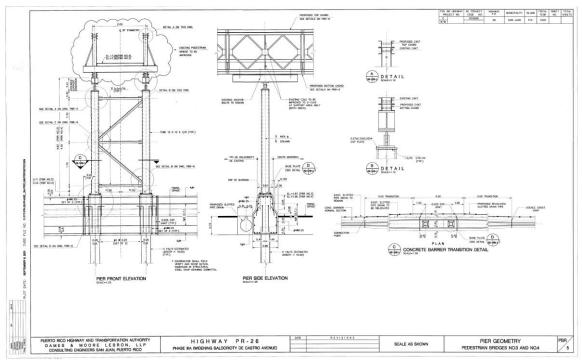


Figure A - 5: Bridge Drawings 2001 – Sheet 5

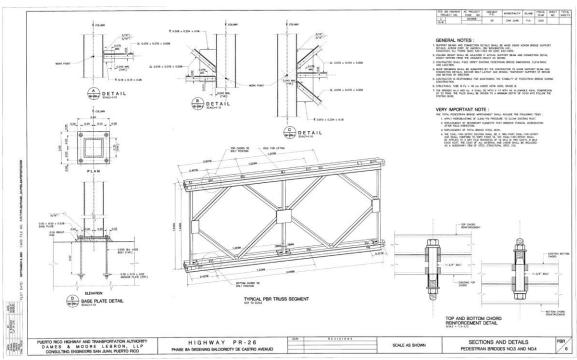


Figure A - 6: Bridge Drawings 2001 – Sheet 6

Appendix B - Collection of images of the bridge



Figure B - 1: East side panels from right to left 1, 2 & 3



Figure B - 2: East side panels from right to left 2, 3 & 4



Figure B - 3: East side panels from right to left 3, 4 & 5 $\,$



Figure B - 4: East side panels from right to left 3, 4 & 5



Figure B - 5: East side panels from right to left 6, 7 & 8



Figure B - 6: East side panels from right to left 8, 9 & 10



Figure B - 7: East side panels from right to left 9, 10 & 11



Figure B - 8: East side panels from right to left 10, 11 & 12



Figure B - 9: East side panels from right to left 10, 11, 12 & 13



Figure B - 10: East side panels from right to left 11, 12, 13 & 14



Figure B - 11: East side panels from right to left 13, 14 & 15



Figure B - 12: East side panels from right to left 16, 17, 18 & 19



Figure B - 13: East side panels from right to left 17, 18, 19 & 20



Figure B - 14: West side panels from left to right 1, 2, 3 & 4



Figure B - 15: West side panels from left to right 2, 3, 4 & 5



Figure B - 16: West side panels from left to right 4, 5, 6 & 7



Figure B - 17: West side panels from left to right 6, 7, 8 & 9



Figure B - 18: West side panels from left to right 8, 9, 10 & 11



Figure B - 19: West side panels from left to right 10, 11, 12 & 13



Figure B - 20: West side panels from left to right 11, 12, 13 & 14



Figure B - 21: West side panels from left to right 13, 14, 15 & 16



Figure B - 22: West side panels from left to right 14, 15, 16, 17 & 18



Figure B - 23: West side panels from left to right 17, 18, 19 & 20



Figure B - 24: West side panels from left to right 17, 18, 19 & 20

Appendix C – Letter Requesting Bridge Samples



Escuela de Ingeniería, Agrimensura y Ciencias Geoespaciales 377 Ponce de León Ave. Hato Rey, PR 00918 (787) 622-8000 www.pupr.edu

22 de abril de 2019

A quien pueda interesar:

La Universidad Politécnica de Puerto Rico recinto de San Juan se encuentra realizando un proyecto de investigación sobre el efecto del huracán María en la infraestructura de trasportación. Se tomó como caso de estudio con el puente peatonal que se encontraba en el Km 4.1 del Expreso Román Baldorioty de Castro, San Juan, Puerto Rico. El mismo fue removido recientemente ya que representaba un peligro para los peatones y el expreso Román Baldorioty de Castro.

El caso de estudio surge luego del huracán María ya que se observó que el puente había sufrido deflexiones laterales permanentes. Se entiende que la deflexión es resultado de los fuertes vientos producidos por el huracán sobre un rotulo que se encuentra en el puente. El propósito general del caso de estudio es obtener los datos sobre la geometría y materiales del puente, para luego desarrollar modelos avanzados del mismo y poder obtener las velocidades del viento del Huracán María que provocaron las deflexiones, y corroborar si la presencia de los letreros fue determinante en la respuesta o no.

Como parte del caso del estudio nos interesa obtener piezas del puente para poder determinar, mediante pruebas de laboratorio, las propiedades mecánicas del material que se utilizó para construir el puente en la década del 60. Por este medio le solicitamos si es posible pasar por las facilidades de donde se encuentra el puente para remover algunas piezas las cuales nos ayudarán con el caso de estudio. Muchas gracias de ante mano por su colaboración; la misma será muy valiosa para PR y el entendimiento de los efectos del huracán María en la isla.

Cordialmente,

Gustavo E. Pacheco-Crosetti, PhD, PE

Director, Transportation Infrastructure Research Center - TIRC

Full Professor, Department of Civil Engineering, Environmental Engineering and Land Surveying Polytechnic University of Puerto Rico

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