NPS Form 10-900 (Rev. Aug. 2002)

United States Department of the Interior National Park Service

042



National Register of Historic Places Registration Form

1. Name of Property	
historic name <u>Puente de las Calabazas</u>	
other names/site number <u>Bridge #175, Bridge over the Cuyó</u>	n Bridge
2. Location	
street & number _SR 14, km. 39.3, Cuyón Ward	not for publication
city or town <u>Coamo</u>	X vicinity
state <u>Puerto Rico</u> code <u>PR</u> county <u>Coamo</u>	code <u>043</u> zip code <u>00769</u>
3. State/Federal Agency Certification	7-Y-4
that this property be considered significant \square nationally \mathbf{X} statew additional comments. Norma I. Fúster Félix, Architect, Deputy SHPO	February 12, 2009
Signature of certifying official/Title	Date Date
Puerto Rico State Historic Preservation Office State or Federal agency or Tribal government In my opinion, the property □ meets □ does not meet continuation sheet for additional comments.)	the National Register criteria. (□ See
Signature of certifying official/Title	Date
State or Federal agency and bureau	

4. National Park Service Certification	6 6			
I, hereby certify that this property is: entered in the National Register See continuation sheet. determined eligible for the National Register See continuation sheet. determined not eligible for the National Register removed from the National Register other (explain):	Jamo John	2/17/2009 		
	Signature of the Keeper	Date of Action		
5. Classification				
Ownership of Property	Category of Property			
□ private □ public-local X public-State □ public-Federal	□building(s) □ district □ site X structure □ object			
Number of Resources within Property				
Contributing	Noncontributing			
0	0	buildings		
0	0	sites		
1	0	structures		
0	0	objects		
1	0	Total		
Name of related multiple property listing Historic Bridges of Puerto Rico	Number of contributing resoluted in the National Register	urces previously		

USDI / NPS NRHP Registration Form Puente de las Calabazas Coamo, Puerto Rico

6. Function or Use			
Historic Functions Transportation/ road-related	Current Functions Transportation/ road-related		
7. Description			
Architectural Classification Other/ lattice girder with transverse joist	Materials foundation N/A walls N/A roof N/A other Superstructure Iron Substructure – concrete, steel, stone		
Narrative Description (See Continuation Sheets)			

NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

Section 7 Page 1

> Puente de las Calabazas Coamo, Puerto Rico

NARRATIVE DESCRIPTION

Puente de las Calabazas (also known as Bridge #175) is two lanes vehicular traffic, single span iron lattice girder with transverse joist bridge that is located at kilometer 39.3 of State Road 14, Municipality of Coamo, between the towns of Coamo and Aibonito. This bridge has 5.02 meters in height over the Cuyón River and rests on two ashlar abutments. The bridge measures 21.4 meters long by 6.32 meters in width. The road width is 4.48 meters and is bounded by two small concrete sidewalks. The deck area has 134.82 square meters. The bridge flooring, which is covered by asphalted pavement, has a steel deck which is supported by transverse joists.

Built by the Spanish Government in the latter part of the 19th century, the bridge serves twoway vehicular traffic. The structure has suffered no significant alteration since the period of significance. The bridge retains its essential character, including a high degree of integrity of design, workmanship, feeling, association, materials and setting.

A description of the structure follows:

Span number:

Construction date:

Span length:

1882 Superstructure: 21.44 meters iron

Total length:

21.44 meters Substructure: stone, steel, concrete

Bridge's width: 6.32 meters Roadway width: 4.48 meters

Engineering Transportation

Coar	mo, Puerto Rico
8. Sto	Itement of Significance
	icable National Register Criteria k "x" in one or more boxes for the criteria qualifying the property for National Register listing)
XA	Property is associated with events that have made a significant contribution to the broad patterns of our history.
□В	Property is associated with the lives of persons significant in our past.
хс	Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
□ D	Property has yielded, or is likely to yield, information important in prehistory or history.
	ria Considerations k "X" in all the boxes that apply.)
Prope	erty is:
	owned by a religious institution or used for religious purposes.
□В	removed from its original location.
□с	a birthplace or a grave.
□ D	a cemetery.
□E	a reconstructed building, object, or structure.
□F	a commemorative property.
□G	less than 50 years of age or achieved significance within the past 50 years.
	s of Significance Continuation Sheets)

USDI / NPS NRHP Registration Form Puente de las Calabazas Coamo, Puerto Rico

Period of Significance	
1882	
Significant Dates	
1882	
Significant Person	
N/A	
Cultural Affiliation	
N/A	
Architect/Builder	
Eugene Rollin & Co. Camprubí, Raimundo	

Narrative Statement of Significance (See Continuation Sheets)

USDI / NPS NRHP Registration Form Puente de las Calabazas Coamo, Puerto Rico

9. Major Bibliographical References	
Bibliography (See continuation sheets)	
Previous documentation on file (NPS):	
□ preliminary determination of individ □ previously listed in the National Reg □ previously determined eligible by th □ designated a National Historic Land recorded by Historic American Build □ recorded by Historic American Engi	ne National Register dmark dings Survey #
Primary Location of Additional Data:	
☐ State Historic Preservation Office X Other State agency ☐ Federal agency X Local government X University ☐ Other	
Puerto Rico, Mayagüez Campus	Authority: General Archives of Puerto Rico: University of
10. Geographical Data	
Acreage of Property Less than one acre	
UTM References (Place additional UTM references on a cont	inuation sheet)
Zone Easting Northing 1 19 784359 2002001 2	Zone Easting Northing 3 4
	See continuation sheet.
Verbal Boundary Description (Describe the boundaries of the property or	n a continuation sheet.)
Boundary Justification (Explain why the boundaries were selected	on a continuation sheet.)

11. Form Prepared By	
name/title _José E. Marull del Río/ State Historian	
organization <u>Puerto Rico State Historic Preservation Office</u>	date October 29, 2008
street & number PO Box 9066581	telephone <u>787-721-3737</u>
city or town <u>San Juan</u> state <u>PR</u>	zip code <u>00906-6581</u>
Additional Documentation	
Submit the following items with the completed form:	
Continuation Sheets	
Maps	
A USGS map (7.5 or 15 minute series) indicating the prop	erty's location.

Photographs

Representative black and white photographs of the property.

Additional items

(Check with the SHPO or FPO for any additional items)

Property Owner					
name <u>Transportation and Public</u>	Works Depart	tment			
street & number <u>PO Box 41269</u>				telephone	_(787) 722-2929
city or town <u>San Juan</u>	state	PR	zip code	00940-4262	

A sketch map for historic districts and properties having large acreage or numerous resources.

NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

Section 8 Page 2

Puente de las Calabazas Coamo, Puerto Rico

NARRATIVE STATEMENT OF SIGNIFICANCE

Puente de las Calabazas is a property of statewide significance under the National Register Criterion C for engineering, and Criterion A for transportation associated with the Carretera Central. Built in 1882, the structure was designed by Spanish Engineer Raimundo Camprubí and its iron components were fabricated by the Belgian factory Eugene Rollin & Co.

Background

In 1874 the Spanish Government started work on the Aibonito-Coamo section of the Carretera Central (also known as the old Military Road). This road, which crossed the Island of Puerto Rico from north to south, linked the northeastern city of San Juan to the southern coastal town of Ponce.

On June 1, 1875, engineer Raimundo Camprubí of the Corps of Engineers of Roads, Channels and Ports submitted the first project for a bridge over the Cuyón River to the Spanish Government in Madrid. The proposal was divided in two distinct projects - the construction of the work on the bridge's foundations; and another project for the metallic bridge. This proposal suggested limiting the intervention in the foundation and using stone from the site for the bridge's abutments. However, the Advisory Board of Roads, Channels and Ports of the Ministry of Overseas Possessions (Junta Consultativa de Caminos, Canales y Puertos del Ministerio de Ultramar) did not consider the designed foundations secure enough and required a new project with taller abutments. However, the Advisory Board did approve the specifications for the iron bridge. In April 1876 the project for the metallic bridge was relayed to José de Echevarría, Commissioner Engineer of Spanish Public Works in Paris to request bids from French and Belgian metal works firms. Later that year, Engineer Raimundo Camprubí completed a new study on the proposed bridge's foundations and prepared a second project, which was subsequently approved by royal decree of July 18, 18761.

In June 30, 1877, the Belgian firm Eugene Rollin & Cía in Ouburg received the commission for preparing the bridge's metallic components. The firm agreed to cast the bridges components for 8,880 francs. The total of the project was 59,608.23 pesetas. The bridge's elements were shipped from the Belgian port of Amberes on the Danish sailing ship "Galeón" in mid December 1877.

¹ Juan E. Castillo, "La Carretera Central - Su Historia", Revista de Obras Públicas, Abril 1930, 99; "Proyecto de puente de hierro sobre el río Cuyon, en la carretera de 1er orden nº 1 de la Capital a Ponce, sección de Aibonito a Juana Díaz" Archivo Histórico Nacional, Ultramar, Legajo 368, Expedientes 3 y 4.

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NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

Section 8

Page 3

Puente de las Calabazas Coamo, Puerto Rico

In 1878, Engineer Camprubí redesigned parts of this section of the road to deal with a stretch of 7.5 kilometers of the steep Asomantes Slopes in Aibonito² As result of the project's redesign, the location of the bridge was changed. He supervised the construction of the bridge's abutments, accompanying walls, embankment and assembling the iron superstructure³. The stone from the Descalabrado quarry, near the site, was used in making the bridge's abutments. Work on the bridge was completed by 1882⁴.

Importance of Raimundo Camprubí

In 1873, Raimundo Camprubí, of the Spanish Corps of Engineers of Roads, Channels and Ports, arrived to work on the Aibonito-Ponce road that formed part of the Carretera Central. There were only three engineers of the Corps of Engineers of Roads, Channels and Ports in Puerto Rico assigned primarily to the Carretera Central project. From 1873-1879 he was responsible for the important redesign of the Aibonito-Coamo road and in the design of four bridges. He designed the bridges crossing the rivers in Coamo (Descalabrado, Coamo, and Cuyón) and Vega Baja (Cibuco)⁵.

Engineering significance

In the 19th century Spain did not the industrial capacity to make its own iron bridges. For this reason they need to acquire the bridges from France, Belgium and England. In the 1870's, when construction of the primary roads in Puerto Rico started the Spanish Government decided to replace the wooden bridges with metallic structures. For this reason, the Spanish engineers prepared detailed specifications for the iron bridges that would be carefully studied and evaluated in Spain. These specifications, once approved, would in turn present to the European iron manufacturers through the Spanish Commissioner Engineer in Parisé. The construction of the iron lattice girder with transverse joist bridges in Puerto Rico are representative of European technology that was rarely used within the jurisdiction in the United States.

² Ibid., 97.

³ Luis Pumarada O'Neill, "Fichero de puentes elegibles consideradas para designación como puentes históricos", 5 de enero de 1995; Luis F. Pumarada O'Neill, <u>Los puentes históricos de Puerto Rico</u>, diciembre 1991, 76.

⁴ Castillo, "La Carretera Central", 99.

⁵ María de los Angeles Castro, "Apuntes sobre Raimundo Camprubí"; In February 6, 1878, Engineer Camprubí requested authorization to return to Spain due to his failing health. He was finally authorized to return to Spain on November 3, 1880.

^{6 &}quot;Carretera de 1^{er} orden núm. 1 de la Capital a Ponce, Sección de Aybonito a Coamo, Proyecto de un puente de hierro sobre el río Cuyon, tramo de hierro", Archivo Histórico Nacional, Legajo 404, Expediente 7.

NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

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Page 4

Puente de las Calabazas Coamo, Puerto Rico

According to Eric Delony, Director of the Historic American Building Survey/ Historic Engineering Record,

By 1800, most European engineers were opened to using cast iron. Architects, however, preferred traditional materials such as granite and marble for the visible parts of the buildings and wood for the hidden structural like roof trusses, and did not accept cast iron as having aesthetic merit or structural value. In the USA, still blessed with abundant virgin forests, early 19th century was the era of "carpenter engineers". Men like Timothy Palmer, Lewis Wernwag, Theodore Burr, and Ithiel Town followed British custom by conceiving and building truss forms predicated on intuition and pragmatic rules of thumb. Their craft tradition of knowledge, passed down from master to apprentice, contrasted with the scientific analysis and mathematical formulas practiced by French government engineers. Models were built and loaded to failure and broken members replaced with stronger ones until the model supported the loading equivalent to a real live load puls a safety factor.

Patents were granted in the USA for composite wood and iron bridges, transitional structures that capitalized on the availability of cheap timber. When the American iron industry caught up with Europe's by the mid-19th century, bridge building took the direction of composite pinconnected trusses, with sophisticated castings for joint blocks and compression members, and forged eyebars and wrought-iron rods for tension members, all fabricated to high tolerances. This allowed them to be assembled easily and inexpensively in the field by unskilled labor using simple tools and erection techniques. The system prevailed in the USA because that country lacked a skill labour force, and the remoteness of many bridge sites hampered the use of sophisticated machinery or the shipping of large bridge parts over long distances. A spirited debate ensued between England and the former colony during the last quarter of the 19th century over which system was best: easily erected pin-connected trusses on the "American Plan," or European-style riveted trusses. Even though the rigid riveted truss was of superior design, American bridges remained competitive in world bridge markets until the early 20th century because they were cheaper and swiftly erected.

For further contextual information regarding bridge building in Puerto Rico, registration requirements, renowned engineers and firms, and property types, see related multiple property listing "Historic Bridges of Puerto Rico".

⁷ Taken from article "Context for World Heritage Bridges" A joint publication with TICCIH, 1996 by Erick DeLony. Can be accessed at http://www.icomos.org/studies/bridges.htm.

NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

Section 9 Page 5

Puente de las Calabazas Coamo, Puerto Rico

MAJOR BIBLIOGRAPHICAL REFERENCES

- Castillo, Juan E. "Carretra Central. –Su Historia." <u>Revista de Obras Públicas</u> 7:4 (Abril 1930): 98-99.
- DeLony, Eric. "Context for World Heritage Bridges". Joint publication with TICCIH, 1996. (http://www.icomos.org/studies/bridges.htm).
- Pumarada O'Neill, Luis. "Fichero de Puentes elegibles considerados para designación como puentes históricos". Informe final para Oficina de Estudios Ambientales, Autoridad de Carreteras y Transportación de Puerto Rico. 5 de enero de 1995.
- -----. <u>Los Puentes Históricos de Puerto Rico</u>. Centro de Investigación y Desarrollo, RUM, Mayagüez, 1991.
- -----. "Historic Bridges of Puerto Rico, c. 1840-1950". Multiple Property Submission (MPS) prepared for PRSHPO on July 31, 1994. MPS approved by National Park Service on July 19, 1995.

United States Department of the Interior National Park Service

NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

Section 10 Page 6

Calabazas Bridge Coamo, Puerto Rico

GEOGRAPHICAL DATA

Verbal Boundary Description

The nominated property is a rectangular shaped parcel measuring 21.44 X 6.32 meters, which is centered on the coordinates in section 10 (Zone 19, Easting 784359, Norhing 2002001). Included within this rectangular parcel are the bridge's superstructure, substructure and floor systems.

Boundary Justification

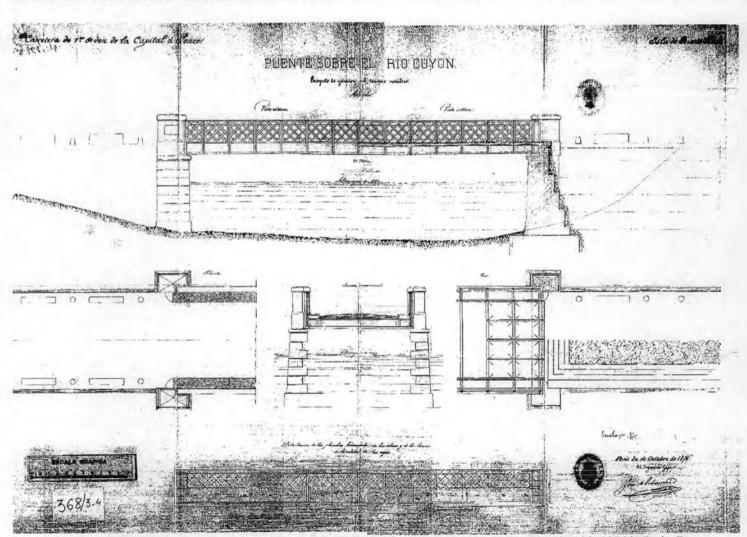
The nominated structure includes the bridge's superstructure, substructure, floor system, any approach spans and the property on which they rest. These boundaries encompass, but not exceed, all of the property that has been historically associated with this bridge.

NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

Section

Page 7

Additional Graphic Documentation



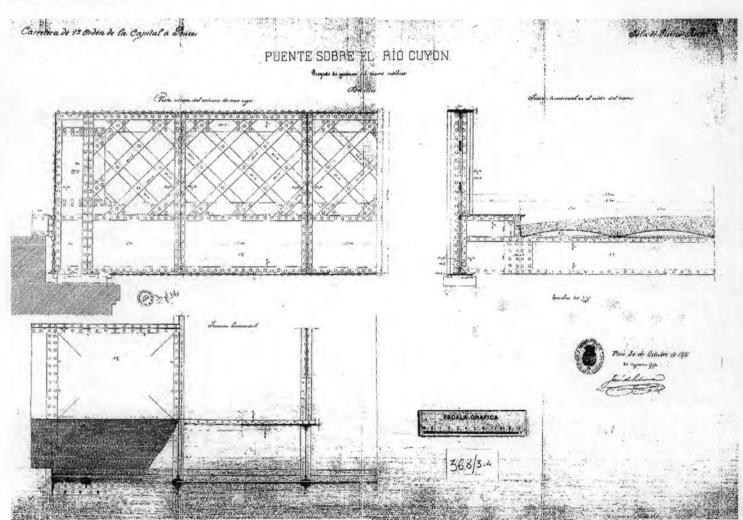
Drawings of the revised project for a metallic bridge over the Cuyón River, Coamo. Prepared on October 30, 1876 in Paris, France, by Engineer in chief José de Echevarría. Archivo Histórico Nacional, Ultramar, Legajo 368, Expediente 4.

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Additional Graphic Documentation



Drawings of details for the revised project for a metallic bridge over the Cuyón River, Coamo. Prepared on October 30, 1876 in Paris, France, by Engineer in chief José de Echevarría. Archivo Histórico Nacional, Ultramar, Legajo 368, Expediente 4.

United States Department of the Interior National Park Service

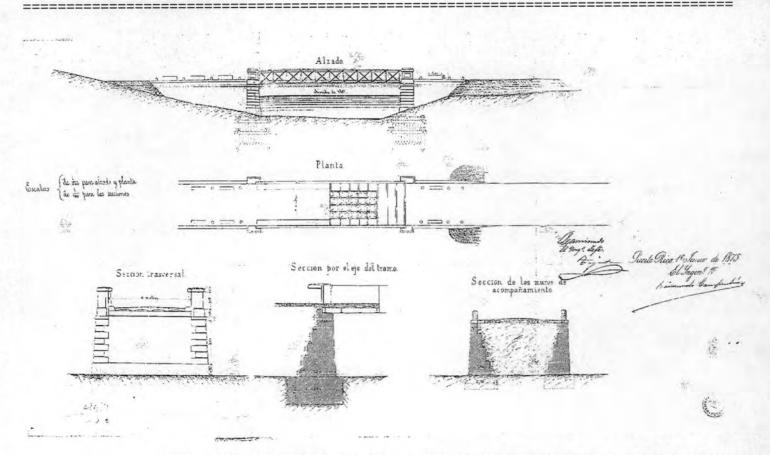
NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

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Additional Graphic Documentation

Puente de las Calabazas Coamo, Puerto Rico



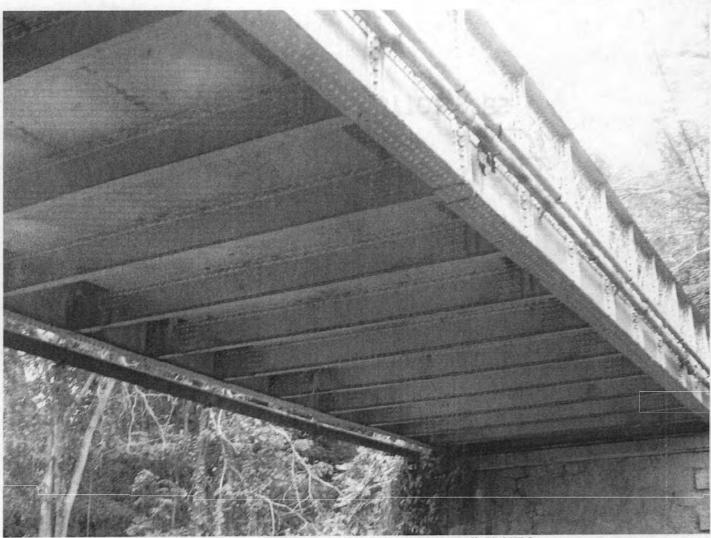
Drawing of the original project by Raimundo for the construction of a metallic bridge over the Cuyón River, Coamo, Puerto Rico, June 1, 1875. Archivo Histórico Nacional, Ultramar, Legajo 404, Expediente 7.

United States Department of the Interior National Park Service

NATIONAL REGISTER OF HISTORIC PLACES **CONTINUATION SHEET**

Section Page 10

Additional Graphic Documentation



Close up of the deck of the bridge. Photo taken on September 18, 2008 by José E. Marull, PRSHPO.

United States Department of the Interior National Park Service

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Additional Graphic Documentation

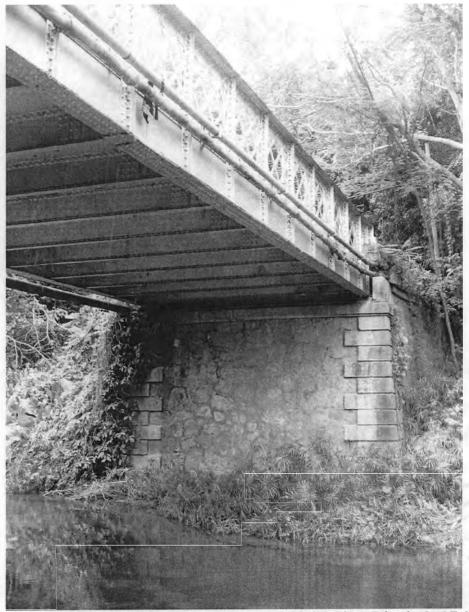


Photo of the deck and abutment of the bridge over the Cuyón River. Taken by José E. Marull, PRSHPO, September 18, 2008.

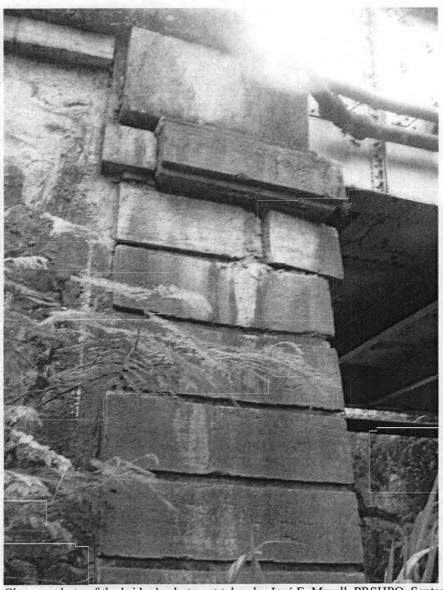
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Additional Graphic Documentation



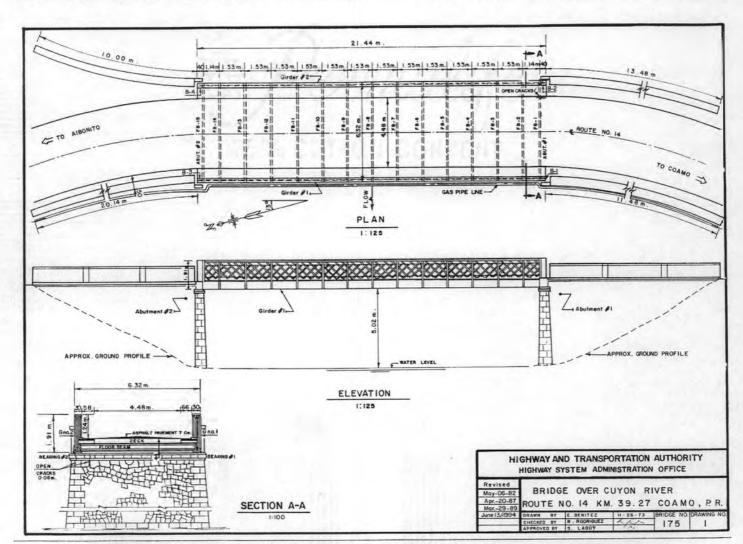
Close up photo of the bridge's abutment taken by José E. Marull, PRSHPO, September 18, 2008.

NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

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Additional Graphic Documentation



Plan, Elevations and Section A-A of the Bridge over Cuyon River prepared by the Puerto Rico Highway and Transportation Authority.

United States Department of the Interior National Park Service

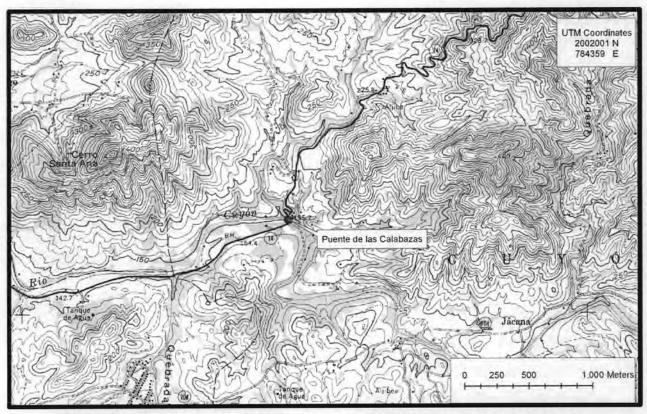
NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

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Additional Graphic Documentation

Puente de las Calabazas Coamo, Puerto Rico





Site Map
Puente de las Calabazas

Coamo, Puerto Rico



shpo



NPS Form 10-900-a (8-86)

United States Department of the Interior National Park Service

NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

Section Page 15

Additional Graphic Documentation

Puente de las Calabazas Coamo, Puerto Rico

2002001 N 784359 E 200 Meters



Site Map Puente de las Calabazas

Coamo, Puerto Rico



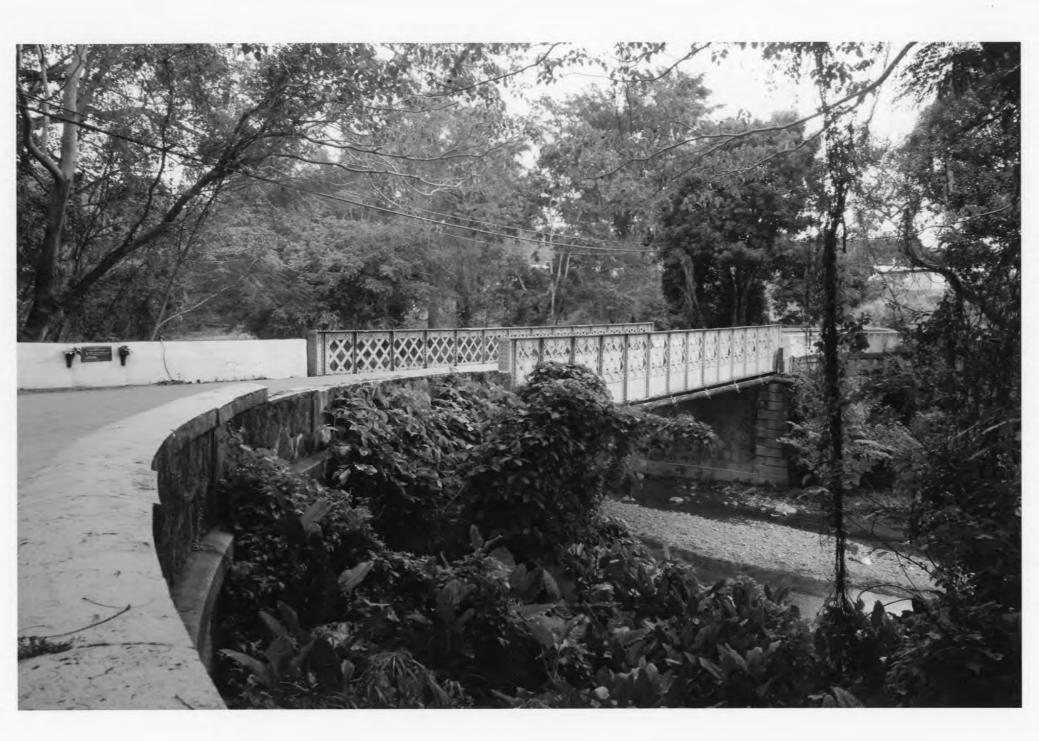


UNITED STATES DEPARTMENT OF THE INTERIOR NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES EVALUATION/RETURN SHEET

REQUESTED ACTION: NOMINATION

PROPERTY Puente de las Calabazas NAME:
MULTIPLE Historic Bridges of Puerto Rico MPS NAME:
STATE & COUNTY: PUERTO RICO, Coamo
DATE RECEIVED: 1/09/09 DATE OF PENDING LIST: 1/27/09 DATE OF 16TH DAY: 2/11/09 DATE OF 45TH DAY: 2/22/09 DATE OF WEEKLY LIST:
REFERENCE NUMBER: 09000042
REASONS FOR REVIEW:
APPEAL: N DATA PROBLEM: N LANDSCAPE: N LESS THAN 50 YEARS: N OTHER: N PDIL: N PERIOD: N PROGRAM UNAPPROVED: N REQUEST: Y SAMPLE: N SLR DRAFT: N NATIONAL: N
COMMENT WAIVER: N
X ACCEPTRETURNREJECT 2/17/2009 DATE
ABSTRACT/SUMMARY COMMENTS:
Excellent example of lattice girder bridge. To one of ten oxtent.
ABSTRACT/SUMMARY COMMENTS: Excellent example of lattice girden bridge. one of few extent. Mets Requirements of MPS.
RECOM./CRITERIA Accot ALC
REVIEWER J. C. DISCIPLINE
TELEPHONE DATE 2/17/2005
DOCUMENTATION see attached comments Y/Osee attached SLR Y/O
If a nomination is returned to the nominating authority, the nomination is no longer under consideration by the NPS.















December 29, 2008



Ms. Janet Snyder Matthews, Ph.D.
National Park Service
National Register of Historic Places
1201 "I" Eye Street, N.W., 8th floor (MS 2280)
Washington, D. C. 20005

SUBMISSION - PUENTE DE LAS CALABAZAS, COAMO, PR

Dear Ms. Snyder:

We are pleased to submit the nomination of Puente de las Calabazas, in the Municipality of Coamo, for inclusion in the National Register of Historic Places.

Should have any questions on the nomination, please contact Arch. Arch. Berenice Sueiro, AIT, Conservation Manager at 787-721-3737 or at bacsueiro aprshpo.gobierno.pr.

Sincerely

José Luis Vega, PhD

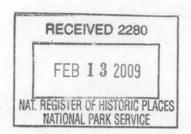
State Historic Preservation Officer

JLV/JEM

Enclosures







February 12, 2009

Ms. Janet Snyder Matthews, Ph.D.
National Park Service
National Register of Historic Places
1201 "I" Eye Street, N.W., 8th floor (MS 2280)
Washington, D. C. 20005

Attention: James Gabbert, Historian, National Register of Historic Places

PUENTE DE LAS CALABAZAS, COAMO, PR

Dear Ms. Snyder:

In response to Mr. James Gabbert's request, we are forwarding the corrected first page of the Puente de las Calabazas nomination. This nomination was submitted by our Office on December 29, 2008.

Should there be any questions on the nomination, please contact Arch. Berenice Sueiro, AIT, Historic Conservation Manager at 787-721-3737 or at bgcsueiro@prshpo.gobierno.pr.

Sincerely,

Norma I. Fuster, Architect

Deputy State Historic Preservation Officer

NIF/SEM / jvr

Enclosure