☒ Original
☐ Update

HISTORICAL BRIDGE FORM
FLORIDA MASTER SITE FILE
Version 4.0 1/07

Consult *Guide to the Historical Bridge Form* for detailed instructions

Site # BR02906
Field Date 1-26-2012
Form Date 2-21-2012
Recorder # 1
FDOT Bridge #

Bridge Name(s) Jay Jay Railroad Draw Bridge
Project Name Historic Survey of NASA Railroad System
Multiple Listing (DHR only)
Survey # (DHR only)
Ownership ☐private-profit ☐private-nonprofit ☐private-individual ☐private-nonspecific ☐city ☐county ☐state ☒federal ☐Native American ☐foreign ☐unknown

LOCATION & MAPPING

Route(s) Carried/Feature(s) Crossed NASA Railroad/Indian River
USGS 7 5 Map Name MIMS USGS Date 1989 Plat or Other Map
City/Town (within 3 miles) Titusville In City Limits? ☐yes ☒no ☐unknown County Brevard
Township 21S Range 35E Section 21 ¼ section: ☐NW ☐SW ☒SE ☐NE Irregular-name:
Township Range Section ¼ section: ☐NW ☐SW ☐SE ☐NE
Landgrant Tax Parcel #
UTM Coordinates: Zone ☐16 ☒17 Easting 518718 Northing 3169440
Other Coordinates: X: Y: Coordinate System & Datum
Name of Public Tract (e.g., park)

HISTORY

Year Built 1963 ☒approximately ☐year listed or earlier ☐year listed or later
Still in use? ☒yes ☐no ☐restricted use (describe)
Prior Fords, Ferries, or Bridges at this Location None

Bridge Use original and current with dates (standard descriptions: auto, railway, pedestrian, fishing pier, abandoned) Railway bridge, 1963-present

Ownership history Florida East Coast Railway Company, 1963-1983; National Aeronautics and Space Administration, 1983-present
Designers/Engineers Nashville Bridge Co., L.O. Hopkins, and Maurice H. Connell
Builders/Contractors Contractor: Florida East Coast Railway Company
Text of Plaque or Inscription None

Narrative History (How did bridge come to be built? How was it financed?, etc.) In 1963, the federal government contracted the Florida East Coast to build a 7.5 mile spur from their railroad track north of Titusville to what would become known as the Kennedy Space Center. The bridge was built to cross the Indian River.

DESCRIPTION

GENERAL

Overall Bridge Design 1. Movable--Bascule 2. Stringer--Multi Beam
Overall Condition ☐excellent ☒good ☐fair ☐deteriorated ☐ruinous
Style and Decorative Details See continuation sheet

Tender Station Description See continuation sheet

Alterations Dates and Descriptions See continuation sheet

DHR USE ONLY	OFFICIAL EVALUATION	DHR USE ONLY
NR List Date ☐Owner Objection	SHPO – Appears to meet criteria for NR listing: ☐yes ☐no ☐insufficient info Date Init. KEEPER – Determined eligible: ☐yes ☐no Date NR Criteria for Evaluation: ☐a ☐b ☐c ☐d (see *National Register Bulletin 15*, p. 2)	

HISTORICAL BRIDGE FORM

Site #8 BR02906

DESCRIPTION (continued)

SUPERSTRUCTURE

Spans: Number 75 Total Length(ft) 2,058

Main Spans: Number 1 Length(ft) 157 Width(ft) 24 Roadway width(ft) 6

Main Span Design Movable--Bascule

Main Span Materials 1. Steel 2. Concrete

Approach Spans: Number 74 Length(ft) 25 Width(ft) 14 Roadway width(ft) 6

Approach Span Design Stringer--Multi Beam

Approach Span Materials 1. Concrete 2. Steel

Deck Materials 1. Wood 2. Steel

SUBSTRUCTURE

Abutment Materials 1. Pre-cast Concrete 2. Steel

Abutment Description Concrete seawall with steel rods and rocks along slope.

Pier Materials 1. Pre-cast Concrete 2. Steel

Pier Description Bents, piles, and caps. Bents have from six to three piles.

RESEARCH METHODS (check all that apply)

- ☐ FDOT database search
- ☐ HABS/HAER record search
- ☒ FMSF record search (sites/surveys)
- ☐ Other methods (specify)
- ☒ Fla. Archives / photo collection
- ☐ property appraiser / tax records
- ☒ library research
- ☒ newspaper files
- ☐ city directory
- ☐ Public Lands Survey (DEP)
- ☐ informal archaeological inspection
- ☐ formal archaeological survey
- ☒ cultural resource survey

Bibliographic References (give FMSF manuscript # if relevant, use separate sheet if needed) See continuation sheet

OPINION OF RESOURCE SIGNIFICANCE

Potentially eligible individually for National Register of Historic Places? ☐ yes ☒ no ☐ insufficient information

Potentially eligible as contributor to a National Register district? ☒ yes ☐ no ☐ insufficient information

Explanation of Evaluation (required, use separate sheet if needed) See continuation sheet

Area(s) of historical significance (See *National Register Bulletin 15*, p. 8 for categories: e.g. "architecture", "ethnic heritage", "community planning & development", etc.)

1 Other 3. 5.

2 Engineering 4. 6.

DOCUMENTATION

Accessible Documentation Not Filed with the Site File - including field & analysis notes, photos, plans, other important documents

1) Document type All materials at one location Maintaining organization Archaeological Consultants Inc

Document description File or accession #'s P9026Q

2) Document type Maintaining organization

Document description File or accession #'s

RECORDER INFORMATION

Recorder Name Christopher Berger Affiliation Archaeological Consultants Inc

Recorder Contact Information (address / phone / fax / e-mail) 8110 Blaikie Court, Ste A, Sarasota, FL 34240;941-379-6206;ACIFlorida@comcast.net

Required Attachments

❶ USGS 7.5' TOPO MAP WITH BRIDGE LOCATION MARKED

❷ PHOTO OF BRIDGE, ARCHIVAL B&W PRINT OR DIGITAL IMAGE FILE

If submitting an image file, it must be included on disk or CD AND in hard copy format (plain paper is acceptable). Digital image must be at least 1600 x 1200 pixels, 24-bit color, jpeg or tiff.

CONTINUATION SHEET

Narrative Description:

The Jay Jay Railroad Draw Bridge (Jay Jay Bridge; H2-1198) carries the NASA Railroad over the Intracoastal Waterway (Indian River) at the Kennedy Space Center (KSC) in Brevard County, Florida. The Florida East Coast (FEC) Railroad mainline is about 2,500' to the west of the Jay Jay Bridge, and railcars and locomotives must traverse its single, standard-gauge track to reach KSC facilities on the east side of the Indian River. The bridge is 2,058' long and made up of 75 spans supported by 72 bents, two end bents, and two piers. A 158' x 20' single leaf, through-girder bascule steel span with floorbeams and stringers crosses a 90' channel, and the other 74 spans are fixed steel deck steel girders with an open deck that measures 24'-8" x 14'.

Substructure
Jay Jay Bridge's concrete substructure is made up of 72 bents, two end bents, and two piers. There are 62 concrete bents with three piles, and 10 concrete bents with six piles. Each concrete pile is about 20" x 20", is either rounded or squared, and rises about 3'-6" above the waterline. Concrete caps that measure 3'-6" tall are placed on top of all the piles. The two reinforced concrete end bent walls are protected by a concrete seawall reinforced by steel rods, packed earth, and riprap slope protection. Pier 1 is an irregularly shaped, partially submerged reinforced concrete pit along the west side of the channel that houses the bascule's machinery and its trunnion and counterweight. The pier measures 53' x 42'-3", stands 34'-2" tall, and rests on a concrete slab 14' thick. Wooden catwalks branch off from the bridge and lead to concrete platforms on top of the north and south sides of the pier. Access to Pier 1's pit is gained through a hatch with a steel door on the south platform, and two ladders lead to the pier's floor, which is kept dry by a sump pump. Pier 2 is an irregularly shaped reinforced concrete wall along the east side of the channel that measures 33' long, 8'-8" at its thickest, and 24'-7" deep. The bascule span rests on Pier 2 when lowered.

Bascule
The steel bascule span is a Hopkins Frame-mounted, single leaf, through-girder with floorbeams. The span is curved at the trunnions and measures 157' long and 24' wide with approximately 10' sidewalls. The two Hopkins Frame trunnions are the mechanisms used to raise and lower the bridge and resemble two quarter circles with gears. In addition to the trunnions, the bascule span includes a counterweight and six segments with beams and X-braces. When the bridge is lowered, two span locks securely connect it to Pier 2.

Superstructure
Steel plates on top of the concrete bent caps separate the substructure from the superstructure. All 75 steel spans consist of two girders, three beams, and four cross braces. The girders are 24'-8" long and 2'-9 ¼" tall and run parallel to each other; the beams are 5'-8" long and are perpendicular to the girders; and the cross braces are 7' long.

Steel plates also are used to separate the spans and wooden railroad ties, and all three are bolted together. The ties are 8"x8" wide and the lengths alternate between three, 9' ties for every 14' tie. The 14' ties extend on the north side of the tracks to support the wooden walkway, which consists of four rows of planks placed end to end and a braced wooden railing. Standard gauge steel railroad tracks are secured to the ties; in addition, wood ties placed end to end run parallel to the railroad tracks on either side. At the bascule span, all the ties are 9' long and a double plank timber walkway runs through the middle of the tracks.

Control house
Access to the control house is gained from the same concrete platform that encompasses the hatch that leads down to Pier 1's pit. The control house itself rests on a concrete platform supported by four concrete

piles; the exterior shell was replaced in 2008 (Washburn 2012). The metal building has a gable roof, and entrance is gained through a metal door on the north elevation. Single 6/6 metal sash windows are located on the west and south elevations. The room is divided into two sections: the larger main room contains the equipment that operates the bridge, and a smaller room to the west is used for storage.

Channel

An approximately 186' long stretch of concrete piles with wooden fenders line both sides of the channel to protect the Jay Jay Bridge from being struck by boats. Five timber wales are attached to the piles, each of which has two or three piers. Catwalks with wooden decks and metal rails have been built on top of the fender piles. Seven pile clustered dolphins are at the northwest, northeast, southeast, and southwest corners of the concrete piles to provide further protection.

Operation

The control house is not manned, so the Jay Jay Bridge is usually in a fully open position with green lights flashing to indicate that vessels are free to pass. The Code of Federal Regulations dated July 1, 2005, describes the bridge's operation:

> *When a train approaches the bridge, it stops and the operator initiates a command to lower the bridge. The lights go to flashing red and the draw lowers and locks, providing scanning equipment reveals nothing under the draw. The draw remains down until a manual raise command is initiated, or will raise automatically 5 minutes after the intermediate track circuit is no longer occupied by a rail car. After the train has cleared, the draw opens and the lights return to flashing green.*

History

Jay Jay Bridge was constructed in 1963 as part of a 7 ½-mile railroad that linked the FEC mainline to the Kennedy Space Center. First, fill was dredged from the bottom of the Indian River due south of the bridge to create an approximately 1,500' long peninsula on the west side of the river and an approximately 2,000' long peninsula on the east.

Multiple entities were involved in Jay Jay Bridge's construction. The stringer-multibeam approach spans were designed by Maurice H. Connell and Associates of Miami, Florida. The Tennessee's Nashville Bridge Company designed and assembled the bascule main span and approach. L.O. Hopkins of Nashville, Tennessee, designed the channel piers and fenders.

During the Apollo Program era, heavy materials used to construct KSC were carried across the bridge. Beginning with the first flight of the Space Shuttle Program (SSP) in 1981, railroad cars that carried solid rocket booster (SRB) segments traveled across the bridge, and SRB segments and other components used to facilitate the SSP continued to be hauled across Jay Jay Bridge until the end of the SSP in 2011.

In June 1983, NASA purchased from FEC the 7 ½-mile railroad segment built in 1963, including Jay Jay Bridge, and the bridge underwent much needed repairs. The channel lights and deteriorated fenders were repaired in early 1985 by Inter-Bay Marine Construction, and later that year the electrical system was rewired. The bridge was closed for seven days in early 1987 as a subcontractor replaced a deteriorated span. In mid-1989, EG&G workers sandblasted and painted the bridge, work that limited boat passage to every hour and half hour. By August of that year, seven spans had been reinforced.

Several more repairs have been made to the bridge in the intervening years, including the installation of pile jackets; repairs and replacements to the railing, walkways, piles, and fender system; upgrades to the

electrical and mechanical operating system; replacement of the exterior shell of the tender station in 2008; and repainting (Washburn 2012).

Explanation of Evaluation:

While noteworthy for its significant historical associations, the Jay Jay Bridge was built to a standard plan for railroad bridges and is not distinguished by its engineering or design. Therefore, it is not considered individually eligible for the NRHP listing. However, the Jay Jay Bridge is considered a contributing resource to the NASA Railroad System Historic District (see Section 3.6). The bridge is the only railroad span to link the FEC mainline to KSC facilities and played an integral role in support of the SSP, most notably in the transportation of new and used SRM segments. The bridge has undergone repairs necessitated by its corrosive environment, yet it has retained its original bascule span and mechanisms and integrity of location, design, setting, materials, workmanship, feeling, and association.

Bibliography

Code of Federal Regulations
2005 33 CFR Ch. I. 117.261, Atlantic Intracoastal Waterway from St. Mary's River to Key Largo," July 1.

Heiney, Ann
2010 "NASA Railroad Keeps Shuttle's Boosters on the Right Track." *Space Shuttle Era: Celebrating a Technological Marvel*. December 23. Accessed on March 2, 2012, http://www.nasa.gov/mission_pages/shuttle/flyout/railroad.html.

Maurice H. Connell and Associates & Nashville Bridge Company
1963 As-built drawings, Jay Jay Bridge. File No. 352475530-VEN5722, provided by Frank Washburn.

NASA KSC Archives Department
Var. Box 3, Folder No. 6670-2-13

Spaceport News
1987 Railroad Bridge Repairs Avoid Schedule Boggles. 27 March:7.
1989a Drawbridge Painting Limits Boat Traffic. 21 April:8.
1989b Working on the Railroad. 25 August:3.

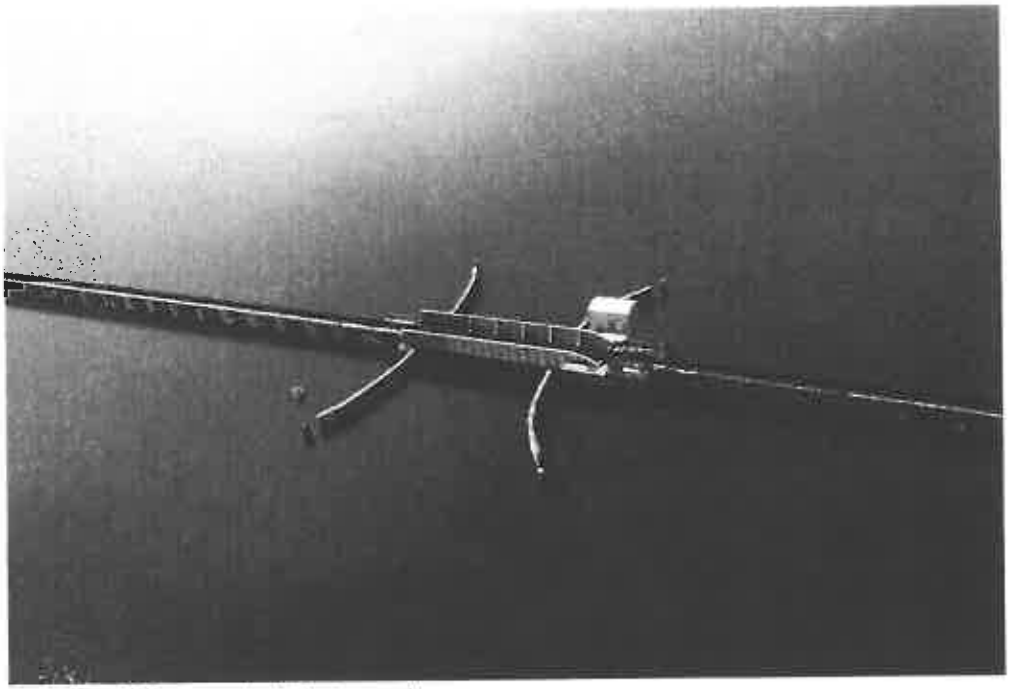
Transystems
2011 *Biennial Inspection and Evaluation of Bridges at Kennedy Space Center, FL.*

Washburn, Frank (KSC Bridge technician)
2012 Interview by Christopher Berger and Patricia Slovinac. 26 January. Notes on file at Archaeological Consultants Inc., Sarasota.

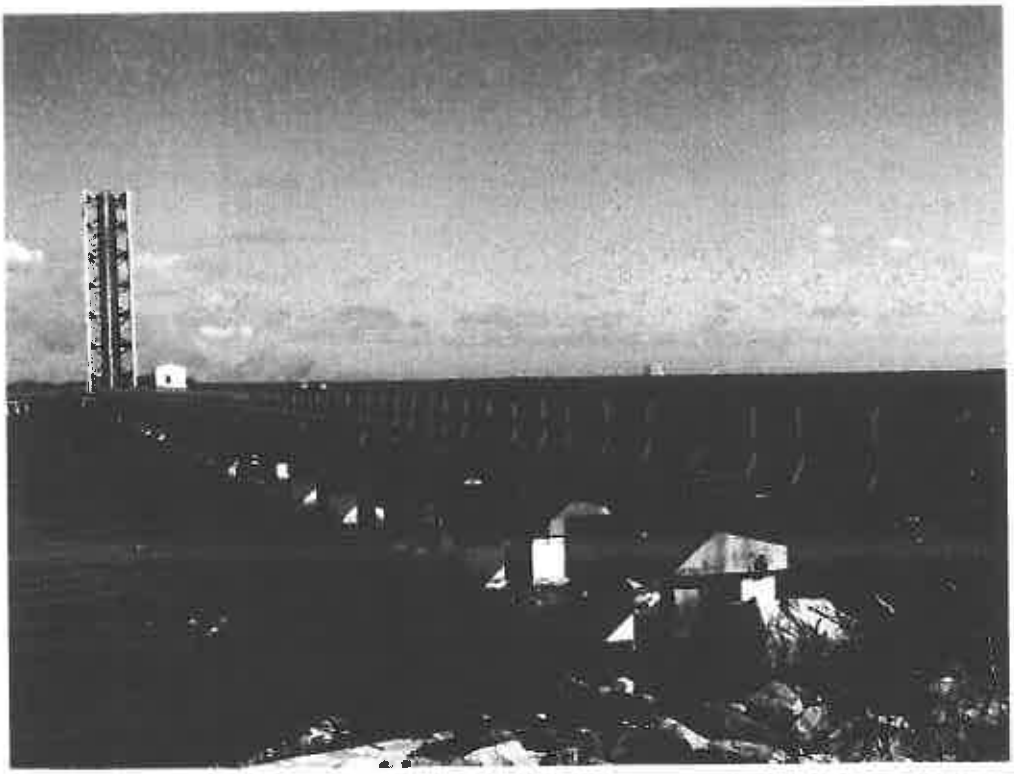
HISTORIC BRIDGE FORM

Site # 8BR2906

PHOTOGRAPHS



Jay Jay Bridge aerial photograph.

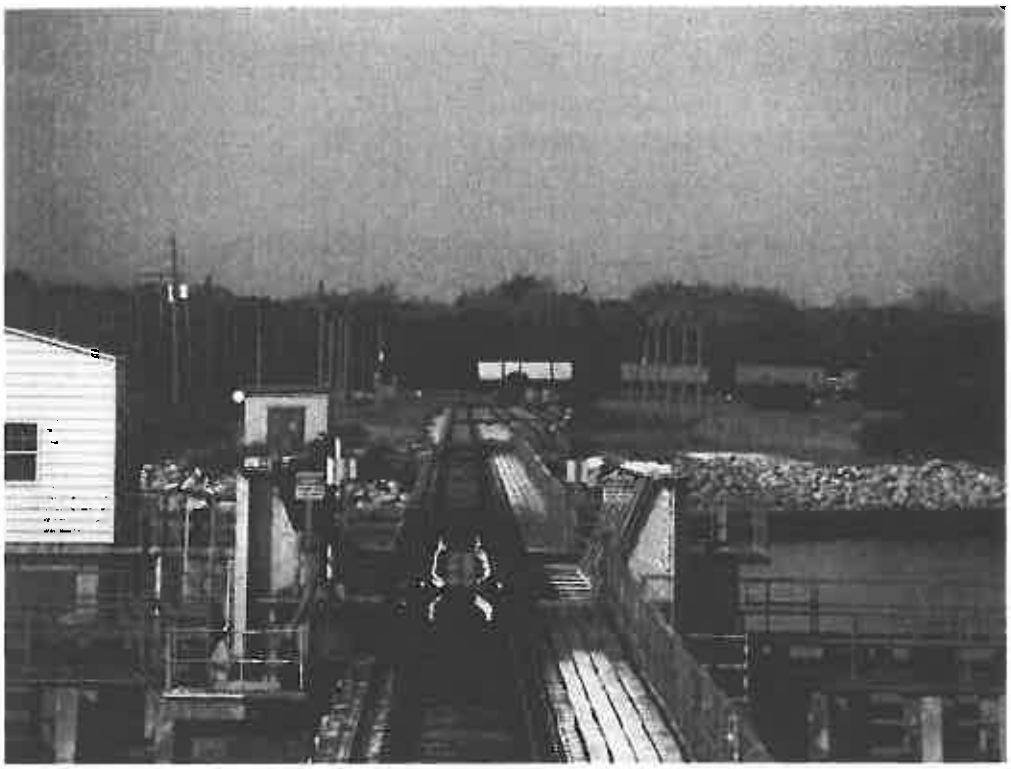


Jay Jay Bridge facing southeast.

HISTORIC BRIDGE FORM

Site # 8BR2906

PHOTOGRAPHS



Jay Jay Bridge down, facing west.

Jay Jay Bridge upright, after crewmember activated span, facing west.

Jay Jay Bridge bascule lowered, facing east.

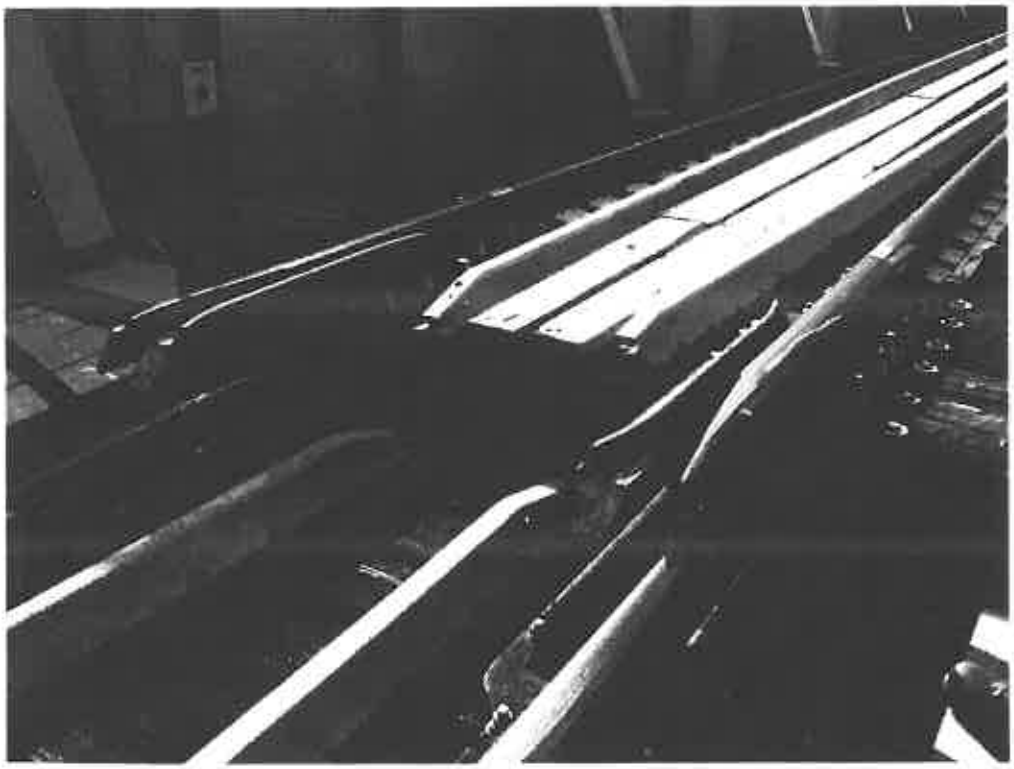
Locomotive 2 on Jay Jay Bridge facing east.

HISTORIC BRIDGE FORM

Site # **8BR2906**

PHOTOGRAPHS

Jay Jay Bridge track detail.



Jay Jay Bridge bascule tracks being lowered, facing northeast.

HISTORIC BRIDGE FORM

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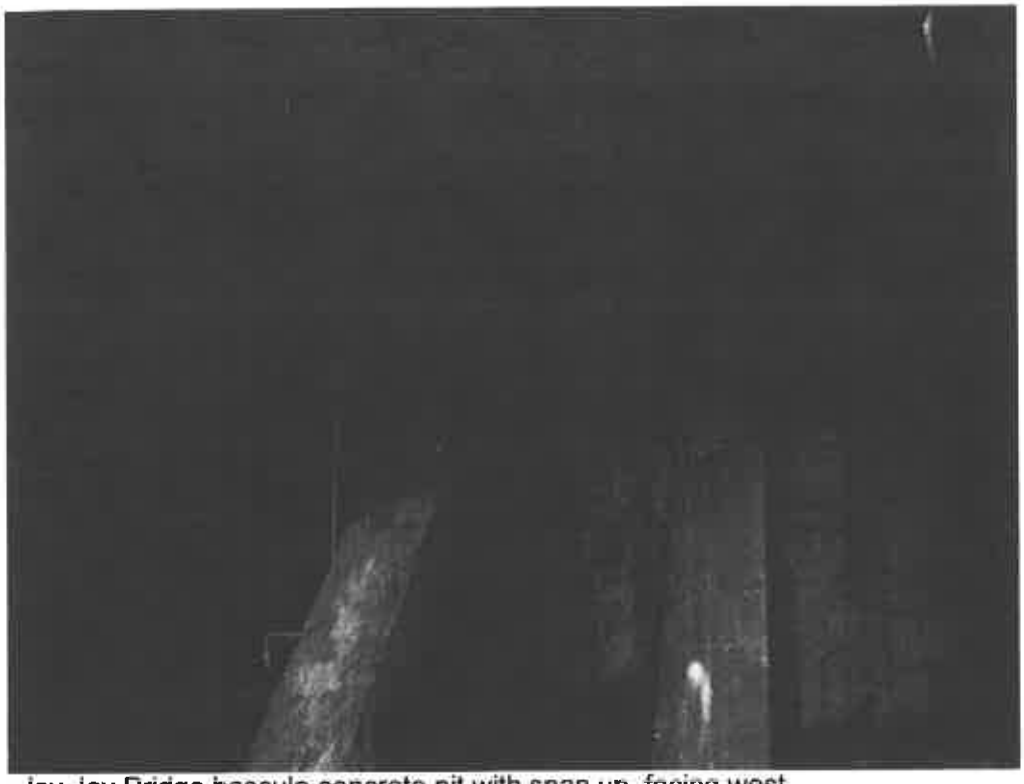

Jay Jay Bridge bascule concrete pit with span up, facing west.

Jay Jay Bridge bascule gears, while bridge is being lowered.

HISTORIC BRIDGE FORM

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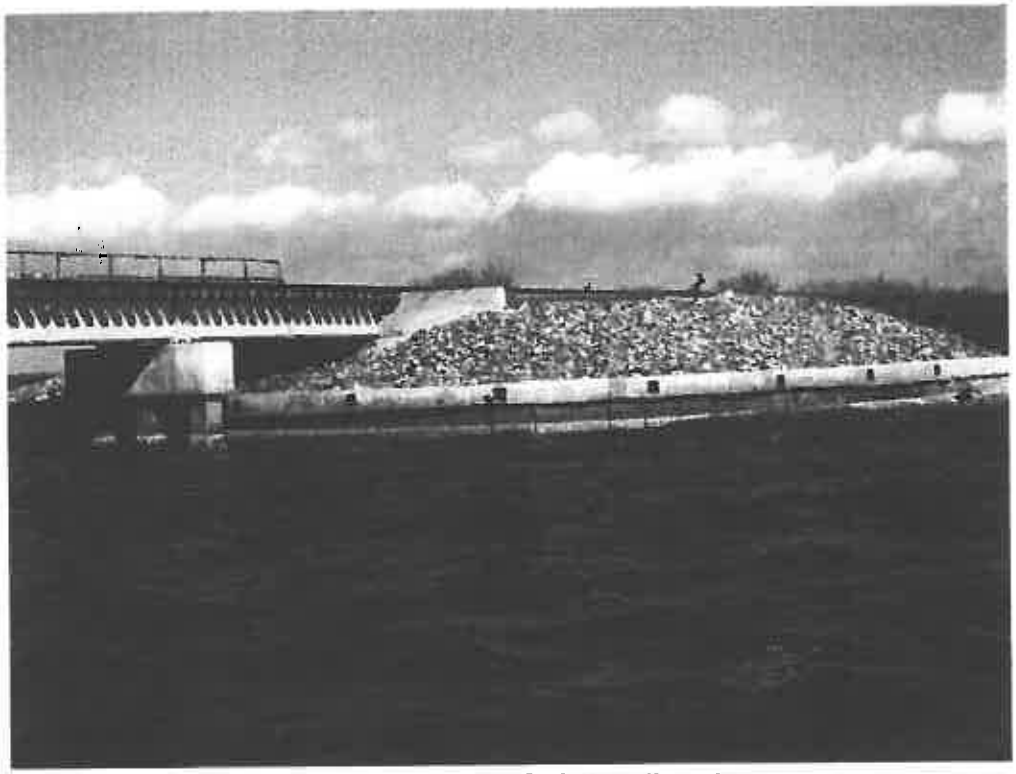
PHOTOGRAPHS



Jay Jay Bridge east approach abutment, facing northeast.

Jay Jay Bridge representative piles, facing southwest.

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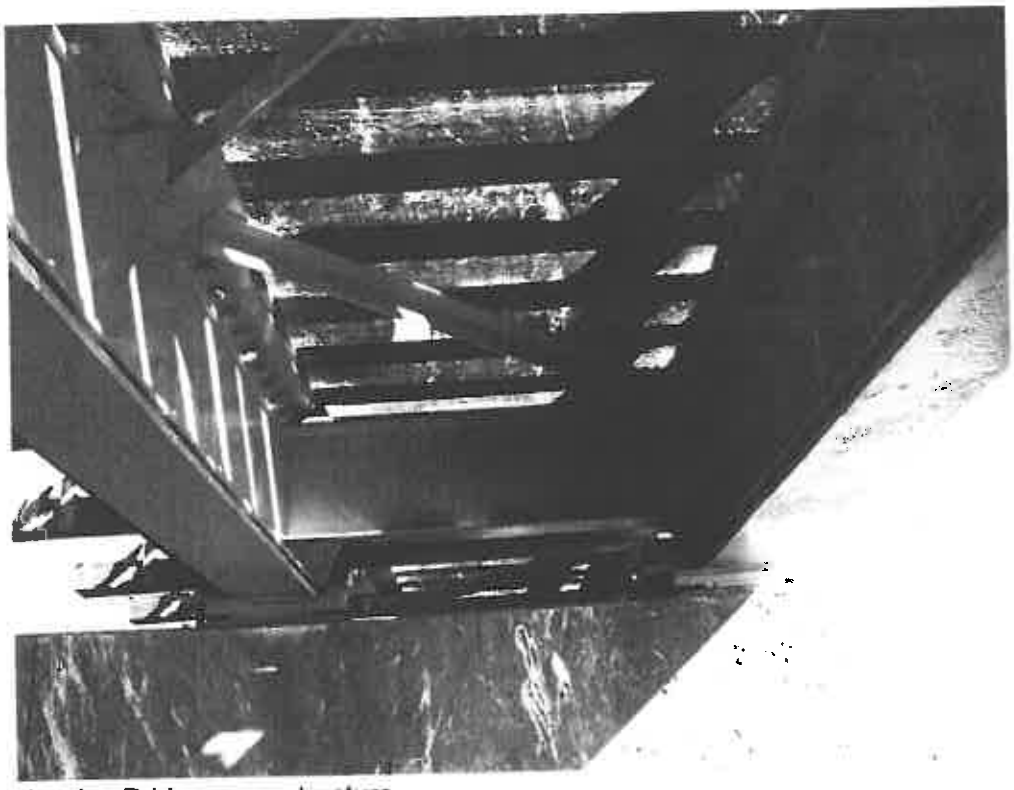
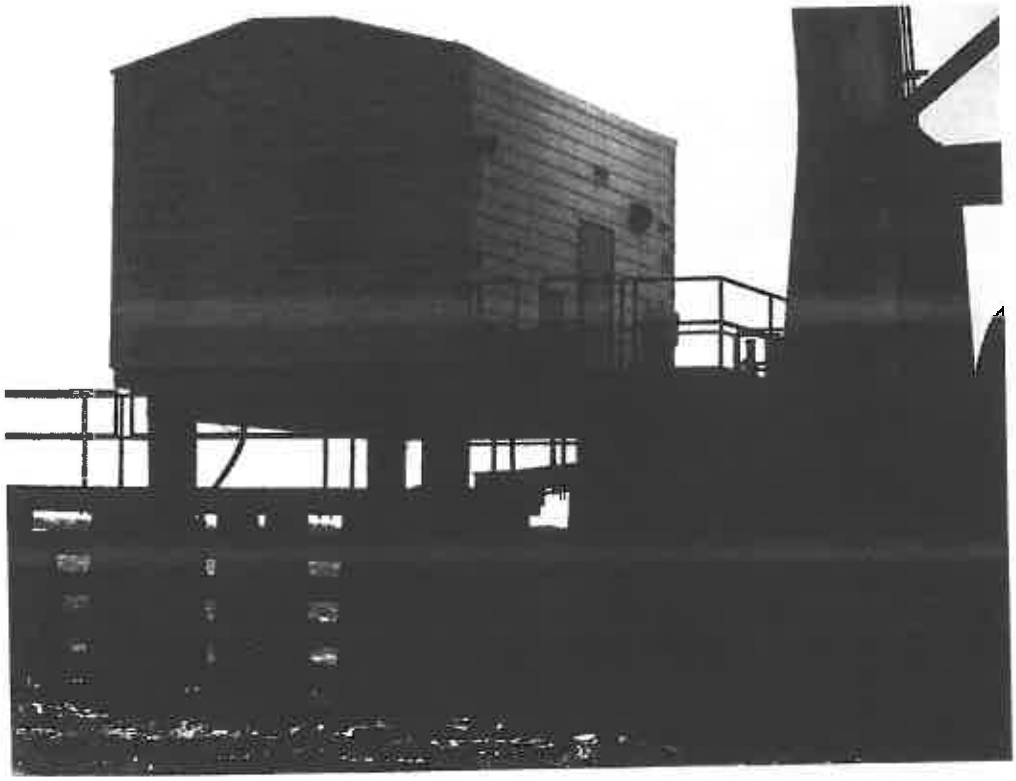
PHOTOGRAPHS



Jay Jay Bridge superstructure.

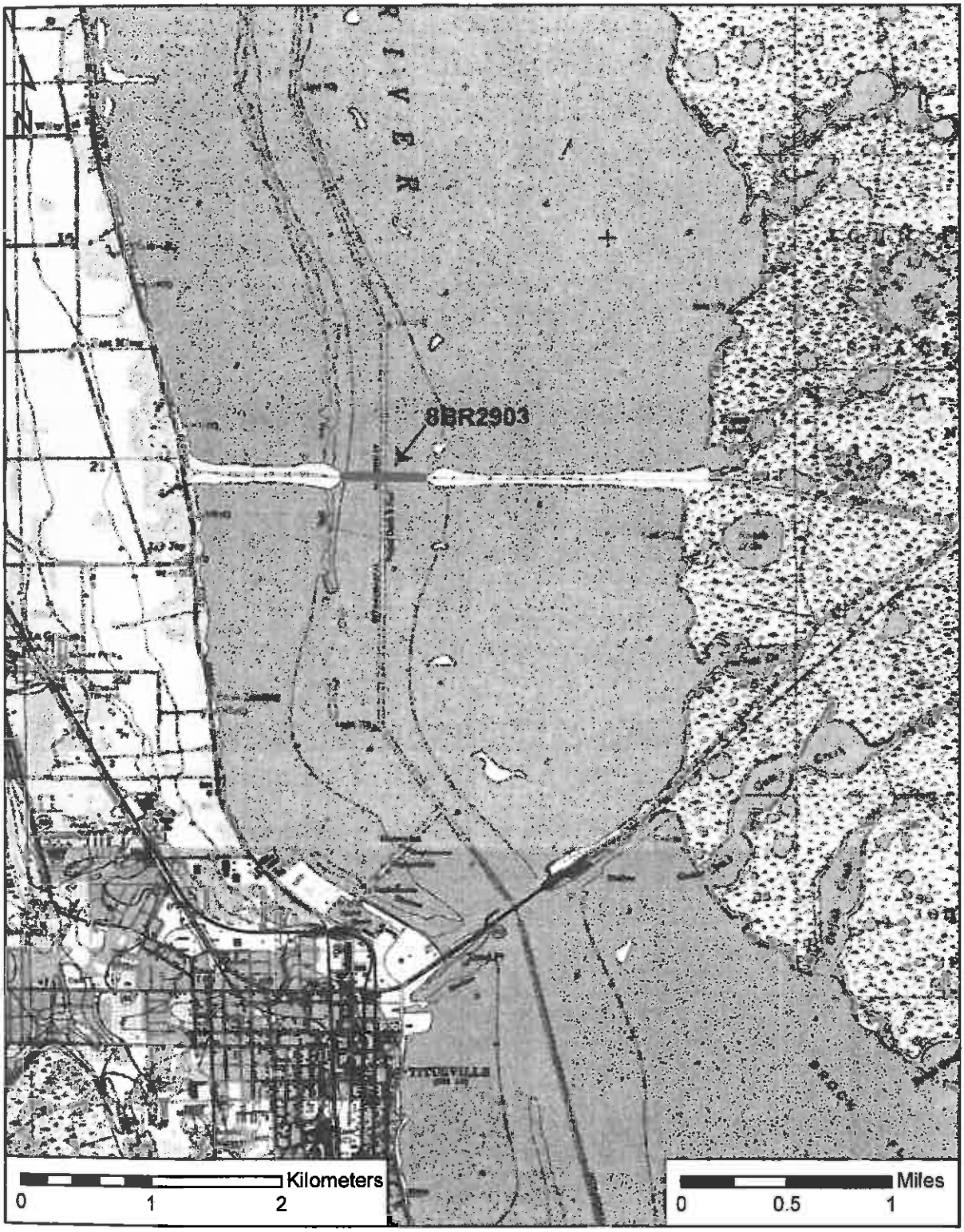


Jay Jay Bridge tender station with fenders

HISTORIC BRIDGE FORM

USGS

Mims
Township 21 South, Range 35 East, Section 21
National Geographic Society (2011) *USA Topo Maps.*



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