Technical Specifications

SWFWMD Gate Refurbishment Project

Structures S-160 and S-162

TWA 19TW0002769, Agreement No. 19CN0002032

Tampa, FL

September 14, 2020

For:

Southwest Florida Water Management District

2379 Broad Street

Brooksville, Florida 34604

By:

HDR Engineering, Inc.

4830 West Kennedy Boulevard, Suite 400

Tampa, Florida 34604

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Division 1 [Excluding Attachments]

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DIVISION 1

GENERAL REQUIREMENTS

SECTION 01010 SUMMARY OF WORK

PART 1 - GENERAL

1.1 SCOPE

A. This section summarizes the WORK to be performed by the CONTRACTOR to complete certain repairs at Control Structure No**(s)**. S-160 and S-162.

B. The CONTRACTOR shall provide all labor, tools, materials, rehabilitation facilities, and equipment necessary to complete the WORK as described herein. The scope includes the removal, repair, and reinstallation of existing steel roller gates, slide gates, rails, gate hoist systems (hydraulic cylinder type) and miscellaneous other repairs at Control Structure No(s). S-160 and S-162. The WORK to be performed to repair each roller gate and appurtenances is further defined in these Specifications. Asbuilt drawings of the gates and gate hoist systems at each structure are provided in Attachment No. 1.

C. The numbers, sizes, and approximate weights of roller gates to be repaired at each structure are as follows

a. Structure No. S-160: 2 roller gates, No. 1 and No. 2 (11.9 ft. high by 28.8 ft. wide 26,000 lbs.).
b. Structure No. S-162: 2 roller gates, No. 1 and No. 2 (11.9 ft. high by 28.8 ft. wide, 28,000 lbs.).

D. Detailed characteristics and costs for certain gate components which are specified herein to be replaced as part of the WORK cannot be readily determined prior to the CONTRACTOR's completion of other elements of the WORK described herein. In these cases, the DISTRICT shall compensate the CONTRACTOR for the cost of furnishing replacement components using the "Replacement Parts Allowance" bid item, which is included in the Bid Form specifically for this purpose (see Bid Form and SECTION 01020 – MEASUREMENT AND PAYMENT).

E. After completion of certain elements of the WORK by the CONTRACTOR, the DISTRICT will perform inspections of existing structure and gates. These inspections may result in identification of a need for additional repairs to the structures and gates (WORK) that are beyond the scope of repairs described herein. Any additional WORK will be incorporated into the contract through a Change Order issued to the CONTRACTOR in accordance with the General Terms and Conditions of the Contract. Additional compensation to the CONTRACTOR for changes to the WORK incorporated into a Change Order shall be paid from the "Contingency" bid item, which is included in the Bid Form specifically for this purpose (see Bid Form and see SECTION 01020 – MEASUREMENT AND PAYMENT). Such Change Order shall also specify the method for determination of the additional amount of compensation due to the CONTRACTOR.

1.2 MEETINGS

A. A preconstruction (kickoff) meeting is required and should be scheduled within two weeks following issuance of the Notice to Proceed.

B. Biweekly progress meetings shall be held throughout the duration of the WORK.

C. At minimum CONTRACTOR supervisor and one (1) key member of staff actively working on project to attend meetings.

D. Additional meetings shall be held when deemed by the DISTRICT to address specific aspects of the WORK to be performed.

1.3 SUBMITTALS

A. Shop Drawings and Product Data shall be submitted in accordance with Section 01300 as the basis for approval of materials and equipment proposed for incorporation into the WORK or as needed to describe the installation, operation, maintenance, or technical properties.

B. CONTRACTOR shall submit a Cost-Loaded Construction Schedule in accordance with the requirements of Section 01310. Schedule is to include, but not be limited to, days of stoplog installations, dewatering time, crane setup time, gate removal, anticipated range of DISTRICT facility visits and facility testing, progress meetings, rehabilitation time, gate and hydraulics re-installation, and startup testing day. The Cost-Loaded Construction Schedule must be approved before the CONTRACTOR's mobilization.

C. CONTRACTOR shall submit a Safety Plan. The safety plan at a minimum will include fall protection, dive plan (as necessary), and ingress and egress to the site and work area. The safety plans will include processes to follow for extreme weather events and when DISTRICT is in emergency status mode.

D. CONTRACTOR shall submit a Gate Removal Plan to include but not limited to crane make/model and capacity, number of days anticipated onsite, personnel who will be constructing and operating the crane and their years of experience, and site map depicting where crane will be positioned during gate removal.

E. CONTRACTOR shall submit a list of required permits and include a plan to obtain permits. CONTRACTOR shall pay for permit fees.

F. CONTRACTOR shall submit the name, address, and contact information of facility where rehabilitation is to take place and where hydraulics are to be stored and tested.

G. The CONTRACTOR shall also submit qualifications of personnel who will perform the WORK to include, but not limited to:
   a. Supervisor(s) name(s) and years of experience.
   b. Name and Years of experience of personnel who will be operating crane.
   c. Name and Years of experience of personnel who will rehabilitate/coat the gate and appurtenances.

H. Where the WORK requires submittal of signed and sealed engineering analyses or designs, submittals shall be provided demonstrating the qualifications of the engineer(s) to perform the WORK.

I. Additional submittals related to materials and methods the CONTRACTOR proposes to employ to complete necessary repairs at each structure may be required.

J. No WORK shall be performed until all submittals, relating to the specific WORK to be performed, have been approved by the DISTRICT.

1.4 SEQUENCE OF WORK

A. The general sequence of work presented below herein presumes that, upon removal of an existing roller gate from the structure and inspection of the gate by the DISTRICT, the roller gate is deemed by the DISTRICT to be in a condition that is suitable for repair and reinstallation. If a roller gate is deemed by the DISTRICT not be in a condition that is suitable for repair and reinstallation, then the changes in the WORK and compensation for such changes in the WORK shall be defined in a Change Order issued in accordance with the General Terms and Conditions of the Contract.

a. CONTRACTOR is to provide DISTRICT access to facilities where gates and appurtenances are being rehabilitated and location where gate hydraulics are being stored and tested. Gate rehabilitation and gate hydraulics storage facilities must be within 50 miles of SWFWMD Tampa, Florida office to facilitate DISTRICT access during rehabilitation process.

b. Only one gate per structure is to be taken out of service at a time.

B. For each roller gate called to be rehabilitated, the WORK to be performed and the general sequence of the repairs shall be as follows:

a. The CONTRACTOR shall inspect, clean, and replace seals of existing stop logs (needle beams and timber needles beams) prior to installation. The CONTRACTOR is to furnish a second full set of stop logs to match dimensions and material of existing stop logs (comprised of needle beams and timber needle beams as shown in as-built detail) for each structure for the purpose of isolating both the upstream and downstream side of each structure gate bay. If as-built detail differs from existing stop log design, the existing stop log design is to take precedence.

b. The CONTRACTOR shall install stop logs (needle beam and timber beams) and dewatering systems as necessary to allow the portion of the structure (bay) containing the designated roller gate to be isolated from the upstream and downstream pools and dewatered. Only one gate is to be taken out of service at a time at each structure. The CONTRACTOR shall then dewater the bay to completely expose the existing roller gate and concrete structure.

c. Following complete dewatering of the bay, the CONTRACTOR shall then completely remove the gate hoist system.

1. The CONTRACTOR shall disconnect all affected instrumentation/control and electrical circuits prior to gate removal in order to render affected hydraulic circuits

inoperable and the area safe. The CONTRACTOR shall disconnect and cap the hydraulic lines at the connection to the hydraulic cylinder. The CONTRACTOR shall then remove the hoist system completely including cables, pulleys/sheaves, hydraulic cylinder actuator, connecting/mounting hardware, and all other components of the hoist system that would interfere with subsequent removal of the corresponding roller gate.

2. The CONTRACTOR and DISTRICT shall examine the existing lift cables, pulleys/sheaves, and connecting/mounting hardware as necessary to determine dimensions and other relevant characteristics. The CONTRACTOR shall be responsible for obtaining new lift cables, pulleys/sheaves, and connecting/mounting hardware to replace the existing items if deemed necessary after condition assessment at facility. The replacement items shall be Type 316L stainless steel and shall have the same geometry and characteristics as the existing items. Compensation to the CONTRACTOR for costs incurred to obtain the replacement items shall be provided from the Replacement Parts Allowance bid items as specified in Section 01020. If existing lift cables, sheaves/pulleys, and connecting/mounting hardware that are replaced CONTRACTOR shall remove from the site and properly dispose of the replaced items.

d. The CONTRACTOR shall transport the hydraulic cylinder to a shop located within a 50-mile radius of the DISTRICT's Tampa, Florida office for storage. CONTRACTOR is to provide DISTRICT access to hydraulic cylinder and hoist system for visual inspection to determine if rehabilitation is necessary. The equipment covers/housings and mounting hardware are to be transported and recoated at facility performing roller gate rehabilitation and coating. CONTRACTOR to perform hydraulic cylinder testing while at facility in accordance with Section 3.3.A. CONTRACTOR to coordinate with DISTRICT for onsite hydraulic cylinder testing observation. Any changes to the WORK that the DISTRICT determines are needed as a result of the inspection shall be incorporated into the WORK via a Change Order issued to the CONTRACTOR in accordance with the General Terms and Conditions of the Contract.

e. CONTRACTOR shall temporarily remove lighting, conduits, and other appurtenances from bay gate opening to facilitate gate removal.

f. Following removal of the gate hoist system (hydraulic cylinder), other appurtenances within the gate removal slot, and dewatering of the bay, the CONTRACTOR shall remove the designated roller gate, slide gates, and gate rails from the structure. Vehicles and lifting equipment used by the CONTRACTOR to remove the roller gate shall be subject to the requirements and limitations of section 1.10. Cranes used to remove roller gates shall be required to operate from beyond the limits of the structure and shall not be permitted to impose a load on the service bridge.

g. Following removal of the roller gate from the structure and while the corresponding bay remains dewatered, the DISTRICT with the assistance of the CONTRACTOR shall perform a visual inspection of the structure to determine whether any cosmetic or coating repairs are required. If a need to perform other repairs (other than cosmetic and coating repairs) are noted during this visual inspection including, but not limited to, repairs needed due to structural connection damage, concrete spalling or cracking, failed welds, significant loss of steel section, rebar exposure, etc., these items shall be repaired. Repairs

of this nature will require additional specifications beyond those provided for the original scope of WORK. The DISTRICT will engage an engineer to provide an evaluation and to determine the appropriate method for repair. Any changes to the WORK specified herein that the DISTRICT determines are needed as a result of the inspection of the existing structure and roller gate shall be incorporated into the WORK via a Change Order issued to the CONTRACTOR in accordance with the General Terms and Conditions of the Contract.

h. Following removal of the roller gate from the structure, the CONTRACTOR shall remove gate rollers, side and bottom seals, rails bolted to bay, and mounting hardware from the main gate; remove slide gate plates and lift systems (threaded stem and tubular steel stem guide supports and bracing) from the main gate; and remove and dispose gate roller lubrication system components (1/4-inch stainless steel tubing and fittings) from the main gate (if present; some structures' lubrication system were removed when ThorPlas® bearings were installed).

i. The CONTRACTOR shall contract with a qualified supplier to furnish replacement bottom and side seals having the same lengths and cross-sectional geometry as the existing bottom and side seals and fabricated of neoprene as specified in this Section.

j. The CONTRACTOR shall contract with a qualified supplier to furnish replacement gate rollers, shafts, and sleeve bearings having the same geometry as the existing gate rollers. The replacement gate rollers and shafts shall be fabricated of Type 316L stainless steel with Thordon Bearings, Inc. ThorPlas® sleeve bearings, or approved equal. Compensation to the CONTRACTOR for costs incurred to obtain fabricated replacement rollers, shafts, and sleeve bearings to replace existing rollers, shafts, and bearings shall be provided from the Replacement Parts Allowance Bid Items No. 11 and 12 as specified in Section 01020.

    1. If existing gate roller bearing are Thordon Bearings, Inc. ThorPlas® sleeve bearings, gate rollers are to be turned and sleeved but not replaced unless visually observed to be cracked or damaged in some way.

k. Following disassembly, the CONTRACTOR shall transport the roller gate, slide gate plates, hydraulic cylinder enclosure, and slide gate lift system components (excluding hydraulic cylinder and appurtenances) to a shop approved by the DISTRICT and located within a 50-mile radius of the DISTRICT's Tampa, Florida office for cleaning, surface preparation, and application of new coatings to the roller gate, slide gate, hydraulic cylinder enclosure, and associated components.

l. CONTRACTOR and DISTRICT are to meet at rehabilitation facility within one week of main gate and slide gate cleaning to observe condition prior to continuation of rehabilitation to determine the condition of the gate and to determine whether additional repairs to the roller gate or slide gates may be required. The DISTRICT will decide within forty-eight (48) hours of the facility visit if rehabilitation is adequate or if some replacements are needed. Any changes to the WORK that the DISTRICT determines are needed as a result of the inspection shall be incorporated into the WORK via a Change Order issued to the CONTRACTOR in accordance with the General Terms and Conditions of the Contract.

m. CONTRACTOR to coordinate with DISTRICT once each coating has been completed. DISTRICT or DISTRICT REPRESENTATIVE to inspect coating after each application. CONTRACTOR to replace anode on gate, CONTRACTOR will not coat area where anode will be mounted (or shall remove coating where anode is to be mounted) to allow for direct contact of anode to gate metal surface. Once recoating of the roller gate, slide gates, hydraulic cylinder enclosure, and appurtenances and other facility related WORK effort has been completed CONTRACTOR will coordinate with DISTRICT for final factory site visit and observation. After final DISTRICT site visit of completed facility WORK, the CONTRACTOR shall transport the roller gate, slide gates, hydraulic enclosure (housing) from the facility to the site and complete reassembly of the roller gate including slide gates and slide gate lift system components, rollers, and side and bottom seals. All replacement hardware shall be type 316L stainless steel.

n. Following reassembly of the roller gate and slide gates, the CONTRACTOR shall reinstall the roller gate and slide gates.

o. Following reinstallation of the roller gate, the CONTRACTOR shall transport to the site and reinstall gate hoist system components including the hydraulic cylinder, actuator, enclosure (housing) and other hydraulic appurtenances. CONTRACTOR shall reinstall all control, instrumentation and electrical equipment connections.

p. While the stoplog (needle beam and timber needle beams) systems remain in place, the CONTRACTOR shall demonstrate (to the DISTRICT) satisfactory operation of the roller gate, slide gates, and gate lift systems within 24 hours of the completion of replacement. Gate operational testing will include full opening and closing of each replaced gate.

q. Following successful demonstration of the roller gate, slide gates, and gate lift systems, the CONTRACTOR shall remove the upstream and downstream stop log (needle beam and timber needle beam) systems and shall cleanup and restore the site to the preconstruction condition. Stop logs may only be removed after any placed concrete has cured for more than 7 days.

1.5 QUALIFICATIONS

A. CONTRACTOR must be a licensed general contractor in the state of Florida. CONTRACTOR will provide a licensed crane operator for gate removal and replacement. CONTRACTOR will need licenses and equipment necessary to transport gates from site to refurbishment facility. CONTRACTOR may need to obtain a wide load permit for gate transport to facility if gate cannot be disassembled on site. Personnel operating the crane must have at least five (5) years of experience operating cranes. Onsite supervisor(s) must have at least five (5) years of experience in supervisory role. Other personnel onsite must have minimum two (2) years of experience performing similar work. All CONTRACTOR personnel working onsite must have OSHA training.

B. The WORK described herein includes analyses of existing control structures to determine allowable loadings for the structure, and to determine the loads that would be imposed upon the structure by equipment and vehicles that the CONTRACTOR proposes to operate on, or travel across, the structure. These analyses shall be performed by a professional engineer registered in the State of Florida. The professional engineer shall have a minimum of five (5) years of

experience that is directly applicable to the analyses to be performed. Cranes are not allowed to be setup or impose load on the service bridge.

C. The WORK described herein includes testing of existing hydraulic cylinders. The testing of the hydraulic cylinders shall be performed by a shop having capability to perform pressure testing, load testing, and have capability of performing single-pass mechanical re-honing to restore the roundness and original manufactured diameter of the cylinder bore if deemed necessary by DISTRICT during hydraulic cylinder testing observations. The shop shall be approved by the DISTRICT.

D. The WORK described herein includes shop cleaning, surface preparation, and recoating of roller gates having overall dimensions and weights listed in section 1.1 and as shown in asbuilts. The cleaning, surface preparation, and recoating shall be performed by a shop having capability to provide surface preparation, removal of existing primers and coating, priming, and coating of the gates in a controlled environment. The shop shall be approved by the DISTRICT.

1.6 OPERATIONAL CONSTRAINTS

A. The stop log system (needle beam and timber beams) systems shall be installed and the bays must be dewatered so that the removal and reinstallation of the existing roller gates and all repairs to the structure can be performed under dry conditions.

B. Only one (1) gate at each structure can be out of service any time.

C. Gate repair can only be performed during the dry season, defined as October 1st through May 31st (8 months).

D. Onsite WORK to be performed between the hours of 8 am to 5 pm.

E. Except for the bay containing the roller gate that is undergoing repairs, the control structure must remain operational throughout the duration of the WORK. Facilities that must remain fully functional consists of the remaining roller gates and gate hoist systems, control buildings, stilling wells, power/instrumentation conduit and wiring, hydraulic systems, and any other system components.

1.7 SITE ACCESS

A. Structure No. S-160 is located near 500 North 78th Street, Tampa, FL. The coordinates for the S-160 structure are N 1317272.473, E 536902.979 based on the State of Florida State Plane Coordinate System, North American Datum of 1983, 2011 Adjustment (NAD83/11).

B. Structure No. S-162 is located at 4107 Courson Drive, Tampa, FL 33610. The coordinates for the S-162 structure are N 1326711.984, E 542383.258 based on the State of Florida State Plane Coordinate System, North American Datum of 1983, 2011 Adjustment (NAD83/11).

1.8 HEADWATER AND TAILWATER CONDITIONS

A. Surface water elevations will vary during construction and may impact the CONTRACTOR's work. Elevations values below were observed during 2019.

a. Structure S-160:
   1. Max. Headwater El. 9.363 ft. NAVD88.
   2. Avg. Headwater EL. 8.860 ft NAVD 88.
   3. Max. Tailwater EL. 2.112 ft. NAVD88.
   4. Avg. Tailwater EL. 0.212 ft NAVD 88.
   5. Structure Invert (floor) EL. -16.892 ft. NAVD88.

b. Structure S-162:
   1. Max. Headwater EL. 13.185 ft. NAVD88.
   2. Avg. Headwater EL. 12.628 ft. NAVD88.
   3. Max. Tailwater EL. 9.365 ft. NAVD88.
   4. Avg. Tailwater EL. 8.813 ft NAVD88.
   5. Structure Invert (floor) El. -2.866 ft. NAVD88.

1.9 WORK PERFORMED BY OTHERS

A. All inspections of the gates and structure conducted for the purpose of determining necessary repairs will be performed by the DISTRICT with the presence of the CONTRACTOR.

1.10 CONTRACTOR'S USE OF PREMISES

A. See General Terms and Conditions, Division 0.

B. Throughout the duration of the WORK the CONTRACTOR shall be responsible for maintaining all access roads in good condition, including grading and drainage.

C. If CONTRACTOR is planning on placing or using vehicles or equipment on structure, the CONTRACTOR shall submit signed and sealed certifications, prepared by a properly qualified Professional Engineer, licensed in the State of Florida, indicating that the vehicles and construction equipment that will be operated on the structures to perform the required construction activities will not adversely impact the structural integrity of the structures. The engineer's certifications shall be based on the ENGINEER's analyses of as-built drawings of the existing structures (provided by the DISTRICT) and based on the ENGINEER's inspection and evaluation of the existing condition of the structures. Cranes are not to be set up on structure or impart load onto service bridge.

D. The CONTRACTOR shall ensure that operations of construction equipment and vehicles on the structures shall not exceed the maximum ratings shown in the tabulation below. In addition, cranes used to lift roller gates from the structure shall be required to operate from beyond the limits of the structure service bridge. CONTRACTOR to provide certification signed and sealed by Professional Engineer that the crane will not impose any loads that would adversely impact the structural integrity of the structure. Ratings for each structure are shown below (as provided by DISTRICT). Cranes will not be permitted to be located on or driven onto the structure.

Structure	Rating
S-160	72,000 lbs
S-162	72,000 lbs

E. The CONTRACTOR shall notify the DISTRICT immediately of any damage to structures or any other DISTRICT-owned infrastructure.

F. It is the CONTRACTOR's sole responsibility to repair all damages to the structures and to any other DISTRICT-owned infrastructure which results from construction activities.

1.11 DISTRICT'S USE OF PREMISES

A. Partial DISTRICT Occupancy: The DISTRICT reserves the right to occupy and to place and install equipment in areas of the Project prior to Substantial Completion, provided that such occupancy does not interfere with completion of the WORK.

1.12 COORDINATION ACTIVITIES AND SCHEDULED DATES

A. General: The CONTRACTOR shall coordinate its WORK with DISTRICT activities, with specific attention to access and staging areas. Construction sequence shall be determined by CONTRACTOR subject to the needs for continuous access and operation by the DISTRICT and the sequence provided in this SECTION.

B. The CONTRACTOR shall maintain access corridors for the purposes of allowing the DISTRICT to access and operate stilling wells, control buildings, and all roller gates remaining in operation.

C. CONTRACTOR is to notify DISTRICT minimum seventy-two (72) hours prior to mobilization onsite. WORK onsite is to be performed during the hours of 8 AM to 5 PM. Structure gates will be closed and locked by DISTRICT at 5 PM. Of special note, Structure S-160 Gate 1 has a Tampa Bay Water operated actuator and will require additional coordination with the DISTRICT concerning the placement of the actuator and gate out of service and will require a notification of no less than seventy-two (72) hours prior to being taken out of service.

D. The roller gates at S-160 are comprised of two sections. In the event that these two sections cannot be dismantled on site, the CONTRACTOR will be responsible for obtaining a wide load permit to transport the full gate on a truck bed. Compensation to the CONTRACTOR for costs incurred to obtain the wide load permit shall be provided from the Mobilization and Demobilization Bid, and Payment Bond Item No. 1 as specified in Section 01020.

1.13 REFERENCE MATERIALS

A. Asbuilt drawings of the existing structures have been provided by the DISTRICT (Attachment No. 1). These materials are for reference only, are provided as-is, are not contractual documents, and do not replace the CONTRACTOR's due diligence in bid preparation and verification of the existing conditions.

B. The Major Maintenance Procedure Manual for Tampa Bypass Structure Gates has been provided by the DISTRICT (Attachment No. 2). These materials are for reference only, are provided as-is, are not contractual documents, and do not replace the CONTRACTOR's due diligence in bid preparation.

1.14 WARRANTY

A. CONTRACTOR work to have two (2) year warranty on coating and one (1) year warranty on all other WORK. Warranty to cover all work effort performed by contractor including but not limited to rehabilitation (coatings, repairs, etc.) Of main gate, slide gates, rails, rollers, and hydraulic enclosure, as well as concrete repair and components re-installed by CONTRACTOR.

PART 2 - PRODUCTS

2.1 GATE SEALS

A. Hy-Q seals shall be Neoprene, ASTM D2000 Grade AA625. J-Seals shall be Neoprene, ASTM D2000 Grade 2BC 515. Replacement seals shall have the same cross-sectional geometry as the existing seals.

2.2 GATE ROLLERS

A. Gate rollers and shafts shall be manufactured of Type 316L stainless steel.

B. Gate roller sleeve bearings shall be manufactured of ThorPlas® by Thordon Bearings, Inc., or equal.

2.3 LIFT CABLE

A. Lift cable shall be manufactured of Type 316L stainless steel.

B. The lift cable for the gate hoist system shall have the following minimum capacities (in tension):
   a. Structure S-160: 40,000 lbs
   b. Structure S-162: 48,000 lbs

2.4 CONNECTING/MOUNTING HARDWARE

A. All connecting/mounting hardware shall be Type 316L stainless steel and matching the existing connecting hardware in all other characteristics.

2.5 SCHEDULE OF COATINGS

A. Galvanizing repair paint shall be high-zinc-dust content paint complying with ASTM A780 and compatible with the paints specified below to be applied over it.

B. The following types of coatings for roller gate (main gate), slide gates, hydraulic cylinder enclosure and other steel appurtenances to be by the Sherwin Williams Company (SW), the Tnemec Company (TN), or the PPG Protective and Marine Coatings (PPG).
   a. First and second coats: Glass Flake Reinforced Epoxy
      1. SW: Sher-Glass FF.
      2. TN: Epoxoline, Series 142.
      3. PPG: Amerlock 400 GF/Sigmashield 400.
   b. Minimum dry film thickness per coat: 8 mils.
   c. Maximum dry film thickness per coat: 15 mils.

2.6 CONCRETE

A. Concrete shall meet the following requirements:
   a. General: Concrete shall be composed of cement, admixtures, aggregates, and water of the qualities indicated. The exact proportions in which these materials are to be used for different parts of the WORK will be determined during the trial batch process. In general, the mix shall be designed to produce a concrete capable of being deposited so as to obtain maximum density and minimum shrinkage, and, where deposited in forms, to have good consolidation properties and maximum smoothness of surface. The aggregate gradations shall be formulated to provide fresh concrete that will not promote rock pockets around reinforcing steel or embedded items. The proportions shall be changed whenever necessary or desirable to meet the required results. All changes shall be subject to review by the DISTRICT.
   b. Minimum 28-day compressive strength of 4,000 psi, determined in accordance with ACI 318, Section 5.3.
   c. The percentage of fine aggregate in total aggregate by weight shall be as indicated in the following table:

Fineness Modulus	Maximum Percent
2.7 or less	41
2.7 to 2.8	42
2.8 to 2.9	43
2.9 to 3.1	44

   d. Maximum water-to-cement (W/C) ratio: 0.45
   e. Cement content: 564 to 600 pounds per cubic yard
   f. Maximum size aggregate: 1 inch
   g. Slump: 3 ± 1 inches

B. Crystalline waterproofing admixture shall be applied to all concrete according to the following requirements:
   a. Admixture shall be classified as acceptable for potable water use according to NSF Standard 61.
   b. Concrete to be coated with admixture shall have the following properties:
      1. Permeability: 1.2 mm (3/64 inch) after 120 hours (5 days), USACE CRD C48.
      2. Minimum compressive strength of 4,000 psi per section 2.7A above.
   c. A single manufacturer for crystalline waterproofing materials shall be used throughout the WORK, and prior to its use, the brand shall be submitted as a shop drawing to the District for review and acceptance prior to use.
   d. Acceptable manufacturers are as follows:
      1. ICS Penetron International Ltd.

2. Xypex Chemical Corporation
3. Kryton International Inc.

PART 3 - EXECUTION

3.1 GENERAL

A. The installation and removal of stop logs (needle beam and timber needle beams); dewatering; and the removal, repair, and reinstallation of roller gates, slide gates, and gate hoist systems shall be performed in general conformance with the sequence presented in Section 1.4.

B. As specified in Section 1.10, cranes used to remove and reinstall roller gates must operate from beyond the limits of the structure.

C. Following reassembly and reinstallation of the roller gates, and while the bay containing the roller gate remains dewatered, the CONTRACTOR shall demonstrate (to the DISTRICT) satisfactory operation of the roller gate, gate hoist systems, and slide gates.

3.2 CLEANING AND COATING OF FERROUS METAL SURFACES

A. Roller gates and slide gates shall be removed and transported to a shop having the capability to provide cleaning, surface preparation, and painting of gates of the sizes and weights indicated in PART 1 in a controlled environment. At the shop, clean, prepare the surface, and paint the roller gate and slide gates with the paints specified in PART 2.

B. Where repairs to galvanized surfaces are determined necessary after review by the DISTRICT with presence of CONTRACTOR, CONTRACTOR to clean field welds, bolted connections, and abraded areas and repair galvanizing with high-zinc-dust content paint specified in PART 2. Apply additional coats of finish paint as specified in PART 2.

C. Steel Surface Preparation for Coating:
   a. Remove all oil and grease from surface by Solvent Cleaning per SSPC-SP1. Minimum surface preparation is Near White Metal Blast Cleaning per SSPC-SP10 or SSPC-SP12/NACE 2. For SSPC-SP10, blast clean all surfaces using a sharp, angular abrasive for optimum surface profile (2 mils / 50 microns). For SSPC-SP12/NACE 2, all surfaces to be coated shall be cleaned in accordance with WJ-2/SC-2 standards. Pre-existing profile should be approximately 2 mils (50 microns). Remove all weld spatter and round all sharp edges. Prime any bare steel the same day as it is cleaned.
   b. All sharp edges shall be rounded or chamfered, and all burrs, surface defects, and weld splatter shall be ground smooth prior to blast cleaning.
   c. The type and size of abrasive shall be selected to produce a surface profile that meets the system requirements for the particular coating and service conditions. Abrasives for submerged and severe service coating systems shall be clean, hard, sharp cutting crushed slag. Automated blasting systems shall not be used for surfaces that will be in submerged service. Metal shot or grit shall not be used for surfaces that will be in submerged service, even if subsequent abrasive blasting is planned to be one with hard, sharp cutting crushed slag.

d. Abrasive shall not be reused unless an automated blasting system is used for surfaces that will be in non-submerged service. For automated blasting systems, clean oil-free abrasives shall be maintained. The abrasive mix shall include at least 50 percent grit.
e. The CONTRACTOR shall comply with the applicable federal, state, and local air pollution control regulations for blast cleaning.
f. Compressed air for air blast cleaning shall be supplied at adequate pressure from well-maintained compressors equipped with oil and moisture separators that remove at least 95 percent of the contaminants.
g. Surfaces shall be cleaned of all dust and residual particles of the cleaning operation by dry air blast cleaning, vacuuming, or another method prior to painting.
h. Enclosed areas and other areas where dust settling is a problem shall be vacuum cleaned and wiped with a tack cloth.
i. Damaged or defective coating shall be removed by the blast cleaning to meet the clean surface requirements before recoating.
j. If the required abrasive blast cleaning will damage adjacent work, the area to be cleaned is less than 100 square feet, and the coated surface will not be submerged in service, then SSPC SP2 or SSPC SP3 may be used.
k. All edges, angles, weld seams, flanges, nuts and bolts, and other areas inaccessible to the application of coatings shall be sealed prior to topcoating with either polyurethane sealant or polysulfide sealant.
l. Coating type, number of coatings, and thickness to be per Section 2.5.B and shall be applied using Manufacturer's recommendations and requirements.

3.3 HYDRAULIC CYLINDER REFURBISHMENT

A. Hydraulic cylinder shall be tested and stored at DISTRICT approved facility. DISTRICT will inspect hydraulic cylinder at storage facility to determine if refurbishment is necessary. The following hydraulic cylinder tests shall be performed by CONRACTOR at the facility:
   a. Pressure Testing
      1. Pressure testing will be performed to test the oil pressure of the hydraulic cylinder.
      2. Pressure testing will be performed by CONTRACTOR in the presence of DISTRICT or DISTRICT Representative.
   b. Load Testing
      1. Load testing will be performed by adding a load to the hydraulic cylinder and holding for 24 hours to ensure that no drifting occurs.
      2. Load testing will be performed by CONTRACTOR in the presence of DISTRICT or DISTRICT Representative.

B. The CONTRACTOR shall transport hydraulic cylinders to a facility located within a 50-mile radius of the DISTRICT's Tampa, Florida office. Facility will allow the DISTRICT to come on-site to inspect the cylinders. At this time, hydraulic cylinder refurbishment is not included as part of the WORK. The hydraulic cylinder refurbishment if deemed necessary shall include the following:

   a. Inspection and measurement of the inside diameter of the bore of the cylinder to determine the nominal size.

   b. Verification of the type of seals installed by the original equipment manufacturer (the technical data for the seals requires exact clearance dimensions).

c. Refurbishment process shall utilize a single pass machined process to restore inside bore roundness. The hone machine shall leave the proper original equipment Manufacturer's cross hatch pattern in the cylinder bore to allow the cylinder to self-lubricate and minimize wear while setting the clearance to the exact dimensions demanded by the seal manufacturer. Once the dimensions of the worn barrel are determined and the required clearance are verified from technical references, the cylinder shall be honed to achieve exacting clearances.

d. The cylinder refurbishment shop shall document the findings and the finish dimensions for each honed cylinder.

e. The shop shall allow the DISTRICT to come on-site to inspect the honed cylinders at their facility.

3.4 DEFECTIVE CONCRETE SURFACE TREATMENTS

A. Defective Concrete:

1. Any existing concrete which shows existing defects as determined from onsite inspection by CONTRACTOR and DISTRICT per Section 1.4 shall be repaired by the CONTRACTOR per instructions provided in Section 3.4B and 3.4C below. Compensation to the CONTRACTOR for costs incurred to repair defective existing concrete shall be provided from the Replacement Parts Allowance Bid Items No. 11 and 12 as specified in Section 01020. Incidental damage to existing concrete as a result of the WORK shall be repaired by CONTRACTOR at his expense. If rebar is exposed, rebar will be inspected prior to concrete repair/patching.

B. Patching Concrete:

1. Patch all tie holes, honeycombs or other defects with a Portland Cement and sand grout.
2. Defective surfaces to be repaired shall be cut back from trueline a minimum depth of 1/2-inch over the entire area. Feathered edges will not be permitted. Where chipping or cutting tools are not required in order to deepen the area properly, the surface shall be prepared for bonding by the removal of all laitance or soft material, plus not less than 1/32-inch depth of the surface film from all hard portions by means of an efficient sandblast.
3. After cutting and sandblasting, the surface shall be wetted sufficiently in advance of shooting with shotcrete or with cement mortar so that while the repair material is being applied, the surfaces underneath will remain moist but not so wet as to overcome the suction upon which a good bond depends.
4. Holes left by tie-rod cones shall be reamed with suitable toothed reamers so as to leave the surfaces of the holes clean and rough. Holes then shall be repaired in an approved manner with dry-packed cement grout. Holes left by form-tying devices having a rectangular cross-section and other imperfections having a depth greater than their least surface dimension shall not be reamed but shall be repaired in an approved manner with dry-packed cement grout.
5. The grout shall not be richer than one (1) part cement and three (3) parts sand with the amount of mixing water enough to produce a workable mix. For exposed walls, the cement shall contain such a proportion of white Portland cement as is required to make

the color of the patch match the color of the surrounding concrete. The patch shall be finished in such a manner as to match the adjoining surfaces.

6. Surfaces of repairs shall receive the same kind and amount of curing treatment as required for the concrete in the repaired section.

C. Cracks in Hydraulic Structures:

7. Prior to filling any structure with water, cracks shall be "vee'd" to 1/2-inch deep and 1/4" wide with bond breaker tape applied to the bottom of the "vee" and filled with sealant conforming to the requirements below. This repair method shall be done on the water bearing face of members. Prior to backfilling, faces of members in contact with fill which are not covered with a waterproofing membrane shall also have cracks repaired as indicated herein.

1. Joint sealant shall be polyurethane polymer designed for bonding to concrete, which is continuously submerged in water. No material will be acceptable which has an unsatisfactory history as to bond or durability when used in the joints of water retaining structures.
2. Joint sealant material shall meet the following requirements (73 degrees F and 5 percent R.H.):

Requirement	Value	ASTM Standard
Work Life (minutes)	45 - 180	-----
Time to Reach 20 Shore "A" Hardness (at 77 degrees F, 200 gr quantity) - max (hours)	24	-----
Ultimate Hardness	20 - 45 Shore "A"	D 2240
Tensile Strength - min (psi)	175	D 412
Ultimate Elongation - min (percent)	400	D 412
Tear Resistance - min (pounds per inch of thickness)	75	D 624 (Die C)
Color	Light Gray	-----

END OF SECTION

SECTION 01020 MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 SCOPE:

A. This section provides the basis for payment to the CONTRCATOR for WORK performed under each bid item included in the Bid Form. Unless indicated on the Contract Documents, all work indicated on the Contract Drawings and specified in the Bid Documents and Contract shall be included in the Contract Sum indicated on the Bid Form. The descriptions provided below of the limits of WORK to be performed under each bid item are not intended to be complete and all-inclusive of the required WORK. The WORK shall include all miscellaneous and ancillary items necessary to construct a complete and functional Project.

B. No additional payment will be approved for weather-related delays.

C. All bid quantities are to be made for the base level of work. Change orders may include additional quantities of the bid items as necessary.

1.02 BASIS FOR PAYMENTS:

A. Bid Item No. 1 – Mobilization and Demobilization, and Payment Bond

1. Payment shall include full compensation for the required one hundred percent (100%) Performance Bond, one hundred percent (100%) Payment Bond, all required insurance for the project and the Contractor's mobilization and demobilization costs as shown in the Bid Form. Mobilization includes, but it not limited to: preparation and movement of personnel, equipment, supplies and incidentals such as safety and sanitary supplies/facilities, attending preconstruction meetings, attending progress meetings, attending facility inspection meetings, and any permits not otherwise required as part of other bid items. Contractor is to provide copies of bonds to DISTRICT prior to start of WORK.

B. Bid Item No. 2 – Design, Furnish, Installation, Maintenance, and Removal of Stoplog System (Needle Beam and Timber Needle Beams)

1. Payment of the unit bid price (per each structure) for this bid item shall fully compensate the CONTRACTOR for all labor, equipment, and materials required to design, furnish, install, and remove upstream and downstream stoplog system (based on existing stoplog system design). Payment shall include cleaning existing set of stoplogs and replacing seals on existing stop logs at each structure.

2. Payment of the unit bid price shall be made only upon successful installation of the stoplog system components on the upstream and downstream side of each main gate. Demonstration by the CONTRATOR of successful installation and operation shall require that the CONTRACTOR is able to effectively dewater the portion of the structure (including the main gate) located between the upstream and downstream coffer dams.

3. Payment under this bid item shall also be full compensation for all other costs incurred by the CONTRACTOR to perform the WORK specified herein, but for which payment is not specified to be made under other bid items including, but not limited to, insurance and cleanup and restoration.

C. Bid Item No. 3 – Dewatering System Installation and Maintenance

1. Payment of the unit bid price (per each main gate) for this bid item shall fully compensate the CONTRACTOR for all labor, equipment, and materials required to design, install, and remove a dewatering system as necessary to isolate the indicated portion of the structure to a minimum of 2 feet below the invert of the gate (in closed position) designated for refurbishment. Payment is for a dewatering bay for the purposes of gate and appurtenances removal, bay inspection, gate and appurtenances reinstallation and gate testing (to accomplish work noted in Bid Item No.s 4 through 11); for a total of approximately three weeks (21 days) of combined dewatering days. Dewatering in addition to this effort will be paid for as needed under Bid Item No. 11 or 13 depending on repair or replacement needs.

2. Payment of 75 percent of the unit bid price for this item shall be made upon installation of the dewatering system and successful dewatering of the indicated portion of the structure.

3. Payment of the remaining 25 percent of the unit bid price shall be made upon removal of the dewatering system following successful demonstration of the reinstalled gate and gate hoist system.

D. Bid Item No. 4 – Removal/Reinstallation/Storage/Testing of Roller Gate Hoist System Components (Hydraulic-Cylinder Gate Hoist System) and Transport to/from a District-Approved Repair Facility

1. Gate hoist system components shall include, but are not limited to, the hydraulic cylinder actuator, cables, hydraulic hose connections, pulleys, and mounting hardware. Replacement of components if deemed necessary after inspection and hydraulic cylinder testing at facility shall be paid for under Bid Item No. 13 Contingency.

2. Payment of the unit bid price (per each main gate) for this bid item shall fully compensate the CONTRACTOR for all labor, equipment, and materials required to remove all components of the hydraulic cylinder type roller (main) gate hoist system (for the designated main gate) from the structure. Components to be removed, stored at DISTRICT approved facility, and reinstalled shall include all components whose removal is necessary to allow subsequent removal of the main gate by the CONTRACTOR to include but not limited to including all hydraulic cylinder components, lighting, conduits, and other appurtenances that obstruct the gate removal.

3. Payment shall include transport of hydraulic cylinders, hoist components, and appearances to DISTRICT approved facility within fifty (50) miles of DISTRICT Tampa, FL office, coordination with DISTRICT, pressure testing of hydraulic cylinder and load testing of hydraulic cylinder. DISTRICT or their representative is to be contacted and be present during hydraulic cylinder inspection and testing.

4. Payment of 50 percent of the unit bid price shall be made upon removal of lift system components from the structure.

5. Payment of the remaining 50 percent of the unit bid price shall be made upon reinstallation of the gate lift system (including refurbished and replaced components).

6. At this time hydraulic cylinder actuator shall not be refurbished (re-honed). If DISTRICT inspection of cylinder once removed deems refurbishment necessary, it will be machine honed and performed in accordance with these specifications and paid for as part of a Bid Item No. 13 Contingency.

7. Hydraulic cylinder enclosure is to be re-coated at same facility as gates and in accordance with these Specifications and paid for under Bid Item No. 7.

E. Bid Item No. 5 – Removal of Roller Gate and Disassembly and Removal of Gate-Mounted Rollers, Seals, Slide Gates, and Mounting Hardware

1. Payment of the unit bid price (per each main gate) for this bid item shall fully compensate the CONTRACTOR for all labor, equipment (including crane), and materials required to remove main gate and slide gates from structure bays, removal of rollers and seals from main gate; removal of slide gate plates and slide gate lift system components (threaded stem and stem guide system) from main gate; removal of gate rails and bolts and stainless steel rail plates; and removal of gate roller lubrication system components (1/4-inch stainless steel tubing and fittings; if present) from the gate.

F. Bid Item No. 6 – Transport Roller Gate and Slide Gates to/from District-Approved Repair Shop

1. Payment of the unit bid price (per each main gate) for this bid item shall fully compensate the CONTRACTOR for all labor, equipment, and materials required to transport the designated main gate, attached slide gates, gate rails and appurtenances associated with the main gate to and from a DISTRICT-approved shop located within fifty (50) miles of DISTRICT Tampa, FL office. Payment shall include cost of acquiring wide load permit(s) as necessary.

G. Bid Item No. 7 – Cleaning, Surface Preparation, and Recoating of Roller Gate, Slide Gates, Hydraulic Cylinder Housing and Appurtenances in DISTRICT-Approved Facility

1. Payment of the unit bid price (per each main gate) for this bid item shall fully compensate the CONTRACTOR for procurement of services by a DISTRICT-approved shop to clean, perform surface preparation, and recoat (as specified in SECTION 01010 – SUMMARY OF WORK) the designated roller (main) gate, designated slide gates, gate rails, hydraulic cylinder housing, and other associated appurtenances as noted in SECTION 01010 – SUMMARY OF WORK). Payment shall also include of gate bottom and side seal replacement, anode replacement, spray weld and re-chrome of slide gate stems, and gate roller bearing turning and re-sleeving.

H. Bid Item No. 8 – Reassembly of Roller Gate including Slide Gates, Rollers, and Seals

1. Payment of the unit bid price (per each main gate) for this bid item shall fully compensate the CONTRACTOR for all labor, equipment, and materials required to completely reassemble main gate including installation of replacement rollers and seals, and reinstallation of slide gates and slide gate lift components.

I. Bid Item No. 9 – Reinstallation of Main Gate

1. Payment of the unit bid price (per each main gate) for this bid item shall fully compensate the CONTRACTOR for all labor, EQUIPMENT, and materials required to reinstall the main gate following complete refurbishment and reassembly.

J. Bid Item No. 10 -Testing and Startup of Roller Gate and Gate Hoist System

1. Payment of the unit bid price (per each main gate) for this bid item shall fully compensate the CONTRACTOR for all labor, equipment, and materials required to startup and test the main gate following reinstallation and to demonstrate (to the DISTRICT) satisfactory operation of the gate and gate hoist system.

K. Bid Item No. 11 – Replacement Parts Coordination and Installation Allowance

1. This allowance shall be used to compensate the CONTRACTOR for costs incurred to coordinate and install replacement parts for all roller gates, slide gates, concrete repair, gate hoist systems deemed necessary for repair or replacement including, but not limited to gate rollers, gate lift cables, pulleys/sheaves, and mounting hardware. Coordination with suppliers shall include determining all relevant characteristics of the parts to be replaced.

2. Compensation to the CONTRACTOR for the actual costs charged by suppliers to furnish replacement parts shall be payable under Bid Item 12 – Replacement Parts Allowance.

L. Bid Item No. 12 – Replacement Parts Allowance

1. This allowance shall be used to compensate the CONTRACTOR for costs incurred to furnish replacement parts, including but not limited to, gate rollers, lift cables, pulleys/sheaves, and connecting/mounting hardware. The amount to be payable to the CONTRACTOR shall be the amount paid by the CONTRACTOR to suppliers of the replacement items. The CONTRACTOR shall furnish copies of invoices from suppliers to justify the amounts invoiced to the DISTRICT under this bid item.

2. The CONTRACTOR shall not be compensated under this bid item for costs incurred by the CONTRACTOR to provide all necessary coordination with suppliers of replacement parts or labor and costs to install replacement parts (see Bid Item No. 11 – Replacement Parts Coordination and Installation Allowance).

M. Bid Item No. 13 – Contingency

1. Contingency shall be used to compensate the CONTRACTOR for changes to the WORK that require additional compensation to the CONTRACTOR. The basis for determination of the amount of additional compensation due the CONTRACTOR for changes in the WORK shall be specified in a Change Order issued in accordance with the General Terms and Conditions of the Contract.

1.03 PAYMENTS:

A. Payments shall be in accordance with the provisions of the General Terms and Conditions of the Contract.

END OF SECTION

SECTION 01300 SUBMITTALS

PART 1 - GENERAL

1.01 SCOPE:

A. This SECTION includes definitions, descriptions, transmittal, and review of "Compliance" and "Miscellaneous" Submittals.

B. Related Work Specified Elsewhere:

1. SECTION 01310 – Cost Loaded Construction Schedule

1.02 GENERAL INFORMATION:

A. Definitions:

1. Compliance Submittals include Shop Drawings, product data, and samples which are prepared by the CONTRACTOR, Subcontractor, MANUFACTURER, or Supplier and submitted by the CONTRACTOR to the DISTRICT as a basis for approval of the use of Equipment and Materials proposed for incorporation in the WORK or needed to describe installation, operation, maintenance, or technical properties.

a. Shop Drawings include custom-prepared data of all types including drawings, diagrams, performance curves, material schedules, templates, instructions, and similar information not in standard printed form applicable to other projects.

b. Product data includes standard printed information on materials, products and systems not custom-prepared for this Project, other than the designation of selections from available choices.

c. Samples include both fabricated and unfabricated physical examples of materials, products, and WORK; both as complete units and as smaller portions of units of WORK; either for limited visual inspection or (where indicated) for more detailed testing and analysis. Mock-ups are a special form of samples which are too large to be handled in the specified manner for transmittal of sample Submittals.

2. Miscellaneous Submittals are those technical reports, administrative Submittals, certificates, and guarantees not defined as Shop Drawings, product data, or samples.

a. Technical reports include laboratory reports, tests, technical procedures, technical records, CONTRACTOR's design analysis and CONTRACTOR's survey field notes for construction staking, before cross-sections and after cross-sections.

b. Administrative Submittals are those nontechnical Submittals required by the Contract Documents or deemed necessary for administrative records. These Submittals include maintenance agreements, workmanship bonds, Project photographs, physical work records, statements of applicability, copies of industry standards, as-constructed data, security/protection/safety data, and similar type Submittals.

c. Certificates and guarantees are those Submittals on Equipment and Materials where a written certificate or guarantee from the MANUFACTURER or Supplier is called for in the Specifications.

d. Reports as required by Contract describing CONTRACTOR's means and methods for items such as dewatering, earth and water retaining, erosion/TURBIDITY control, and safety plans.

3. Refer to ARTICLE 1.03 and 1.04 of this Part for detailed lists of documents and specific requirements.

B. Quality Requirements:

1. Submittals such as Shop Drawings and product data shall be of the quality for legibility and reproduction purposes. Every line, character, and letter shall be clearly legible. Drawings such as reproducibles shall be useable for further reproduction to yield legible hard copy.

2. Documents submitted to the DISTRICT that do not conform to these requirements shall be subject to rejection by the DISTRICT, and upon request by DISTRICT, CONTRACTOR shall resubmit conforming documents. If conforming Submittals cannot be obtained, such documents shall be retraced, redrawn, or photographically restored as may be necessary to meet such requirements. CONTRACTOR's (or his Subcontractor's) failure to initially satisfy the legibility quality requirements will not relieve CONTRACTOR (or his Subcontractors) from meeting the required schedule for Submittal of Shop Drawings and product data.

C. Language and Dimensions:

1. All words and dimensional units shall be in the English language.

2. Metric dimensional unit equivalents may be stated in addition to the English units.

D. Submittal Completeness:

1. Submittals shall be complete with respect to dimensions, design criteria, materials of construction, and other information specified to enable the DISTRICT to review the information effectively.

2. Where standard drawings are furnished which cover a number of variations of the general class of equipment, each such drawing shall be individually annotated to describe exactly which parts of the drawing apply to the equipment being furnished. Use hatch marks to indicate variations that do not apply to the Submittal. The use of "highlighting markers" is not an acceptable means of annotating Submittals. Such annotation shall also include proper identification of the Submittal permanently attached to the drawing.

3. Reproduction or copies of Drawings or portions thereof will not be accepted as complete fabrication or erection drawings. The CONTRACTOR may use a reproduction of the DISTRICT-prepared Contract Drawings for erection drawings such as to indicate information on erection or to identify detail drawing references. Where the Drawings are revised to show this additional CONTRACTOR information, the DISTRICT's title block shall be replaced with a CONTRACTOR's title block and the DISTRICT's professional seal shall be removed from the Drawing. The CONTRACTOR shall revise these erection drawings for subsequent DISTRICT revisions to the Contract Drawings.

1.03 COMPLIANCE SUBMITTALS:

A. Items shall include, but not be limited to, the following:

1. MANUFACTURER's specifications

2. Catalogs, or parts thereof, of manufactured equipment

3. Shop fabrication and erection drawings

4. General outline drawings of equipment showing overall dimensions, location of major components, weights, and location of required building openings and floor plates

5. Detailed equipment installation drawings, showing foundation details, anchor bolt sizes and locations, baseplate sizes, location of DISTRICT's connections, and all clearances required for erection, operation, and disassembly for maintenance.

6. Schematic diagrams for electrical items, showing external connections, terminal block numbers, internal wiring diagrams, and one-line diagrams

7. Bills of material and spare parts list

8. Instruction books and operating manuals

9. Material lists or schedules
10. Performance tests on equipment by MANUFACTURERs
11. Concrete mix design information
12. Samples and color charts
13. All drawings, calculations, catalogs or parts thereof, MANUFACTURER's specifications and data, samples, instructions, and other information specified or necessary:
    a. For DISTRICT to determine that the Equipment and Materials conform with the design concept and comply with the intent of the Contract Documents.
    b. For the proper erection, installation, operation and maintenance of the Equipment and Materials which the DISTRICT will review for general content but not for substance.
    c. For the DISTRICT to determine what supports, anchorages, structural details, connections, and services are required for the Equipment and Materials, and the effects on contiguous or related structures and Equipment and Materials.

B. Compliance Submittal Action Stamps:

1. The DISTRICT's review action stamp or designation, appropriately completed, will appear on all Compliance Submittals of CONTRACTOR when returned by the DISTRICT. Review status designations listed on DISTRICT's action stamp are defined as follows:
    a. "ACCEPTED AS SUBMITTED": Signifies Equipment or Material represented by the Submittal conforms with the design concept and complies with the intent of the Contract Documents and is acceptable for incorporation in the WORK. CONTRACTOR is to proceed with fabrication or procurement of the items and with related WORK.
    b. "ACCEPTED AS NOTED": Signifies Equipment and Material represented by the Submittal conforms with the design concept and complies with the intent of the Contract Documents and is acceptable for incorporation in the WORK subject to the condition that as constructed it shall be in accordance with all notations and/or corrections indicated. CONTRACTOR is to proceed with fabrication or procurement of the items and with related WORK in accordance with DISTRICT's notations.
    c. "RETURNED FOR REVISION": Means that deviations from the requirements of the Contract Documents exist in the Submittal. CONTRACTOR is to resubmit revised information responsive to DISTRICT's annotations on the returned Submittal or written in the letter of transmittal. Fabrication or procurement of items represented by the Submittal and related WORK is not to proceed until the Submittal is approved.
    d. "NOT ACCEPTABLE (SUBMIT ANEW)": Signifies Equipment and Material represented by the Submittal does not conform with the design concept or comply with the intent of the Contract Documents and is disapproved for use in the WORK. CONTRACTOR is to resubmit Compliance Submittals responsive to the Contract Documents.
    e. "PRELIMINARY SUBMITTAL": Signifies Submittals of such preliminary nature that a determination of conformance with the design concept or compliance with the intent of the Contract Documents must be deferred until additional information is furnished. CONTRACTOR is to submit such additional information to permit layout and related activities to proceed.
    f. "FOR REFERENCE ONLY": Signifies Submittals which are for supplementary information only; pamphlets, general information sheets, catalog cuts, standard sheets, bulletins and similar data, all of which are useful to the DISTRICT in design, operation, or maintenance, but which by their nature do not constitute a basis for determining that items represented thereby conform with the design concept or comply with the intent of the Contract Documents. The DISTRICT reviews such Submittals for general content but not for substance.

g. "DISTRIBUTION COPY (PREVIOUSLY ACCEPTED)": Signifies Submittals which have been previously accepted and are being distributed to CONTRACTOR, DISTRICT, Resident Project Representative, and others for coordination and construction purposes.

C. Schedule and Log of Compliance Submittals:

1. Prepare for the DISTRICT, a schedule and log for submission of all Compliance Submittals specified or necessary for DISTRICT's review of the use of Equipment and Materials proposed for incorporation in the WORK or needed for proper installation, operation or maintenance. Submit the schedule and log with the procurement schedule and WORK progress schedule. Schedule submission of all Compliance Submittals to permit review, fabrication, and delivery in time so as to not cause a delay in the WORK of CONTRACTOR or his Subcontractors or any other contractors as described herein.

2. In establishing schedule for Compliance Submittals, allow fifteen (15) working days in DISTRICT's office for reviewing original Submittals and ten (10) working days for reviewing resubmittals. Note that the DISTRICT will not allow any WORK to begin until all submittals affecting such WORK have been approved.

3. The schedule shall indicate the anticipated dates of original submission, and shall be prepared in accordance with SECTION 01310.

4. Schedule all Compliance Submittals required prior to fabrication or manufacture for submission within **90** days of the Notice to Proceed. Schedule Compliance Submittals pertaining to storage, installation and operation at the Site for DISTRICT's acceptance prior to delivery of the Equipment and Materials.

5. Resubmit Compliance Submittals the number of times required for DISTRICT's "ACCEPTED AS SUBMITTED." However, any need for resubmittals in excess of the number set forth in the accepted schedule, or any other delay in obtaining acceptance of Submittals, will not be grounds for extension of the Contract Time, provided the DISTRICT completes its reviews within the times stated above.

D. Transmittal of Compliance Submittals:

1. All Compliance Submittals of Equipment and Materials furnished by Subcontractors, MANUFACTURERs, and Suppliers shall be submitted to the DISTRICT by CONTRACTOR in electronic and hard copy format as indicated below.

2. After checking and verifying all field measurements, transmit all Compliance Submittals to the DISTRICT for acceptance as follows:

a. Identify each Compliance Submittal by Submittal Number, Project name and number, Contract title and number, structure number (S-160 or S-162), gate number, and the Specification SECTION and article number marked thereon or in the letter of transmittal. Unidentifiable Submittals will be returned for proper identification.

b. Check and stamp Compliance Submittals of Subcontractors, Suppliers, and MANUFACTURERS with CONTRACTOR's approval prior to transmitting them to the DISTRICT. CONTRACTOR's stamp of approval shall constitute a representation to the DISTRICT that CONTRACTOR has either determined and verified all quantities, dimensions, field construction criteria, materials, catalog numbers, and similar data, or he assumes full responsibility for doing so, and that he has coordinated each Compliance Submittal with the requirements of the WORK and the Contract Documents.

c. At the time of each submission, call to the attention of DISTRICT in the letter of transmittal any deviations from the requirements of the Contract Documents.

d. Provide all Submittals in electronic format, compatible with Adobe Professional, Version 8 (or higher), and submitted as a single file, using PDF bookmarks and/or chapters to identify divisions within the Submittal package.

e. In addition to the electronic copy, the CONTRACTOR shall provide one (1) hard copy for each Submittal. Both the electronic and the hard copy Submittals shall include the required transmittal sheet and written confirmation by the CONTRACTOR that the electronic Submittal is complete and identical to the submitted hard copy. Note that the Submittal receipt date will be the date that the hard copy is received by the DISTRICT.

f. Submittals with file sizes greater than ten (10) megabyte (MB) shall be transferred to an existing DISTRICT File Transfer Protocol (FTP) site, coupled with an electronic notification to the DISTRICT of the transfer. One (1) hard copy of the Submittal shall be provided by the CONTRACTOR. The Submittal receipt date will be the date that the hard copy is received by the DISTRICT. The FTP address, and associated password information, will be provided by the DISTRICT Project Manager.

g. Make all modifications noted or indicated by DISTRICT and return revised prints, copies, or samples until accepted. Revised Submittals must be complete and conformed, including all pages/sheets with the required revisions and any additional or replacement pages/sheets. Direct specific attention in writing, or on revised Submittals, to changes other than the modifications called for by the DISTRICT on previous Submittals. Subsequent review cycles for returned or revised Submittals shall replicate the process described in items d. through f. above.

h. If the DISTRICT's review action is "ACCEPTED AS NOTED", the Submittal will be stamped as such, and electronically transmitted back to the CONTRACTOR. Upon receipt of this notification from the DISTRICT, The CONTRACTOR shall resubmit one (1) conformed hard copy with an electronic PDF file format to the DISTRICT for final distribution. If the Submittal is required to be signed and sealed by a Professional Engineer registered in the State of Florida, it shall be signed and sealed at this time. Submittal will not be considered final until all copies have been received by the DISTRICT. Submittal will be stamped "DISTRIBUTION COPY (PREVIOUSLY ACCEPTED)" by the DISTRICT. Prints of accepted Submittals transmitted for final distribution will not be further reviewed and are not to be revised. If errors are discovered during manufacture or fabrication, correct the Submittal and resubmit for review.

i. Following completion of the WORK and prior to final payment, furnish those drawings necessary to indicate "AS CONSTRUCTED" conditions, including field modifications, in the number of copies specified. Furnish additional copies for insertion in equipment instruction books as required. All such copies shall be clearly marked "AS BUILT DRAWING."

j. WORK requiring a Compliance Submittal shall not be commenced or shipped until the Submittal has been stamped "ACCEPTED AS SUBMITTED" or "ACCEPTED AS NOTED" by the DISTRICT.

k. Keep a copy or sample of each Compliance Submittal in good order at the Site.

3. Copies of the equipment CONTRACTOR's erection drawings and other Compliance Submittals required for the installation of equipment furnished by others under separate Contract for installation under this Contract will be transmitted to CONTRACTOR by the DISTRICT in the final distribution of such Submittals.

4. Information to MANUFACTURER's District Office: MANUFACTURERS and Suppliers of Equipment and Materials shall furnish copies of all agreements, drawings, specifications, operating instructions, correspondence, and other matters associated with this Contract to the MANUFACTURER's district office servicing the DISTRICT. Insofar as practicable, all business matters relative to Equipment and Materials included in this Contract shall be conducted through such local district offices.

E. DISTRICT's Review:

1. The DISTRICT will review and return Compliance Submittals to CONTRACTOR with appropriate notations. Instruction books and similar Submittals will be reviewed by the DISTRICT for general content but not for substance.

2. The DISTRICT's acceptance of Compliance Submittals will not relieve CONTRACTOR from his responsibility as stated in the Section 00700 – General Terms and Conditions.

F. Instruction Books / Operation & Maintenance Manuals:

1. Equipment instruction books and manuals shall be prepared by the MANUFACTURER and shall include the following:

a. Index and tabs

b. Instructions for installation, start-up, operation, inspection, maintenance, parts lists and recommended spare parts, and data sheets showing model numbers

c. Applicable drawings

d. Name of contact person, phone number, and address of the nearest authorized service facility

e. Attached to the above shall be a notice of the exact warranty effective dates, beginning and ending.

f. All additional data specified

2. Information listed above shall be submitted electronically in a PDF file format and also be bound into hard-back binders of three-ring type. Sheet size shall be 8-1/2 inches x 11 inches. Binder color shall be yellow for Electrical and Electronics and brown for Miscellaneous Equipment. Capacity shall be a minimum of 1-1/2 inches, but sufficient to contain and utilize sheets with ease.

a. Instruction Books/Operation & Maintenance Manuals shall contain the following:

i. Equipment name

ii. MANUFACTURER’s name

iii. Project name

iv. Contract number

v. Reference to applicable Drawing No. & Technical Specifications Section

vi. Structure number and gate number.

b. Format: The overall manual should be constructed around certain types of structures or equipment in the Project, and not merely assembled by technical specification section, so that all pertinent data needed by personnel to operate or maintain the equipment or structure is in one (1) manual (as far as is practical). The CONTRACTOR shall coordinate with the DISTRICT as to how the manuals are to be assembled.

G. Samples:

1. Office samples shall be of sufficient size and quantity to clearly illustrate the following:

a. Functional characteristics of the product, with integrally related parts and attachment devices

b. Full range of color, texture, and pattern

1.04 MISCELLANEOUS SUBMITTALS:

A. Miscellaneous Submittals are comprised of technical reports, administrative Submittals, and guarantees which relate to the WORK, but do not require DISTRICT’s approval prior to proceeding with the WORK. Miscellaneous Submittals may include but are not limited to (at DISTRICT's discretion):

1. Welder qualification tests

2. Welding procedure qualification tests

3. X-ray and radiographic reports

4. Field test reports
5. Concrete cylinder test reports
6. Certification on Materials:
    a. Steel mill tests
    b. Paint lab tests
    c. Cement tests
7. Soil test reports
8. Temperature records
9. Shipping or packing lists
10. Job progress schedules
11. Equipment and Material delivery schedules
12. Progress photographs
13. Warranties and guarantees
14. Fire protection and hydraulic calculations
15. Surveying field notes, preliminary and final Surveyor's Reports
16. Pump tests
17. Traffic control plan
18. Technical Reports
19. Written Certificates and Guarantees

B. Transmittal of Miscellaneous Submittals:

1. All Miscellaneous Submittals furnished by Subcontractors, MANUFACTURERS, and Suppliers shall be submitted to DISTRICT by CONTRACTOR in the form of one (1) hard copy with an electronic PDF file format, unless otherwise specified.
    a. Identify each miscellaneous Submittal by Project name and number, structure number (S-160 or S-162), gate number, Contract title and number, and the specification section and article number marked thereon or in the letter of transmittal. Unidentifiable Submittals will be returned for proper identification.
    b. Check and stamp Miscellaneous Submittals of Subcontractors, Suppliers, and MANUFACTURERS with CONTRACTOR's approval prior to transmitting them to the DISTRICT. CONTRACTOR's stamp of approval shall constitute a representation to the DISTRICT that CONTRACTOR has either determined and verified all information, or he assumes full responsibility for doing so, and that he has coordinated Miscellaneous Submittal with the requirements of the WORK and the Contract Documents.
    c. At the time of each submission, call to the attention of the DISTRICT in the letter of transmittal any deviations from the requirements of the Contract Documents.
    d. Make all modifications noted or indicated by DISTRICT and return revised prints, or copies until accepted. Direct specific attention in writing, or on revised Submittals, to changes other than the modifications called for by the DISTRICT on previous Submittals. After Submittals have been accepted, submit copies thereof for final distribution.
2. Test Reports:

a. Responsibilities of CONTRACTOR and DISTRICT regarding tests and inspections of Equipment and Materials and completed WORK are set forth elsewhere in these Contract Documents.

b. The party specified responsible for testing or inspection shall in each case, unless otherwise specified, arrange for the testing laboratory or reporting agency to distribute test reports in the form of one (1) hard copy with an electronic PDF file format to the following parties:

i. DISTRICT

ii. Resident Project Representative

iii. CONTRACTOR

iv. MANUFACTURER or supplier

C. DISTRICT'S Review:

1. DISTRICT will review Miscellaneous Submittals for indications of WORK or material deficiencies within fifteen (15) working days in DISTRICT's office for original Submittals and ten (10) working days for reviewing resubmittals.

2. DISTRICT will respond to CONTRACTOR on those Miscellaneous Submittals which indicate WORK or material deficiency.

PART 2 - PRODUCTS (Not applicable)

PART 3 - EXECUTION

3.01 SUBMITTAL LOG:

A. CONTRACTOR shall maintain an accurate Submittal Log and a Distribution List for the duration of the WORK, showing current status of all Submittals and Distributees at all times in a form acceptable to the DISTRICT. CONTRACTOR shall make the Submittal Log available to the DISTRICT for its review on request and shall bring a copy of the Submittal Log to all Progress Meetings.

END OF SECTION

SECTION 01310 COST LOADED CONSTRUCTION SCHEDULES

PART 1 - GENERAL

1.01 SCOPE:

A. COST LOADED CONSTRUCTION SCHEDULE (Construction Schedule): The WORK under this Contract shall be planned, scheduled, executed, and reported by the CONTRACTOR. The CONTRACTOR shall adhere to established technical standards for CPM (Critical Path Method) scheduling using the computerized PDM (Precedence Diagram Method), unless otherwise directed by the DISTRICT. The CONTRACTOR is required to provide all Construction Schedules in electronic format.

B. The CONTRACTOR shall submit a detailed Cost Loaded Construction Baseline Schedule (Baseline Schedule) showing all WORK required under the Contract and scheduled within the time constraints set forth under the Contract. The DISTRICT will review and comment on the Baseline Schedule submittal as per 2.03. Upon acceptance, the CONTRACTOR shall not change the accepted Baseline Schedule without prior concurrence of the DISTRICT. The Baseline Schedule shall be updated to show actual progress. Any proposed changes in the schedule activities, original duration, logic, activity constraints, other than progress, shall be incorporated into a request for a revision to the accepted Baseline Schedule and submitted for review and acceptance.

C. The CONTRACTOR shall be responsible for coordinating its own schedules (including subcontractors) as well as the construction activities of others as required to fully execute the WORK.

1.02 SOFTWARE/INTERFACE REQUIREMENTS:

A. The CONTRACTOR shall use the latest version of Oracle/Primavera P6 Professional Project Management (P6) for creating and updating all Construction Schedules and reports. No other scheduling software programs will be accepted.

B. To ensure compatibility for DISTRICT asset accounting, the DISTRICT will provide Activity Codes (for all Asset and Non-asset Activities) and assist the CONTRACTOR in developing a Work Breakdown Structure (WBS) to be entered into the scheduling software as referenced in Section 2.02. The Construction Schedule (i.e. the accepted Baseline Schedule and all Schedule Updates) shall be used as the basis for payment.

1.03 QUALITY ASSURANCE:

A. The CONTRACTOR shall perform the WORK covered by this SECTION with personnel having substantial experience in the use of the latest version of P6 scheduling software on construction projects which required the development and maintenance of the schedule throughout the Project duration.

B. It is the responsibility of the CONTRACTOR to work with each subcontractor and supplier to obtain information pertinent to the planning and updating of their respective activities in the schedules.

1.04 DEALING WITH SUBSTITUTES:

A. All versions of the CONTRACTOR's Construction Schedule shall be based solely on the WORK as awarded, and shall exclude any substitute proposals, even if the CONTRACTOR pursues a substitution in accordance with the provisions of the Contract.

B. The DISTRICT's final determination on any proposed substitutions may not be made until after the CONTRACTOR's Construction Schedule is prepared and accepted. Accepted proposed substitutions shall be identified in the schedule as Change Orders.

1.05 USE OF FLOAT:

A. Total Float is the amount of time a scheduled activity can be delayed without delaying the completion of the WORK beyond the contractually required end date. Contract Float is the number of days between

the CONTRACTOR's anticipated date for early completion of the WORK, or specified part, and the corresponding Contract Time. Total Float and Contract Float belong to the Project and are not for the exclusive benefit of any party. Contract Float and Total Float shall be available to the DISTRICT, consultants, or the CONTRACTOR to accommodate changes in the WORK or to mitigate the effect of events which may delay performance or completion. The DISTRICT will monitor and optimize the use of float for the benefit of the Project.

B. The CONTRACTOR shall adjust or remove any float suppression techniques (e.g., preferential sequencing, out-of-sequence activity relationships, crew movements, equipment use, form reuse, extended durations, imposed dates, etc.) as a prerequisite to a request for an increase in Contract Price and/or Contract Time. Use of constraints should be minimized and require approval by the DISTRICT.

1.06 EARLY COMPLETION:

A. An early completion schedule is one which anticipates completion of all or a specified part of the WORK ahead of the corresponding Contract Time. Since Contract and Total Floats belong to the Project, the CONTRACTOR shall not be entitled to any extension in Contract Time or recovery for any delay incurred because of extensions in an early completion date until all Contract Float is used or consumed and performance or completion of the WORK extends beyond the Contract Time. The accepted Baseline Schedule must have a single longest path with zero Total Float. Multiple longest paths are not acceptable.

1.07 NON-COMPLIANCE:

A. The DISTRICT may refuse to recommend/authorize a progress payment in the event of the CONTRACTOR's failure, refusal or neglect to provide the required schedule information, since this will preclude the proper evaluation of the CONTRACTOR's progress. Remedies for the CONTRACTOR's failure, neglect or refusal to comply with the requirements of this SECTION are in addition, and not limited to, those provided under other sections of the Contract.

PART 2 - PRODUCTS

2.01 GENERAL CRITERIA:

A. All Construction Schedules shall be prepared by the CONTRACTOR and reflect the CONTRACTOR's plans, means and methods, techniques and sequences for performing of the WORK.

B. The Construction Schedules shall break down the WORK into distinct activities with interdependencies to the extent required to clearly depict the planned approach for completion of the WORK and to effectively manage the execution of the WORK.

1. The Construction Schedules shall divide the WORK into manageable and logical segments and specify the progression from the Notice to Proceed (NTP) to Substantial Completion (SC) to Final Completion (FC) within Contract Time.
2. The Construction Schedule is to include, at minimum, appropriate time allowances for preparation of submittals, and for review of submittals by the DISTRICT and the ENGINEER. The schedule shall include adequate allowances for preparation of revisions to submittals and additional review by the DISTRICT and ENGINEER.
3. The Construction Schedule shall also include appropriate time allowances for notifications to the DISTRICT in advance of activities that would affect DISTRICT operations.
4. The Construction Contract shall include appropriate time allowances for procurement, coordination with others, construction, start-up/check-out, operational and performance testing, and Contract Close-Out.
5. Site-related activities shall not reflect a combination of work located in separate structures, work corresponding to different divisions of the specifications, work performed by first and second tier subcontractors or rough-in and finish work of the same trade.
6. The NTP activity shall be the first activity in the schedule and shall be a Start Milestone, with an assigned 7-day, no holiday calendar. The SC and FC activities shall be Finish Milestones, with

assigned “Finish on or Before” constraints, with the Contract SC and FC dates assigned to the constraints, with a 7-day, no holiday calendar.

7. Primavera Settings:
    a. Constraints – Mandatory Starts or Finishes, Start on or Finish on and Late as Possible constraints cannot be used in the Construction Schedules.
    b. Calculation Settings – Default settings must be used, except that Critical activities must be defined as Longest Path activities.
    c. Activity Types – Resource Dependent & WBS Summary activity types cannot be used except as directed by the DISTRICT. Most activity types will be set to Task Dependent.
    d. Percent (%) Complete Type must be set to Duration.
    e. Duration Type must be set to Fixed Duration & Units.
    f. There must not be any Curve applied to an activity if the Status % Complete method is going to be used to calculate the actual cost.
8. The CONTRACTOR’s Construction Schedule shall include preparation, review and acceptance of Shop Drawings, material fabrication and material deliveries. The first submittal review and acceptance activity durations shall be fifteen (15) working days. Resubmittal review and acceptance cycles shall have activity durations of ten (10) working days. The CONTRACTOR shall include only the first submittal review and acceptance cycle for each submittal in the Construction schedule. If more than one cycle for a submittal occurs, the CONTRACTOR shall add that cycle to the schedule at the time it occurs. Additional submittal, review and acceptance cycles will require a revision to the Baseline Schedule.

C. The CONTRACTOR shall schedule any requirements (such as submittal reviews) of the DISTRICT, the DESIGN CONSULTANT and others (performing WORK for the DISTRICT) indicated in, or required by, the Contract Documents. The Construction Schedule shall incorporate appropriate activities and WORK sequences based upon the Contract Documents.

2.02 RESOURCE AND COST LOADING:

A. Each activity in the Contract Schedule shall be assigned a dollar value in accordance with the physical value of that work in relationship to the Activity Codes/WBS. The total budget value of all activities shall equal the Contract Price. The CONTRACTOR shall also indicate the estimated duration for each construction activity.

B. The WBS for the logical construction sequencing, at a minimum shall consist of the following:
    1. General (e.g., NTP, SC, FC, General Conditions, Bonds & Insurance, Punchlist)
    2. Submittal Preparation
    3. Submittal Review and Acceptance – If there are engineering costs associated with a submittal, those costs must be approved by the DISTRICT before they can be cost loaded in the Construction Schedule. Once approved, a separate activity named “Submittal Accepted” with zero (0) days duration can be added with the cost loading applied. No payment will be made for submittals until the review and acceptance process has been completed for that submittal.
    4. Fabrication & Delivery - If there are costs associated with the Fabrication and Delivery, then a separate cost loaded Delivery Activity must be added with one (1) day duration, and assigned to its appropriate Activity Code/WBS. The DISTRICT will only pay for materials once delivered and stored in a manner that complies with all the Contract Documents.
    5. The WBS for the remaining construction related work shall be broken down in sufficient detail for conveying the sequence at which the CONTRACTOR intends to construct the Project.

C. Schedules where activities are not assigned both an Activity Code and WBS will not be accepted.

D. Cost Resource Loading:
    1. A single unique resource for the cost loading of all activities shall be created in the resource dictionary.

2. The resource type for costs shall be “Nonlabor”.

3. Cost loading of activities shall be lump sum loading of the Budgeted Cost field or Budgeted Units.

4. Activity Costs shall be updated using the Actual Nonlabor Cost field or, if “Calculating Costs from Units”, change the Duration % Complete or Remaining Duration for each activity. The Duration % Complete must match the Cost % Complete or a specific reason must be given in the narrative for this discrepancy and the DISTRICT will determine if the discrepancy is acceptable.

5. All costs must be displayed to two (2) decimal places.

6. The Costs for Mobilization and Demobilization activities must be equal.

E. Financial Periods and Stored Period Performance:

1. The Financial Periods must be set for the duration of the Project and start on the first day of the month and finish on the last day of the month.

2. “Stored Period Performance” must be used on a monthly basis in order for the “Actual This Period Nonlabor Cost” to be displayed correctly in the reports.

F. Stored Material - For those Construction Schedule activities of WORK that will use Stored Materials, the material or equipment delivery activities related to the WORK will be cost loaded with enough money to cover the stored material. The cost loading of activities related to the work-in-place will be reduced by the amount of the stored material costs loaded into the delivery activities. The CONTRACTOR must provide a list of materials and/or equipment that will be paid for under Stored Materials prior to acceptance of the Baseline Schedule so that the DISTRICT can check for proper cost loading.

G. If the WORK includes items covered by allowances, the CONTRACTOR shall ensure that WORK is completed within the limits of the Contract Time. The Construction Schedule shall incorporate the CONTRACTOR’s best estimate of the activities and logic associated with the allowances.

2.03 COST LOADED CONSTRUCTION SCHEDULE SUBMITTAL:

A. The Construction Schedule submittal, which refers to both the Baseline Schedule and all Schedule Updates, are to consist of the following items:

1. An electronic file containing PDF formats of all required reports and graphics, including a written narrative.

2. An electronic backup of the Construction Schedule in Primavera P6 XER format.

3. For Schedule Updates, a copy of the payment application is required. The Period Ending date in the DISTRICT Application for Payment must match the Data Date of the corresponding Schedule Update.

B. The Schedule Narrative Report for the Construction Schedule shall consist of a written description of how the WORK will be accomplished in accordance with the planned Construction Schedule. The Schedule Narrative accompanying each Schedule Update shall, at a minimum, compare current progress and cost performance to the accepted baseline schedule for all milestones and activities, including longest path activities. If there are potential or actual delays, the narrative shall state the cause of the delay and impact to the Construction Schedule and define steps that have been taken or intend to be taken to mitigate delay impacts. The CONTRACTOR shall list any proposed changes in network activities and logic that will need to be incorporated into a revision to the Baseline Schedule. The narrative shall provide sufficient detail to allow the DISTRICT to verify the progress of the WORK, compare actual versus planned activities, and identify assumptions made in scheduling work, including Change Order work. The CONTRACTOR shall direct specific attention, in writing, to adjustments or corrections made, either in response to the DISTRICT’s comments on the previous submittal or otherwise. A Schedule Narrative Report must be provided for all Baseline Schedules and Schedule Updates even if there are no detailed comments for each sub-heading.

1. Schedule Narrative Report

a. The Schedule Narrative Report shall show the following sub-headings with detailed comments:
    i. Progress, issues, delays, and claims
    ii. Schedule changes, including out-of-sequence work
    iii. Milestones
    iv. Critical submittals and Procurement items
    v. Response to DISTRICT Review comments from previous submittal on an item by item basis.
b. It shall be an electronic color PDF – 8 ½ x 11 portrait format file.

C. Required Schedule Reports and Graphics - Bar Chart reports/P6 (plf) layouts will be provided by the DISTRICT and imported for use by the CONTRACTOR.

1. Schedule/Leveling Report (Schedlog)
    a. The report shall indicate software settings and calculations generated by Primavera software.
    b. Shall be an electronic color PDF - 8 ½ x 11 portrait format file.
2. WBS with Cash Flow Diagram (Grouped by WBS)
    a. Bar Chart shall indicate all activities grouped by WBS and sorted by Early Start, Early Finish and Total Float.
    b. Cash Flow Diagram shall be shown at the end of the Bar Chart, which shows budget and actual monthly bars, and cumulative curves.
    c. Shall be an electronic color PDF - 11 x 17 landscape format file.
3. Longest Path Bar Chart (No Grouping)
    a. Bar Chart shall indicate all longest path activities without grouping and sorted by Early Start, Early Finish and Total Float.
    b. Bar Chart shall be an electronic color PDF - 11 x 17 landscape format file.
4. Pay App - Expanded (Grouped by Activity Codes)
    a. Bar Chart shall indicate all activities grouped by Activity Codes and sorted by Activity ID.
    b. Bar Chart shall be an electronic color PDF - 11 x 17 landscape format file.
5. Pay App - Rollup (Grouped by Activity Codes)
    a. Bar Chart shall indicate all activities grouped by Activity Codes rolled up per each major Activity Code. The application for payment line items must match this layout.
    b. Bar Chart shall be an electronic color PDF - 11 x 17 landscape format file.
6. Earned Value Report
    a. The report shall show Earned Value information comparison between the accepted Baseline and the Current Schedule Update.
    b. The report shall be an electronic color PDF - 11 x 17 landscape format file.

D. Draft Schedule Reports – The following reports are to be provided prior to the formal submission of the Schedule Update and application for payment for the purpose of agreeing upon the Duration % Complete and Cost % Complete of each activity.

1. WBS with Cash Flow Diagram
2. Pay App - Expanded
3. Longest Path

E. Prior to each Schedule Update submittal, the DISTRICT and the CONTRACTOR will agree upon the physical progress of the WORK (Duration % Complete of each activity), and the value (Cost % Complete) of the scheduled work in place. The Duration % Complete must match the Cost % Complete, or a specific reason must be given in the Schedule Narrative Report.

F. All documents shall show the Project ID and Name. The DISTRICT's review shall not extend to the CONTRACTOR's means, methods, or techniques, the correctness of which shall remain the sole responsibility of the CONTRACTOR.

G. All schedules shall be in accordance with the Contract Time requirements of the Contract. Neither the DISTRICT's review of the Construction Schedule, nor the DISTRICT's statement of "Accepted As Submitted", will relieve the CONTRACTOR from responsibility for complying with Contract Time requirements, adhering to those sequences of work indicated in or required by the Contract Documents, or from completing any omitted WORK within the Contract Time.

H. Acceptance by the DISTRICT of the Baseline Schedule and Schedule Updates shall be a CONDITION PRECEDENT to the processing of Applications for Payment.

2.04 INITIAL AND REVISED COST LOADED CONSTRUCTION BASELINE SCHEDULE:

A. The CONTRACTOR shall submit their Initial Cost Loaded Construction Baseline Schedule to the DISTRICT for review and acceptance following Contract Execution and prior to NTP. It will be reviewed for conformance to the requirements of the Contract Documents. If the schedule is not accepted and requires revisions, the CONTRACTOR will revise this Initial Construction Baseline Schedule and resubmit it for review and acceptance within ten (10) calendar days.

B. Schedule Naming Structure: Once the Initial Construction Baseline Schedule is accepted, it becomes the CONTRACTOR's Baseline Schedule Revision 0 and is the basis for monitoring the CONTRACTOR's progress against milestones, Contract Time, and the evaluation and reconciliation of extensions in Contract Time. From then on, all activities, original durations, and their relationships may not be changed, added, or deleted without the prior approval of the DISTRICT. The CONTRACTOR's Baseline Schedule Revision 0 must be revised when it is no longer useful as a status and control mechanism as determined by the DISTRICT. All changes must be coordinated with and approved by the DISTRICT. Contract Time (including all contracted milestones) cannot be changed without a formal Change Order approved by the DISTRICT. When a revision to the Baseline Schedule is required, a new revised Baseline Schedule shall be submitted in accordance with change procedures, for review and acceptance by the DISTRICT. Revisions to the Baseline Schedule shall follow the naming sequence listed below: (commas (",") or ampersands ("&") cannot be used in the naming structure because they are recognized as commands by Primavera).

Project Name – R0A-U0	1st Submission of Baseline Schedule.
Project Name – R0B-U0	2nd Submission of Baseline Schedule, which is accepted.
Project Name – R1A-U0	1st Submission of Revision to the Accepted Baseline Schedule R0B-U0, which is accepted.
Project Name – R2A-U0	1st Submission of revised Baseline Schedule R1A-U0, which is accepted.
Project Name – R3A-U0	1st Submission of revised Baseline Schedule R2A-U0, which is accepted.

C. Baseline Schedule revisions shall accurately reflect all approved Change Orders including the exact duration and cost. They will be reviewed for conformance to the requirements of the Contract Documents as amended by Change Orders.

D. Upon execution of a Change Order, a new Activity Code for that Change Order must be created. All activities associated with that Change Order will be assigned to both the new Activity Code and their corresponding WBS. Both the Application for Payment and the layout report, Pay App - Rollup, will have a line item indicating the new Change Order.

E. The cost loading must not be changed from any Baseline Schedule Activities as a result of an executed Change Order. Original duration and logic may be changed on the Baseline Schedule Activities but the dollars amounts can only be changed by adding a new Change Order activity. This is applicable for both additive and deductive Change Orders.

F. If a particular Scope of Work (SOW) has been deleted in a Change Order, the activity associated with that SOW must have the proper logic that causes both the new deductive Change Order Activity and the Baseline Schedule Activity to progress equally so the costs calculate correctly for that SOW.

G. If a Baseline Schedule Activity becomes associated with a Change Order that affects its original duration or logic, then the Activity Name must include the Change Order. (e.g. ***CO#01***).

H. If a new activity is added because of an executed Change Order both the Activity ID and the Activity Name must reflect the associated Change Order. (e.g. CO#01-A2500, Additional Silt Fence ***CO#01***).

I. Baseline Schedule Activity ID's must not be changed or deleted.

J. An executed Change Order may require multiple activities broken down in sufficient detail to convey the new SOW.

2.05 COST LOADED CONSTRUCTION SCHEDULE UPDATES:

A. A Schedule Update is a copy of the accepted Baseline Schedule with progress added. Progress is Duration % Complete.

B. The Schedule Update must be submitted by the CONTRACTOR each month with each pay application or as directed by the DISTRICT. The Schedule Update will indicate actual performed WORK and WORK forecast through Project completion. The actual schedule data shall record when WORK was performed. Forecast data will be calculated by the schedule.

C. All out of sequence activities that originally had a finish to start relationship, but became a Start to Start or Finish to Finish relationship must be corrected in the Schedule Update. For other out of sequence relationships, a revision to the baseline is required.

D. Each Schedule Update shall be named beginning with the Accepted Baseline Number followed by the Update number beginning with "1A" as follows:

Project Name – R0B-U1A	1st submitted Update of the accepted Baseline R0B, which was rejected.
Project Name – R0B-U1B	Resubmittal of 1st Update, which was accepted.
Project Name – R0B-U2A	2nd submitted Update of the accepted Baseline R0B, which was rejected.
Project Name – R0B-U2B	Resubmittal of 2nd Update, which was accepted.

PART 3 - EXECUTION

3.01 MONTHLY UPDATE CYCLE:

A. Schedule Update Submittals are due every 30 days and are to be attached to each Application for Payment. The Schedule Update Total Actual Cost to Date must match the Application for Payment WORK Completed and Stored to Date amount. The DISTRICT will advise the CONTRACTOR of any change to the due dates.

B. See Paragraph 2.03.D for the Draft Schedule Reports that are to be provided prior to the formal submission of the Schedule Update and application for payment.

3.02 CHANGES:

A. Within ten (10) days after a schedule problem is identified by either CONTRACTOR or DISTRICT, or at any time the percentage of the dollar value for completed work is 10 % less than the value of the scheduled WORK, the CONTRACTOR shall submit a Construction Recovery Schedule that identifies the cause of the Change and any actions required by the CONTRACTOR to recover the schedule and complete the WORK within Contract Time. The CONTRACTOR shall promptly undertake appropriate

action, at no additional cost to the DISTRICT, to recover the schedule whenever the current schedule shows that the CONTRACTOR did not or cannot achieve a milestone established in the Contract.

B. Appropriate recovery actions include, but are not limited to, assignment of additional labor, subcontractors, equipment, shift or overtime work, expediting of submittal or deliveries, or any combination of thereof. Overlapping of activities or sequencing changes shall be deemed appropriate only if properly substantiated in the submittal. Recovery plans that are accepted by the DISTRICT that add, delete, or change activities, activity relationships, durations or constraints and cost or resource loading must be submitted as a Revision to the Baseline Schedule with zero Total Float in accordance with this specification. Once the revised baseline is accepted by the DISTRICT, the CONTRACTOR must prepare a Schedule Update of the Baseline Schedule with all actuals to date and submit it for acceptance.

C. The CONTRACTOR's refusal, failure or neglect to take appropriate recovery action or to submit a written recovery statement shall constitute reasonable evidence that the CONTRACTOR is not prosecuting the WORK, or separable part, with the diligence that will ensure its completion within the Contract Time. Such lack of action shall constitute sufficient basis for the DISTRICT to recommend the withholding of some or all of any payment due and/or shall be considered grounds for termination of the Contract by the DISTRICT in accordance with Article 15 of the General Terms & Conditions.

END OF SECTION

ATTACHMENT NO. 1

AS-BUILT DRAWINGS OF WATER CONTROL STRUCTURE NOS. S-160 & S-162

SAFETY ON THIS JOB DEPENDS ON YOU

REVISIONS					
NO.	DTW	ZONE	DESCRIPTION	DATE	APPROVED

INDEX OF SHEETS	
SHEET NO.	TITLE
1	LOCATION MAP AND INDEX
2	AERIAL PHOTOGRAPH, R/W AND CONTROL
3	TOPOGRAPHY
4	SITE PLAN
5	ACCESS ROAD
6	GENERAL PLAN AND SECTIONS
7	MASONRY PLAN AND SECTIONS
8	MASONRY SECTIONS AND WINGWALLS
9	MASONRY DETAILS
10	REINFORCEMENT- GATE MONOLITHS BASE SLAB
11	REINFORCEMENT- GATE MONOLITHS PIERS AND ABUTMENT
12	REINFORCEMENT- GATE MONOLITHS DETAILS AND STILLING BASIN SLAB
13	REINFORCEMENT- STILLING BASIN WALLS
14	REINFORCEMENT- UPSTREAM WINGWALLS
15	REINFORCEMENT- DOWNSTREAM WINGWALLS
16	MAIN GATES
17	GATE DETAILS
18	SLIDE GATES
19	SKIMMER GATE
20	HANDRAIL PLAN AND ELEVATIONS
21	HANDRAIL ELEVATIONS AND DETAILS
22	EMBEDDED METALS AND MISC. DETAILS
23	WARNING SIGNS AND MISC. DETAILS
24	SAFETY BARRIER ANCHORAGES
25	CULVERT PLAN AND DETAILS
26	CONTROL HOUSE - PLAN AND DETAILS
27	GATE HOIST - GENERAL ARRANGEMENT
28	GATE HOIST - ASSEMBLY
29	GATE HOIST - DETAILS NO.1
30	GATE HOIST - DETAILS NO.2
31	GATE CONTROL SWITCHES AND POSITION TRANSMITTER
32	CONTROL HOUSE - HYDRAULIC AND STILLING WELL PIPING
33	ELECTRICAL SYSTEM - CONDUIT AND GROUNDING
34	ELECTRICAL SYSTEM - SCHEMATIC DIAGRAMS
35	LOG OF CORE BORINGS
36	LOG OF CORE BORINGS
37	LOG OF CORE BORINGS
38	GRADATION CURVES
39	GRADATION CURVES
40	STAGE GRAPH

GENERAL NOTES:

1. ELEVATIONS ARE IN FEET AND TENTHS AND ARE REFERRED TO MEAN SEA LEVEL.
2. ALL ELEVATIONS ARE ABOVE REFERENCE PLANE, UNLESS PRECEDED BY A MINUS (-) SIGN.
3. COORDINATES ARE BASED ON THE STANDARD PLANE RECTANGULAR COORDINATE SYSTEM FOR THE WEST ZONE OF FLORIDA.
4. ALL AZIMUTH (0° = SOUTH) REFER TO GRID.
5. F.R.B. (FOUR RIVER BASINS) STATIONS ARE C OF E TRAVERSE DISKS SET IN CONCRETE MONUMENTS OR 2" IRON PIPES AND ARE BENCH MARKS.
6. ALL STATIONING IS ALONG ℄ CANAL, RANGE 1000.

RECORD DRAWING NOTE

"Shall be," "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract.

AS BUILT

SECTION	CHECK SIGNATURE	DATE	SECTION	CHECK SIGNATURE	DATE
ARCHITECTURAL			H.PLMG. & CONT.		
ELECTRICAL	[signature]	[illegible]	MECHANICAL	[signature]	
FDNS. & MATLS.			PAVING		
LEVEE & WWS.			STRUCTURES	[signature]	[illegible]

U.S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

FOUR RIVER BASINS, FLORIDA
CANAL 135

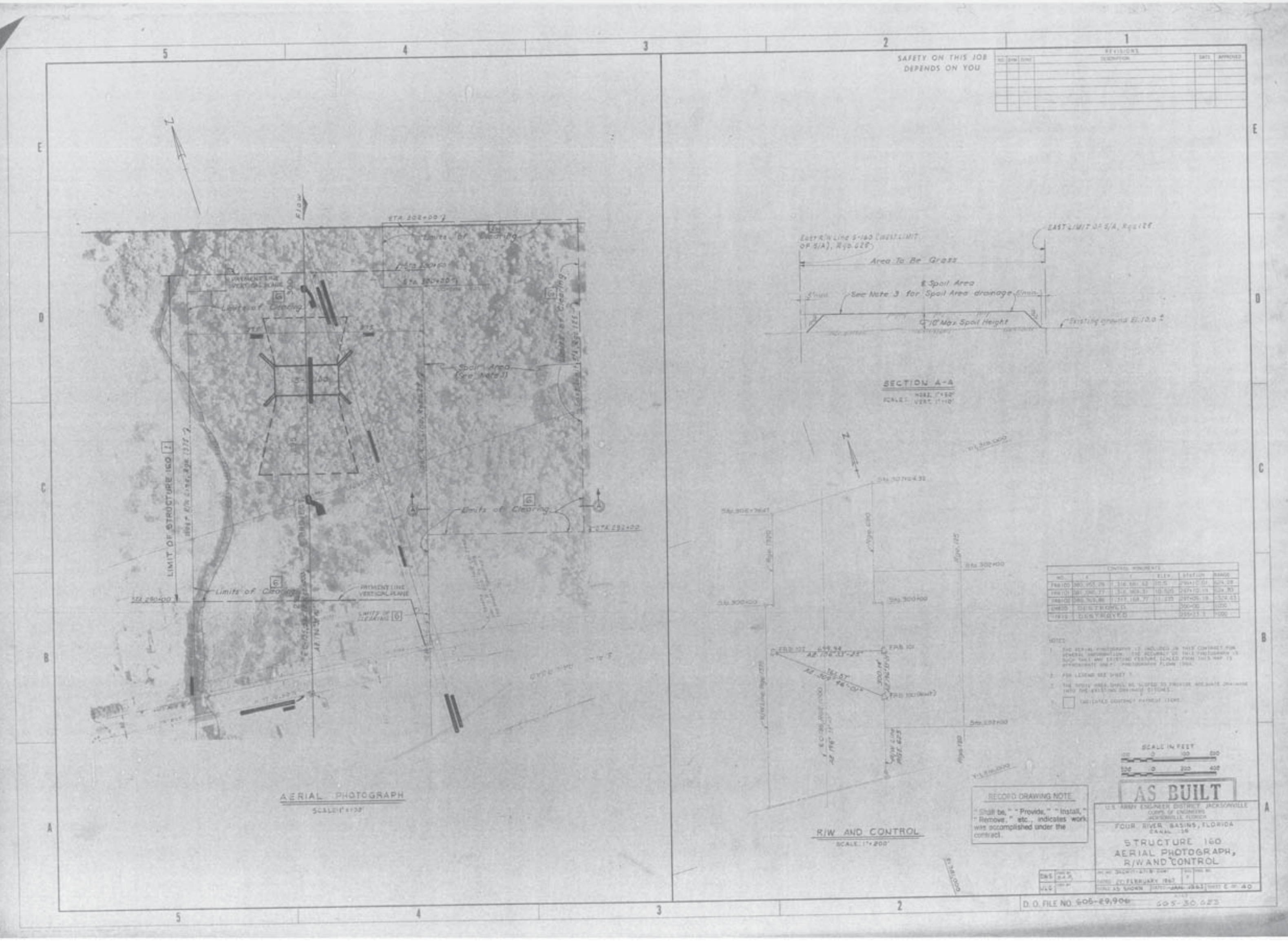
STRUCTURE 160
LOCATION MAP AND INDEX

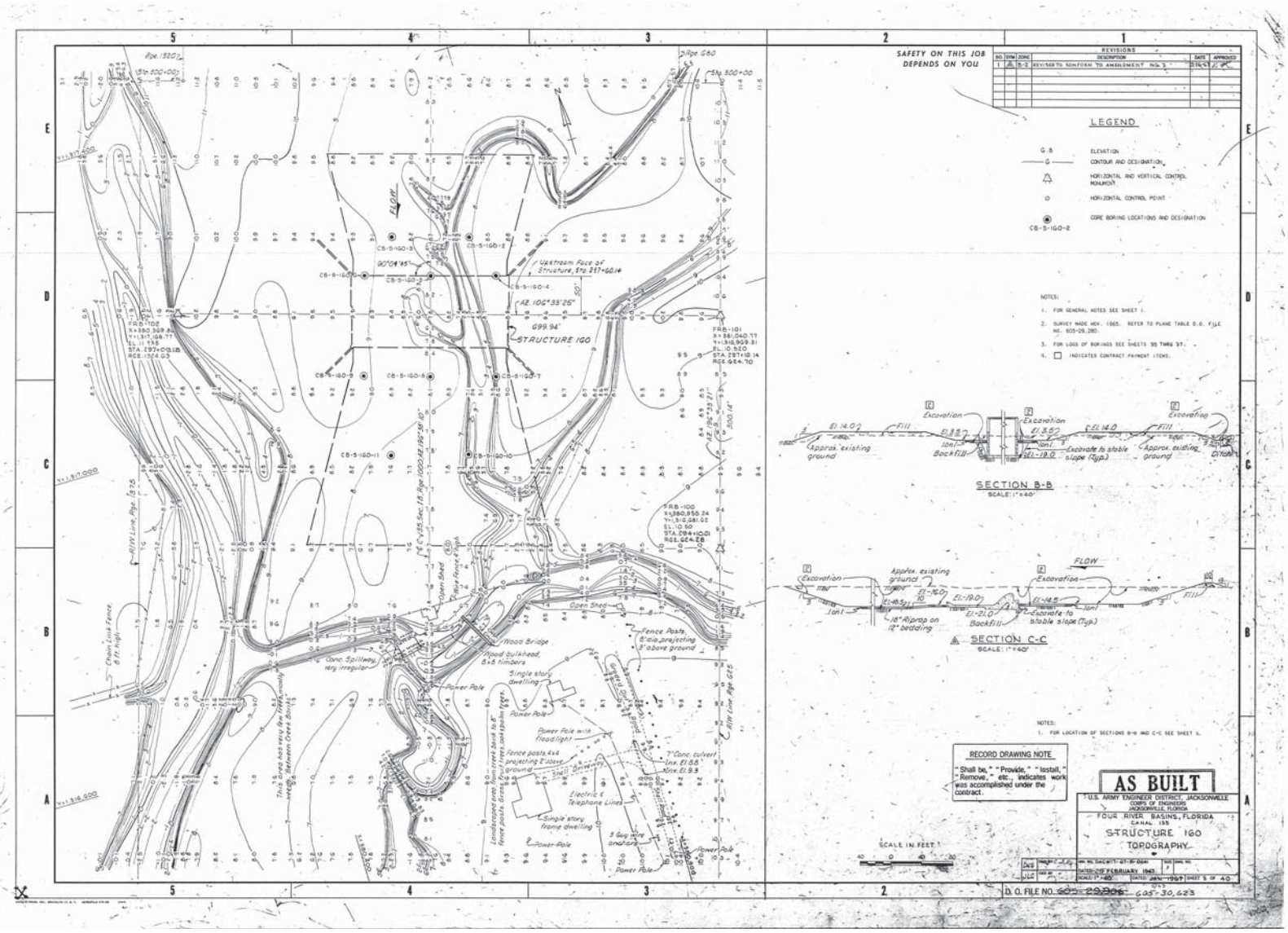
INV. NO. DACW17-67-B-0041
DATED: 20 FEBRUARY 1967
SCALE: 1" = 5 MILES
SHEET 1 OF 40
DRAWN BY: C.J.B. JLC

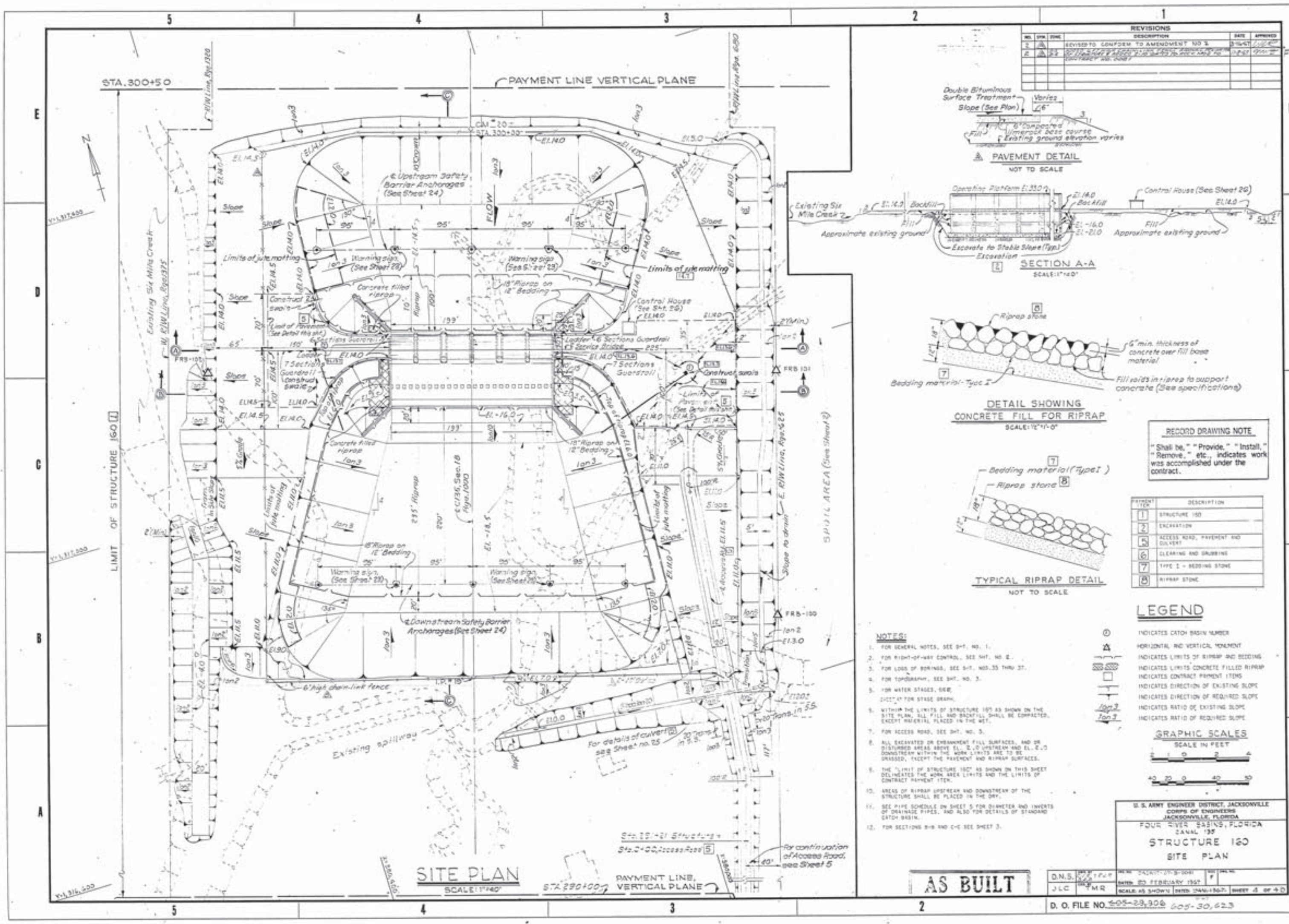
CONTRACT NO. DACW17-67-C-0081

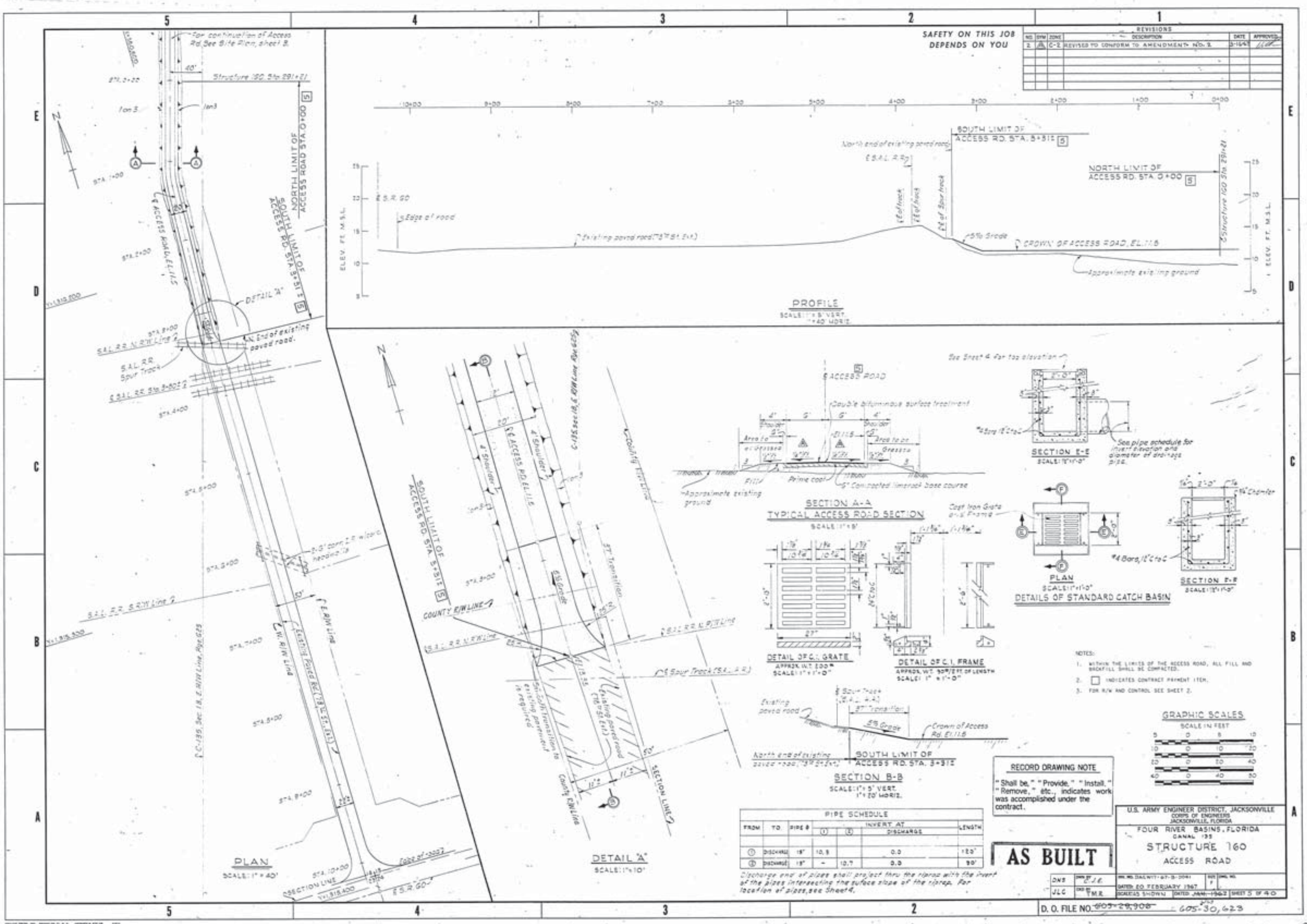
D. O. FILE NO. ~~605-29,808~~ 605-30,623

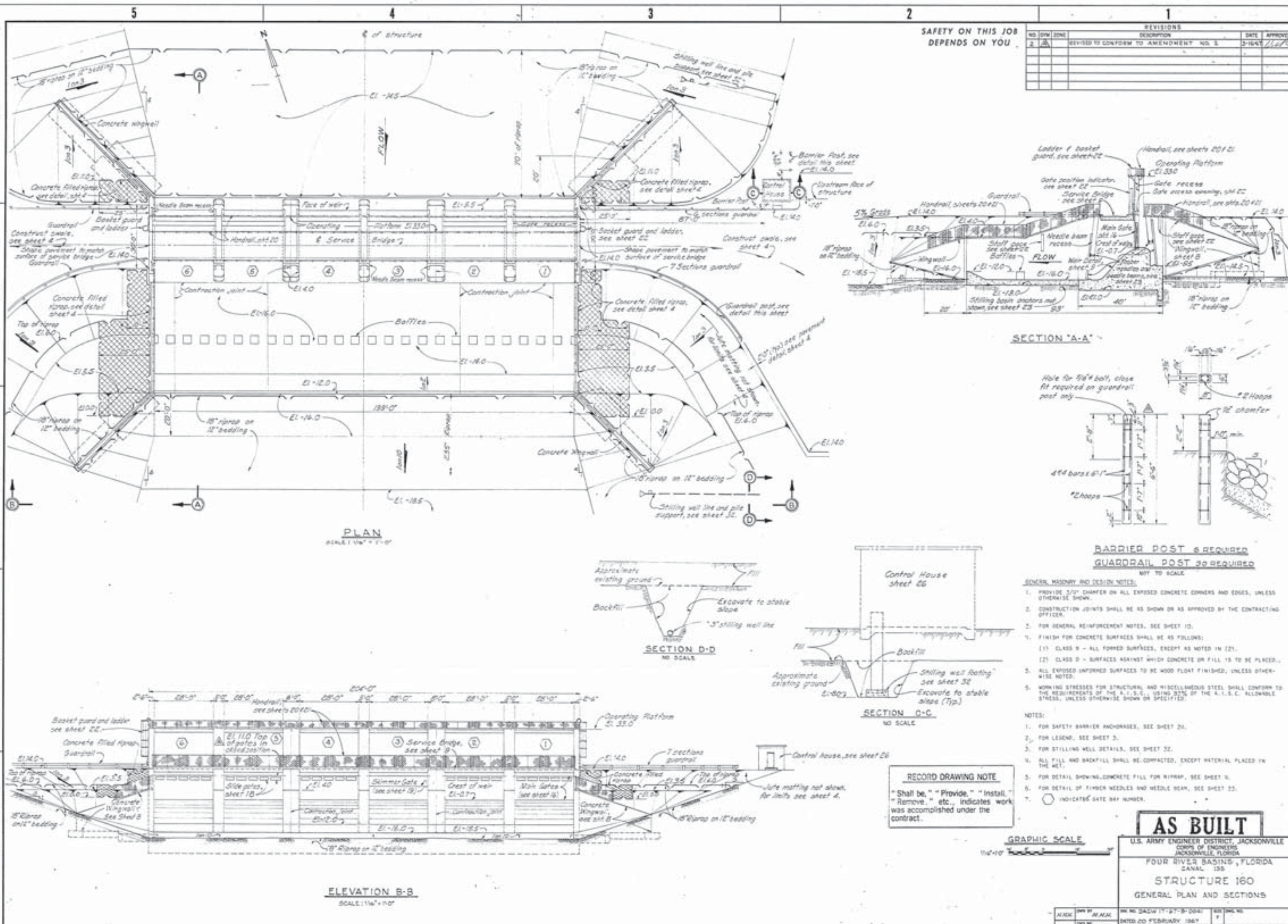
Roll # 181


SAFETY ON THIS JOB DEPENDS ON YOU
REVISIONS
FLOW
Limits of Clearing
LIMIT OF STRUCTURE 160
Spoil Area
AERIAL PHOTOGRAPH
East R/W Line S-160 (WEST LIMIT OF S/A), Rge 028
EAST LIMIT OF S/A, Rge 128
Area To Be Grass
℄ Spoil Area
See Note 3 for Spoil Area drainage
10' Max Spoil Height
Existing ground El. 10.0 ±
SECTION A-A
R/W AND CONTROL
SCALE: 1" = 200'
SCALE IN FEET
100 0 100 200
200 0 200 400
RECORD DRAWING NOTE
"Shall be," "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract.
AS BUILT
U.S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
CANAL 38
STRUCTURE 160
AERIAL PHOTOGRAPH,
R/W AND CONTROL
20 FEBRUARY 1967
AS SHOWN
D. O. FILE NO. 605-29,906
605-30,623


SAFETY ON THIS JOB DEPENDS ON YOU
REVISIONS
NO. SYM ZONE DESCRIPTION DATE APPROVED
1 B-2 REVISED TO CONFORM TO AMENDMENT NO. 3
LEGEND
ELEVATION
CONTOUR AND DESIGNATION
HORIZONTAL AND VERTICAL CONTROL MONUMENT
HORIZONTAL CONTROL POINT
CORE BORING LOCATIONS AND DESIGNATION
CB-S-1GO-2
NOTES:
1. FOR GENERAL NOTES SEE SHEET 1.
2. SURVEY MADE NOV. 1965. REFER TO PLANE TABLE D.O. FILE NO. 605-29,280.
3. FOR LOGS OF BORINGS SEE SHEETS 35 THRU 37.
4. ☐ INDICATES CONTRACT PAYMENT ITEMS.
SECTION B-B
SCALE: 1"=40'
SECTION C-C
SCALE: 1"=40'
NOTES:
1. FOR LOCATION OF SECTIONS B-B AND C-C SEE SHEET 6.
RECORD DRAWING NOTE
" Shall be, " " Provide, " " Install, " " Remove, " etc., indicates work was accomplished under the contract.
AS BUILT
U.S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
CANAL 195
STRUCTURE 1GO
TOPOGRAPHY
SCALE IN FEET
DATE: FEBRUARY 1967
SCALE 1"=40'
SHEET 5 OF 40
D.O. FILE NO. 605-30,623


SITE PLAN
SCALE: 1"=40'
PAYMENT LINE VERTICAL PLANE
STA. 300+50
LIMIT OF STRUCTURE 160 [1]
PAVEMENT DETAIL
NOT TO SCALE
SECTION A-A
DETAIL SHOWING CONCRETE FILL FOR RIPRAP
TYPICAL RIPRAP DETAIL
NOT TO SCALE
RECORD DRAWING NOTE
" Shall be," " Provide," " Install," " Remove," etc., indicates work was accomplished under the contract.
PAYMENT ITEM / DESCRIPTION
1 STRUCTURE 160
2 EXCAVATION
5 ACCESS ROAD, PAVEMENT AND CULVERT
6 CLEARING AND GRUBBING
7 TYPE I - BEDDING STONE
8 RIPRAP STONE
LEGEND
INDICATES CATCH BASIN NUMBER
HORIZONTAL AND VERTICAL MONUMENT
INDICATES LIMITS OF RIPRAP AND BEDDING
INDICATES LIMITS CONCRETE FILLED RIPRAP
INDICATES CONTRACT PAYMENT ITEMS
INDICATES DIRECTION OF EXISTING SLOPE
INDICATES DIRECTION OF REQUIRED SLOPE
INDICATES RATIO OF EXISTING SLOPE
INDICATES RATIO OF REQUIRED SLOPE
GRAPHIC SCALES
SCALE IN FEET
NOTES:
1. FOR GENERAL NOTES, SEE SHT. NO. 1.
2. FOR RIGHT-OF-WAY CONTROL, SEE SHT. NO. 2.
3. FOR LOGS OF BORINGS, SEE SHT. NOS. 35 THRU 37.
4. FOR TOPOGRAPHY, SEE SHT. NO. 3.
5. FOR WATER STAGES, SEE SHEET 4? FOR STAGE GRAPH.
6. WITHIN THE LIMITS OF STRUCTURE 160 AS SHOWN ON THE SITE PLAN, ALL FILL AND BACKFILL SHALL BE COMPACTED, EXCEPT MATERIAL PLACED IN THE WET.
7. FOR ACCESS ROAD, SEE SHT. NO. 5.
8. ALL EXCAVATED OR EMBANKMENT FILL SURFACES, AND OR DISTURBED AREAS ABOVE EL. 2.0 UPSTREAM AND EL. 2.0 DOWNSTREAM WITHIN THE WORK LIMITS ARE TO BE GRASSED, EXCEPT THE PAVEMENT AND RIPRAP SURFACES.
9. THE "LIMIT OF STRUCTURE 160" AS SHOWN ON THIS SHEET DELINEATES THE WORK AREA LIMITS AND THE LIMITS OF CONTRACT PAYMENT ITEM.
10. AREAS OF RIPRAP UPSTREAM AND DOWNSTREAM OF THE STRUCTURE SHALL BE PLACED IN THE DRY.
11. SEE PIPE SCHEDULE ON SHEET 5 FOR DIAMETER AND INVERTS OF DRAINAGE PIPES, AND ALSO FOR DETAILS OF STANDARD CATCH BASIN.
12. FOR SECTIONS B-B AND C-C SEE SHEET 3.
U. S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
CANAL 135
STRUCTURE 160
SITE PLAN
AS BUILT
DATED: 20 FEBRUARY 1967
SCALE: AS SHOWN
SHEET 4 OF 40
D. O. FILE NO. 605-28,306 605-30,623


SAFETY ON THIS JOB DEPENDS ON YOU
REVISIONS
REVISED TO CONFORM TO AMENDMENT NO. 2
PROFILE
NORTH LIMIT OF ACCESS RD. STA. 0+00
SOUTH LIMIT OF ACCESS RD. STA. 5+31±
CROWN OF ACCESS ROAD, EL. 11.8
Approximate existing ground
SECTION A-A
TYPICAL ACCESS ROAD SECTION
DETAIL OF C.I. GRATE
DETAIL OF C.I. FRAME
SECTION E-E
SECTION F-F
DETAILS OF STANDARD CATCH BASIN
SECTION B-B
PLAN
DETAIL "A"
PIPE SCHEDULE
NOTES:
1. WITHIN THE LIMITS OF THE ACCESS ROAD, ALL FILL AND BACKFILL SHALL BE COMPACTED.
2. INDICATES CONTRACT PAYMENT ITEM.
3. FOR R/W AND CONTROL SEE SHEET 2.
GRAPHIC SCALES
SCALE IN FEET
RECORD DRAWING NOTE
"Shall be," "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract.
AS BUILT
U.S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
CANAL 135
STRUCTURE 160
ACCESS ROAD
DATED: 20 FEBRUARY 1967
SCALE: AS SHOWN
SHEET 5 OF 40
D. O. FILE NO. 605-30,623



REVISIONS

NO.	SYM	ZONE	DESCRIPTION	DATE	APPROVED
2			REVISED TO CONFORM TO AMENDMENT NO. 2		

BARRIER POST 8 REQUIRED

GUARDRAIL POST 30 REQUIRED

NOT TO SCALE

GENERAL MASONRY AND DESIGN NOTES:

1. PROVIDE 3/4" CHAMFER ON ALL EXPOSED CONCRETE CORNERS AND EDGES, UNLESS OTHERWISE SHOWN.
2. CONSTRUCTION JOINTS SHALL BE AS SHOWN OR AS APPROVED BY THE CONTRACTING OFFICER.
3. FOR GENERAL REINFORCEMENT NOTES, SEE SHEET 10.
4. FINISH FOR CONCRETE SURFACES SHALL BE AS FOLLOWS:
   (1) CLASS B - ALL FORMED SURFACES, EXCEPT AS NOTED IN (2).
   (2) CLASS D - SURFACES AGAINST WHICH CONCRETE OR FILL IS TO BE PLACED.
5. ALL EXPOSED UNFORMED SURFACES TO BE WOOD FLOAT FINISHED, UNLESS OTHERWISE NOTED.
6. WORKING STRESSES FOR STRUCTURAL AND MISCELLANEOUS STEEL SHALL CONFORM TO THE REQUIREMENTS OF THE A.I.S.C., USING 92% OF THE A.I.S.C. ALLOWABLE STRESS, UNLESS OTHERWISE SHOWN OR SPECIFIED.

NOTES:

1. FOR SAFETY BARRIER ANCHORAGES, SEE SHEET 24.
2. FOR LEGEND, SEE SHEET 3.
3. FOR STILLING WELL DETAILS, SEE SHEET 32.
4. ALL FILL AND BACKFILL SHALL BE COMPACTED, EXCEPT MATERIAL PLACED IN THE WET.
5. FOR DETAIL SHOWING CONCRETE FILL FOR RIPRAP, SEE SHEET 4.
6. FOR DETAIL OF TIMBER NEEDLES AND NEEDLE BEAM, SEE SHEET 23.
7. ⬡ INDICATES GATE BAY NUMBER.

RECORD DRAWING NOTE

"Shall be," "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract.

GRAPHIC SCALE

AS BUILT

U.S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

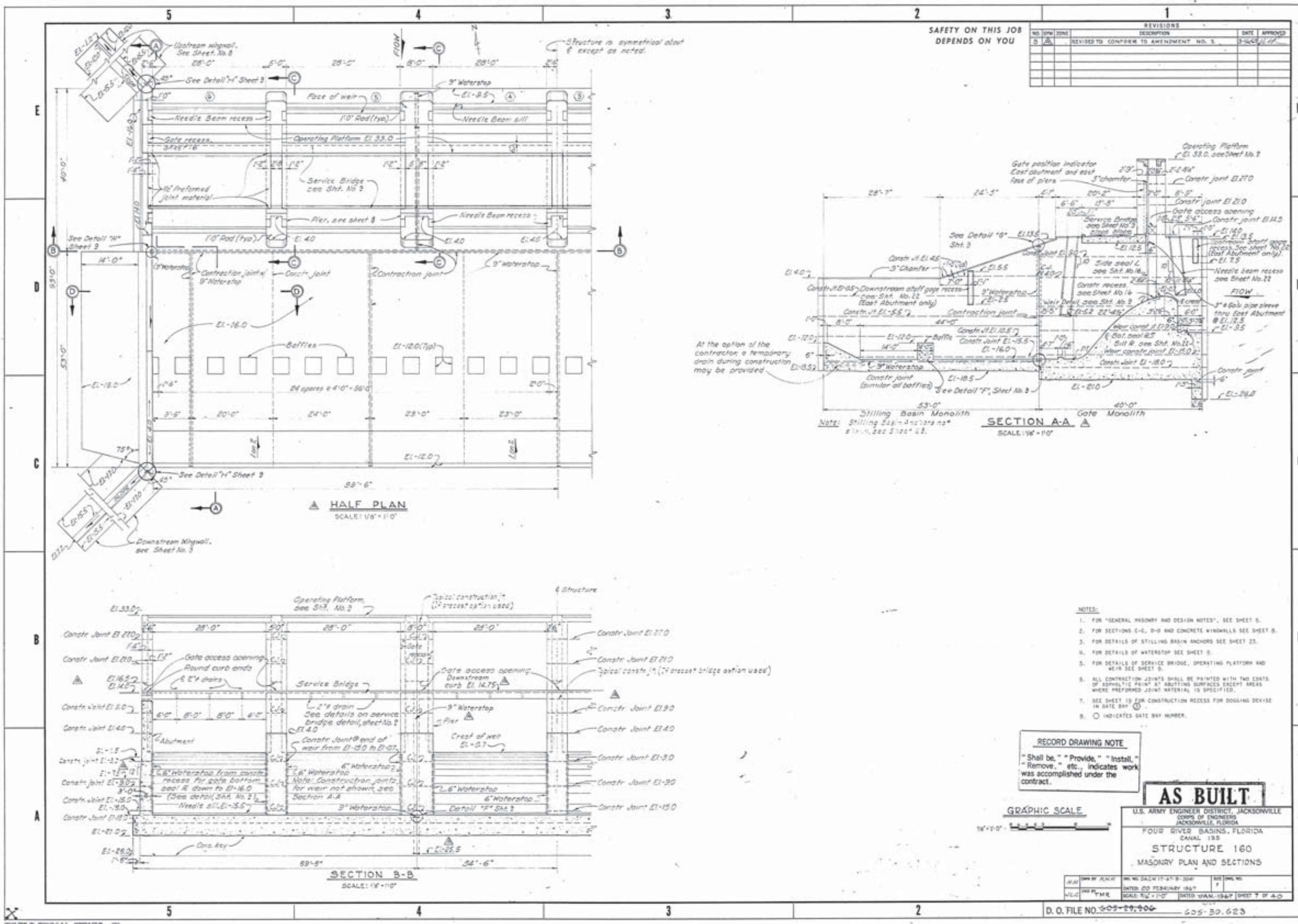
FOUR RIVER BASINS, FLORIDA
CANAL 135

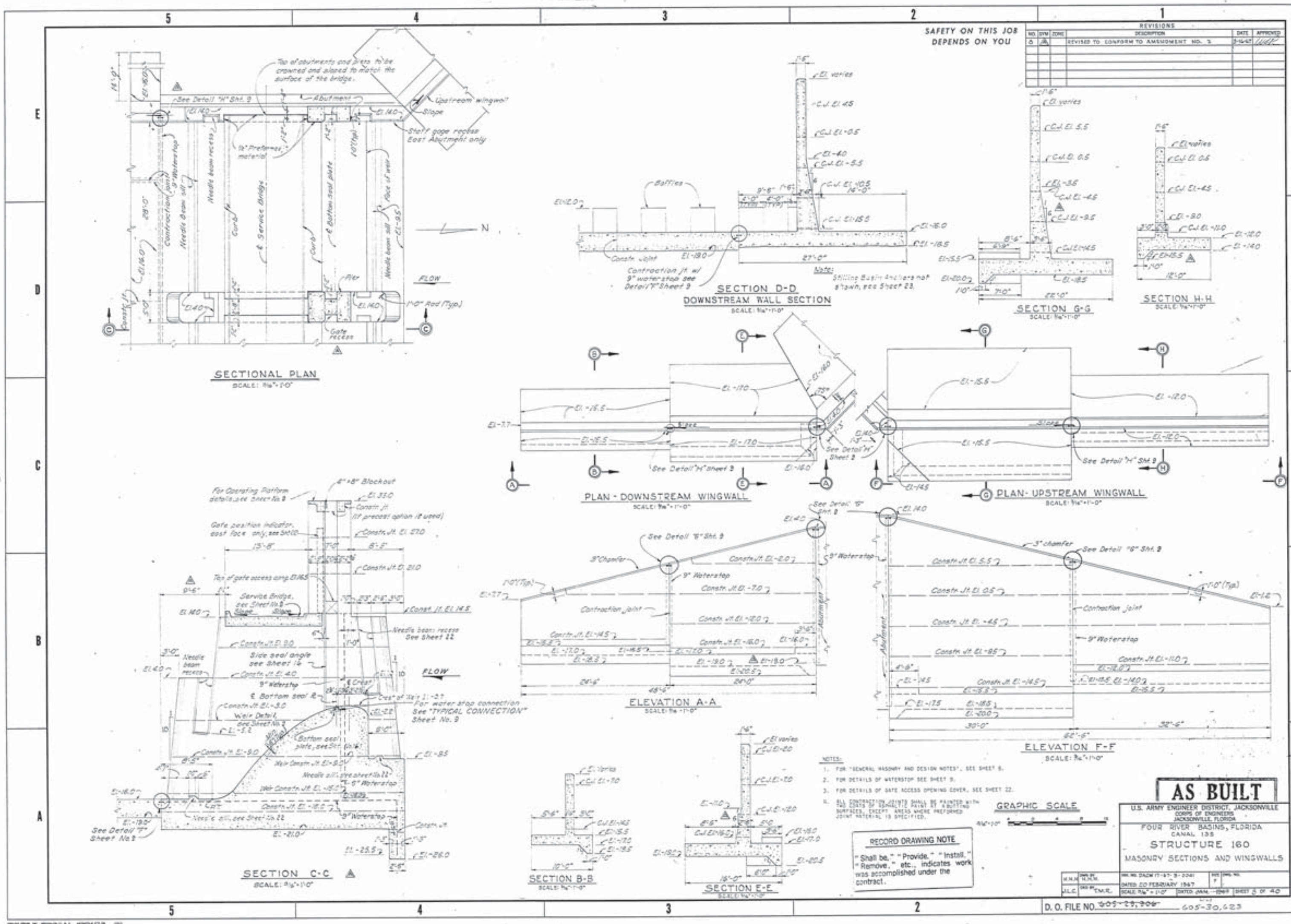
STRUCTURE 160

GENERAL PLAN AND SECTIONS

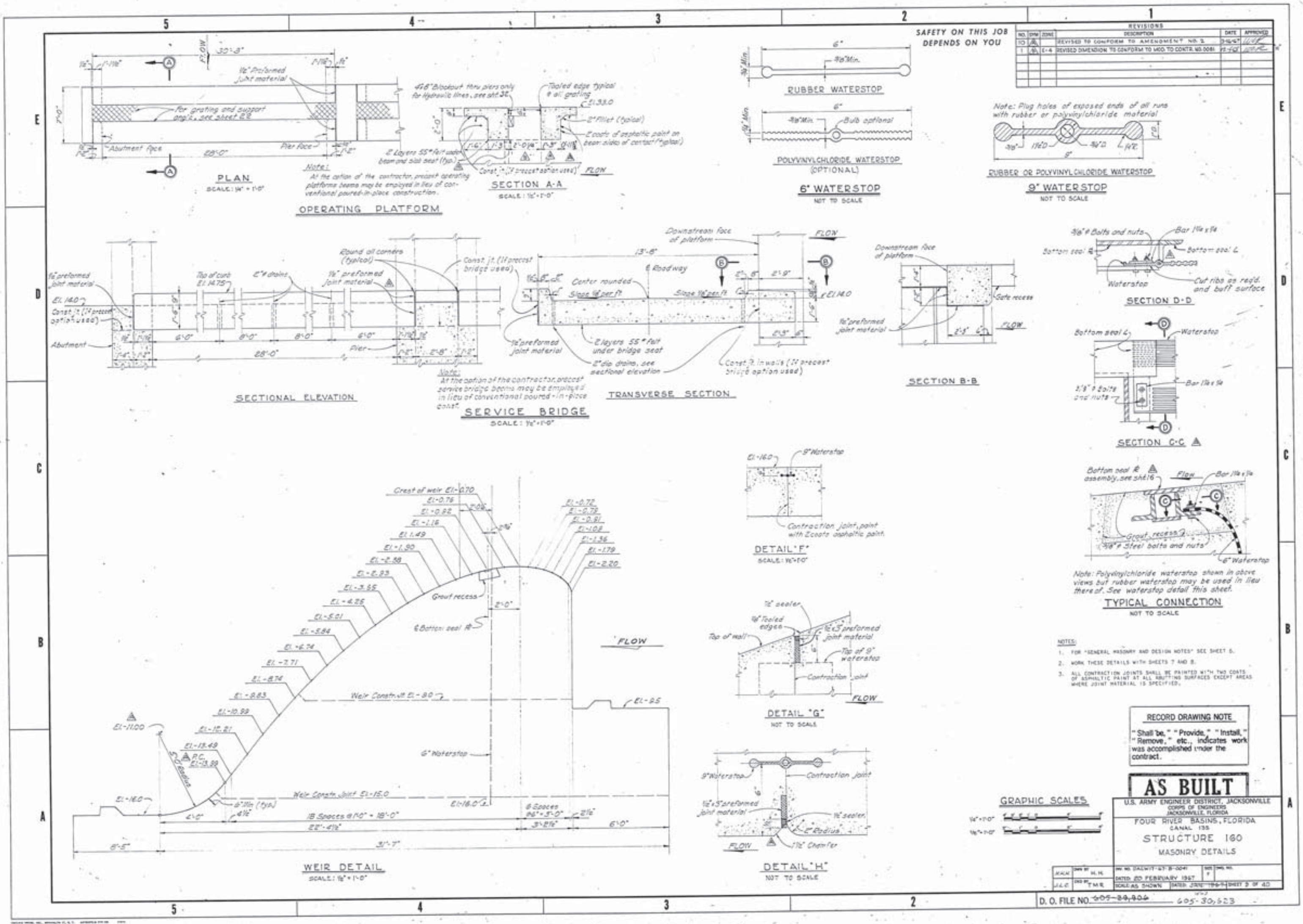
INV. NO. DACW 17-67-B-0041 — DATED: 20 FEBRUARY 1967 — SCALE: AS SHOWN — SHEET 6 OF 40

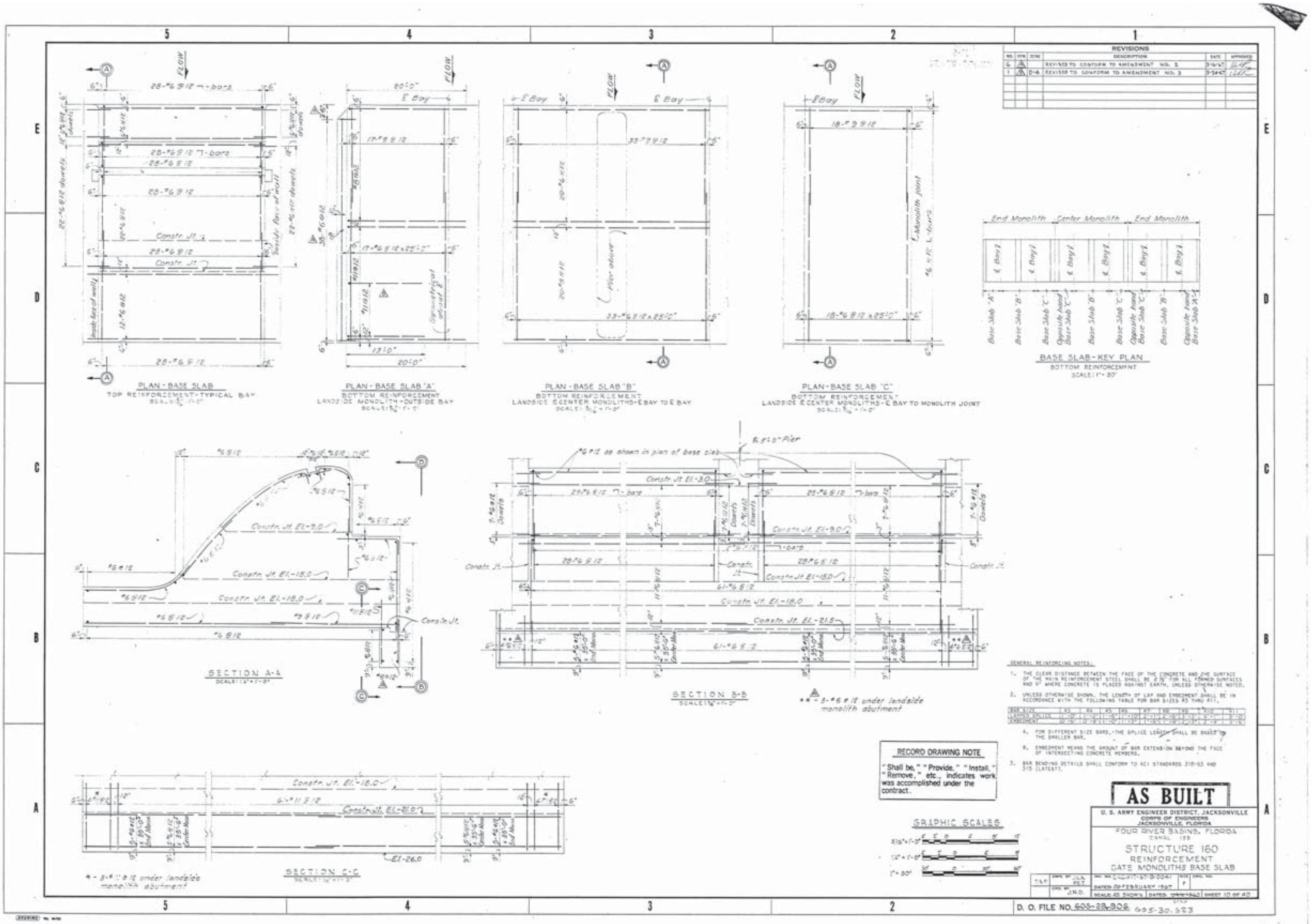
D. O. FILE NO. ~~605-29,906~~ 605-30,523

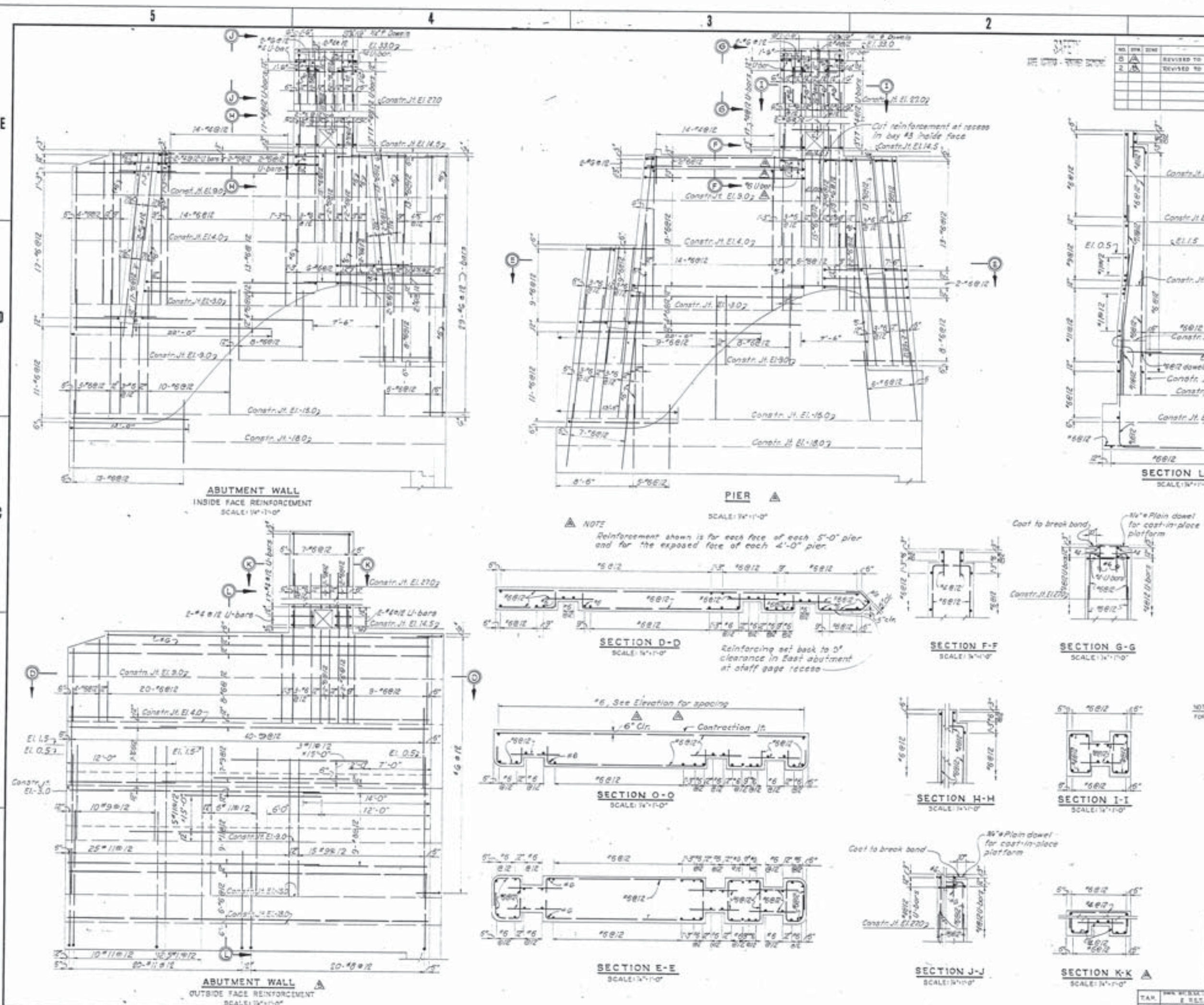

SAFETY ON THIS JOB DEPENDS ON YOU
REVISIONS
REVISED TO CONFORM TO AMENDMENT NO. 2
HALF PLAN
SCALE: 1/8" = 1'-0"
SECTION A-A
SCALE: 1/8" = 1'-0"
SECTION B-B
SCALE: 1/8" = 1'-0"
Structure is symmetrical about ℄ except as noted.
Stilling Basin Monolith
Gate Monolith
NOTES:
1. FOR "GENERAL MASONRY AND DESIGN NOTES", SEE SHEET 5.
2. FOR SECTIONS C-C, D-D AND CONCRETE WINGWALLS SEE SHEET 8.
3. FOR DETAILS OF STILLING BASIN ANCHORS SEE SHEET 23.
4. FOR DETAILS OF WATERSTOP SEE SHEET 5.
5. FOR DETAILS OF SERVICE BRIDGE, OPERATING PLATFORM AND WEIR SEE SHEET 9.
6. ALL CONTRACTION JOINTS SHALL BE PAINTED WITH TWO COATS OF ASPHALTIC PAINT AT ABUTTING SURFACES EXCEPT AREAS WHERE PREFORMED JOINT MATERIAL IS SPECIFIED.
7. SEE SHEET 19 FOR CONSTRUCTION RECESS FOR DOGGING DEVISE IN GATE BAY ①.
8. ○ INDICATES GATE BAY NUMBER.
RECORD DRAWING NOTE
"Shall be," "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract.
AS BUILT
GRAPHIC SCALE
U.S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
CANAL 135
STRUCTURE 160
MASONRY PLAN AND SECTIONS
TMR
DATED: 20 FEBRUARY 1967
SCALE: 1/8" = 1'-0"
DATED: JAN. 1967
SHEET 7 OF 40
D. O. FILE NO. 605-29,906
605-30,623



SAFETY ON THIS JOB DEPENDS ON YOU
REVISIONS
REVISED TO CONFORM TO AMENDMENT NO. 3
SECTIONAL PLAN
SCALE: 3/16" = 1'-0"
SECTION D-D
DOWNSTREAM WALL SECTION
SECTION G-G
SECTION H-H
PLAN - DOWNSTREAM WINGWALL
PLAN - UPSTREAM WINGWALL
SECTION C-C
ELEVATION A-A
ELEVATION F-F
SECTION B-B
SECTION E-E
FLOW
NOTES:
1. FOR "GENERAL MASONRY AND DESIGN NOTES", SEE SHEET 5.
2. FOR DETAILS OF WATERSTOP SEE SHEET 9.
3. FOR DETAILS OF GATE ACCESS OPENING COVER, SEE SHEET 22.
4. ALL CONTRACTION JOINTS SHALL BE PAINTED WITH TWO COATS OF ASPHALTIC PAINT AT ABUTTING SURFACES, EXCEPT AREAS WHERE PREFORMED JOINT MATERIAL IS SPECIFIED.
GRAPHIC SCALE
RECORD DRAWING NOTE
"Shall be," "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract.
AS BUILT
U.S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
CANAL 135
STRUCTURE 160
MASONRY SECTIONS AND WINGWALLS
DATED: 20 FEBRUARY 1967
SHEET 8 OF 40
D. O. FILE NO. 605-29,306 605-30,623


SAFETY ON THIS JOB DEPENDS ON YOU
REVISIONS
REVISED TO CONFORM TO AMENDMENT NO. 2
REVISED DIMENSION TO CONFORM TO MOD. TO CONTR. NO. 0081
PLAN
SCALE: 1/4" = 1'-0"
OPERATING PLATFORM
SECTION A-A
SCALE: 1/2" = 1'-0"
RUBBER WATERSTOP
POLYVINYLCHLORIDE WATERSTOP
(OPTIONAL)
6" WATERSTOP
NOT TO SCALE
Note: Plug holes of exposed ends of all runs with rubber or polyvinylchloride material
RUBBER OR POLYVINYLCHLORIDE WATERSTOP
9" WATERSTOP
NOT TO SCALE
SECTIONAL ELEVATION
TRANSVERSE SECTION
SERVICE BRIDGE
SCALE: 1/2" = 1'-0"
SECTION B-B
SECTION D-D
SECTION C-C
DETAIL "F"
SCALE: 1/2" = 1'-0"
TYPICAL CONNECTION
NOT TO SCALE
DETAIL "G"
NOT TO SCALE
WEIR DETAIL
SCALE: 1/2" = 1'-0"
DETAIL "H"
NOT TO SCALE
NOTES:
1. FOR "GENERAL MASONRY AND DESIGN NOTES" SEE SHEET 5.
2. WORK THESE DETAILS WITH SHEETS 7 AND 8.
3. ALL CONTRACTION JOINTS SHALL BE PAINTED WITH TWO COATS OF ASPHALTIC PAINT AT ALL ABUTTING SURFACES EXCEPT AREAS WHERE JOINT MATERIAL IS SPECIFIED.
RECORD DRAWING NOTE
"Shall be," "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract.
AS BUILT
GRAPHIC SCALES
U.S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
CANAL 135
STRUCTURE 160
MASONRY DETAILS
DATED: 20 FEBRUARY 1967
SCALE: AS SHOWN
SHEET 9 OF 40
D. O. FILE NO. 605-29,806
605-30,623


REVISIONS
NO. | SYM. | ZONE | DESCRIPTION | DATE | APPROVED
REVISED TO CONFORM TO AMENDMENT NO. 2 | 3-16-67
1 | D-4 | REVISED TO CONFORM TO AMENDMENT NO. 3 | 3-24-67
FLOW
PLAN - BASE SLAB
TOP REINFORCEMENT - TYPICAL BAY
PLAN - BASE SLAB "A"
BOTTOM REINFORCEMENT
LANDSIDE MONOLITH - OUTSIDE BAY
PLAN - BASE SLAB "B"
BOTTOM REINFORCEMENT
LANDSIDE & CENTER MONOLITHS - ℄ BAY TO ℄ BAY
PLAN - BASE SLAB "C"
BOTTOM REINFORCEMENT
LANDSIDE & CENTER MONOLITHS - ℄ BAY TO MONOLITH JOINT
End Monolith
Center Monolith
End Monolith
BASE SLAB - KEY PLAN
BOTTOM REINFORCEMENT
SCALE: 1" = 30'
SECTION A-A
SECTION B-B
SECTION C-C
** - 3-#6 @ 12 under landside monolith abutment
GENERAL REINFORCING NOTES:
1. THE CLEAR DISTANCE BETWEEN THE FACE OF THE CONCRETE AND THE SURFACE OF THE MAIN REINFORCEMENT STEEL SHALL BE 2 1/2" FOR ALL FORMED SURFACES AND 4" WHERE CONCRETE IS PLACED AGAINST EARTH, UNLESS OTHERWISE NOTED.
2. UNLESS OTHERWISE SHOWN, THE LENGTH OF LAP AND EMBEDMENT SHALL BE IN ACCORDANCE WITH THE FOLLOWING TABLE FOR BAR SIZES #3 THRU #11.
BAR SIZE
LAPPED SPLICE
EMBEDMENT
A. FOR DIFFERENT SIZE BARS, THE SPLICE LENGTH SHALL BE BASED ON THE SMALLER BAR.
B. EMBEDMENT MEANS THE AMOUNT OF BAR EXTENSION BEYOND THE FACE OF INTERSECTING CONCRETE MEMBERS.
3. BAR BENDING DETAILS SHALL CONFORM TO ACI STANDARDS 315-65 AND 315 (LATEST).
RECORD DRAWING NOTE
"Shall be," "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract.
GRAPHIC SCALES
AS BUILT
U. S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
CANAL 133
STRUCTURE 160
REINFORCEMENT
GATE MONOLITHS BASE SLAB
DATED: 20 FEBRUARY 1967
SCALE: AS SHOWN
SHEET 10 OF 40
D. O. FILE NO. 605-28,806 605-30,523



REVISIONS					
NO.	SYM.	ZONE	DESCRIPTION	DATE	APPROVED
8	A		REVISED TO CONFORM TO AMENDMENT NO. 2	3-16-67	
2	B		REVISED TO CONFORM TO AMENDMENT NO. 3	3-24-67	

NOTE:
FOR GENERAL REINFORCING NOTES SEE SHEET 910.

RECORD DRAWING NOTE

"Shall be," "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract.

AS BUILT

GRAPHIC SCALES

1/4" = 1'-0"

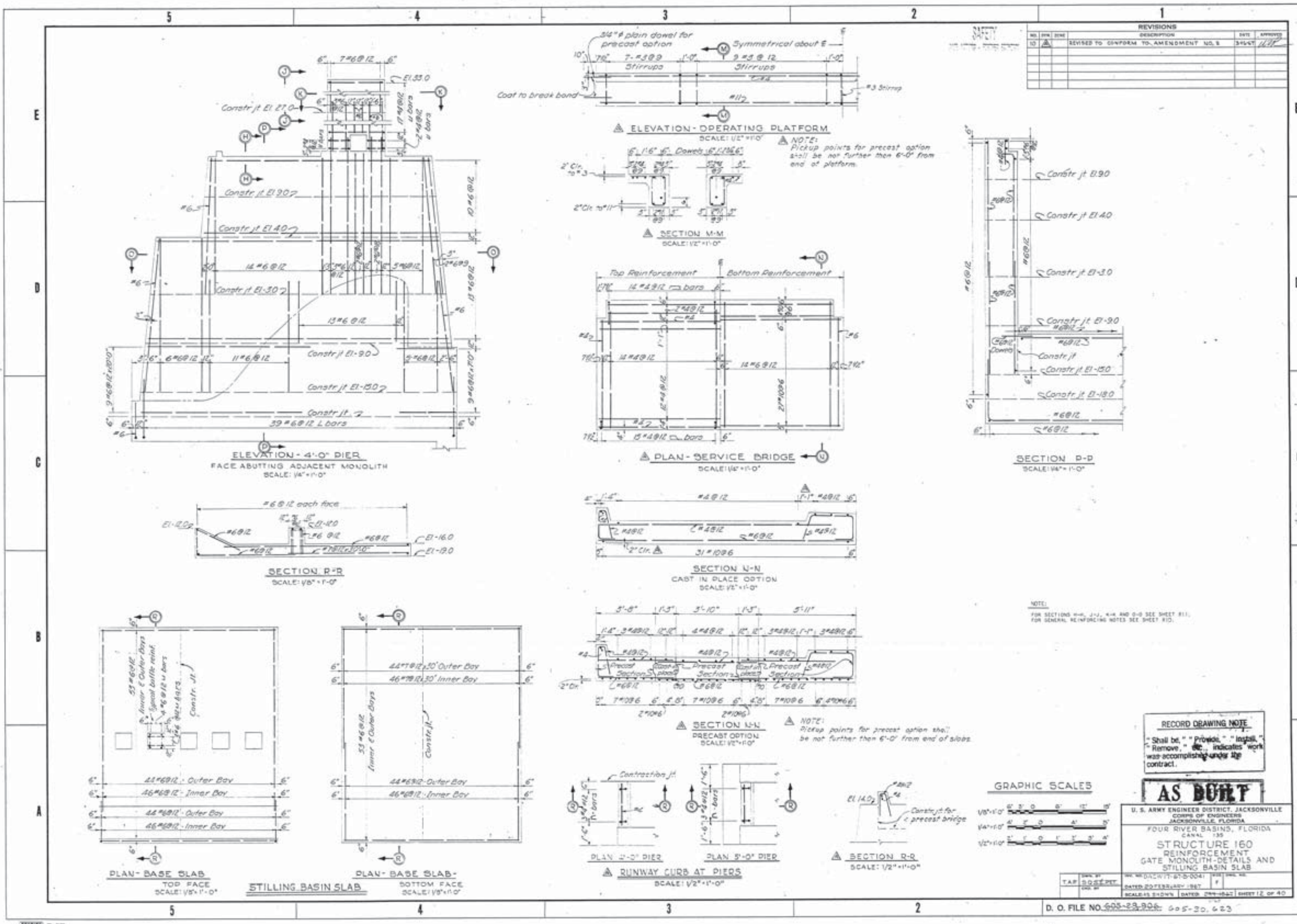
U. S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

FOUR RIVER BASINS, FLORIDA
CANAL 133

STRUCTURE 160
REINFORCEMENT
GATE MONOLITHS-PIERS AND ABUTMENTS

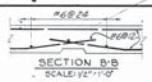
T.A.P. | E. T.S.T. | JND | DACW17-67-B-0041 | DATED: 20 FEBRUARY 1967 | SCALE: AS SHOWN | DATED: JAN 1967 | SHEET 11 OF 40

D. O. FILE NO. ~~605-29,906~~ 605-35,623

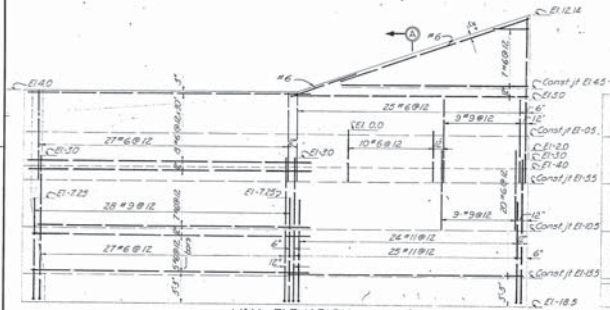

ELEVATION - 4'-0" PIER
FACE ABUTTING ADJACENT MONOLITH
SCALE: 1/4" = 1'-0"
ELEVATION - OPERATING PLATFORM
SCALE: 1/2" = 1'-0"
NOTE: Pickup points for precast option shall be not further than 6'-0" from end of platform.
SECTION M-M
SCALE: 1/2" = 1'-0"
PLAN - SERVICE BRIDGE
SCALE: 1/4" = 1'-0"
SECTION P-P
SCALE: 1/4" = 1'-0"
SECTION R-R
SCALE: 1/8" = 1'-0"
SECTION N-N
CAST IN PLACE OPTION
SCALE: 1/2" = 1'-0"
SECTION N-N
PRECAST OPTION
SCALE: 1/2" = 1'-0"
NOTE: Pickup points for precast option shall be not further than 6'-0" from end of slabs.
NOTE: FOR SECTIONS H-H, J-J, K-K AND O-O SEE SHEET R11. FOR GENERAL REINFORCING NOTES SEE SHEET R10.
PLAN - BASE SLAB
TOP FACE
SCALE: 1/8" = 1'-0"
STILLING BASIN SLAB
PLAN - BASE SLAB -
BOTTOM FACE
SCALE: 1/8" = 1'-0"
PLAN 2'-0" PIER
PLAN 8'-0" PIER
RUNWAY CURB AT PIERS
SCALE: 1/2" = 1'-0"
SECTION R-R
SCALE: 1/2" = 1'-0"
GRAPHIC SCALES
REVISIONS
REVISED TO CONFORM TO AMENDMENT NO. 5
RECORD DRAWING NOTE
"Shall be," "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract.
AS BUILT
U. S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
CANAL 135
STRUCTURE 160
REINFORCEMENT
GATE MONOLITH - DETAILS AND
STILLING BASIN SLAB
DACW17-67-B-0041
DATED: 20 FEBRUARY 1967
SCALE: AS SHOWN
SHEET 12 OF 40
D. O. FILE NO. 605-28.906 605-30.623

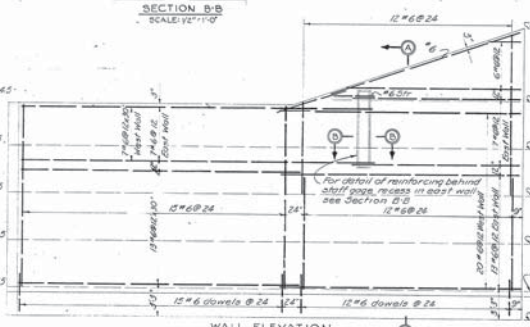
SAFETY ON THIS JOB DEPENDS ON YOU

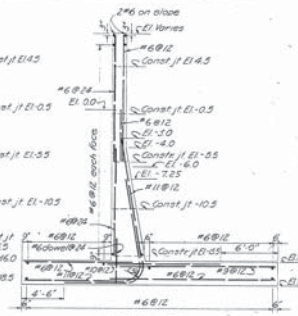
REVISIONS					
NO.	SYM	ZONE	DESCRIPTION	DATE	APPROVED

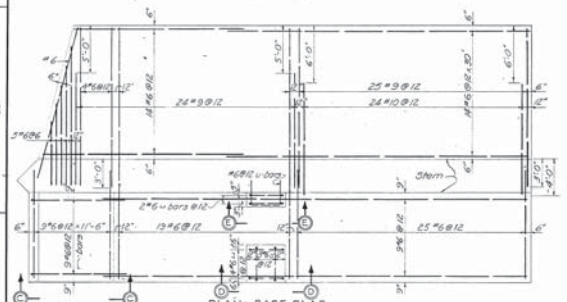


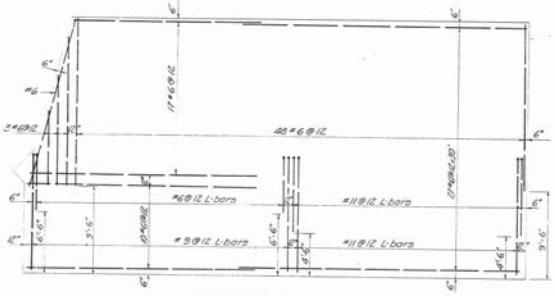
SECTION B-B
SCALE: 1/2"=1'-0"



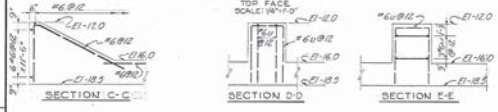








NOTES:
1. FOR GENERAL REINFORCEMENT NOTES SEE SHEET 10.



RECORD DRAWING NOTE

" Shall be, " " Provide, " " Install, " " Remove, " etc., indicates work was accomplished under the contract.

AS BUILT

GRAPHIC SCALES

1/4"=1'0" 4' 2' 0 4' 8'

1/2"=1'0" 8' 4' 0 8' 16' 24' 32'

U.S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

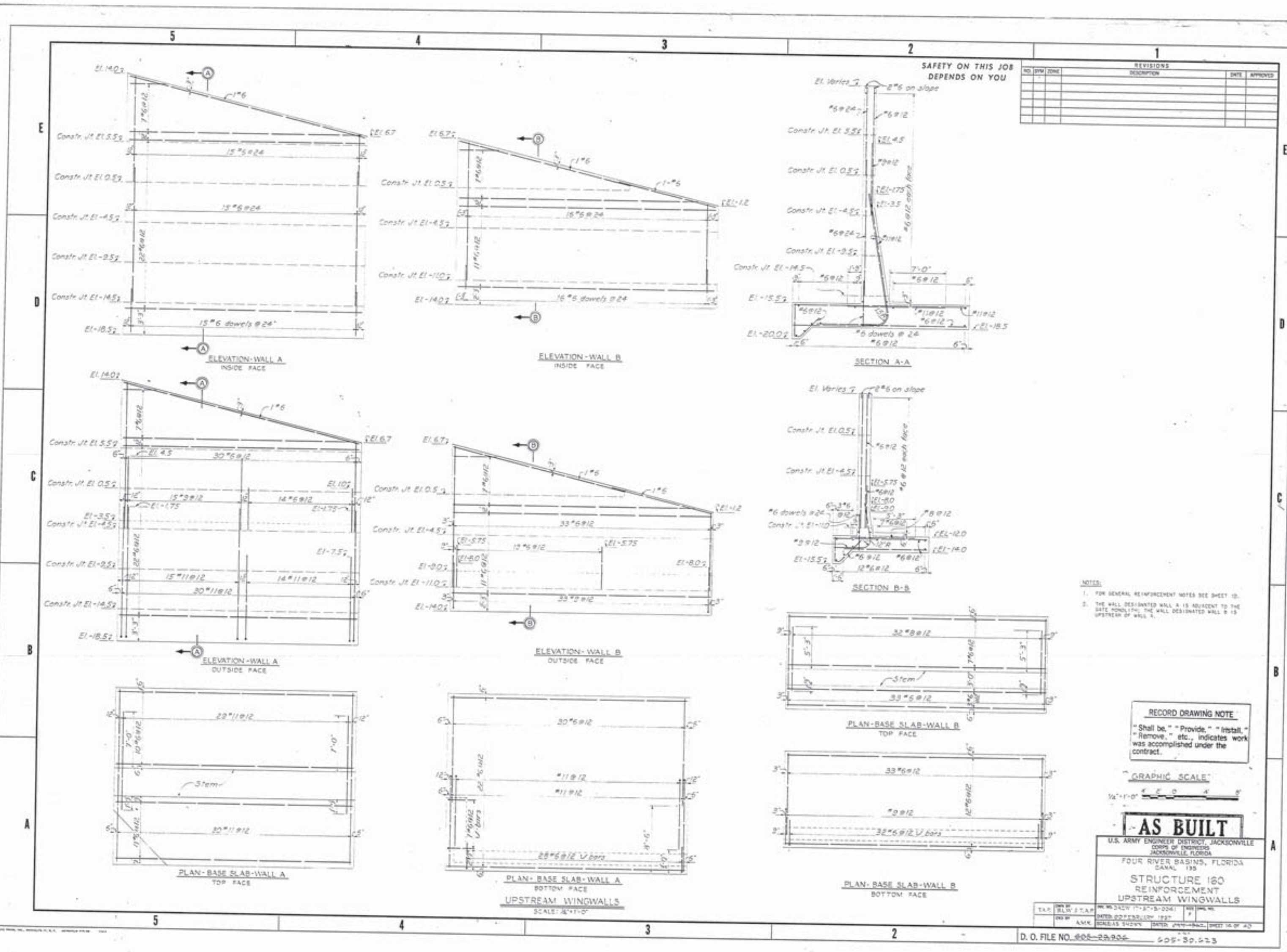
FOUR RIVER BASINS, FLORIDA
CANAL 195

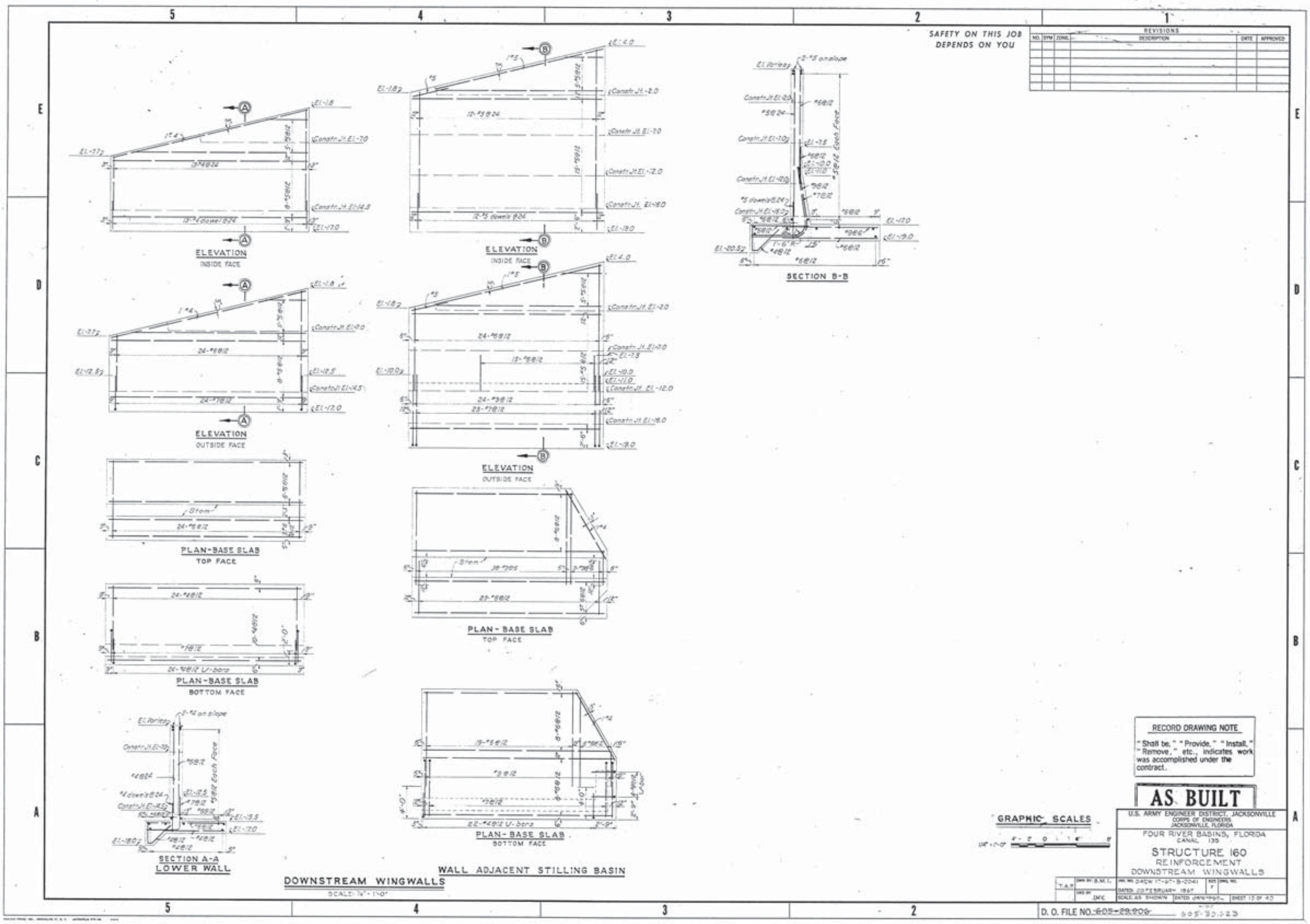
STRUCTURE 160
REINFORCEMENT
STILLING BASIN WALLS

DRAWN BY	TRACED BY	DESIGNED BY	CHECKED BY
TAP	SDS-SLW	AMK	

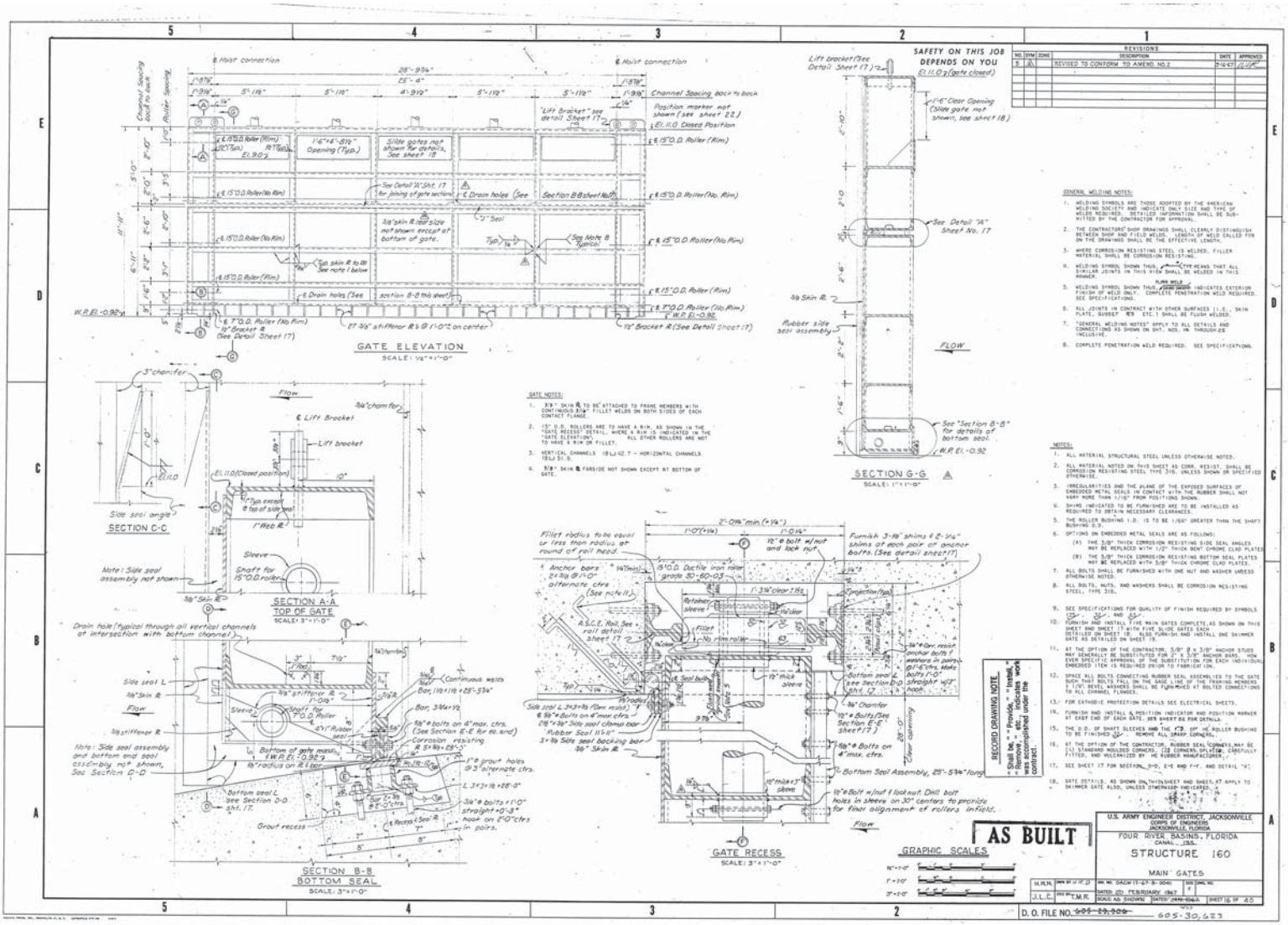
DWG. NO. SACW 17-87-S-2041 | SUPS DWG. NO. | REV.
DATED: 20 FEBRUARY 1987 | SCALE AS SHOWN | DATED: JAN. 1989 | SHEET 13 OF 40

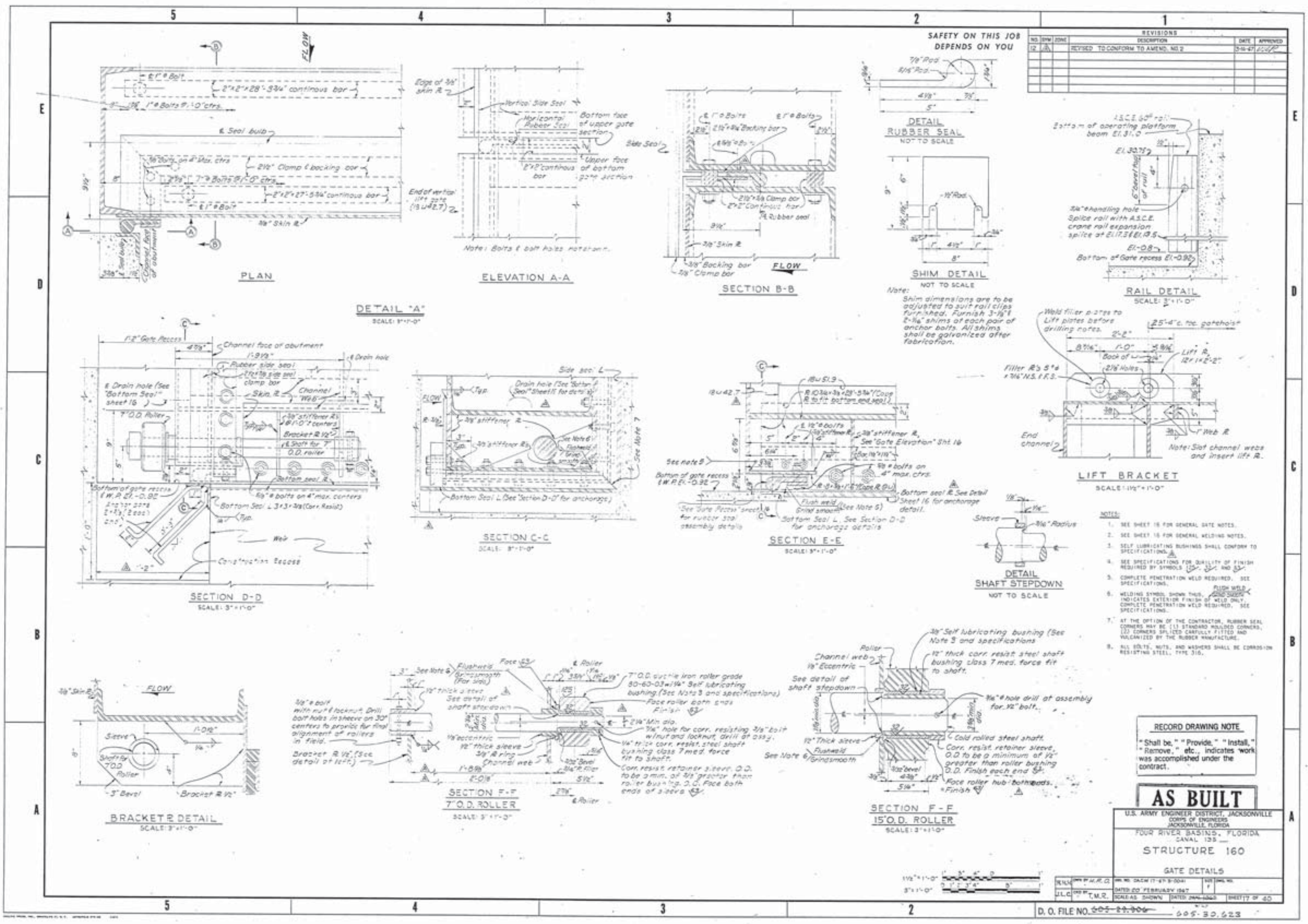
D. O. FILE NO. ~~909-29,906~~ 605-30,623

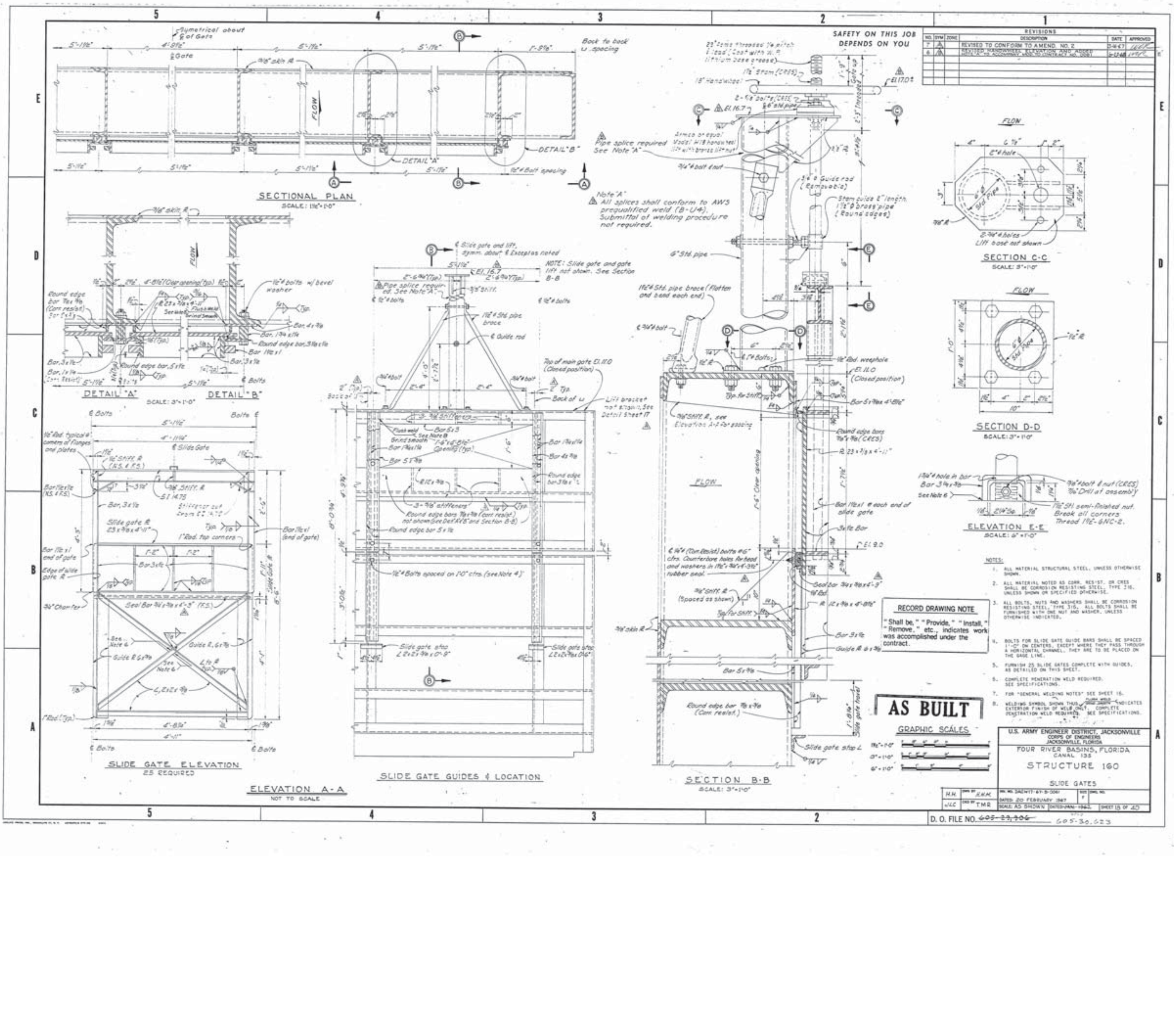

SAFETY ON THIS JOB DEPENDS ON YOU
REVISIONS
ELEVATION-WALL A
INSIDE FACE
ELEVATION-WALL B
INSIDE FACE
SECTION A-A
ELEVATION-WALL A
OUTSIDE FACE
ELEVATION-WALL B
OUTSIDE FACE
SECTION B-B
PLAN-BASE SLAB-WALL B
TOP FACE
PLAN-BASE SLAB-WALL A
TOP FACE
PLAN-BASE SLAB-WALL A
BOTTOM FACE
PLAN-BASE SLAB-WALL B
BOTTOM FACE
UPSTREAM WINGWALLS
NOTES:
1. FOR GENERAL REINFORCEMENT NOTES SEE SHEET 10.
2. THE WALL DESIGNATED WALL A IS ADJACENT TO THE GATE MONOLITH; THE WALL DESIGNATED WALL B IS UPSTREAM OF WALL A.
RECORD DRAWING NOTE
"Shall be," "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract.
GRAPHIC SCALE
AS BUILT
U.S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
CANAL 135
STRUCTURE 160
REINFORCEMENT
UPSTREAM WINGWALLS
SCALE: AS SHOWN
D. O. FILE NO. 605-23,906
605-30,623

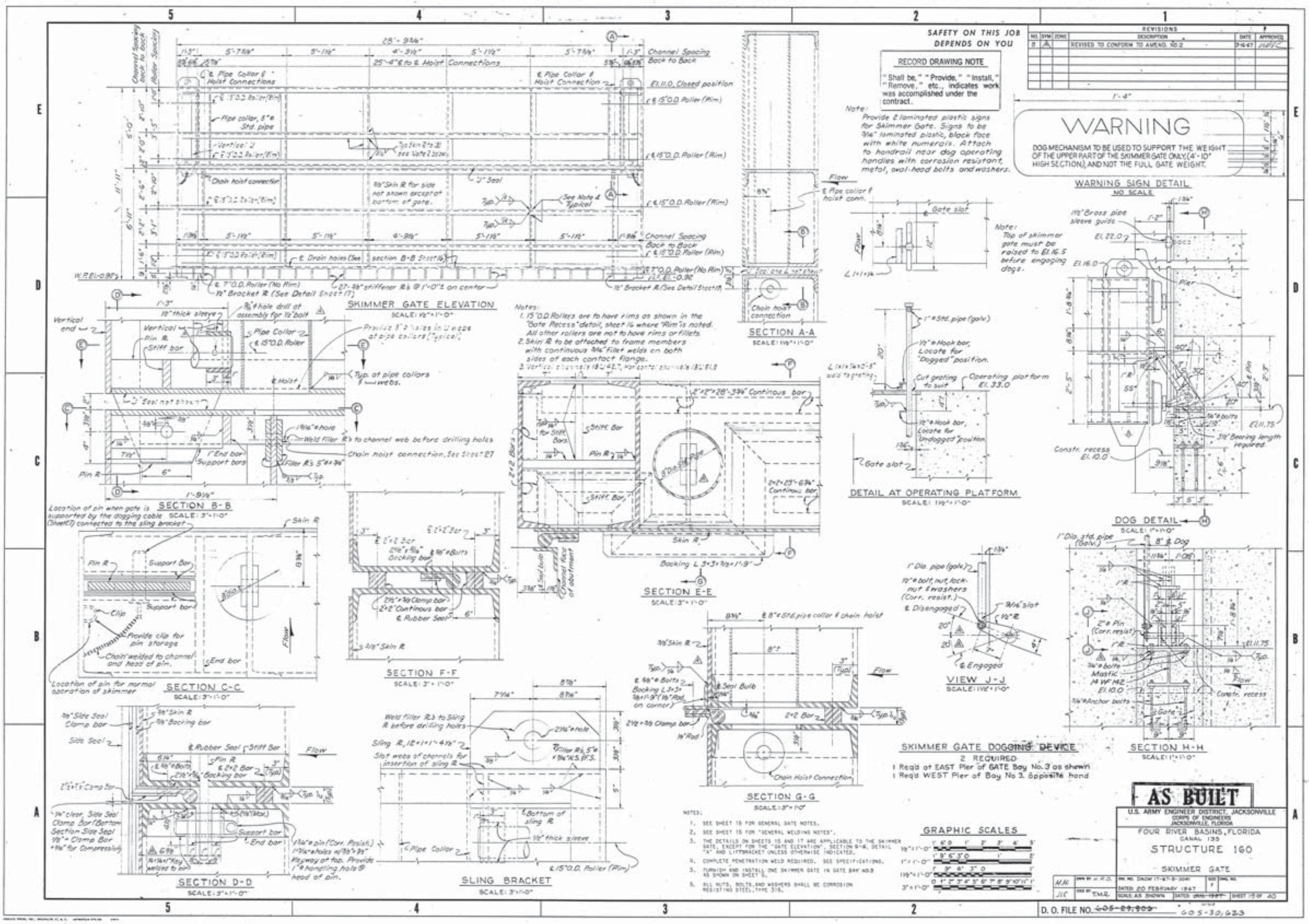


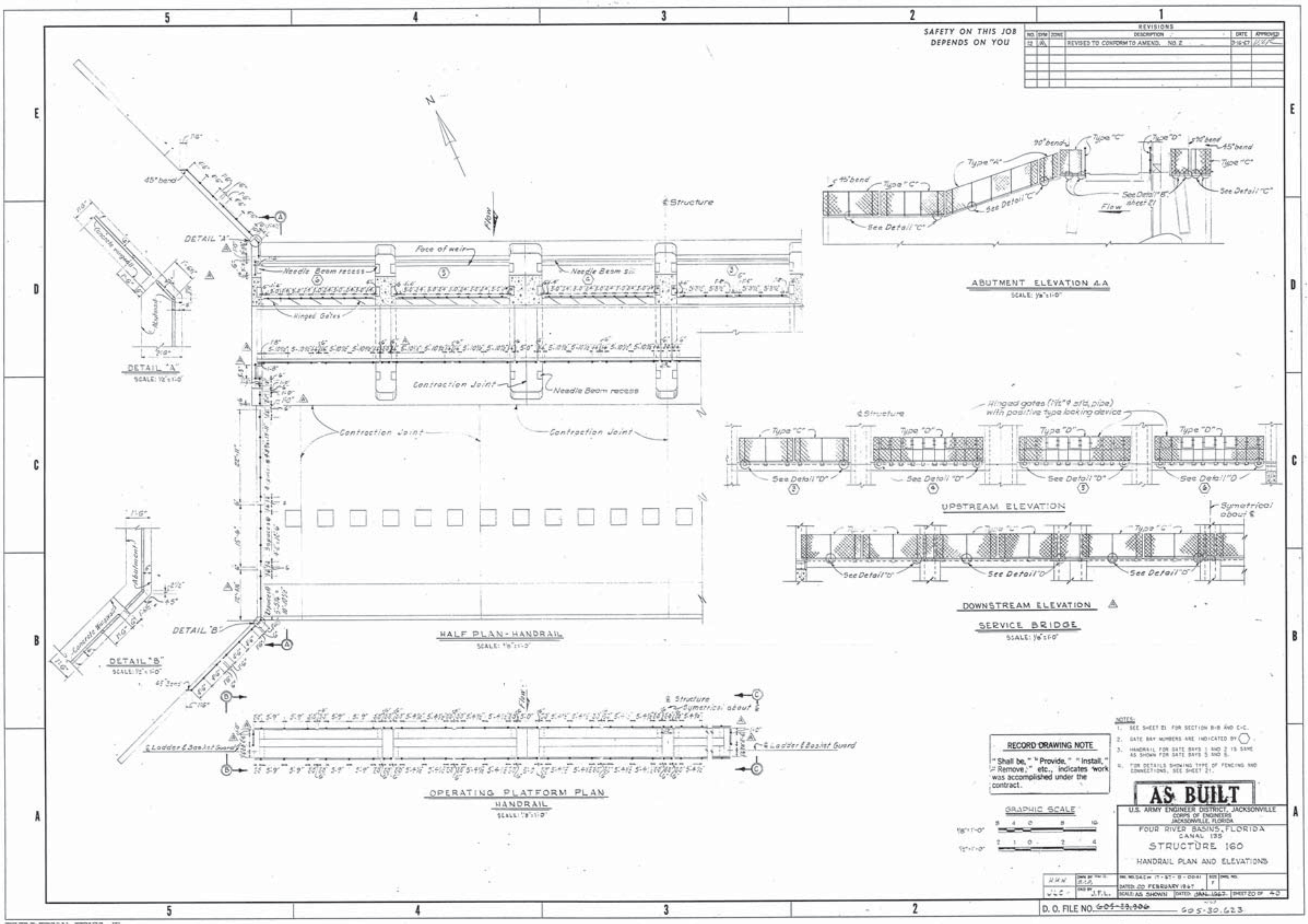
SAFETY ON THIS JOB DEPENDS ON YOU
REVISIONS
NO. | SYM | ZONE | DESCRIPTION | DATE | APPROVED
ELEVATION
INSIDE FACE
ELEVATION
OUTSIDE FACE
PLAN-BASE SLAB
TOP FACE
PLAN-BASE SLAB
BOTTOM FACE
SECTION A-A
LOWER WALL
SECTION B-B
DOWNSTREAM WINGWALLS
SCALE: 1/8" = 1'-0"
WALL ADJACENT STILLING BASIN
RECORD DRAWING NOTE
"Shall be," "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract.
AS BUILT
GRAPHIC SCALES
U.S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
CANAL 135
STRUCTURE 160
REINFORCEMENT
DOWNSTREAM WINGWALLS
T.A.F.
SCALE: AS SHOWN
D. O. FILE NO. 605-29,906


GATE ELEVATION
SCALE: 1/2"=1'-0"
SECTION G-G
SCALE: 1"=1'-0"
SECTION C-C
SECTION A-A
TOP OF GATE
SCALE: 3"=1'-0"
SECTION B-B
BOTTOM SEAL
SCALE: 3"=1'-0"
GATE RECESS
SCALE: 3"=1'-0"
GRAPHIC SCALES
SAFETY ON THIS JOB DEPENDS ON YOU
AS BUILT
RECORD DRAWING NOTE
U.S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
CANAL 19.5
STRUCTURE 160
MAIN GATES
D.O. FILE NO. 605-30,623


SAFETY ON THIS JOB DEPENDS ON YOU
REVISIONS
REVISED TO CONFORM TO AMEND. NO. 2
PLAN
ELEVATION A-A
SECTION B-B
DETAIL "A"
SCALE: 3"=1'-0"
DETAIL RUBBER SEAL
NOT TO SCALE
SHIM DETAIL
NOT TO SCALE
Note: Shim dimensions are to be adjusted to suit rail clips furnished. Furnish 3-⅛" & 2-1/16" shims at each pair of anchor bolts. All shims shall be galvanized after fabrication.
RAIL DETAIL
SCALE: 3"=1'-0"
LIFT BRACKET
SCALE: 1½"=1'-0"
Note: Slot channel webs and insert lift ℞.
SECTION D-D
SCALE: 3"=1'-0"
SECTION C-C
SCALE: 3"=1'-0"
SECTION E-E
SCALE: 3"=1'-0"
DETAIL SHAFT STEPDOWN
NOT TO SCALE
NOTES:
1. SEE SHEET 16 FOR GENERAL GATE NOTES.
2. SEE SHEET 16 FOR GENERAL WELDING NOTES.
3. SELF LUBRICATING BUSHINGS SHALL CONFORM TO SPECIFICATIONS.
4. SEE SPECIFICATIONS FOR QUALITY OF FINISH REQUIRED BY SYMBOLS 125, 32, AND 63.
5. COMPLETE PENETRATION WELD REQUIRED. SEE SPECIFICATIONS.
6. WELDING SYMBOL SHOWN THUS, FLUSH WELD GRIND SMOOTH INDICATES EXTERIOR FINISH OF WELD ONLY. COMPLETE PENETRATION WELD REQUIRED. SEE SPECIFICATIONS.
7. AT THE OPTION OF THE CONTRACTOR, RUBBER SEAL CORNERS MAY BE (1) STANDARD MOULDED CORNERS, (2) CORNERS SPLICED CARFULLY FITTED AND VULCANIZED BY THE RUBBER MANUFACTURE.
8. ALL BOLTS, NUTS, AND WASHERS SHALL BE CORROSION RESISTING STEEL, TYPE 316.
BRACKET ℞ DETAIL
SCALE: 3"=1'-0"
SECTION F-F
7" O.D. ROLLER
SCALE: 3"=1'-0"
SECTION F-F
15" O.D. ROLLER
SCALE: 3"=1'-0"
RECORD DRAWING NOTE
"Shall be," "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract.
AS BUILT
U.S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
CANAL 135
STRUCTURE 160
GATE DETAILS
DATED: 20 FEBRUARY 1967
SCALE: AS SHOWN
SHEET 17 OF 40
D. O. FILE NO. 605-29,906 605-30,623

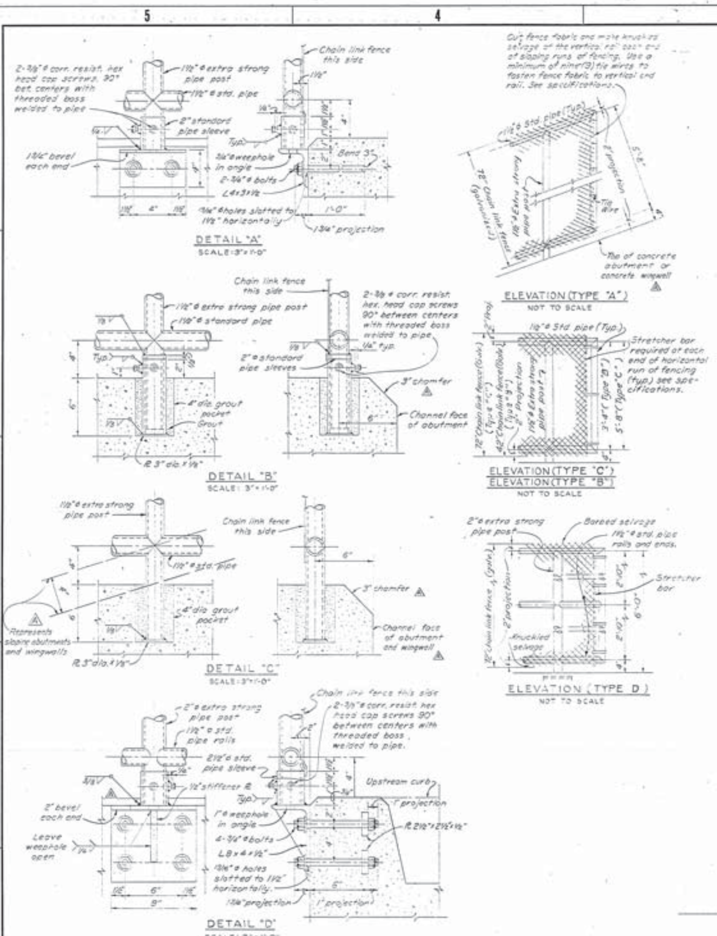

SAFETY ON THIS JOB DEPENDS ON YOU
REVISIONS
REVISED TO CONFORM TO AMEND. NO. 2
SECTIONAL PLAN
SCALE: 1½"=1'-0"
DETAIL "A"
DETAIL "B"
SCALE: 3"=1'-0"
SLIDE GATE ELEVATION
25 REQUIRED
ELEVATION A-A
NOT TO SCALE
SLIDE GATE GUIDES & LOCATION
SECTION B-B
SCALE: 3"=1'-0"
SECTION C-C
SCALE: 3"=1'-0"
SECTION D-D
SCALE: 3"=1'-0"
ELEVATION E-E
SCALE: 6"=1'-0"
Note "A"
All splices shall conform to AWS prequalified weld (B-U4). Submittal of welding procedure not required.
NOTES:
1. ALL MATERIAL STRUCTURAL STEEL, UNLESS OTHERWISE SHOWN.
2. ALL MATERIAL NOTED AS CORR. RESIST. OR CRES SHALL BE CORROSION RESISTING STEEL, TYPE 316, UNLESS SHOWN OR SPECIFIED OTHERWISE.
3. ALL BOLTS, NUTS AND WASHERS SHALL BE CORROSION RESISTING STEEL, TYPE 316. ALL BOLTS SHALL BE FURNISHED WITH ONE NUT AND WASHER, UNLESS OTHERWISE INDICATED.
4. BOLTS FOR SLIDE GATE GUIDE BARS SHALL BE SPACED 1'-0" ON CENTERS, EXCEPT WHERE THEY PASS THROUGH A HORIZONTAL CHANNEL, THEY ARE TO BE PLACED ON THE GAGE LINE.
5. FURNISH 25 SLIDE GATES COMPLETE WITH GUIDES, AS DETAILED ON THIS SHEET.
6. COMPLETE PENETRATION WELD REQUIRED. SEE SPECIFICATIONS.
7. FOR "GENERAL WELDING NOTES" SEE SHEET 16.
8. WELDING SYMBOL SHOWN THUS INDICATES EXTERIOR FINISH OF WELD ONLY. COMPLETE PENETRATION WELD REQUIRED. SEE SPECIFICATIONS.
RECORD DRAWING NOTE
"Shall be," "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract.
AS BUILT
GRAPHIC SCALES
U.S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
CANAL 135
STRUCTURE 160
SLIDE GATES
DATED: 20 FEBRUARY 1967
SCALE: AS SHOWN
SHEET 18 OF 40
D. O. FILE NO. 605-29,406 605-30,623

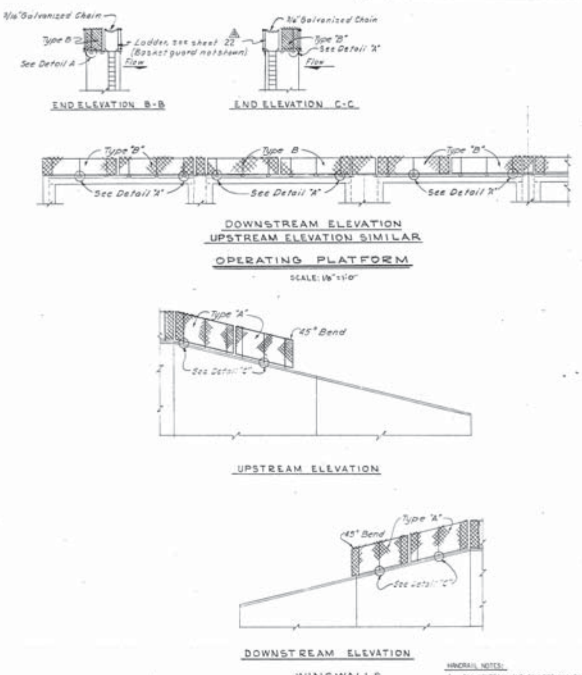

SKIMMER GATE ELEVATION
SCALE: 1/2" = 1'-0"
Notes:
1. 15" O.D. Rollers are to have rims as shown in the "Gate Recess" detail, sheet 16 where "Rim" is noted. All other rollers are not to have rims or fillets.
2. Skin ℞ to be attached to frame members with continuous 5/16" Fillet welds on both sides of each contact flange.
SECTION A-A
SECTION B-B
SCALE: 3" = 1'-0"
SECTION C-C
SCALE: 3" = 1'-0"
SECTION D-D
SCALE: 3" = 1'-0"
SECTION E-E
SCALE: 3" = 1'-0"
SECTION F-F
SCALE: 3" = 1'-0"
SECTION G-G
SCALE: 3" = 1'-0"
SLING BRACKET
SCALE: 3" = 1'-0"
SAFETY ON THIS JOB DEPENDS ON YOU
RECORD DRAWING NOTE
"Shall be," "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract.
Note:
Provide 2 laminated plastic signs for Skimmer Gate. Signs to be 3/16" laminated plastic, black face with white numerals. Attach to handrail near dog operating handles with corrosion resistant, metal, oval-head bolts and washers.
REVISIONS
NO. | SYM | ZONE | DESCRIPTION | DATE | APPROVED
B | A | | REVISED TO CONFORM TO AMEND. NO. 2 | 7-16-67
WARNING
DOG MECHANISM TO BE USED TO SUPPORT THE WEIGHT OF THE UPPER PART OF THE SKIMMER GATE ONLY, (4'-10" HIGH SECTION), AND NOT THE FULL GATE WEIGHT.
WARNING SIGN DETAIL
NO SCALE
Note:
Top of skimmer gate must be raised to El. 16.5 before engaging dogs.
DETAIL AT OPERATING PLATFORM
SCALE: 1 1/2" = 1'-0"
DOG DETAIL
SCALE: 1" = 1'-0"
VIEW J-J
SCALE: 1 1/2" = 1'-0"
SECTION H-H
SCALE: 1" = 1'-0"
SKIMMER GATE DOGGING DEVICE
2 REQUIRED
1 Req'd at EAST Pier of GATE Bay No. 3 as shown
1 Req'd WEST Pier of Bay No 3. opposite hand
NOTES:
1. SEE SHEET 15 FOR GENERAL GATE NOTES.
2. SEE SHEET 15 FOR "GENERAL WELDING NOTES".
3. THE DETAILS ON SHEETS 15 AND 17 ARE APPLICABLE TO THE SKIMMER GATE, EXCEPT FOR THE "GATE ELEVATION", SECTION G-G, DETAIL "A" AND LIFTBRACKET UNLESS OTHERWISE INDICATED.
4. COMPLETE PENETRATION WELD REQUIRED. SEE SPECIFICATIONS.
5. FURNISH AND INSTALL ONE SKIMMER GATE IN GATE BAY NO. 3 AS SHOWN ON SHEET 5.
6. ALL NUTS, BOLTS, AND WASHERS SHALL BE CORROSION RESISTING STEEL, TYPE 3-5.
GRAPHIC SCALES
AS BUILT
U.S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
CANAL 135
STRUCTURE 160
SKIMMER GATE
DATED: 20 FEBRUARY 1967
SCALE: AS SHOWN
SHEET 15 OF 40
D. O. FILE NO. 605-29,909
605-30,623


SAFETY ON THIS JOB
DEPENDS ON YOU
REVISIONS
REVISED TO CONFORM TO AMEND. NO. 2
Face of weir
Needle Beam recess
Needle Beam sill
Hinged Gates
Contraction Joint
Needle Beam recess
DETAIL "A"
SCALE: 1/2"=1'-0"
DETAIL "B"
SCALE: 1/2"=1'-0"
HALF PLAN - HANDRAIL
SCALE: 1/8"=1'-0"
ABUTMENT ELEVATION A-A
SCALE: 1/8"=1'-0"
Winged gates (1 1/2"φ std. pipe) with positive type locking device
UPSTREAM ELEVATION
DOWNSTREAM ELEVATION
SERVICE BRIDGE
SCALE: 1/8"=1'-0"
OPERATING PLATFORM PLAN
HANDRAIL
SCALE: 1/8"=1'-0"
RECORD DRAWING NOTE
"Shall be," "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract.
NOTES:
1. SEE SHEET 21 FOR SECTION B-B AND C-C.
2. GATE BAY NUMBERS ARE INDICATED BY ⬡.
3. HANDRAIL FOR GATE BAYS 1 AND 2 IS SAME AS SHOWN FOR GATE BAYS 5 AND 6.
4. FOR DETAILS SHOWING TYPE OF FENCING AND CONNECTIONS, SEE SHEET 21.
GRAPHIC SCALE
AS BUILT
U.S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
CANAL 135
STRUCTURE 160
HANDRAIL PLAN AND ELEVATIONS
DATED: 20 FEBRUARY 1967
SCALE: AS SHOWN
SHEET 20 OF 40
D. O. FILE NO. 605-29,906
605-30,623

SAFETY ON THIS JOB DEPENDS ON YOU

REVISIONS					
NO.	SYM	ZONE	DESCRIPTION	DATE	APPROVED
7	△		REVISED TO CONFORM TO AMEND. NO.2		





HANDRAIL NOTES:

1. ALL HANDRAIL AND CONNECTIONS TO BE GALVANIZED.
2. ALL GALVANIZED ITEMS TO BE GALVANIZED AFTER FABRICATION.
3. ALL VERTICAL PIPE POSTS TO BE 1-1/2" DIA. EXTRA STRONG PIPE EXCEPT FOR PIPE POSTS ON SERVICE BRIDGE (SEE DETAIL "D"). ALL OTHER VERTICAL, HORIZONTAL, AND SLOPING PIPE TO BE 1-1/2" DIA. STANDARD PIPE.
4. HANDRAIL TO BE FLUSH WELDED TYPE.
5. ALL MATERIAL NOTED AS CORR. RESIST. SHALL BE CORROSION RESISTING STEEL, TYPE 316 UNLESS SPECIFIED OTHERWISE.
6. FOR LADDER DETAILS, SEE SHEET 22.
7. WHERE GALVANIZED ITEMS LOSE THEIR COATING DUE TO FIELD WELDING, GALVANIZING REPAIRS SHALL BE MADE IN ACCORDANCE WITH THE SPECIFICATIONS.

RECORD DRAWING NOTE

"Shall be," "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract.

GRAPHIC SCALES

1/8" = 1'-0"

3" = 1'-0"

AS BUILT

U.S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

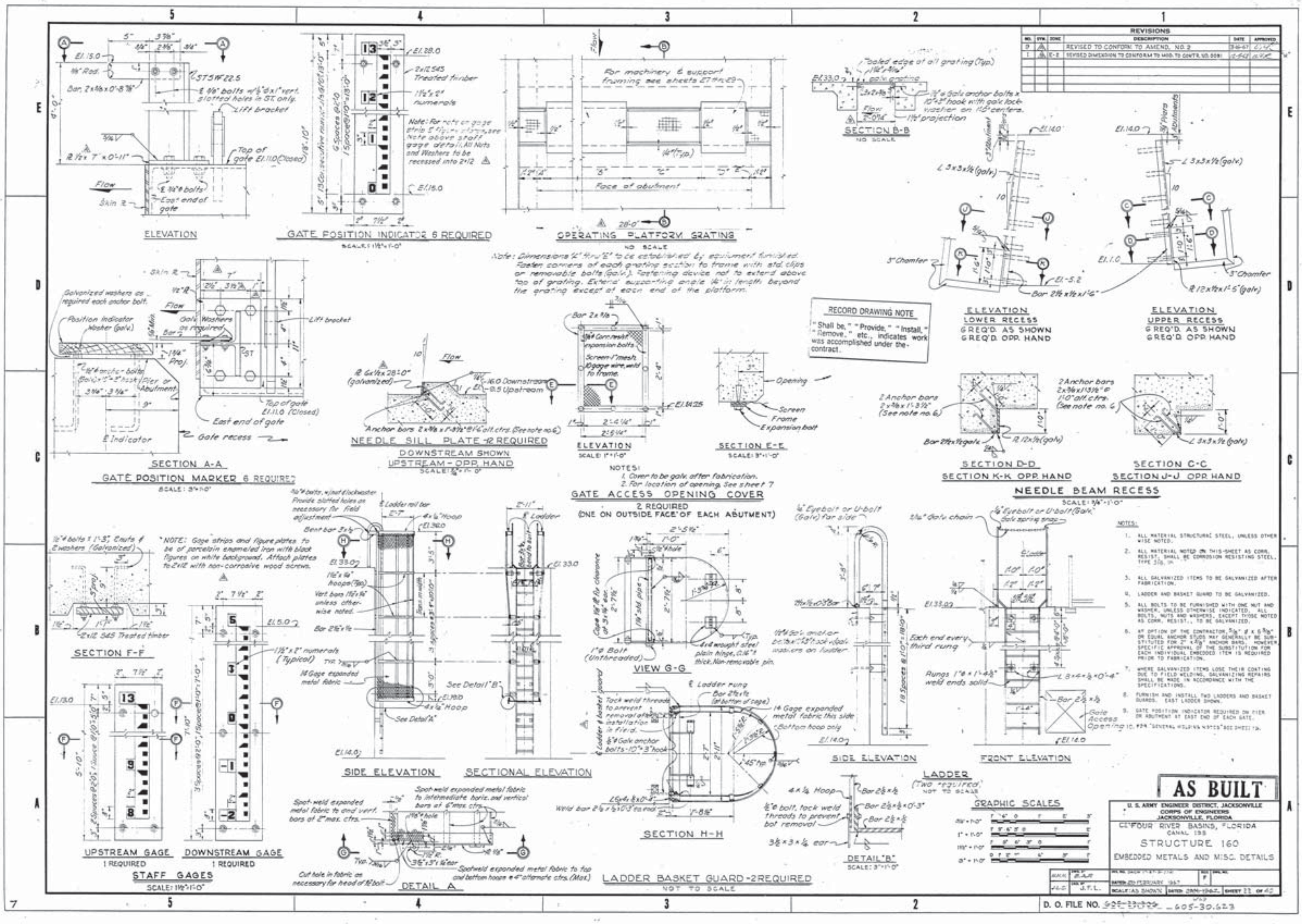
FOUR RIVER BASINS, FLORIDA
CANAL 135

STRUCTURE 160

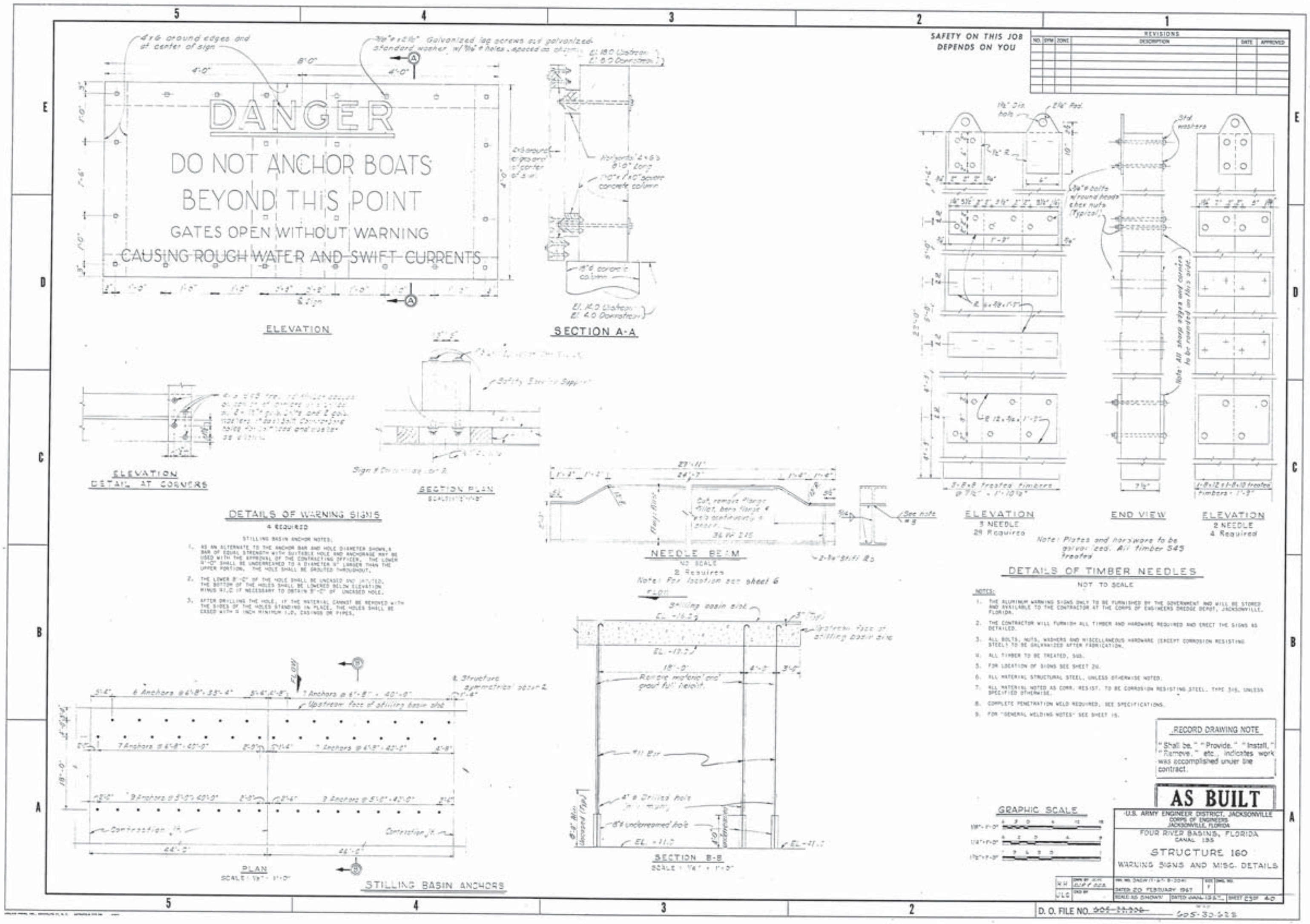
HANDRAIL ELEVATIONS AND DETAILS

INV. NO. DACW 17-67-B-0041
DATED: 23 FEBRUARY 1967
CKD BY J.F.L.
SCALE: AS SHOWN
SHEET 21 OF 43

D. O. FILE NO. ~~G05-29,406~~ G05-30,623



ELEVATION
GATE POSITION INDICATOR 6 REQUIRED
OPERATING PLATFORM GRATING
SECTION B-B
ELEVATION LOWER RECESS
ELEVATION UPPER RECESS
SECTION A-A
GATE POSITION MARKER 6 REQUIRED
NEEDLE SILL PLATE 12 REQUIRED
DOWNSTREAM SHOWN
UPSTREAM - OPP. HAND
ELEVATION
SECTION E-E
GATE ACCESS OPENING COVER
2 REQUIRED
(ONE ON OUTSIDE FACE OF EACH ABUTMENT)
RECORD DRAWING NOTE
"Shall be," "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract.
SECTION D-D
SECTION K-K OPP. HAND
SECTION C-C
SECTION J-J OPP. HAND
NEEDLE BEAM RECESS
SECTION F-F
SIDE ELEVATION
SECTIONAL ELEVATION
VIEW G-G
SECTION H-H
DETAIL A
LADDER BASKET GUARD - 2 REQUIRED
NOT TO SCALE
SIDE ELEVATION
FRONT ELEVATION
LADDER
DETAIL "B"
UPSTREAM GAGE
DOWNSTREAM GAGE
STAFF GAGES
GRAPHIC SCALES
NOTES:
1. ALL MATERIAL STRUCTURAL STEEL, UNLESS OTHERWISE NOTED.
2. ALL MATERIAL NOTED ON THIS SHEET AS CORR. RESIST. SHALL BE CORROSION RESISTING STEEL, TYPE 316, 18.
3. ALL GALVANIZED ITEMS TO BE GALVANIZED AFTER FABRICATION.
4. LADDER AND BASKET GUARD TO BE GALVANIZED.
5. ALL BOLTS TO BE FURNISHED WITH ONE NUT AND WASHER, UNLESS OTHERWISE INDICATED. ALL BOLTS, NUTS AND WASHERS, EXCEPT THOSE NOTED AS CORR. RESIST., TO BE GALVANIZED.
6. AT OPTION OF THE CONTRACTOR, 5/8" Ø x 6 3/8" OR EQUAL ANCHOR STUDS MAY GENERALLY BE SUBSTITUTED FOR 2" x 3/8" ANCHOR BARS. HOWEVER, SPECIFIC APPROVAL OF THE SUBSTITUTION FOR EACH INDIVIDUAL EMBEDDED ITEM IS REQUIRED PRIOR TO FABRICATION.
7. WHERE GALVANIZED ITEMS LOSE THEIR COATING DUE TO FIELD WELDING, GALVANIZING REPAIRS SHALL BE MADE IN ACCORDANCE WITH THE SPECIFICATIONS.
8. FURNISH AND INSTALL TWO LADDERS AND BASKET GUARDS. EAST LADDER SHOWN.
9. GATE POSITION INDICATOR REQUIRED ON PIER OR ABUTMENT AT EAST END OF EACH GATE.
10. FOR "GENERAL WELDING NOTES" SEE SHEET 13.
REVISIONS
REVISED TO CONFORM TO AMEND. NO. 2
REVISED DIMENSION TO CONFORM TO MOD. TO CONTR.
AS BUILT
U. S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
CANAL 155
STRUCTURE 160
EMBEDDED METALS AND MISC. DETAILS
SCALE: AS SHOWN
D. O. FILE NO. 605-30,623



DETAILS OF WARNING SIGNS

4 REQUIRED

STILLING BASIN ANCHOR NOTES:

1. AS AN ALTERNATE TO THE ANCHOR BAR AND HOLE DIAMETER SHOWN, A BAR OF EQUAL STRENGTH WITH SUITABLE HOLE AND ANCHORAGE MAY BE USED WITH THE APPROVAL OF THE CONTRACTING OFFICER. THE LOWER 8'-0" SHALL BE UNDERREAMED TO A DIAMETER 4" LARGER THAN THE UPPER PORTION. THE HOLE SHALL BE GROUTED THROUGHOUT.
2. THE LOWER 8'-0" OF THE HOLE SHALL BE UNCASED AND GROUTED. THE BOTTOM OF THE HOLES SHALL BE LOWERED BELOW ELEVATION MINUS 41.0 IF NECESSARY TO OBTAIN 8'-0" OF UNCASED HOLE.
3. AFTER DRILLING THE HOLE, IF THE MATERIAL CANNOT BE REMOVED WITH THE SIDES OF THE HOLES STANDING IN PLACE, THE HOLES SHALL BE CASED WITH 5 INCH MINIMUM I.D. CASINGS OR PIPES.

DETAILS OF TIMBER NEEDLES

NOT TO SCALE

NOTES:

1. THE ALUMINUM WARNING SIGNS ONLY TO BE FURNISHED BY THE GOVERNMENT AND WILL BE STORED AND AVAILABLE TO THE CONTRACTOR AT THE CORPS OF ENGINEERS DREDGE DEPOT, JACKSONVILLE, FLORIDA.
2. THE CONTRACTOR WILL FURNISH ALL TIMBER AND HARDWARE REQUIRED AND ERECT THE SIGNS AS DETAILED.
3. ALL BOLTS, NUTS, WASHERS AND MISCELLANEOUS HARDWARE (EXCEPT CORROSION RESISTING STEEL) TO BE GALVANIZED AFTER FABRICATION.
4. ALL TIMBER TO BE TREATED, 545.
5. FOR LOCATION OF SIGNS SEE SHEET 28.
6. ALL MATERIAL STRUCTURAL STEEL, UNLESS OTHERWISE NOTED.
7. ALL MATERIAL NOTED AS CORR. RESIST. TO BE CORROSION RESISTING STEEL, TYPE 316, UNLESS SPECIFIED OTHERWISE.
8. COMPLETE PENETRATION WELD REQUIRED, SEE SPECIFICATIONS.
9. FOR "GENERAL WELDING NOTES" SEE SHEET 15.

RECORD DRAWING NOTE

"Shall be," "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract.

AS BUILT

U.S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

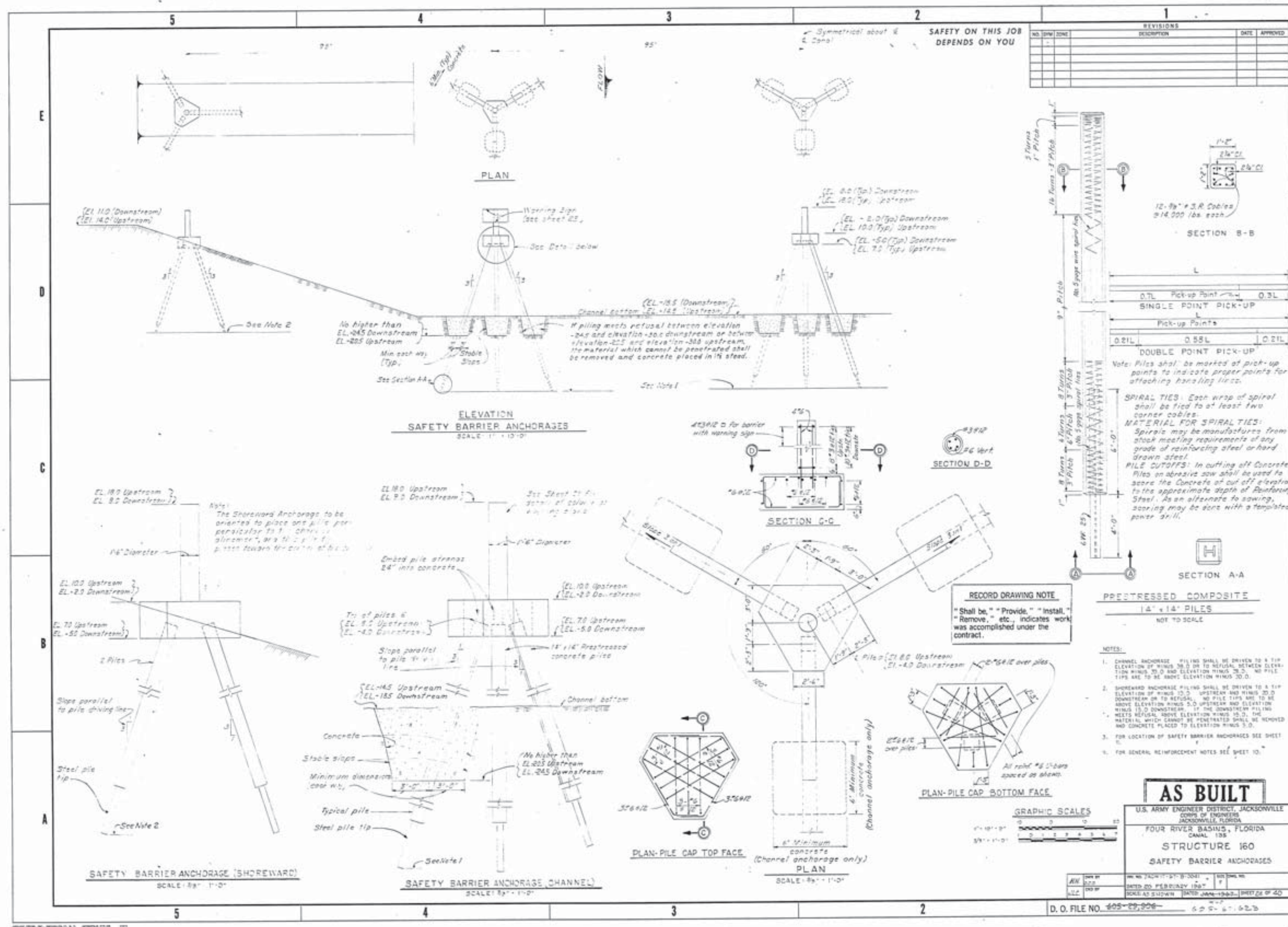
FOUR RIVER BASINS, FLORIDA
CANAL 155

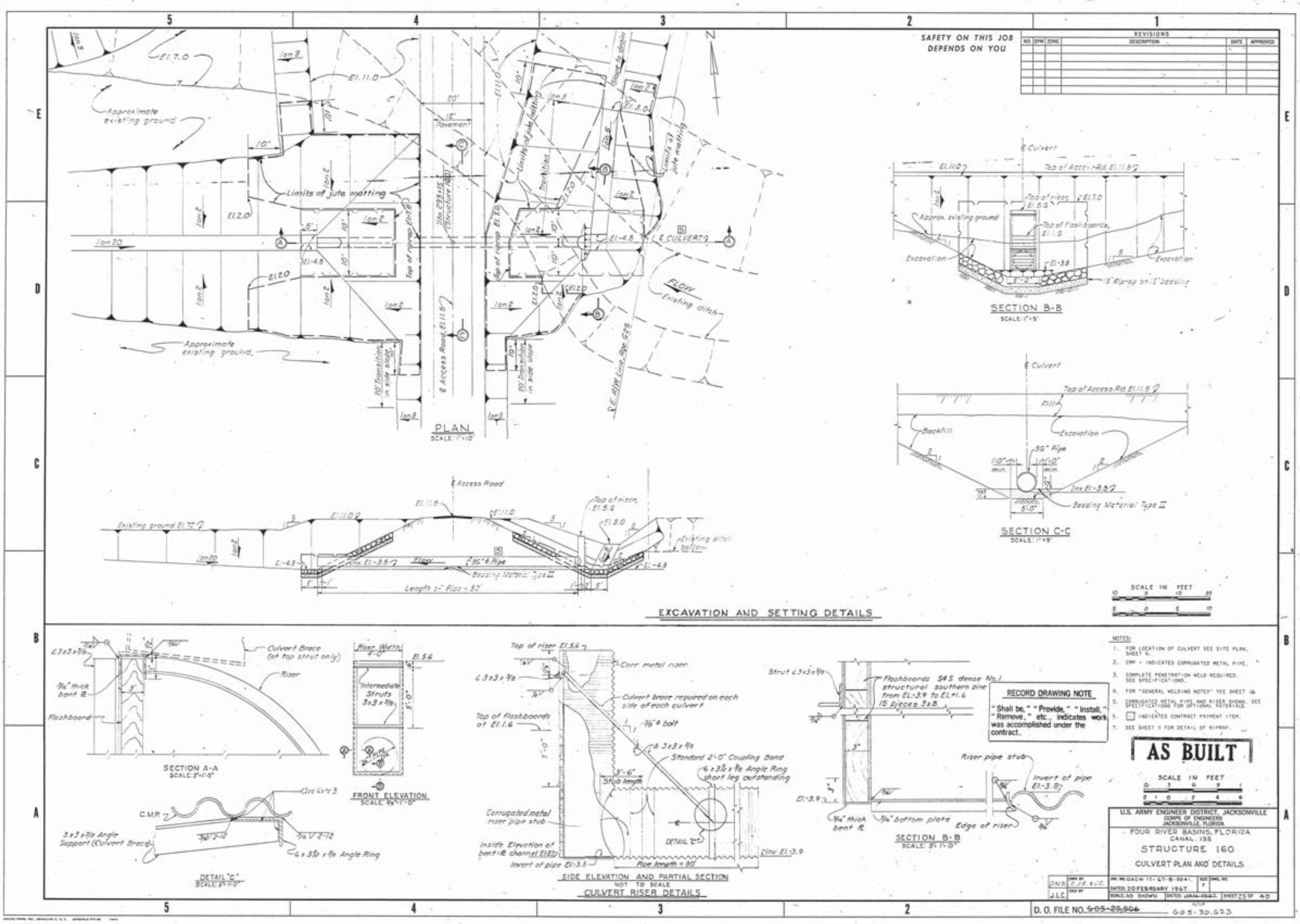
STRUCTURE 160

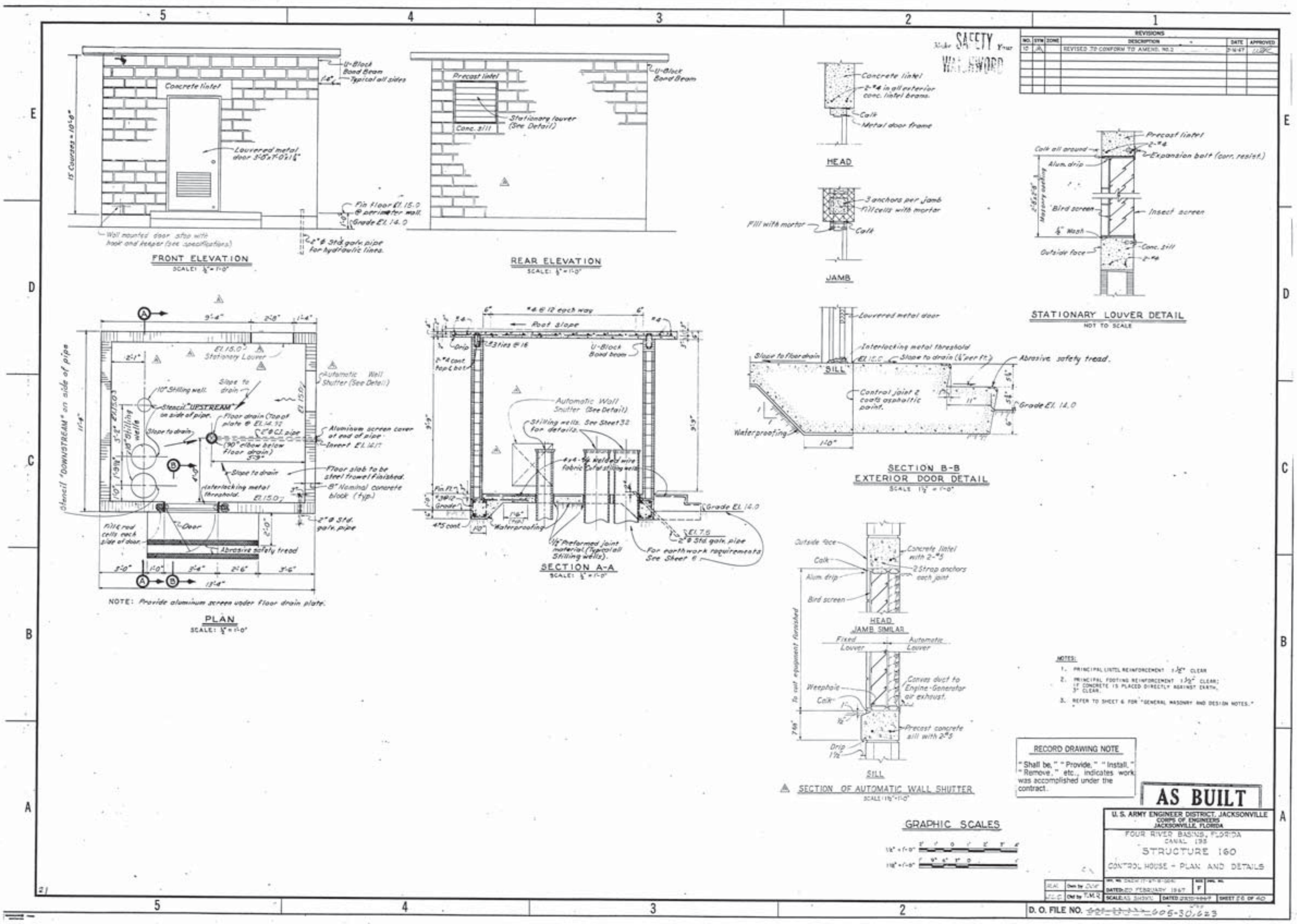
WARNING SIGNS AND MISC. DETAILS

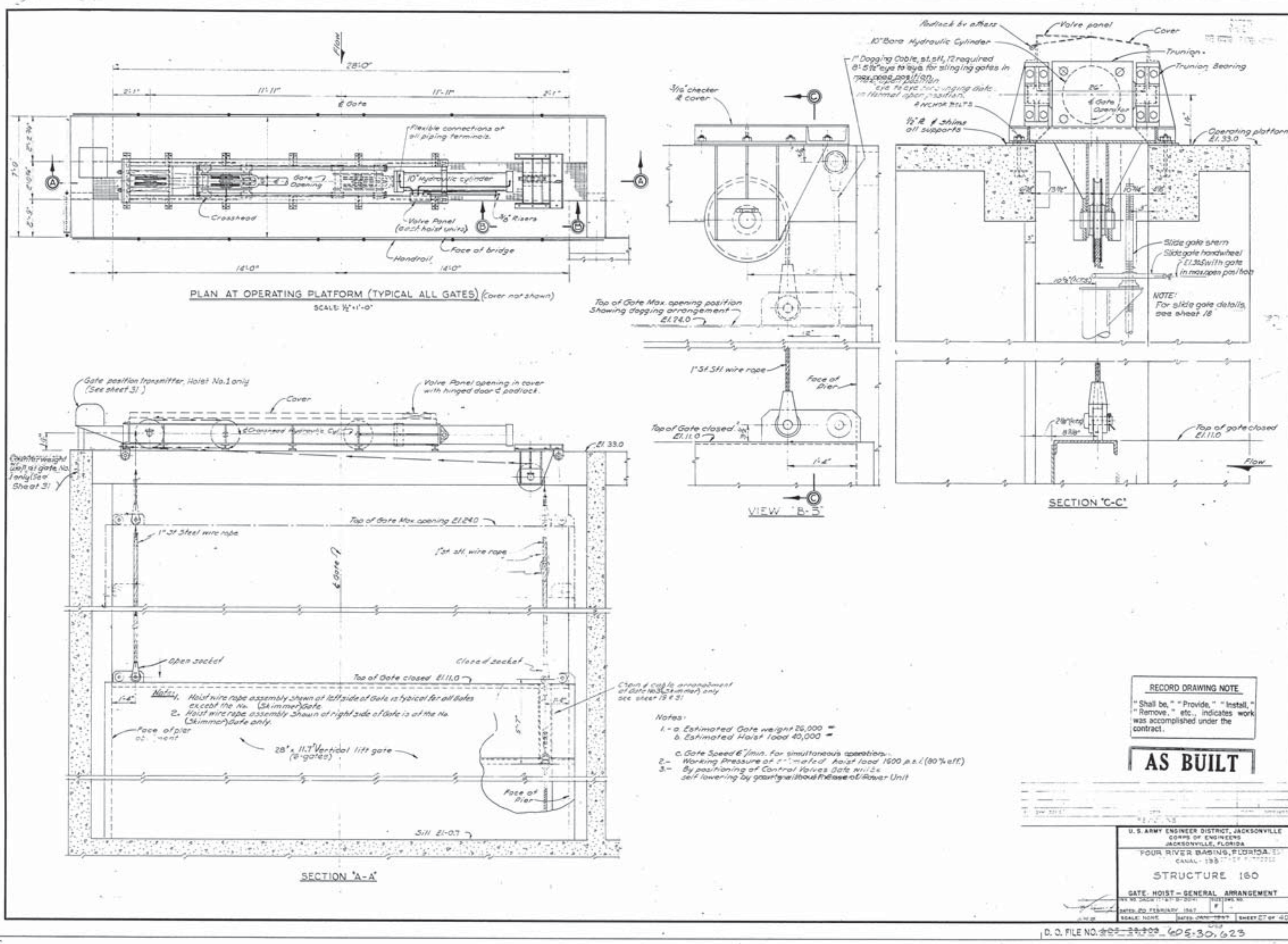
DATED: 20 FEBRUARY 1967
SCALE: AS SHOWN
SHEET 23 OF 40

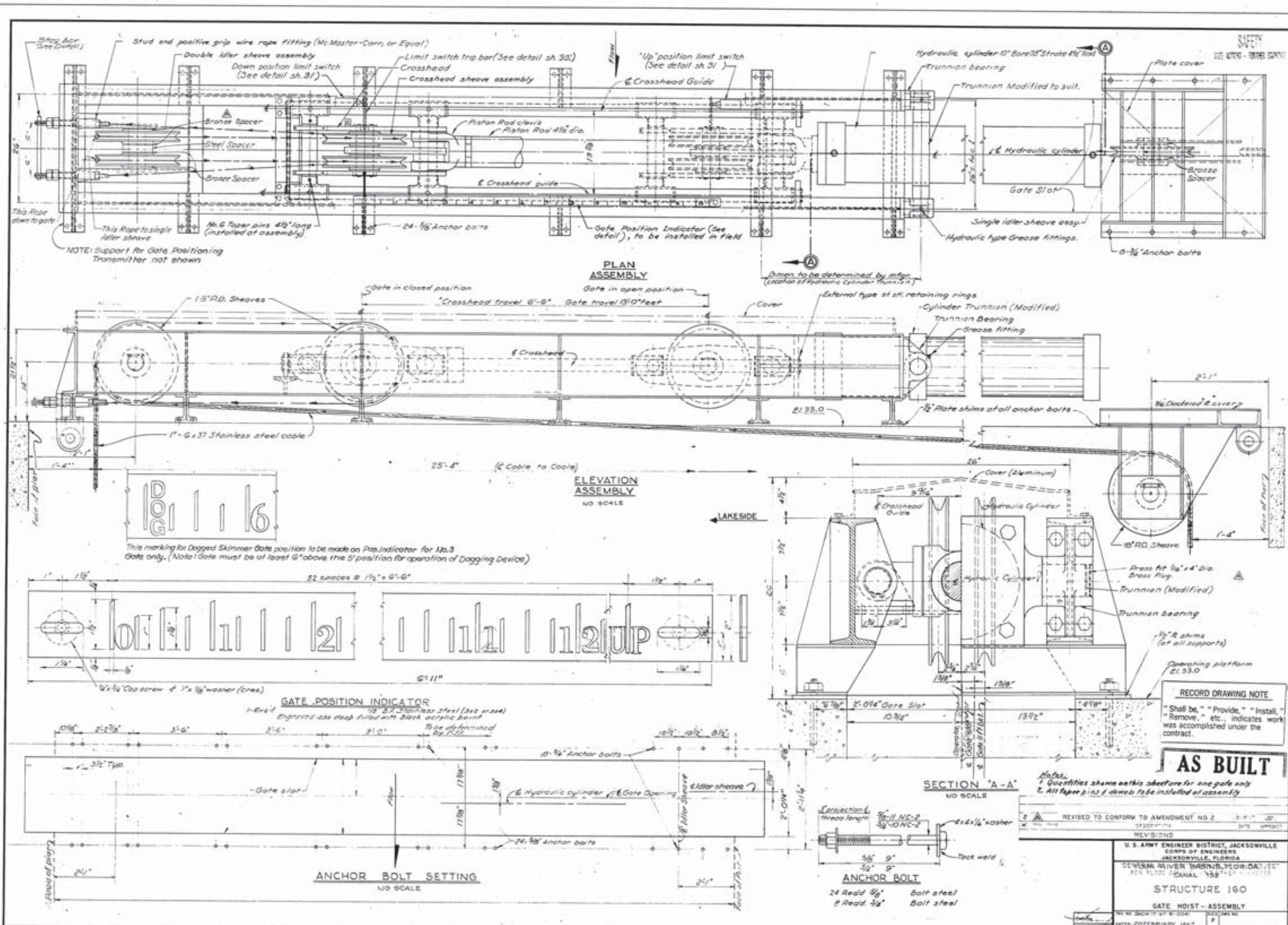
D. O. FILE NO. ~~205-33,306~~ 205-30-528

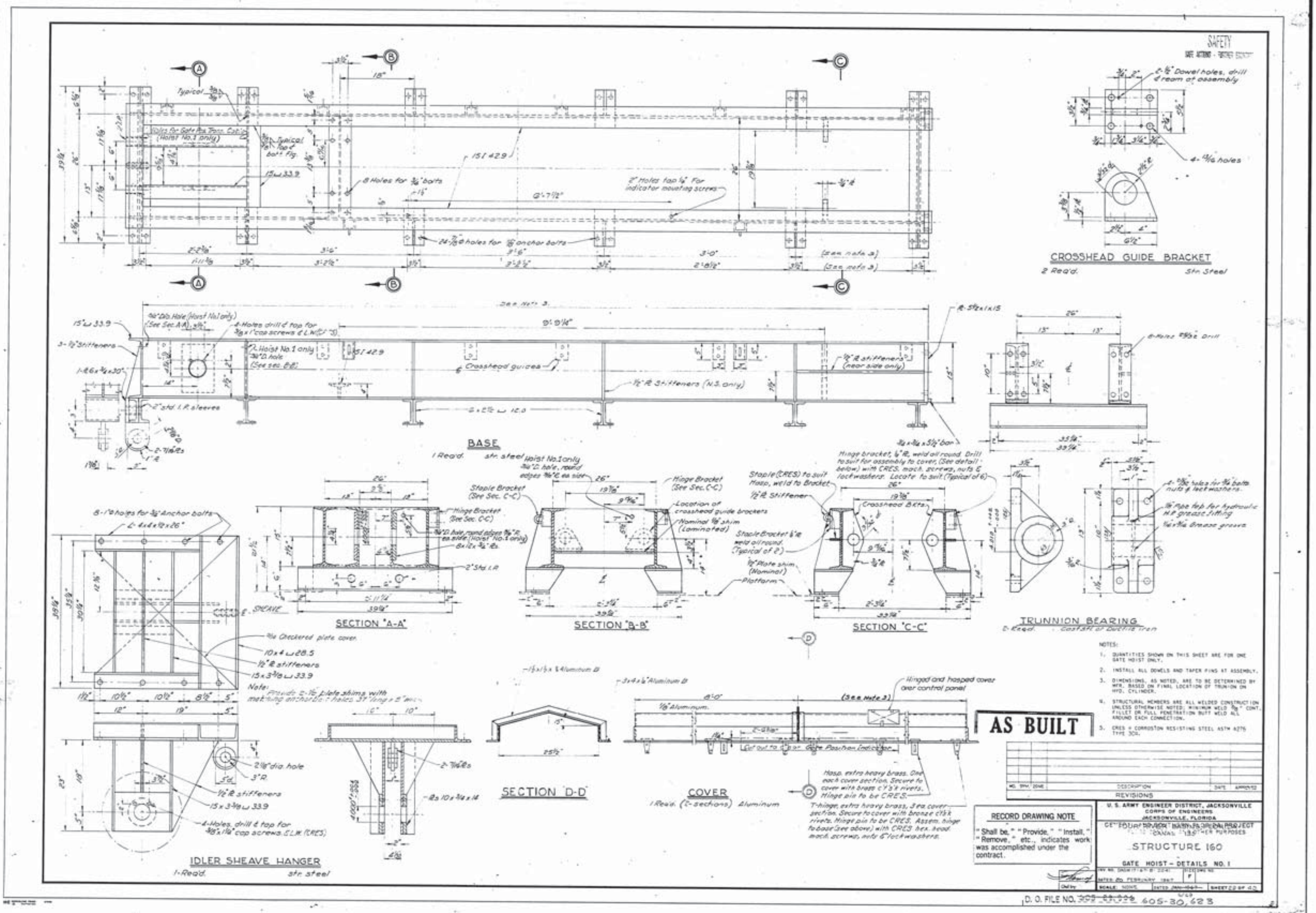

SAFETY ON THIS JOB DEPENDS ON YOU
REVISIONS
PLAN
ELEVATION
SAFETY BARRIER ANCHORAGES
See Note 2
See Note 1
SECTION B-B
SINGLE POINT PICK-UP
DOUBLE POINT PICK-UP
Note: Piles shall be marked at pick-up points to indicate proper points for attaching handling lines.
SPIRAL TIES: Each wrap of spiral shall be tied to at least two corner cables.
MATERIAL FOR SPIRAL TIES: Spirals may be manufactured from stock meeting requirements of any grade of reinforcing steel or hard drawn steel.
PILE CUTOFFS: In cutting off Concrete Piles an abrasive saw shall be used to score the Concrete at cut off elevation to the approximate depth of Reinforcing Steel. As an alternate to sawing, scoring may be done with a templated power drill.
SECTION C-C
SECTION D-D
SECTION A-A
PRESTRESSED COMPOSITE
14" x 14" PILES
NOT TO SCALE
RECORD DRAWING NOTE
"Shall be," "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract.
NOTES:
1. CHANNEL ANCHORAGE PILING SHALL BE DRIVEN TO A TIP ELEVATION OF MINUS 38.0 OR TO REFUSAL BETWEEN ELEVATION MINUS 30.0 AND ELEVATION MINUS 38.0. NO PILE TIPS ARE TO BE ABOVE ELEVATION MINUS 30.0.
2. SHOREWARD ANCHORAGE PILING SHALL BE DRIVEN TO A TIP ELEVATION OF MINUS 13.0 UPSTREAM AND MINUS 20.0 DOWNSTREAM OR TO REFUSAL. NO PILE TIPS ARE TO BE ABOVE ELEVATION MINUS 5.0 UPSTREAM AND ELEVATION MINUS 15.0 DOWNSTREAM. IF THE DOWNSTREAM PILING MEETS REFUSAL ABOVE ELEVATION MINUS 15.0, THE MATERIAL WHICH CANNOT BE PENETRATED SHALL BE REMOVED AND CONCRETE PLACED TO ELEVATION MINUS 5.0.
3. FOR LOCATION OF SAFETY BARRIER ANCHORAGES SEE SHEET
4. FOR GENERAL REINFORCEMENT NOTES SEE SHEET 10.
PLAN-PILE CAP TOP FACE
PLAN
PLAN-PILE CAP BOTTOM FACE
GRAPHIC SCALES
SAFETY BARRIER ANCHORAGE (SHOREWARD)
SAFETY BARRIER ANCHORAGE (CHANNEL)
AS BUILT
U.S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
CANAL 135
STRUCTURE 160
SAFETY BARRIER ANCHORAGES
DATED 20 FEBRUARY 1967
SCALE AS SHOWN
SHEET OF 40
D. O. FILE NO.

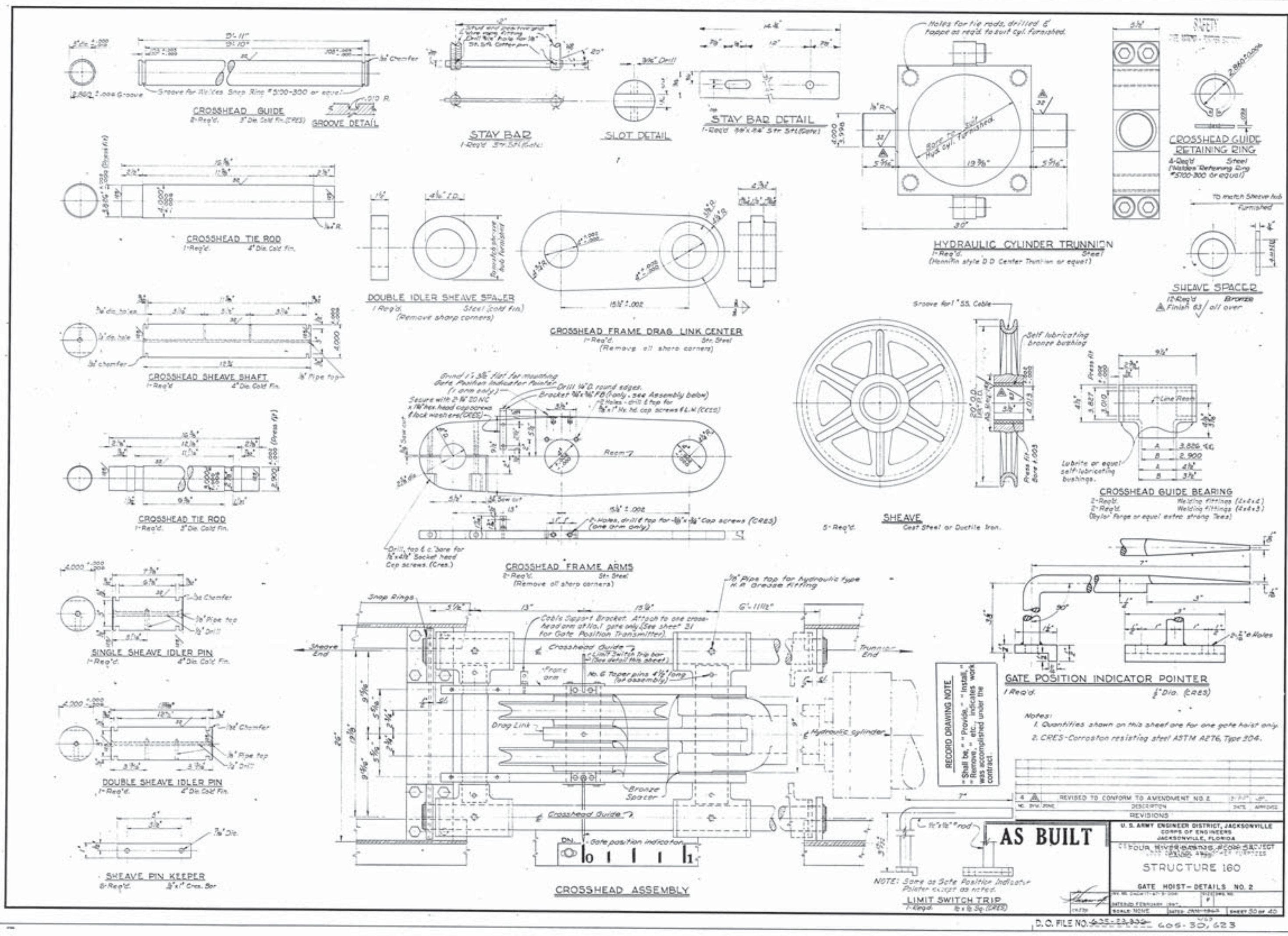

SAFETY ON THIS JOB DEPENDS ON YOU
REVISIONS
NO. SYM. ZONE DESCRIPTION DATE APPROVED
PLAN
SCALE: 1"=10'
SECTION B-B
SCALE: 1"=5'
SECTION C-C
SCALE: 1"=5'
EXCAVATION AND SETTING DETAILS
SECTION A-A
FRONT ELEVATION
DETAIL "C"
SIDE ELEVATION AND PARTIAL SECTION
NOT TO SCALE
CULVERT RISER DETAILS
SECTION B-B
RECORD DRAWING NOTE
"Shall be," "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract.
NOTES:
1. FOR LOCATION OF CULVERT SEE SITE PLAN, SHEET 4.
2. CMP - INDICATES CORRUGATED METAL PIPE.
3. COMPLETE PENETRATION WELD REQUIRED. SEE SPECIFICATIONS.
4. FOR "GENERAL WELDING NOTES" SEE SHEET 16
5. CORRUGATED METAL PIPE AND RISER SHOWN. SEE SPECIFICATIONS FOR OPTIONAL MATERIALS.
6. ☐ INDICATES CONTRACT PAYMENT ITEM.
7. SEE SHEET 8 FOR DETAIL OF RIPRAP.
AS BUILT
SCALE IN FEET
U.S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
CANAL 135
STRUCTURE 160
CULVERT PLAN AND DETAILS
DATED: 20 FEBRUARY 1967
SCALE: AS SHOWN
SHEET 25 OF 40
D. O. FILE NO. 605-29,906
605-30,673

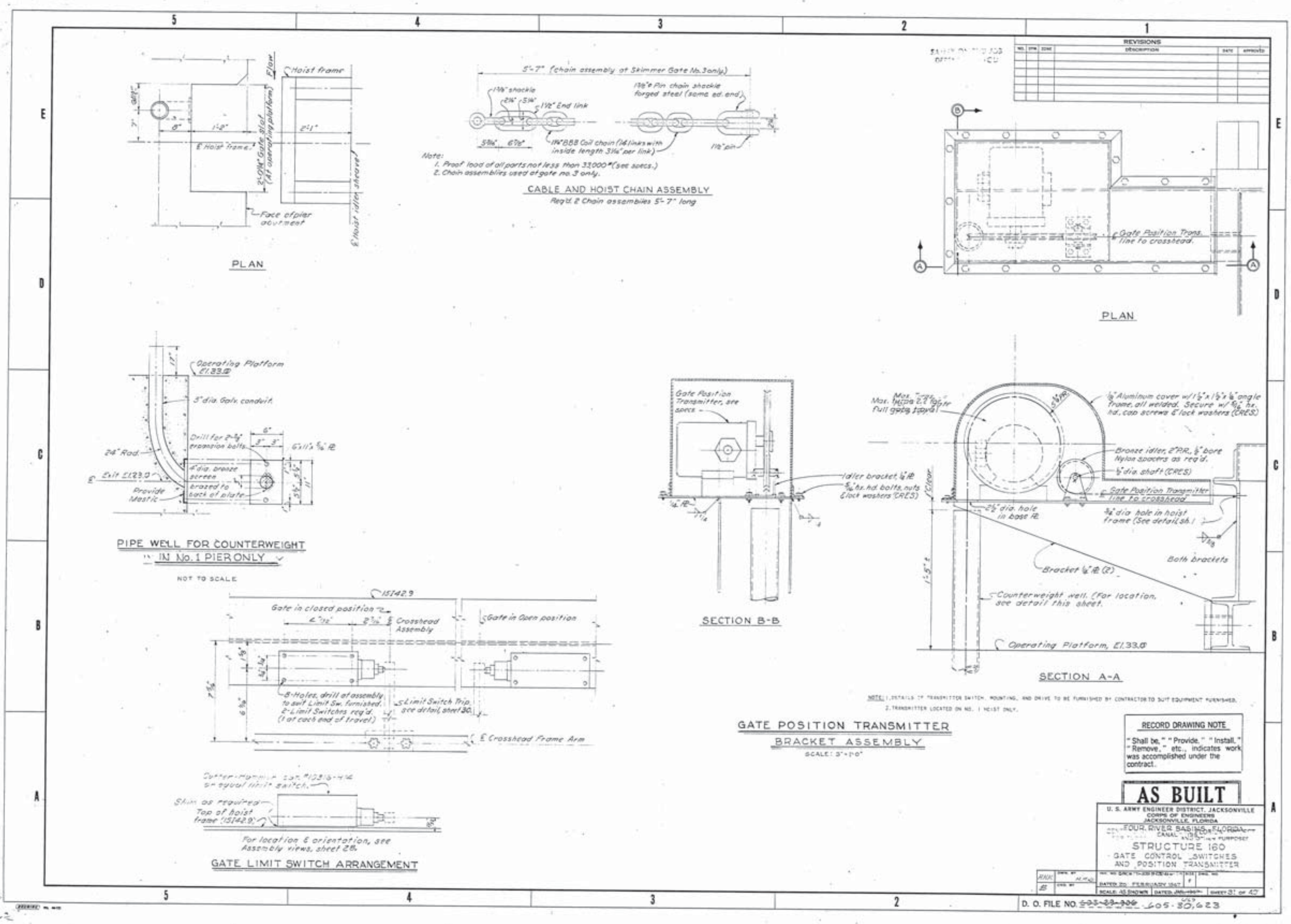

FRONT ELEVATION
SCALE: 1/4" = 1'-0"
REAR ELEVATION
SCALE: 1/4" = 1'-0"
HEAD
JAMB
STATIONARY LOUVER DETAIL
NOT TO SCALE
PLAN
SCALE: 1/4" = 1'-0"
NOTE: Provide aluminum screen under floor drain plate.
SECTION A-A
SCALE: 1/4" = 1'-0"
SECTION B-B
EXTERIOR DOOR DETAIL
SCALE 1 1/2" = 1'-0"
HEAD
JAMB SIMILAR
SILL
SECTION OF AUTOMATIC WALL SHUTTER
GRAPHIC SCALES
Concrete lintel
Louvered metal door 3'-0"x7'-0"x1 3/4"
Precast lintel
Stationary louver (See Detail)
U-Block Bond Beam
Grade El. 14.0
Fin floor El. 15.0
Abrasive safety tread
Automatic Wall Shutter (See Detail)
Waterproofing
SAFETY
NOTES:
1. PRINCIPAL LINTEL REINFORCEMENT 1 1/2" CLEAR
2. PRINCIPAL FOOTING REINFORCEMENT 1 1/2" CLEAR; IF CONCRETE IS PLACED DIRECTLY AGAINST EARTH, 3" CLEAR.
3. REFER TO SHEET 6 FOR "GENERAL MASONRY AND DESIGN NOTES."
REVISIONS
REVISED TO CONFORM TO AMEND. NO. 2
RECORD DRAWING NOTE
"Shall be," "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract.
AS BUILT
U.S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
CANAL 138
STRUCTURE 160
CONTROL HOUSE - PLAN AND DETAILS
DATED: 20 FEBRUARY 1967
SCALE: AS SHOWN
SHEET 26 OF 40
D. O. FILE NO. 605-30,623

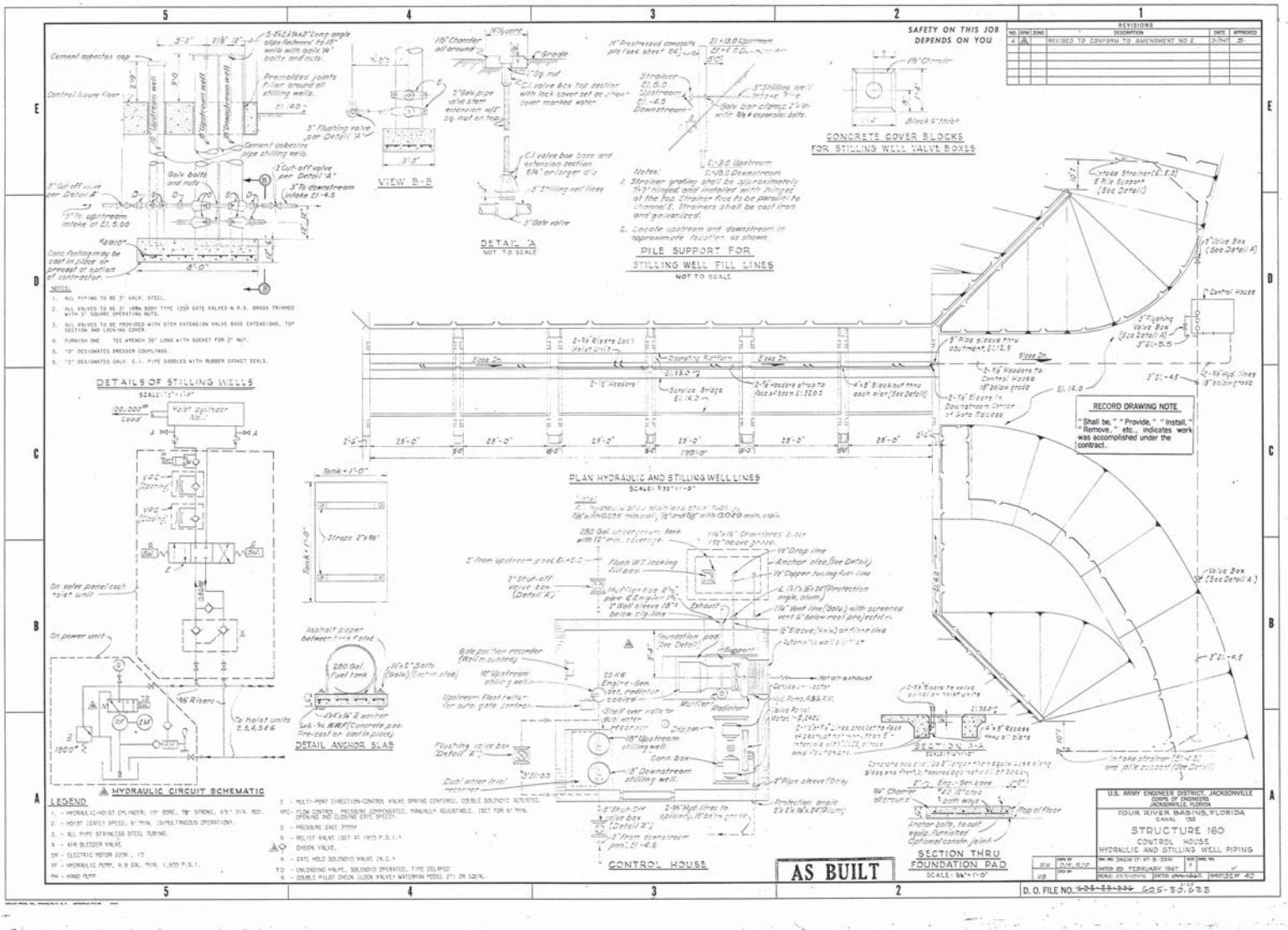

PLAN AT OPERATING PLATFORM (TYPICAL ALL GATES) (Cover not shown)
SCALE: 1/2"=1'-0"
Flow
28'-0"
℄ Gate
Flexible connections at all piping terminals.
10" Hydraulic cylinder
Gate Opening
Crosshead
Valve Panel (each hoist unit)
3/8" Risers
Handrail
Face of bridge
14'-0"
VIEW "B-B"
3/16" checker & cover
Top of Gate Max. opening position Showing dogging arrangement El. 24.0
1" St. Stl wire rope
Face of Pier
Top of Gate closed El. 11.0
SECTION "C-C"
Padlock by others
Valve panel
Cover
10" Bore Hydraulic Cylinder
Trunion
Trunion Bearing
Operating platform El. 33.0
Slide gate stem
Slide gate handwheel
NOTE: For slide gate details, see sheet 18
Top of gate closed El. 11.0
Flow
SECTION "A-A"
Gate position transmitter, Hoist No. 1 only (See sheet 31)
Valve Panel opening in cover with hinged door & padlock.
Cover
El. 33.0
Top of Gate Max opening El. 24.0
1" St. Steel wire rope
1" st. stl. wire rope
℄ Gate
Open socket
Closed socket
Top of Gate closed El. 11.0
Face of pier
28' x 11.7' Vertical lift gate (6-gates)
Face of Pier
Sill El. -0.7
Notes:
1. - a. Estimated Gate weight 26,000 #
b. Estimated Hoist load 40,000 #
c. Gate Speed 6"/min. for simultaneous operation.
RECORD DRAWING NOTE
" Shall be, " " Provide, " " Install, " " Remove, " etc., indicates work was accomplished under the contract.
AS BUILT
U. S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
STRUCTURE 160
GATE HOIST – GENERAL ARRANGEMENT
SCALE: NONE
D. O. FILE NO. 605-30,623

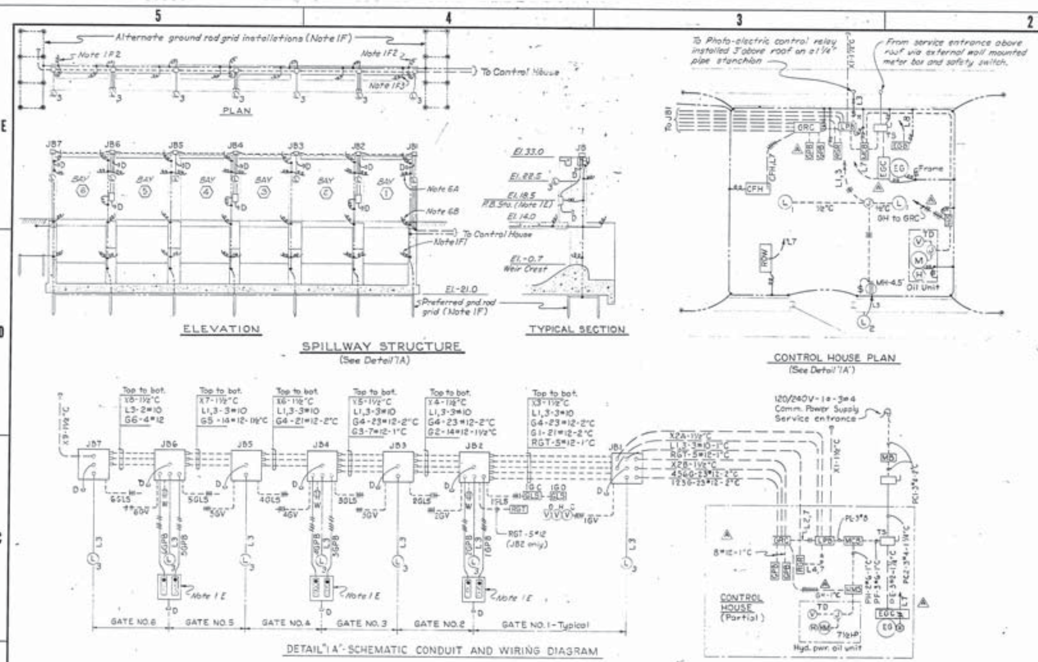

PLAN
ASSEMBLY
ELEVATION
ASSEMBLY
NO SCALE
LAKESIDE
GATE POSITION INDICATOR
SECTION "A-A"
NO SCALE
ANCHOR BOLT SETTING
NO SCALE
ANCHOR BOLT
Crosshead sheave assembly
Crosshead
Crosshead Guide
Crosshead guide
Hydraulic cylinder
Trunnion Modified to suit.
Trunnion bearing
Plate cover
Bronze Spacer
Steel Spacer
Gate Slot
Single idler sheave assy.
Hydraulic type Grease fittings.
Gate Position Indicator (See detail), to be installed in field
NOTE: Support for Gate Positioning Transmitter not shown
18" P.D. Sheaves
Crosshead travel 6'-6" Gate travel 13'-0" feet
Gate in closed position
Gate in open position
Cover
Cylinder Trunnion (Modified)
Trunnion Bearing
Grease fitting
1" - 6 x 37 Stainless steel cable
This marking for Dogged Skimmer Gate position to be made on Pos. Indicator for No. 3 Gate only. (Note: Gate must be at least 6" above the 5' position for operation of Dogging Device)
Operating platform
RECORD DRAWING NOTE
"Shall be," "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract.
AS BUILT
Notes:
1. Quantities shown on this sheet are for one gate only
2. All taper pins & dowels to be installed at assembly
REVISED TO CONFORM TO AMENDMENT NO. 2
REVISIONS
U. S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
STRUCTURE 160
GATE HOIST - ASSEMBLY
24 Reqd. 5/8" Bolt steel
8 Reqd. 3/4" Bolt steel
D. O. FILE NO. 605-30,623


SAFETY
CROSSHEAD GUIDE BRACKET
2 Req'd. Str. Steel
BASE
1 Req'd. str. steel
Crosshead guides
SECTION "A-A"
SECTION "B-B"
SECTION "C-C"
TRUNNION BEARING
2-Req'd. Cast Stl. or Ductile Iron
IDLER SHEAVE HANGER
1-Req'd. str. steel
SECTION "D-D"
COVER
1 Req'd. (2-sections) Aluminum
Hinged and hasped cover over control panel
NOTES:
1. QUANTITIES SHOWN ON THIS SHEET ARE FOR ONE GATE HOIST ONLY.
2. INSTALL ALL DOWELS AND TAPER PINS AT ASSEMBLY.
3. DIMENSIONS, AS NOTED, ARE TO BE DETERMINED BY MFR. BASED ON FINAL LOCATION OF TRUNION ON HYD. CYLINDER.
4. STRUCTURAL MEMBERS ARE ALL WELDED CONSTRUCTION UNLESS OTHERWISE NOTED; MINIMUM WELD 3/16" CONT. FILLET OR FULL PENETRATION BUTT WELD ALL AROUND EACH CONNECTION.
5. CRES = CORROSION RESISTING STEEL ASTM A276 TYPE 304.
AS BUILT
REVISIONS
RECORD DRAWING NOTE
"Shall be," "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract.
U. S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
STRUCTURE 160
GATE HOIST - DETAILS NO. 1
D. O. FILE NO. 605-30,623


CROSSHEAD GUIDE
2-Req'd. 5" Dia. Cold Fin. (CRES)
GROOVE DETAIL
STAY BAR
SLOT DETAIL
STAY BAR DETAIL
HYDRAULIC CYLINDER TRUNNION
1-Req'd. Steel
CROSSHEAD GUIDE RETAINING RING
SHEAVE SPACER
12-Req'd Bronze
CROSSHEAD TIE ROD
1-Req'd. 4" Dia. Cold Fin.
DOUBLE IDLER SHEAVE SPACER
CROSSHEAD FRAME DRAG LINK CENTER
1-Req'd. Str. Steel
(Remove all sharp corners)
CROSSHEAD SHEAVE SHAFT
1-Req'd. 4" Dia. Cold Fin.
SHEAVE
5-Req'd. Cast Steel or Ductile Iron.
CROSSHEAD GUIDE BEARING
CROSSHEAD TIE ROD
1-Req'd. 3" Dia. Cold Fin.
CROSSHEAD FRAME ARMS
2-Req'd. Str. Steel
(Remove all sharp corners)
SINGLE SHEAVE IDLER PIN
1-Req'd. 4" Dia. Cold Fin.
DOUBLE SHEAVE IDLER PIN
1-Req'd. 4" Dia. Cold Fin.
SHEAVE PIN KEEPER
CROSSHEAD ASSEMBLY
GATE POSITION INDICATOR POINTER
1 Req'd.
Notes:
1. Quantities shown on this sheet are for one gate hoist only.
2. CRES-Corrosion resisting steel ASTM A276, Type 304.
RECORD DRAWING NOTE
"Shall be," "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract.
LIMIT SWITCH TRIP
NOTE: Same as Gate Position Indicator Pointer except as noted.
4 REVISED TO CONFORM TO AMENDMENT NO. 2
NO. SYM. ZONE DESCRIPTION DATE APPROVED
REVISIONS
AS BUILT
U. S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA PROJECT
STRUCTURE 160
GATE HOIST—DETAILS NO. 2
SCALE: NONE
SHEET 30 OF 40
D. O. FILE NO. 605-30,623


PLAN
Hoist frame
Face of pier abutment
CABLE AND HOIST CHAIN ASSEMBLY
Req'd. 2 Chain assemblies 5'-7" long
5'-7" (chain assembly at Skimmer Gate No. 3 only)
Note:
1. Proof load of all parts not less than 33,000# (see specs.)
2. Chain assemblies used at gate no. 3 only.
PLAN
Gate Position Trans. line to crosshead.
PIPE WELL FOR COUNTERWEIGHT
IN No. 1 PIER ONLY
NOT TO SCALE
Operating Platform El. 33.0
5" dia. Galv. conduit
24" Rad.
Provide Mastic
SECTION B-B
Gate Position Transmitter, see specs.
Idler bracket
SECTION A-A
Bronze idler, 2" P.R., Nylon spacers as req'd.
Gate Position Transmitter line to crosshead
Bracket
Both brackets
Counterweight well. (For location, see detail this sheet.
Operating Platform, El. 33.0
GATE POSITION TRANSMITTER
BRACKET ASSEMBLY
Gate in closed position
Crosshead Assembly
Gate in Open position
Limit Switch Trip, see detail, sheet 30.
Crosshead Frame Arm
GATE LIMIT SWITCH ARRANGEMENT
For location & orientation, see Assembly views, sheet 28.
RECORD DRAWING NOTE
"Shall be," "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract.
AS BUILT
U. S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
STRUCTURE 160
GATE CONTROL SWITCHES
AND POSITION TRANSMITTER
SCALE: AS SHOWN
SHEET 31 OF 47
D. O. FILE NO. 605-30,623


SAFETY ON THIS JOB DEPENDS ON YOU
REVISIONS
REVISED TO CONFORM TO AMENDMENT NO. 2
DETAILS OF STILLING WELLS
DETAIL 'A'
VIEW B-B
PILE SUPPORT FOR STILLING WELL FILL LINES
CONCRETE COVER BLOCKS FOR STILLING WELL VALVE BOXES
PLAN HYDRAULIC AND STILLING WELL LINES
CONTROL HOUSE
SECTION THRU FOUNDATION PAD
HYDRAULIC CIRCUIT SCHEMATIC
LEGEND
DETAIL ANCHOR SLAB
RECORD DRAWING NOTE
"Shall be," "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract.
AS BUILT
U.S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
CANAL 135
STRUCTURE 160
CONTROL HOUSE
HYDRAULIC AND STILLING WELL PIPING
D. O. FILE NO. 625-33.322 625-33.323

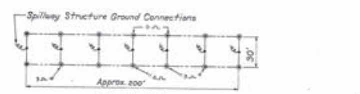


SAFETY ON THIS JOB DEPENDS ON YOU

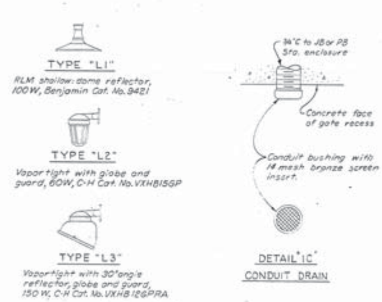
REVISIONS					
NO.	SYM	ZONE	DESCRIPTION	DATE	APPROVED
7	A		REVISED TO CONFORM TO AMENDMENT NO.2		

SCHEDULE "1A" - SYMBOL LIST

REV.	SYMBOL	DESCRIPTION
	W	DUPLEX CONV. OUTLET, 2P3W; W - WEATHERPROOF
	$	SWITCH, TOGGLE, SPST, SPECIFICATION GRADE
		PILOT ILLUMINATED TOGGLE SWITCH HANDLE
	TS	SAFETY SWITCH; TS DENOTES TRANSFER - SEE SPECIFICATIONS
		PB STATION, SPILLWAY STRUCTURE - SEE NOTE 1E
	H	EQUIPMENT HEATER - SEE SPECIFICATIONS
		ELECTRICAL EQUIPMENT AS NOTED - SEE SCHEDULE "EA"
		CONDUIT SYSTEM SYMBOLS - SEE NOTE 1A
		CONDUIT - EXPOSED
		CONCEALED IN FLOOR OR EARTH
		CONCEALED IN WALL OR CEILING
		HASH MARKS DENOTE NUMBER OF AWG NO. 12 WIRES
		STUB OUT BEYOND CONCRETE OR PAVEMENT AND CAP
		DENOTES CONDUIT DRAIN - SEE DETAIL 1C
		CONDUIT EXPANSION FITTING - SEE NOTE 1C
		HOME RUN TO LTG. PNBD. OR AS NOTED
	JB	JUNCTION BOX - SEE NOTE 1B
		GROUND WIRE - SEE SPECIFICATIONS AND NOTE 1F
		EQUIPMENT GROUND CONNECTION
		GROUND ROD, PLAN AND ELEVATION VIEWS
		CIRCUIT BREAKER, AMP. TRIP AND POLES AS NOTED; SEE SPECS
		OVERLOAD, INSTANTANEOUS
		THERMAL
		CONTACT
A	GA1	WIRE OR CONDUIT IDENTIFICATION SYMBOL; SEE SCH. 2A
		CONTACTS
		MAIN CONTACTOR CONTACTS
		CONTROL RELAY OR AUX. CONTACTOR; NC AND NO
		PUSHBUTTON-NO: C-CLOSE, O-OPEN, S-STOP
		HAND-OFF-AUTO SELECTOR SWITCH
		LIMIT SWITCH; SEE GATE MACH. DWG. FOR INSTALLATION
		TRANSFER PLUG; MALE AND FEMALE, 5 WIRE
		FLOAT SWITCH-CLOSES ON RISING WATER LEVEL
		FLOAT SWITCH-CLOSES ON FALLING WATER LEVEL



DETAIL "1D"
GROUND ROD GRID SYS. (Note 1F)



TYPE "L1"

TYPE "L2"

TYPE "L3"

DETAIL "1B"
LIGHTING FIXTURES

DETAIL "1C"
CONDUIT DRAIN

NOTES

1A. CONDUIT SHALL BE 3/4" WITH 2 #12 AWG WIRES UNLESS NOTED OTHERWISE ON DETAIL "1A", THE CONDUIT PLANS, OR THE SCHEMATIC DIAGRAMS. CONDUIT IDENTIFICATION SYMBOLS SHALL BE AS FOLLOWS:

- G PREFIX: GATE CONTROL CIRCUIT
- L PREFIX: LIGHTING CIRCUIT
- P PREFIX: POWER CIRCUIT
- R PREFIX: AUTOMATIC RECORDER CIRCUIT
- X PREFIX: SPARE CONDUIT - 1 1/2" UNLESS NOTED OTHERWISE

1B. JUNCTION BOXES ON THE SPILLWAY STRUCTURE OPERATING PLATFORM SHALL BE 12" W X 12" L X 8" D, BE OF CAST IRON NEMA 4 CONSTRUCTION WITH HOT DIP GALVANIZED FINISH, BE PROVIDED WITH SLIP HOLES IN THE BOTTOM AND CONDUIT BOSSES WITH AT LEAST 5 FULL THREADS ON THE SIDES AS REQUIRED FOR THE CONDUITS OR CONDUIT EXPANSION FITTINGS AS SHOWN, BE PROVIDED WITH MOUNTING LUGS, BE INSTALLED ON 1/8" MASTIC, AND BE SIMILAR AND/OR EQUAL TO OZ TYPE "YW" CAST IRON BOX.

1C. EXPOSED CONDUIT RUNS ON THE OPERATING PLATFORM SHALL BE PROVIDED AT ONE END WITH A CONDUIT EXPANSION FITTING SIMILAR AND/OR EQUAL TO OZ TYPE "EXE".

1D. PUSHBUTTON STATIONS IN THE CONTROL HOUSE SHALL CONSIST OF SIX "OPEN-CLOSE-STOP-POWER ON IND. LT." UNITS INSTALLED IN TWO (3-UNIT) SHEET METAL ENCLOSURES, WESTINGHOUSE CAT. NO. OT1K12. SEE SPECIFICATIONS FOR ALTERNATE METHODS OF INSTALLATION.

1E. PUSHBUTTON STATIONS ON ALTERNATE PIERS OF THE SPILLWAY STRUCTURE SHALL CONSIST OF TWO "OPEN-CLOSE-STOP-POWER ON IND. LT." NEMA 4 ENCLOSED PB UNITS INSTALLED IN A VANDALISM PROTECTIVE CABINET. EACH CABINET SHALL BE OF SUFFICIENT SIZE TO ENCLOSE THE TWO PB UNITS, BE OF FLUSH MOUNTED, HOT DIP GALVANIZED CAST IRON CONSTRUCTION WITH A SMOOTH EXTERIOR FINISH AND NO EXPOSED MOUNTING SCREWS, AND SHALL BE SIMILAR AND/OR EQUAL TO THE HB200 TYPE CABINET OF HOPE ELECTRICAL PRODUCTS CO., 30 LONG AVE., HILLSIDE, N.J., EXCEPT PROVIDED WITH A HEAVY DUTY PADLOCK HASP INSTEAD OF A CYLINDER LOCK.

1F. IN ACCORDANCE WITH THE SPECIFICATIONS, A GROUND ROD GRID SYSTEM SHALL BE INSTALLED BENEATH THE SPILLWAY STRUCTURE. WHEN INSTALLED IN THIS LOCATION, GROUND WIRES SHALL BE RUN IN EACH STRUCTURAL PEIR AND SHALL BE CONNECTED TO THE GRID AT THE BOTTOM AND TO THE OPERATION PLATFORM GROUND WIRE AT THE TOP, AND THE GRID SYSTEM SHALL CONFORM TO DETAIL "1D".

1F1. GROUND EACH GATE GUIDE RAIL NEAR THE TOP AND NEAR THE BOTTOM WITH NO. 1 AWG WIRE.

1F2. GROUND HANDRAILS, LADDERS, AND LADDER SAFETY BASKETS WITH A MINIMUM NO. 8 AWG WIRE. BOND DISCONTINUOUS SECTIONS TOGETHER TO PROVIDE A CONTINUOUS GROUND.

1F3. GROUND GATE OPERATION MACHINERY WITH NO. 1 AWG WIRE.

RECORD DRAWING NOTE

"Shall be," "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract.

AS BUILT

U.S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

FOUR RIVER BASINS, FLORIDA
CANAL 135

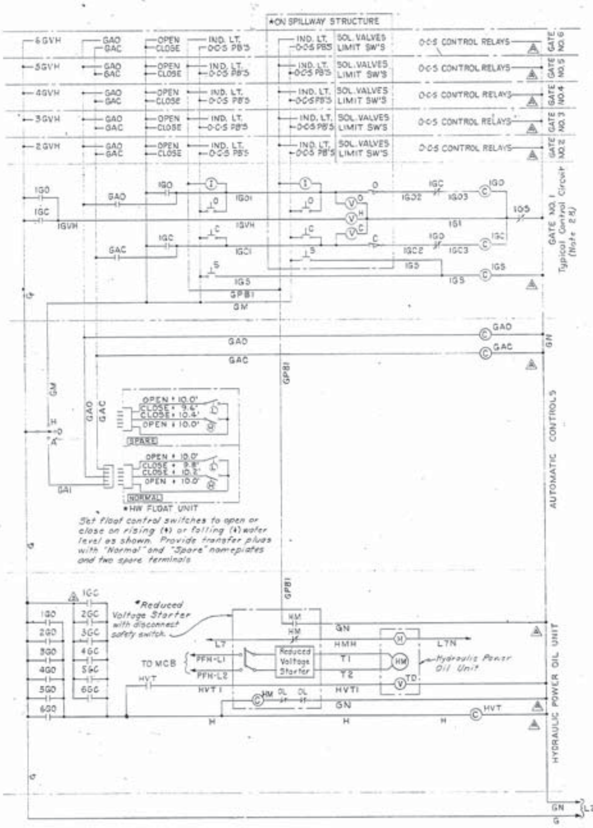
STRUCTURE 160
ELECTRICAL SYSTEM
CONDUIT AND GROUNDING

DATED: 20 FEBRUARY 1967
SCALE: NONE
SHEET 33 OF 40

D. O. FILE NO. ~~605-28,906~~ 605-30,623

SAFETY ON THIS JOB DEPENDS ON YOU

REVISIONS*					
NO.	SYM	ZONE	DESCRIPTION	DATE	APPROVED
II	△		REVISED TO CONFORM TO AMENDMENT NO. 2	3-16-67	[illegible]
I	△	B-5	REVISED MOTOR CONTROL CKT. TO ACCOMP MOD TO CONT 67-0081		[illegible]



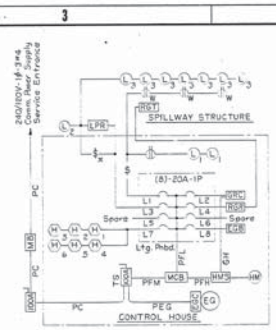
SPILLWAY GATE CIRCUITS

SCHEDULE "2C" SPILLWAY GATE CONTROL RELAYS					
REV.	SYMBOL	NO. REQ'D	CONTACTS NO	CONTACTS NC	CONTROL FUNCTION
	#GC	6	3	3	CLOSE CONTROL-EACH GATE
	GAC	1	8	9	AUTOMATIC OPERATION
	#GO	6	3	3	OPEN CONTROL-EACH GATE
	GAO	1	8	9	AUTOMATIC OPERATION
	#GS	6	1	3	STOP CONTROL-EACH GATE
	GTD	1	1TD		TIME DELAY-SEE SPECIFICATIONS

RELAY SCHEDULE & NOTES

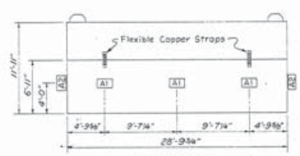
*2A. AN ASTERIK (*) DENOTES REMOTELY LOCATED EQUIPMENT. ALL OTHER EQUIPMENT SHALL BE LOCATED ON THE CONTROL HOUSE WALL ADJACENT TO, OR IN THE CONTROL RELAY CABINET.

2B. A TYPICAL CONTROL CIRCUIT IS SHOWN FOR GATE NO. 1. IDENTICAL CONTROL CIRCUITS SHALL BE PROVIDED FOR THE OTHER GATES EXCEPT PREFIX WIRE, CONDUIT, AND EQUIPMENT SYMBOLS WITH THE PROPER GATE NUMBER: EXAMPLE - FOR GATE NO. 2, DENOTE COMMON, CLOSE, OPEN, AND STOP FUNCTIONS WITH 2G-, 2GC-, 2GO-, AND 2GS SYMBOLS INSTEAD OF 1G- SYMBOLS SHOWN IN THE TYPICAL CIRCUIT.



DETAIL "2A"

POWER AND LIGHTING CIRCUITS SCHEMATIC ONE LINE DIAGRAM



DETAIL "2B"

SACRIFICIAL ANODE LOCATIONS - DOWNSTREAM SIDE

TYPICAL GATE CATHODIC PROTECTION SYSTEM

A1 Hull slab anode - Type ZHS - 24 lbs.

A2 Disc anode - Type ZEP - 4 lbs.

SCHEDULE "2E" EQUIPMENT HEATERS		
REV.	NO.	EQUIPMENT LOCATION
	H1	CONTROL RELAY CABINET
	H2	GENERATOR FRAME: SEE SPECIFICATIONS
	H3	HYD. POWER OIL UNIT MOTOR FRAME: SEE SPECIFICATIONS
	H4	WATER LEVEL RECORDER
	H5	GATE POSITION RECORDER RECEIVER
	H6	HEADWATER FLOAT CONTROL UNIT

SCHEDULE "2A" - ABBREVIATIONS CONDUIT, WIRE PREFIX, AND EQUIPMENT SYMBOLS		
REV.	*ABBREV.	DESCRIPTION
	C	COIL, CONTACTOR OR CONTROL RELAY: SEE SCHEDULE 2C
	EG	EMERGENCY GENERATOR: SEE SPECIFICATIONS
	EGB	BATTERY CHARGER
	EGC	CONTROL PANEL
	#G	GATE CONTROL FUNCTION
	GA	AUTOMATIC OPERATION
	GAC	CLOSE CONTROL
	GAO	OPEN CONTROL
	#GC	CLOSE CONTROL
	GFH	FLOAT CONTROL UNIT, HEADWATER: SEE SPECIFICATIONS
△		
	#GLS	LIMIT SWITCH
	GM	MANUAL CONTROL
	GN	CONTROL CIRCUIT NEUTRAL
	#GO	OPEN CONTROL
	#GPB	PUSHBUTTON: SEE NOTES 1D AND 1E
	GRC	RELAY CABINET: SEE SPECIFICATIONS
	#GVH	HYDRAULIC SOLENOID OP. VALVE, GATE HOLD CONTROL
	H	HYDRAULIC POWER OIL UNIT FUNCTION: SEE SPECIFICATIONS
	HM	MOTOR
	HMH	MOTOR HEATER
	HMS	MOTOR STARTER
	HVT	SOLENOID VALVE - TIME DELAY CONTROL
	J	JUNCTION OR CONNECTION BOX, PROVIDE AS REQUIRED
		LIGHTING FUNCTIONS
	L	LIGHTING FIXTURE OUTLET: SEE DETAIL 1E
	LP	PHOTO-ELECTRIC CONTROL RELAY: SEE SPECIFICATIONS
	LPB	LIGHTING PANELBOARD: SEE SPECIFICATIONS
	LB	LIGHTING PANELBOARD CIRCUIT NUMBER
	MB	METER BOX
	MCB	MAIN CIRCUIT BREAKER AS NOTED
		POWER CIRCUITS
	PC	COMMERCIAL POWER SUPPLY
	PEG	EMERGENCY GENERATOR POWER SUPPLY
	PF	FEEDER CIRCUIT
	PFH	HYDRAULIC POWER OIL UNIT
	PFL	LIGHTING PANELBOARD
	PFM	MAIN
		AUTOMATIC RECORDERS: SEE SPECIFICATIONS
	RDW	DUPLEX UP-DOWNSTREAM WATER LEVEL
	RGR	GATE POSITION RECEIVER
	RGT	TRANSMITTER: SEE GATE MACH. DRAWINGS
	V	VALVE, SOLENOID OPERATED, HYD. CONTROL: SEE GATE MACH. DWG.

* FOR INDIVIDUAL GATE CONTROL CIRCUITS, REPLACE THE SYMBOL "#" WITH THE NUMBER OF THE CONTROLLED GATE.

RECORD DRAWING NOTE

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AS BUILT

U.S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

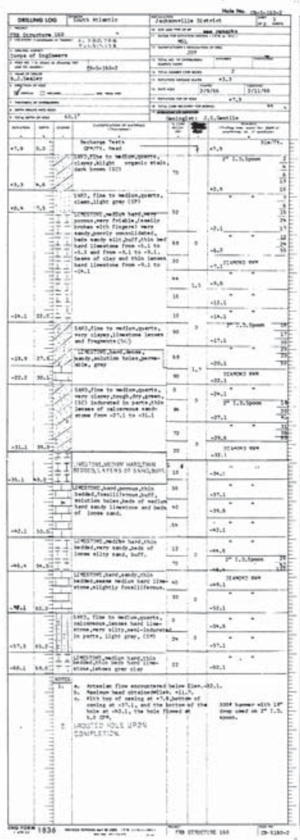
FOUR RIVER BASINS, FLORIDA
CANAL 135

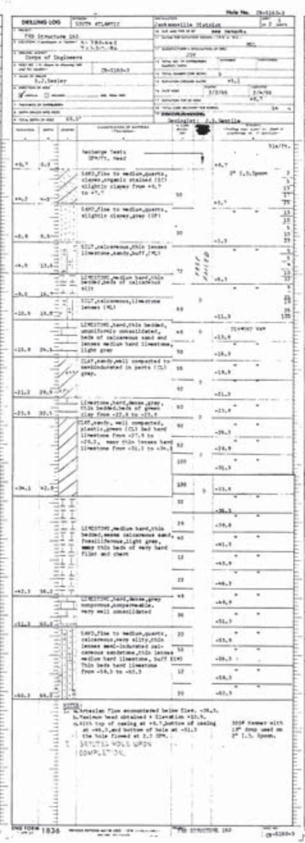
STRUCTURE 160

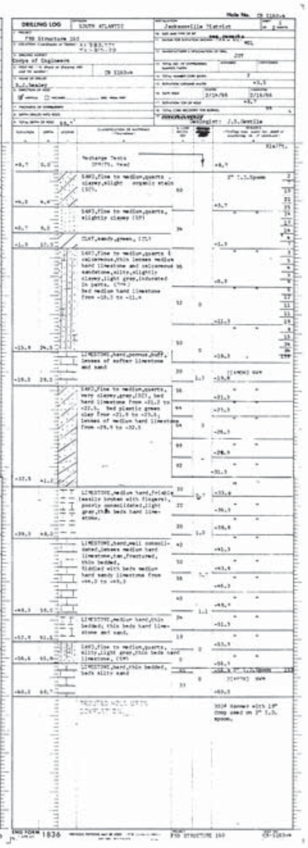
ELECTRICAL SYSTEM SCHEMATIC DIAGRAMS

DRN BY: H.W.G. | INV. NO. DACW 17-67-B-3041 | DATED: 20 FEBRUARY 1967 | SCALE: NONE | DATED: JAN 1967 | SHEET 34 OF 40

D. O. FILE NO. ~~605-29,906~~ 605-30,623







CORE BORING NOTES

1. BORING LOCATIONS ARE SHOWN ON SHEETS 3.
2. BLS/FT. REFERS TO THE NUMBER OF HAMMER BLOWS REQUIRED TO ADVANCE A SOLID SPOON (2" I.D. X 2 " O.D.) ONE FOOT. THE SPOON IS 3 FT. LONG AND DRIVEN CONTINUOUSLY 3 FT., WHERE POSSIBLE.
3. (SP) AND (CL) ETC., REFERS TO THE CORPS OF ENGINEERS UNIFIED SOILS CLASSIFICATION SYSTEM. CLASSIFICATION OF MATERIALS IS BASED ON VISUAL EXAMINATION.
4. CORE SAMPLES TAKEN DURING THE BORING OPERATIONS ARE AVAILABLE FOR INSPECTION AT THE CORPS OF ENGINEERS DREDGE DEPOT IN JACKSONVILLE, FLORIDA.
5. ORIGINAL BORING NOTES ARE AVAILABLE FOR INSPECTION AT THE JACKSONVILLE DISTRICT OFFICE.
6. GROUND WATER ELEVATIONS WERE OBSERVED ON THE COMPLETION DATES OF THE BORINGS AND ARE SUBJECT TO SEASONAL FLUCTUATIONS.
7. ROCK HARDNESS IS DEFINED BY THE FOLLOWING:

   SOFT - CAN BE SCRATCHED WITH FINGERNAIL.

   MEDIUM HARD - CAN BE SCRATCHED EASILY WITH KNIFE; CANNOT BE SCRATCHED WITH FINGERNAIL.

   HARD - DIFFICULT TO SCRATCH WITH KNIFE.

   VERY HARD - CANNOT BE SCRATCHED WITH KNIFE.
8. RECHARGE TESTS MADE IN THE FOLLOWING MANNER: CASING IS INSTALLED IN THE HOLE TO THE UPPER LIMIT OF THE ZONE TO BE TESTED. THE HOLE IS THEN DRILLED TO THE LOWER LIMIT OF THE SECTION TO BE TESTED. WATER IS PUMPED INTO THE CASING AT A RATE SUFFICIENT TO MAINTAIN A CONSTANT HEAD ABOVE THE NORMAL WATER TABLE, IF POSSIBLE, AND THIS RATE OF FLOW, DIVIDED BY THE HEAD MAINTAINED, GIVES GALLONS PER MINUTE PER FOOT OF HEAD.

REVISIONS

NO.	SYM	ZONE	DESCRIPTION	DATE	APPROVED

RECORD DRAWING NOTE

"Shall be," "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract.

AS BUILT

U. S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

FOUR RIVER BASINS, FLORIDA
CANAL 135

STRUCTURE 160

LOG OF CORE BORINGS

DATED: 20 FEBRUARY 1967
SCALE: AS SHOWN
SHEET 33 OF 40

D. O. FILE NO. ~~605-80,306~~ 605-30,523

DRILLING LOG — Hole No. CS-S160-5

Division	SOUTH ATLANTIC
Installation	Jacksonville District
Project	FRB STRUCTURE 160
Drilling agency	Corps of Engineers
Hole No.	CS-S-160-5
Name of driller	R.J. Sealey
Datum for elevation shown	MSL
Manufacturer's designation of drill	JOY
Total number core boxes	3
Elevation ground water	+8.6
Date hole	Started 2/7/56 — Completed 2/9/56
Elevation top of hole	+8.3
Total core recovery for boring	91 %
Total depth of hole	59.3'
Geologist	J.S. Gentile

Elevation	Depth	Classification of materials	% Core recovery	Remarks
+8.3	0.0	Recharge Tests GPM/Ft. Head		+8.3
+2.8	5.5	SAND, fine to medium, quartz, very clayey, slight organic stain, (SC).	50	2" I.D. Spoon; +3.3
-4.1	12.4	SAND, fine to medium, quartz, Tan, clean, watery, loose, (SP)	38	-1.7
		LIMESTONE, medium hard, porous, fossiliferous.	88	
-12.4	20.7	SILT, calcareous, dry, semi-indurated in parts, thin lenses medium hard limestone, seams green clay, slightly sandy, buff, (ML)	92	-6.7; -11.7
-19.7	28.0	LIMESTONE, hard, porous, silty, slightly fossiliferous, buff, poorly consolidated beds of medium hard limestone, seams of clay from -15.7 to -16.7, bed of calcareous silt from -18.7 to -19.7	50; 60; 62; 100	-13.7; -14.7 DIAMOND BWR; -16.7; -19.2
-22.6	30.9	CLAY, compacted to semi-indurated, gray (CL)	69	-21.7
-24.4	32.7	LIMESTONE, hard, dense, well consolidated, gray, lenses of clay	84; 100	-24.2; -26.7
-29.2	37.5	CLAY, compact, sandy, green, beds of clayey sand (CL)	100	-29.2
-37.2	45.5	SAND, fine to medium, quartz, very clayey, compacted to semi-indurated, riddled with lenses of calcareous sandstone, green, (SC) beds of gray plastic clay from -36.7 to -37.2	90; 100	-31.7; -34.2; -36.7
-51.0	59.3	LIMESTONE, hard, well consolidated, thin bedded, tan, very sandy, solution holes, thin beds and seams of loose sand, permeable, lenses of softer limestone and calcareous silt	52; 75; 68; 59; 76; 54; 60; 69; 29	-39.2; -41.7; -44.2; -46.7; -49.2; -51.7; -54.2; -57.2; -60.0

Notes:
1. a. Artesian flow encountered below Elev. -41.7.
   b. Maximum head obtained = +11.3.
   c. With top of casing at +8.3, bottom of casing at -41.7, and the bottom of the hole at -51.0, the hole flowed at 1.5 GPM.
2. Grouted hole upon completion.

300# Hammer with 18" drop used on 2" I.D. spoon.

ENG FORM 1836 — FRB STRUCTURE 160 — CS-S160-5

DRILLING LOG — Hole No. CS-S160-6

Division	SOUTH ATLANTIC
Installation	Jacksonville District
Project	FRB Structure 160
Drilling agency	Corps of Engineers
Hole No.	CS-S 160-6
Name of driller	R. J. Sealey
Datum for elevation shown	MSL
Manufacturer's designation of drill	JOY
Date hole	Started 1/29/56 — Completed 2/2/56
Elevation top of hole	+8.3
Total core recovery for boring	62 %
Total depth of hole	69.5'
Geologist	J.S. Gentile

Elevation	Depth	Classification of materials	% Core recovery	Remarks
+8.3	0.0	RECHARGE TESTS GPM/Ft. Head		+8.3; 2" I.D. Spoon
		SAND, fine to medium, quartz, clayey, dark brown, (SC)	40	
		SAND, fine to medium, quartz, clean, light brown, (SP) shells, slightly silty, from -0.3 to -8.3	43	
		LIMESTONE, medium hard, thin bedded, lenses of calcareous silt and hard limestone, sandy, non-fossiliferous, buff	70	
		SAND, fine to medium, quartz, very silty, lenses limestone, light gray, (SM)	68; 40	DIAMOND BWR
		LIMESTONE, hard, slightly porous, unevenly consolidated, lenses of medium hard limestone and clay.	43; 32; 45; 40	
		CLAY, partly indurated, gray (CL)	75	
		Limestone, hard, thin bedded, seams green clay, fossiliferous, solution holes	75	
		CLAY, well compacted to semi-indurated, sandy, green (CL)	100	
		LIMESTONE, hard, dense, sandy, gray, seams of clay	100	
		SAND, fine to medium, quartz, very clayey, green (SC)	100	
-60.3	69.5	Limestone, hard, slightly porous, thin bedded, sandy, fossiliferous, buff, well consolidated, lenses of limestone breccia; seams medium hard porous limestone and calcareous silt and clay	70; 50; 44; 54; 16; 32; 32; 0; 17; 25	

Notes:
1. a. Artesian flow encountered below elevation -49.3
   b. Maximum head = Elevation +10.8
   c. With top of casing at +8.3, bottom of casing at -50.7, and bottom of hole at -51.7, hole flowed at approximately 0.25 GPM.

300# Hammer with 18" drop used on 2" I.D. spoon.

GROUTED HOLE UPON COMPLETION

ENG FORM 1836 — FRB STRUCTURE 160 — CS-S160-6

DRILLING LOG — Hole No. CS-S160-7

Division	SOUTH ATLANTIC
Installation	Jacksonville District
Project	FRB Structure 160
Drilling agency	Corps of Engineers
Hole No.	CS-S160-7
Name of driller	R.J. Sealey
Datum for elevation shown	MSL
Manufacturer's designation of drill	JOY
Elevation ground water	+5.2
Date hole	Started 2/10/56 — Completed 2/15/56
Elevation top of hole	+8.3
Total core recovery for boring	52 %
Total depth of hole	69.5'
Geologist	J.S. Gentile

Elevation	Depth	Classification of materials	% Core recovery	Remarks
+8.3	0.0	RECHARGE TESTS GPM/Ft. Head		+8.3; 2" I.D. Spoon
+3.3	5.0	SAND, fine to medium, quartz, clayey, slight organic stain, dark brown (SC)	50	
		SAND, fine to medium quartz, slightly clayey, gray (SP)	84	
		LIMESTONE, medium hard, porous, permeable, thin bedded, very sandy, light gray, seams loose silty sand.	70	
		SAND, fine to medium, quartz, silty, semi-indurated in part, thin lenses calcareous sandstone (SM).		DIAMOND BWR
-19.2	27.8	LIMESTONE, medium hard, porous, sandy, thin bedded, beds loose calcareous sand, lenses hard limestone, buff.	93; 60; 63	2" I.D. Spoon; DIAMOND BWR
-27.6	36.0	LIMESTONE, hard, porous, very sandy, beds medium hard limestone and clay	40; 86	
-34.2	42.5	SAND, fine to medium, quartz, very clayey, compacted, semi-indurated in part, green (SC). Bed hard limestone from -31.5 to -34.2 riddled with lenses of sand	100; 130	
-41.0	49.3	LIMESTONE, hard, dense, well consolidated, lenses of softer limestone and sand	94; 36	
-46.2	54.5	SAND, fine to medium quartz, partly indurated, silty, slightly clayey, thin lenses medium hard limestone, buff. (SM)	17; 130	2" I.D. Spoon
-60.0	69.5	LIMESTONE, hard, porous, sandy, light gray, well consolidated, thin bedded, gray, lenses of softer limestone and sand.		DIAMOND BWR

GROUTED HOLE UPON COMPLETION

300# Hammer with 18" drop used on 2" I.D. spoon.

ENG FORM 1836 — FRB STRUCTURE 160 — CS-S160-7

DRILLING LOG — Hole No. CS-S160-8

Division	South Atlantic
Installation	Jacksonville District
Project	FRB Structure 160
Drilling agency	Corps of Engineers
Hole No.	CS-S160-8
Name of driller	R. M. Sealey
Datum for elevation shown	MSL
Manufacturer's designation of drill	JOY
Elevation ground water	+5.8
Date hole	Started 2/11/56 — Completed 2/15/56
Total core recovery for boring	50 %
Total depth of hole	67.4'
Geologist	J.S. Gentile

Elevation	Depth	Classification of materials	% Core recovery	Remarks
+8.1	0.0	Recharge Tests GPM/Ft. Head		BIT & BARREL; +8.1
+2.6	5.5	SAND, fine to medium, quartz, clayey, gray, (SC) organic stain from +8.1 to +7.5	32	2" I.D. Spoon; +3.1
-3.9	11.9	SAND, fine to coarse, quartz, light brown, clean, very shelly from +0.1 to -3.9 (SP-SM)	56	
-5.4	13.5	SAND, fine to coarse, quartz, clayey, green (SC)	85	
-10.2	18.3	LIMESTONE, medium hard, sandy, thin bedded, thin beds of calcareous silt, light gray, porous, solution holes and small cavities.	60	
-12.4	20.5	CLAY, calcareous, thin lenses medium hard limestone, light gray, slightly sandy (CL)	96	DIAMOND BWR
		LIMESTONE, hard, dense, light gray, many lenses of calcareous silt and softer limestone		
-21.4	30.5	INDURATED CLAY, easily scratched with finger nail, hard limestone lenses.		
-26.6	35.0	CLAY, light gray. (CL)	78	
-35.2	43.5	LIMESTONE, hard, dense, thin bedded, many small cavities partly filled with clay, many lenses of calcareous silt and softer limestone, lenses of chert		
-59.3	67.4			

NOTES:
1. a. Artesian flow encountered below Elevation -53.5
   b. Maximum head obtained = Elevation +8.9
   c. With top of casing at Elevation +8.1, bottom of casing at Elevation -58.3, and bottom of hole at Elevation -59.3, hole flowed at 2.8 GPM.
2. Grouted hole upon completion.

300# hammer with 18" drop used on 2" I.D. spoon.

ENG FORM 1836 — FRB STRUCTURE 160 — CS-S160-8

REVISIONS

NO.	DTW.	ZONE	DESCRIPTION	DATE	APPROVED

RECORD DRAWING NOTE

"Shall be," "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract.

NOTE:
1. For notes see sheet No. 35

AS BUILT

U. S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

FOUR RIVER BASINS, FLORIDA
CANAL 135

STRUCTURE 160

LOG OF CORE BORINGS

Spec. No. DACW17-67-B-0041 — Dated: 20 FEBRUARY 1967 — Size F

Scale: AS SHOWN — Sheet 36 of 43

D. O. FILE NO. ~~605-39,336~~ 605-30,623

DRILLING LOG — South Atlantic — Jacksonville District

Hole No. CB-5180-9 · Project: FCD Structure 160 · Corps of Engineers · Driller: W. J. Sealey · Date hole started 1/24/66, completed 1/26/66 · Geologist: J. S. Saville

- MECHANICAL TESTS — GPM/Ft. Head
- SAND, fine to medium, quartz, SILTY, dark brown organic stain (SM)
- SAND, fine to medium, quartz, light brown (SP-SM)
- LIMESTONE, medium hard, thin bedded, thin beds hard sandy limestone and beds unconsolidated calcareous silt.

NOTES:
1. a. Artesian flow encountered below Elevation -10.9.
   b. Maximum head obtained = Elevation +10.9.
   c. With top of casing at Elevation +9.1, bottom of casing at Elevation -33.9, bottom of hole at Elevation -55.9, hole flowed at 0.25 GPM.
2. GROUTED HOLE UPON COMPLETION.

300# hammer with 18" drop used on 2" I.D. spoon.

REVISED FROM LAB. TEST RESULTS 3-17-66

ENG FORM 1836 — FCD STRUCTURE 160 — CB-5180-9

DRILLING LOG — South Atlantic — Jacksonville District

Hole No. CB-5180-10 · Project: FCD Structure 160 · Corps of Engineers · W. J. Sealey · Geologist: J. S. Saville

- Recharge Tests GPM/Ft. Head
- SAND, fine to medium, quartz, SILTY, dark brown
- LIMESTONE, medium hard, porous, thin bedded, lenses of sandy silty and clayey sand, light grey
- CLAY, sandy, stiff, green, lenses hard limestone (CL)
- LIMESTONE, hard, dense, very sandy, lenses of sand silt and softer rock

NOTES:
a. Artesian flow encountered below elevation -30.7.
b. Maximum head = Elevation +9.4
c. With top of casing at Elevation +4.3, bottom of casing at -41.7, bottom of hole at -60.7, hole flowed at 1.0 GPM.
Grouted hole upon completion.

300# hammer with 18" drop used on 2" I.D. spoon.

REVISED FROM LAB. TEST RESULTS 3-17-66

ENG FORM 1836 — FCD STRUCTURE 160 — CB-5180-10

DRILLING LOG — South Atlantic — Jacksonville District

Hole No. CB-5180-11 · Project: FCD Structure 160 · Corps of Engineers · W. J. Sealey · Geologist: J. S. Saville

- Recharge Tests GPM/Ft. Head
- SAND, fine to medium, quartz (SP)
- SAND, fine to medium, quartz, very clayey, well compacted, organic stain, dark gray (SC)
- SAND, fine to medium, quartz, light gray, slightly clayey, slightly shelly
- LIMESTONE, medium hard, thin bedded, fossiliferous
- SILT, very calcareous, sandy, slightly clayey
- LIMESTONE, hard, dense, porous, buff, slightly fossiliferous, sandy
- CLAY, sandy, very stiff, green, thin lenses of limestone (CH)
- LIMESTONE, hard, thin bedded, many lenses and pockets of calcareous silt and softer limestone

NOTES:
1. a. Artesian flow encountered below elevation -47.3
   b. Maximum head obtained = Elevation +9.4
   c. With top of casing at elevation +7.9, bottom of casing at elevation -43.3, bottom of hole at elevation -52.3, hole flowed at 12 GPM.
2. Hole grouted upon completion.

300# hammer with 18" drop used on 2" I.D. spoon.

REVISED FROM LAB. TEST RESULTS 3-17-66

ENG FORM 1836 — FCD STRUCTURE 160 — CB-5180-11

NOTE
1. For notes see sheet 38

REVISIONS

NO.	SYM.	ZONE	DESCRIPTION	DATE	APPROVED

RECORD DRAWING NOTE

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AS BUILT

U. S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

FOUR RIVER BASINS, FLORIDA
CANAL 135

STRUCTURE 160

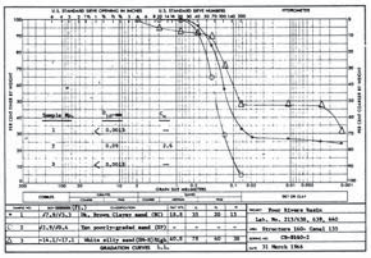
LOG OF CORE BORINGS

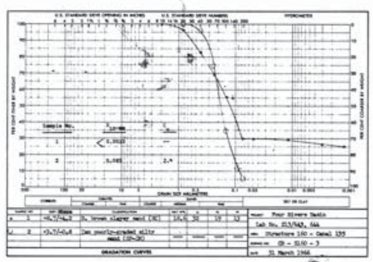
DATED: 20 FEBRUARY 1967 · SCALE: AS SHOWN · SHEET 37 OF 40

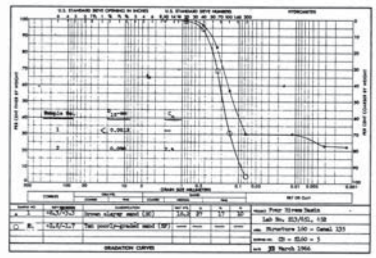
D. O. FILE NO. ~~605-23,906~~ 605-30,623

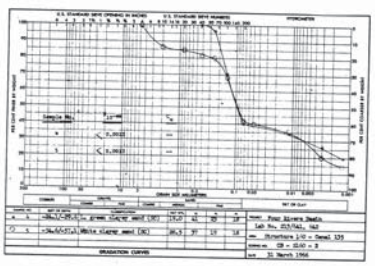
SAFETY ON THIS JOB
DEPENDS ON YOU

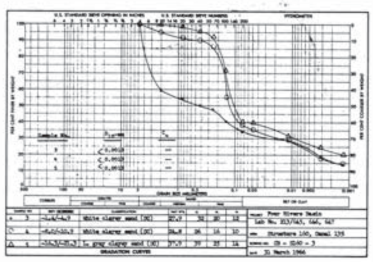
NO.	DFM	ZONE	REVISIONS DESCRIPTION	DATE	APPROVED

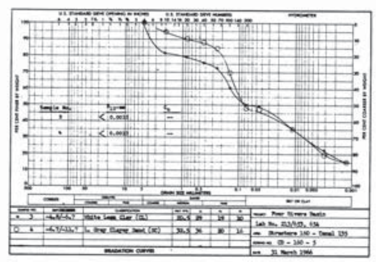






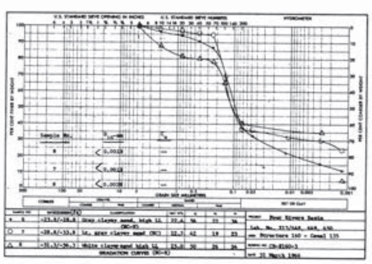


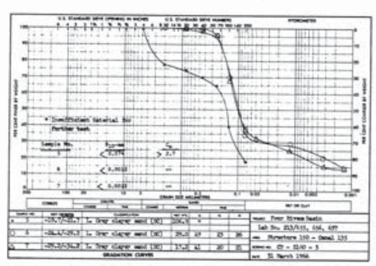




1. D_N^{mm} = THE DIAMETER IN MILLIMETERS, SUCH THAT THE AGGREGATE WEIGHT OF ALL SMALLER GRAINS IS N PERCENT OF THE TOTAL WEIGHT OF THE SAMPLE.

2. $C_U = D_{60} \div D_{10}$ (UNIFORMITY COEFFICIENT)





RECORD DRAWING NOTE

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AS BUILT

U.S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

FOUR RIVER BASINS, FLORIDA
CANAL 135

STRUCTURE 160

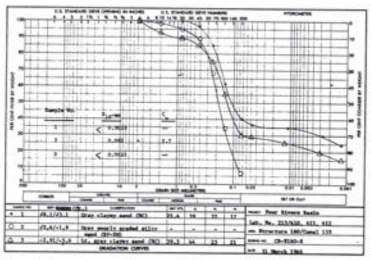
GRADATION CURVES

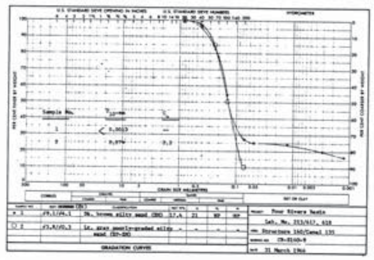
INV. NO. DACW17-67-B-0041
DATED 20 FEBRUARY 1967
SCALE AS SHOWN
DATED JAN. 1967
SHEET 35 OF 40

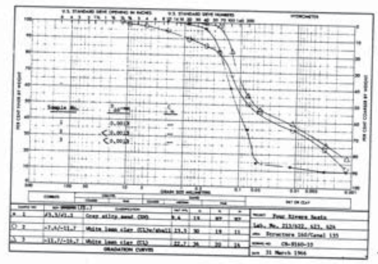
D. O. FILE NO. ~~605-29,906~~ 1605-30,623

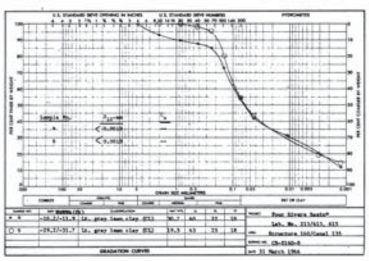
SAFETY ON THIS JOB DEPENDS ON YOU

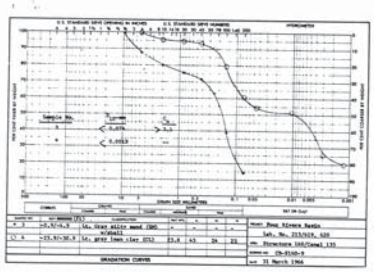
NO.	SYM	ZONE	REVISIONS DESCRIPTION	DATE	APPROVED

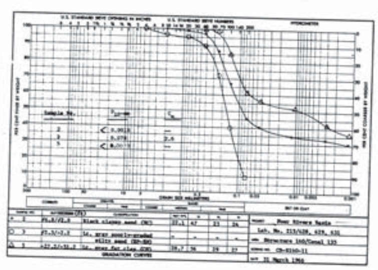












NOTE:
1. For notes see sheet No. 38

RECORD DRAWING NOTE
"Shall be," "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract.

AS BUILT

U.S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

FOUR RIVER BASINS, FLORIDA
CANAL 133

STRUCTURE 130

GRADATION CURVES

INV. NO. DACW17-67-B-0041
DATED 20 FEBRUARY 1967
SCALE: AS SHOWN
DATED JAN. 1967
SHEET 33 OF 40

D. O. FILE NO. ~~606-29,306~~ 606-30,623

SAFETY ON THIS JOB DEPENDS ON YOU

NOTE:

1. ELEVATIONS ARE MEAN DAILY STAGES.
2. GAGE IS LOCATED ON SIXMILE CREEK AT TAMPA, FLORIDA UPSTREAM FROM S.R. 570 BRIDGE.

RECORD DRAWING NOTE

"Shall be," "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract.

AS BUILT

U. S. ARMY ENGINEER DISTRICT, JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

FOUR RIVER BASIN, FLORIDA
CANAL 135

STRUCTURE 160

STAGE GRAPH

DATED: 20 FEBRUARY 1967

SCALE: AS SHOWN

SHEET 40 OF 40

D. O. FILE NO. ~~605-29,906~~ 605-30,623

SAFETY ON THIS JOB DEPENDS ON YOU

REVISIONS					
NO.	SYM.	ZONE	DESCRIPTION	DATE	APPROVED
1	△	A-1	REVISED TO CONFORM TO AMEND NO. 0002	3-3-75	RGE

DRILLING LOG — Hole No. CB-5162-15

South Atlantic — Jacksonville District

FRB Structure 162

Corps of Engineers

SAND, fine to medium quartz, slightly silty, tan (SP)

clayey, stiff, brown (SC), from +16.0 to +14.5

clean from +14.5 to +13.0

SAND, fine to medium quartz, slightly silty to silty, gray, (SM)

organic stain, dark brown from +1.0 to -7.5

CLAY, plastic, sandy, gray, thin lenses of limestone (CL)

SAND, fine to medium quartz, silty, slightly clayey, slightly plastic, tan (SM)

SILT, plastic, clayey, sandy, tan, (MH)

CLAY, plastic, silty, slightly sandy, gray (CL)

BIT OR BARREL — SPLIT SPOON

DRILLING LOG (Cont Sheet) — Hole No. CB-5162-15

FRB Structure 162 — Jacksonville District

SILT, plastic, sandy tan, (MH)

SILT, calcareous, compacted, slightly sandy, slightly clayey, many thin lenses of limestone, buff (ML)

LIMESTONE, hard, sandy, dense, gray

SAND, clayey, stiff (SC)

LIMESTONE, hard, sandy, dense, gray

SAND, clayey, brown (SC)

SILT, calcareous, compacted, thin lenses of limestone (ML)

LIMESTONE, hard, dense, solid, buff, flint from -49.8 to -49.8

LIMESTONE, medium hard, dense, friable, tan, calcareous silt from -52.6 to -53.0 and from -54.1 to -54.7

NOTES:

1. Hole drilled with mud; no casing set.
2. Partial drill fluid loss at el -7.5.
3. *Representative samples wrapped in wax impregnated cloth.
4. Hole grouted upon completion.

140# hammer with 30" drop used on 2.0" split spoon (1-3/8" I.D. x 2" O.D.)

DRILLING LOG — Hole No. CB-5162-16

South Atlantic — Jacksonville District

FRB Structure 162

Corps of Engineers

FILL, canal spoil bank, clayey sand

SAND, fine to medium, quartz, slightly clayey to clayey, slightly silty, dark brown (SC)

SAND, fine to medium quartz, silty, slightly clayey (SM)

very silty +9.0 to +8.5

Organic stains

CLAY, slightly sandy, slightly silty, dark gray (CL)

brown below -6.2

thin bed of medium hard limestone -7.7 to -8.1

SAND, fine quartz, silty, slightly clayey, brown (SM)

SILT, tan, soft (ML)

DRILLING LOG (Cont Sheet) — Hole No. CB-5162-16

FRB Structure 162 — Jacksonville District

SILT, brown, slightly sandy (MH)

SAND, fine quartz, very silty (SM) bed of clayey sand (SC) with lenses of very hard chert from -32.2 to -33.7

LIMESTONE, hard, dense, solid, gray, sandy, massive

soft from -38.7 to -40.2

many medium hard streaks below -44.7

NOTES:

1. 6" casing set to Elev minus 26.7
2. No measurable drill fluid loss while drilling
3. Hole grouted upon completion

140# hammer with 30" drop used on a 2.0 ft. split spoon (1-3/8" I.D. x 2" O.D.)

AS BUILT

RECORD DRAWING NOTE

"Shall be" "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract

NOTES:

1. For boring locations see Note 1, Dwg. No. 24/1.
2. For boring notes, see Dwg. No. 24/1.

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
CORE BORINGS AND MISCELLANEOUS
STRUCTURE 162 - LOG OF BORINGS

H.R.D.

DATED 13 FEBRUARY 1975

SCALE: AS SHOWN

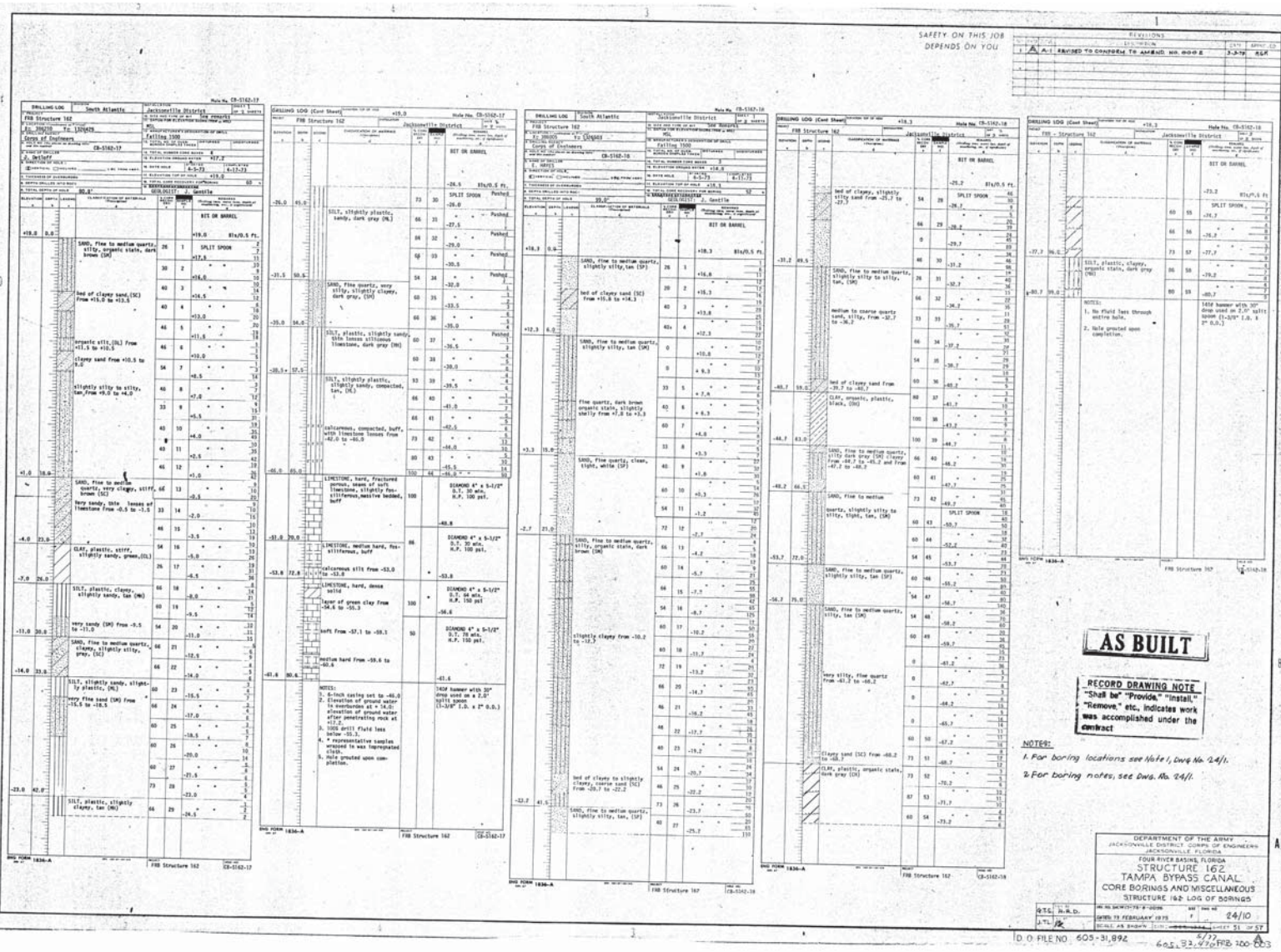
DWG. NO. 24/9

SHEET 50 OF 57

D. O. FILE NO. ~~605-31,892~~ 605-31,470 FRB 200-003

SAFETY ON THIS JOB DEPENDS ON YOU

REVISIONS			
NO.	DESCRIPTION	DATE	APPR'D
1	A-1 REVISED TO CONFORM TO AMEND. NO. 0006 E	3-3-78	RLR



SAFETY ON THIS JOB DEPENDS ON YOU

REVISIONS					
NO	SYM	ZONE	DESCRIPTION	DATE	APPROVED
1	A	A-J	REVISED TO CONFORM TO AMEND No. 0002	3-3-75	RGK

DRILLING LOG

Hole No. CB-S162-19

DIVISION: South Atlantic	INSTALLATION: Jacksonville District — SHEET 1 OF 3 SHEETS
1. PROJECT: FRB Structure 162	10. SIZE AND TYPE OF BIT: See Remarks
2. LOCATION: X=386,105 Y=1,326,381	11. DATUM FOR ELEVATION SHOWN: MSL
3. DRILLING AGENCY: Corps of Engineers	12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500
4. HOLE NO.: CB-S162-19	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN
5. NAME OF DRILLER: E. Sayre	14. TOTAL NUMBER CORE BOXES: 2
6. DIRECTION OF HOLE: Vertical	15. ELEVATION GROUND WATER: +17.1
7. THICKNESS OF OVERBURDEN	16. DATE HOLE: STARTED 5-3-73; COMPLETED 5-8-73
8. DEPTH DRILLED INTO ROCK	17. ELEVATION TOP OF HOLE: +18.1
9. TOTAL DEPTH OF HOLE: 96.0'	18. TOTAL CORE RECOVERY FOR BORING: 40%
	19. Geologist: J. Gentile

ELEVATION	DEPTH	CLASSIFICATION OF MATERIALS	REMARKS
+18.1	0.0		Bit or Barrel; +18.1 Bls/0.5 ft. SPLIT SPOON
+15.1	3.0	SAND, fine to medium quartz, silty, organic stained, dark gray (SM)	
+12.1	6.0	SAND, fine to medium, quartz, clayey, brown (SC)	
+10.6	7.5	SAND, fine quartz, tan (SP)	
+9.1	9.0	SAND, fine quartz, silty, shelly, gray (SM)	
+3.6	14.5	SILT, dark gray, organic stained (ML)	
+1.8 / +1.3	16.3 / 16.8	SAND, fine quartz, silty, gray (SM); thin bed of medium hard limestone from +1.8 to +1.3; organic stained and lenses of peat from +1.3 to -7.4	
-3.9 / -4.4	22.0 / 22.5	bed of clayey sand (SC) from -3.9 to -4.4	
-7.4	25.5		
-11.9	30.0	SAND, fine to medium, quartz, slightly silty, light gray (SP)	
		SAND, fine to medium, quartz, silty, dark brown, organic stains (SM)	

ENG FORM 1836-A — PROJECT: FRB Structure 162 — HOLE NO. CB-S162-19

DRILLING LOG (Cont Sheet)

Elevation top of hole +18.1 — Hole No. CB-S162-19 — PROJECT: FRB Structure 162 — SHEET 2

ELEVATION	DEPTH	CLASSIFICATION OF MATERIALS	REMARKS
			Bit or Barrel; -25.4 Bls/0.5 ft. SPLIT SPOON
-31.4	49.5		
-36.4	88.5	PEAT, dark brown, silty (PT)	pushed
-37.4	55.5	SAND, fine quartz, very silty (organic) (SM)	pushed
-45.9	64.0	PEAT, dark brown, silty (PT)	
-55.4	73.5	SAND, fine, quartz, silty, brown, organic stained (SM)	
-58.4	76.5	PEAT, dark brown, silty (PT)	
		SAND, fine, quartz, silty (organic) (SM)	

ENG FORM 1836-A — PROJECT: FRB Structure 162 — HOLE NO. CB-S162-19

DRILLING LOG (Cont Sheet)

Elevation top of hole +18.1 — Hole No. CB-S162-19 — PROJECT: FRB Structure 162 — INSTALLATION: Jacksonville District — SHEET 3 OF 3 SHEETS

ELEVATION	DEPTH	CLASSIFICATION OF MATERIALS	% CORE RECOVERY	SAMPLE NO.	REMARKS
					Bit or Barrel; -74.9 Bls/0.5 ft. SPLIT SPOON
			80	52	-76.4
-77.9	96.0		0		-77.9
		NOTES: 1. Hole grouted upon completion			140# hammer with 30" drop used on 2.0" Split Spoon (1-3/8" ID. x 2" O.D.)

ENG FORM 1836-A — PROJECT: FRB Structure 162 — HOLE NO. CB-S162-19

AS BUILT

RECORD DRAWING NOTE
"Shall be" "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract

NOTE:
1- For boring locations see Note & Dwg. No. 24/1.
2- For boring notes, see Dwg. No. 24/1.

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
CORE BORINGS AND MISCELLANEOUS
STRUCTURE 162 - LOG OF BORINGS

G.T.S.	H.R.D.
J.T.L.	
DACW17-75-B-0036	DWG. No. 24/11
DATED: 13 FEBRUARY 1975	
SCALE: AS SHOWN	SHEET 52 OF 57

D.O. FILE NO. 605-31,892

5/77 605, 32,470 FRB 200-003

SAFETY ON THIS JOB DEPENDS ON YOU

REVISIONS					
NO.	SYM	ZONE	DESCRIPTION	DATE	APPROVED
1	△	B-2	REVISED TO CONFORM TO AMEND NO. 0001	2-27-75	RBM
1	△	A-1	REVISED TO CONFORM TO AMEND. NO. 0002	3-3-75	RGK

DRILLING LOG

Division: South Atlantic — Installation: Jacksonville District — Sheet 1 of 1 sheets

1. Project: TBP, Canal 135
2. Location: X=385,556 Y=1,326,057
3. Drilling agency: Corps of Engineers
4. Hole No.: CB-C-135-6
5. Name of driller: P. L. Leuthold
6. Direction of hole: ✓ Vertical ☐ Inclined
9. Total depth of hole: 60.0'
10. Size and type of bit: 2" & [illegible]
11. Datum for elevation shown: MSL
12. Manufacturer's designation of drill: Sprague & Henwood 40C
14. Total number core boxes: 1
15. Elevation ground water: +13.6
16. Date hole: Started 3-12-65; Completed 3-13-65
17. Elevation top of hole: +19.4
18. Total core recovery for boring: 52 %
19. Signature of inspector: Z. [illegible]

Elevation	Depth	Legend	Classification of materials (Description)	% Core recovery	Sample No.	Remarks
+19.4	0.0					Bit or barrel: Bla/Ft; +19.4
+15.2	4.2		SAND, fine to medium quartz, tan to dark brown, organic stain (SP)	38	1	2" I.D. Spoon
+14.4	5.0		SAND, fine to medium quartz, clayey, brown to gray (SC)		2	+14.4
+4.6	14.8		SAND, fine to medium quartz, white to light gray (SP); slightly silty, gray, from +6.4 to +4.6	22; 96	3; 4	+9.4; +4.4
-1.1	20.5		CLAY, sandy, green, (CL); very sandy from +1.4 to -0.6	60	5	-0.6
-3.9	23.3		SAND, fine to medium quartz, clayey, green to gray (SC)	80	6	
-5.3	24.7		CLAY, sandy, green (CL)		7	-5.6
-15.5	34.9		SAND, clayey, lenses (CL) clay, thin lenses medium hard limestone, thin lenses of very hard flint, light gray-tan (SC); no flint or limestone from -10.6 to -15.6	26; 60	8; 9	-10.6; -15.6
-21.6	41.0		CLAY, silty, sandy, gray to dark gray, (CL)	100	10	Pushed; -20.6
-23.6	43.0		SILT, calcareous, sandy, thin lenses medium hard limestone, buff to tan (ML)	92	11, 12	Pushed; Pushed
-25.6	45.0		LIMESTONE, medium hard, porous, thin bedded, lenses silty sand, lenses flint, buff, slightly fossiliferous			-25.6
-29.1	48.5		LIMESTONE, hard, dense, slightly porous, massive bedded, gray-tan, sandy, seams and beds of medium hard porous limestone	50		Diamond NX; -28.6
-37.1	56.5		LIMESTONE, medium hard, porous, with seams of very friable limestone with fine crystalline limestone, tan-buff, slightly fossiliferous, thin bedded, lenses hard limestone and very hard flint, beds of well compacted poorly consolidated siltstone	16; 0		-33.6; -36.6
-38.1	57.5		LIMESTONE, hard, dense, non porous, tan, slightly fossiliferous, thin bedded	18		-37.1 2" I.D. Spoon; Diamond NX
-40.6	60.0		LIMESTONE, medium hard, same description as medium hard limestone, above			-40.6

HOLE GROUTED UPON COMPLETION

300# hammer with 18" drop used on 2" I.D. x 2-1/2" O.D. Spoon

ENG FORM 1836 — TBP, Canal 135 — CB-C-135-6

DRILLING LOG

Division: South Atlantic — Installation: Jacksonville District — Sheet 1 of 1 sheets

1. Project: TBP, Canal 135
2. Location: X=385,587 Y=1,326,026
3. Drilling agency: Corps of Engineers
4. Hole No.: CB-C135-80
5. Name of driller: J. King
6. Direction of hole: Vertical
9. Total depth of hole: 38.9'
11. Datum for elevation shown: MSL
12. Manufacturer's designation of drill: Sprague & Henwood 142-C
14. Total number core boxes: 1
15. Elevation ground water: +12.0
16. Date hole: Started 3/19/80; Completed 3/21/80
17. Elevation top of hole: +20.4
18. Total core recovery for boring: 75
19. Signature of inspector: J. Coffle

Elevation	Depth	Legend	Classification of materials (Description)	% Core recovery	Sample No.	Remarks
+20.4	0.0					Bit or barrel; +20.4
+8.6	11.8		SAND, fine to medium, quartz, (SP)	0		6" FISHTAIL; +7.5
-8.1	28.5		SAND, clayey, green to gray, (SC-SM)	0; 40; –	ST-1; –	5" SHELBY TUBE; +1.5; -0.7; 6" FISHTAIL; -7.3
-9.3	29.7		SAND, fine to medium, quartz, very clayey, gray (SC)	100		DIAMOND 4" x 5-1/2"; -10.3
-10.3	30.7		many thin lenses fossiliferous limestone and very thin lenses flint -9.3 to -10.3			
-14.8	35.2		thin lenses of flint -14.8 to -15.3	54		DIAMOND 4" x 5-1/2"; -15.3
-15.3	35.7			–	–	6" FISHTAIL; -16.3
-18.5	38.9		CLAY, gray, thin lenses of flint, some lenses soft limestone -17.5 to -18.5 (CH)	85	ST-2	5" SHELBY TUBE; -18.5

NOTES:
1. 6" casing set to elevation -5.3.
2. *Representative samples sealed in wax impregnated cloth.
3. Ground water elevation of +12.0 was constant throughout the hole.
4. Hole grouted upon completion.
5. Log conforms to laboratory classification 3/31/70.

ENG FORM 1836-A — TBP, CANAL 135 — CB-C135-80

AS BUILT

RECORD DRAWING NOTE
"Shall be" "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract

NOTES:
△ 1. For boring locations see Note 1, Dwg. No. 24/1.
2. For boring notes, see Dwg. No. 24/1.

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

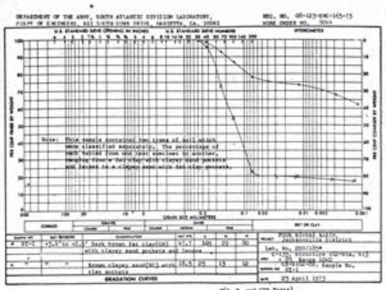
FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
CORE BORINGS AND MISCELLANEOUS
STRUCTURE 162: LOG OF BORINGS

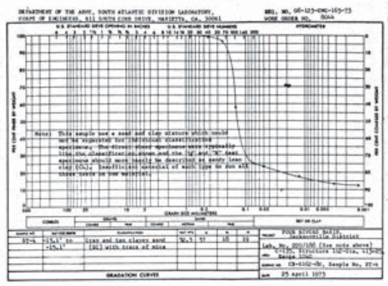
G.T.S.	DRAWN BY H.R.D.	SPEC. NO. DACW17-75-B-0036		DWG. NO. 24/12
J.T.L.	CHECKED BY RK	DATE: 13 FEBRUARY 1975		
		SCALE: AS SHOWN	DATED ~~OCT. 1974~~	SHEET 53 OF 57

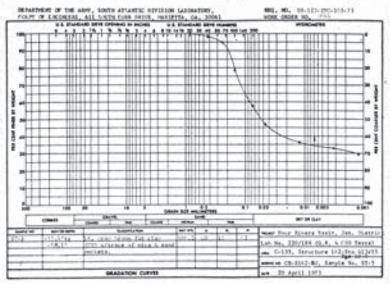
D. O. FILE NO. ~~605-31,098~~ 1 605-33,470/5177 FR8 200-003

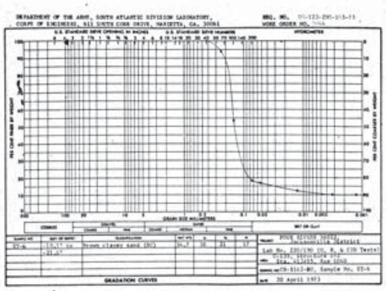
SAFETY ON THIS JOB DEPENDS ON YOU

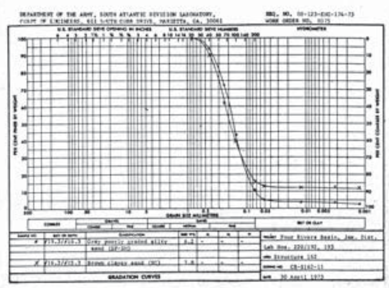
REVISIONS					
NO	SYM	ZONE	DESCRIPTION	DATE	APPROVED
1	A	A-1	REVISED TO CONFORM TO AMEND NO. 0002	3-3-77	RSK

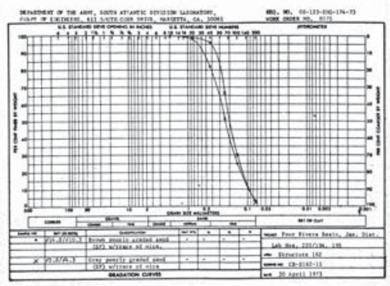


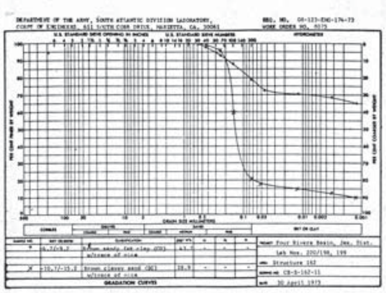


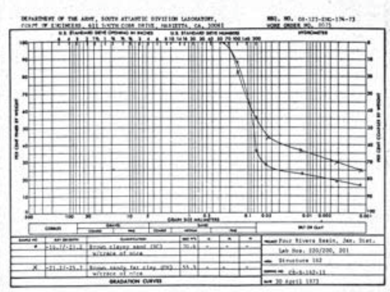


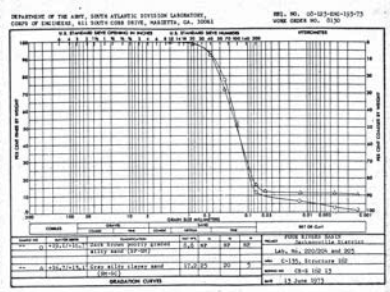












AS BUILT

RECORD DRAWING NOTE
"Shall be" "Provide," "install," "Remove" etc. indicates work was accomplished under the contract

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
CORE BORINGS AND MISCELLANEOUS
STRUCTURE 162 GRADATION CURVES

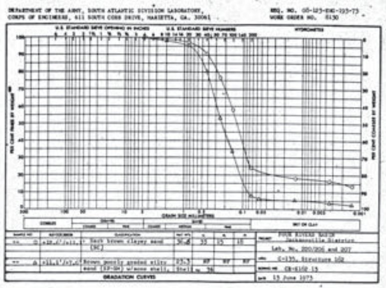
R.T.S. H.R.D.
J.T.L. RSK
DATED 12 FEBRUARY 1975
SCALE AS SHOWN
24/15
SHEET 54 OF 57

D. O. FILE NO. ~~605-31,808~~ 605-32,470
ERB 200-003

SAFETY ON THIS JOB DEPENDS ON YOU

REVISIONS					
NO	SYM	ZONE	DESCRIPTION	DATE	APPROVED
1	△	A-1	REVISED TO CONFORM TO AMEND NO. 0002	3-3-75	RGK

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY, CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30061
REQ. NO. 08-123-ENG-193-73
WORK ORDER NO. 8130



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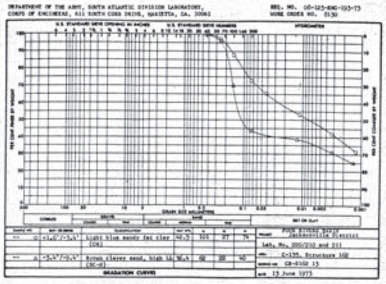
REQ. NO. 08-123-ENG-193-73
WORK ORDER NO. 8130



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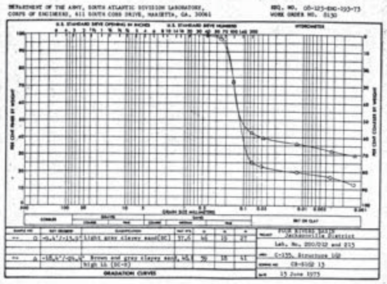
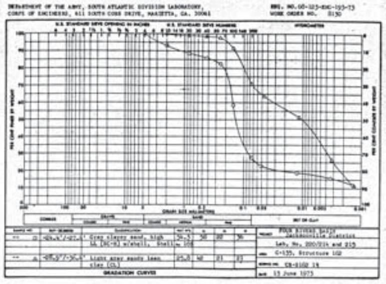
REQ. NO. 08-123-ENG-193-73
WORK ORDER NO. 8130



DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY, CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30061
REQ. NO. 08-123-ENG-193-73
WORK ORDER NO. 8130



AS BUILT

RECORD DRAWING NOTE
"Shall be" "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

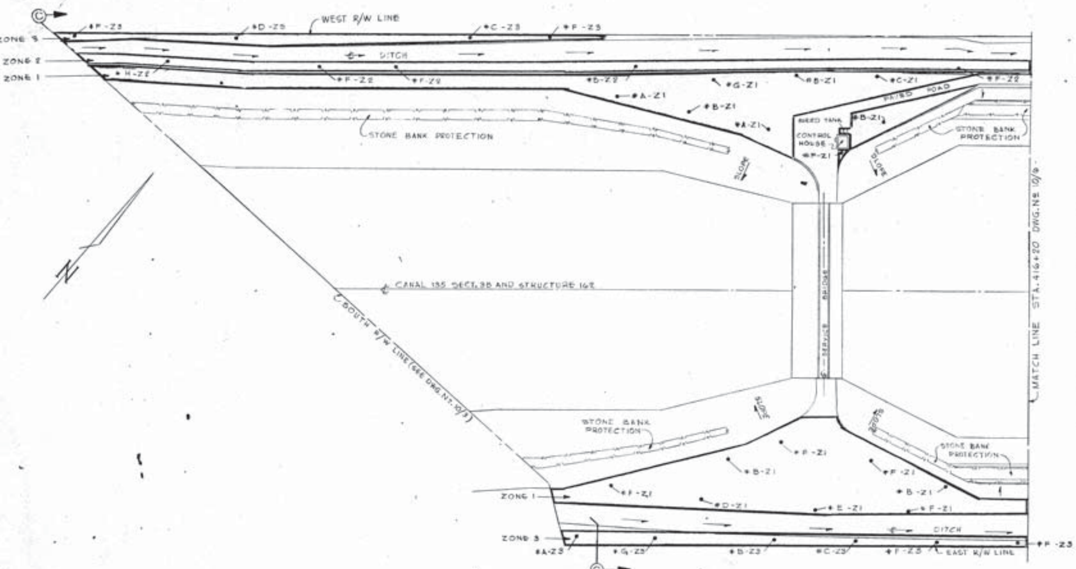
FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
CORE BORINGS AND MISCELLANEOUS
STRUCTURE 162 - GRADATION CURVES

G.T.E.	H.R.D.	DACW17-75-B-0036	F	24/14
ATL.	[illegible]	DATE 13 FEBRUARY 1975		
		SCALE AS SHOWN	DATE ~~OCT. 1974~~	SHEET 55 OF 57

D. O. FILE NO. ~~200-31,882~~ 665-32,970 5/75
FRB 200-003

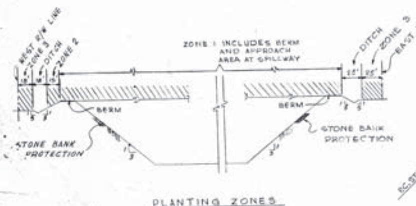
SAFETY ON THIS JOB DEPENDS ON YOU

NO.	SYM	ZONE	
1	A	A-1	REVISED TO CO-



PLANTING NOTES:

- IN THE EVENT OF A DIFFERENCE BETWEEN THE PLANT QUANTITIES SHOWN ON THE PLAN AND THOSE LISTED IN THE PLANT REQUIREMENT SCHEDULE, THE QUANTITIES ON THE PLAN SHALL GOVERN.
- THE NUMBERS IN THE DETAIL GROUP PLANS INDICATES THE KEY # IN THE PLANT REQUIREMENT SCHEDULE.
- TREE GROUPS SHALL BE PLANTED AS INDICATED ON THE PLANTING PLAN. THE GROUPS SHALL BE CENTERED WITHIN THE PROPER ZONE, WITH NO STEMS CLOSER THAN 1.5' TO THE EDGE OF THEIR ZONE.
- TREE GROUP LOCATION SHALL BE SCALED FROM THE PLANTING PLAN, AND SHALL BE CENTERED ± 10' USING THE SERVICE BRIDGE CENTER LINE AS A POINT OF BEGINNING.
- THE TREES WITHIN EACH GROUP SHALL BE ARRANGED AS SHOWN IN THE DETAILED GROUP PLAN. THE INDIVIDUAL STEMS SHALL BE LOCATED ± 1 FOOT FROM THE CENTER INDICATED IN THE PLAN.
- ON THE 'PLANTING PLAN' WHERE LETTERS AND NUMBERS OCCUR AS #B-Z3, THE FIRST LETTER INDICATES THE TREE GROUP #, AND THE Z3 IS ZONE NUMBER. FOR LOCATION OF EACH ZONE, SEE 'CROSS-SECTION DETAIL BELOW.'
- GUYING FOR ALL TREES WILL BE REQUIRED AS SHOWN ON PLATE LS-2 IN THE SPECIFICATIONS.
- NO TREE STEMS SHALL BE PLANTED WITHIN 4' OF A BERM DITCH ℄ OR BERM CULVERTS.
- PLANTING ARRANGED SO THAT NO TALL TREES ARE UNDER POWER LINES.



PLANTING ZONES AT SECTION C-C
SCALE: "A" VERT. "B" HORIZ.

PLANTING PLAN
SCALE "B"

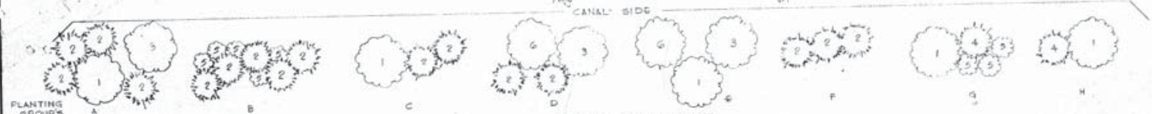
PLANTING PLAN-CONT'D
SCALE "C"

PLANT REQUIREMENT SCHEDULE

KEY No	QUANTITY	SCIENTIFIC NAME	COMMON NAME	ROOTS	SIZE HEIGHT	SIZE SPREAD	CALIPER (MINIMUM)	REMARKS
1	18	QUERCUS VIRGINIANA	LIVE OAK	B&B	5'-6'	3'-4'	1"	ALL STOCK WILL BE FLA. No 1 GRADE OR EQUIVALENT.
2	112	PINUS CARIBAEA	SLASH PINE	SGC	4'-5'	2'-3'	1"	
3	7	LIQUIDAMBAR STYRACIFLUA	AMERICAN SWEETGUM	B&B	6'-8'	2'-3'	1½"	
4	3	JUNIPERUS VIRGINIANA	EASTERN REDCEDAR	B&B	5'-6'	2'-3'	1"	
5	51	MYRICA CERIFERA	WAXMYRTLE	B&B	3'-4'	30"	–	
6	3	ACER RUBRUM	RED MAPLE	B&B	6'-8'	3'-4'	1"	

AS BUILT

RECORD DRAWING NOTE
"Shall be" "Provide." "Install," "Remove" etc., indicates work was accomplished under the contract



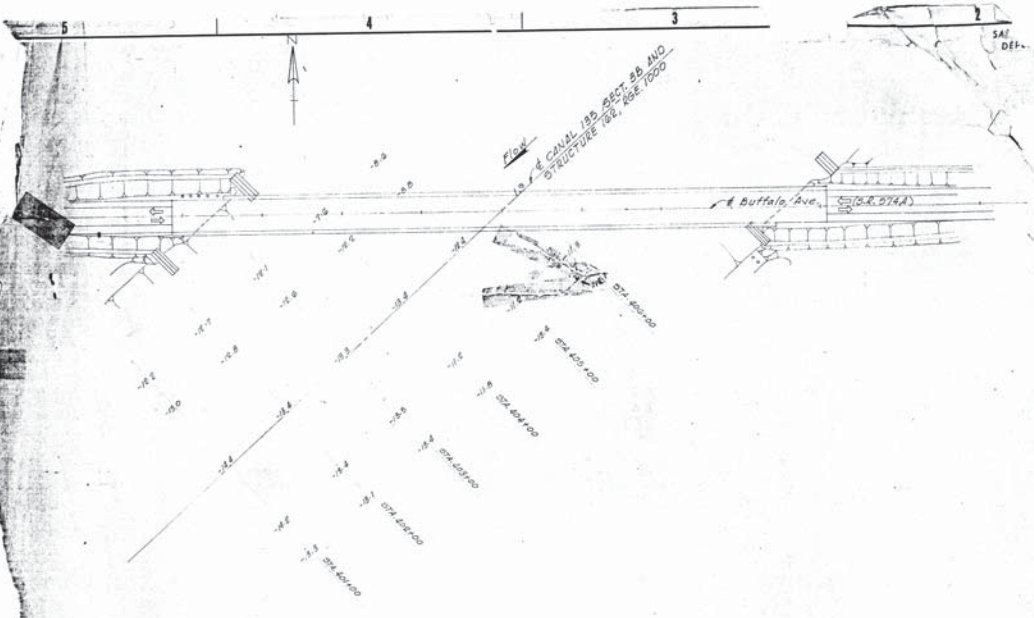
DETAIL GROUP PLANS
SCALE: "A"

SCALE IN FEET
"A" 20' 0' 20' 40'
"B" 50' 0' 50' 100'
"C" 200' 0' 200' 400'

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
CORE BORINGS AND MISCELLANEOUS
TREE PLANTING PLAN

DWN. BY TL | CK. BY JL | DATED: 13 FEBRUARY 1975 | SCALE: AS SHOWN | F | DWG. NO. 24/15 | SHEET 56 OF 57

D. O. FILE NO. ~~605-31,898~~ 605-32,920 FRB 200-003



PLAN OF SURVEY DATA FOR CANAL 135, SECTION 8A
SCALE: "A"
Note: See Notes 1, 2 and 3 at right.

SCALE IN FEET
"A" 50' 0 50' 100'

NOTES:

1. EXISTING GROUND AS SHOWN ON THIS SHEET I AS DETERMINED BY SURVEY MADE PRIOR TO C OF WORK UNDER THIS CONTRACT. REFER TO FIL TITLED "FINAL CROSS-SECTIONS CANAL 135, SE BYPASS CANAL" AT CORPS OF ENGINEERS' ARE TAMPA, FLORIDA. SURVEY MADE NOVEMBER GROUND ELEVATIONS +5.0 AND BELOW SHO CANAL BOTTOM BELOW BUFFALO AVENUE BE BELOW DESIGN GRADE AND SECTION AS SH NO. 10/4 AS OF SURVEY DATE NOTED ABOV

2. FOR PLAN OF CANAL 135 IN VICINITY OF BU BRIDGE SEE DWG. NO. 10/4.

3. ALL STATIONING SHOWN ON THIS SHEET IS A CENTERLINE OF THE CANAL, RANGE 1000.

AS BUILT

RECORD DRAWING NOTE
"Shall be" "Provide." "Install," "Remove" etc., indicates work was accomplished under the contract

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
CORE BORINGS AND MISCELLANEOUS
C-135 SECT. 8A-FINAL SURVEY DATA BELOW BUFFALO AVE. BRIDGE

DATED 15 FEBRUARY 1975
SCALE AS SHOWN
DWG. NO. 24/16
SHEET 57 OF 57

D. O. FILE NO. ~~605-31,690~~ 605,32,470
FRB 300-603

SAFETY ON THIS JOB DEPENDS ON YOU

REVISIONS		
C △	REVISED TO CONFORM TO AMENDMENT NO. 0002	3-5-75

FOUR RIVER BASINS, FLORIDA

PLANS

FOR CONSTRUCTION OF

STRUCTURE 162

TAMPA BY PASS CANAL

DEPARTMENT OF THE ARMY

JACKSONVILLE DISTRICT, CORPS OF ENGINEERS

JACKSONVILLE, FLORIDA

1975

INDEX TO DRAWINGS

SHEET NO.	DWG. NO.	TITLE
		GENERAL
1	10/1	INDEX TO DRAWINGS
2	10/2	LOCATION MAP AND VICINITY MAP
3	10/3	PHOTO PLAN, RIGHT-OF-WAY AND CONTROL
4	10/4	OVERALL SITE PLAN
5	10/5	TOPOGRAPHY
6	10/6	SITE PLAN
7	10/7	DETAILS
8	10/8	EXCAVATION, FILL AND BACKFILL
9	10/9	PERMANENT ACCESS ROAD
10	10/10	GENERAL PLAN
11	10/11	SECTIONS
12	10/12	FOUNDATION PILES
13	10/13	CULVERT DETAILS
14	10/14	DISPOSAL AREA "V" EAST AND CORE BORING LOCATIONS
		MASONRY
15	12/1	PLAN AND SECTIONS
16	12/2	SECTIONS
17	12/3	DETAILS
		REINFORCEMENT
18	14/1	GATE MONOLITHS (BAYS 1, 2, 6, 7)
19	14/2	GATE MONOLITHS (BAYS 3, 4, 5)
20	14/3	STILLING BASIN AND RETAINING WALLS
		VERTICAL LIFT GATES
21	16/1	MAIN GATES
22	16/2	DETAILS
23	16/3	SLIDE GATES

SHEET NO.	DWG. NO.	TITLE
		METALS AND MISCELLANEOUS
24	18/1	WINGWALLS, CUTOFF WALL AND DETAILS
25	18/2	FENCING - PLAN AND ELEVATIONS
26	18/3	FENCING - PLAN AND ELEVATIONS
27	18/4	FENCING - DETAILS
28	18/5	EMBEDDED METALS AND MISCELLANEOUS NO. 1
29	18/6	EMBEDDED METALS AND MISCELLANEOUS NO. 2
30	18/7	WARNING SIGNS AND SAFETY BARRIER ANCHOR DETAILS
31	18/8	SAFETY BARRIER DETAILS
32	18/9	CONTROL HOUSE - PLAN AND DETAILS
		MECHANICAL
33	20/1	GATE HOIST - GENERAL ARRANGEMENT
34	20/2	GATE HOIST - DETAILS NO. 1
35	20/3	GATE HOIST - DETAILS NO. 2
36	20/4	GATE HOIST - DETAILS NO. 3
37	20/5	HYDRAULIC DIAGRAM AND CONTROL HOUSE
38	20/6	GATE LIMIT SWITCHES AND POSITION TRANSMITTER
		ELECTRICAL SYSTEM
39	22/1	CONDUIT PLANS
40	22/2	SCHEMATIC WIRING DIAGRAMS
41	22/3	MISCELLANEOUS SCHEDULES AND DETAILS

SHEET NO.	DWG. NO.	TITLE
		CORE BORINGS AND MISCELLANEOUS
42	24/1	STRUCTURE 162 - LOG OF BORINGS
43	24/2	STRUCTURE 162 - LOG OF BORINGS
44	24/3	STRUCTURE 162 - LOG OF BORINGS
45	24/4	STRUCTURE 162 - LOG OF BORINGS
46	24/5	STRUCTURE 162 - LOG OF BORINGS
47	24/6	STRUCTURE 162 - LOG OF BORINGS
48	24/7	STRUCTURE 162 - LOG OF BORINGS
49	24/8	STRUCTURE 162 - LOG OF BORINGS
50	24/9	STRUCTURE 162 - LOG OF BORINGS
51	24/10	STRUCTURE 162 - LOG OF BORINGS
52	24/11	STRUCTURE 162 - LOG OF BORINGS
53	24/12	STRUCTURE 162 - LOG OF BORINGS
54	24/13	STRUCTURE 162 - GRADATION CURVES
55	24/14	STRUCTURE 162 - GRADATION CURVES
56	24/15	TREE PLANTING PLAN
△ 57	24/16	C-135 SECT. 3A - FINAL SURVEY DATA BELOW BUFFALO AVE. BRIDGE

RECORD DRAWING NOTE
"Shall be" "Provide," "install," "Remove," etc., indicates work was accomplished under the contract

AS BUILT

SECTION		DATE	SECTION	CHIEFS' SIGNATURE	DATE
ELECTRICAL			MECHANICAL		
FDNS & MATL			PAVING		
LEVEE & HWS			STRUCTURES		

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

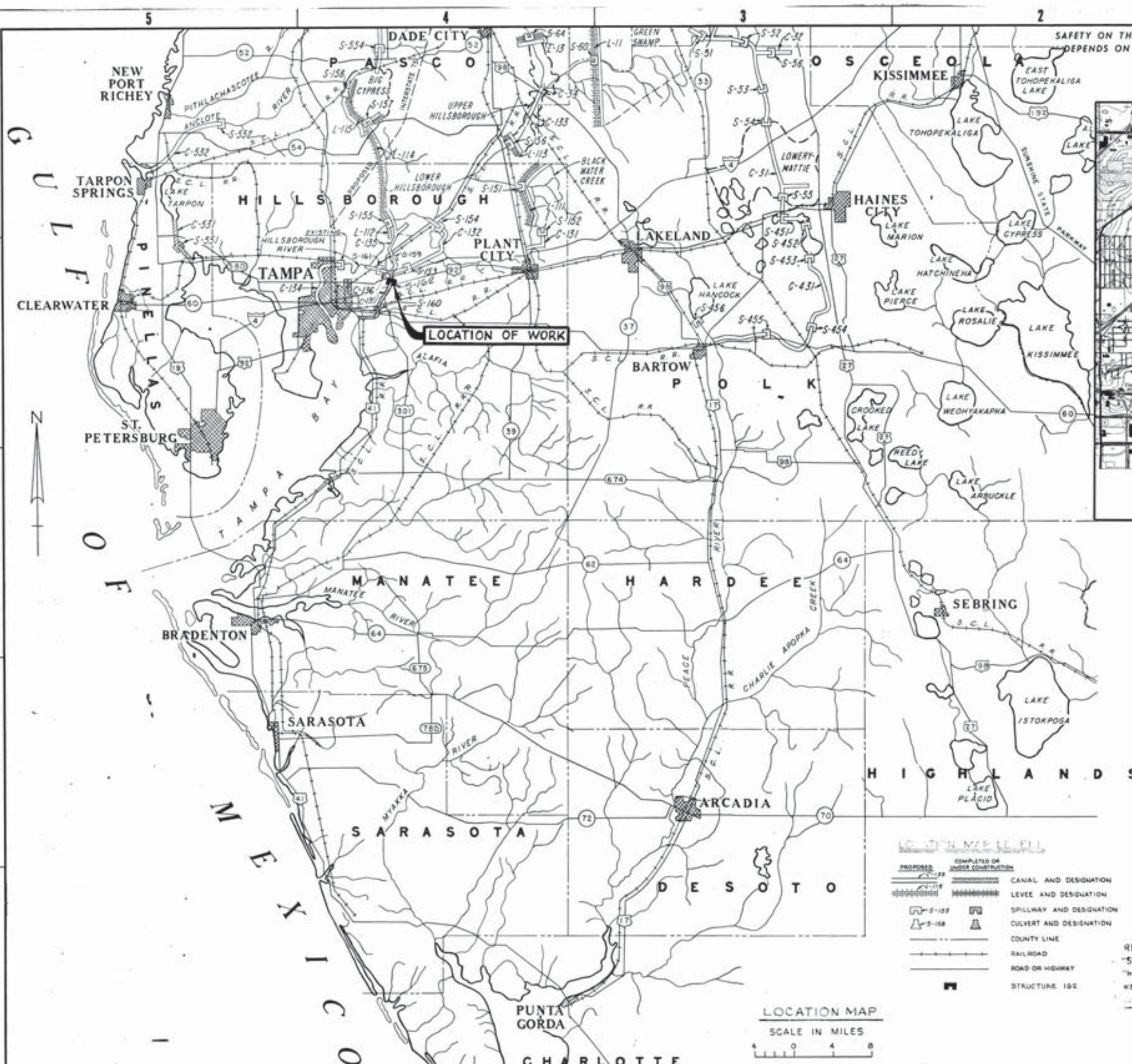
FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
GENERAL
INDEX TO DRAWINGS

DRN BY C.L.K. CKD BY J.T.L.
DATED: 13 FEBRUARY 1975
SCALE: NONE
F 10/1
SHEET 1 OF 57 △

D. O. FILE NO. [redacted]

SAFETY ON THIS JOB DEPENDS ON YOU

REVISIONS					
NO.	SYM	ZONE	DESCRIPTION	DATE	APPROVED
1	A	A-1	REVISED TO CONFORM TO AMEND. NO. 0002		



VICINITY MAP

SCALE IN MILES

GENERAL NOTES:

1. ELEVATIONS ARE IN FEET AND TENTHS AND ARE REFERRED TO MEAN SEA LEVEL.
2. ALL ELEVATIONS ARE ABOVE REFERENCE PLANE, UNLESS PRECEDED BY A MINUS (-) SIGN.
3. COORDINATES ARE BASED ON THE STANDARD PLANE RECTANGULAR COORDINATE SYSTEM FOR THE WEST ZONE OF FLORIDA.
4. ALL AZIMUTHS (0° - SOUTH) REFER TO GRID.
5. FRB (FOUR RIVER BASINS) STATIONS ARE CORPS OF ENGINEERS TRAVERSE DISKS SET IN CONCRETE MONUMENTS OR 4" IRON PIPES AND ARE BENCH MARKS.
6. CORPS OF ENGINEERS MONUMENTS ARE STANDARD BRONZE DISKS SET IN CONCRETE.
7. ALL STATIONING IS ALONG THE CENTERLINE OF THE CANAL, RANGE 1000.
8. FOR RIGHT-OF-WAY AND CONTROL DATA, SEE DWG. NO. 10/3.
9. SURVEY MADE FEB. 1973. REFER TO FIELD BOOK 73 FRB PT-22.
10. THE ACCURACY OF THE PHOTOGRAPHY SHOWN WITH THIS CONTRACT IS DEPENDENT UPON SEVERAL FACTORS. THIS PHOTOGRAPHY IS SHOWN FOR GENERAL INFORMATION ALONG THE CANAL ALINEMENT AND THE STATION OF ANY EXISTING FEATURE SCALED FROM THESE MAPS IS APPROXIMATE ONLY.
11. PHOTOGRAPHY FLOWN SEPTEMBER 19[illegible].
12. "EXISTING GROUND" AND/OR "APPROXIMATE EXISTING GROUND" AS RELATES TO CONSTRUCTION IS THE GROUND AS DETERMINED BY THE LAST SURVEY MADE PRIOR TO COMMENCEMENT OF WORK UNDER THIS CONTRACT.
13. NO RAILROAD RIGHTS-OF-WAY SHALL BE ENTERED UPON IN THE PROSECUTION OF ANY AND ALL WORK UNDER THIS CONTRACT WITHOUT THE CONTRACTOR FIRST OBTAINING THE WRITTEN APPROVAL OF A RESPONSIBLE OFFICIAL OF THE RAILROAD AND PRESENTING IT TO THE CONTRACTING OFFICER FOR APPROVAL. PUBLIC RAILROAD CROSSINGS, FREIGHT DEPOTS, YARDS, ETC. ENTERED FOR THE PURPOSES OF RECEIVING OR SHIPPING GOODS AND MATERIALS, OR RAILROAD LANDS WITHIN THE CONSTRUCTION LANDS SHOWN IN THE CONTRACT DRAWINGS, ARE EXEMPT FROM THE FOREGOING PROVISIONS.

RECORD DRAWING NOTE: "Shall be" "Provide" "Install" "Remove" etc. indicates work was accomplished under the contract

AS BUILT

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

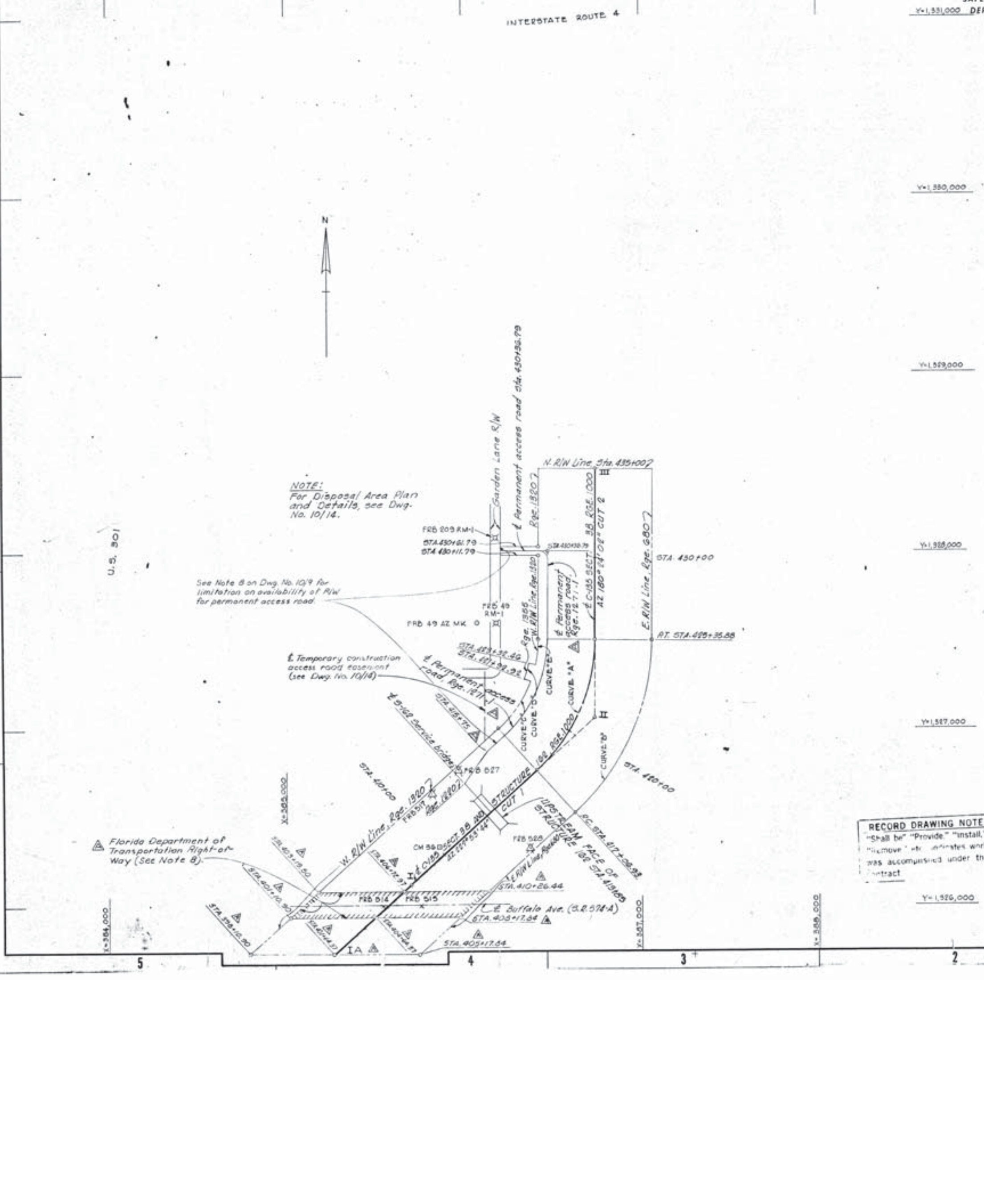
FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
GENERAL
LOCATION MAP AND VICINITY MAP

DWN BY: J.T.L. / G.T.S.
CKD BY: J.T.L.
DWG. NO. 10/2

D. O. FILE NO. ~~805-31,882~~ 1

SAFETY ON THIS JOB DEPENDS ON YOU

REVISIONS					
NO.	SYM	ZONE	DESCRIPTION	DATE	APPROVED
19	△	—	REVISED TO ACCOMPANY AMEND. NO. 0002	3-3-75	



LEGEND

- ○ HORIZONTAL CONTROL SURVEY MARKER (SURVEY MARKER SET IN IRON PIPE)
- FRB 528 HORIZONTAL AND VERTICAL CONTROL MONUMENT
- HORIZONTAL AND VERTICAL CONTROL SURVEY MARKER
- × BENCH MARK (VERTICAL CONTROL)
- CM 36 SOUTH WEST FLORIDA WATER MANAGEMENT DISTRICT HORIZONTAL CONTROL MONUMENT
- — — — RIGHT-OF-WAY LINE
- FLORIDA DEPARTMENT OF TRANSPORTATION RIGHT-OF-WAY

NOTES:

1. CORPS OF ENGINEERS MONUMENTS ARE STANDARD BRONZE DISKS SET IN CONCRETE.
2. CORPS OF ENGINEERS SURVEY MARKERS ARE 1 1/2" BRASS PLUGS SET IN IRON PIPES IMBEDDED IN CONCRETE.
3. FRB (FOUR RIVER BASINS) STATIONS ARE CORPS OF ENGINEERS TRAVERSE DISKS SET IN CONCRETE MONUMENTS OR 4" IRON PIPES AND ARE BENCH MARKS.
4. ALL ELEVATIONS ARE IN FEET AND TENTHS AND ARE REFERRED TO MEAN SEA LEVEL.
5. ALL AZIMUTHS (0°- SOUTH) ARE GRID AZIMUTHS.
6. ALL STATIONING IS ALONG THE CENTERLINE OF THE CANAL, RANGE 1000.
7. COORDINATES ARE BASED ON THE STANDARD PLANE RECTANGULAR COORDINATE SYSTEM FOR THE WEST ZONE OF FLORIDA.
8. △ LANDS WITHIN FLORIDA DEPARTMENT OF TRANSPORTATION (D. O. T.) RIGHT-OF-WAY FOR S. R. 574 A (BUFFALO AVE.) ARE AVAILABLE FOR PROJECT CONSTRUCTION PROVIDED THAT ADEQUATE MEASURES ARE TAKEN FOR PROTECTION OF BRIDGE STRUCTURE, ROADWAY AND DRAINAGE APPURTENANCES WITHIN THIS D. O. T. ROAD RIGHT-OF-WAY. F. R. B. PROJECT CONTRACTOR SHALL BE REQUIRED TO OBTAIN A PERMIT FROM D. O. T. MAINTENANCE ENGINEER GIVING PROTECTION ASSURANCES AND OUTLINING IN DETAIL THE CONSTRUCTION OPERATIONS TO BE CONDUCTED WITHIN THE D. O. T. RIGHT-OF-WAY. SEE SPECIFICATIONS PARAGRAPH 2C-5.8.

P. I. NO.	PLANE COORDINATES		CUT	STATION	CURVE DATA			
	X	Y			Δ	R	T	L.A.
I△	385,263.58	1,325,731.83	1	401+64.37				
I	385,699.13	1,326,125.45	1	407+51.43				
II	386,734.46	1,327,061.08	1	421+46.89	47°29' 42"	1000.00	439.96	828.94
			2	420+95.92				
P.O.T. III	386,744.28	1,328,465.13	2	435+00				

MONUMENT	PLANE COORDINATES		M.S.L. ELEV.	CUT	STATION	RANGE
	X	Y				
FRB 514 (BM)			25.21			
FRB 515 (BM)			25.21			
FRB 527	385,968.07	1,326,772.77	18.62	1	413+84.98	1,299.95
FRB 528	386,370.24	1,326,327.63	19.58	1	413+84.90	700.05
CM 36	385,357.49	1,326,329.15		1	410+05.50	1,064.96
FRB 517	385,815.76	1,326,635.11	18.31	1	411+79.68	1,299.94
FRB 49 RM-1	386,180.12	1,327,599.07	19.34	1 2	420+96.32 426+30.02	1,770.82 1,558.09
FRB 49AZMK	386,071.47	1,327,600.63		1 2	420+16.76 426+30.82	1,844.33 1,666.75
FRB209RM1	38[illegible],112.[illegible]	1,328,082.36	19.90	2	431+13.31	1,558.90

FROM	TO	AZIMUTH	DISTANCE
FRB 517	FRB 528	299° 00' 33"	634.02
FRB 517	FRB 527	227° 53' 32"	205.30
FRB 527	FRB 528	317° 54' 09"	599.90
FRB 49 RM-1	FRB 209 RM-1	180° 18' 17"	483.30

CURVE	DELTA	RADIUS	TAN	ARC	CHORD	CH. BRG
A	47° 29' 42"	1,000.00	439.96'	828.95'	805.42'	N 24°08'53"E
B	47° 29' 42"	1,320.90	580.75'	1,094.21'	1,063.15'	N 24°08'53"E
C	27° 50' 42"	680.00	168.57'	330.47'	327.23'	N 33°53'23"E
D	07° 59' 42"	645.00	45.07'	90.00'	89.93'	N 16°03'11"E
E	11° 39' 38"	680.00	69.40'	138.32'	138.08'	N 06°13'41"E

9. △ FOR GENERAL NOTES, SEE DWG. NO. 10/2.
10. △ PHOTOGRAPHY FLOWN SEPTEMBER 1974.

AS BUILT

RECORD DRAWING NOTE
"Shall be" "Provide" "Install," "Remove" etc. indicates work was accomplished under the contract

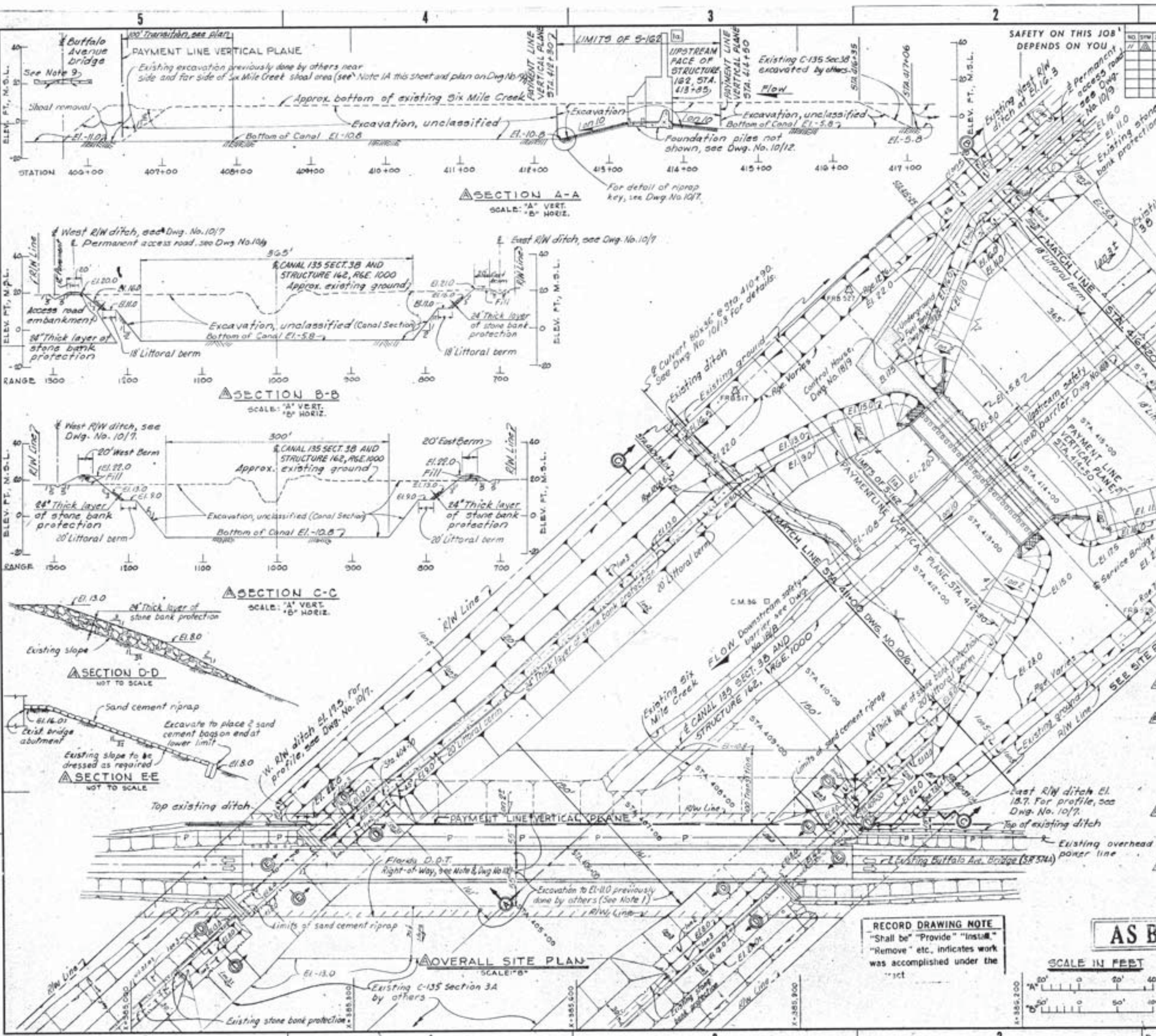
SCALE IN FEET
200' 0 200' 400'

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
GENERAL
PHOTO PLAN, RIGHT-OF-WAY AND CONTROL

G.T.S. | D.N.S., G.T.S. | J.T.L.
DATED 13 FEBRUARY 1975
SCALE AS SHOWN
DWG. NO. 10/3
SHEET 3 OF 37

D. O. FILE NO. ~~608-81,892~~ 608-32,470 — FRB 200-003



REVISIONS					
NO.	SYM	ZONE	DESCRIPTION	DATE	APPROVED
11	△	—	REVISED TO ACCOMPANY AMEND. NO. 0002	3-3-75	

NOTES:

1. THE EXCAVATION FOR BUFFALO AVENUE BRIDGE DONE PREVIOUSLY BY OTHERS, SHALL BE RESTORED TO ELEVATIONS AND SIDE SLOPES WITHIN THE LIMITS SHOWN IN PLAN ON THIS SHEET.

1A. EXISTING SHOALS AS SHOWN ON DWG. NO. 10/7 SHALL BE REMOVED DOWN TO EL. -11.0. SEE SPECIFICATIONS.

2. FOR LEGEND, SEE DWG. NO. 10/7.

3. FOR GENERAL NOTES, SEE DWG. NO. 10/2.

4. FOR RIGHT-OF-WAY AND CONTROL, SEE DWG. NO. 10/3.

5. FOR PLAN OF STRUCTURE BYPASS, SEE DWG. NO. 10/7.

6. FOR GRASSING LIMITS REFER TO NOTE 6 ON DWG. NO. 10/7.

7. SHOALING DEPOSITED FROM EXISTING SIX MILE CREEK NOT SHOWN IN PLAN ON THIS SHEET. SEE DWG. NO. 10/7 FOR DETAILS.

8. STILLING WELL INTAKE LINES AND STAFF GAGE PILE SUPPORTS NOT SHOWN ON THIS SHEET. REFER TO DWG. NO. 10/6 FOR LOCATION.

9. CONCRETE PILES, PILECAP AND LOW BEAM FOR BUFFALO AVE. BRIDGE NOT SHOWN FOR CLARITY. LOW BEAM OF BRIDGE AT EL. 11.

10. FOR LOCATION OF TEMPORARY CONSTRUCTION ACCESS ROAD EASEMENT TO S-162, SEE DWG. NO. 10/14.

RECORD DRAWING NOTE
"Shall be" "Provide" "Install" "Remove" etc. indicates work was accomplished under the contract.

AS BUILT

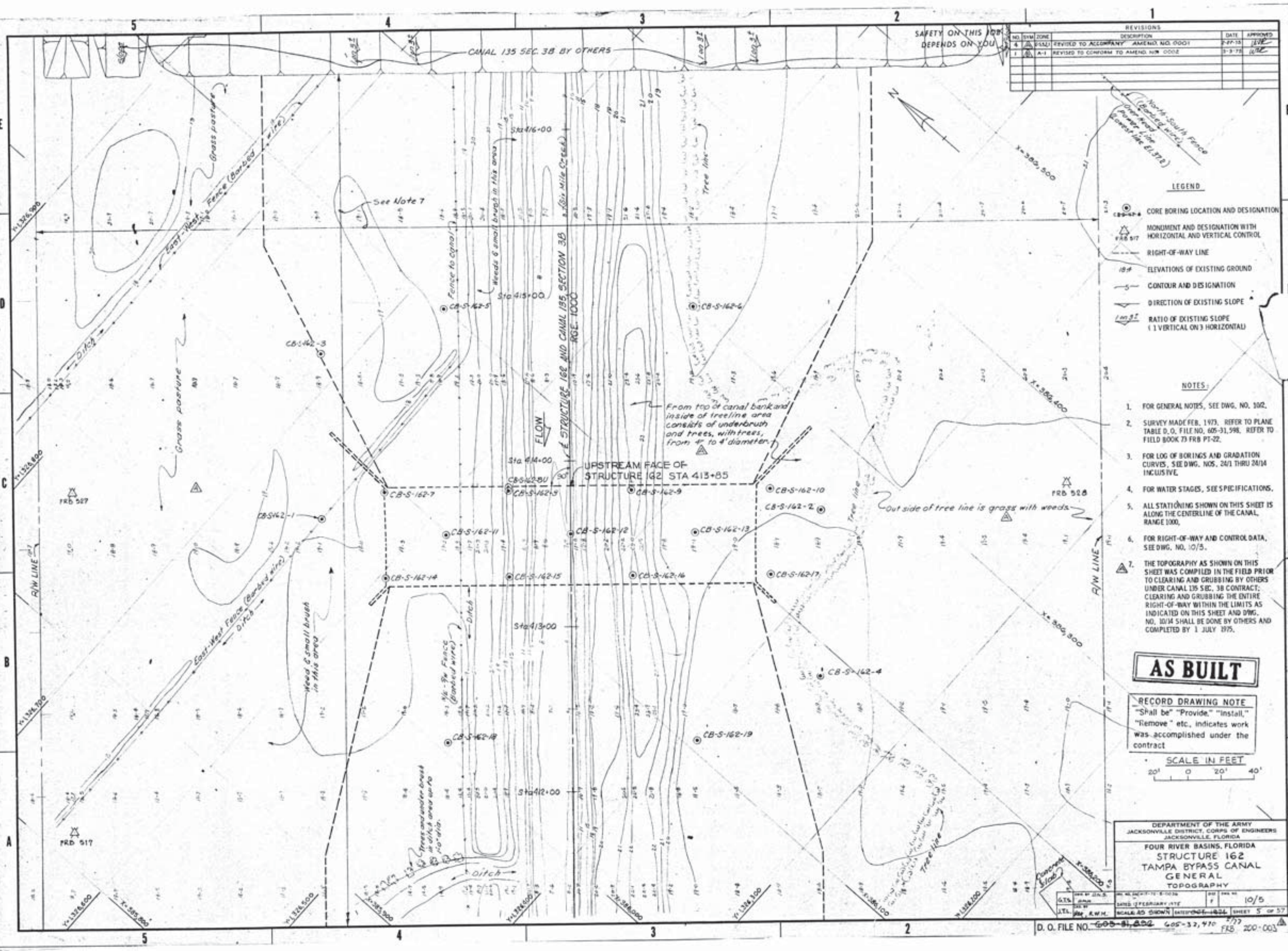
DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

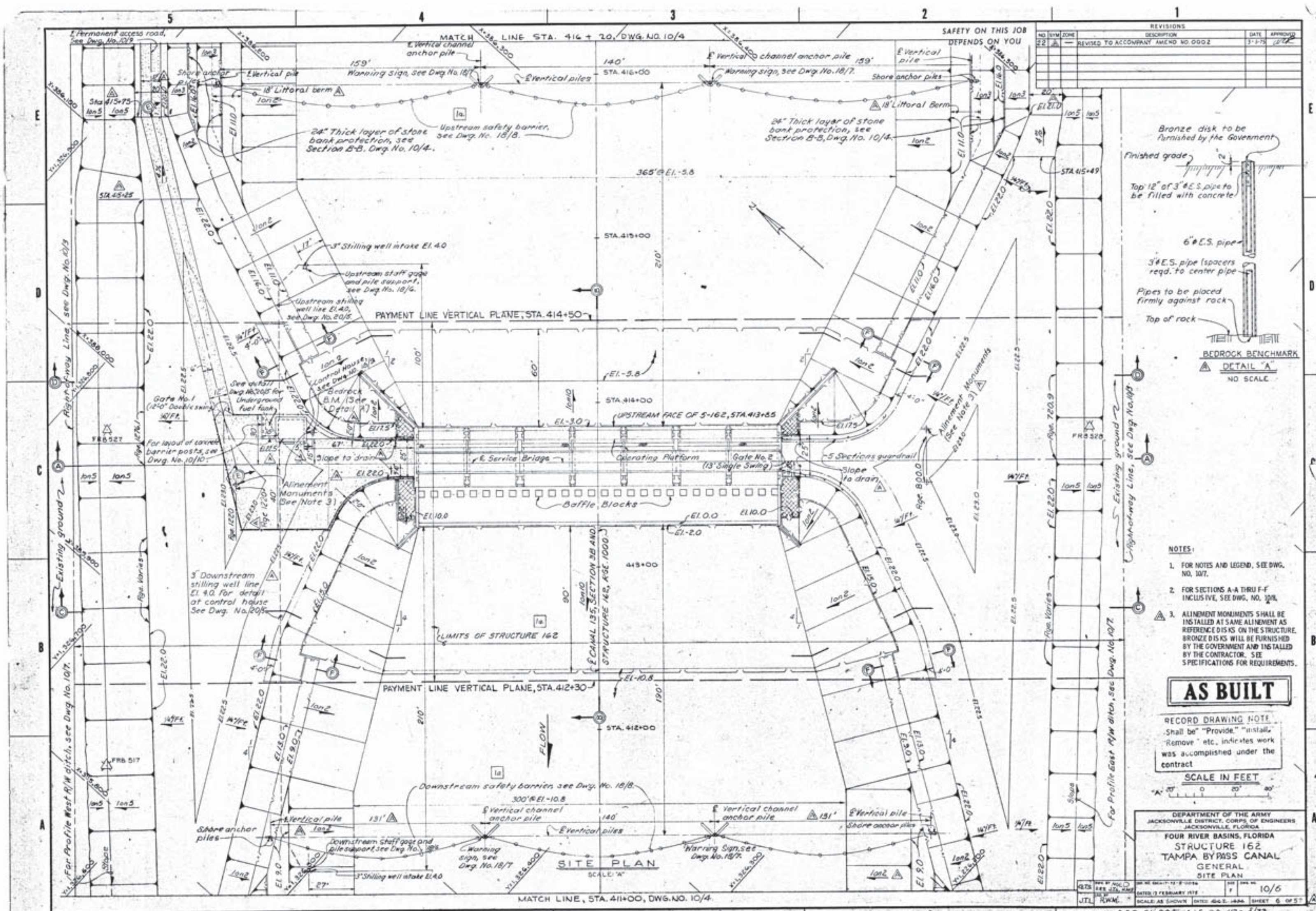
FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
GENERAL
OVERALL SITE PLAN

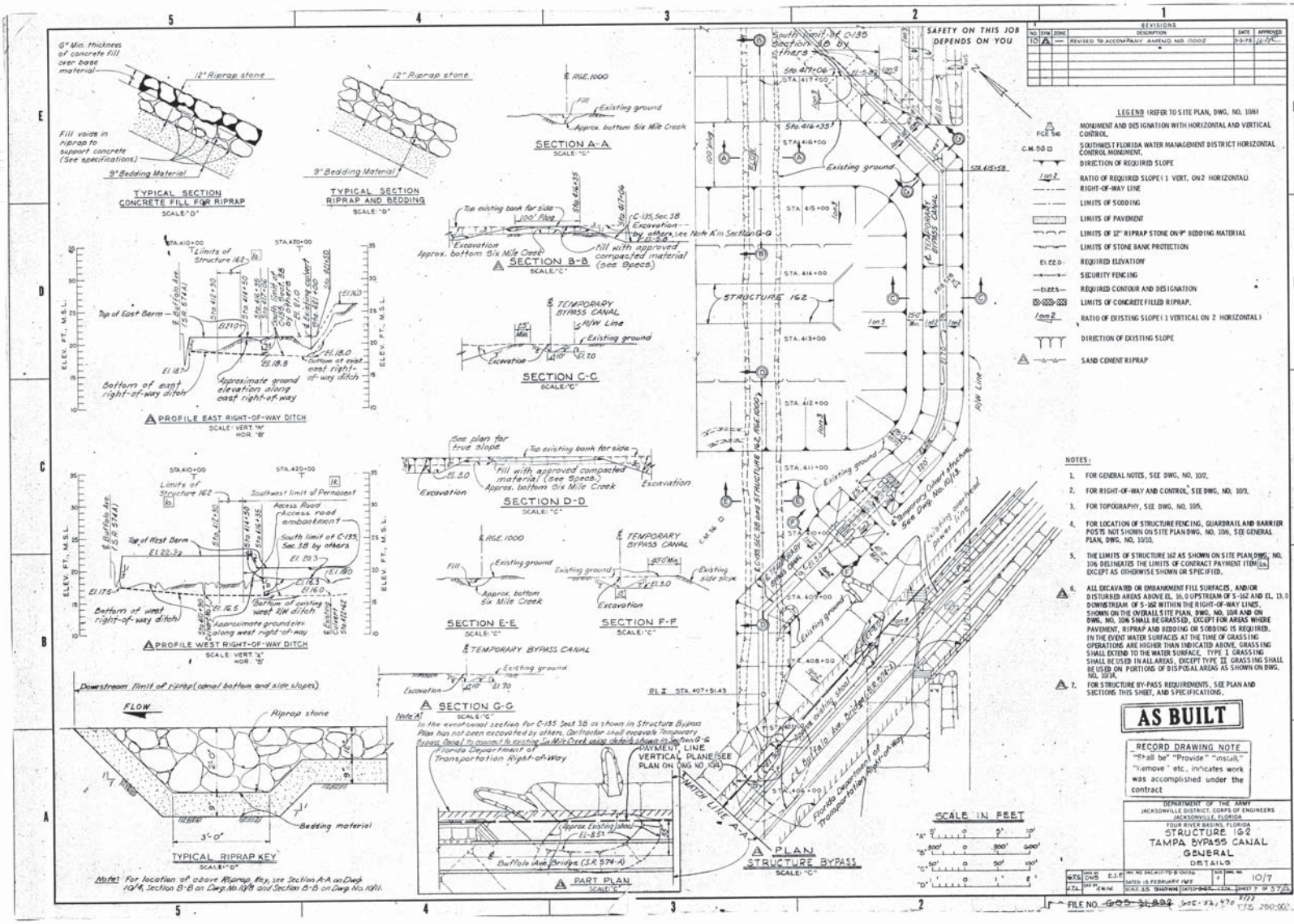
DATED: 13 FEBRUARY 1975
SCALE: AS SHOWN
DWG. NO. 10/4
SHEET 4 OF 57

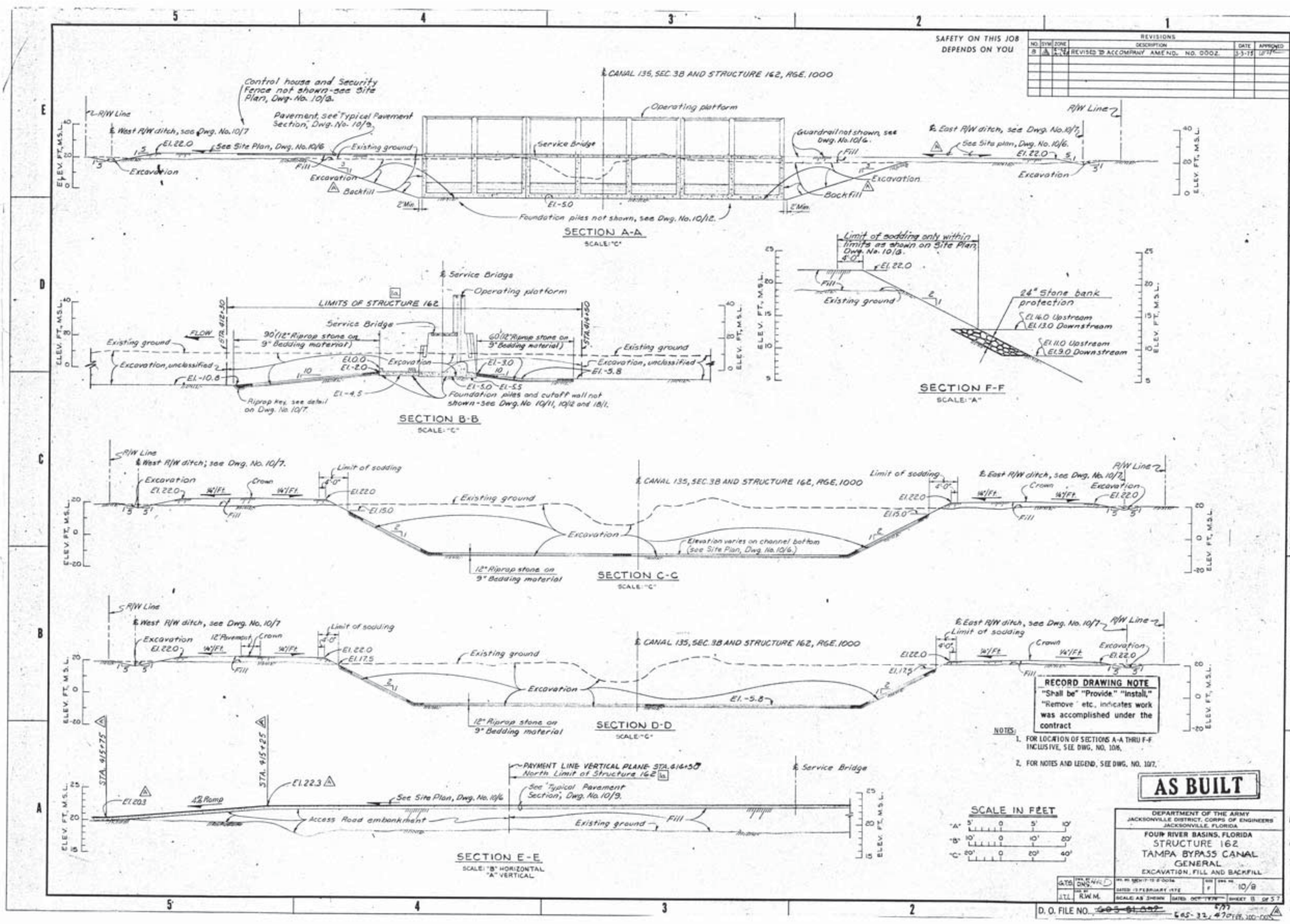
D. O. FILE NO. ~~605-31,802~~ 605-32,470

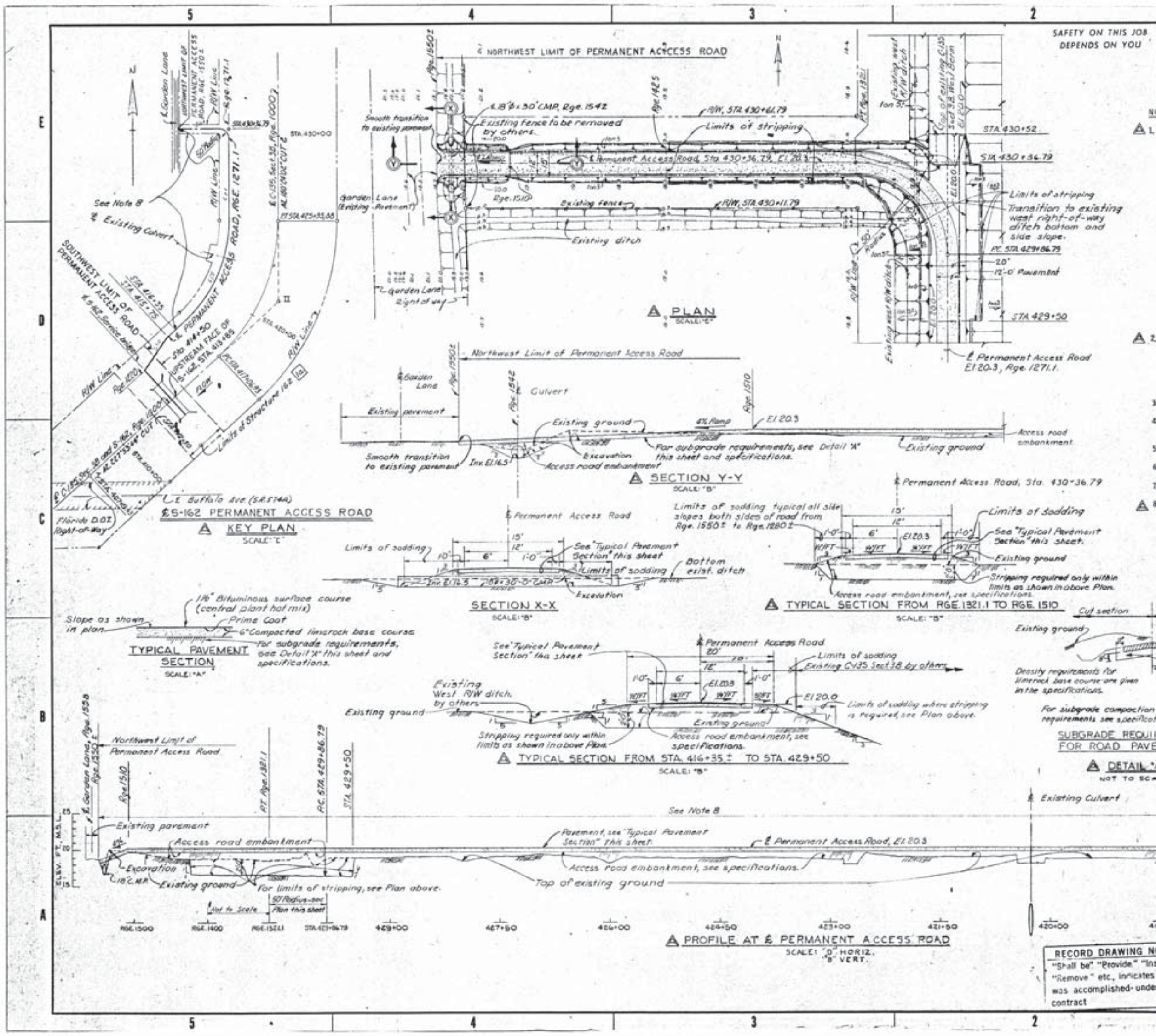
FRB 200-009


SAFETY ON THIS JOB DEPENDS ON YOU
REVISIONS
NO. | SYM | ZONE | DESCRIPTION | DATE | APPROVED
4 | 4 | B5&D1 | REVISED TO ACCOMPANY AMEND. NO. 0001 | 2-27-75
1 | 1 | A-1 | REVISED TO CONFORM TO AMEND. NO. 0002 | 3-3-75
CANAL 135 SEC. 38 BY OTHERS
North-South Fence (Barbed wire)
Over head power line (Lowest line El. 37.2)
East-West Fence (Barbed wire)
Grass pasture
See Note 7
Fence to canal
Weeds & small brush in this area
Six Mile Creek
℄ STRUCTURE 162 AND CANAL 135 SECTION 38 RGE 1000
Tree line
From top of canal bank and inside of treeline area consists of underbrush and trees, with trees, from 4" to 4' diameter.
FLOW
UPSTREAM FACE OF STRUCTURE 162 STA 413+85
Sta 416+00
Sta 415+00
Sta 414+00
Sta 413+00
Sta 412+00
Out side of tree line is grass with weeds.
Weeds & small brush in this area
Ditch
Trees and under brush in ditch area up to 12" dia.
R/W LINE
FRB 527
FRB 528
FRB 517
CB-S-162-1
CB-S-162-2
CB-S-162-3
CB-S-162-4
CB-S-162-5
CB-S-162-6
CB-S-162-7
CB-S-162-9
CB-S-162-10
CB-S-162-11
CB-S-162-12
CB-S-162-13
CB-S-162-14
CB-S-162-15
CB-S-162-16
CB-S-162-17
CB-S-162-18
CB-S-162-19
LEGEND
CORE BORING LOCATION AND DESIGNATION
MONUMENT AND DESIGNATION WITH HORIZONTAL AND VERTICAL CONTROL
RIGHT-OF-WAY LINE
ELEVATIONS OF EXISTING GROUND
CONTOUR AND DESIGNATION
DIRECTION OF EXISTING SLOPE
RATIO OF EXISTING SLOPE (1 VERTICAL ON 3 HORIZONTAL)
NOTES:
1. FOR GENERAL NOTES, SEE DWG. NO. 10/2.
2. SURVEY MADE FEB. 1973. REFER TO PLANE TABLE D.O. FILE NO. 605-31,598. REFER TO FIELD BOOK 73 FRB PT-22.
3. FOR LOG OF BORINGS AND GRADATION CURVES, SEE DWG. NOS. 24/1 THRU 24/14 INCLUSIVE.
4. FOR WATER STAGES, SEE SPECIFICATIONS.
5. ALL STATIONING SHOWN ON THIS SHEET IS ALONG THE CENTERLINE OF THE CANAL, RANGE 1000.
6. FOR RIGHT-OF-WAY AND CONTROL DATA, SEE DWG. NO. 10/3.
7. THE TOPOGRAPHY AS SHOWN ON THIS SHEET WAS COMPILED IN THE FIELD PRIOR TO CLEARING AND GRUBBING BY OTHERS UNDER CANAL 135 SEC. 38 CONTRACT; CLEARING AND GRUBBING THE ENTIRE RIGHT-OF-WAY WITHIN THE LIMITS AS INDICATED ON THIS SHEET AND DWG. NO. 10/14 SHALL BE DONE BY OTHERS AND COMPLETED BY 1 JULY 1975.
AS BUILT
RECORD DRAWING NOTE
"Shall be" "Provide," "Install," "Remove" etc., indicates work was accomplished under the contract
SCALE IN FEET
20' 0 20' 40'
DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
GENERAL
TOPOGRAPHY
SCALE AS SHOWN
10/5
SHEET 5 OF 57
D. O. FILE NO. 605-31,892 605-32,970
FRB 200-003


MATCH LINE STA. 416 + 20, DWG. NO. 10/4
SAFETY ON THIS JOB DEPENDS ON YOU
REVISIONS
REVISED TO ACCOMPANY AMEND NO. 0002
Upstream safety barrier, see Dwg. No. 18/8.
24" Thick layer of stone bank protection, see Section B-B, Dwg. No. 10/4.
18' Littoral berm
365' @ El. -5.8
3" Stilling well intake El. 4.0
PAYMENT LINE VERTICAL PLANE, STA. 414+50
UPSTREAM FACE OF S-162, STA. 413+85
Service Bridge
Operating Platform
Gate No. 2 (13' Single Swing)
Gate No. 1 (12'-0" Double swing)
Baffle Blocks
5 Sections guardrail
Alinement Monuments (See Note 3)
LIMITS OF STRUCTURE 162
℄ CANAL 135, SECTION 3B AND STRUCTURE 162, RGE 1000.
PAYMENT LINE VERTICAL PLANE, STA. 412+30
FLOW
Downstream safety barrier, see Dwg. No. 18/8.
300' @ El. -10.8
SITE PLAN
SCALE: "A"
MATCH LINE, STA. 411+00, DWG. NO. 10/4.
Bronze disk to be furnished by the Government
Finished grade
Top 12" of 3" ⌀ E.S. pipe to be filled with concrete
6" ⌀ E.S. pipe
3" ⌀ E.S. pipe (spacers reqd. to center pipe)
Pipes to be placed firmly against rock
Top of rock
BEDROCK BENCHMARK
DETAIL "A"
NO SCALE
NOTES:
1. FOR NOTES AND LEGEND, SEE DWG. NO. 10/7.
2. FOR SECTIONS A-A THRU F-F INCLUSIVE, SEE DWG. NO. 10/8.
3. ALINEMENT MONUMENTS SHALL BE INSTALLED AT SAME ALINEMENT AS REFERENCE DISKS ON THE STRUCTURE. BRONZE DISKS WILL BE FURNISHED BY THE GOVERNMENT AND INSTALLED BY THE CONTRACTOR. SEE SPECIFICATIONS FOR REQUIREMENTS.
AS BUILT
RECORD DRAWING NOTE
Shall be "Provide," "Install," "Remove," etc. indicates work was accomplished under the contract
SCALE IN FEET
DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
GENERAL
SITE PLAN
DATED 13 FEBRUARY 1978
10/6
D. O. FILE NO.


6" Min. thickness of concrete fill over base material
12" Riprap stone
Fill voids in riprap to support concrete (See specifications)
9" Bedding Material
TYPICAL SECTION CONCRETE FILL FOR RIPRAP
SCALE: "D"
TYPICAL SECTION RIPRAP AND BEDDING
SCALE: "D"
SECTION A-A
SCALE: "C"
SECTION B-B (See Specs)
SCALE: "C"
SECTION C-C
SCALE: "C"
PROFILE EAST RIGHT-OF-WAY DITCH
SCALE: VERT. "A" HOR. "B"
PROFILE WEST RIGHT-OF-WAY DITCH
SCALE: VERT. "A" HOR. "B"
SECTION D-D
SCALE: "C"
SECTION E-E
SCALE: "C"
SECTION F-F
SCALE: "C"
SECTION G-G
SCALE: "C"
TYPICAL RIPRAP KEY
SCALE: 1"=1'-0"
PART PLAN
SCALE: "C"
PLAN STRUCTURE BYPASS
SCALE: "C"
SCALE IN FEET
SAFETY ON THIS JOB DEPENDS ON YOU
LEGEND (REFER TO SITE PLAN, DWG. NO. 1016)
NOTES:
AS BUILT
RECORD DRAWING NOTE
DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
GENERAL
DETAILS
FILE NO. 905-372/470


SAFETY ON THIS JOB DEPENDS ON YOU
REVISIONS
NO. | SYM | ZONE | DESCRIPTION | DATE | APPROVED
REVISED TO ACCOMPANY AMEND. NO. 0002.
℄ CANAL 135, SEC. 3B AND STRUCTURE 162, RGE. 1000
Control house and Security Fence not shown-see Site Plan, Dwg. No. 10/6.
Pavement, see Typical Pavement Section, Dwg. No. 10/9.
Operating platform
Guardrail not shown, see Dwg. No. 10/6.
R/W Line
℄ West R/W ditch, see Dwg. No. 10/7
℄ East R/W ditch, see Dwg. No. 10/7
El. 22.0
See Site Plan, Dwg. No. 10/6
Existing ground
Service Bridge
Fill
Excavation
Backfill
2' Min.
El. -5.0
Foundation piles not shown, see Dwg. No. 10/12.
SECTION A-A
SCALE: "C"
℄ Service Bridge
Operating platform
LIMITS OF STRUCTURE 162
STA. 412+30
STA. 414+50
FLOW
90' (12" Riprap stone on 9" Bedding material)
60' (12" Riprap stone on 9" Bedding material)
Existing ground
Excavation, unclassified
El. -10.8
El. 0.0
El. -2.0
El. -3.0
El. -4.5
El. -5.0
El. -5.5
El. -5.8
Riprap key, see detail on Dwg. No. 10/7.
Foundation piles and cutoff wall not shown - see Dwg. No. 10/11, 10/12 and 18/1.
SECTION B-B
SCALE: "C"
Limit of sodding only within limits as shown on Site Plan, Dwg. No. 10/6.
4'-0"
El. 22.0
Fill
Existing ground
24" Stone bank protection
El. 14.0 Upstream
El. 13.0 Downstream
El. 11.0 Upstream
El. 9.0 Downstream
SECTION F-F
SCALE: "A"
ELEV. FT. M.S.L.
Limit of sodding
Crown
1/4"/Ft.
El. 15.0
El. 22.0
Elevation varies on channel bottom (see Site Plan, Dwg. No. 10/6)
12" Riprap stone on 9" Bedding material
SECTION C-C
SCALE: "C"
12" Pavement
El. 17.5
El. -5.8
SECTION D-D
SCALE: "C"
RECORD DRAWING NOTE
"Shall be" "Provide" "Install," "Remove" etc. indicates work was accomplished under the contract
NOTES:
1. FOR LOCATION OF SECTIONS A-A THRU F-F INCLUSIVE, SEE DWG. NO. 10/6.
2. FOR NOTES AND LEGEND, SEE DWG. NO. 10/7.
STA. 415+75
STA. 415+25
El. 20.3
El. 22.3
4% Ramp
PAYMENT LINE VERTICAL PLANE STA. 416+50
North Limit of Structure 162
See Typical Pavement Section, Dwg. No. 10/9.
Access Road embankment
℄ Service Bridge
SECTION E-E
SCALE: "B" HORIZONTAL "A" VERTICAL
SCALE IN FEET
AS BUILT
DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
GENERAL
EXCAVATION, FILL AND BACKFILL
10/8
DATED 13 FEBRUARY 1972
SCALE: AS SHOWN
D. O. FILE NO.



REVISIONS					
NO.	SYM	ZONE	DESCRIPTION	DATE	APPROVED
11	A	—	REVISED TO ACCOMPANY AMEND. NO. 0002	3-3-75	

NOTES:

A 1. SHALLOW BORINGS WERE TAKEN WITH A POST HOLE DIGGER ALONG THE ACCESS ROAD (STA. 430 + 25) BETWEEN RANGES 1290 AND 1525. THE MATERIALS ENCOUNTERED IN THIS INVESTIGATION ARE TABULATED BELOW. THE HIGHLY ORGANIC CLAYEY SAND OCCURRING NEAR THE SURFACE BETWEEN RANGE 1290 AND 1325 WOULD BECOME VERY SOFT WHEN WET.

STATION	RANGE	ELEV, MSL	MATERIAL
430+25	1290	+18.8/+18.3	SILTY SAND
		+18.3/+16.8	SOFT VERY CLAYEY ORGANIC SAND
		+16.8/+16.3	SILTY SAND
430 + 25	1325	+18.8/+18.3	SILTY SAND
		+18.3/+16.8	SOFT VERY CLAYEY ORGANIC SAND
		+16.8/+16.3	SILTY SAND
430 + 25	1425	+18.7/16.2	SILTY SAND
		+16.2/+15.7	CLEAN SAND
430 + 25	1525	+20.0/+17.5	CLEAN SAND
		+17.5/+17.0	CLAYEY SAND

A 2. ALL EXCAVATED OR ACCESS ROAD EMBANKMENT FILL SURFACES, AND/OR DISTURBED AREAS WITHIN THE LIMITS OF PERMANENT ACCESS ROAD AS SHOWN ON THIS SHEET SHALL BE GRASSED EXCEPT FOR PAVEMENT OR SODDED AREAS. TYPE I GRASSING SHALL BE USED.

3. FOR CONTINUATION OF PERMANENT ACCESS ROAD, SEE SITE PLAN, DWG. NO. 10/6.

4. ALL STATIONING IS ALONG THE CENTERLINE OF THE CANAL, RANGE 1000.

5. FOR RIGHT-OF-WAY AND CONTROL DATA, SEE DWG. NO. 10/3.

6. FOR "GENERAL NOTES", SEE DWG. NO. 10/2.

7. FOR LEGEND, SEE DWG. NO. 10/7.

A 8. PERMANENT ACCESS ROAD SITE BETWEEN NORTHWEST LIMIT (RGE. 1550±) TO STA. 416+35 AS SHOWN IN KEY PLAN AND PROFILE WILL NOT BE AVAILABLE UNTIL ACCEPTANCE SECTION 1 OF C-135, SECTION 3B IS COMPLETED BY OTHERS ON OR ABOUT 15 JUNE 1976. SEE SPECIFICATIONS.

RECORD DRAWING NOTE

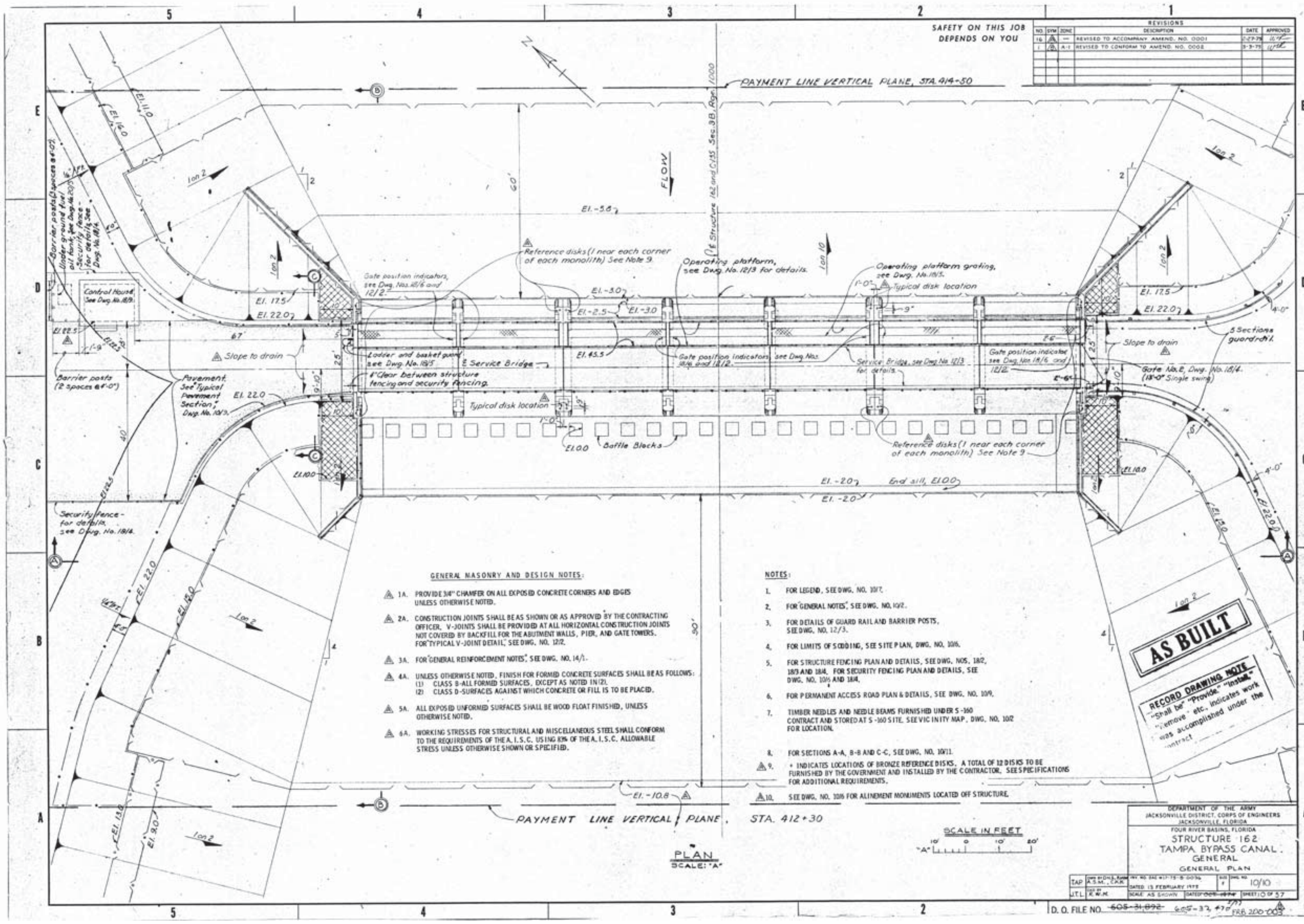
"Shall be" "Provide" "Install," "Remove" etc., indicates work was accomplished under the contract

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
GENERAL
PERMANENT ACCESS ROAD

DATED: 13 FEBRUARY 1975 — SIZE F — DWG. NO. 10/9
SCALE: AS SHOWN — SHEET 9 OF 57

D. O. FILE NO. ~~605-31,898~~ 605-37,470



GENERAL MASONRY AND DESIGN NOTES:

1A. PROVIDE 3/4" CHAMFER ON ALL EXPOSED CONCRETE CORNERS AND EDGES UNLESS OTHERWISE NOTED.

2A. CONSTRUCTION JOINTS SHALL BE AS SHOWN OR AS APPROVED BY THE CONTRACTING OFFICER. V-JOINTS SHALL BE PROVIDED AT ALL HORIZONTAL CONSTRUCTION JOINTS NOT COVERED BY BACKFILL FOR THE ABUTMENT WALLS, PIER, AND GATE TOWERS. FOR "TYPICAL V-JOINT DETAIL," SEE DWG. NO. 12/2.

3A. FOR "GENERAL REINFORCEMENT NOTES," SEE DWG. NO. 14/1.

4A. UNLESS OTHERWISE NOTED, FINISH FOR FORMED CONCRETE SURFACES SHALL BE AS FOLLOWS:
(1) CLASS B-ALL FORMED SURFACES, EXCEPT AS NOTED IN (2).
(2) CLASS D-SURFACES AGAINST WHICH CONCRETE OR FILL IS TO BE PLACED.

5A. ALL EXPOSED UNFORMED SURFACES SHALL BE WOOD FLOAT FINISHED, UNLESS OTHERWISE NOTED.

6A. WORKING STRESSES FOR STRUCTURAL AND MISCELLANEOUS STEEL SHALL CONFORM TO THE REQUIREMENTS OF THE A.I.S.C. USING 83% OF THE A.I.S.C. ALLOWABLE STRESS UNLESS OTHERWISE SHOWN OR SPECIFIED.

NOTES:

1. FOR LEGEND, SEE DWG. NO. 10/7.
2. FOR "GENERAL NOTES," SEE DWG. NO. 10/2.
3. FOR DETAILS OF GUARD RAIL AND BARRIER POSTS, SEE DWG. NO. 12/3.
4. FOR LIMITS OF SODDING, SEE SITE PLAN, DWG. NO. 10/6.
5. FOR STRUCTURE FENCING PLAN AND DETAILS, SEE DWG. NOS. 18/2, 18/3 AND 18/4. FOR SECURITY FENCING PLAN AND DETAILS, SEE DWG. NO. 10/6 AND 18/4.
6. FOR PERMANENT ACCESS ROAD PLAN & DETAILS, SEE DWG. NO. 10/9.
7. TIMBER NEEDLES AND NEEDLE BEAMS FURNISHED UNDER S-160 CONTRACT AND STORED AT S-160 SITE. SEE VICINITY MAP, DWG. NO. 10/2 FOR LOCATION.
8. FOR SECTIONS A-A, B-B AND C-C, SEE DWG. NO. 10/11.
9. + INDICATES LOCATIONS OF BRONZE REFERENCE DISKS. A TOTAL OF 12 DISKS TO BE FURNISHED BY THE GOVERNMENT AND INSTALLED BY THE CONTRACTOR. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
10. SEE DWG. NO. 10/6 FOR ALINEMENT MONUMENTS LOCATED OFF STRUCTURE.

REVISIONS

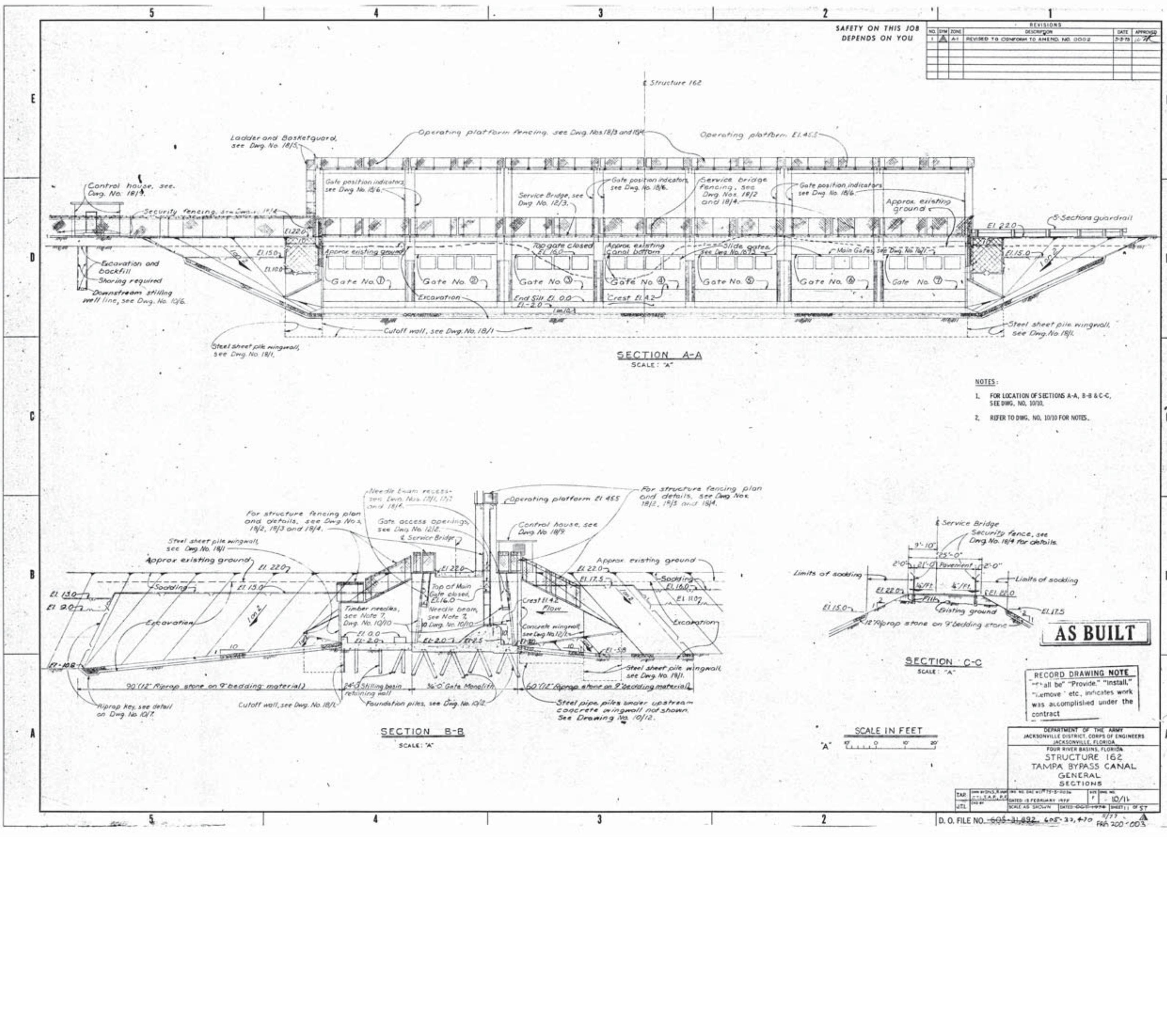
NO.	SYM	ZONE	DESCRIPTION	DATE	APPROVED
16	A	—	REVISED TO ACCOMPANY AMEND. NO. 0001	2-27-75	
1	B	A-1	REVISED TO CONFORM TO AMEND. NO. 0002	3-3-75	

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
GENERAL
GENERAL PLAN

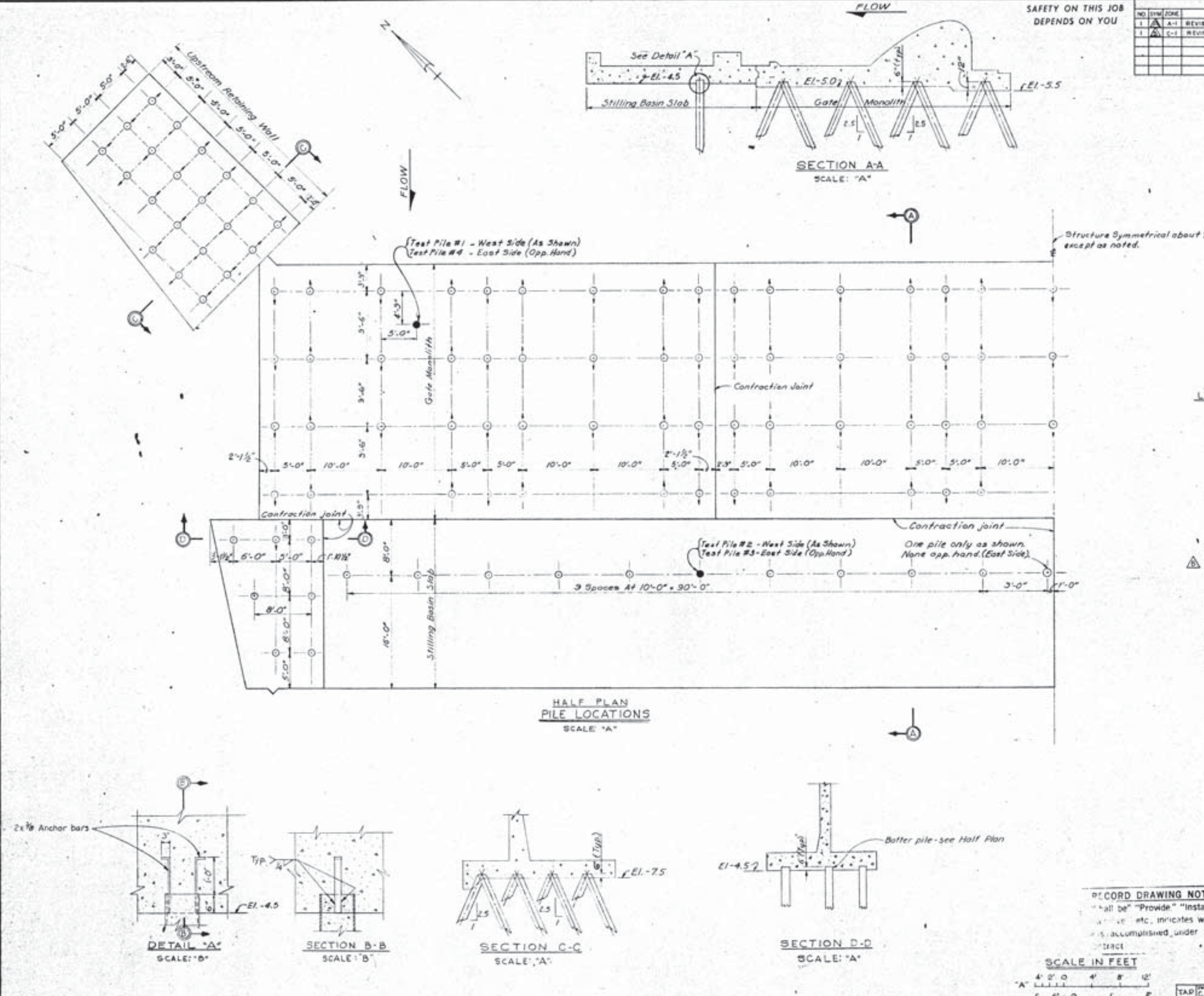
DATED 13 FEBRUARY 1975
SCALE AS SHOWN
DWG. NO. 10/10
SHEET 10 OF 37

D. O. FILE NO. ~~605-31,892~~ 605-33,470 FRB 200-003


SAFETY ON THIS JOB DEPENDS ON YOU
REVISIONS
REVISED TO CONFORM TO AMEND. NO. 0002
℄ Structure 162
Ladder and Basketguard, see Dwg. No. 18/5.
Operating platform fencing, see Dwg. Nos. 18/3 and 18/4.
Operating platform El. 45.5
Control house, see Dwg. No. 18/9.
Security fencing
Gate position indicators, see Dwg. No. 18/6.
Service Bridge, see Dwg. No. 12/3.
Service bridge fencing, see Dwg. Nos. 18/2 and 18/4.
Approx. existing ground
5-Sections guardrail
Top gate closed El. 16.0
Approx. existing canal bottom
Slide gates
Main Gates
Gate No. 1
Gate No. 2
Gate No. 3
Gate No. 4
Gate No. 5
Gate No. 6
Gate No. 7
Excavation and backfill
Shoring required
Downstream stilling well line, see Dwg. No. 10/6.
Excavation
End Sill El. 0.0
Crest El. 4.2
Cutoff wall, see Dwg. No. 18/1
Steel sheet pile wingwall, see Dwg. No. 18/1.
SECTION A-A
SCALE: "A"
NOTES:
1. FOR LOCATION OF SECTIONS A-A, B-B & C-C, SEE DWG. NO. 10/10.
2. REFER TO DWG. NO. 10/10 FOR NOTES.
Operating platform El. 45.5
For structure fencing plan and details, see Dwg. Nos. 18/2, 18/3 and 18/4.
Gate access openings, see Dwg. No. 12/2.
℄ Service Bridge
Control house, see Dwg. No. 18/9.
Steel sheet pile wingwall, see Dwg. No. 18/1
Approx. existing ground
Sodding
Timber needles, see Note 7, Dwg. No. 10/10
Top of Main Gate closed, El. 16.0
Needle beam, see Note 7, Dwg. No. 10/10
Crest El. 4.2
Flow
Concrete wingwall
Excavation
90'(12" Riprap stone on 9" bedding material)
24'-3" Stilling basin retaining wall
36'-0" Gate Monolith
60'(12" Riprap stone on 9" bedding material)
Steel sheet pile wingwall, see Dwg. No. 18/1.
Riprap key, see detail on Dwg. No. 10/7.
Cutoff wall, see Dwg. No. 18/1.
Foundation piles, see Dwg. No. 10/12.
Steel pipe piles under upstream concrete wingwall not shown. See Drawing No. 10/12.
SECTION B-B
SCALE: "A"
℄ Service Bridge
Security fence, see Dwg. No. 18/4 for details.
Limits of sodding
Pavement
Existing ground
12" Riprap stone on 9" bedding stone
SECTION C-C
SCALE: "A"
AS BUILT
RECORD DRAWING NOTE
"Shall be" "Provide." "Install," "Remove" etc., indicates work was accomplished under the contract
SCALE IN FEET
DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
GENERAL
SECTIONS
DATED 15 FEBRUARY 1977
SCALE AS SHOWN
10/11
SHEET 11 OF 57
D. O. FILE NO. 605-31,892 605-33,470
FAA 200-003

SAFETY ON THIS JOB DEPENDS ON YOU

REVISIONS					
NO	SYM	ZONE	DESCRIPTION	DATE	APPROVED
1	A	A-1	REVISED TO CONFORM TO AMEND. NO. 0002	3-3-75	[illegible]
1	A	C-1	REVISED TO CONFORM TO AMEND. NO. 0003	3-2-75	[illegible]



NOTES:

1. ALL PILES SHOWN ON THIS SHEET ARE STEEL PIPE PILES. PIPE PILES SHALL BE 10 ¾" O.D., HAVE 5/16" MINIMUM WALL THICKNESS, AND BE CONCRETE FILLED. (SEE NOTE 10).
2. ALL PILES SHOWN THUS ⊙→ ARE BATTERED TO SLOPE INDICATED AND IN THE DIRECTION OF THE ARROW.
3. VERTICAL PILES ARE SHOWN THUS ⊙.
4. ALL PILES SHOWN THUS ● ARE VERTICAL TEST PILES.
5. BATTER PILE LOCATIONS SHOWN ON THIS SHEET ARE 6 INCHES ABOVE BASE OF CONCRETE AT MONOLITH FOUNDATION GRADES INDICATED EXCEPT AS NOTED IN SECTION A-A.
6. ANTICIPATED TIP ELEVATION FOR ALL PILES ON THIS SHEET (INCLUDING TEST PILES) IS EL. -30.0 TO -40.0 FEET.
7. TOTAL NO. OF PILES REQUIRED IS 196 INCLUDING TEST PILES.
8. FOR FIELD SPLICING REQUIREMENTS, SEE SPECIFICATIONS.
9. FOR PLAN OF SHEET PILE CUTOFF WALL AND WING WALLS, SEE DWG. NO. 18/1.
10. ALL PILES ARE DRIVEN WITH CLOSED ENDS AND FILLED WITH CONCRETE FOR THEIR ENTIRE LENGTH.

.S BUILT

RECORD DRAWING NOTE
"shall be" "Provide" "Install" ... etc. indicates work ... accomplished under the ...tract

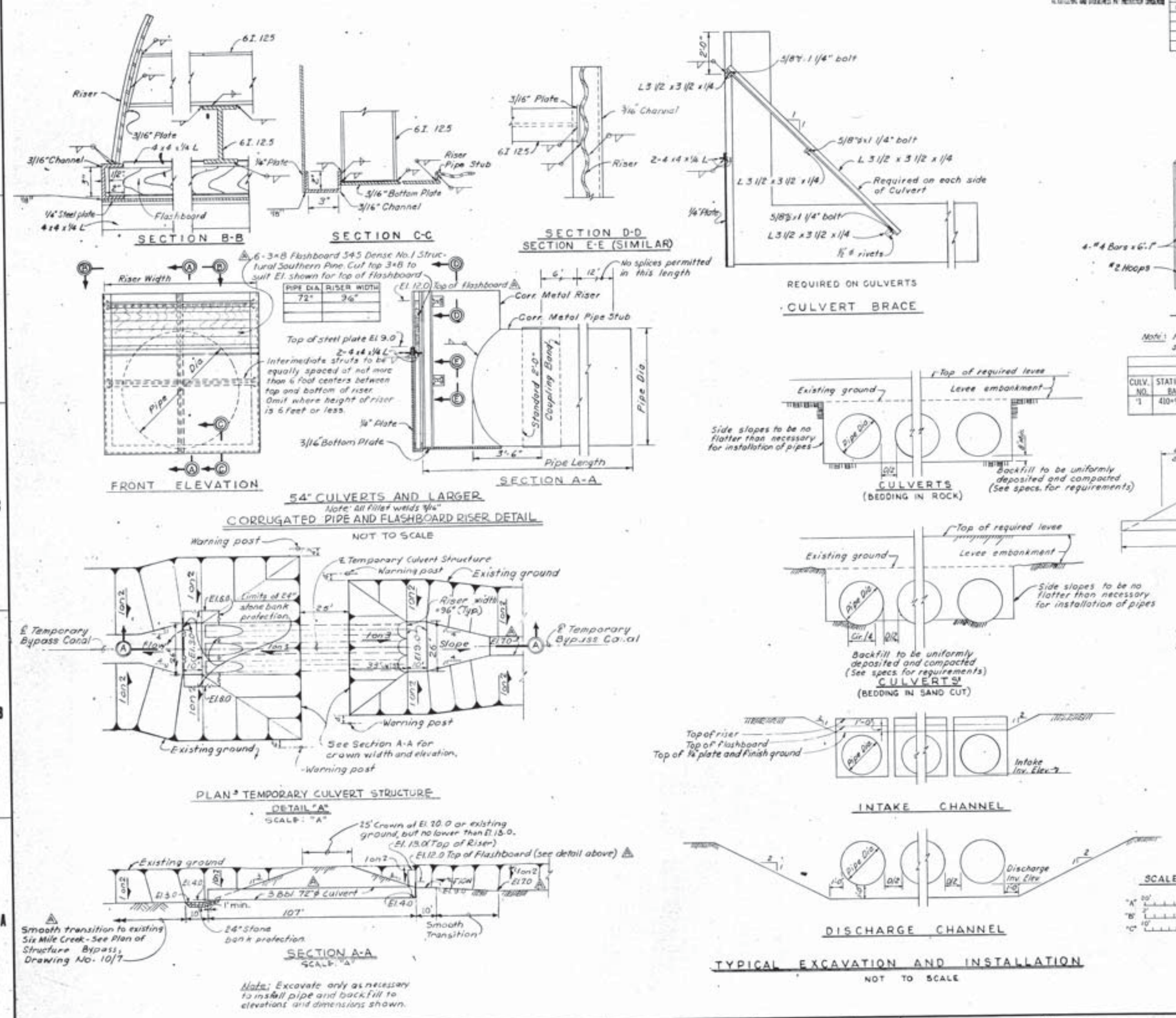
SCALE IN FEET
"A" 4' 2' 0 4' 8' 12'
"B" 1' 6" 0 1' 2'

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
GENERAL
FOUNDATION - PILES

TAP	J.T.L. C.K. W.L.R.	DATED: 3 FEBRUARY 1975		10/12
JTL	RWM	SCALE: AS SHOWN		SHEET 12 OF 57

D. O. FILE NO. ~~605-31,842~~ 605-31,470 5/77 - FRB 100-005



REVISIONS

NO.	SYM.	ZONE	DESCRIPTION	DATE	APPROVED
0	△	—	REVISED TO ACCOMPANY AMEND. NO. 0001	2-27-75	
1	△	A-1	REVISED TO CONFORM TO AMEND. NO. 0002	3-3-75	

Note: For location and number required, see Detail "A" this sheet.

CULVERT TABULATION

CULV. NO.	STATION & BANK	NO. BBLS.	PIPE DIA	PIPE LENGTH	INVERT EL. INLET	INVERT EL. DISC.	EMBANKMENT WIDTH	EMBANKMENT ELEV.	EL. TOP RISER	CONTROL TYPE	CONTROL EL.	RISER WIDTH
1	410+90	1	36"	80'	10.0	10.0	26+	22.0	20.0	FLASH BOARD	16.5	48"

NOTE:

1A. EXCAVATE ONLY AS NECESSARY TO INSTALL PIPE AND BACKFILL TO ELEVATIONS AND DIMENSIONS SHOWN. STONE BACK PROTECTION NOT SHOWN ON THE ABOVE DETAIL.

2A. NO SODDING BELOW CANAL WATER LINE AT TIME OF CONSTR.

AS BUILT

NOTES:

△ 1. FOR PLAN OF STRUCTURE BYPASS SHOWING LOCATION OF TEMPORARY CULVERT STRUCTURE SHOWN ON THIS SHEET, SEE DWG. NO. 10/7.

△ 2. CORRUGATED METAL PIPE AND RISER DO NOT REQUIRE BITUMINOUS OR COAL TAR BASE COATING. SEE SPECIFICATIONS.

RECORD DRAWING NOTE

"Shall be" "Provide" "install," "Remove" etc., indicates work was accomplished under the contract

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

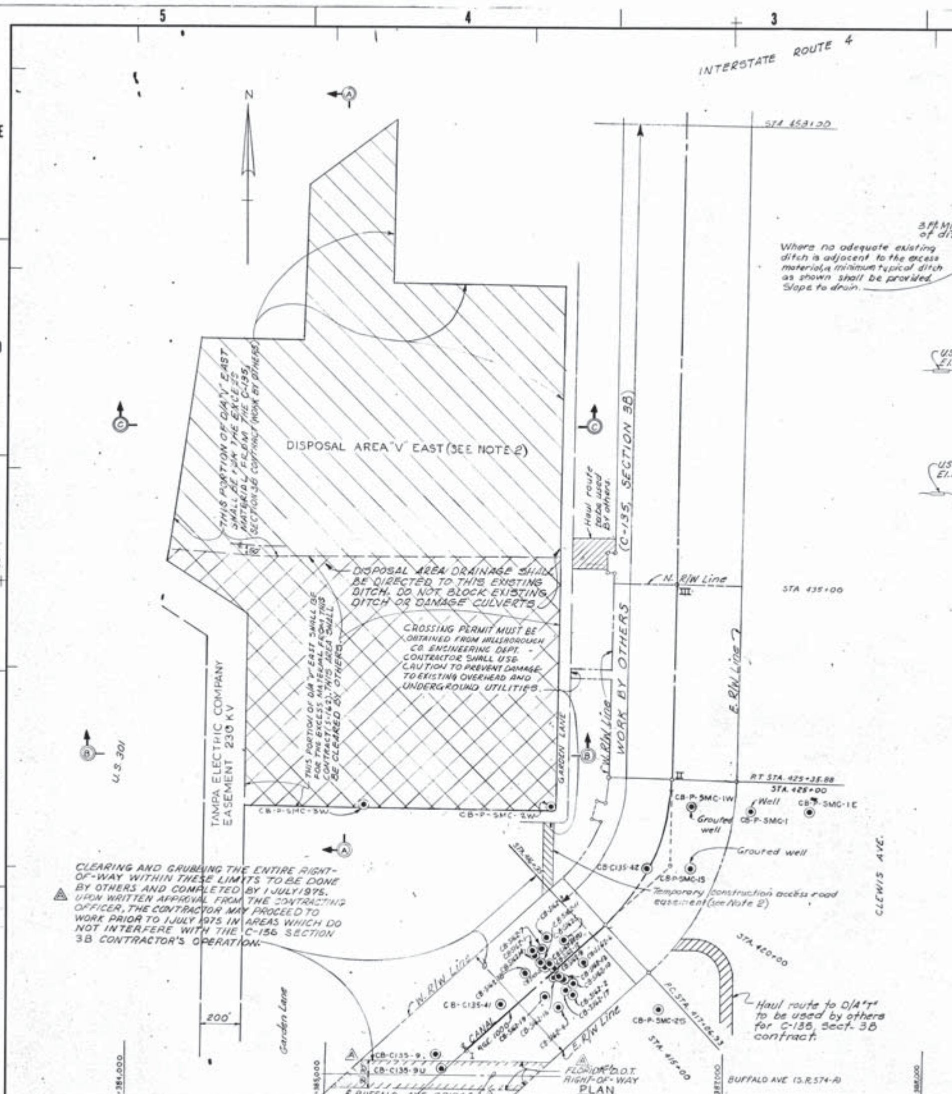
FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
GENERAL
CULVERT DETAILS

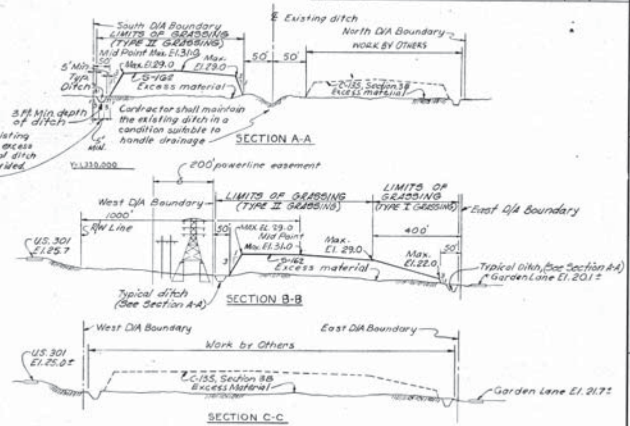
DWN. BY M.K.S., J.T.L. — CKD. BY R.W.M.
DATED: 13 FEBRUARY 1975
SCALE: AS SHOWN — DATED: OCT. 1976
DWG. NO. 10/13 — SHEET 13 OF 57

D. O. FILE NO. ~~605-31,892~~ 605-32,470 FRB 300-003

SAFETY ON THIS JOB DEPENDS ON YOU

NO.	SYM	ZONE	REVISIONS DESCRIPTION	DATE	APPROVED
2	A	A-1	REVISED TO ACCOMPANY AMEND. NO. 0001		
1	A	A-1	REVISED TO CONFORM TO AMEND. NO. 0002		





TYPICAL SECTIONS D/A "V" EAST

NOT TO SCALE

NOTES

1. PHOTOGRAPHY FLOWN SEPTEMBER 1974.
2. DISPOSAL AREA "V" EAST AND TEMPORARY CONSTRUCTION ACCESS ROAD EASEMENT SHOWN IN PLAN AT LEFT SHALL BE SURVEYED AND STAKED BY SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT. SEE SPECS PARAGRAPH 2C - 5.9.
3. PERMITS ARE REQUIRED FOR CONSTRUCTION EQUIPMENT CROSSING HIGHWAYS. SEE SPECS. FOR FURTHER REQUIREMENTS.
4. FOR LOG OF BORINGS SHOWN ON THIS SHEET, SEE DWG. NOS. 24/1 THRU 24/12.
5. FOR RIGHT-OF-WAY AND CONTROL, SEE DWG. NO. 10/3.
6. AFTER ALL OTHER WORK REQUIRED BY THIS CONTRACT WITHIN DISPOSAL AREAS HAS BEEN COMPLETED, THE CONTRACTOR SHALL CLEAR ALL D/A DITCHES AND LEAVE THE DITCHES CLEAN AND FREE FLOWING.
7. THE CORE HOLES, TABULATED BELOW AND LOCATED OUTSIDE OF THE RIGHT-OF-WAY, CONTAIN CASING EXTENDING ABOVE THE GROUND. THESE HOLES ARE PART OF A PERMANENT GROUND WATER MONITORING NETWORK AND ARE NOT TO BE DISTURBED BY THE CONTRACTOR.

HOLE NO.	APPROX. LOCATION STA.	RGE.
CB-P-SMC-1	423+50	600
CB-P-SMC-1E	423+50	300
CB-P-SMC-2S	416+00	500
CB-P-SMC-2W	423+50	1600
CB-P-SMC-3W	423+50	2540

AS BUILT

SCALE IN FEET

200' 0 200' 400'

RECORD DRAWING NOTE

"Install,"

LEGEND:

CB-5162-10 CORE BORING LOCATION AND DESIGNATION

RIGHT-OF-WAY LINE

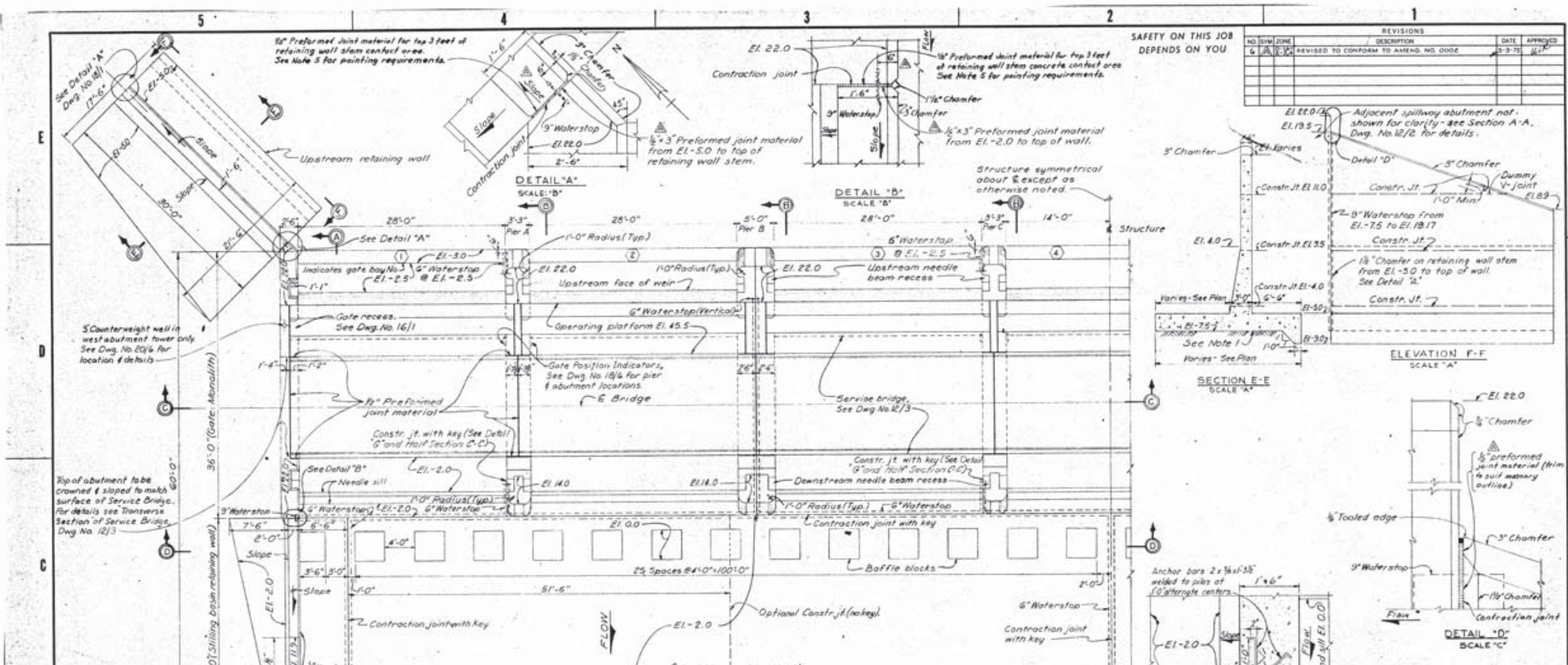
EXISTING OVERHEAD UTILITY LINES

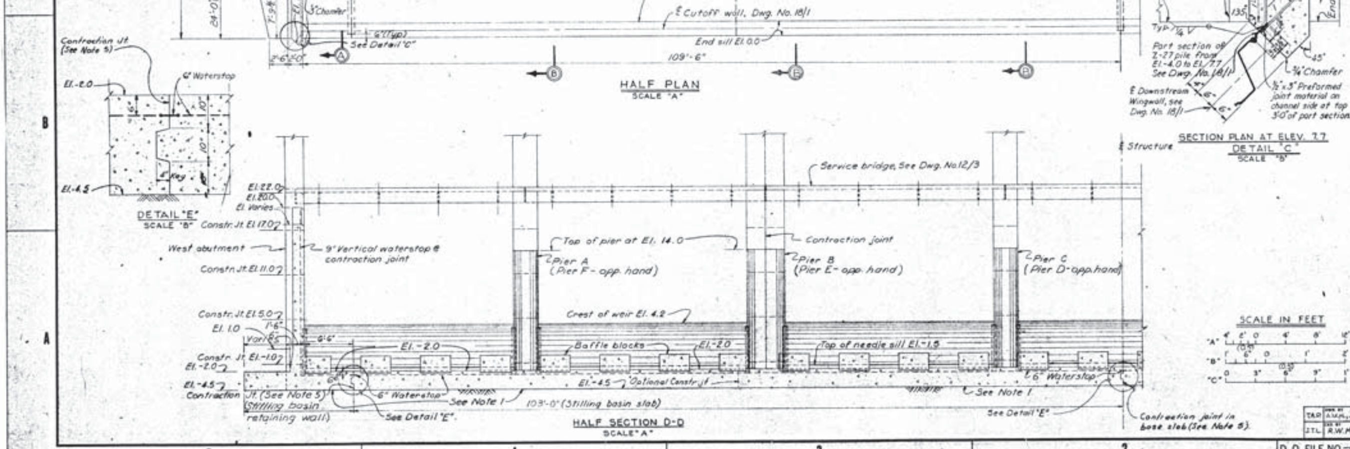
DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
GENERAL
DISPOSAL AREA "V" EAST AND CORE BORING LOCATIONS

D.N.G., JTL — R.W.M. — SCALE AS SHOWN — DWG. NO. 10/14 — SHEET 14 OF 57

D.-O. FILE NO. ~~605-31,892~~ 605.32, 5/10 FRB 200-003





NOTES:

1. FOUNDATION PILES NOT SHOWN IN SECTIONS ON THIS SHEET. SEE DWG. NO. 10/12 FOR PLAN AND DETAILS.
2. FOR "GENERAL MASONRY AND DESIGN NOTES", SEE DWG. NO. 10/10.
3. FOR DETAILS OF WATERSTOPS, SEE DWG. NO. 12/3.
4. FOR SECTIONS A-A, B-B AND C-C, SEE DWG. NO. 12/2.
5. ALL CONTRACTION JOINTS SHALL BE PAINTED WITH TWO COATS OF ASPHALTIC PAINT AT ALL ABUTTING SURFACES EXCEPT AREAS WHERE PREFORMED JOINT MATERIAL IS REQUIRED.

AS BUILT

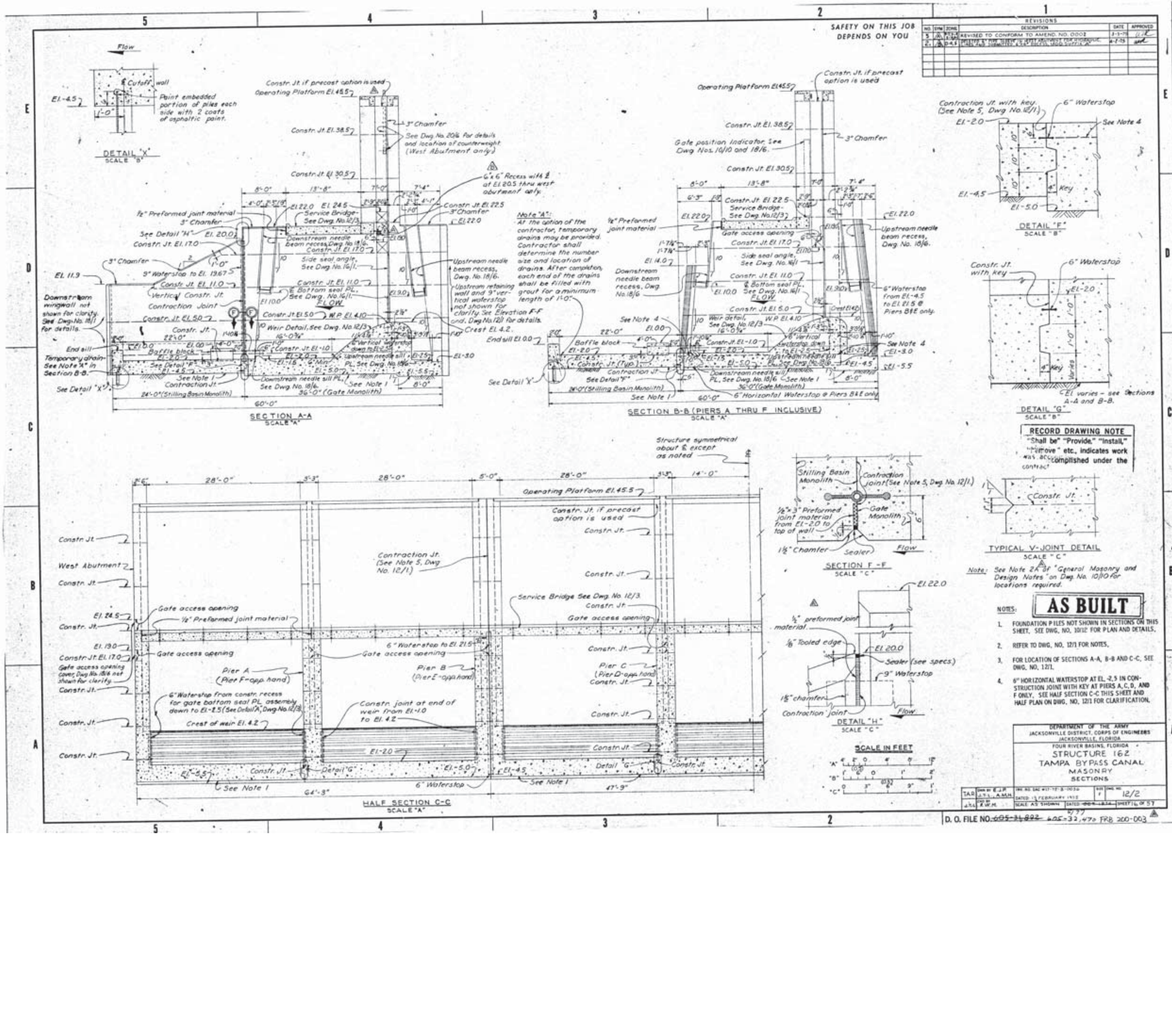
RECORD DRAWING NOTE
"Shall be" "Provide." "Install," "...ove" etc., indicates work ...ccomplished under the

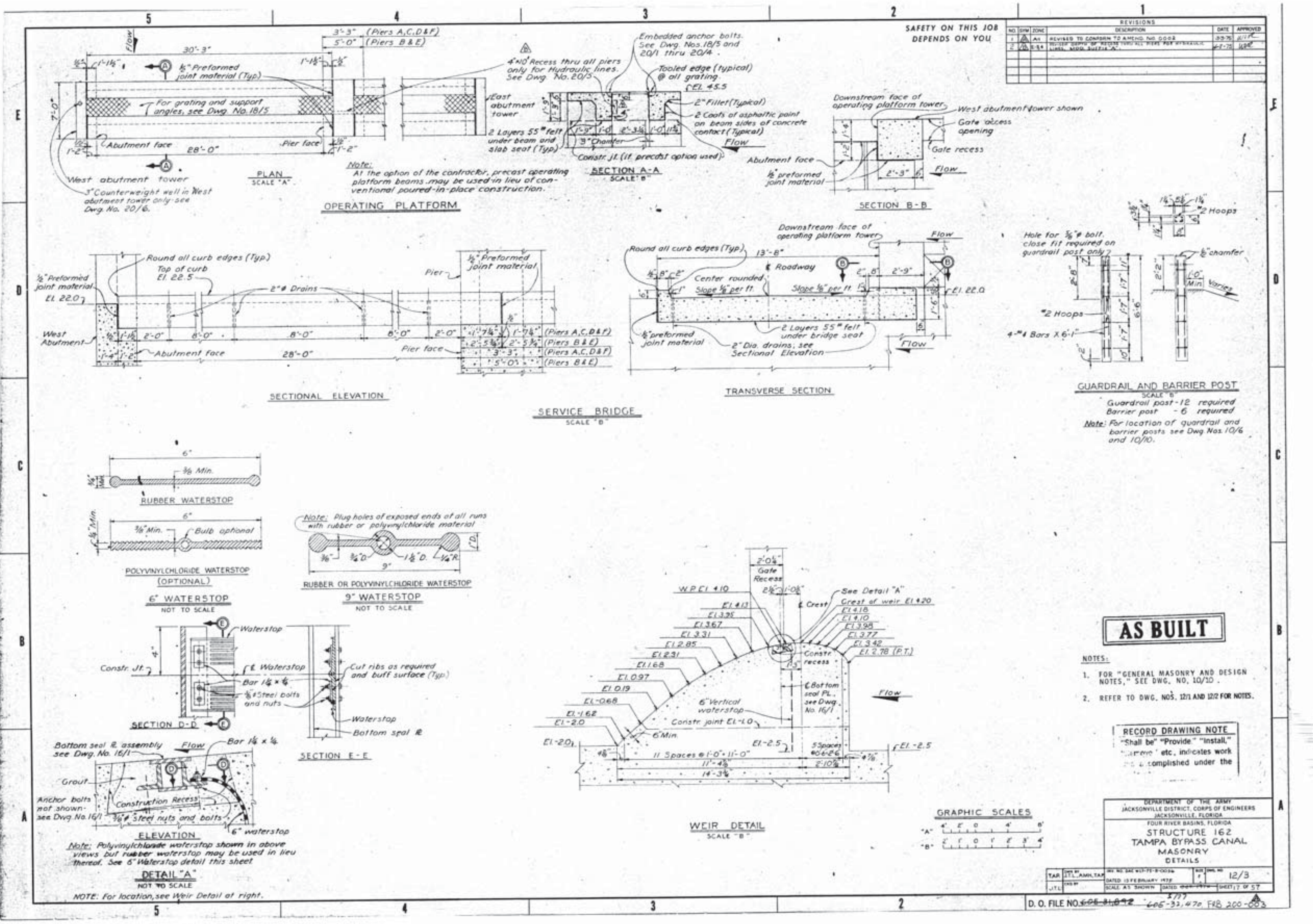
DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

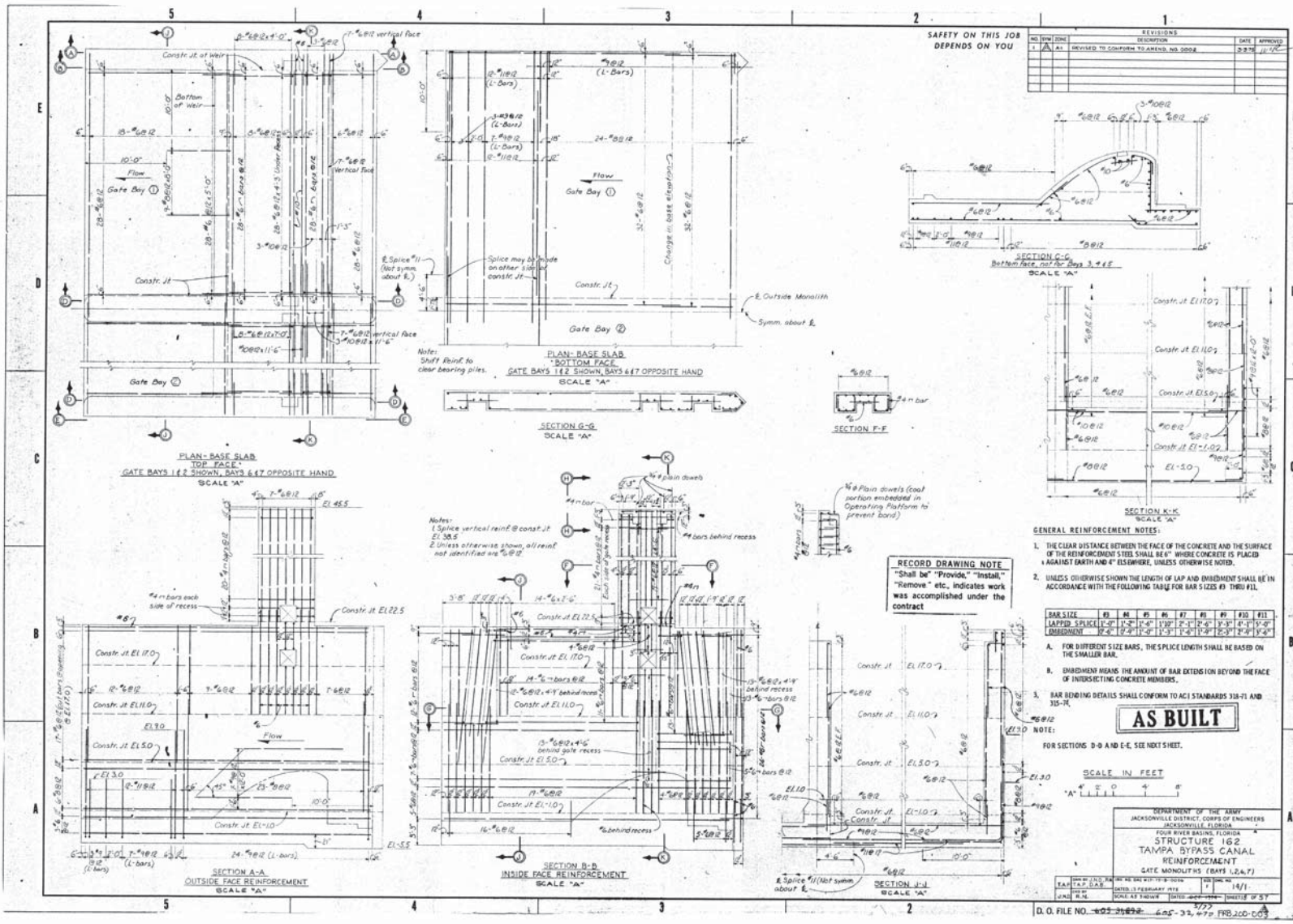
FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL.
MASONRY
PLAN AND SECTIONS

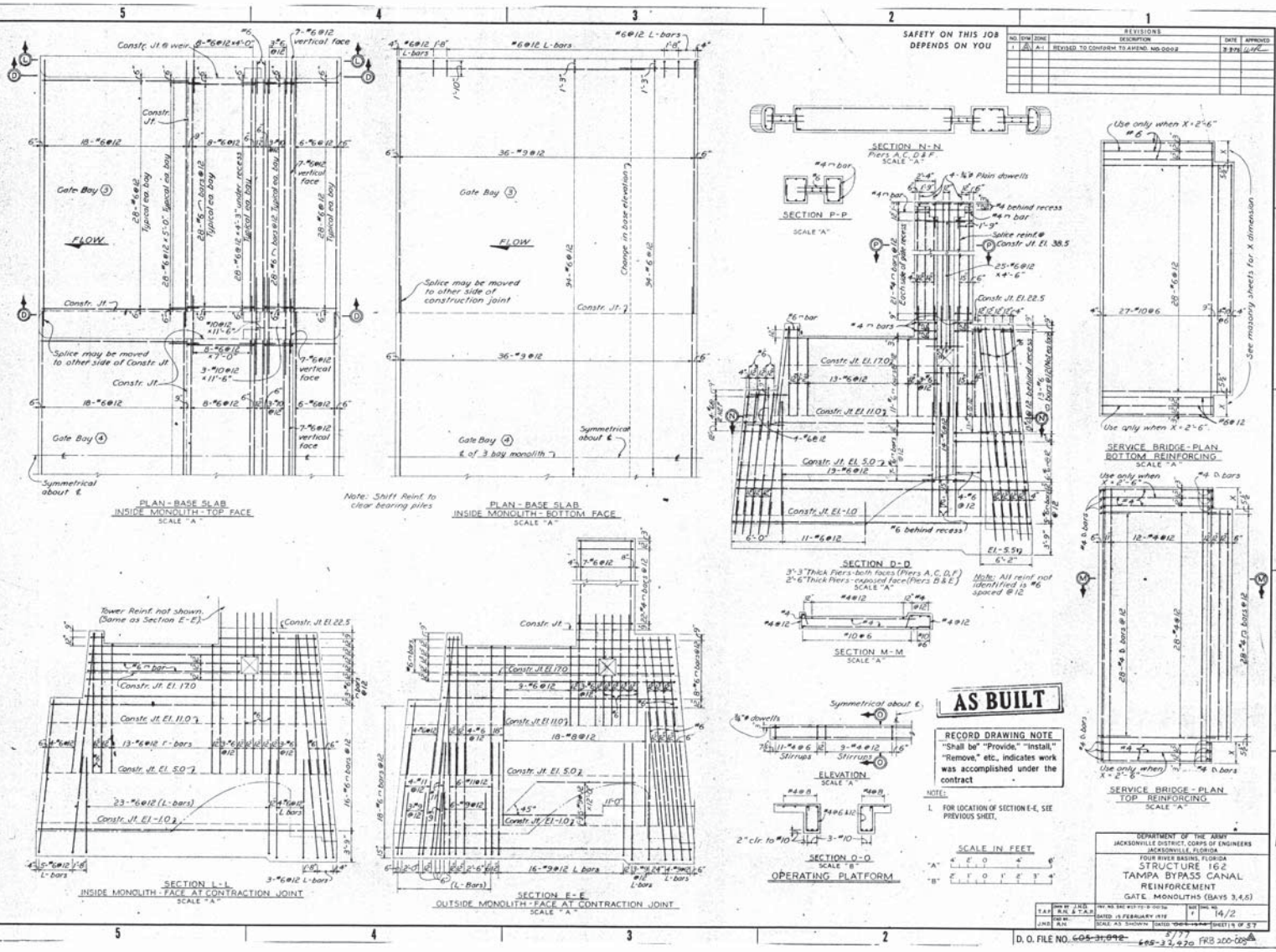
TAR	A.M.H., F.C.	DATED: 15 FEBRUARY 1972	F	12/1
JTL	R.W.M.	SCALE: AS SHOWN	DATED: ~~OCT 1970~~	SHEET 15 OF 57

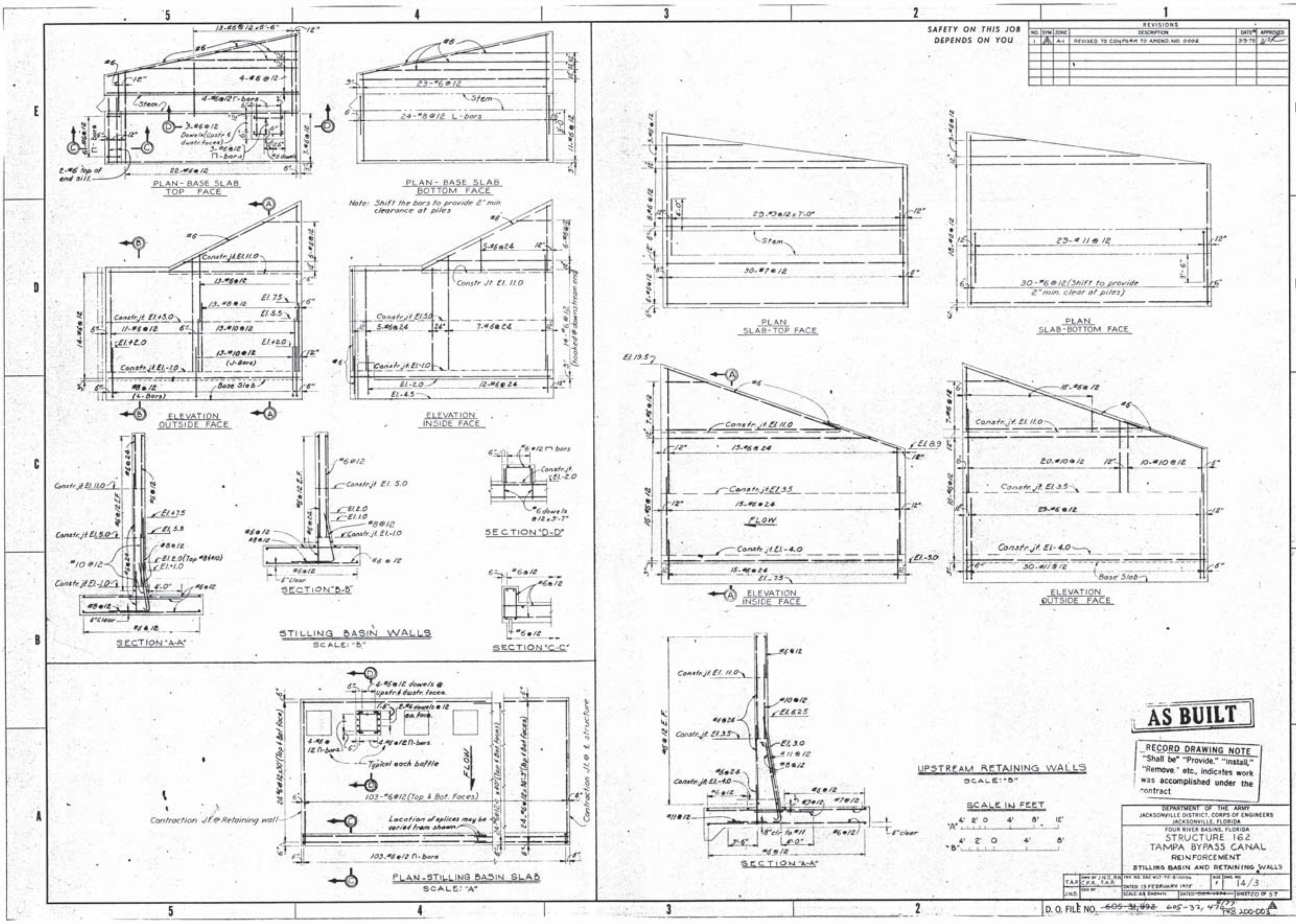
D. O. FILE NO. ~~605-31,892~~ 605-23,470 FEB 200-003


SAFETY ON THIS JOB DEPENDS ON YOU
REVISIONS
NO. | SYM | ZONE | DESCRIPTION | DATE | APPROVED
5 | REVISED TO CONFORM TO AMEND. NO. 0002 | 3-5-75
DETAIL "X" SCALE "B"
SECTION A-A SCALE "A"
SECTION B-B (PIERS A THRU F INCLUSIVE) SCALE "A"
DETAIL "F" SCALE "B"
DETAIL "G" SCALE "B"
Note "A": At the option of the contractor, temporary drains may be provided. Contractor shall determine the number size and location of drains. After completion, each end of the drains shall be filled with grout for a minimum length of 1'-0".
RECORD DRAWING NOTE
"Shall be" "Provide," "Install," "Remove" etc., indicates work was accomplished under the contract
TYPICAL V-JOINT DETAIL SCALE "C"
SECTION F-F SCALE "C"
Note: See Note 2A of "General Masonry and Design Notes" on Dwg. No. 10/10 for locations required.
AS BUILT
NOTES:
1. FOUNDATION PILES NOT SHOWN IN SECTIONS ON THIS SHEET. SEE DWG. NO. 10/12 FOR PLAN AND DETAILS.
2. REFER TO DWG. NO. 12/1 FOR NOTES.
3. FOR LOCATION OF SECTIONS A-A, B-B AND C-C, SEE DWG. NO. 12/1.
4. 6" HORIZONTAL WATERSTOP AT EL -2.5 IN CONSTRUCTION JOINT WITH KEY AT PIERS A, C, D, AND F ONLY. SEE HALF SECTION C-C THIS SHEET AND HALF PLAN ON DWG. NO. 12/1 FOR CLARIFICATION.
DETAIL "H" SCALE "C"
SCALE IN FEET
HALF SECTION C-C SCALE "A"
DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
MASONRY
SECTIONS
DATED: 13 FEBRUARY 1975
SCALE AS SHOWN
DWG. NO. 12/2
SHEET 16 OF 57
D. O. FILE NO. 605-32,470 FRB 200-003

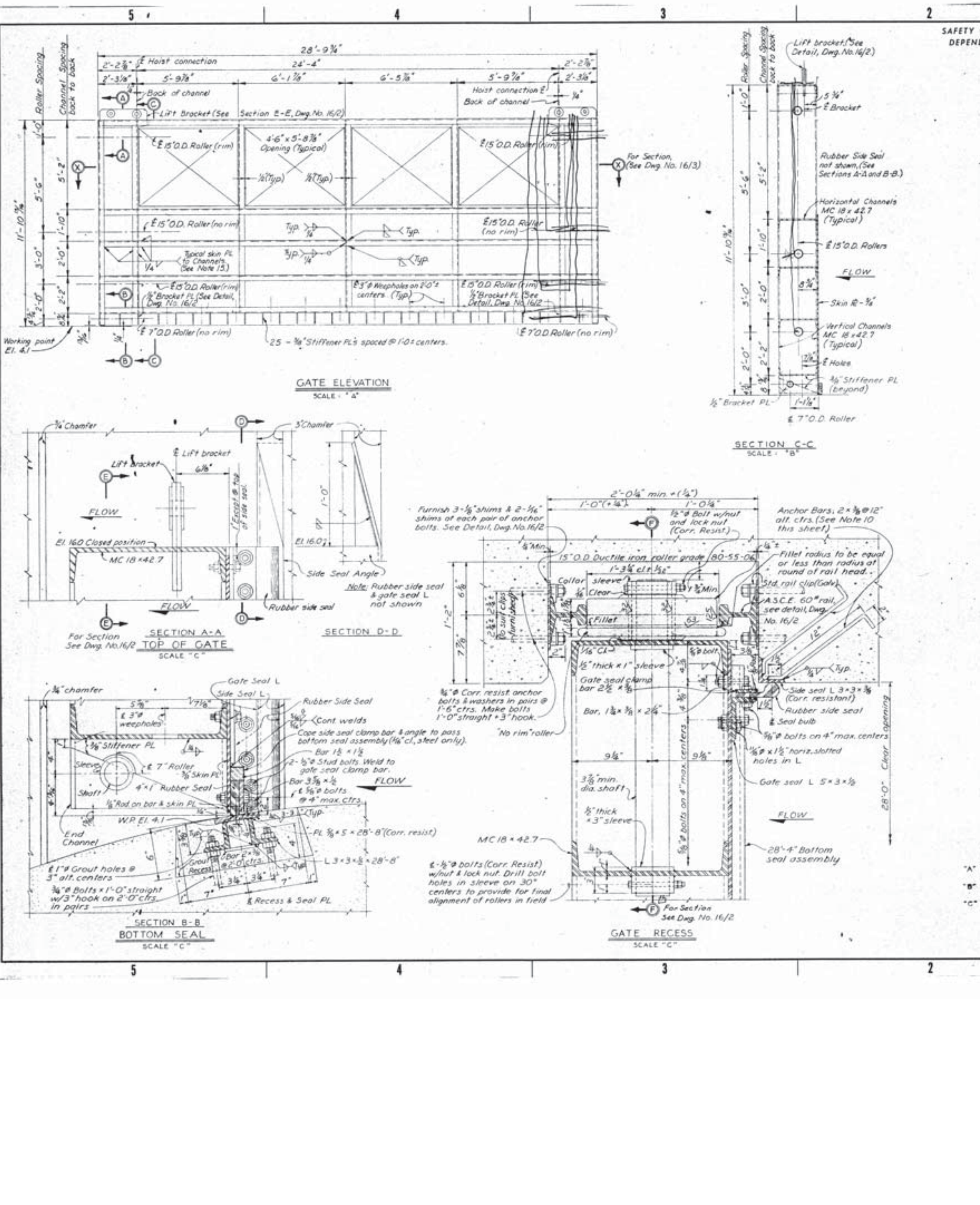

SAFETY ON THIS JOB DEPENDS ON YOU
REVISIONS
REVISED TO CONFORM TO AMEND. NO. 0002
OPERATING PLATFORM
PLAN
SCALE "A"
SECTION A-A
SCALE "B"
SECTION B-B
Note: At the option of the contractor, precast operating platform beams may be used in lieu of conventional poured-in-place construction.
West abutment tower
3" Counterweight well in West abutment tower only-see Dwg. No. 20/6.
SECTIONAL ELEVATION
SERVICE BRIDGE
SCALE "B"
TRANSVERSE SECTION
GUARDRAIL AND BARRIER POST
SCALE "B"
Guardrail post - 12 required
Barrier post - 6 required
Note: For location of guardrail and barrier posts see Dwg. Nos. 10/6 and 10/10.
RUBBER WATERSTOP
POLYVINYLCHLORIDE WATERSTOP (OPTIONAL)
6" WATERSTOP
NOT TO SCALE
Note: Plug holes of exposed ends of all runs with rubber or polyvinylchloride material
RUBBER OR POLYVINYLCHLORIDE WATERSTOP
9" WATERSTOP
NOT TO SCALE
SECTION D-D
SECTION E-E
ELEVATION
Note: Polyvinylchloride waterstop shown in above views but rubber waterstop may be used in lieu thereof. See 6" Waterstop detail this sheet.
DETAIL "A"
NOT TO SCALE
NOTE: For location, see Weir Detail at right.
WEIR DETAIL
SCALE "B"
GRAPHIC SCALES
AS BUILT
NOTES:
1. FOR "GENERAL MASONRY AND DESIGN NOTES," SEE DWG. NO. 10/10.
2. REFER TO DWG. NOS. 12/1 AND 12/2 FOR NOTES.
RECORD DRAWING NOTE
DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
MASONRY
DETAILS
DATED 15 FEBRUARY 1972
12/3
D. O. FILE NO. 405-32,470 FILE 200-003


SAFETY ON THIS JOB DEPENDS ON YOU
REVISIONS
NO. | TYPE | ZONE | DESCRIPTION | DATE | APPROVED
1 | A | A1 | REVISED TO CONFORM TO AMEND. NO. 0002 | 3-3-76 | J.L.K.
PLAN - BASE SLAB TOP FACE GATE BAYS 1 & 2 SHOWN, BAYS 6 & 7 OPPOSITE HAND
SCALE "A"
PLAN - BASE SLAB BOTTOM FACE GATE BAYS 1 & 2 SHOWN, BAYS 6 & 7 OPPOSITE HAND
SCALE "A"
SECTION G-G
SCALE "A"
SECTION F-F
SECTION G-G Bottom Face, not for Bays 3, 4 & 5
SCALE "A"
SECTION K-K
SCALE "A"
SECTION A-A OUTSIDE FACE REINFORCEMENT
SCALE "A"
SECTION B-B INSIDE FACE REINFORCEMENT
SCALE "A"
SECTION J-J
SCALE "A"
RECORD DRAWING NOTE
"Shall be" "Provide," "Install," "Remove" etc., indicates work was accomplished under the contract
GENERAL REINFORCEMENT NOTES:
1. THE CLEAR DISTANCE BETWEEN THE FACE OF THE CONCRETE AND THE SURFACE OF THE REINFORCEMENT STEEL SHALL BE 6" WHERE CONCRETE IS PLACED AGAINST EARTH AND 4" ELSEWHERE, UNLESS OTHERWISE NOTED.
2. UNLESS OTHERWISE SHOWN THE LENGTH OF LAP AND EMBEDMENT SHALL BE IN ACCORDANCE WITH THE FOLLOWING TABLE FOR BAR SIZES #3 THRU #11.
BAR SIZE | #3 | #4 | #5 | #6 | #7 | #8 | #9 | #10 | #11
LAPPED SPLICE | 1'-0" | 1'-3" | 1'-6" | 1'10" | 2'-1" | 2'-4" | 3'-3" | 4'-1" | 5'-0"
EMBEDMENT | 0'-6" | 0'-9" | 1'-0" | 1'-3" | 1'-6" | 1'-9" | 2'-3" | 2'-9" | 3'-6"
A. FOR DIFFERENT SIZE BARS, THE SPLICE LENGTH SHALL BE BASED ON THE SMALLER BAR.
B. EMBEDMENT MEANS THE AMOUNT OF BAR EXTENSION BEYOND THE FACE OF INTERSECTING CONCRETE MEMBERS.
3. BAR BENDING DETAILS SHALL CONFORM TO ACI STANDARDS 318-71 AND 315-74.
NOTE: FOR SECTIONS D-D AND E-E, SEE NEXT SHEET.
AS BUILT
SCALE IN FEET
DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
REINFORCEMENT
GATE MONOLITHS (BAYS 1,2,4,7)
DESIGNED BY J.N.S. | DRAWN BY T.A.P. DAB | TRACED BY J.N.S. | CHECKED BY R.M.
DATED: 13 FEBRUARY 1978
SCALE: AS SHOWN
DRAWING NO. 7
14/1-
SHEET 18 OF 57
D.O. FILE NO. 605-32,472 FRB.JCD-003


SAFETY ON THIS JOB DEPENDS ON YOU
REVISIONS
NO. SYM ZONE DESCRIPTION DATE APPROVED
1 A A-1 REVISED TO CONFORM TO AMEND. NO5-0002 9 3 79
PLAN - BASE SLAB INSIDE MONOLITH - TOP FACE
SCALE "A"
PLAN - BASE SLAB INSIDE MONOLITH - BOTTOM FACE
SCALE "A"
Note: Shift Reinf. to clear bearing piles
SECTION N-N
Piers A, C, D & F
SCALE "A"
SECTION P-P
SCALE "A"
SECTION D-D
3'-3" Thick Piers - both faces (Piers A, C, D, F)
2'-6" Thick Piers - exposed face (Piers B & E)
SCALE "A"
Note: All reinf. not identified is #6 spaced @ 12
SECTION M-M
SCALE "A"
SERVICE BRIDGE - PLAN BOTTOM REINFORCING
SCALE "A"
SERVICE BRIDGE - PLAN TOP REINFORCING
SCALE "A"
SECTION L-L
INSIDE MONOLITH - FACE AT CONTRACTION JOINT
SCALE "A"
SECTION E-E
OUTSIDE MONOLITH - FACE AT CONTRACTION JOINT
SCALE "A"
ELEVATION
SCALE "A"
SECTION O-O
SCALE "B"
OPERATING PLATFORM
AS BUILT
RECORD DRAWING NOTE
"Shall be" "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract
NOTE:
1. FOR LOCATION OF SECTION E-E, SEE PREVIOUS SHEET.
SCALE IN FEET
DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
REINFORCEMENT
GATE MONOLITHS (BAYS 3,4,6)
DESIGNED BY J.N.D.
DRAWN BY R.N. & T.A.P.
CHECKED BY R.N.
DATED: 15 FEBRUARY 1978
SCALE: AS SHOWN
14/2
D.O. FILE NO. 605-31,898
605-32,420 FRB 200-089



SAFETY ON THIS JOB DEPENDS ON YOU
REVISIONS
REVISED TO CONFORM TO AMEND. NO. 0004
PLAN - BASE SLAB TOP FACE
PLAN - BASE SLAB BOTTOM FACE
Note: Shift the bars to provide 2" min clearance at piles
ELEVATION OUTSIDE FACE
ELEVATION INSIDE FACE
SECTION "A-A"
SECTION "B-B"
SECTION "C-C"
SECTION "D-D"
STILLING BASIN WALLS
SCALE: "B"
PLAN-STILLING BASIN SLAB
SCALE: "A"
Contraction Jt. @ Retaining wall
Location of splices may be varied from shown
Typical each baffle
FLOW
PLAN SLAB-TOP FACE
PLAN SLAB-BOTTOM FACE
ELEVATION INSIDE FACE
ELEVATION OUTSIDE FACE
UPSTREAM RETAINING WALLS
SCALE: "B"
SCALE IN FEET
AS BUILT
RECORD DRAWING NOTE
"Shall be" "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract
DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
REINFORCEMENT
STILLING BASIN AND RETAINING WALLS
DATED 13 FEBRUARY 1975
SCALE AS SHOWN
14/3
SHEET 20 OF 57
D. O. FILE NO. 605-31,892 605-32,476



SAFETY ON THIS JOB DEPENDS ON YOU

REVISIONS					
NO.	SYM	ZONE	DESCRIPTION	DATE	APPROVED
1	A	A-1	REVISED TO CONFORM TO AMEND NO. 0002	3-3-75	[illegible]

GENERAL WELDING NOTES:

1A. WELDING SYMBOLS ARE THOSE ADOPTED BY THE AMERICAN WELDING SOCIETY AND INDICATE ONLY SIZE AND TYPE OF WELDS REQUIRED. DETAILED INFORMATION SHALL BE SUBMITTED BY THE CONTRACTOR FOR APPROVAL.

2A. THE CONTRACTORS' SHOP DRAWINGS SHALL CLEARLY DISTINGUISH BETWEEN SHOP AND FIELD WELDS. LENGTH OF WELD CALLED FOR ON THE DRAWINGS SHALL BE THE EFFECTIVE LENGTH.

3A. WHERE CORROSION RESISTING STEEL IS WELDED, FILLER MATERIAL SHALL BE CORROSION RESISTING.

4A. WELDING SYMBOL SHOWN THUS, ——<TYP. MEANS THAT ALL SIMILAR JOINTS IN THIS VIEW SHALL BE WELDED IN THIS MANNER.

5A. ALL JOINTS IN CONTACT WITH OTHER SURFACES (I.E., SKIN PLATE, GUSSET PL'S, ETC.) SHALL BE FLUSH WELDED.

6A. "GENERAL WELDING NOTES" APPLY TO ALL DETAILS AND CONNECTIONS AS SHOWN ON DWG. NOS. 16/1 THROUGH 16/3 INCLUSIVE.

GENERAL NOTES ON VERTICAL LIFT GATES:

1. ALL MATERIAL STRUCTURAL STEEL UNLESS OTHERWISE NOTED.

2. ALL MATERIAL NOTED AS CORR. RESIST. SHALL BE CORROSION RESISTING STEEL TYPE 304 OR 410 UNLESS SHOWN OR SPECIFIED OTHERWISE.

3. IRREGULARITIES IN THE PLANE OF THE EXPOSED SURFACES OF EMBEDDED METAL SEALS IN CONTACT WITH THE RUBBER SEALS SHALL NOT VARY MORE THAN 1/16" FROM POSITIONS SHOWN.

4. SHIMS INDICATED TO BE FURNISHED ARE TO BE INSTALLED AS REQUIRED TO OBTAIN NECESSARY CLEARANCES.

5. THE ROLLER BUSHING I.D. IS TO BE 1/32" GREATER THAN THE SHAFT SLEEVE O.D.

6. OPTIONS ON EMBEDDED METAL SEALS ARE AS FOLLOWS:
   (A) THE 3/8" THICK CORROSION RESISTING SEAL ANGLES MAY BE REPLACED WITH 1/2" THICK BENT CHROME CLAD PLATES.
   (B) THE 5/8" THICK CORROSION RESISTING BOTTOM SEAL PLATES MAY BE REPLACED WITH 5/8" THICK CHROME CLAD PLATES.

7. ALL BOLTS, NUTS, AND WASHERS (EXCEPT THOSE NOTED AS CORR. RESIST. OR CRES, OR THOSE BOLTS AND NUTS FULLY EMBEDDED IN CONCRETE) SHALL BE GALVANIZED.

8. SEE SPECIFICATIONS FOR QUALITY OF FINISH REQUIRED BY SYMBOLS 125 32 AND 63.

9. FURNISH AND INSTALL SEVEN VERTICAL LIFT GATES, AS SHOWN ON THIS DRAWING AND DWG. NO. 16/2, COMPLETE WITH FOUR SLIDE GATES EACH, AS DETAILED ON DWG. NO. 16/3.

10. AT THE OPTION OF THE CONTRACTOR, 5/8"φ × 6 3/8" OR EQUAL ANCHOR STUDS MAY BE SUBSTITUTED FOR 2" X 3/8" ANCHOR BARS. SEE SPECIFICATIONS.

11. SPACE ALL BOLTS CONNECTING RUBBER SEAL ASSEMBLIES TO THE GATE SUCH THAT BOLTS FALL ON THE GAGE LINE OF THE FRAMING MEMBERS ± 1/4". BEVEL WASHERS SHALL BE FURNISHED AT BOLTED CONNECTIONS TO ALL CHANNEL FLANGES. ALL BOLTS SHALL BE FURNISHED WITH ONE NUT AND WASHER, UNLESS OTHERWISE INDICATED.

12. ALL GALVANIZED ITEMS SHALL BE GALVANIZED AFTER FABRICATION.

13. AT THE OPTION OF THE CONTRACTOR, RUBBER SEAL CORNERS MAY BE (1) STANDARD MOULDED CORNERS, (2) CORNERS SPLICED, CAREFULLY FITTED, AND VULCANIZED BY THE RUBBER SEAL MANUFACTURER.

14. FOR SECTIONS E-E, F-F, SEE DWG. NO. 16/2. FOR SECTION X-X, SEE DWG. NO. 16/3.

15. 3/8" SKIN PL. TO BE ATTACHED TO FRAME MEMBERS WITH CONTINUOUS 1/4" FILLET WELDS ON BOTH SIDES OF EACH CONTACT FLANGE AND STIFFENER PLATES.

16. 15" O.D. ROLLERS ARE TO HAVE A 17" O.D. RIM AS SHOWN IN THE "GATE RECESS" DETAIL, WHERE A RIM IS INDICATED IN THE "GATE ELEVATION." ALL OTHER ROLLERS ARE NOT TO HAVE A RIM OR FILLET.

17. POSITION INDICATORS ARE REQUIRED ON THE PIERS AND ABUTMENTS AT THE LOCATIONS SHOWN ON DWG. NOS. 10/10 AND 12/2. FOR POSITION INDICATOR AND POSITION MARKER DETAILS, SEE DWG. NO. 18/6.

18. SELF LUBRICATING ROLLER BUSHING SHALL CONFORM TO SPECIFICATIONS.

AS BUILT

RECORD DRAWING NOTE
"Shall be" "Provide." "Install," "Remove." etc., indicates work was accomplished under the ... tract

SCALE IN FEET

"A" 2' 1' 0 2 4
"B" 1' 6" 0 1' 2' 3'
"C" 0 3" 6" 9" 1'

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

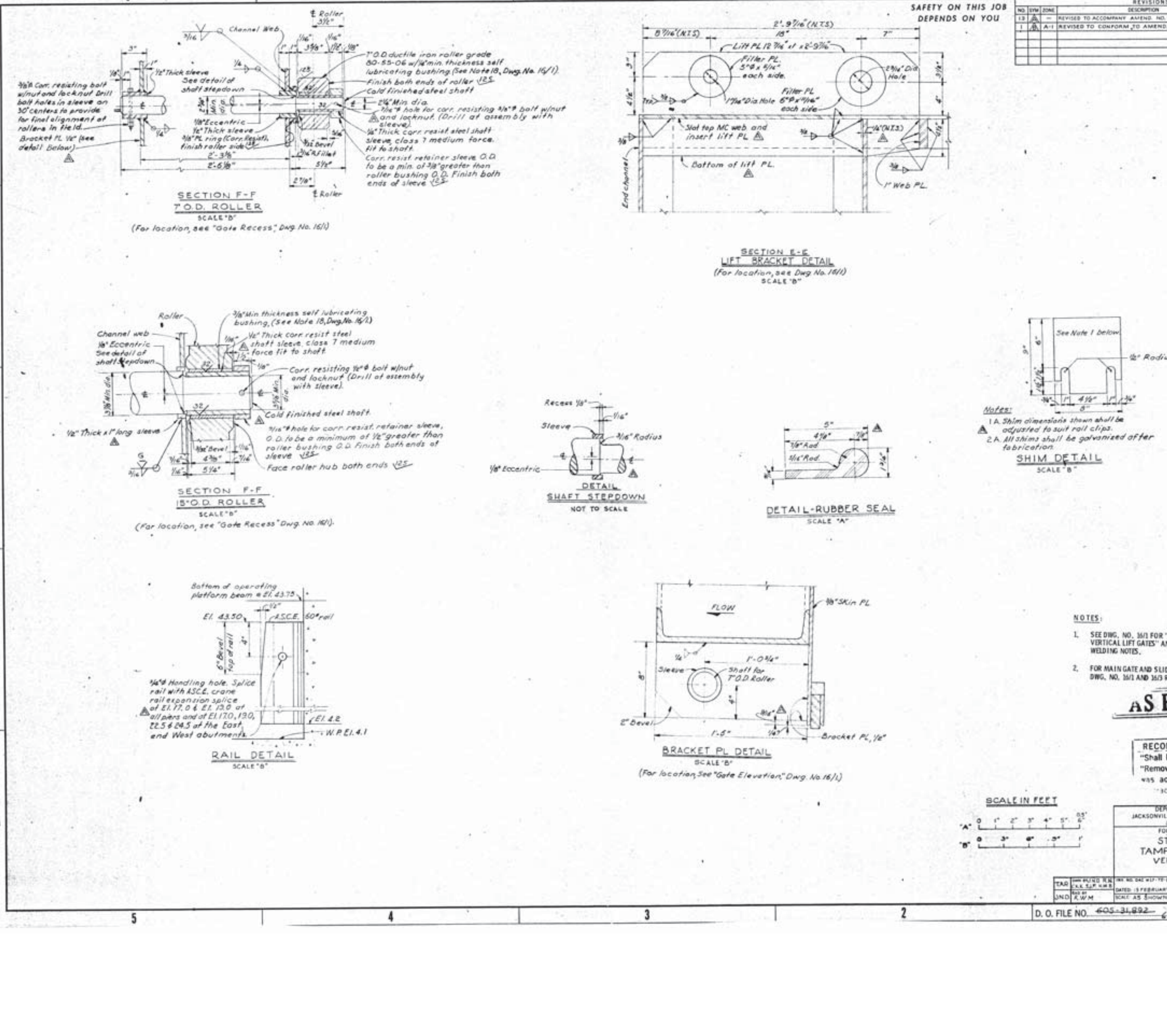
FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
VERTICAL LIFT GATES
MAIN GATES

TAP | DWN BY T.A.P. A.L. | [illegible]
JND | CKD BY R.W.M.
DATED 13 FEBRUARY 1975
SCALE AS SHOWN | DATED ~~OCT 1974~~ | SHEET 21 OF 57
DWG. NO. 16/1

D. O. FILE NO. ~~605-31,892~~ 645, 32, 470 5/77 FRB 200-003

SAFETY ON THIS JOB DEPENDS ON YOU

REVISIONS					
NO.	SYM	ZONE	DESCRIPTION	DATE	APPROVED
13	△	—	REVISED TO ACCOMPANY AMEND. NO. 0001	2-27-75	
1	△	A-1	REVISED TO CONFORM TO AMEND. NO. 0002	3-3-75	



NOTES:

1. SEE DWG. NO. 16/1 FOR "GENERAL NOTES ON VERTICAL LIFT GATES" AND FOR GENERAL WELDING NOTES.
2. FOR MAIN GATE AND SLIDE GATE DETAILS, SEE DWG. NO. 16/1 AND 16/3 RESPECTIVELY.

AS BUILT

RECORD DRAWING NOTE
"Shall be" "Provide." "Install," "Remove." etc., indicates work was accomplished under the ...act

SCALE IN FEET

"A" 0 1" 2" 3" 4" 5" 6"

"B" 0 3" 6" 9" 1'

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

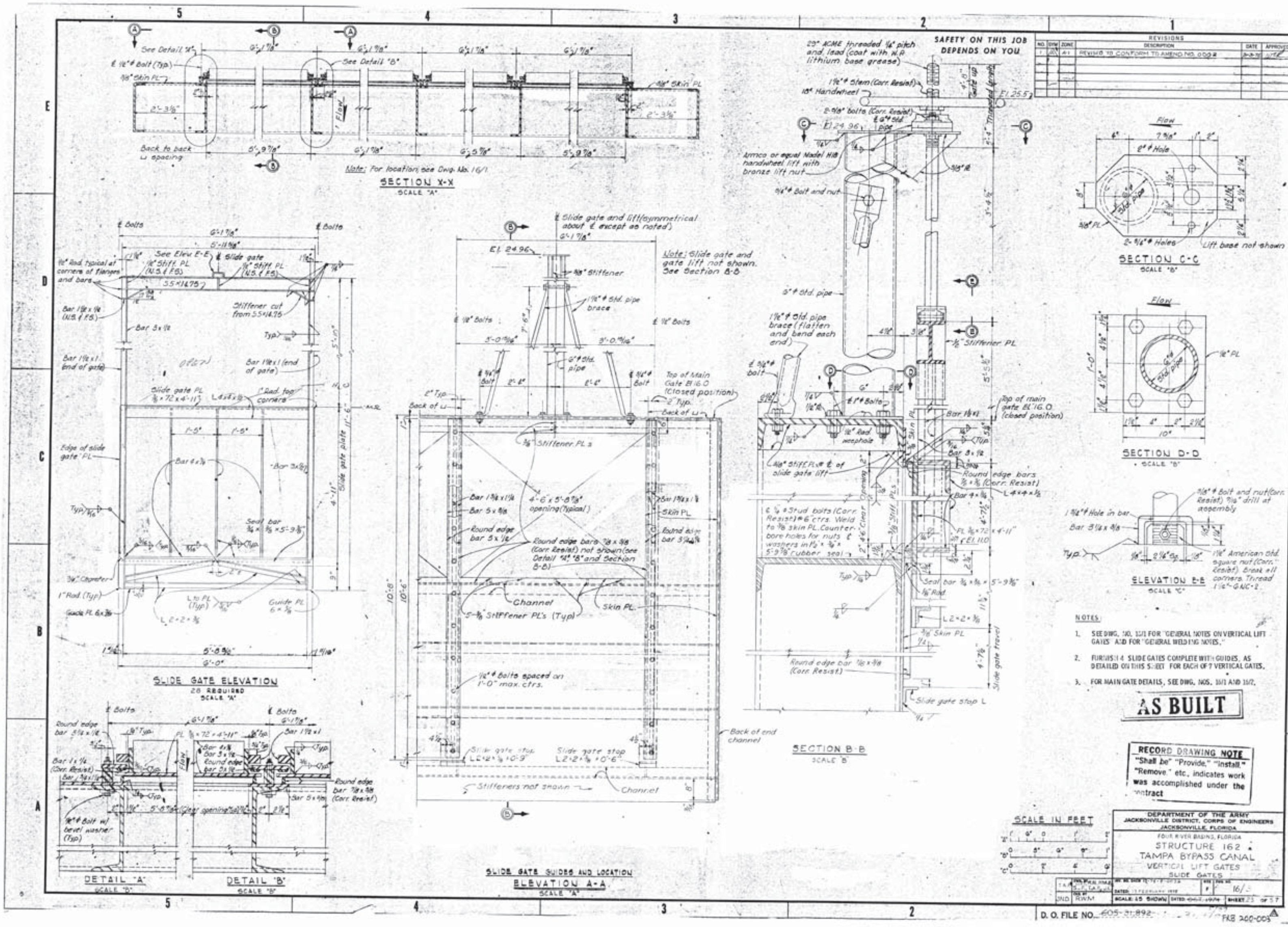
FOUR RIVER BASINS, FLORIDA

STRUCTURE 162
TAMPA BYPASS CANAL
VERTICAL LIFT GATES
DETAILS

DATED: 13 FEBRUARY 1975 | SCALE: AS SHOWN | DATED ~~OCT 1974~~ | DWG. NO. 16/2 | SHEET 22 OF 57

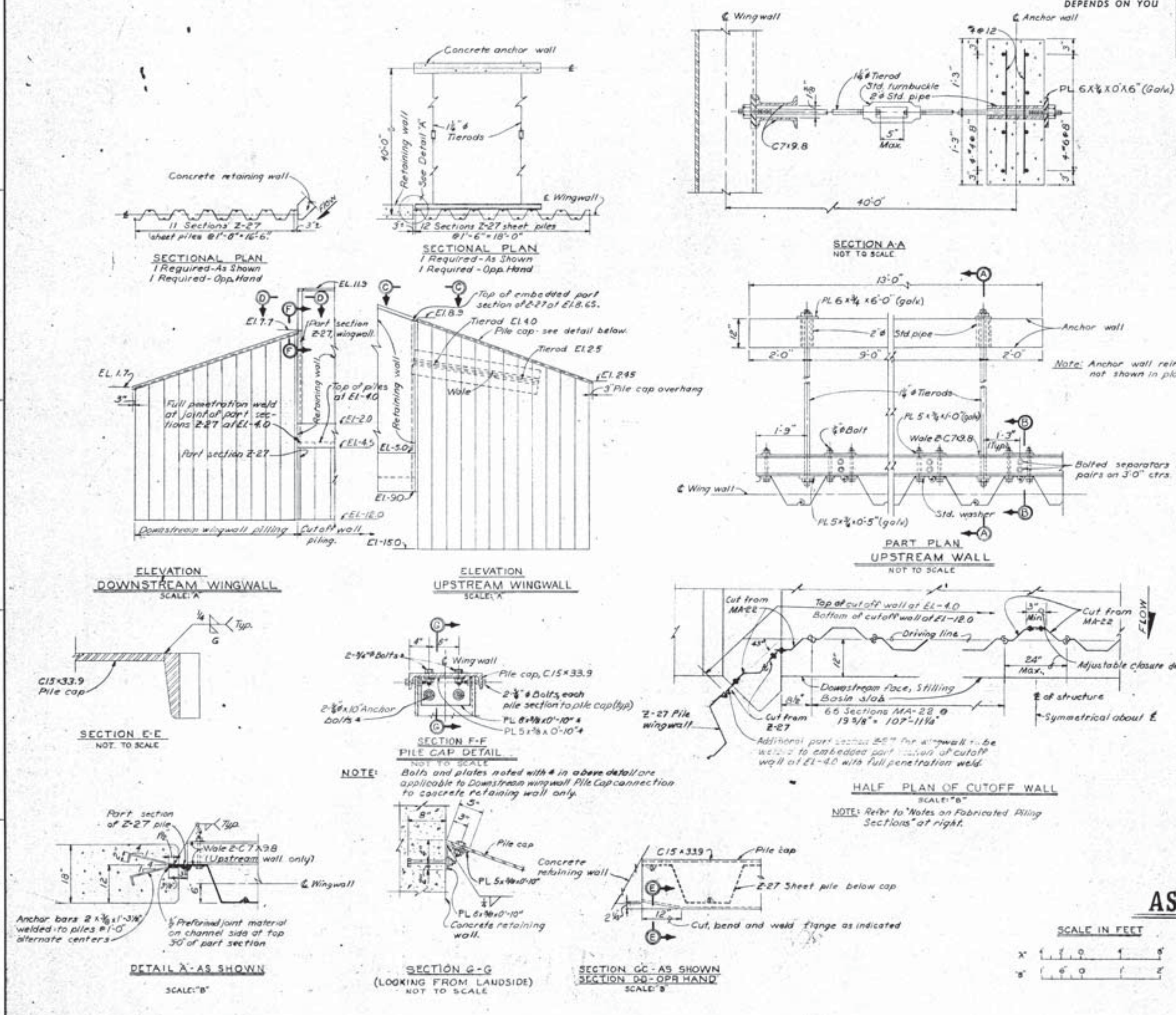
TAR | UND | K.W.M.

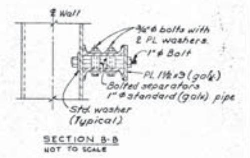
D. O. FILE NO. ~~605-31,892~~ 605, 32, 470 FRB 200-003


SAFETY ON THIS JOB DEPENDS ON YOU
REVISIONS
REVISED TO CONFORM TO AMEND NO. 0002
SECTION X-X
SCALE "A"
Note: For location, see Dwg. No. 16/1.
SECTION C-C
SCALE "B"
SECTION D-D
SCALE "B"
SLIDE GATE ELEVATION
28 REQUIRED
SCALE "A"
SLIDE GATE GUIDES AND LOCATION
ELEVATION A-A
SCALE "A"
SECTION B-B
SCALE "B"
ELEVATION E-E
SCALE "C"
DETAIL "A"
SCALE "B"
DETAIL "B"
SCALE "B"
NOTES:
1. SEE DWG. NO. 15/1 FOR "GENERAL NOTES ON VERTICAL LIFT GATES" AND FOR "GENERAL WELDING NOTES."
2. FURNISH 4 SLIDE GATES COMPLETE WITH GUIDES, AS DETAILED ON THIS SHEET FOR EACH OF 7 VERTICAL GATES.
3. FOR MAIN GATE DETAILS, SEE DWG. NOS. 16/1 AND 16/2.
AS BUILT
RECORD DRAWING NOTE
"Shall be" "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract
SCALE IN FEET
DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
VERTICAL LIFT GATES
SLIDE GATES
SCALE: AS SHOWN
16/3
D. O. FILE NO. 605-31,892

SAFETY ON THIS JOB DEPENDS ON YOU

NO.	SYM	ZONE	REVISIONS DESCRIPTION	DATE	APPROVED
1	1	A-1	REVISED TO CONFORM TO AMEND. NO. 0002	3-3-75	





NOTES:

1. ALL BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED, UNLESS SPECIFIED OTHERWISE, ALL BOLTS SHALL BE FURNISHED WITH ONE NUT AND WASHER, UNLESS OTHERWISE INDICATED.
2. ALL MATERIAL SHALL BE STRUCTURAL STEEL UNLESS OTHERWISE NOTED.
3. ALL GALVANIZED ITEMS SHALL BE GALVANIZED AFTER FABRICATION.
4. FOR "GENERAL REINFORCEMENT NOTES", SEE DWG. NO. 14/1.
5. SEE DWG. NO. 16/1 FOR "GENERAL WELDING NOTES."

RECORD DRAWING NOTE
"Shall be" "Provide," "Install," "Remove" etc., indicates work was accomplished under the contract

NOTES ON FABRICATED PILING SECTIONS:

1A. CUTOFF PILING LAYOUT AND FABRICATED CONNECTION DETAILS TO WINGWALLS SHOWN ABOVE MAY BE VARIED TO AN EQUIVALENT LAYOUT, APPROVAL BY THE CONTRACTING OFFICER IS REQUIRED.

2A. WELDING OF FABRICATED SECTION OF PILING IN LIEU OF RIVETING WILL BE ACCEPTED IF WELDS ARE SIZED TO PROVIDE STRENGTH EQUIVALENT TO REQUIRED RIVETS AT INDICATED SPACING.

3A. SPLICE PLATES AND ANGLES USED ON FABRICATED SECTIONS OF PILING SHALL BE EQUAL IN THICKNESS TO THE THICKEST PILING WEB JOINED.

4A. FABRICATE SECTIONS W/ 7/8" ø RIVETS SPACED AT 3" CENTERS AT THE TOP AND BOTTOM 2 FEET OF THE SECTION AND SPACED @ 6" CENTERS BETWEEN.

AS BUILT

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

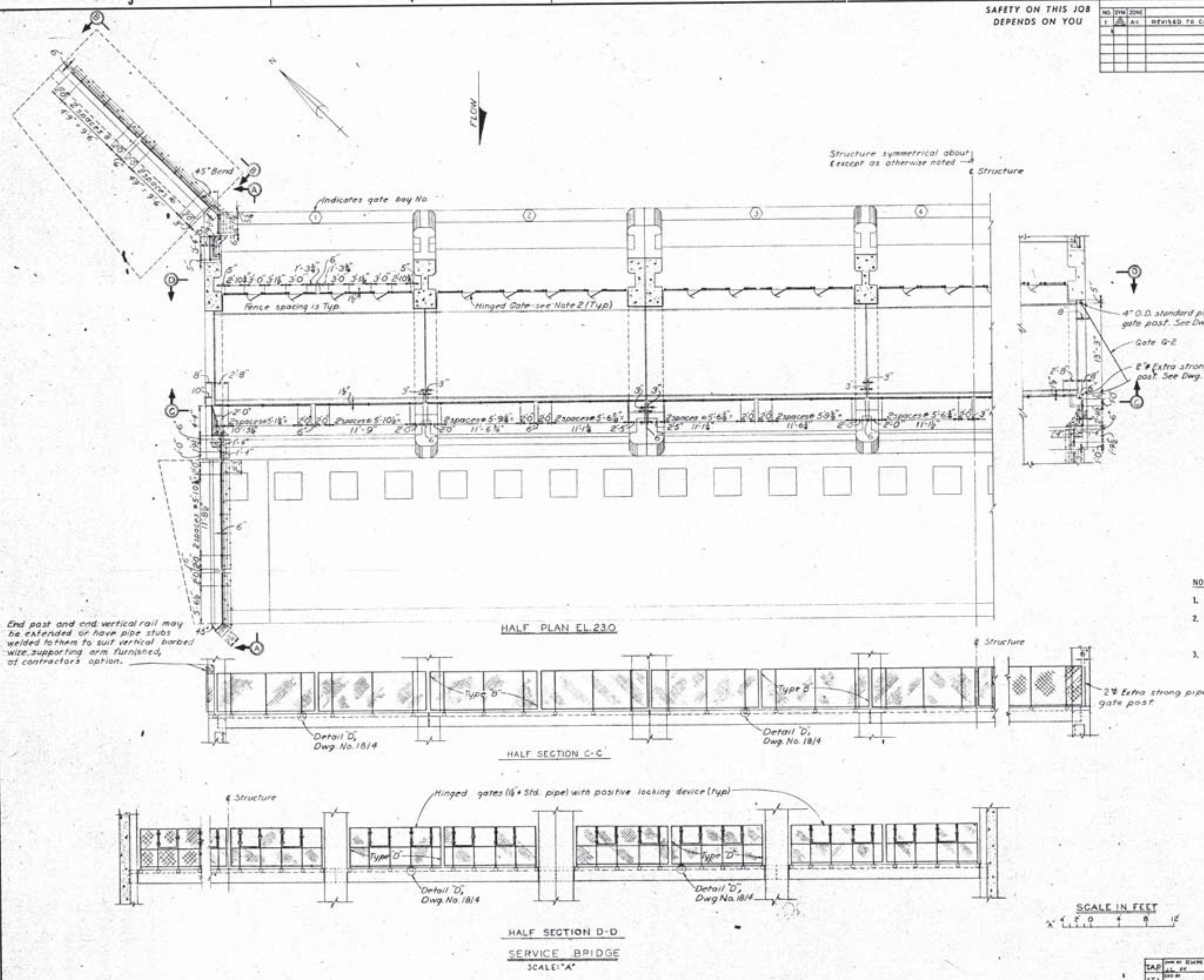
FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
METALS AND MISCELLANEOUS
WINGWALLS, CUTOFF WALL AND DETAILS

T.A.R.	DRN BY J. L. W.L.P.	DATED: 13 FEBRUARY 1975	F	DWG. NO. 18/1
J.T.L.	CKD BY R.W.M.	SCALE: AS SHOWN	DATED: ~~OCT 1974~~	SHEET 24 OF 57

D. O. FILE NO. ~~605-31,892~~ 605-32,470 5/77 FRB 200-003

SAFETY ON THIS JOB
DEPENDS ON YOU

REVISIONS					
NO.	SYM	ZONE	DESCRIPTION	DATE	APPROVED
1	△	A-1	REVISED TO CONFORM TO AMEND. NO. 0004	3-3-75	[illegible]



NOTES:

1. FOR FENCING NOTES AND DETAILS, SEE DWG. NO. 18/4.
2. PROVIDE STOP BAR WELDED TO HINGED GATE SO THAT GATE CAN OPEN ONLY BY SWINGING BACK TOWARD THE SERVICE BRIDGE.
3. FOR SECTIONS A-A AND B-B, SEE DWG. NO. 18/3.

AS BUILT

RECORD DRAWING NOTE
"Shall be" "Provide," "Install," "Remove." etc., indicates work was accomplished under the contract

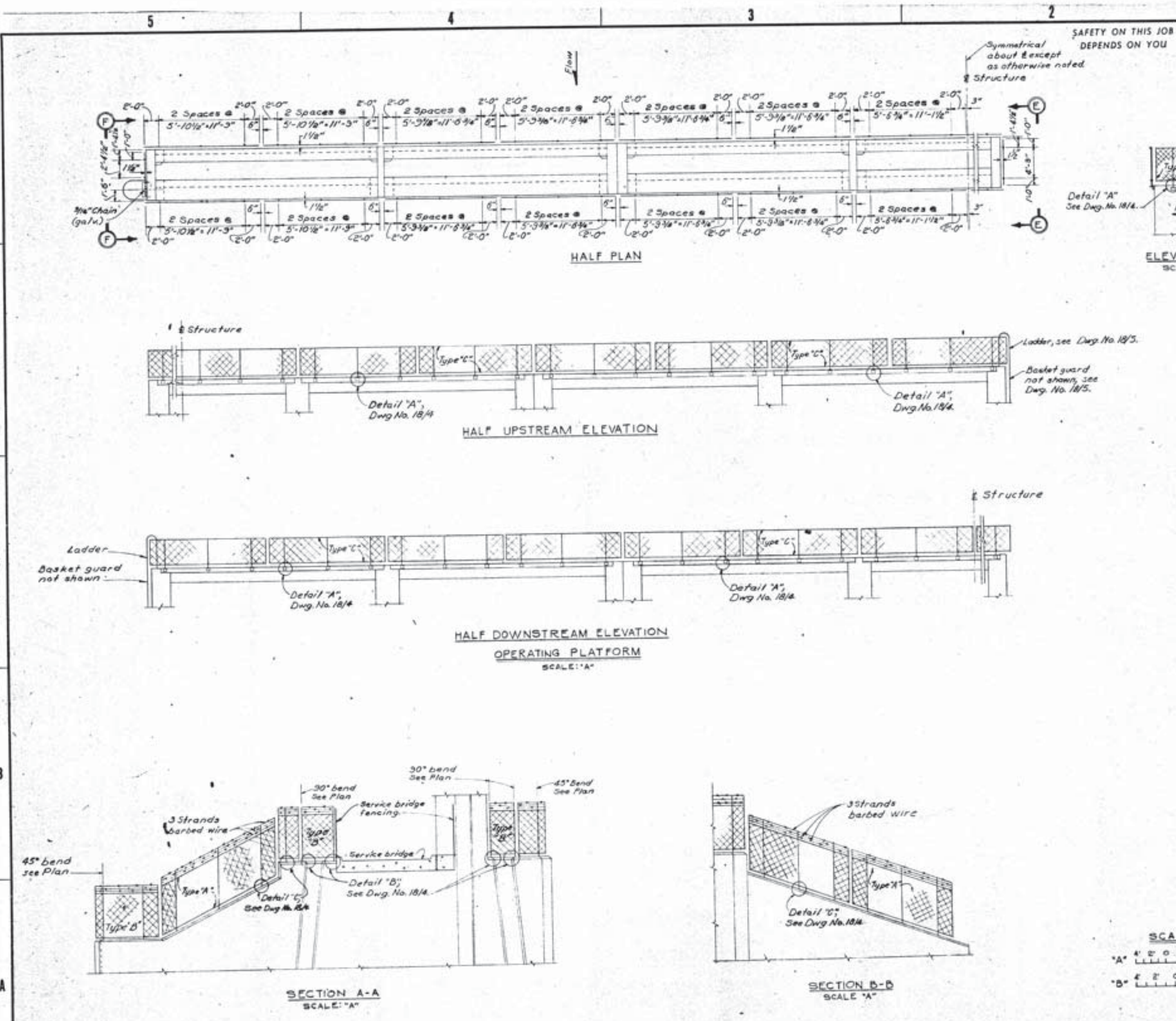
SCALE IN FEET
2 0 4 8 12

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
METALS AND MISCELLANEOUS
FENCING - PLAN AND ELEVATIONS

TAP JTL
DATED: 13 FEBRUARY 1975
SCALE: AS SHOWN
DWG. NO. 18/2
SHEET 25 OF 57

D. O. FILE NO. ~~605-31,002~~ 605-32,470 FRB 200-005



NO.	SYM	ZONE	REVISIONS DESCRIPTION	DATE	APPROVED
1	1	A-1	REVISED TO CONFORM TO AMEND. NO. 0002	3-3-75	

AS BUILT

NOTES:

1. FOR FENCING NOTES AND DETAILS, SEE DWG. NO. 18/4.
2. FOR PLAN AND DETAILS OF FENCING FOR UPSTREAM AND STILLING BASIN RETAINING WALLS, SEE DWG. NO. 18/2.
3. FOR LOCATION OF SECTIONS A-A AND B-B, SEE DWG. NO. 18/2.

RECORD DRAWING NOTE
"Shall be" "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
METALS AND MISCELLANEOUS
FENCING - PLAN AND ELEVATIONS

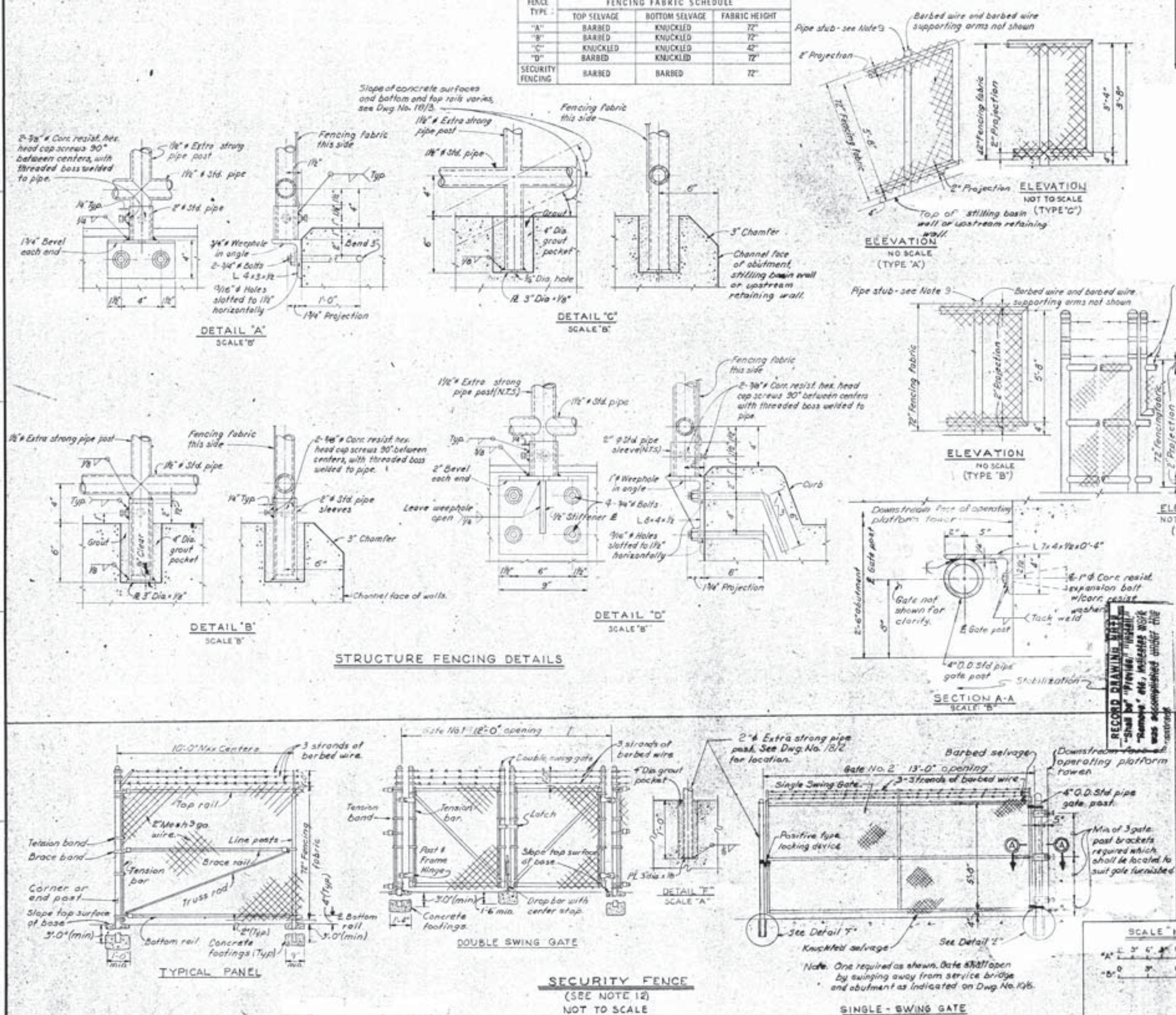
TAP | R.W.M. C.K.N. | JTL
DATED 15 FEBRUARY 1974
SCALE: AS SHOWN
DWG. NO. 18/3
SHEET 26 OF 57

D. O. FILE NO. 605-31,892
605-32,470

SAFETY ON THIS JOB DEPENDS ON YOU

NO.	SYM.	ZONE	REVISIONS DESCRIPTION	DATE	APPROVED
1	1	A-1	REVISED TO CONFORM TO AMEND. NO.0002	3-3-75	[illegible]

FENCE TYPE	FENCING FABRIC SCHEDULE		
	TOP SELVAGE	BOTTOM SELVAGE	FABRIC HEIGHT
"A"	BARBED	KNUCKLED	72"
"B"	BARBED	KNUCKLED	72"
"C"	KNUCKLED	KNUCKLED	42"
"D"	BARBED	KNUCKLED	72"
SECURITY FENCING	BARBED	BARBED	72"



AS BUILT

FENCING NOTES:

1. ALL FENCING POSTS, RAILS, CONNECTIONS AND FENCING FABRIC SHALL BE GALVANIZED.
2. ALL GALVANIZED ITEMS SHALL BE GALVANIZED AFTER FABRICATION.
3. WHERE GALVANIZED ITEMS LOSE THEIR COATING DUE TO FIELD WELDING OR CHIPPING, GALVANIZING REPAIRS SHALL BE MADE IN ACCORDANCE WITH THE SPECIFICATIONS.
4. STRUCTURE FENCING POST & RAIL CONNECTIONS SHALL BE FLUSH-WELDED TYPE.
5. ALL MATERIAL NOTED AS CORR. RESIST. SHALL BE CORROSION RESISTING STEEL, TYPE 304 OR 410 UNLESS SHOWN OR SPECIFIED OTHERWISE.
6. FOR "GENERAL WELDING NOTES," SEE DWG. NO. 16/1.
7. FOR TYPES "A", "B", "C", & "D" FENCING, ALL POSTS SHALL BE 1 ½" ⌀ EXTRA STRONG PIPE AND ALL HORIZONTAL AND SLOPING PIPE SHALL BE 1 ½" ⌀ STANDARD PIPE.
8. FOR LOCATION OF SINGLE SWING GATE, SEE DWG. NO. 10/6.
9. WELD PIPE STUBS TO TOP RAIL AT EVERY POST LOCATION AND AT END OF RUNS WHERE NEEDED FOR BARBED WIRE SUPPORTING ARMS. STUB SIZE SHALL SUIT BARBED WIRE SUPPORTING ARM FURNISHED. THIS NOTE IS APPLICABLE TO STRUCTURE FENCING ONLY.
10. FOR LAYOUT OF STRUCTURE AND SECURITY FENCING, SEE DWG. NOS. 10/6, 18/2 AND 18/3.
11. FOR LOCATION OF DOUBLE SWING GATE, SEE DWG. NO. 10/6.
12. FOR MEMBER SIZES, SHAPES, AND MATERIALS REQUIRED FOR CONSTRUCTION OF SECURITY FENCE AND FOR ADDITIONAL INSTALLATION REQUIREMENTS, SEE SPECIFICATIONS.
13. ALL MATERIAL SHALL BE STRUCTURAL STEEL, UNLESS OTHERWISE SPECIFIED.
14. ALL BOLTS, NUTS, AND WASHERS (EXCEPT THOSE NOTED AS CORR. RESIST.) SHALL BE GALVANIZED.

SCALE IN FEET

"A" 1" 9" 6" 3" 0 1'

"B" 0 3" 6" 9" 1'

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

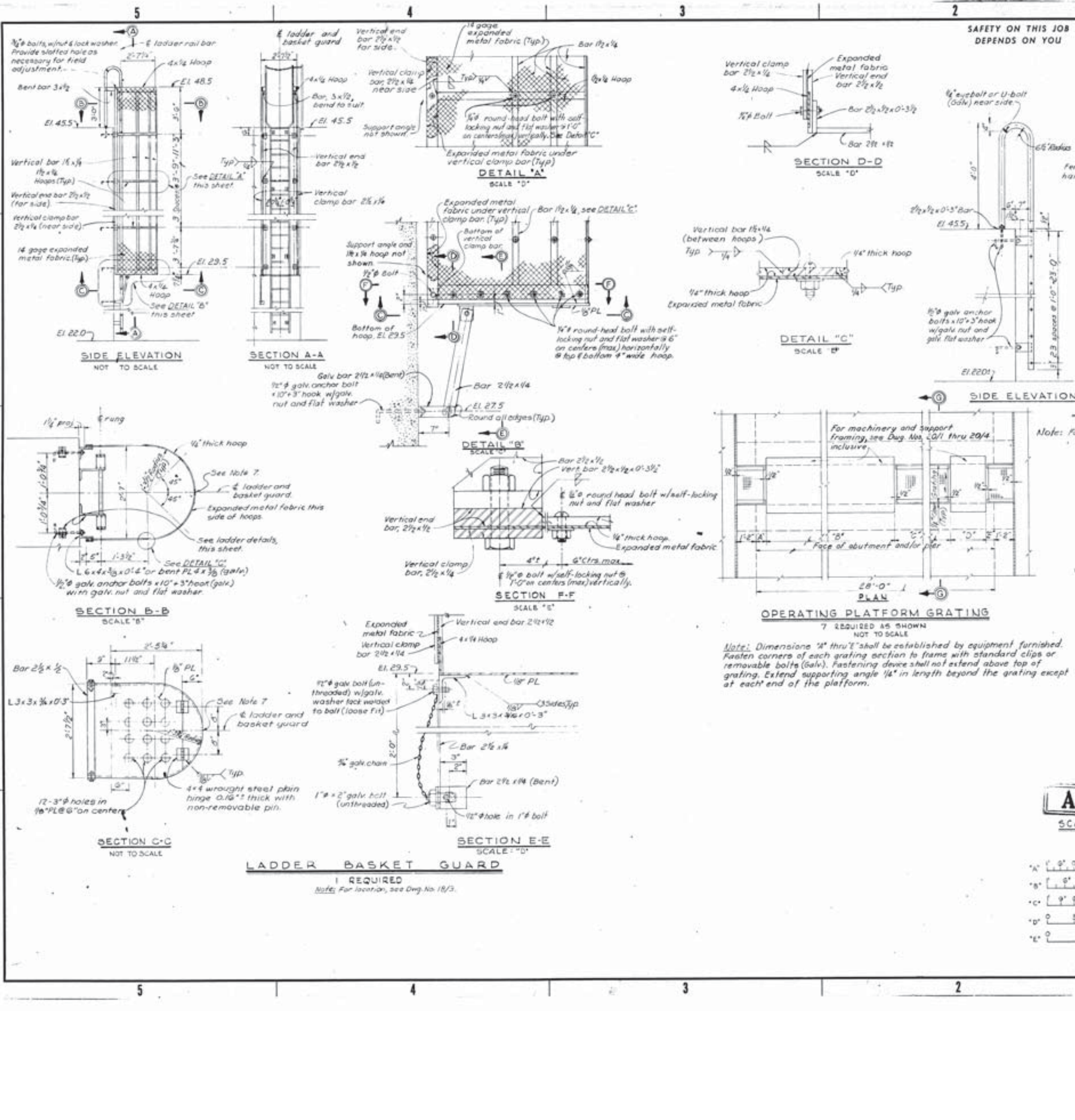
FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
METALS AND MISCELLANEOUS
FENCING DETAILS

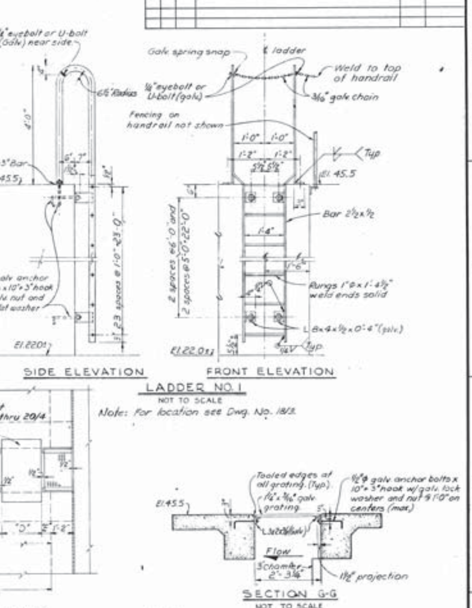
TAR | DWN. BY: RJM. J.T.L. CKK. | DATED: 18 FEBRUARY 1975 | F | 18/4
J.T.L. | RWR | SCALE: AS SHOWN | DATED: OCT 1974 | SHEET 27 OF 57

D. O. FILE NO. ~~605-31,898~~ 5/77 605-33,420 FRB 200-003

SAFETY ON THIS JOB DEPENDS ON YOU

REVISIONS				
NO. SYM	ZONE	DESCRIPTION	DATE	APPROVED
1	A-1	REVISED TO CONFORM TO AMEND. NO. 0002	3-3-75	





NOTES:

1. ALL MATERIAL SHALL BE STRUCTURAL STEEL, UNLESS OTHERWISE NOTED.
2. FOR "GENERAL WELDING NOTES," SEE DWG. NO. 16/1.
3. ALL GALVANIZED ITEMS SHALL BE GALVANIZED AFTER FABRICATION.
4. LADDERS AND BASKET GUARD SHALL BE GALVANIZED.
5. ALL BOLTS SHALL BE FURNISHED WITH ONE NUT AND WASHER, UNLESS OTHERWISE INDICATED. ALL BOLTS, NUTS AND WASHERS (EXCEPT THOSE NOTED AS CORR. RESIST.) SHALL BE GALVANIZED.
6. WHERE GALVANIZED ITEMS LOSE THEIR COATING DUE TO FIELD WELDING OR CHIPPING, GALVANIZING REPAIRS SHALL BE MADE IN ACCORDANCE WITH THE SPECIFICATIONS.
7. VERTICAL 2" LAP SPLICE IS ALLOWED IN EXPANDED METAL FABRIC AT BASKET GUARD ℄ ONLY, IF REQUIRED. PROVIDE CLAMP BAR 1 1/2" x 1/4" FROM EL. 29.5 TO EL. 48.5 FASTENED WITH 1/4" ∅ ROUND HEAD BOLTS @ 1'-0" ON CENTERS (MAX.).

AS BUILT

SCALE IN FEET

"A" 1' 6" 0 1' 2' 3'

"B" 1' 6" 0 1' 2'

"C" 1' 9" 6" 3" 0 1'

"D" 0 3" 6" 9" 1'

"E" 0 1" 2" 3" (0.25)

RECORD DRAWING NOTE

"Shall be" "Provide," "install," "Remove" etc., indicates work was accomplished under the contract

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
METALS AND MISCELLANEOUS
EMBEDDED METALS AND MISCELLANEOUS NO. 1

TAP | JTL, GFH | JTL | RWM

DATED: 13 FEBRUARY 1975

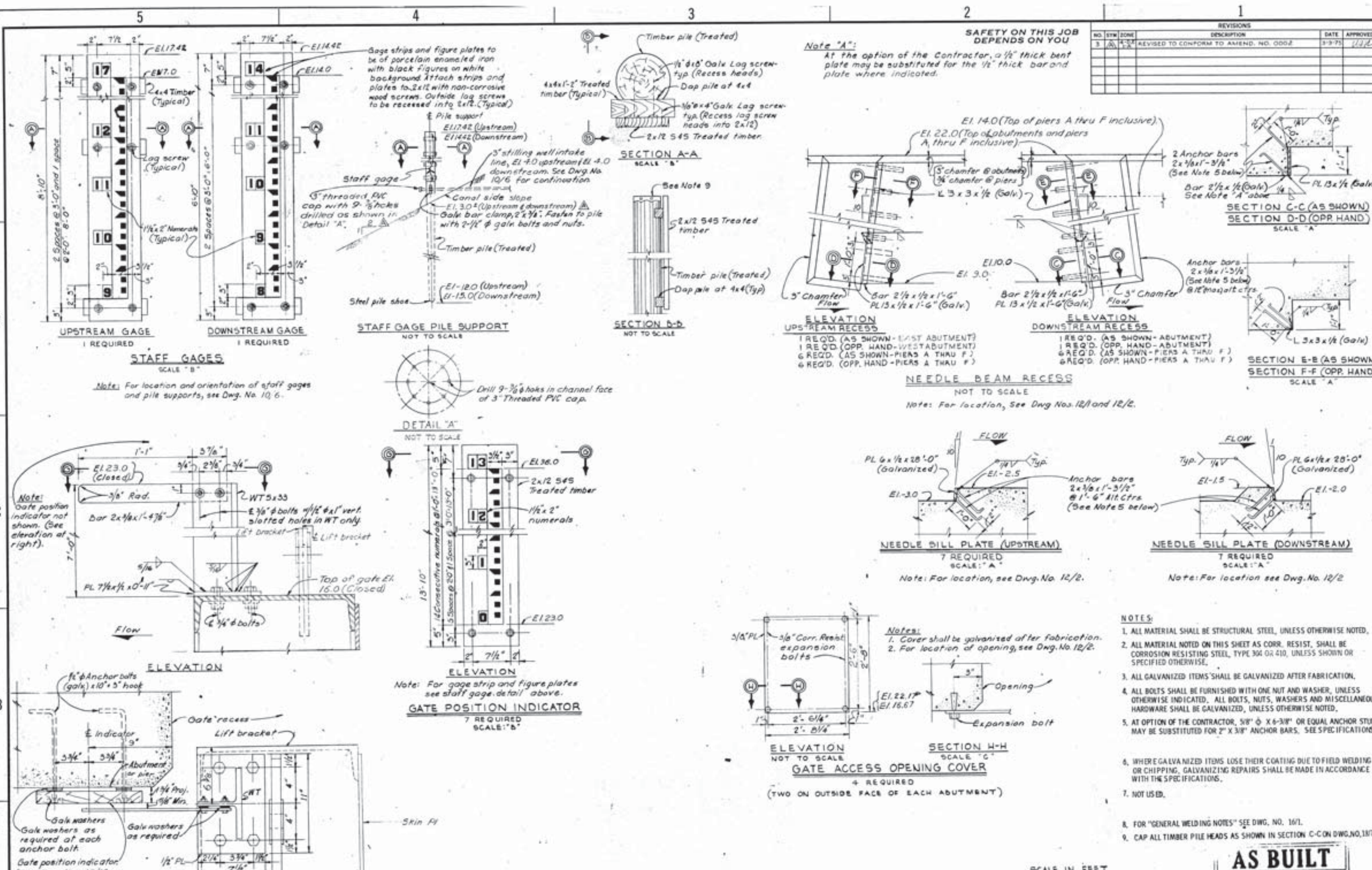
SCALE: AS SHOWN | 18/5 | SHEET 28 OF 57

D. O. FILE NO. 605-31,892

SAFETY ON THIS JOB DEPENDS ON YOU

Note "A": At the option of the Contractor, a 1/2" thick bent plate may be substituted for the 1/2" thick bar and plate where indicated.

NO.	SYM	ZONE	DESCRIPTION	DATE	APPROVED
3			REVISED TO CONFORM TO AMEND. NO. 0002		



NOTES:

1. ALL MATERIAL SHALL BE STRUCTURAL STEEL, UNLESS OTHERWISE NOTED.
2. ALL MATERIAL NOTED ON THIS SHEET AS CORR. RESIST. SHALL BE CORROSION RESISTING STEEL, TYPE 304 OR 410, UNLESS SHOWN OR SPECIFIED OTHERWISE.
3. ALL GALVANIZED ITEMS SHALL BE GALVANIZED AFTER FABRICATION.
4. ALL BOLTS SHALL BE FURNISHED WITH ONE NUT AND WASHER, UNLESS OTHERWISE INDICATED. ALL BOLTS, NUTS, WASHERS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED, UNLESS OTHERWISE NOTED.
5. AT OPTION OF THE CONTRACTOR, 5/8" ⌀ X 6-3/8" OR EQUAL ANCHOR STUDS MAY BE SUBSTITUTED FOR 2" X 3/8" ANCHOR BARS. SEE SPECIFICATIONS.
6. WHERE GALVANIZED ITEMS LOSE THEIR COATING DUE TO FIELD WELDING OR CHIPPING, GALVANIZING REPAIRS SHALL BE MADE IN ACCORDANCE WITH THE SPECIFICATIONS.
7. NOT USED.
8. FOR "GENERAL WELDING NOTES" SEE DWG. NO. 16/1.
9. CAP ALL TIMBER PILE HEADS AS SHOWN IN SECTION C-C ON DWG. NO. 18/7.

AS BUILT

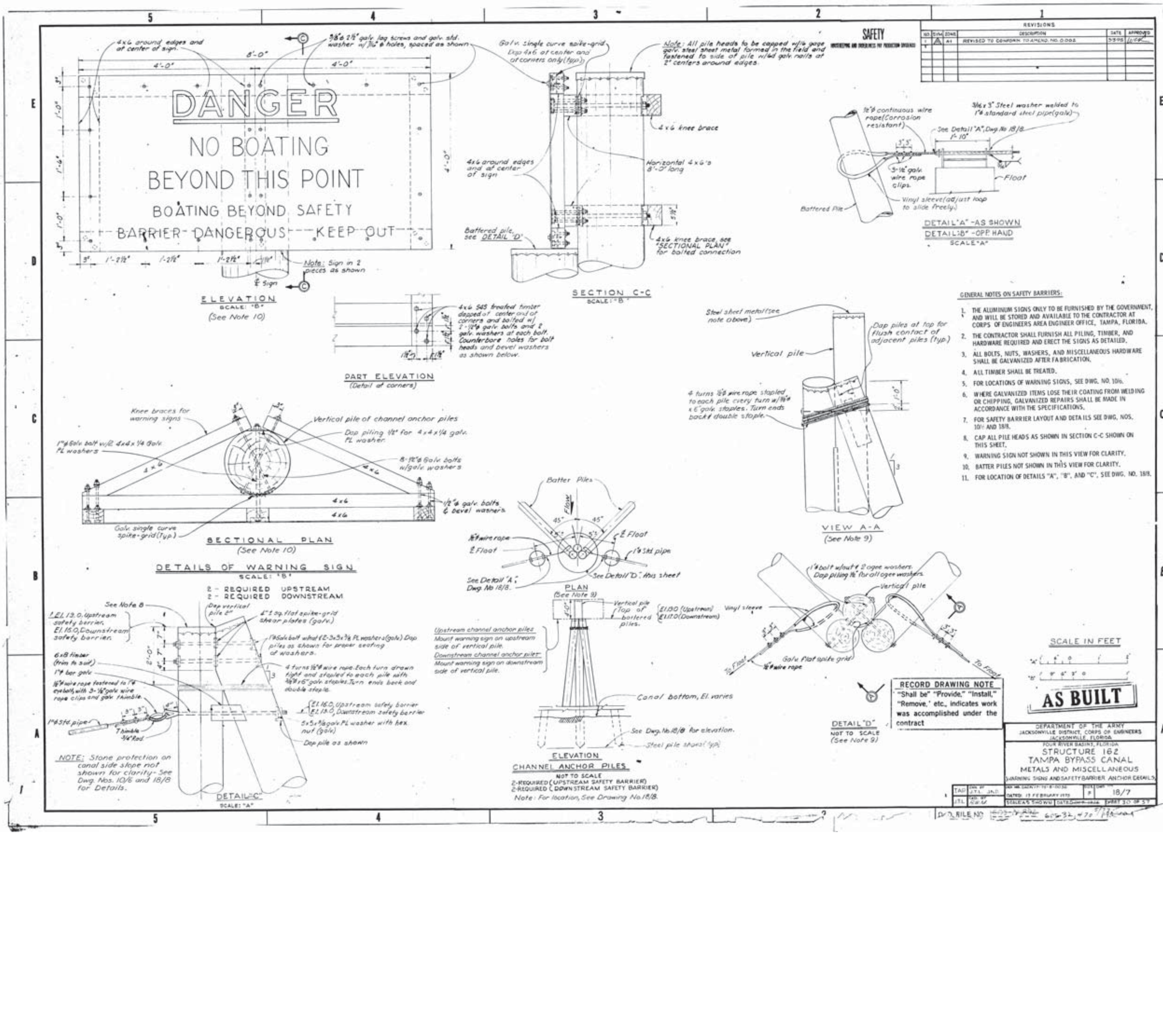
RECORD DRAWING NOTE
"Shall be" "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
METALS AND MISCELLANEOUS
EMBEDDED METALS AND MISCELLANEOUS NO.2

TAP | F.M.B., J.T.L. | DATED: 13 FEBRUARY 1975 | F | DWG. NO. 18/6
J.T.L. | A.W.M. | SCALE: AS SHOWN | DATED: OCT. 1974 | SHEET 29 OF 57

D. O. FILE NO. ~~605-31,998~~ 605-32,470 FRB 200-003



GENERAL NOTES ON SAFETY BARRIERS:

1. THE ALUMINUM SIGNS ONLY TO BE FURNISHED BY THE GOVERNMENT, AND WILL BE STORED AND AVAILABLE TO THE CONTRACTOR AT CORPS OF ENGINEERS AREA ENGINEER OFFICE, TAMPA, FLORIDA.
2. THE CONTRACTOR SHALL FURNISH ALL PILING, TIMBER, AND HARDWARE REQUIRED AND ERECT THE SIGNS AS DETAILED.
3. ALL BOLTS, NUTS, WASHERS, AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED AFTER FABRICATION.
4. ALL TIMBER SHALL BE TREATED.
5. FOR LOCATIONS OF WARNING SIGNS, SEE DWG. NO. 10/6.
6. WHERE GALVANIZED ITEMS LOSE THEIR COATING FROM WELDING OR CHIPPING, GALVANIZED REPAIRS SHALL BE MADE IN ACCORDANCE WITH THE SPECIFICATIONS.
7. FOR SAFETY BARRIER LAYOUT AND DETAILS SEE DWG. NOS. 10/6 AND 18/8.
8. CAP ALL PILE HEADS AS SHOWN IN SECTION C-C SHOWN ON THIS SHEET.
9. WARNING SIGN NOT SHOWN IN THIS VIEW FOR CLARITY.
10. BATTER PILES NOT SHOWN IN THIS VIEW FOR CLARITY.
11. FOR LOCATION OF DETAILS "A", "B", AND "C", SEE DWG. NO. 18/8.

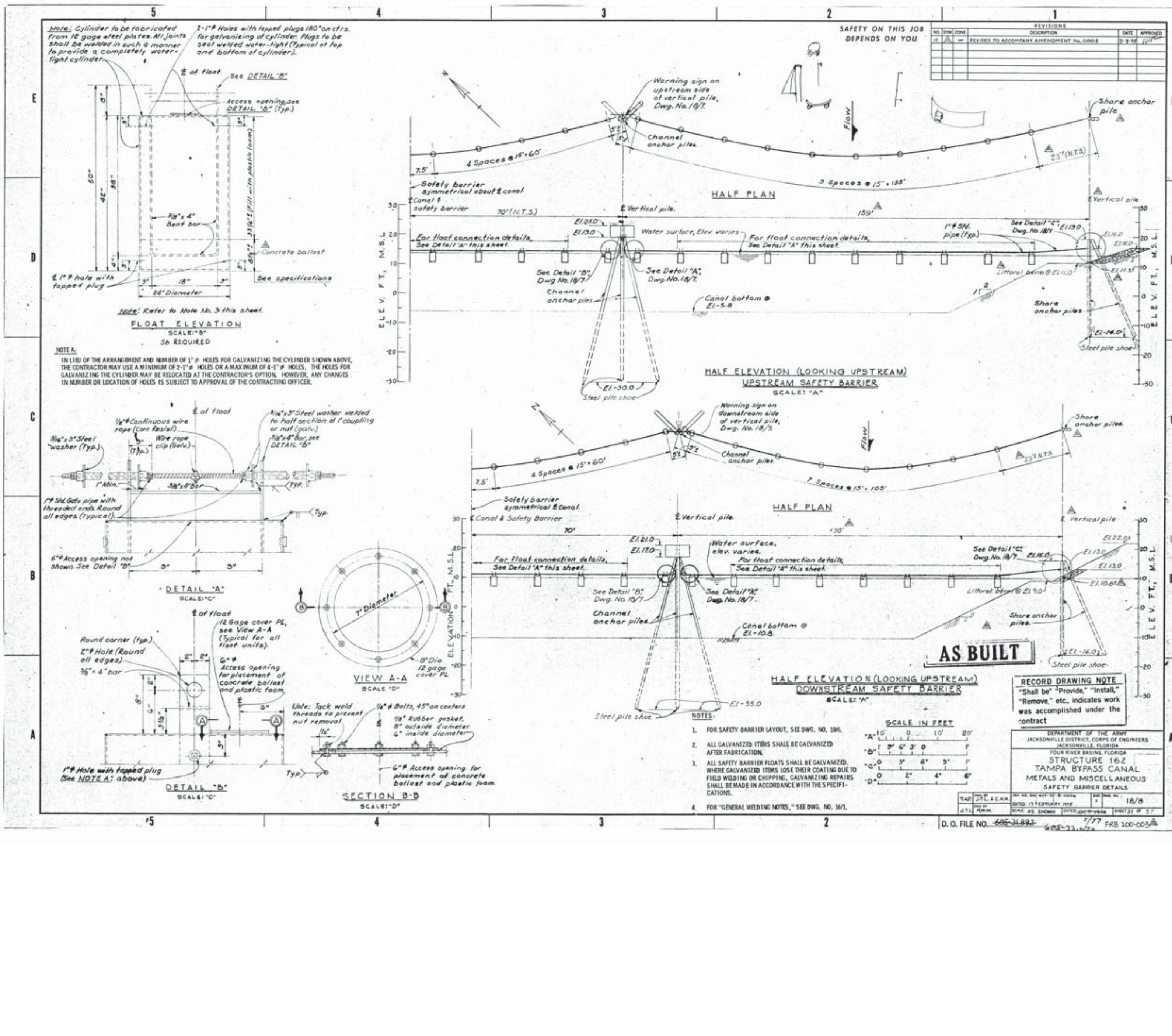
RECORD DRAWING NOTE
"Shall be" "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract

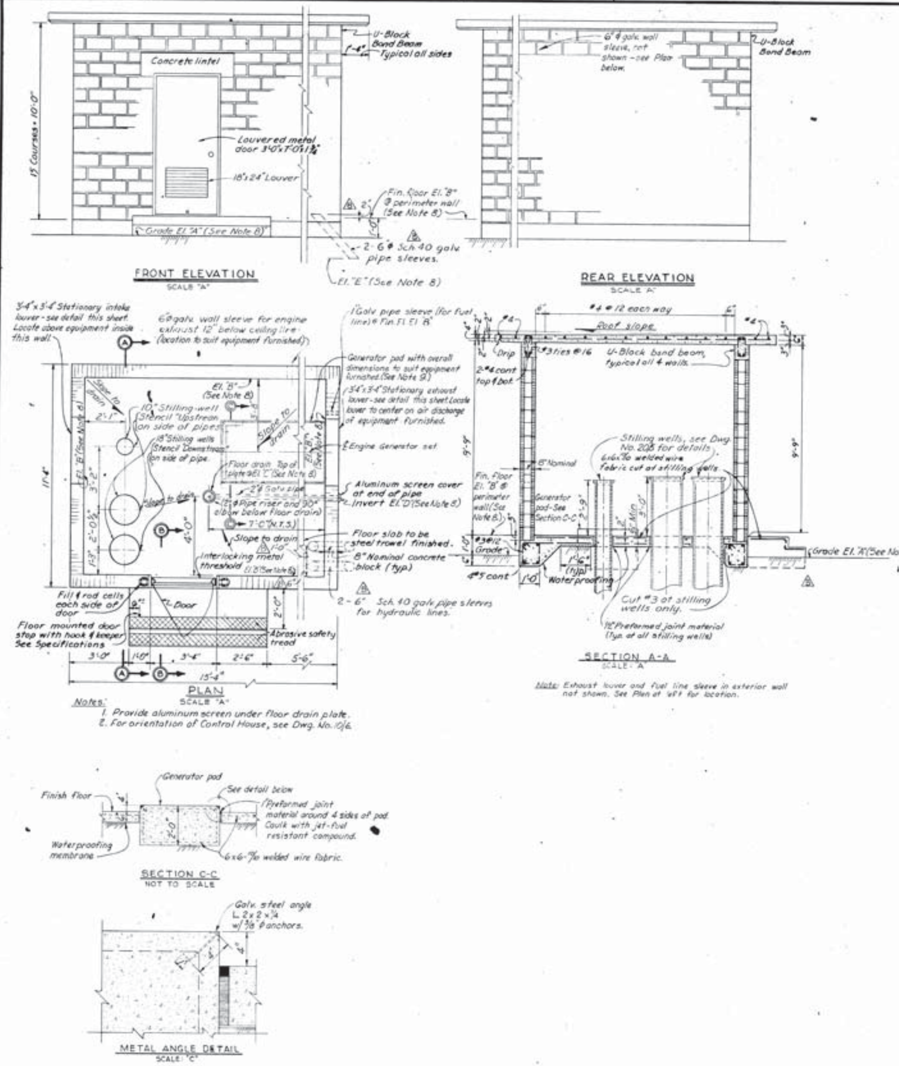
DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

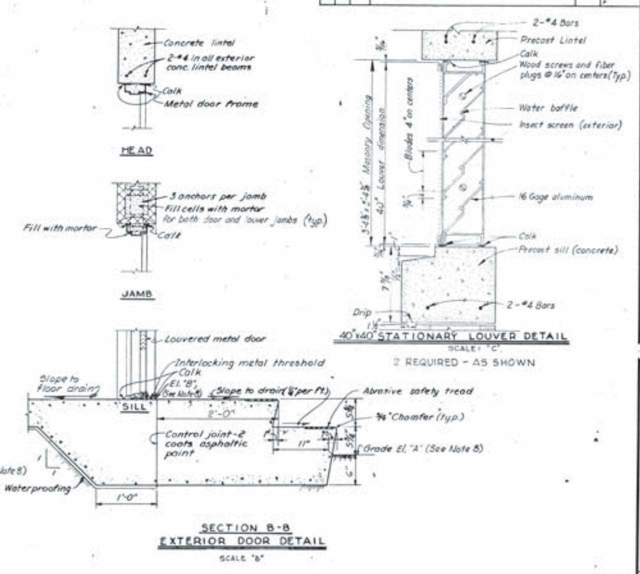
FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
METALS AND MISCELLANEOUS
WARNING SIGNS AND SAFETY BARRIER ANCHOR DETAILS

DATED: 17 FEBRUARY 1970
SCALE: AS SHOWN
18/7
SHEET 30 OF 57

D.O. FILE NO. 605-32,470


Note: Cylinder to be fabricated from 12 gage steel plates. All joints shall be welded in such a manner to provide a completely water-tight cylinder.
2-1" ϕ Holes with tapped plugs 180° on ctrs. for galvanizing of cylinder. Plugs to be seal welded water-tight (Typical at top and bottom of cylinder).
℄ of float
See DETAIL "B"
Access opening, see DETAIL "B" (Typ.)
3/8" x 4" Bent bar
Concrete ballast
See specifications
1" ϕ hole with tapped plug
24" Diameter
Note: Refer to Note No. 3 this sheet.
FLOAT ELEVATION
SCALE: "B"
56 REQUIRED
NOTE A:
IN LIEU OF THE ARRANGEMENT AND NUMBER OF 1" ϕ HOLES FOR GALVANIZING THE CYLINDER SHOWN ABOVE, THE CONTRACTOR MAY USE A MINIMUM OF 2-1" ϕ HOLES OR A MAXIMUM OF 4-1" ϕ HOLES. THE HOLES FOR GALVANIZING THE CYLINDER MAY BE RELOCATED AT THE CONTRACTOR'S OPTION. HOWEVER, ANY CHANGES IN NUMBER OR LOCATION OF HOLES IS SUBJECT TO APPROVAL OF THE CONTRACTING OFFICER.
SAFETY ON THIS JOB DEPENDS ON YOU
REVISIONS
REVISED TO ACCOMPANY AMENDMENT No. 0002
Warning sign on upstream side of vertical pile, Dwg. No. 18/7.
Channel anchor piles
Flow
Shore anchor pile
4 Spaces @ 15' = 60'
3 Spaces @ 15' = 135'
HALF PLAN
Safety barrier symmetrical about ℄ canal
℄ Canal & safety barrier
℄ Vertical pile
For float connection details, See Detail "A" this sheet.
Water surface, Elev. varies
See Detail "B", Dwg. No. 18/7.
See Detail "A", Dwg. No. 18/7.
Canal bottom @ El. -5.8
Littoral berm @ El. 11.0
Shore anchor piles
Steel pile shoe
HALF ELEVATION (LOOKING UPSTREAM)
UPSTREAM SAFETY BARRIER
SCALE: "A"
ELEV. FT., M.S.L.
Warning sign on downstream side of vertical pile, Dwg. No. 18/7.
Shore anchor piles
7 Spaces @ 15' = 105'
HALF PLAN
Canal bottom @ El. -10.8
HALF ELEVATION (LOOKING UPSTREAM)
DOWNSTREAM SAFETY BARRIER
SCALE: "A"
AS BUILT
RECORD DRAWING NOTE
"Shall be" "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract
1/8" ϕ Continuous wire rope (Corr. Resist)
Wire rope clip (Galv.)
3/16" x 3" Steel washer welded to half section of 1" coupling or nut (galv.)
3/8" x 4" bar, see DETAIL "B"
1" ϕ Std. Galv. pipe with threaded ends. Round all edges (typical).
6" ϕ Access opening not shown. See Detail "B"
DETAIL "A"
SCALE: "C"
7" Diameter
VIEW A-A
SCALE "D"
8" Dia. 12 gage cover PL
12 Gage cover PL, see View A-A (Typical for all float units).
Round corner (typ.)
1" ϕ Hole (Round all edges)
3/8" x 4" bar
Access opening for placement of concrete ballast and plastic foam.
1" ϕ Hole with tapped plug (See NOTE A: above)
DETAIL "B"
SCALE: "C"
Note: Tack weld threads to prevent nut removal.
1/4" ϕ Bolts, 45° on centers
1/8" Rubber gasket, 8" outside diameter, 6" inside diameter
6" ϕ Access opening for placement of concrete ballast and plastic foam.
SECTION B-B
SCALE: "D"
NOTES:
1. FOR SAFETY BARRIER LAYOUT, SEE DWG. NO. 10/6.
2. ALL GALVANIZED ITEMS SHALL BE GALVANIZED AFTER FABRICATION.
3. ALL SAFETY BARRIER FLOATS SHALL BE GALVANIZED. WHERE GALVANIZED ITEMS LOSE THEIR COATING DUE TO FIELD WELDING OR CHIPPING, GALVANIZING REPAIRS SHALL BE MADE IN ACCORDANCE WITH THE SPECIFICATIONS.
4. FOR "GENERAL WELDING NOTES," SEE DWG. NO. 16/1.
SCALE IN FEET
DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
METALS AND MISCELLANEOUS
SAFETY BARRIER DETAILS
18/8
D. O. FILE NO.





SAFETY ON THIS JOB DEPENDS ON YOU

REVISIONS					
NO.	SYM	ZONE	DESCRIPTION	DATE	APPROVED
1	A	A1	REVISED TO CONFORM TO AMEND NO. 0002	5-5-75	
6	A		REVISED NUMBER AND ORIENTATION OF PIPE SLEEVES THRU FLOOR SLAB FOR HYDRAULIC LINES. "MOD. SUFFIX 'A'"	4-8-75	

SCHEDULE OF ELEVATIONS FOR CONTROL HOUSE

STRUCTURE NO.	ELEV "A"	ELEV "B"	ELEV "C"	ELEV "D"	ELEV "E"
S-162	22.5	23.5	23.42	22.7	21.5

NOTES

1. PRINCIPAL LINTEL REINFORCEMENT 1-1/2" CLEAR.
2. PRINCIPAL FOOTING REINFORCEMENT 1-1/2" CLEAR; IF CONCRETE IS PLACED DIRECTLY AGAINST EARTH, 3" CLEAR.
3. REFER TO DWG. NO. 10(3) FOR "GENERAL MASONRY AND DESIGN NOTES."
4. FOR DETAILS OF STILLING WELLS BELOW CONTROL HOUSE, SEE DWG. NO. 205.
5. FOR LOCATION AND ORIENTATION OF CONTROL HOUSE, SEE DWG. NO. 10/6.
6. FOR LOCATION OF STILLING WELL LINES, SEE DWG. NO. 10/6.
7. ALL GALVANIZED ITEMS TO BE GALVANIZED AFTER FABRICATION.
8. FOR ELEVATIONS "A" THRU "E" INCLUSIVE REFERRED TO IN PLAN AND SECTIONS OF CONTROL HOUSE. SEE SCHEDULE OF ELEVATIONS FOR CONTHOL HOUSE THIS SHEET.
9. OVERALL DIMENSIONS FOR GENERATOR PAD SHALL BE ADJUSTED TO SUIT EQUIPMENT FURNISHED. CONTRACTOR SHALL PROVIDE ANCHOR BOLTS (4) OF SIZE AND LENGTH, NUMBER AND SPACING AS REQUIRED BY GENERATOR MANUFACTURER.

RECORD DRAWING NOTE
"Shall be" "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract

SCALE IN FEET

AS BUILT

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

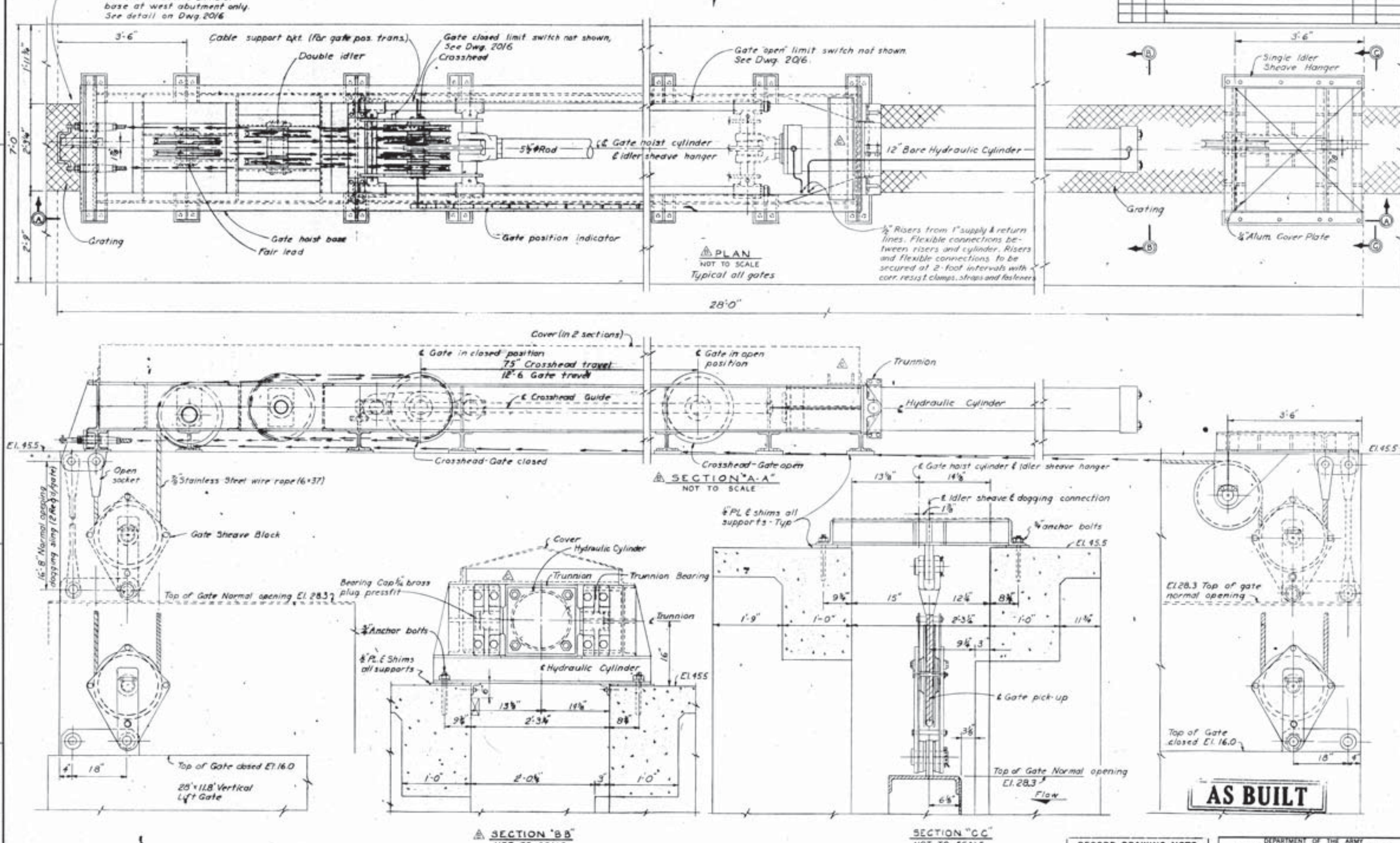
FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
METALS AND MISCELLANEOUS
CONTROL HOUSE – PLAN AND DETAILS

TAP | GJB JTL | J.T.L. R.W.M.
DATED: 15 FEBRUARY 1975
SCALE: AS SHOWN
18/3
SHEET 32 OF 57

D. O. FILE NO. ~~605-31,892~~ 605-33,470 FKB 200-003

SAFETY ON THIS JOB
DEPENDS ON YOU

REVISIONS					
NO.	SYM	ZONE	DESCRIPTION	DATE	APPROVED
1	△	A-1	REVISED TO CONFORM TO AMEND. NR. 0008	[illegible]	[illegible]
2	△	—	REVISED HYDRAULIC SYSTEM, MOD. SUFFIX "A"	[illegible]	[illegible]
3	△	[illegible]	ADDED CHANNEL AND ANCHOR BOLTS TO FRAME, [illegible] SUFFIX "D"	[illegible]	[illegible]



NOTES:

1. HOIST ASSEMBLY, SHEAVE BLOCKS, CABLE ARRANGEMENT AND LIMIT SWITCHES SHOWN ON THIS SHEET ARE TYPICAL FOR ALL GATES UNLESS OTHERWISE INDICATED.
2. (a.) ESTIMATED GATE WEIGHT 28,000#
   (b.) ESTIMATED HOIST LOAD 48,000#
   (c.) ESTIMATED PISTON LOAD 120,000#
3. 12" BORE HYDRAULIC CYLINDER 5½" ROD, 75" STROKE.
4. OPERATING PRESSURE 1500 P.S.I.
5. 7 GATES SHALL OPERATE SIMULTANEOUSLY AT 6 INCHES/MINUTE (± 10%) WHEN RAISING, 6 INCHES/MINUTE (± 10%) WHEN LOWERING.
6. DOGGING SLINGS SAME SIZE AND TYPE AS HOIST ROPES.

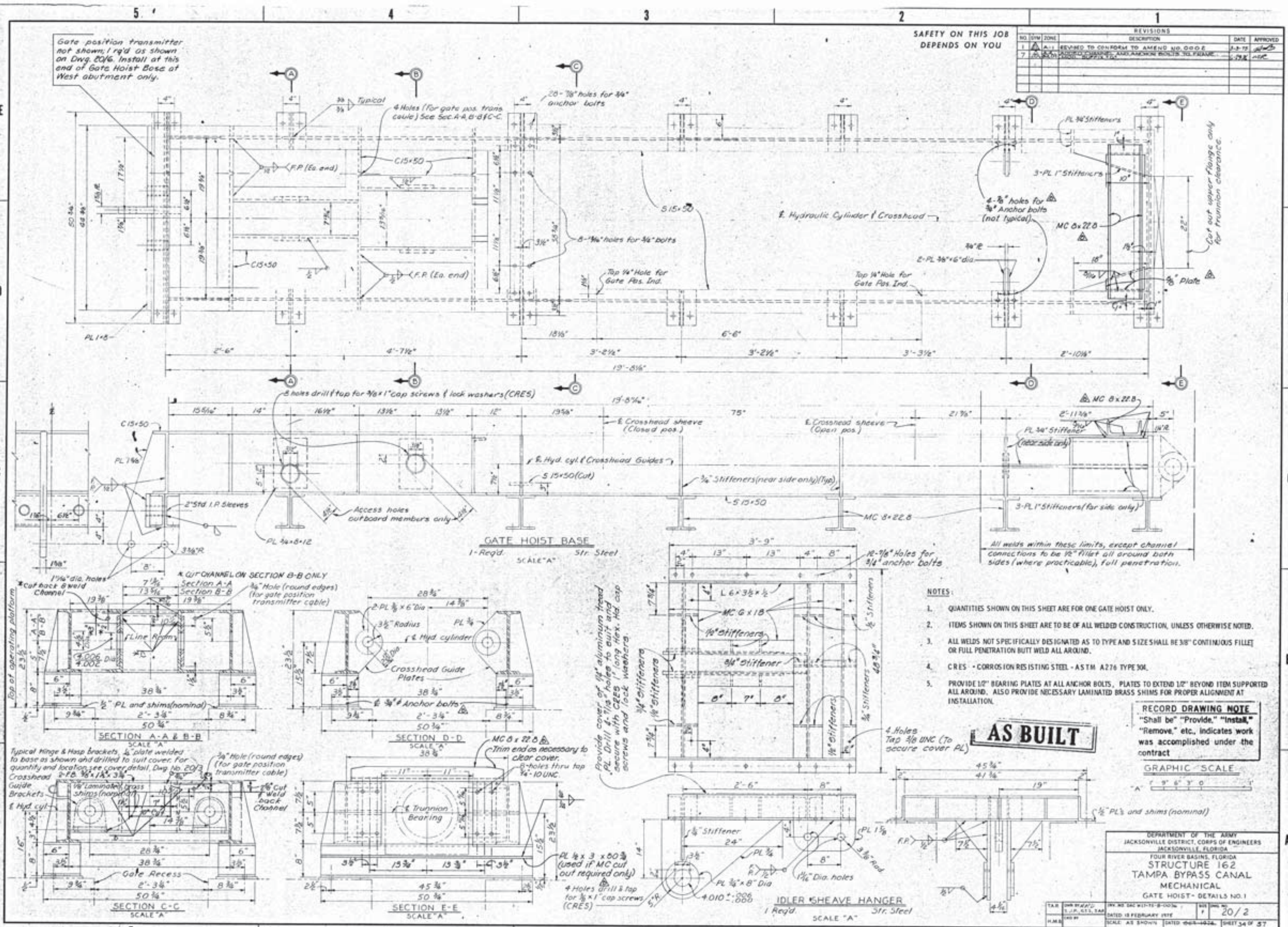
RECORD DRAWING NOTE
"Shall be" "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
MECHANICAL
GATE HOIST - GENERAL ARRANGEMENT

T.A.P. DWN BY J.L. S.J.P. H.M.B. CKD BY
INV. NO. DAC W17-75-B-0058
DATED: 13 FEBRUARY 1975
SCALE: NONE
DWG. NO. 20/1
SHEET 33 OF 57

D. O. FILE NO. ~~605-31,898~~ 5/77FRB200-003 605-32,470



NOTES:

1. QUANTITIES SHOWN ON THIS SHEET ARE FOR ONE GATE HOIST ONLY.
2. ITEMS SHOWN ON THIS SHEET ARE TO BE OF ALL WELDED CONSTRUCTION, UNLESS OTHERWISE NOTED.
3. ALL WELDS NOT SPECIFICALLY DESIGNATED AS TO TYPE AND SIZE SHALL BE 3/8" CONTINUOUS FILLET OR FULL PENETRATION BUTT WELD ALL AROUND.
4. CRES - CORROSION RESISTING STEEL - ASTM A276 TYPE 304.
5. PROVIDE 1/2" BEARING PLATES AT ALL ANCHOR BOLTS, PLATES TO EXTEND 1/2" BEYOND ITEM SUPPORTED ALL AROUND. ALSO PROVIDE NECESSARY LAMINATED BRASS SHIMS FOR PROPER ALIGNMENT AT INSTALLATION.

AS BUILT

RECORD DRAWING NOTE
"Shall be" "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract

GRAPHIC SCALE
"A" 1' 9" 6" 3" 0 1'

SAFETY ON THIS JOB DEPENDS ON YOU

REVISIONS

NO.	SYM	ZONE	DESCRIPTION	DATE	APPROVED
1	△	A-1	REVISED TO CONFORM TO AMEND NO. 0002	3-3-75	[illegible]
7	△	[illegible]	ADDED CHANNEL AND ANCHOR BOLTS TO FRAME; [illegible] SUFFIX TO	[illegible]	[illegible]

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

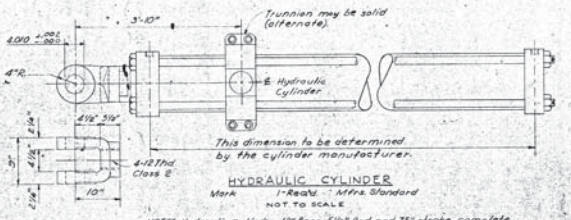
FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
MECHANICAL
GATE HOIST - DETAILS NO. 1

DATED 18 FEBRUARY 1976 — SCALE: AS SHOWN — DWG. NO. 20/2 — SHEET 34 OF 57

D. O. FILE NO. ~~605-31,892~~ 605-32,470 FRB 200-003

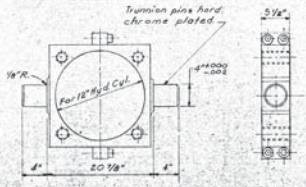
REVISIONS					
NO.	SYM	ZONE	DESCRIPTION	DATE	APPROVED
1	A-1		REVISED TO CONFORM TO AMEND. NO. 000 8	8-3-73	[illegible]
[illegible]	A-3A		REVISED HYDRAULIC SYSTEM, MOD. SUFFIX "A"	4-8-74	[illegible]

SAFETY ON THIS JOB DEPENDS ON YOU

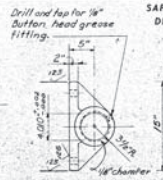


HYDRAULIC CYLINDER
Mark 1-Req'd. Mfrs. Standard
NOT TO SCALE

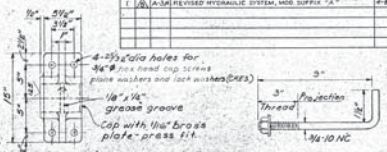
NOTE: Hydraulic cylinder -12" Bore, 5½" Rod and 75" stroke complete as shown with clevis and trunnion (See detail)



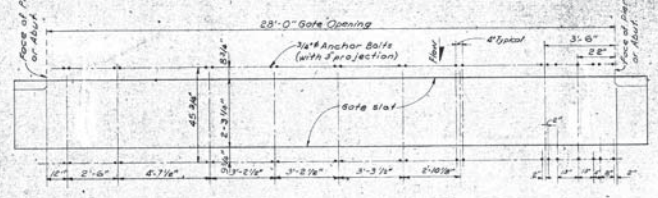
HYDRAULIC CYLINDER TRUNNION
Mark 1-Req'd Steel
NOT TO SCALE



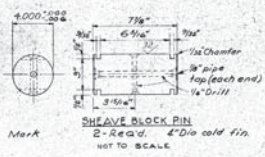
TRUNNION BEARING
Mark 2 Req'd Ductile iron
NOT TO SCALE



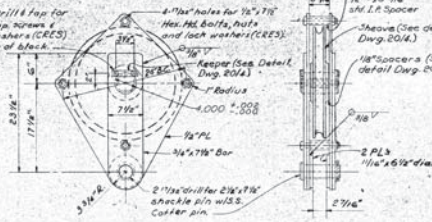
ANCHOR BOLT
Mark 40 Req'd Bolt steel
NOT TO SCALE



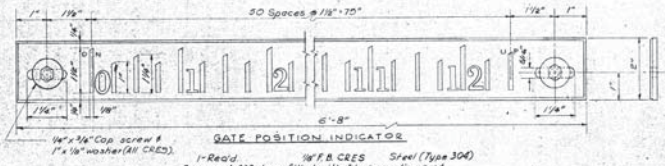
ANCHOR BOLT SETTING
NOT TO SCALE



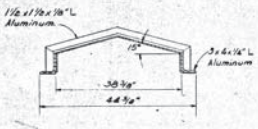
Mark
SHEAVE BLOCK PIN
2-Req'd. 4" Dia cold fin.
NOT TO SCALE



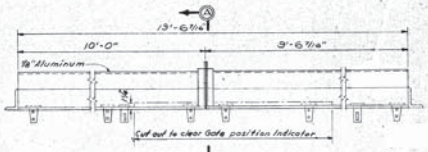
SHEAVE BLOCK
Mark 2-Req'd. Str. Stl. ASTM A36
NOT TO SCALE



GATE POSITION INDICATOR
1-Req'd. ⅛" F.B. CRES Steel (Type 304)
Engraved, .030 deep, filled with Black acrylic paint.
NOT TO SCALE



SECTION A-A



COVER
Mark 1-Req'd. (2-Section) Aluminum
NOT TO SCALE

Note: Cover to be in two (2) sections all welded construction unless otherwise noted. Each section to have 4 extra heavy brass hinges and one extra heavy brass hasp secured to cover with brass countersunk rivets. Hinges and hasps to have CRES pins. Cover to be installed on base (See detail) with CRES Hex. hd. machine screws, nuts and lock washers.

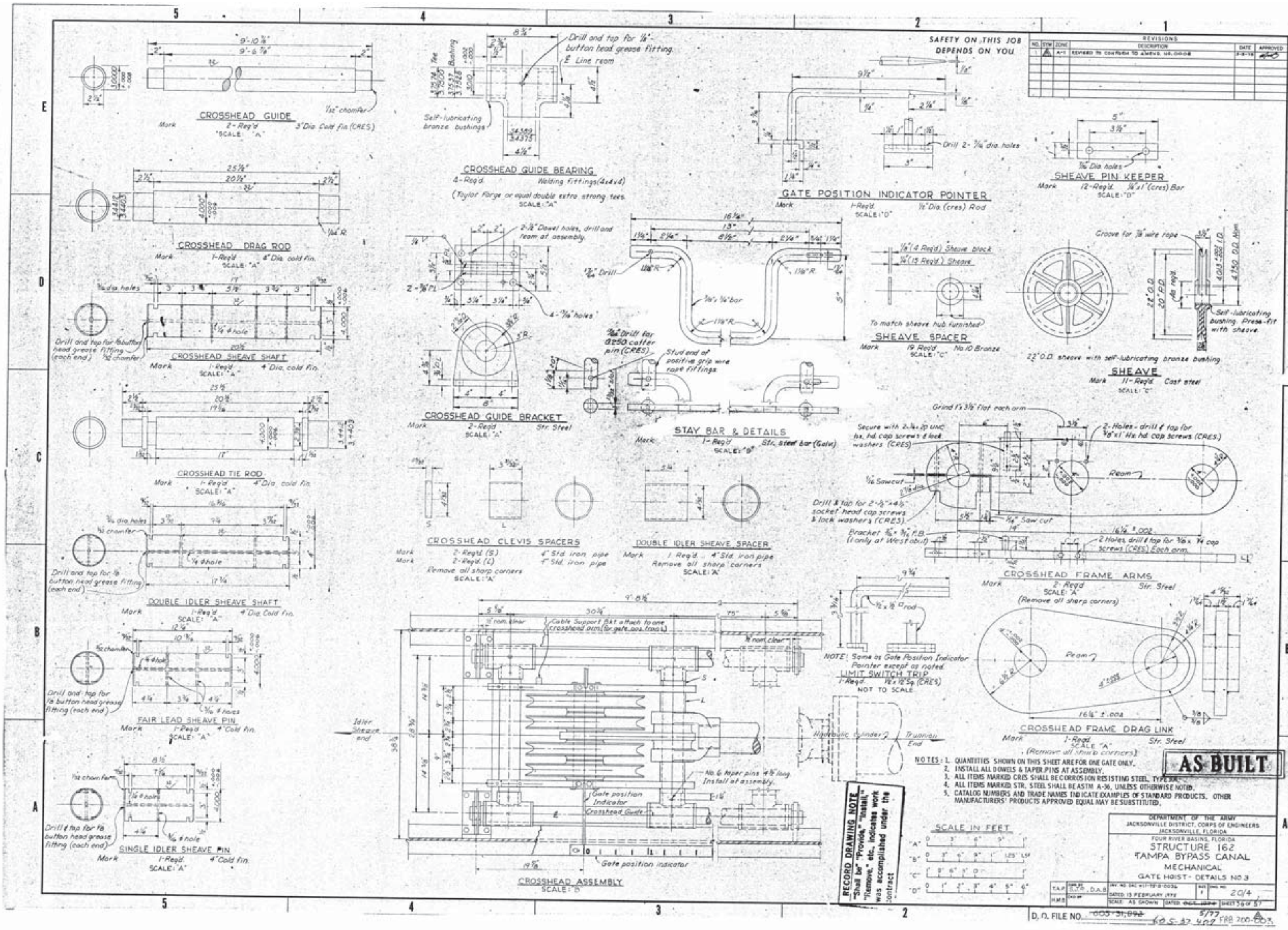
AS BUILT

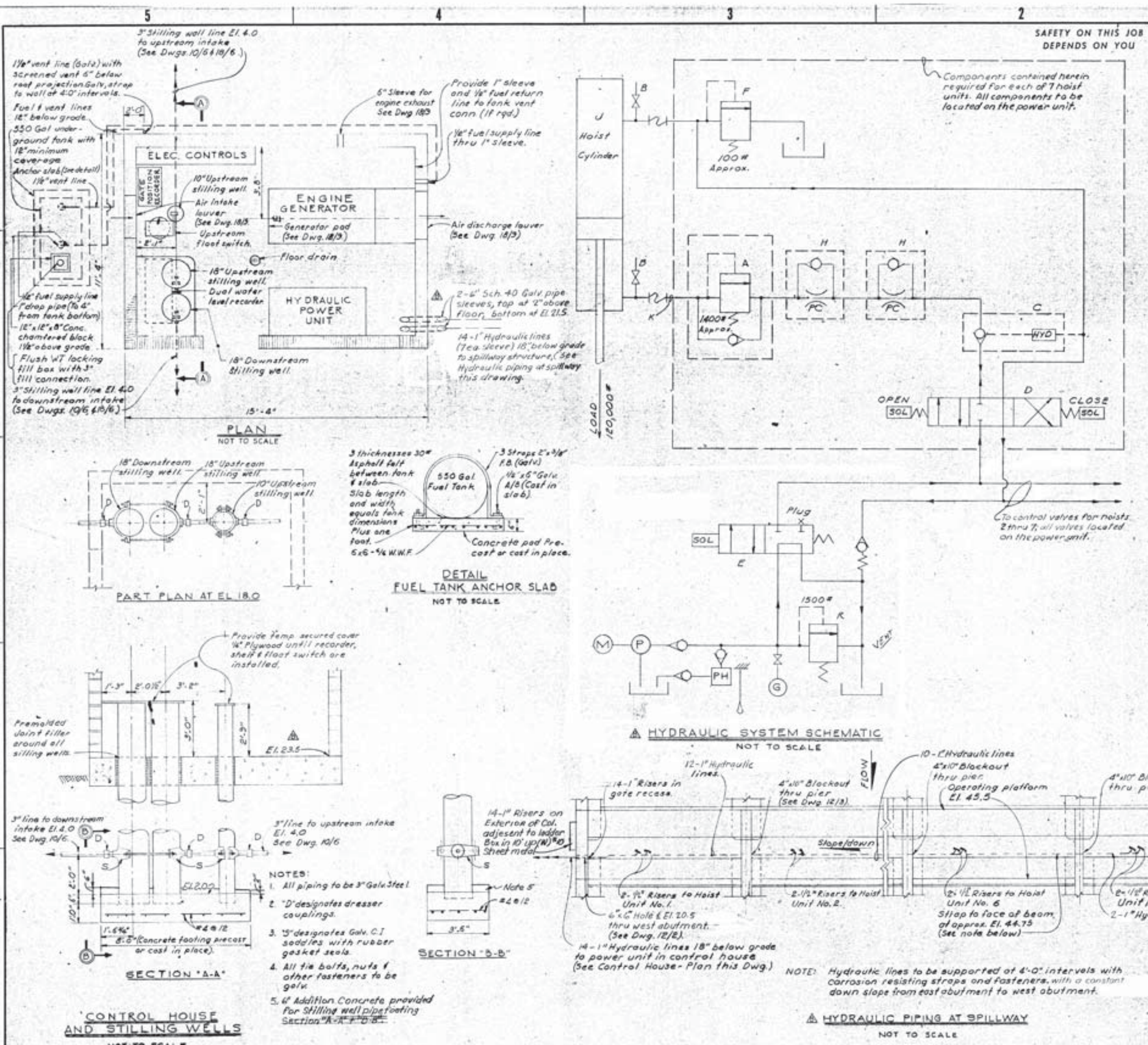
RECORD DRAWING NOTE
"Shall be" "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
MECHANICAL
GATE HOIST - DETAILS NO. 2

TAP	DWG BY J.P.	CK'D	DWG NO. 20/3
HMB	DES BY	SCALE NOTED	DATED 15 FEBRUARY 1972 SHEET 33 OF 57

D. O. FILE NO. ~~605-31.892~~ 5/77 605-32.47e FRB 200-003


SAFETY ON THIS JOB DEPENDS ON YOU
REVISIONS
CROSSHEAD GUIDE
Mark 2-Req'd 5" Dia. Cold fin. (CRES) SCALE "A"
CROSSHEAD GUIDE BEARING
4-Req'd. Welding fittings (4x4x4)
(Taylor Forge or equal double extra strong tees.)
SCALE "A"
GATE POSITION INDICATOR POINTER
Mark 1-Req'd ½" Dia. (cres) Rod SCALE "D"
SHEAVE PIN KEEPER
Mark 12-Req'd. ⅜"x1" (cres) Bar SCALE "D"
CROSSHEAD DRAG ROD
Mark 1-Req'd 4" Dia. cold fin. SCALE "A"
CROSSHEAD SHEAVE SHAFT
Mark 1-Req'd 4" Dia. cold fin. SCALE "A"
CROSSHEAD GUIDE BRACKET
Mark 2-Req'd Str. Steel SCALE "A"
STAY BAR & DETAILS
Mark 1-Req'd Str. steel bar (Galv) SCALE "D"
SHEAVE SPACER
Mark 19 Req'd No.10 Bronze SCALE "C"
SHEAVE
Mark 11-Req'd. Cast steel SCALE "C"
22" O.D. sheave with self-lubricating bronze bushing
CROSSHEAD TIE ROD
Mark 1-Req'd 4" Dia. cold fin. SCALE "A"
CROSSHEAD CLEVIS SPACERS
Mark 2-Req'd. (S) 4" Std. iron pipe
Mark 2-Req'd. (L) 4" Std. iron pipe
Remove all sharp corners SCALE "A"
DOUBLE IDLER SHEAVE SPACER
Mark 1 Req'd. 4" Std. iron pipe
Remove all sharp corners SCALE "A"
DOUBLE IDLER SHEAVE SHAFT
Mark 1-Req'd 4" Dia. Cold fin. SCALE "A"
CROSSHEAD FRAME ARMS
Mark 2-Req'd Str. Steel SCALE "A"
(Remove all sharp corners)
LIMIT SWITCH TRIP
1-Req'd. ½"x½" Sq. (CRES)
NOT TO SCALE
NOTE: Same as Gate Position Indicator Pointer except as noted.
FAIR LEAD SHEAVE PIN
Mark 1-Req'd 4" Cold fin. SCALE "A"
SINGLE IDLER SHEAVE PIN
Mark 1-Req'd. 4" Cold fin. SCALE "A"
CROSSHEAD ASSEMBLY
SCALE "B"
CROSSHEAD FRAME DRAG LINK
Mark 1-Req'd Str. Steel SCALE "A"
(Remove all sharp corners)
NOTES: 1. QUANTITIES SHOWN ON THIS SHEET ARE FOR ONE GATE ONLY.
2. INSTALL ALL DOWELS & TAPER PINS AT ASSEMBLY.
3. ALL ITEMS MARKED CRES SHALL BE CORROSION RESISTING STEEL, TYPE 304.
4. ALL ITEMS MARKED STR. STEEL SHALL BE ASTM A-36, UNLESS OTHERWISE NOTED.
5. CATALOG NUMBERS AND TRADE NAMES INDICATE EXAMPLES OF STANDARD PRODUCTS. OTHER MANUFACTURERS' PRODUCTS APPROVED EQUAL MAY BE SUBSTITUTED.
AS BUILT
RECORD DRAWING NOTE
"Shall be" "Provide," "Install," "Remove," etc. indicates work was accomplished under the contract
SCALE IN FEET
DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
MECHANICAL
GATE HOIST - DETAILS NO.3
DATED 13 FEBRUARY 1972
SCALE: AS SHOWN
20/4
SHEET 36 OF 57
D. O. FILE NO. 605-37,409 FRB 200-003



REVISIONS					
NO.	SYM	ZONE	DESCRIPTION	DATE	APPROVED
1	△	A-1	REVISED TO CONFORM TO AMEND. NO. 0002		
6	△	—	REVISED HYDRAULIC SYSTEM, MOD. SUFFIX "A"		

HYDRAULIC SYSTEM

LEGEND:

A. COUNTER BALANCE VALVE

B. AIR BLEEDER VALVE

C. PILOT OPERATED CHECK VALVE

D. DIRECTIONAL CONTROL VALVE, DOUBLE SOLENOID ACTUATED, SPRING CENTERED

E. UNLOADING VALVE, SOLENOID ACTUATED, SPRING OFFSET, TIME DELAYED

F. GATE CLOSE RELIEF VALVE

G. PRESSURE GAGE, 0-3000 P.S.I.

H. FLOW CONTROL VALVE, MANUALLY VARIABLE, PRESSURE COMPENSATED

J. HYDRAULIC CYLINDER, 12" BORE, 5½" D. ROD, 6' - 3" STROKE

△ K: ALL TUBING TO BE STAINLESS STEEL. SIZE AND WALL THICKNESS AS SHOWN HEREON AND IN SPECIFICATIONS.

M. ELECTRIC MOTOR, 240V, 3Ø, 10 H.P., 1800 R.P.M.

P. PUMP, RATED 8.1 G.P.M. AT 1500 P.S.I. AND 1800 R.P.M.

PH. HAND PUMP

R. SYSTEM RELIEF VALVE

HYDRAULIC SYSTEM

NOTES:

1. WITH THIS SYSTEM OIL IS PUMPED TO THE CYLINDER WHEN GATE IS EITHER RAISED OR LOWERED.
2. COUNTER BALANCE VALVE "A" SHALL BE SET (1) TO CLOSE AT THE MINIMUM PRESSURE REQUIRED TO HOLD GATE OPEN AT ANY POSITION, AND (2) TO OPEN WHEN THIS PRESSURE IS EXCEEDED IN ORDER TO LOWER THE GATE. RELIEF VALVE "F" SHALL BE SET AT MINIMUM PRESSURE REQUIRED TO CLOSE GATE.
3. DRAIN LINES TO COMPONENTS REQUIRING SAME SHALL BE PROVIDED ALTHOUGH NOT SHOWN.
4. AIR BLEEDING VALVES SHALL BE PROVIDED AT HIGH POINTS OF SYSTEM.
5. △ EXCEPT FOR HYDRAULIC CYLINDERS, AIR BLEEDER VALVES AND FLEXIBLE CONNECTIONS, ALL HYDRAULIC SYSTEM COMPONENTS SHOWN IN THE SCHEMATIC SHALL BE LOCATED ON THE HYDRAULIC POWER UNIT IN THE CONTROL HOUSE.

AS BUILT

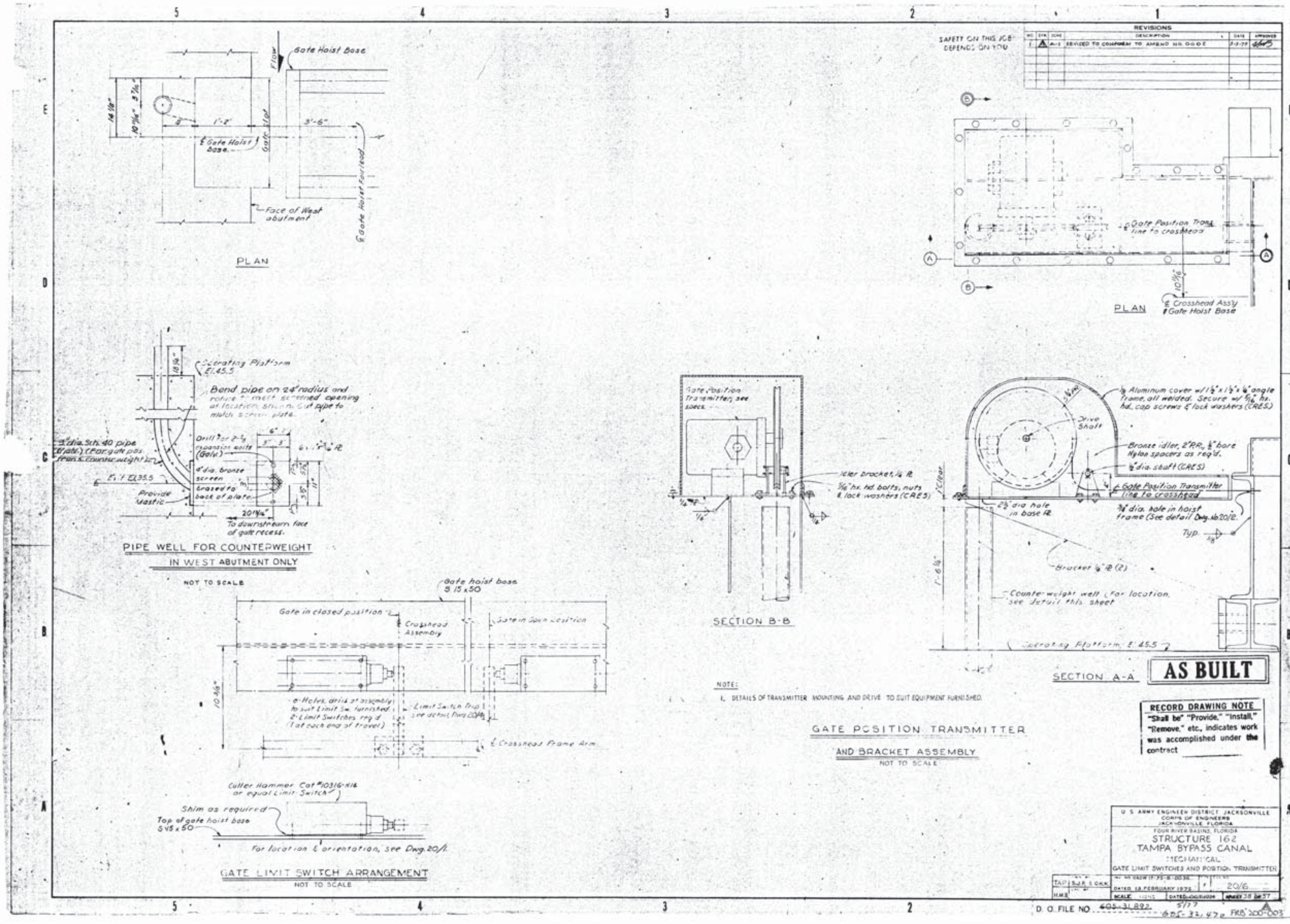
RECORD DRAWING NOTE
"Shall be" "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract

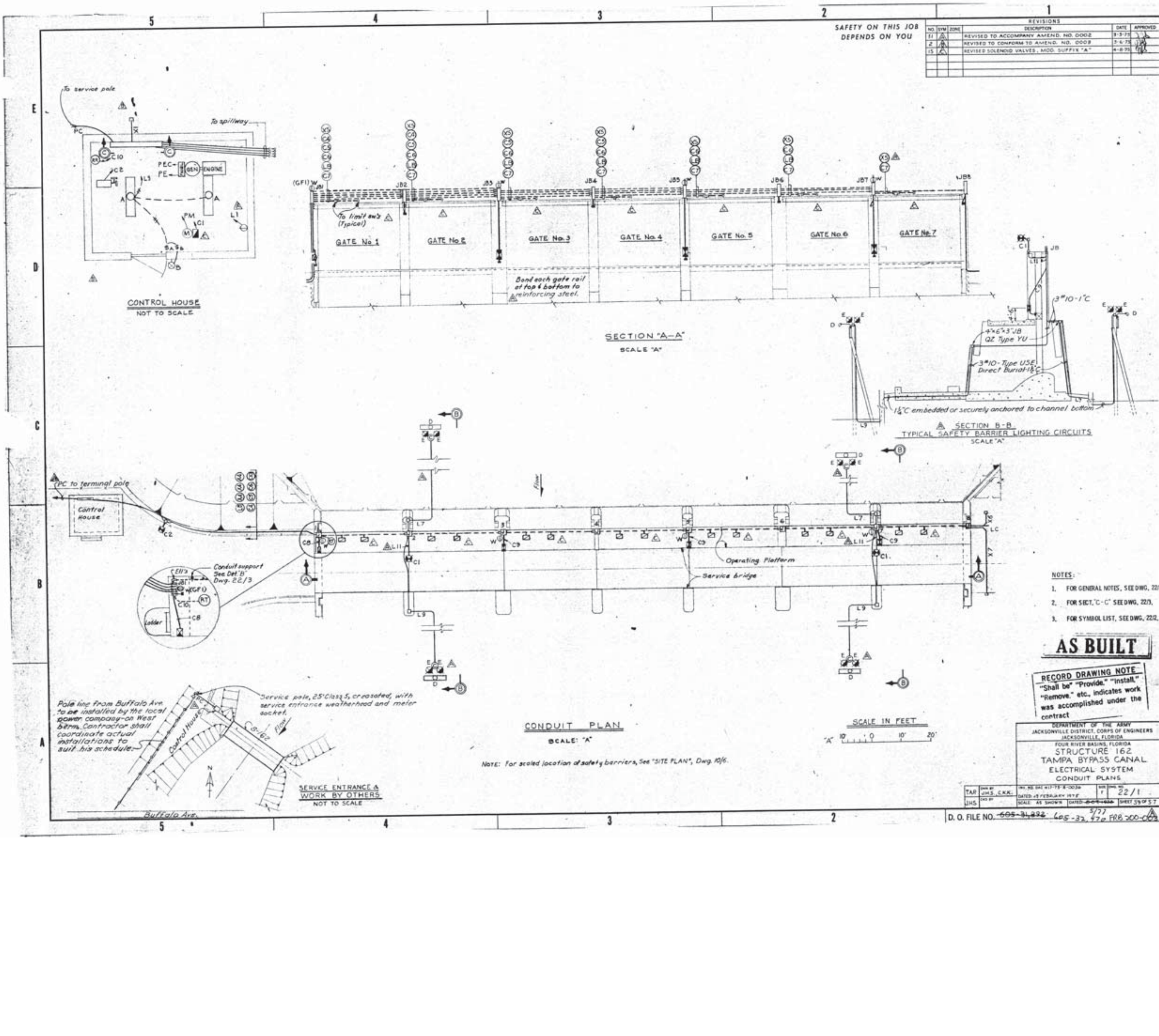
DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
MECHANICAL
HYDRAULIC DIAGRAM AND CONTROL HOUSE

T.A.P. | DRN BY S.J.R. & C.K.K. | DATED: 13 FEBRUARY 1975 | DWG NO. 20/5
H.M.B. | CKD BY | SCALE: NONE | SHEET 37 OF 51

D. O. FILE NO. ~~605-31,892~~ 605.37,470 5/77 FRB 200-003


SAFETY ON THIS JOB DEPENDS ON YOU
REVISIONS
REVISED TO CONFORM TO AMEND NO. 0005
PLAN
Gate Hoist Base
Flow
Face of West abutment
PIPE WELL FOR COUNTERWEIGHT
IN WEST ABUTMENT ONLY
NOT TO SCALE
Operating Platform El. 45.5
Bend pipe on 24" radius and rotate to meet screened opening at location shown. Cut pipe to match screen plate.
4" dia. bronze screen brazed to back of plate.
Provide Mastic
To downstream face of gate recess.
Gate hoist base S 15 x 50
Gate in closed position
Crosshead Assembly
Gate in open position
Limit Switch Trip see detail Dwg. 20/6
Crosshead Frame Arm
Cutler Hammer Cat #10316-H16 or equal Limit Switch
Shim as required
Top of gate hoist base S 15 x 50
For location & orientation, see Dwg. 20/1.
GATE LIMIT SWITCH ARRANGEMENT
NOT TO SCALE
Gate Position Transmitter, see specs.
Idler bracket, ¼ R
SECTION B-B
NOTE:
1. DETAILS OF TRANSMITTER MOUNTING AND DRIVE TO SUIT EQUIPMENT FURNISHED.
GATE POSITION TRANSMITTER
AND BRACKET ASSEMBLY
NOT TO SCALE
Gate Position Trans. line to crosshead
PLAN
Crosshead Ass'y & Gate Hoist Base
Drive Shaft
Bronze idler, 2" RR, ½" bore Nylon spacers as req'd.
½" dia. shaft (CRES)
Gate Position Transmitter line to crosshead
Counter-weight well (For location, see detail this sheet
Operating Platform El. 45.5
SECTION A-A
AS BUILT
RECORD DRAWING NOTE
"Shall be" "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract
U. S. ARMY ENGINEER DISTRICT JACKSONVILLE
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
MECHANICAL
GATE LIMIT SWITCHES AND POSITION TRANSMITTER
DATED 18 FEBRUARY 1975
20/6
D. O. FILE NO. 605-31,892
605-32,470
FRB 200-003



REVISIONS

NO.	SYM	ZONE	DESCRIPTION	DATE	APPROVED
11	1		REVISED TO ACCOMPANY AMEND. NO. 0002	3-3-75	
2	2		REVISED TO CONFORM TO AMEND. NO. 0003	3-6-75	
15	3		REVISED SOLENOID VALVES, MOD. SUFFIX "A"	4-8-75	

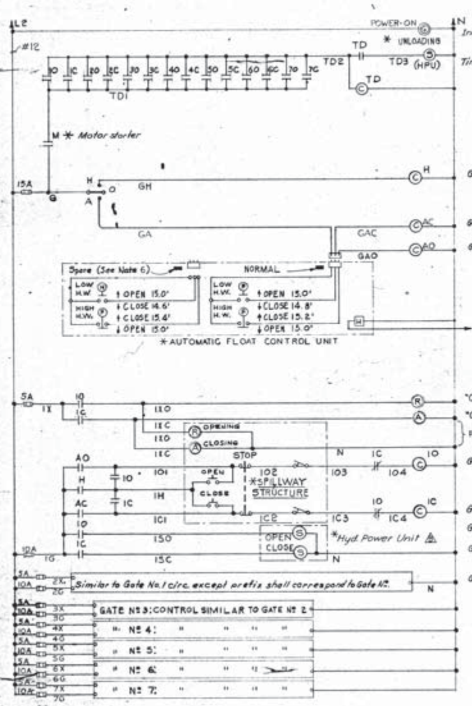
DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
ELECTRICAL SYSTEM
CONDUIT PLANS

DWN BY: JHS, CKK. — TAR — JHS
DATED: 19 FEBRUARY 1975
SCALE: AS SHOWN
DWG. NO. 22/1
SHEET 39 OF 57

D. O. FILE NO. ~~605-31,892~~ 605-32,470 5/77 FRB 200-003

SAFETY ON THIS JOB DEPENDS ON YOU



GATE CONTROL CIRCUITS

NOTES:

1. * AN ASTERICK * DENOTES EQUIPMENT REMOTELY LOCATED FROM RELAY CABINET.

2. A TIME DELAY CIRCUIT SHALL PROVIDE A 5 SECOND ENERGINATION DELAY TO THE UNLOADING SOLENOID VALVE SO AS TO PERMIT UNLOADED START FOR THE HYDRAULIC POWER UNIT MOTOR.

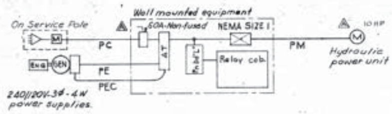
3. NOT USED.

4. OPENING-CLOSING INDICATOR LIGHTS FOR EACH GATE SHALL BE PROVIDED ON THE RELAY CABINET DOOR.

5. OPEN-CLOSE-STOP MANUAL CONTROL NEMA 4 PUSHBUTTON STATIONS SHALL BE PROVIDED AT THE SPILLWAY STRUCTURE ADJACENT TO EACH GATE. OPENING-CLOSING INDICATOR LIGHTS SHALL ALSO BE PROVIDED FOR EACH PB STATION, EITHER IN COMBINATION WITH OPEN-CLOSE PUSHBUTTONS OR AS SEPARATE UNITS. A SUITABLE FLUSH MOUNTED NEMA 4 VANDELISM PROTECTIVE CABINET SHALL BE PROVIDED FOR THE P. B. UNITS.

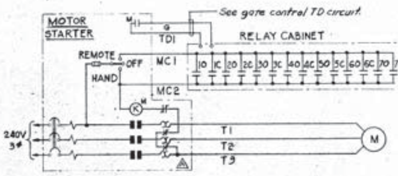
6. THE AUTOMATIC FLOAT CONTROL UNIT PROVIDED WITH 2 SETS OF HIGH AND LOW FLOAT OPERATED SWITCHES OPERATED VIA A LOST MOTION CLUTCH ARRANGEMENT SHALL OPEN OR CLOSE SWITCHES ON RISING (↑) OR FALLING (↓) WATER LEVEL TO MAINTAIN HEADWATER BETWEEN PREDETERMINED ELEVATIONS AS INDICATED. SWITCHES SHALL BE ADJUSTABLE SO AS TO PERMIT FIELD CHANGES IN OPERATIONAL WATER LEVELS. SPARE FLOAT UNITS SHALL NOT BE CONNECTED TO THE TRANSFER PLUG, AND THE PLUG SHALL BE PROVIDED WITH A BLANK UNENGRAVED NAMEPLATE.

7. WIRING SHALL BE AWG NO. 14 UNLESS OTHERWISE NOTED.

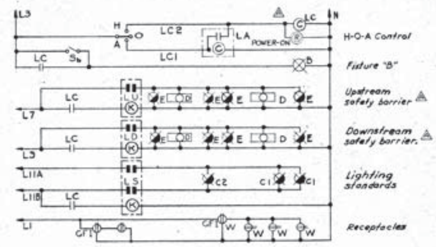


ONE LINE DIAGRAM

THE AUTOMATIC TRANSFER SWITCH SHALL AUTOMATICALLY START THE ENGINE-GENERATOR UNIT UPON FAILURE OF THE COMMERCIAL POWER SUPPLY.



HYDRAULIC POWER UNIT



EXTERIOR LIGHTING CIRCUITS

IN GENERAL, AWG NO. 12 WIRING SHALL BE PROVIDED IN THE CONTROL HOUSE AND FOR SHORT CONNECTIONS FROM ADJACENT BOXES TO FIXTURES. AWG NO. 10 WIRING SHALL BE PROVIDED FROM RELAY CABINET TO CONNECTION BOXES.

REVISIONS

NO.	SYM	ZONE	DESCRIPTION	DATE	APPROVED
8	△	–	REVISED TO CONFORM TO AMENDMENT No. 0002	3-3-75	[illegible]
2	△		REVISED SOLENOID VALVES, MOD. SUFFIX "A"	4-8-75	[illegible]

SCHEDULE - SYMBOL LIST

REV.	NO.	SYMBOL	ITEM DESCRIPTION
	1		LIGHTING FIXTURES - SEE DETAILS:
	2		INCANDESCENT
	3		MERCURY - VAPOR
	4		IODINE - QUARTZ
	5		FLUORESCENT
	6		INDICATING LT.: A-AMBER, G-GREEN, R-RED
	7	W	DUPLEX CONVENIENCE OUTLET, W DENOTES WEATHERPROOF.
	8	GFI	GROUND FAULT PROTECTED FEED-THRU RECEPT.
	9		SWITCH, TOGGLE, SPST
	10		PB STATION - ONE GATE (NOTE 1)
	11		PB STATION - TWO GATES (NOTE 1)
	12		LIMIT SWITCH UNIT
	13		SAFETY SWITCH
	14		MOTOR STARTER, COMBINATION CIRC. BKR.-MAGNETIC CONTACTOR
	15		LIGHTING PANEL BOARD
	16		NAMEPLATE, LEGEND AS NOTED
	17		CIRCUIT BREAKER
	18		OVERLOAD TRIP, INSTANTANEOUS AND THERMAL
	19	AT	AUTOMATIC TRANSFER SWITCH
	20		COIL, CONTROL RELAY, 120V
	21		EQUIPMENT HEATER
	22		JUNCTION BOXES, SEE DETAILS
	23		COIL, CONTACTOR
	24		MOTOR
	25	RK RT	GATE POSITION RECORDER, RECEIVER-TRANSMITTER
	26		SOLENOID OPERATED VALVE
	27		FUSE, DEAD-FRONT INSTALLATION
	28		CONTACTS:
	29		SWITCH, SPST
	30		SWITCH, 3 POSITION
	31		PUSHBUTTON - N.O. AND N.C.
	32		CONTROL RELAY OR AUX. CONTACTOR - N.O. AND N.C.
	33		CONTACTOR MAINS
	34		LIMIT SWITCH
	35		FLOAT SWITCH
	36		PRESSURE SWITCH
	37		MANUAL TRANSFER PLUG, 3P, FEMALE - MALE
	38	LA	WIRE OR CONDUIT LEGEND
	39		HOMERUN TO PNBD. OR AS NOTED
	40		GROUND CONNECTION
	41		CONDUIT: EXPOSED
	42		CONCEALED IN CEILING
	43		CONCEALED IN FLOOR, WALLS OR EARTH
	44		STUB OUT AND CAP
	45		DRAIN - SEE DETAILS
	46		CONDUIT EXPANSION FITTING
	47		SERVICE ENTRANCE WEATHERHEAD AND METER SOCKET
△	48		PANEL, SOLENOID OPERATED VALUES

GENERAL NOTES

1. SCHEMATIC WIRING DIAGRAMS, CONDUIT AND CABLE SCHEDULE, AND CONDUIT PLANS SHALL BE WORKED TOGETHER AND SHALL TAKE PREFERENCE IN THAT ORDER IN CASES OF CONFLICT.

AS BUILT

RECORD DRAWING NOTE
"Shall be" "Provide," "Install," "Remove" etc., indicates work was accomplished under the contract

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
ELECTRICAL SYSTEM
SCHEMATIC WIRING DIAGRAMS

TAP	J.H.S., CKK.	DACW17-75-B-0034	F	22/2
JHS		DATED 13 FEBRUARY 1975		
		SCALE: NONE	DATED ~~OCT 1974~~	SHEET 40 OF 57

D. O. FILE NO. ~~605-31,892~~ 5/77 605-32,470 FRB 200-003

SAFETY ON THIS JOB DEPENDS ON YOU

REVISIONS					
NO.	SYM	ZONE	DESCRIPTION	DATE	APPROVED
16	△	-	REVISED TO ACCOMPANY AMENDMENT No. 0002	3-3-76	[illegible]
5	△		REVISED SCHEDULE "B", MOD. SUFFIX "A"	4-8-75	[illegible]

SCHEDULE "B" - CONDUIT AND CABLE SCHEDULE

REV.	LINE NO.	LEGEND	WIRE DATA #-AWG	WIRE DATA GDN.	CONDUIT SIZE	FUNCTION	FROM	TO	ROUTING OR REMARKS
	1	PC	4 # 6	#6	2"	COMMERCIAL SERVICE	SERVICE ENTRANCE POLE	AUTO TRANSFER S.W.	VIA SAFETY DISCONNECT
	2								
	3	PE	4 # 6	#6	1½"	EMERGENCY SERVICE	ENG-GEN, CONTROL PANEL	AUTO TRANSFER S.W.	
	4	PEC	#12 AS REQ'D		1¼"	AUTO START CONTROL	ENG-GEN CONTROL PANEL	AUTO TRANSFER S.W.	
	5								
	6	PL	3 # 4		1½"	FEEDER-LTG., PNBD.	AUTO TRANSFER S.W.	PANELBOARD	
	7	PM	3 # 8	#8	1¼"	HYDRAULIC POWER UNIT	AUTO TRANSFER S.W.	HPU	
	8								
	9								
	10					GATE CONTROL			
△	11	C1	20 # 14	#8	1½"	HPU SOLENOID	RELAY CABINET	HPU	INCLUDES 4 SPARE WIRES
	12	C2	3 # 14	#10	3/4"	FLOAT CONTROL	RELAY CABINET	FLOAT UNIT	
	13	C3				(NOT USED)			
△	14	C4	26 # 14	#8	2"	GATES 1-3	RELAY CABINET	JB 1	INCLUDES 4 SPARE WIRES
△	15		26 # 14	#8	2"		JB 1	JB 2-3	INCLUDES 4 SPARE WIRES
△	16	C5	19 # 14	#8	2"	GATES 4-5	RELAY CABINET	JB 1-2-3-4-5	INCLUDES 4 SPARE WIRES
△	17	C6	19 # 14	#8	2"	GATES 6-7	RELAY CABINET	JB 1-2-3-4-5-6-7	INCLUDES 4 SPARE WIRES
	18	C7	7 # 14		1"	SOLENOIDS AND LIMIT SW'S	JB 1,2,3,4,5,6,7	T CONDULET	
	19		2 # 14		1/2"		T CONDULET	LIMIT SWITCHES	
	20		3 # 14		1/2"		T CONDULET	SOLENOID VALVES	
	21	C8	8 # 14	#10	1"	PUSHBUTTON STATIONS	JB 1	GATE NO. 1 P.B. STATION	
	22	C9	15 # 14	#10	1¼"		JB 3,5,7	TWO GATE P.B. STATION	
	23	C10	5 # 12	#10	1"	GATE POSITION RECORDER	PANELBOARD	RECEIVER RECORDER	IN CONTROL HOUSE
	24		5 # 12	#10	1¼"		PANELBOARD	TRANSMITTER	VIA JB 1
	25								
	26								
	27								
	28								
	29								
	30					EXTERIOR LIGHTING			
	31	LA	3 # 12	#12	1"	AUTOMATIC CONTROL	RELAY CABINET	PHOTO-ELECTRIC SWITCH	
△	32	LB	7 # 10	#6	1½"	EXTERIOR LIGHTING	RELAY CABINET	LTG. STD. "C2"	INCLUDES L1, L7, L9, L11
△	33		7 # 10	#6	1½"		LTG. STD. "C2"	JB1-2-3-4-5-6-7	INCLUDES L1, L7, L9, L11
△	34	L1	2 # 12	#12			JB1, JB3, JB5 AND JB7	CONVENIENCE OUTLET	
△	35	L7	2 # 10	#10	1¼"		JB2 AND JB7	UPSTREAM BARRIER LTG.	
△	36	L9	2 # 10	#10	1¼"		JB2 AND JB7	DOWNSTREAM BARRIER LTG.	
△	37	L11	2 # 12	#10	3/4"		JB2 AND JB7	LTG. STD. "C1"	
	38								
△	39								
△	40								
	41								
	42								
	43	X1			1½"	SPARE CONDUITS	WIRING GUTTER	STUB OUT AND CAP	BACK SIDE OF CONTROL HOUSE
	44	X2			1½"		WIRING GUTTER	JB 1	
	45	X3			1½"		WIRING GUTTER	JB 1	
	46	X4			1½"		WIRING GUTTER	JB 1	
	47	X5			1½"		JB 1	JB8 VIA JB 2-JB 7	
	48	X6			1½"		JB 8	STUB DOWN, OUT AND CAP	N.E. SIDE
	49	X7			1½"		JB 8	STUB DOWN, OUT AND CAP	S.E. SIDE
	50								

SCHEDULE "C": PANELBOARD "L"

120/240 VOLTS, 1 PHASE, 3 WIRE, A.C., SURFACE MOUNTED — MAINS: 2P-50A BREAKER

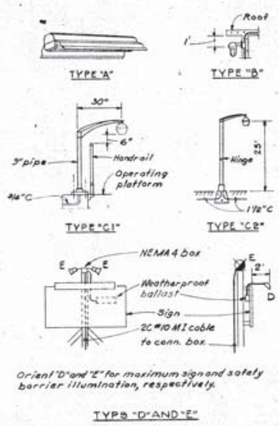
REV	CIRC. NO.	CIRC. BK'R. POLES	CIRC. BK'R. TRIP	LOAD WATTS	WIRING DATA	CIRCUIT	CIRC. NO.	CIRC. BK'R. POLES	CIRC. BK'R. TRIP	LOAD WATTS	WIRING DATA	CIRCUIT	REV.
	1	1	20A		2#12-3/4" C	RECEPTACLES	2	1	20A		2#12	GATE CONTROL	
	3	1	20A		3#12-3/4" C	CONTROL HOUSE LIGHTING	4	1	20A			SPARE	
	5	1	20A			SPARE	6	1	20A		C10-SCH "B"	GATE POSITION RECORDER	
△	7	1	20A		5#10-1½" C	UPSTREAM BARRIER	8	1	20A		2#12 AS REQ'D	EQUIPMENT HEATERS, (NOTE 1)	
△	9	1	20A		5#10-1½" C	DOWNSTREAM BARRIER	10	1				SPARE	
△	11	2	20A		5#10-1½" C	SPILLWAY LIGHTING	12	2	—			SPACE ONLY	

* NOTES:
1. PROVIDE 2 NO. 12 AWG WIRES TO HEATERS IN RELAY CABINET, GENERATOR AND FLOAT CONTROL UNIT.

SCHEDULE "F": CONTROL RELAYS AND CONTACTORS

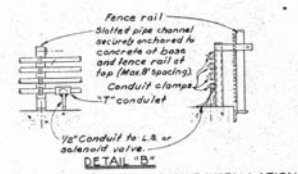
REV.	MARK	FUNCTION	NO. REQ'D.	LOCATION	CONTACTS NO	CONTACTS NC	CONTACTS 20A	MATERIAL MFG.	MATERIAL CAT. NUMBER	REMARKS
		GATE CONTROL RELAYS:								
	#C	GATE # CLOSE	7	RELAY CABINET	8	4		(W)	BF84F	NOTE 1
	#O	GATE # OPEN	7	RELAY CABINET	8	4		(W)	BF84F	NOTE 1
	AC	AUTOMATIC CLOSE	1	RELAY CABINET	8	4		(W)	BF84F	NOTE 1
	AO	AUTOMATIC OPEN	1	RELAY CABINET	8	4		(W)	BF84F	NOTE 1
	H	HAND	1	RELAY CABINET	8	4		(W)	BF84F	NOTE 1
	TD	TIME DELAY	1	RELAY CABINET	TD			(W)	50SC969G01	NOTE 2
		LIGHTING CONTROL								
	LA	AUTO PHOTO-ELECTRIC	1	6" ABOVE ROOF	1			G.E.	C420G003	
	LC	CONTROL RELAY	1	RELAY CABINET	6	2		(W)	BF62	NOTE 1
	LD	DOWNSTREAM BARRIER	1	RELAY CABINET			1P	[D]	LO-20	
	LS	SPILLWAY STRUCTURE	1	RELAY CABINET			2P	[D]	LO-20	
	LU	UPSTREAM BARRIER	1	RELAY CABINET			1P	[D]	LO-20	

NOTES:
1. PROVIDE A MINIMUM OF 2 NO AND 2 NC SPARE CONTACTS FOR CONTROL RELAYS
2. RELAY "TD" SHALL HAVE 5 SECOND CLOSING DELAY UPON ENERGIZATION



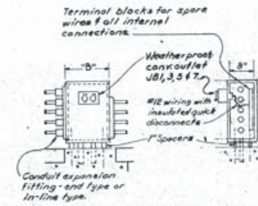
DETAIL "A"

LIGHTING FIXTURE INSTALLATIONS



DETAIL "B"

TYPICAL SPILLWAY CONDUIT INSTALLATION

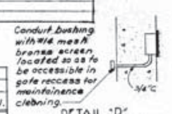


MINIMUM DIMENSIONS			
DIMEN.	JB 1	JB 2-5	JB 6-8
A	18"	18"	14"
B	18"	12"	12"

△ Dust-tight and weatherproof cast iron box and cover, hot-dip galvanized, neoprene gasket, bosses for 5 full threads on sides, slip holes on bottom side, interior mounting buttons for terminal blocks.

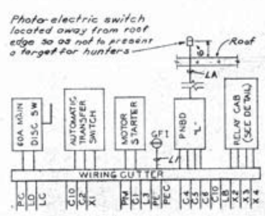
DETAIL "C"

TYPICAL SPILLWAY JUNCTION BOX INSTALLATION



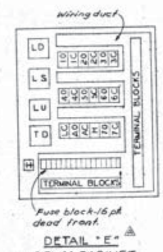
DETAIL "D"

TYPICAL CONDUIT DRAIN ASSEMBLY



SECTION "C-C"

SUGGESTED EQUIPMENT INSTALLATION



DETAIL "E" △

RELAY CABINET

△ Provide cover mounted equipment as follows:
7 "OPENING" indicating lights for gate circuits.
7 "CLOSING" " " " " "
1 "POWER-ON" " " " " "
1 "H-O-A" selector switch " " control.
1 "POWER-ON" indicating light " ltg. circuits.

AS BUILT

RECORD DRAWING NOTE
"Shall be" "Provide," "install," "Remove," etc., indicates work was accomplished under the contract

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
ELECTRICAL SYSTEM
MISCELLANEOUS SCHEDULES AND DETAILS

TAR | DWN BY J.H.S., C.K.K. | INV. NO. DAC W17-75-B-0036 | SIZE F | DWG. NO. 22/3
J.H.S. | CKD BY | DATED: 18 FEBRUARY 1975 | SCALE: NONE | SHEET 41 OF 57

D. O. FILE NO. ~~608-31,892~~ 5/77 605.32.470 FRB 200-003 △

SAFETY ON THIS JOB DEPENDS ON YOU

REVISIONS					
NO.	SYM	ZONE	DESCRIPTION	DATE	APPROVED
1	△1	A-1	REVISED TO CONFORM TO AMEND. NO. 0002	3-3-75	AGK

DRILLING LOG — Hole No. CB-C135-41

Division	South Atlantic
Installation	Jacksonville District
Sheet	1 of 1 sheets
Project	FRB, CANAL 135
Location	E=101,881 N=1,138,353
Drilling agency	Corps of Engineers
Hole no.	CB-C135-41
Name of driller	J. King
Direction of hole	Vertical
Total depth of hole	36.0'
Size and type of bit	see remarks
Datum for elevation shown	MSL
Manufacturer's designation of drill	Sprague & Henwood 40-C
Total number core boxes	2
Elevation ground water	+14.6
Date hole	1/8/69 – 1/8/69
Elevation top of hole	+21.9
Total core recovery for boring	76 %
	Geologist: J. Gentile

Elevation	Depth	Classification of materials	% Core recovery	Sample no.	Remarks
					BIT OR BARREL
+21.9	0.0				+21.9 Bls/0.5 ft.
		SAND, fine to medium, quartz, light brown (SP)	46	1	1-3/8" ID split spoon; +20.4
+18.4	3.5		20	2	+18.9
		SAND, fine to medium, quartz, very clayey, brown (SC)	68	3	+17.4
+15.9	6.0		73	4	+15.9
		SAND, fine to medium, quartz, tan, clean (SP)	53	5	+14.4
			59	6	+12.9
			46	7	+11.4
		slightly silty, tan from +9.9 to +5.4	73	8	+9.9
			73	9	+8.4
			60	10	+6.9
+5.4	16.5		66	11	+5.4
		SAND, fine to medium, quartz, clayey, grey (SC)	33	12	+3.9
+2.4	19.5		80	13	+2.4
		CLAY, stiff, slightly sandy, grey (CL)	73	14	+0.9
-0.6	22.5		100	15	-0.6
		CLAY, blue (CH)	100	16	-2.1
			94	17	-3.6
-4.6	26.5		82	18	-5.1
		bed of slightly sandy (CL) clay from -4.6 to -8.1	100	19	-6.6
-8.1	30.0		80	20	-8.1
			100	21	-9.6
			100	22	-11.1
			80	23	-12.6
-14.1	36.0		63	24	-14.1
		HOLE GROUTED UPON COMPLETION			140# Hammer with 30" drop used on 2.0' split spoon (1-3/8" I.D. x 2" O.D.)

ENG FORM 1836 — Project: FRB, CANAL 135 — Hole No.: CB-C135-41

DRILLING LOG — Hole No. CB-S162-1

Division	South Atlantic
Installation	Jacksonville District
Sheet	1 of 2 sheets
Project	FRB, Structure 162
Location	[illegible]
Drilling agency	Corps of Engineers
Hole no.	CB-S162-1
Name of driller	J. King
Direction of hole	Vertical
Total depth of hole	69.3'
Size and type of bit	See remarks
Datum for elevation shown	MSL
Manufacturer's designation of drill	Failing 1500
Total number core boxes	3
Date hole	Started 8-2-72, Completed 8-11-72
Elevation top of hole	+19.3
Total core recovery for boring	54%
	Geologist: J. Gentile

Elevation	Depth	Classification of materials	% Core recovery	Sample no.	Remarks
					BIT OR BARREL
+19.3	0.0				+19.3 Bls/0.5 ft.
		SAND, fine to medium, quartz, slightly silty to silty, organic stain (SM)	33	1	SPLIT SPOON; +17.8
+17.8	1.5	SAND, fine to medium, quartz, slightly silty, tan (SP)	33	2	+16.3
			33	3	+14.8
			35	4	+13.3
			30	5	+11.8
			33	6	+10.3
			35	7	+8.8
			36	8	+7.3
+5.8	13.5		30	9	+5.8
		SAND, fine to medium, quartz, silty, shelly, dark brown, organic stain (SM)	30	10	+4.3
+3.3	16.0		35	11	+2.8
		SAND, fine to medium, quartz, slightly silty, dark gray, organic stain (SP)	35	12	+1.3
			35	13	-0.2
			40	14	-1.7
-3.2	22.5	brown, from -0.2 to -3.2	45	15	-3.2
-4.7	24.0	bed of slightly silty to silty sand, slightly clayey, brown from -3.2 to -4.7	50	16	-4.7
		CLAY, plastic, tan, stiff (CH)	66	17	-6.2
			66	18	-7.7
			66	19	-9.2
-10.7	30.0		68	20	-10.7
		CLAY, stiff, sandy with seams of clayey sand, tan (CL)	66	21	-12.2
			66	22	-13.7
			45	23	-15.2
			60	24	-16.7
			70	25	-18.2
			76	26	-19.7
			70	27	-21.2
			65	28	-22.7
-24.2	43.5		68	29	-24.2

ENG FORM 1836-A — Project: FRB, Structure 162 — Hole No.: CB-S162-1

DRILLING LOG (Cont Sheet) — Hole No. CB-S162-1

Elevation top of hole: +19.3 — Project: FRB, Structure 162 — Installation: Jacksonville District — Sheet 2 of 2 sheets

Elevation	Depth	Classification of materials	% Core recovery	Sample no.	Remarks
					BIT OR BARREL
-24.2	43.5				-24.2 Bls/0.5 ft.
		SAND, fine, quartz, clayey, slightly silty, tan, (SC)	70	30	SPLIT SPOON; -25.7
			65	31	-27.2
-28.7	48.0		65	32	-28.7
		SILT, calcareous, slightly sandy, slightly clayey, compacted lenses limestone, tan (ML)	66	33	-30.2
-33.2	52.5		60		DIAMOND 4" x 5-1/2" D.T. 12 min. H.P. 100 psi.; -33.2
-34.7	54.0	bed of soft to medium hard limestone from -33.2 to -34.7			
-36.7	56.0		68		DIAMOND 4" x 5-1/2" D.T. 19 min. H.P. 100 psi.; -38.2
-37.2	56.5	soft limestone from -36.7 to -37.2			
-38.5	57.8				
		LIMESTONE, very hard, dense, solid, non-porous, non-permeable, sandy in composition, gray	70		DIAMOND 4" x 5-1/2" D.T. [illegible] min. H.P. 150 psi.; -39.2
			88		DIAMOND 4" x 5-1/2" D.T. 33 min. H.P. 150 psi.; -44.2
-43.4	62.7	LIMESTONE, soft to medium hard, porous, seams compacted calcareous silt, thin lenses hard limestone, massive bedded, slightly fossiliferous, gray, seams clay	89		DIAMOND 4" x 5-1/2" D.T. 10 min. H.P. 100 psi.; -47.0
-48.7	68.0	bed of medium hard to hard limestone from -48.7 to -50.0	83		DIAMOND 4" x 5-1/2" D.T. 13 min. H.P. 100 psi.; -50.0
-50.0	69.3				140# hammer with 30" drop used on 2.0' split spoon. (1-3/8" I.D. x 2" O.D.)

NOTES:
1. 6-inch casing set to elevation -28.7.
2. No noticable drill fluid loss.
3. Ground water in overburden and in rock at elevation +4.8.
4. Hole grouted upon completion.

ENG FORM 1836-A — Project: FRB, Structure 162 — Hole No.: CB-S162-1

CORE BORING NOTES.

1. BORING LOCATIONS ARE SHOWN ON DWG. NOS. 10/5 AND 10/14.
2. BLS/FT. REFERS TO THE NUMBER OF HAMMER BLOWS REQUIRED TO ADVANCE A SOLID-SPOON (2" I.D. X 2 1/2" O.D.) ONE FOOT. THE SPOON IS 5 FT. LONG AND DRIVEN CONTINUOUSLY 5 FT. WHERE POSSIBLE.
3. BLS/0.5 FT. REFERS TO THE NUMBER OF HAMMER BLOWS REQUIRED TO ADVANCE A SPLIT-SPOON (1 3/8" I.D. X 2" O.D.) ONE-HALF FOOT. THE SPOON IS 2.0 FEET LONG AND DRIVEN CONTINUOUSLY ONE AND ONE-HALF FEET, WHERE POSSIBLE.
4. (SP) AND (SC), ETC., REFERS TO THE CORPS OF ENGINEERS UNIFIED SOILS CLASSIFICATION SYSTEM. CLASSIFICATION OF MATERIALS IS BASED ON VISUAL EXAMINATION, EXCEPT FOR THOSE UNDISTURBED SAMPLES TAKEN FROM CB-C135-9U, CB-C135-48U, AND CB-S-162-8U.
5. LABORATORY DATA ON THE UNDISTURBED SAMPLES ARE AVAILABLE FOR INSPECTION AT THE JACKSONVILLE DISTRICT OFFICE.
6. CORE SAMPLES TAKEN DURING THE BORING OPERATIONS ARE AVAILABLE FOR INSPECTION AT THE CORPS OF ENGINEERS DREDGE DEPOT IN JACKSONVILLE, FLORIDA.
7. ORIGINAL BORING NOTES ARE AVAILABLE FOR INSPECTION AT THE JACKSONVILLE DISTRICT OFFICE.
8. GROUND WATER ELEVATIONS WERE OBSERVED ON THE COMPLETION DATES OF THE BORINGS AND ARE SUBJECT TO FLUCTUATIONS. WHERE GROUND WATER ELEVATIONS WERE NOT OBSERVED OR NOT RECORDED, IT DOES NOT NECESSARILY INDICATE THAT GROUND WATER WILL NOT BE ENCOUNTERED AT THE LOCATION AND THROUGHOUT THE DEPTH OF THE HOLE.
9. ROCK HARDNESS IS DEFINED BY THE FOLLOWING:
   SOFT - CAN BE SCRATCHED WITH FINGERNAIL.
   MEDIUM HARD - CAN BE SCRATCHED EASILY WITH KNIFE; CANNOT BE SCRATCHED WITH FINGERNAIL.
   HARD - DIFFICULT TO SCRATCH WITH KNIFE.
   VERY HARD - CANNOT BE SCRATCHED WITH KNIFE.
10. D.T. 14 MIN. ETC., REFERS TO THE TIME IN MINUTES, REQUIRED TO DRILL THROUGH THE VERTICAL REACH SHOWN.
11. H.P. 50 P.S.I. ETC., REFERS TO THE HYDRAULIC PRESSURE, IN POUNDS PER SQUARE INCH, APPLIED TO THE DRILL BIT WHILE DRILLING THROUGH THE VERTICAL REACH SHOWN.
12. RECHARGE TESTS MADE IN THE FOLLOWING MANNER: CASING IS INSTALLED IN THE HOLE TO THE UPPER LIMIT OF THE ZONE TO BE TESTED. THE HOLE IS THEN DRILLED TO THE LOWER LIMIT OF THE SECTION TO BE TESTED. WATER IS PUMPED INTO THE CASING AT A RATE SUFFICIENT TO MAINTAIN A CONSTANT HEAD ABOVE THE NORMAL WATER TABLE, IF POSSIBLE, AND THIS RATE OF FLOW IS DETERMINED. THE RATE OF FLOW, DIVIDED BY THE HEAD MAINTAINED, GIVES GALLONS PER MINUTE PER FOOT OF HEAD.
13. EXTENSIVE PUMPING TESTS WERE CONDUCTED APPROXIMATELY 500 FEET NORTH OF THE STRUCTURE SITE. LOGS OF THE TEST WELLS, RESULTS OF TEST PUMPING AND LOGS OF C-135 BORINGS IN THE VICINITY OF THE STRUCTURE ARE AVAILABLE FOR INSPECTION AT THE JACKSONVILLE DISTRICT OFFICE.

AS BUILT

RECORD DRAWING NOTE
"Shall be" "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
CORE BORINGS AND MISCELLANEOUS
STRUCTURE 162 - LOG OF BORINGS

GTS — J.T.L. — DATED: 13 FEBRUARY 1975 — SCALE: AS SHOWN — 24/1 — SHEET 42 OF 57

D. O. FILE NO. ~~605-31,692~~ 605-32,470 FRB 200-003

SAFETY ON THIS JOB DEPENDS ON YOU

REVISIONS					
NO.	SYMBOL	DESCRIPTION		DATE	APPROVED
1	A-1	REVISED TO CONFORM TO AMEND. NO. 0002		3-3-78	ASK

DRILLING LOG — Hole No. CB-8162-2 (Sheet 1 of 2 sheets)

Division: South Atlantic. Installation: Jacksonville District.
1. Project: FRB, Structure 162
2. Location (Coordinates or Station): X= 381,266 Y= 1,304,458
3. Drilling Agency: Corps of Engineers
4. Hole No.: CB-8162-2
5. Name of Driller: J. King
6. Direction of Hole: Vertical
7. Thickness of Overburden:
8. Depth Drilled into Rock:
9. Total Depth of Hole: 77.0'
10. Size and Type of Bit: See remarks
11. Datum for Elevation Shown: MSL
12. Manufacturer's Designation of Drill: Failing 1500
14. Total Number Core Boxes: 4
15. Elevation Ground Water: +12.0
16. Date Hole: Started 7-19-72; Completed 7-27-72
17. Elevation Top of Hole: +20.0
18. Total Core Recovery for Boring: 52 %
19. Geologist: J. Gentile

Elevation	Depth	Classification of Materials	% Core Recovery	Sample No.	Remarks
+20.0	0.0				Bit or barrel; +20.0; Bls/0.5 ft.
+18.5	1.5	SAND, fine to medium, quartz, slightly silty, organic stain, dark brown (SP)	30	1	SPLIT SPOON; +18.5; 3-5-10
		SAND, fine to medium, quartz, clayey, stiff, gray (SC)	30	2	+17.0; 2-8-9
			39	3	+15.5; 3-4-8
			30	4	+14.0; 4-6-10
+16.5	3.5		40	5	+12.5; 5-7-11
		SAND, fine to medium, quartz, silty, tan, (SM)	35	6	+11.0; 4-6-12
			30	7	+9.5; 4-7-11
+8.0	12.0		33	8	+8.0; 3-7-10
		SAND, fine to medium, quartz, slightly silty, tan (SP)	33	9	+6.5; 5-6-11
+5.0	15.0		35	10	+5.0; 4-7-12
+3.5	16.5	bed of very clayey sand (SC) from +5.0 to +3.5	60	11	+3.5; 5-8-13
		CLAY, plastic, stiff, fat, green (CH)	60	12	+2.0; 5-8-12
			66	13	+0.5; 5-9-14
			66	14	-1.0; 5-8-15
			66	15	-2.5; 6-10-14
-4.0	24.0		60	16	-4.0; 7-11-15
		SAND, fine to medium, quartz, clayey, light gray (SC)	66	17	-5.5; 8-11-13
			66	18	-7.0; 5-8-12
-8.5	28.5		66	19	-8.5; 5-9-11
		CLAY, slightly plastic to plastic, slightly sandy, gray (CL)	66	20	-10.0; 5-8-12
			66	21	-11.5; 2-3-9
-13.0	33.0		40	22	-13.0; 6-10-12
-14.5	34.5	bed of slightly silty (SP) sand from -13.0 to -14.5	50	23	-14.5; 3-3-11
-16.0	36.0		50	24	-16.0; 3-3-8
		SILT, calcareous, clayey, lenses limestone, gray, (ML) seams of gray, clayey, sand	40	25	-17.5; 5-6-7
-20.5	40.5		40	26	-18.5; 3-12
		CLAY, slightly plastic, sandy, calcareous, thin lenses soft limestone, gray (CL)	20		DIAMOND 4" X 5-1/2" D.T. 25 min. B.P. 80 psi.; -23.5

ENG FORM 1836-A. Project: FRB, Structure 162. Hole No. CB-8162-2

DRILLING LOG (Cont Sheet) — Hole No. CB-8162-2 (Sheet 2 of 2 sheets)

Elevation top of hole: +20.0. Project: FRB, Structure 162. Installation: Jacksonville District.

Elevation	Depth	Classification of Materials	% Core Recovery	Sample No.	Remarks
					Bit or barrel; -23.5
-25.0	45.0				DIAMOND 4" X 5-1/2" D.T. 20 min. B.P. 100 psi.
		SILT, calcareous, sandy, clayey, thin lenses limestone, light gray (ML)	44		-28.5
-31.0	51.0		34		DIAMOND 4" X 5-1/2" D.T. 26 min. B.P. 100 psi.; -33.5
-35.5	55.5	LIMESTONE, soft, isolated lenses chert, very porous, permeable, light gray, seams unconsolidated, calcareous, silt	50		DIAMOND 4" X 5-1/2" D.T. 20 min. B.P. 150 psi.; -37.0
		LIMESTONE, medium hard to hard, seams soft limestone, solution holes and channels, unevenly bedded, light gray, slightly fossiliferous, fractured	75		DIAMOND 4" X 5-1/2" D.T. 17 min. B.P. 150 psi.; -39.0
-40.5	60.5		86		DIAMOND 4" X 5-1/2" D.T. 15 min. B.P. 150 psi.; -40.5
-41.5	61.5	beds of soft to medium hard, fractured limestone from -40.5 to -41.5 and from -43.0 to -44.5			
-43.0	63.0		90		DIAMOND 4" X 5-1/2" D.T. 27 min. B.P. 150 psi.
-44.5	64.5				
-46.0	66.0				-45.5
		LIMESTONE, soft to medium hard, porous, non-permeable, silty in composition, brecciated	78		DIAMOND 4" X 5-1/2" D.T. B.P.
-50.0	70.0				-50.0
		cavity from -50.0 to -53.5			DROPPED
-53.5	73.5				-53.5
-55.6	75.6	soft to medium hard, tan, fossiliferous, seams calcareous silt, from -53.5 to -55.6	71		DIAMOND 4" X 5-1/2" D.T. 16 min. B.P. 150 psi.
-57.0	77.0	medium hard to hard limestone from -55.6 to -57.0			-57.0

NOTES:
1. 6-inch casing set to elevation -18.5.
2. Complete drill fluid loss below elevation -31.0.
3. Cavity from elevation -50.0 to -53.5.
4. Ground water in overburden and in rock at elevation +12.0.
5. Hole grouted upon completion

140# hammer with 30" drop used on 2.0' split spoon. (1-3/8" I.D. X 2" O.D.)

ENG FORM 1836-A. Project: FRB, Structure 162. Hole No. CB-8162-2

DRILLING LOG — Hole No. CB-8162-3 (Sheet 1 of 2 sheets)

Division: South Atlantic. Installation: Jacksonville District.
1. Project: FRB, Structure 162, Canal 135
2. Location: X= 380,791 Y= 1,304,748
3. Drilling Agency: Corps of Engineers
4. Hole No.: CB-8162-3
5. Name of Driller: J. King
6. Direction of Hole: Vertical
9. Total Depth of Hole: 69.0'
10. Size and Type of Bit: See remarks
11. Datum for Elevation Shown: MSL
12. Manufacturer's Designation of Drill: Failing 1500
14. Total Number Core Boxes: 3
15. Elevation Ground Water: +10.0
16. Date Hole: Started 8-18-72; Completed 8-24-72
17. Elevation Top of Hole: +19.0
18. Total Core Recovery for Boring: 52 %
19. Geologist: J. Gentile

Elevation	Depth	Classification of Materials	% Core Recovery	Sample No.	Remarks
+19.0	0.0				Bit or barrel; +19.0; Bls/0.5 ft.
		SAND, fine to medium, quartz, slightly silty, tan (SP)	33	1	SPLIT SPOON; +17.5
+16.0	3.0		33	2	+16.0
		SAND, fine to medium, quartz, clayey, stiff, tan (SC)	33	3	+14.5
			30	4	+13.0
			33	5	+11.5
+10.0	9.0		33	6	+10.0
		SAND, fine to medium, quartz, slightly silty to silty, shelly, gray (SM)	33	7	+8.5
+7.0	12.0		33	8	+7.0
		CLAY, plastic, stiff, blue (CH)	53	9	+5.5
			50	10	+4.0
+2.5	16.5		50	11	+2.5
		CLAY, slightly plastic to plastic, slightly sandy, gray (CL)	53	12	+1.0
			50	13	-0.5
-2.0	21.0		60	14	-2.0
		SAND, fine to medium, quartz, clayey, slightly silty (SC)	50	15	-3.5
-5.0	24.0		53	16	-5.0
		CLAY, plastic, silty, slightly sandy, tan, (CL) slightly calcareous	50	17	-6.5
			56	18	-8.0
			60	19	-9.5
-11.0	30.0		60	20	-11.0
		SAND, fine, quartz, silty, tan, slightly calcareous (SC) clayey	55	21	-12.5
-14.0	33.0		60	22	-14.0
		SILT, calcareous, thin lenses limestone, clayey, plastic, buff (ML)	60	23	-15.5
			72	24	-17.0
			75	25	-18.5
			70	26	-20.0
-21.5	40.5		50	27	-21.5; 5-3-20

Blow counts for samples 1–26 of this log: [illegible]

ENG FORM 1836-A. Project: FRB, Structure 162, Canal 135. Hole No. CB-8162-3

DRILLING LOG (Cont Sheet) — Hole No. CB-8162-3 (Sheet 2 of 2 sheets)

Elevation top of hole: +19.0. Project: FRB, Structure 162, Canal 135. Installation: Jacksonville District.

Elevation	Depth	Classification of Materials	% Core Recovery	Sample No.	Remarks
-21.5	40.5				Bit or barrel; -21.5
		LIMESTONE, soft to medium hard, porous, permeable, solution holes, fossiliferous, buff, seams calcareous silt, thin lenses hard limestone	46		DIAMOND 4" X 5-1/2" D.T. 13 min. B.P. 150 psi.; -26.5
		soft weathered limestone with many seams of calcareous silt, fractured, from -27.0 to -34.0	50		DIAMOND 4" X 5-1/2" D.T. 11 min. B.P. 100 psi.; -31.5
-34.0	53.0		28		DIAMOND 4" X 5-1/2" D.T. 10 min. B.P. 150 psi.; -34.5
-36.5	55.5	bed of hard fractured limestone from -34.0 to -36.5	64		DIAMOND 4" X 5-1/2" D.T. 20 min. B.P. 150 psi.; -39.5
		soft, porous, permeable fossiliferous from -39.5 to -45.0	86		DIAMOND 4" X 5-1/2" D.T. 13 min. B.P. 100 psi.; -44.0
-45.0	64.0	medium hard to hard, clayey in composition with seams indurated clay, fractured, from -45.0 to -48.0	68		DIAMOND 4" X 5-1/2" D.T. 12 min. B.P. 150 psi.; -46.5
-48.0	67.0		85		DIAMOND 4" X 5-1/2" D.T. 16 min. B.P. 150 psi.
-50.0	69.0	soft, silty in composition, many seams calcareous silt from -48.0 to -50.0			-50.0

NOTES:
1. Hole grouted upon completion

140# hammer with 30" drop used on 2.0' split spoon. (1-3/8" I.D. X 2" O.D.)

ENG FORM 1836-A. Project: FRB, Structure 162, Canal 135. Hole No. CB-8162-3

AS BUILT

RECORD DRAWING NOTE
"Shall be" "Provide," "Install," "Remove," etc. indicates work was accomplished under the contract

NOTES:
1. For boring locations see Note 1, Dwg. No. 24/1.
2. For boring notes, see Dwg. No. 24/1.

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
CORE BORINGS AND MISCELLANEOUS
STRUCTURE 162 - LOG OF BORINGS

G.T.S. | H.B.B. | J.T.L. | Inv. No. DACW17-75-B-0036 | Dated: 13 February 1975 | Size F | Dwg. No. 24/2 | Scale as shown | Sheet 43 of 57

D. O. FILE NO. ~~605-31,892~~ 605-32,470 5/77 FRB 200-003

SAFETY ON THIS JOB DEPENDS ON YOU

1	A	A-1	REVISED TO CONFORM TO AMEND NO. 000-E	3-3-77

DRILLING LOG — Hole No. CB-5162-4 (Sheet 1 of 2 sheets)

Division: South Atlantic
Installation: Jacksonville District
1. Project: FRB, Structure 162, C-135
2. Location: X = 50[illegible],104 Y = [illegible]
3. Drilling agency: Corps of Engineers
4. Hole No.: CB-5162-4
5. Name of driller: J. King
6. Direction of hole: Vertical
9. Total depth of hole: 89.6'
10. Size and type of bit: See remarks
11. Datum for elevation shown: MSL
12. Manufacturer's designation of drill: Failing 1500
14. Total number core boxes: 3
15. Elevation ground water: +9.0
16. Date hole: Started 9-14-72, Completed 9-25-72
17. Elevation top of hole: +19.0
18. Total core recovery for boring: 72 %
Geologist: J. Gentile

Elevation	Depth	Classification of materials	% Core recovery	Sample No.	Remarks
					BIT OR BARREL
+19.0	0.0				+19.0 Bls/0.5 ft. SPLIT SPOON
		SAND, fine to medium, quartz, silty, organic stain, dark gray (SM)	33	1	+17.5
+17.0	2.0	SAND, fine to medium, quartz, slightly silty, gray (SP)	26	2	+16.0
+15.5	3.5	SAND, fine to medium, quartz, clayey, dark brown (SC)	68	3	+14.5
			60	4	+13.0
+12.5	6.5	CLAY, silty, slightly plastic, slightly sandy, dark green (CL)	40	5	+11.5
			40	6	+10.0
+10.0	9.0	clayey sand, slightly silty, dark gray from +10.0 to +8.5	40	7	+8.5
+8.5	10.5	SAND, fine to medium, quartz, tan, clean, tight (SP)	46	8	+7.0
+6.5	12.5	SAND, fine to medium, quartz, clayey, stiff, gray (SC)	60	9	+5.5
+5.0	14.0	CLAY, plastic, fat, green, slightly sandy (CH)	66	10	+4.0
			68	11	+2.5
+2.0	17.0	SAND, fine to medium, quartz, clayey, tan, stiff (SC)	60	12	+1.0
+0.5	18.5	CLAY, plastic, slightly sandy, green (CL)	68	13	-0.5
			60	14	-2.0
			72	15	-3.5
			60	16	-5.0
-5.0	24.0	SAND, fine, quartz, clayey, stiff, tan (SC)	60	17	-6.5
			72	18	-8.0
			68	19	-9.5
-9.5	28.5	CLAY, plastic, slightly sandy, tan (CL)	93	20	-11.0
			86	21	-12.5
			86	22	-14.0
			80	23	-15.5
-15.5	34.5	bed of clayey sand (SC) from -15.5 to -18.5	68	24	-17.0
			86	25	-18.5
-18.5	37.5	bed of tan, plastic clay from -18.5 to -20.5	93	26	-20.0
-20.5	39.5	SILT, calcareous, slightly clayey, tan, loose limestone, seams of sandy tan clay (ML)		27	-21.4
-22.0	41.0	bed of medium hard to hard, tan, dense, limestone from -22.0 to -23.5	75		DIAMOND 4" X 5-1/2" D.T. 11 min. H.P. 100 psi.
-23.5	42.5				-25.4

ENG FORM 1836-A — Project: FRB, Structure 162, C-135 — Hole No. CB-5162-4

DRILLING LOG (Cont Sheet) — Hole No. CB-5162-4 (Sheet 2 of 2 sheets)

Elevation top of hole: +19.0
Project: FRB, Structure 162, C-135
Installation: Jacksonville District

Elevation	Depth	Classification of materials	% Core recovery	Sample No.	Remarks
					BIT OR BARREL
					-25.4
			8		DIAMOND 4" X 5-1/2" D.T. 10 min. H.P. 100 psi. -30.2
			52		DIAMOND 4" X 5-1/2" D.T. 09 min. H.P. 100 psi. -34.4
-34.4	53.4	bed of medium hard to hard limestone, fractured, from -34.4 to -35.5			
-35.5	54.5		48		DIAMOND 4" X 5-1/2" D.T. 13 min. H.P. 120 psi. -39.4
-39.4	58.4	LIMESTONE, soft to medium hard, porous, non-permeable, massive bedded, tan, fossiliferous, friable (broken with fingers)	100		DIAMOND 4" X 5-1/2" D.T. 12 min. H.P. 150 psi. -42.9
			57		DIAMOND 4" X 5-1/2" D.T. 15 min. H.P. 150 psi. -46.6
-46.2	65.2	bed of hard dense limestone from -46.2 to -47.2			
-47.2	66.2		80		DIAMOND 4" X 5-1/2" D.T. 13 min. H.P. 150 psi.
-50.6	69.6				-50.6

NOTES:
1. 6-inch casing set to elevation -22.0.
2. No measurable water loss.
3. Hole grouted upon completion.

140# hammer with 30" drop used on 2.0" split spoon. (1-3/8" I.D. X 2" O.D.)

ENG FORM 1836-A — Project: FRB, Structure 162, C-135 — Hole No. CB-5162-4

DRILLING LOG — Hole No. CB-5162-5 (Sheet 1 of 2 sheets)

Division: South Atlantic
Installation: Jacksonville District
1. Project: FRB Structure 162
2. Location: [illegible]
3. Drilling agency: Corps of Engineers
4. Hole No.: CB-5162-5
5. Name of driller: Hatlaff, J.
9. Total depth of hole: 72.0'
10. Size and type of bit: See Remarks
11. Datum for elevation shown: MSL
12. Manufacturer's designation of drill: Failing 1500
14. Total number core boxes: 4
15. Elevation ground water: +16.1
16. Date hole: Started 3-27-73, Completed 4-3-73
17. Elevation top of hole: +19.1
18. Total core recovery for boring: 64 %
Geologist: J. Gentile

Elevation	Depth	Classification of materials	% Core recovery	Sample No.	Remarks
					BIT OR BARREL
+19.1	0.0				+19.1 Bls/0.5 ft. SPLIT SPOON
+18.1	1.0	SAND, fine to medium quartz, slightly silty to silty, slightly clayey, organic stain, light gray (SM)	26	1	+17.6
		SAND, fine to medium quartz, slightly silty, tan, (SP)	20	2	+16.1
+16.1	3.0	SAND, fine to medium quartz, slightly silty to silty, slightly clayey, tan, (SM)	20	3	+14.6
+13.6	5.5		26	4	+13.1
		SAND, fine to medium quartz, clean, white, (SP)	76	5	+11.6
+10.6	8.5		70	6	+10.1
		SAND, fine to medium quartz, clayey, slightly silty, brown, (SC)	66	7	+8.6
			72	8	+7.1
			88	9	+5.6
+4.1	15.0		66	10	+4.1
		CLAY, plastic, stiff, green, (CL)	100	11	+2.6
			100	12	+1.1
			60	13	-0.4
			93	14	-1.9
			0		-3.4
			100	15	-4.9
			100	16	-6.4
-7.9	27.0		40	17	-7.9
		SAND, fine quartz, clayey, silty, tan, (SC)	88	18	-9.4
			66	19	-10.9
			72	20	-12.4
			80	21	-13.9
-15.4	34.5		80	22	-15.4
		SILT, plastic, clayey, brown, slightly sandy (MH)	66	23	-16.9
			72	24	-18.4
			66	25	-19.9 Pushed
			80	26	-21.4 Pushed
			72	27	-22.9
			40	28	-24.4 Pushed

ENG FORM 1836-A — Project: FRB Structure 162 — Hole No. CB-5162-5

DRILLING LOG (Cont Sheet) — Hole No. CB-5162-5 (Sheet 2 of 2 sheets)

Elevation top of hole: +19.1
Project: FRB Structure 162
Installation: Jacksonville District

Elevation	Depth	Classification of materials	% Core recovery	Sample No.	Remarks
					BIT OR BARREL
					-24.4 Bls/0.5 ft.
			40	29	SPLIT SPOON Pushed -25.9
-26.9	46.0		72	30	Pushed -27.4
		SAND, fine quartz, very silty, tan (SM)	80	31	-28.9
		sandy silt from -30.4 to -33.9	40	32	-30.4
			88	33	-31.9
			80	34	Pushed -33.4
-34.4	53.5	Calcareous silt from -33.9 to -34.4	100	35	-34.4
		LIMESTONE, medium hard, slightly fossiliferous, massive bedding, seams of calcareous silt, buff, hard from -34.4 to -35.4	38		DIAMOND 4"X5-1/2" D.T. 110 min. H.P. 150 psi. -39.1
			94	*	DIAMOND 4"X5-1/2" D.T. 70 min. H.P. 150 psi. -43.7
-43.7	62.8	LIMESTONE, hard, factured, solution holes, seams of soft limestone, fossiliferous, tan			DIAMOND 4"X5-1/2" D.T. 58 min. H.P. 150 psi.
-46.5	65.6	LIMESTONE, medium hard, slightly fossiliferous, buff, seams of calcareous silt.	66		-48.7
			65	*	DIAMOND 4"X5-1/2" D.T. 45 min. H.P. 150 psi.
-52.9	72.0				-52.9

NOTES:
1. 6-inch casing set to -34.4.
2. Partial drill fluid loss at -39.1, -43.7, and -48.7.
3. * - representative sample wrapped in wax impregnated cloth.
4. Hole grouted upon completion.

140# hammer with 30" drop used on 2.0" split spoon (1-3/8" I.D. X 2" O.D.)

ENG FORM 1836-A — Project: FRB Structure 162 — Hole No. CB-5162-5

AS BUILT

RECORD DRAWING NOTE
"Shall be" "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract

NOTES:
1. For boring locations see Note 1, Dwg. No. 24/1.
2. For boring notes, see Dwg. No. 24/1.

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
CORE BORINGS AND MISCELLANEOUS
STRUCTURE 162 - LOG OF BORINGS

G.T.S. — H.R.D. — J.T.L.
Dated: 13 FEBRUARY 1978
Scale: AS SHOWN
24/3
Sheet 44 of 57

D.O. FILE NO. ~~605-31,892~~ 605-32,420 FRB 200-003

SAFETY ON THIS JOB DEPENDS ON YOU

REVISIONS				
NO.	SYM	ZONE	DESCRIPTION	DATE
1	A	A-1	REVISED TO CONFORM TO AMEND NO. 0002	[illegible]

DRILLING LOG — Hole No. CB-5162-6 (Sheet 1 of 2 sheets)

Division: South Atlantic — Installation: Jacksonville District
Project: FRB Structure 162
Location: X: 306799 Y: 1329566
Drilling agency: Corps of Engineers
Hole No.: CB-5162-6
Name of driller: E. Hayes
Size and type of bit: See Remarks
Datum for elevation shown: MSL
Manufacturer's designation of drill: Failing 1500
Total number core boxes: 4
Elevation ground water: +14.0
Date hole: started 6-12-73, completed 6-26-73
Elevation top of hole: +18.5
Total core recovery for boring: 53 %
Geologist: J. Gentile
Total depth of hole: 96.0'

Elevation	Depth	Classification of materials	% Core recovery	Sample No.	Remarks
+18.5	0.0				BIT OR BARREL; +18.5 Bls/0.5 ft. SPLIT SPOON
+17.0	1.5	SAND, fine to medium quartz, silty, organic stain, dark brown (SM)	54	1	+17.0
+14.5	4.0	SAND, fine to medium quartz slightly clayey to clayey, tan (SC)	66	2	+15.5
		SAND, fine to medium quartz slightly silty, white (SP)	40	3	+14.0
		silty (SM) from +12.5 to +11.5	33	4	+12.5
			26	5	+11.0
			33	6	+9.5
+8.0	10.5		20	7	+8.0
		SAND, fine to medium quartz silty, gray (SM)	46	8	+6.5
+4.0	14.5	dark brown organic stain from +6.5 to +4.0	60	9	+5.0
		SAND, fine quartz, slightly clayey to clayey, brown, (SC)	73	10	+3.5
			46	11	+2.0
			73	12	+0.5
			46	13	-1.0
-2.5	21.0		54	14	-2.5
		SAND, fine quartz, slightly silty to silty, brown, (SM)	46	15	-4.0
			60	16	-5.5
-7.0	25.5		60	17	-7.0
		SAND, fine quartz, slightly clayey to clayey, brown (SC)	73	18	-8.5
-10.0	28.5		54	19	-10.0
		SAND, fine quartz, silty, slightly clayey, brown (SM)	26	20	-11.5
-14.0	32.5		46	21	-13.0
		SILT, plastic, stiff, slightly sandy, brown (MH)	46	22	-14.5
-17.0	35.5		40	23	-16.0
		SILT, slightly plastic, sandy, brown (ML) very sandy (SM) from -17.0 to -18.5	60	24	-17.5
			100	25	-19.0
			60	26	-20.5
			60	27	-22.0
			66	28	-23.5
			93	29	-25.0
			80	30	-26.5 Pushed

ENG FORM 1836-A — Project: FRB Structure 162 — Hole No. CB-5162-6

DRILLING LOG (Cont Sheet) — Hole No. CB-5162-6 (Sheet 2 of 2 sheets)

Elevation top of hole: +18.5 — Project: FRB Structure 162 — Installation: Jacksonville District

Elevation	Depth	Classification of materials	% Core recovery	Sample No.	Remarks
					BIT OR BARREL; -26.5 Bls/0.5 ft; SPLIT SPOON
-28.5	47.0		100	31	-28.0 Pushed
		SILT, slightly sandy, clayey, tan (MH)	100	32	-29.5
			93	33	-31.0
			86	34	-32.5
-34.5	53.0		66	35	-34.0
		SAND, fine quartz, very silty, tan (SM)	100	36	-35.5
			80	37	-37.0
-38.5	57.0		100	38	-38.5
-39.0	57.5	SILT, slightly sandy, tan (ML)	66	39	-40.0
-39.5	58.0	siliceous limestone from -39.0 to -39.5			
-41.5	60.0		40	40	-41.5 Pushed
		SILT, calcareous, soft, isolated lenses of soft limestone, buff (ML) cavity filled with very soft, calcareous silt from -43.0 to -47.5	40	41	-43.0
			33	42	-44.5 Pushed
			46	43	-46.0 Pushed
			33	44	-47.5 Pushed
			40	45	-49.0
			46	46	-50.5
			40	47	SPLIT SPOON -52.0
		cavity from -53.0 to -55.5, partially filled with silty sand (SM)	0		-53.5 Pushed, Dropped
			0		-55.0 Dropped
			20	48	-56.5 Dropped
-58.5	77.0	cavity from -56.0 to -58.5	0		-58.0 Dropped
		LIMESTONE, soft with lenses of medium hard limestone, riddled with solution cavities, porous, permeable, slightly fossiliferous, light gray, numerous seams of calcareous silt	18	49	-59.5 Dropped
			30	50	-61.0
			26	51	-62.5
		hard, fractured from -63.5 to -64.5; calcareous silt from -64.5 to -66.5	50	*	DIAMOND 4" x 5-1/2" D.T. 30 min H.P. 100 psi; -67.5
-73.0	91.5	hard, fossiliferous, tan from -68.0 to -70.0; fractured from -70.0 to -71.0	66	*	DIAMOND 4" x 5-1/2" D.T. 70 min H.P. 120 psi; -72.5
-77.5	96.0	LIMESTONE, hard, porous, permeable, fossiliferous, fractured, tan, massive, bedded.	92		DIAMOND 4" x 5-1/2" D.T. 40 min H.P. 150 psi; -77.5

NOTES:
1. 6-in casing set to -43.5
2. Elevation of ground water in overburden at +14.0, elevation of ground water after penetrating rock at +16.8
3. Complete drill fluid loss below -43.0
4. * represents samples sealed in wax impregnated cloth
5. Hole grouted upon completion

Remarks: 140# hammer with 30" drop used on a 2.0" split spoon (1-3/8" I.D. x 2" O.D.)

DRILLING LOG — Hole No. CB-5162-7 (Sheet 1 of 2 sheets)

Division: South Atlantic — Installation: Jacksonville District
Project: FRB Structure 162
Location: X: 306092 Y: 1329632
Drilling agency: Corps of Engineers
Hole No.: CB-5162-7
Name of driller: E. Hayes
Direction of hole: Vertical
Size and type of bit: See Remarks
Datum for elevation shown: M.S.L.
Manufacturer's designation of drill: Failing 1500
Total number core boxes: 4
Elevation ground water: +14.3
Date hole: started 3/20/73, completed 3/27/73
Elevation top of hole: +19.3
Total core recovery for boring: 49 %
Geologist: J. Gentile
Total depth of hole: 70.0'

Elevation	Depth	Classification of materials	% Core recovery	Sample No.	Remarks
+19.3	0.0				BIT OR BARREL; +19.3 Bls/0.5 ft. SPLIT SPOON
		SAND, fine to medium, quartz, tan, clean (SP); dark gray, slightly silty, organic stain from +19.3 to +18.3	46	1	+17.8
		bed of clayey sand (SC) stiff, brown from +16.8 to +15.6	66	2	+16.3
		Clean, white, tight from +15.6 to +13.3	66	3	+14.8
+13.3	6.0		40	4	+13.3
		SAND, fine to medium, quartz, slightly silty to silty, light gray (SM)	20	5	+11.8
			12	6	+10.3
			0	-	+8.8
		silty, shelly from +8.8 to +2.8	0	-	+7.3
			20	7	+5.8
			0	-	+4.3
			7	8	+2.8
+0.8	18.5	dark brown organic stain from +2.8 to +1.8	93	9	+1.3
		SAND, fine to medium, quartz, clayey, gray (SC)	40	10	-0.2
-1.7	21.0		87	11	-1.7
		Clay, slick, green (CL) Plastic	40	12	-3.2
			100	13	-4.7
			66	14	-6.2
			86	15	-7.7
-8.5	27.8	bed of medium hard siliceous permeable limestone with solution holes from -7.5 to -8.5	33	16	-9.2
		SILT, slightly sandy, tan, compact (MH) Plastic	46	17	-10.7
-12.2	31.5		0		-12.2
-14.2	33.5	SAND, fine, quartz, silty tan (SM)	100	18	-13.7
		SILT, compact, slightly sandy, tan (ML) slightly plastic	33	19	-15.2
-16.7	36.0		46	20	-16.7
		SAND, fine quartz, silty, stiff, tan (SM)	33	21	-18.2
-19.2	38.5		66	22	-19.7
-21.2	40.5	SILT, tan, slightly sandy, (MH) Plastic	46	23	-21.2
		SILT, very sandy, tan, (ML) slightly plastic	66	24	-22.7
-24.2	43.5		40	25	-24.2 Pushed

ENG FORM 1836-A — Project: FRB Structure 162 — Hole No. CB-5162-7

DRILLING LOG (Cont Sheet) — Hole No. CB-5162-7 (Sheet 2 of 2 sheets)

Elevation top of hole: +19.3 — Project: FRB Structure 162 — Installation: Jacksonville District

Elevation	Depth	Classification of materials	% Core recovery	Sample No.	Remarks
-24.2	43.5				BIT OR BARREL; -24.2 Bls/0.5 ft; SPLIT SPOON
		SAND, fine, quartz, very silty, tan (SM)	46	26	-25.7 Pushed
			54	27	-27.2 Pushed
			40	28	-28.7
			46	29	-30.2
-31.7	51.0	from -31.0 to -31.7 Calcareous silt	72	30	-31.7
		LIMESTONE, hard solid, dense, gray, slightly fossiliferous, sandy; medium hard with seams of calcareous silt and beds of sandy clay from -35.2 to -36.7, hard from -36.7 to -37.2	12	*	DIAMOND 4"x5-1/2" D.T. 120 min. H.P. 150 psi; -36.7
		clayey, sandy, calcareous silt (ML) with limestone lenses, gray, from -37.2 to -40.2; very hard, dense and solid from -40.2 to -42.6	100	*	DIAMOND 4"x5-1/2" D.T. 60 min. H.P. 150 psi; -41.7
-45.0	64.3	clayey, sandy, gray calcareous silt with limestone lenses from -43.6 to -45.0	100	*	DIAMOND 4"x5-1/2" D.T. 70 min. H.P. 150 psi; -46.7
-50.7	70	LIMESTONE, soft, dense, impermeable, (easily broken with fingers) buff, slightly fossiliferous, massive, bedded	100	*	DIAMOND 4"x5-1/2" D.T. 45 min. H.P. 100 psi; -50.7

NOTES:
1. Six-inch casing set to elev. -30.2.
2. Elev. of ground water in overburden, and after penetrating rock, is +14.3
3. Partial drill fluid loss from -7.5 to -8.5.
4. *Representative sample wrapped in wax-impregnated cloth.
5. Hole grouted upon completion.

Remarks: 140# hammer with 30" drop used on 2" split spoon (1-3/8" I.D. x 2" O.D.)

ENG FORM 1836-A — Project: FRB Structure 162 — Hole No. CB-5162-7

AS BUILT

RECORD DRAWING NOTE
"Shall be" "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract

NOTES:
1. For boring locations see Note 1, Dwg No. 24/1.
2. For boring notes, see Dwg No. 24/1

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
CORE BORINGS AND MISCELLANEOUS
STRUCTURE 162 - LOG OF BORINGS

R.T.S. — H.R.D. — J.T.L.
DACW17-73-B-0036
DATED 12 FEBRUARY 1973
SCALE AS SHOWN
24/4
SHEET 45 OF 57

O. FILE NO. ~~605-31,892~~ 605-32,47? — 5/77 — FRB 300-?

SAFETY ON THIS JOB
DEPENDS ON YOU

REVISIONS					
		ZONE	DESCRIPTION	DATE	APPROVED
1	△	All	REVISED TO CONFORM TO AMEND NO. 0002	3-3-75	RGX

Hole No. CB-5162-B

DRILLING LOG	DIVISION: South Atlantic	INSTALLATION: Jacksonville District	SHEET 1 OF 2 SHEETS
PROJECT: FRB Structure 162		SIZE AND TYPE OF BIT: See remarks	
LOCATION: E= 386742, N= 1350574		DATUM FOR ELEVATION SHOWN: MSL	
DRILLING AGENCY: Corps of Engineers		MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500	
HOLE NO.: CB-5162-B		TOTAL NUMBER CORE BOXES: 4	
NAME OF DRILLER: J. King		ELEVATION GROUND WATER: +13.4	
DIRECTION OF HOLE: Vertical		DATE HOLE: Started 3/6/73, Completed 3/15/73	
THICKNESS OF OVERBURDEN		ELEVATION TOP OF HOLE: +19.4	
DEPTH DRILLED INTO ROCK		TOTAL CORE RECOVERY FOR BORING: 62 %	
TOTAL DEPTH OF HOLE: 72.7'		GEOLOGIST: J. Gentile	

Elevation	Depth	Classification of Materials	% Core Recovery	Sample No.	Remarks	Blows/0.5 Ft.
					BIT OR BARREL	
+19.4	0.0				+19.4 — SPLIT SPOON	Blo/0.5 Ft.
+16.9	2.5	SAND, fine to medium, quartz, slightly silty, tan, (SP)	46	1	+17.9	1, 2, 4
			34	2	+16.4	6, 8, 14
+15.4	4.0	SAND, fine to medium, quartz, clayey, stiff, tan (SC)	46	3	+14.9	17, 14, 21
+13.4	6.0	SAND, fine to medium, quartz, clean, white (SP)	33	4	+13.4	25, 30, 30
		SAND, fine to medium, quartz, silty, slightly clayey, tan, (SM)	40	5	+11.9	15, 15, 14
		layer of silt from +11.9 to +10.9	33	6	+10.4	Pushed, Pushed, Pushed
			60	7	+8.9	12, 13, 12
			0		+7.4	8, 4, 10
+5.9	13.5		0		+5.9	2, 4, 4
		CLAY, very plastic, brown slightly sandy, (CH)	87	8	+4.4	2, 3, 4
+1.9	17.5		80	9	+2.9	2, 8, 12
		SAND, clayey, stiff, brown, (SC)	100	10	+1.4	12, 13, 15
+0.4	19.0		72	11	-0.1	12, 11, 15
		CLAY, plastic, green slightly sandy, stiff (CL)	80	12	-1.6	8, 12, 14
			100	13	-3.1	10, 13, 19
		sandy from -3.1 to -4.6	42	14	-4.6	9, 14, 15
-5.6	25.0	sandy, silty, slightly shelly, brown from -4.6 to -5.6	80	15	-6.1	12, 18, 24
		SILT, sandy, plastic, stiff, brown (ML)	72	16	-7.6	18, 17, 12
		limestone lens from -7.1 to -7.4	60	17	-9.1	13, 18, 15
			52	18	-10.6	7, 12, 14
			100	19	-12.1	7, 5, 5
		soft, slightly plastic from -12.1 to -15.1	60	20	-13.6	Pushed
-15.1	34.5		66	21	-15.1	Pushed
		SAND, very fine, quartz, very silty, slightly plastic to plastic, slightly clayey, dark brown (SM)	72	22	-16.6	Pushed
			60	23	-18.1	Pushed
			80	24	-19.6	2, 2, 5
			100	25	-21.1	1, 4, 4
			93	26	-22.6	3, 2, 2
-24.1	43.5		54	27	-24.1	Pushed

ENG FORM 1836-A — PROJECT: FRB Structure 162 — HOLE NO.: CB-5162-B

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE: +19.4	Hole No. CB-5162-B
PROJECT: FRB Structure 162	INSTALLATION: Jacksonville District	SHEET 2 OF 2 SHEETS

Elevation	Depth	Classification of Materials	% Core Recovery	Sample No.	Remarks	Blows/0.5 Ft.
					BIT OR BARREL	
-24.1	43.5				-24.1	Blo/0.5 Ft.
		SILT, calcareous, slightly clayey, slightly sandy, compacted, thin lenses of limestone, light gray (ML)	34	28	SPLIT SPOON -25.6	7, 14, 14
			60	29	-27.1	8, 15, 15
		sandy from -27.1 to -28.6	93	30	-28.6	6, 13, 11
		very light from -28.6 to -30.1	33	31	-30.1	30, 46, 50
			50	32	-30.6	100
		Bed of medium hard limestone from -30.6 to -31.1	67	33	DIAMOND 4" x 5-1/2" D.T. 40 min. B.P. 150 psi	
		Semi-indurated from -31.1 to -33.3			-33.8	
		bed of medium hard limestone sandy, gray, from -33.3 to -33.1			DIAMOND 4" x 5-1/2" D.T. 32 min. B.P. 100 psi	
		silty sand from -35.1 to -38.7	82	34		
-38.0	57.4				-38.8	
		LIMESTONE, medium hard, with soft seams, and lenses of hard limestone, porous, permeable, solution cavities, slightly fossiliferous, fractured, buff	36	*	DIAMOND 4" x 5-1/2" D.T. 43 min. B.P. 150 psi	
					-43.8	
			100	*	DIAMOND 4" x 5-1/2" D.T. 30 min. B.P. 150 psi	
					-48.3	
		soft with seams of partly indurated silt from -48.1 to -49.3	90	*	DIAMOND 4" x 5-1/2" D.T. 55 min. B.P. 150 psi	
		hard and dense from -49.3 to -51.3				
		soft with seams of calcareous silt from -51.3 to -53.3				
-53.3	72.7				-53.3	

Notes:
1. 6-inch casing set to -38.8
2. Elevation of ground water in overburden at +13.4
3. Elevation of ground water after penetrating rock is +16.4
4. Complete drill fluid loss below -38.0
5. * represents sample wrapped in wax impregnated cloth
6. Hole grouted upon completion

140 lb. hammer with a 30" drop used on a 2.0" split spoon (1-3/8" ID x 2" OD)

ENG FORM 1836-A — PROJECT: FRB - Structure 162 — HOLE NO.: CB-5162-B

Hole No. CB-5162-BU

DRILLING LOG	DIVISION: South Atlantic	INSTALLATION: Jacksonville District	SHEET 1 OF 1 SHEETS
PROJECT: FRB Structure 162		SIZE AND TYPE OF BIT: See remarks	
LOCATION: X= 386,145, Y= 1350,496		DATUM FOR ELEVATION SHOWN: MSL	
DRILLING AGENCY: Corps of Engineers		MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500	
HOLE NO.: CB-5162-BU		TOTAL NUMBER CORE BOXES: 4	
NAME OF DRILLER: J. King		ELEVATION GROUND WATER: Not recorded	
DIRECTION OF HOLE: Vertical		DATE HOLE: Started 2/27/73, Completed 3/1/73	
THICKNESS OF OVERBURDEN		ELEVATION TOP OF HOLE: +19.4	
DEPTH DRILLED INTO ROCK		TOTAL CORE RECOVERY FOR BORING: 65 %	
TOTAL DEPTH OF HOLE: 43.5'		GEOLOGIST: J. Gentile	

Elevation	Depth	Legend	Classification of Materials	% Core Recovery	Sample No.	Remarks
						BIT OR BARREL
+19.4	0.0					+19.4
		No Rec	No sample taken.			5-7/8 - inch rock bit
+5.4	14.0					+5.4
			CLAY, very plastic, slightly sandy, brown, (CH)	80	St-1	5-in. Shelby Tube +2.9
+1.4	18.0			80	St-2	5-in. Shelby Tube
+0.4	19.0		SAND, very clayey (SC)			+0.4
		No Rec	No sample taken			5-7/8-in. rock bit
-7.1	26.5					-7.1
			No sample recovered	0		5-in. Shelby Tube
-9.6	29.0					-9.6
-12.1	31.5		SILT, plastic, slightly sandy, brown, (MH)	80	St-3	5-in. Shelby Tube -12.1
-13.1	32.5		No sample taken			-13.1 5-7/8-in. rock bit
-15.1	34.5		SILT, plastic, slightly sandy, brown, (MH)	75	St-4	5-in Shelby Tube -15.1
-15.6	35.0		No sample taken			-15.6 5-7/8-in rock bit
-18.1	37.5		SILT, plastic, slightly sandy, brown, (MH)	60	St-5	5-in. Shelby Tube -18.1
-19.1	38.5		No sample taken			-19.1 5-7/8-in Rock Bit
-21.6	41.0		SAND, fine quartz, silty, plastic, tan (SM)	52	St-6	5-in Shelby Tube -21.6
-22.1	41.5		No sample taken			-22.1 5-7/8-in Rock Bit
-24.1	43.5		SAND fine quartz, silty, plastic, tan (SM)	80	St-7	5-in Shelby Tube -24.1

Notes:
1. Hole grouted upon completion.

ENG FORM 1836-A — PROJECT: FRB Structure 162 — HOLE NO.: CB-5162-BU

RECORD DRAWING NOTE
"Shall be" "Provide," "install," "Remove" etc., indicates work was accomplished under the contract

NOTES:
1. For boring locations see Note 1, Dwg. No. 24/1.
2. For boring notes, see Dwg. No. 24/1.

AS BUILT

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
CORE BORINGS AND MISCELLANEOUS
STRUCTURE 162-LOG OF BORINGS

G.T.S.	H.R.D.	INV. NO. DACW17-75-B-0036	F	DWG. NO. 24/5
J.T.L.		DATED: 13 FEBRUARY 1975		
		SCALE: AS SHOWN	DATED ~~069-1026~~	SHEET 46 OF 57

D. O. FILE NO. ~~605-31,692~~ 65-32-470 5/77 FRB 200-003

SAFETY ON THIS JOB DEPENDS ON YOU

REVISIONS				
NO.	SYM.	ZONE	DESCRIPTION	DATE	APPROVED
1	△	A-1	REVISED TO CONFORM TO AMEND NO 0002	2-3-75	RGR

DRILLING LOG — Hole No. CB-5162-9

Division	South Atlantic
Installation	Jacksonville District
Sheet	1 of 1 sheets
Project	FRB C-135 Structure 162
Location	X= 386292, Y= 1316415
Size and type of bit	See Remarks
Datum for elevation shown	MSL
Drilling agency	Corps of Engineers
Manufacturer's designation of drill	Failing 1500
Hole no.	CB-5162-9
Name of driller	J. King
Elevation ground water	+16.9
Date hole	Started 2-16-73; Completed 2-23-73
Elevation top of hole	+23.1
Total core recovery for boring	60 %
Total depth of hole	72.0'
Geologist	J. Gentile

Elevation	Depth	Classification of materials	% Core recovery	Sample no.	Remarks
+23.1	0.0				BIT OR BARREL; +23.1 Bls per 0.5 ft; SPLIT SPOON
		FILL, spoil bank overgrown with large trees, fine to medium, quartz sand, slightly silty (SM)	30	1	+21.6
+19.6	3.5		33	2	+20.1
		SAND, fine to medium, quartz, slightly silty to silty, organic stain, dark brown (SM)	21	3	+18.6
+17.6	5.5	SAND, fine to medium, quartz, clayey, stiff, tan, (SC)	93	4	+17.1
			60	5	+15.6*
+14.1	9.0		30	6	+14.1
		SAND, fine, quartz, slightly silty, slightly shelly, gray (SP)	21	7	+12.6
+11.1	12.0		13	8	+11.1
+10.2	12.9	SILT, organic, sandy (OL)	66	9	+9.6
		SAND, fine, quartz, slightly silty to silty, slightly clayey, tan (SM)	40	10	+8.1
			48	11	+6.6
		Dark brown, organic stain, silty, from +6.6 to +3.6	40	12	+5.1
+3.6	19.5		46	13	+3.6*
		CLAY, plastic, green (CL)	46	14	+2.1
			60	15	+0.6
			66	16	-0.9
		slightly sandy to sandy, seams of clayey sand.	60	17	-2.4
			73	18	-3.9
			80	19	-5.4
			78	20	-6.9
-8.4	31.5		30	21	-8.4
		SAND, fine, quartz, slightly clayey to clayey, slightly silty, tan (SC)	80	22	-9.9
			80	23	-11.4
			60	24	-12.9
			60	25	-14.4
-15.9	39.0		76	26	-15.9
		SILT, plastic, brown, soft, slightly sandy (ML)	70	27	-17.4
			80	28	-18.9 Pushed
			70	29	-20.4 Pushed

ENG FORM 1836-A — Project: FRB C-135, S162 — Hole No. CB-5162-9

DRILLING LOG (Cont Sheet) — Elevation top of hole +23.1 — Hole No. CB-5162-9

Project: FRB C135 Structure 162 — Installation: Jacksonville District

Elevation	Depth	Classification of materials	% Core recovery	Sample no.	Remarks
					BIT OR BARREL; -20.4
-21.9	45.0		80	30	SPLIT SPOON Pushed; -21.9
		SAND, very fine, quartz, silty, brown, plastic, clayey, (SM)	76	31	-23.4 Pushed
			80	32	-24.9 Pushed
			93	33	-26.4
			100	34	-27.9
			80	35	-29.4
			100	36	-30.9
-32.4	55.5		80	37	-32.4
		CALCAREOUS SILT, cemented slightly sandy, slightly clayey, thin lenses of limestone, buff. (ML)	54	38	-33.9
-34.4	57.5		20		-34.4
		LIMESTONE, hard, fractured, dense, gray, Soft from -35.9 to -36.4. Bed of sandy gray clay (CL) from -36.9 to -37.4	100		DIAMOND 4x5-1/2"; DT 40 min; R.P. 100 psi; -38.9
		medium hard, silty, fractured, seams of clay from -38.6 to -38.5; hard, dense, solid, slightly fossiliferous, massive, buff, from -39.5 to -42.9	100		DIAMOND 4x5-1/2"; D.T. 54 min; R.P. 150 psi
-42.9	66.0				-43.9
-45.4	68.5	medium hard, porous, permeable, solution channels,			DIAMOND 4x5-1/2"; D.T. 40 min; R.P. 150 psi
		hard, permeable, fractured, riddled with solution holes and channels, seams of soft limestone	90		
-48.9	72				-48.9

NOTES:

1. 6-inch casing set to elevation -34.4'
2. Groundwater in overburden at elev. +16.9
3. Groundwater after penetrating rock at elev. +15.7
4. Complete drill fluid loss below elev. -42.9
5. *Representative samples wrapped in wax impregnated cloth
6. Hole grouted upon completion

140# hammer with 30" drop used on 2" split spoon (1-3/8" I.D. x 2" O.D.)

ENG FORM 1836-A — Project: FRB C135, S162 — Hole No. CB-5162-9

DRILLING LOG — Hole No. CB-5162-10

Division	South Atlantic
Installation	Jacksonville District
Sheet	1 of 2 sheets
Project	FRB Structure 162
Location	X= 386,347; Y= 1,316,459
Size and type of bit	See Remarks
Datum for elevation shown	MSL
Drilling agency	Corps of Engineers
Manufacturer's designation of drill	Failing 1500
Hole no.	CB-5162-10
Name of driller	J. Dullott
Elevation ground water	+14.1
Date hole	Started 4-25-73; Completed 5-1-73
Elevation top of hole	+19.6
Total core recovery for boring	57 %
Total depth of hole	68.5'
Geologist	J. Gentile

Elevation	Depth	Classification of materials	% Core recovery	Sample no.	Remarks
+19.6	0.0				BIT OR BARREL; +19.6 Bls/0.5 ft; SPLIT SPOON
+17.6	2.0	SAND, fine to medium quartz, slightly silty, organic stain, gray (SP)	58	1	+18.1
		SAND, fine to medium quartz, slightly clayey to clayey, gray (SC) silty, slightly clayey from +15.1 to +13.6	19	2	+16.6
+15.1	4.5		46	3	+15.1
+13.6	6.0		46	4	+13.6
		SAND, fine to medium quartz, slightly silty, tan (SP)	33	5	+12.1
			33	6	+10.6
+10.1	9.5	silty (SM) from +10.1 to +9.1	40	7	+9.1
+9.1	10.5	sandy (SC) from +9.1 to +7.6	66	8	+7.6
+7.6	12.0	CLAY, stiff, slightly sandy, gray (CL)	20	9	+6.1
			66	10	+4.6
			33	11	+3.1
			46	12	+1.6
			60	13	+0.1
			60	14	-1.4
			60	15	-2.9
-4.4	24.0		66	16	-4.4
		SAND, fine, quartz, clayey, slightly silty, light gray (SC)	20	17	-5.9
			73	18	-7.4
-9.4	29.0		60	19	-8.9
		CLAY, stiff, slightly silty, gray (CL)	93	20	-10.4
			60	21	-11.9
-13.4	33.0		60	22	-13.4
-15.4	35.0	SILT, gray (ML)	40	23	-14.9
		SILT, calcareous, slightly clayey, buff, thin lenses of limestone, (ML)	100	24	-16.4
			100	25	-17.9
			53	26	-19.4
			46	27	-20.9
			46	28	-22.4

ENG FORM 1836-A — Project: FRB Structure 162 — Hole No. CB-5162-10

DRILLING LOG (Cont Sheet) — Elevation top of hole +19.6 — Hole No. CB-5162-10

Project: FRB Structure 162 — Installation: Jacksonville District

Elevation	Depth	Classification of materials	% Core recovery	Sample no.	Remarks
					Bit or Barrel; -22.4
-24.9	44.5				Diamond 4" x 5-1/2"; D.T. 25 min.; R.P. 100 psi
-27.9	47.5	SAND, clayey (SC)	42		-26.4; Diamond 4" x 5-1/2"; D.T. 70 min.; R.P. 130 psi
-31.9	51.5	LIMESTONE, hard, dense, solid, sandy, massive bedded, cavity from -30.9 to -31.9'	92		-30.9; DIAMOND 4" x 5-1/2"; -31.9 Dropped
-34.9	54.5	SILT, soft, sandy, slightly clayey, brown, (ML)			Diamond 4" x 5-1/2"; D.T. 40 min.; R.P. 150 psi
		LIMESTONE, hard, dense, solid. solution channels partly filled with green clay from -36.9 to -40.1	72		-36.9; Diamond 4" x 5-1/2"; D.T. 110 min.; R.P. 150 psi
-40.5	59.7	LIMESTONE, medium hard, porous, permeable, silty, massive bedded, slightly fossiliferous, seams of calcareous silt, solution holes and channels	54		-41.9; Diamond 4" x 5-1/2"; D.T. 72 min.; R.P. 100 psi
-48.9	68.5		54		-48.9

NOTES:

1. 6 in. casing set to -20.4
2. Partial drill fluid loss below -40.1, complete loss below -41.7
3. Ground water in overburden at +14.1, elevation of groundwater after penetrating rock at +16.1
4. * representative samples sealed in wax impregnated cloth
5. Hole grouted upon completion

140# hammer with 30" drop used on 2.0" split spoon (1-3/8" I.D. x 2" O.D.)

ENG FORM 1836-A — Project: FRB Structure 162 — Hole No. CB-5162-10

RECORD DRAWING NOTE

"Shall be" "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract

NOTES:

1. For boring locations see Note 1, Dwg. No. 24/1
2. For boring notes, see Dwg. No. 24/1

AS BUILT

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
CORE BORINGS AND MISCELLANEOUS
STRUCTURE 162 - LOG OF BORINGS

Dsgn. H.R.D.	Dwg. 24/6
Dated: 15 February 1975	Scale: As shown
Sheet 42 of 57	

D.O. FILE NO. ~~605-31,892~~ 605-32,470 FRB 200-003

SAFETY ON THIS JOB DEPENDS ON YOU

REVISIONS					
NO	SYM	ZONE	DESCRIPTION	DATE	APPROVED
1	△	A-1	REVISED TO CONFORM TO AMEND NO. 0002	3-3-78	RGA

DRILLING LOG — Hole No. CB-5162-11 (Sheet 1 of 2 sheets)

- Division: South Atlantic
- Installation: Jacksonville District
- Project: FRB Structure 162
- Size and type of bit: See remarks
- Datum for elevation shown: MSL
- Drilling agency: Corps of Engineers
- Manufacturer's designation of drill: Failing 1500
- Hole No.: CB-5162-11
- Name of driller: J. King
- Total number core boxes: 2
- Elevation ground water: +14.3
- Date hole: Started 3/19/73; Completed 3/26/73
- Elevation top of hole: +19.3
- Total depth of hole: 66'
- Geologist: J. Gentile

Elevation	Depth	Classification of Materials	% Core Recovery	Remarks
+19.3	0.0	Recharge Tests; CPM/Ft. Head		BIT OR BARREL; +19.3 Bls/0.5 Ft.
+11.8	7.5	SAND, fine to medium, quartz, slightly silty, organic stain, dark gray (SP); tan, clean from +17.8 to +16.3; bed of clayey sand (SC) tan from +16.3 to +13.3; light gray, clean, tight from +13.3 to +11.8	33, 20, 20, 66, 66	SPLIT SPOON
+7.3	12.0	Probably fine to medium quartz sand, slightly silty to silty, light gray (SM)	0, 0, 0	
+4.3	15.0	SAND, fine to medium, quartz, tan, slightly silty (SP)	6, 46	
-3.2	22.5	SAND, fine to medium, quartz, brown, silty (SM); hardpan, organic stain, slightly silty to silty from -0.7 to -3.2	20, 20, 12, 12, 66	
-4.7	24.0	SAND, fine to medium, quartz, very clayey, stiff, brown (SC)	73	
-10.2	29.5	CLAY, stiff, green (CL)	93, 46, 66, 66	
-16.7	36.0	SAND, fine to medium, quartz, slightly silty to silty, brown, organic stain (SM); Thin lenses of siliceous limestone from -10.2 to -10.7.	66, 80, 80, 46	
-24.2		SILT, dark brown, sandy (ML)	60, 60, 66, 93, 100	Pushed

ENG FORM 1836-A — FRB Structure 162 — CB-5162-11

DRILLING LOG (Cont Sheet) — Hole No. CB-5162-11 (Sheet 2)

- Elevation top of hole: +19.3
- Project: FRB Structure 162
- Installation: Jacksonville District

Elevation	Depth	Classification of Materials	% Core Recovery	Box or Sample No.	Remarks
		Recharge Tests; C.P.M./Ft. Head			BIT OR BARREL; -24.2 Bls/0.5 Ft.
-25.2	44.5		100		SPLIT SPOON
-31.7	51.0	SAND, fine, quartz, very silty, tan (SM); bed of silt, sandy, tan from -27.2 to -28.7	100, 100, 100, 100		
-34.2	53.5	LIMESTONE, hard, dense, solid, gray, slightly fossiliferous	50	No measurable leakage	DIAMOND NX; D.T. 60 min.; H.P. 150 psi.
-37.7	57.0	medium hard, seams of calcareous silt, beds of sandy clay, sandy from -34.8 to -37.3.			
-43.2	62.5	hard, dense, solid, gray, massive bedded from -37.7 to -43.2	52	No measurable leakage	DIAMOND NX; D.T. 66 min.; H.P. 150 psi.
-46.7	66.0	medium hard, seams of calcareous silt, seams and beds of clayey sand from -43.2 to -46.7	39	No measurable leakage	DIAMOND NX; D.T. 54 min.; H.P. 150 psi.

Notes:
1. 3" casing set to elev. -41.7.
2. No drill fluid loss
3. Ground water in overburden, and after penetrating rock, is at elevation +14.3
4. Hole grouted upon completion

140# hammer with 30" drop used on 2" split spoon (1-3/8" I.D. x 2" O.D.)

ENG FORM 1836-A — FRB Structure 162 — CB-5162-11

DRILLING LOG — Hole No. CB-5162-12 (Sheet 1 of 2 sheets)

- Division: South Atlantic
- Installation: Jacksonville District
- Project: FRB Structure 162
- Location: X: 306348 Y: 1326531
- Size and type of bit: See remarks
- Datum for elevation shown: MSL
- Drilling agency: Corps of Engineers
- Manufacturer's designation of drill: Sprague & Henwood 40-C
- Hole No.: CB-5162-12
- Name of driller: J. Mason
- Total number core boxes: 3
- Elevation ground water: +11.8
- Date hole: Started 3-22-73; Completed 4-3-73
- Elevation top of hole: +7.7
- Total core recovery for boring: 77 %
- Total depth of hole: 56.5'
- Geologist: J. Gentile

Elevation	Depth	Classification of Materials	% Core Recovery	Sample No.	Remarks
+7.7	0.0				BIT OR BARREL; +7.7 Bls/0.5 Ft.
+1.7	6.0	SAND, fine to medium quartz, slightly silty to silty, organic stain, dark brown, (SM)	12, 33, 40, 40	1, 2, 3, 4	SPLIT SPOON; Pushed
-4.3	12.0	CLAY, plastic, green, stiff, slightly sandy, (CL)	33, 72, 80, 80	5, 6, 7, 8	
-8.8	16.5	SAND, fine quartz, very silty, stiff, slightly plastic, compacted, tan (SM)	66, 66, 72	9, 10, 15	
-17.8	25.6	SILT, plastic, slightly sandy, slightly clayey, brown, (MH)	93, 90, 100, 100, 100, 100	12, 13, 14, 15, 16, 17	Pushed
-24.3	32.0	SAND, very fine quartz, very silty, plastic, brown (SM)	100, 100, 100, 100	18, 19, 20, 21	Pushed
		SILT, calcareous, slightly sandy, clayey, limestone lenses, gray (ML)	60, 80, 93, 100, 80, 60	22, 23, 24, 25, 26, 27	

ENG FORM 1836-A — FRB Structure 162 — CB-5162-12

DRILLING LOG (Cont Sheet) — Hole No. CB-5162-12 (Sheet 2)

- Elevation top of hole: +7.7
- Project: FRB Structure 162
- Installation: Jacksonville District

Elevation	Depth	Classification of Materials	% Core Recovery	Sample No.	Remarks
					BIT OR BARREL; Bls/0.5 Ft.; -32.8
-33.8	41.5		100	28	-33.8 SPLIT SPOON 40/120
-39.3	47.0	LIMESTONE, hard, dense, solid, massive bedded, sandy, gray; soft calcareous silt (ML) from -35.3 to -35.8	94		DIAMOND 4" x 5-1/2"; D.T. 60 min.; H.P. 150 psi.
-40.7	48.4	SAND, clayey, compacted (SC)	92	*	DIAMOND 4" x 5-1/2"; D.T. 65 min.; H.P. 100 psi.
-41.5	49.2	SILT, calcareous (ML)			
-48.8	56.5	LIMESTONE, soft, porous, slightly permeable, massive bedded, slightly fossiliferous, seams of calcareous silt, buff; medium hard from -45.3 to -48.8	70		DIAMOND 4" x 5-1/2"; D.T. 60 min.; H.P. 100 psi.

NOTES:
1. 6-in. casing set to -33.8.
2. Artesian flow encountered at -33.8. Maximum head at +15.0. With top of casing at +14.0, bottom of casing at -33.8, and bottom of hole at -48.8, flow was 5 gpm.
3. * representative samples wrapped in wax impregnated cloth.
4. Partial drill fluid loss at -34.8.
5. Hole grouted upon completion.

140 # hammer with 30" drop used on 2.0' split spoon (1-3/8" I.D. x 2" O.D.)

ENG FORM 1836-A — FRB Structure 162 — CB-5162-12

AS BUILT

NOTE:
1. For boring locations see Note 1, Dwg. No. 24/1.
2. For boring notes, see Dwg. No. 24/1.

RECORD DRAWING NOTE
"Shall be" "Provide," "Install," "Remove," etc., indicates work was accomplished under the contract

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
CORE BORINGS AND MISCELLANEOUS
STRUCTURE 162 LOG OF BORINGS

- DATED: 13 FEBRUARY 1975
- SCALE: AS SHOWN
- DATED: ~~OCT 1974~~
- DWG. NO. 24/7
- SHEET 48 OF 57
- G.T.S.
- J.T.L.

D. O. FILE NO. ~~605-31,896~~ 3/77 605-32,470 FRB 200-003

SAFETY ON THIS JOB DEPENDS ON YOU

No.	Symbol	Description	Date	Approved
1	A-1	REVISED TO CONFORM TO AMEND No. [illegible]	3-3-75	RGK

DRILLING LOG — Hole No. CB-S162-13

South Atlantic — Jacksonville District — FRB Structure 162 — Sheet 1 of 2 sheets

Corps of Engineers — Failing 1500 — Total depth of hole 79.0'

Elevation	Depth	Classification of materials	Remarks
			BIT OR BARREL
+19.1	0.0		+19.1 Bls/0.5 ft. SPLIT SPOON
		SAND, fine to medium quartz, slightly silty to silty, organic stain, dark brown (SM)	
		SAND, fine to medium quartz, slightly clayey to clayey, brown (SC)	
		SAND, fine to medium quartz, slightly silty to silty, tan; thin layer of clayey sand (SC) from +12.6 to +11.1	Pushed
		SAND, fine to medium quartz, clayey, tan (SC)	
		CLAY, stiff, green (CH)	
		clayey sand (SC) from +2.1 to +1.6	
		SAND, clayey, brown (SC)	
		SAND, fine quartz, very clayey, light green (SC)	
		CLAY, stiff green (CL)	
		soft and silty from -15.6 to -18.4	Pushed
		SAND, clayey, brown and gray (SC)	Pushed
-26.4	45.5		-26.4

ENG FORM 1836-A — FRB Structure 162 — CB-S162-13

DRILLING LOG (Cont Sheet) — Hole No. CB-S162-13

Elevation top of hole +19.1 — FRB Structure 162 — Jacksonville District — Sheet 2 of 2 sheets

Elevation	Depth	Classification of materials	Remarks
		Recharge Test gal per/ft. head	BIT OR BARREL
-24.4	43.5		-24.4 Bls/0.5 ft. SPLIT SPOON
		SAND, shelly, gray, clayey, thin films lenses (SC)	
		SAND, fine to medium quartz, very silty, shelly, gray (SM)	
		CLAY, calcareous, compact, buff, thin limestone lenses (CL)	
-37.4	56.5	LIMESTONE, medium hard, porous, permeable, solution holes, massive bedded, slightly fossiliferous, buff, seams of calcareous silt, thin beds of hard limestone from -37.9 to -38.4, from -41.9 to -42.4, and from -45.9 to -46.4	Not tested; DIAMOND NX D.T. 30 min. R.P. 100 psi
		calcareous silt with many thin lenses of limestone from -44.4 to -45.9	SPLIT SPOON
-48.9	68.0		DIAMOND NX D.T. 30 min R.P. 100 psi
		SILT, calcareous, (ML)	SPLIT SPOON; Not tested -52.4
-54.4	73.5		-53.9
-54.9	74.0	LIMESTONE, medium hard, seams calcareous silt, thin lenses of hard limestone from -54.4 to -54.9 and from -56.9 to -57.4	-54.9
-56.9	76.0		DIAMOND NX D.T. 25 min R.P. 100 psi
-57.4	76.5		
-59.9	79.0		-59.9

NOTES:

1. 3-inch casing set to -52.9
2. Elevation of ground water in over burden: +13.1; elevation of ground water after penetrating rock: +16.6
3. Partial drill fluid loss at -37.4, -54.4, and -56.9. Complete drill fluid loss from -46.4 to -48.9
4. Hole grouted upon completion.
5. *Indicates no measurable leakage during recharge test for interval indicated.

140# hammer with 30" drop used on a 2.0" split spoon (1-3/8" I.D. x 2" O.D.)

Conforms to SAD Laboratory Classification 6/21/73

ENG FORM 1836-A — FRB Structure 162 — CB-S162-13

DRILLING LOG — Hole No. CB-S162-14

South Atlantic — Jacksonville District — FRB Structure 162 — Sheet 1 of 2 sheets

Corps of Engineers — Failing 1500 — Elevation ground water +14.3 — Total depth of hole 72.0' — Geologist: J. Gentile

Elevation	Depth	Classification of materials	Remarks
			BIT OR BARREL
+19.3	0.0		+19.3 Bls/0.5 ft. SPLIT SPOON
		SAND, fine to medium quartz, slightly silty, organic stain, dark brown from +19.3 to +17.3 tan, clean from +17.3 to +15.8 (SP)	
		Clayey from +15.8 to +14.8 (SC)	
		Clean, white, from +14.8 to +13.3	
+13.3	6.0	SAND, fine to medium quartz, slightly silty to silty, tan, (SM)	
		slightly shelly, gray from +7.3 to +5.8	
		clean, medium to coarse quartz, white, from +5.8 to +4.3	
		dark brown organic stain from +4.3 to -0.2	
		layer of slightly sandy, plastic, silt, organic stain, (MH) from -0.2 to -0.9	
		slightly clayey from -7.7 to -9.2	
-9.2	28.5	CLAY, plastic, sandy, stiff, green (CL)	
-14.7	34.0	SAND, fine quartz, slightly clayey, silty, tan, (SM)	
-18.7	38.0	SILT, plastic, slightly sandy, tan (MH)	
		very sandy from -23.2 to -24.2	-24.2

ENG FORM 1836-A — FRB Structure 162 — CB-S162-14

DRILLING LOG (Cont Sheet) — Hole No. CB-S162-14

Elevation top of hole +19.3 — FRB - Structure 162 — Jacksonville District — Sheet 2 of 2 sheets

Elevation	Depth	Classification of materials	Remarks
			BIT OR BARREL
			-25.2 Bls/0.5 ft. SPLIT SPOON
-27.2	46.5	Layer of clay, plastic, silty from -26.2 to -27.2	-27.2
		SAND, fine to medium quartz, silty, stiff, tan, (SM)	
-30.7	51.0	calcareous, slightly clayey from -29.5 to -30.7	-30.7
		LIMESTONE, medium hard, porous, not permeable, fossiliferous, friable, fractured, seams of calcareous silt.	DIAMOND 4" x 5-1/2" D.T. 45 min. R.P. 150 psi
		hard, fractured from -30.7 to -31.7	
-34.2	53.5	LIMESTONE, hard, dense, solid, slightly fossiliferous	-34.2; DIAMOND 4" x 5-1/2" D.T. 63 min R.P. 150 psi
-38.2	57.5	LIMESTONE, medium hard, solution holes, fossiliferous, buff, seams of calcareous silt	-39.2; DIAMOND 4" x 5-1/2" D.T. 40 min. R.P. 100 psi
-42.5	61.8	SAND, very clayey, fine quartz, partially indurated, gray (SC)	
-44.2	63.5	LIMESTONE, hard, dense, very sandy, gray	-44.2; DIAMOND 4" x 5-1/2" D.T. 50 min. R.P. 150 psi
-47.7	67.0	SILT, calcareous, sandy, limestone lenses (ML)	-49.2
-50.2	69.6	LIMESTONE, medium hard, seams of calcareous silt	DIAMOND 4" x 5-1/2" D.T. 30 min. R.P. 100 psi.
-52.7	72.0	Hard from -52.2 to -52.7	-52.7

NOTES:

1. Six inch casing set to el. -30.7.
2. Elevation of groundwater in overburden at +14.3.
3. Elevation of groundwater after penetrating rock was +12.1.
4. No drill fluid loss throughout entire hole.
5. Rock samples wrapped in wax impregnated cloth designated by a *.
6. Hole grouted upon completion.

140# hammer with 30" drop used on 2' split spoon (1-3/8" I.D. x 2" O.D.)

ENG FORM 1836-A — FRB Structure 162 — CB-S162-14

AS BUILT

RECORD DRAWING NOTE
"Shall be" "Provide," "Install," "Remove" etc., indicates work was accomplished under the contract

NOTES:

1. For boring locations see Note 1, Dwg. No. 24/1.
2. For boring notes, see Dwg. No. 24/1.

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

FOUR RIVER BASINS, FLORIDA
STRUCTURE 162
TAMPA BYPASS CANAL
CORE BORINGS AND MISCELLANEOUS
STRUCTURE 162- LOG OF BORINGS

G.T.S. — H.R.D. — J.T.L.
DACW17-73-B-0038 — DATE: 13 FEBRUARY 1975 — SCALE: AS SHOWN — DWG. NO. 24/8 — SHEET 49 OF 57

D. O. FILE NO. ~~605-31,092~~ 605-32,470 5/77 FRB 200-005

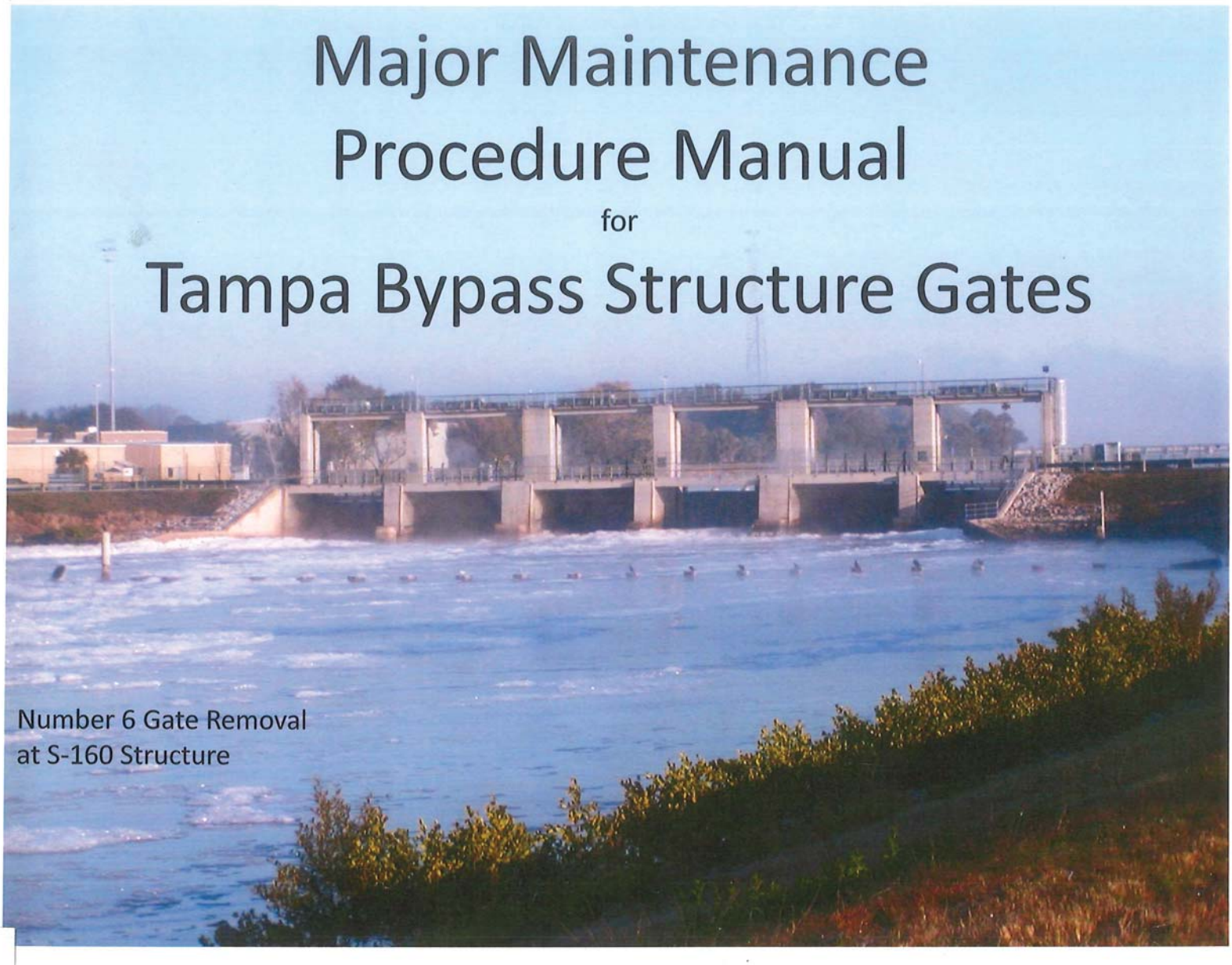
ATTACHMENT NO. 2

MAJOR MAINTENANCE PROCEDURE MANUAL FOR TAMPA BYPASS STRUCTURE GATES

Major Maintenance Procedure Manual

for

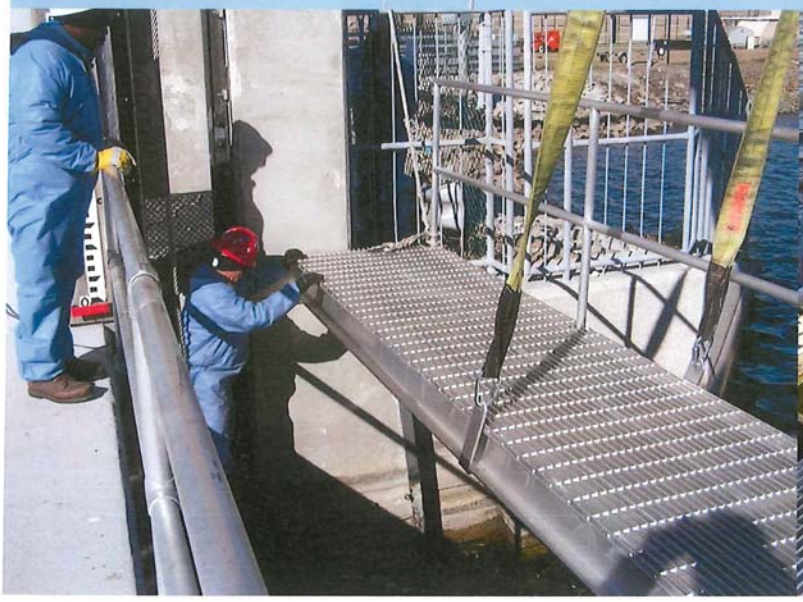
Tampa Bypass Structure Gates

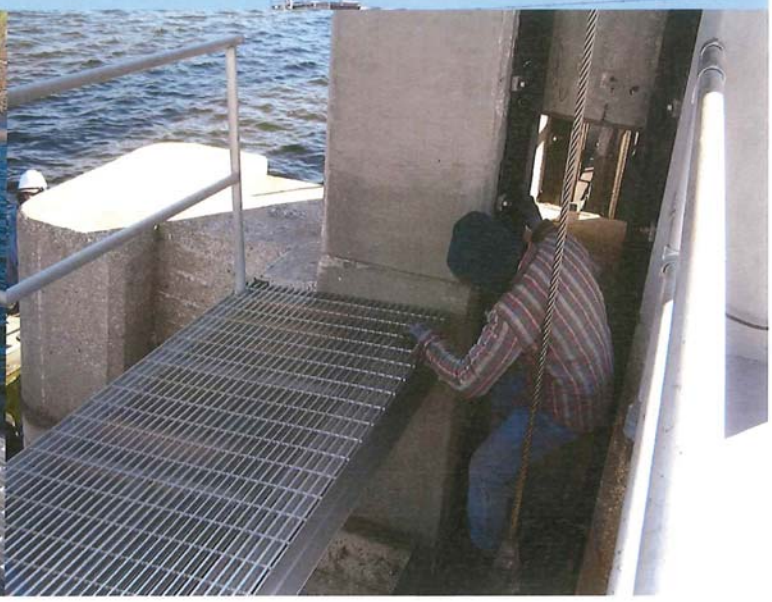


Number 6 Gate Removal
at S-160 Structure

Remove Electrical From Gate

Install Work Scaffold

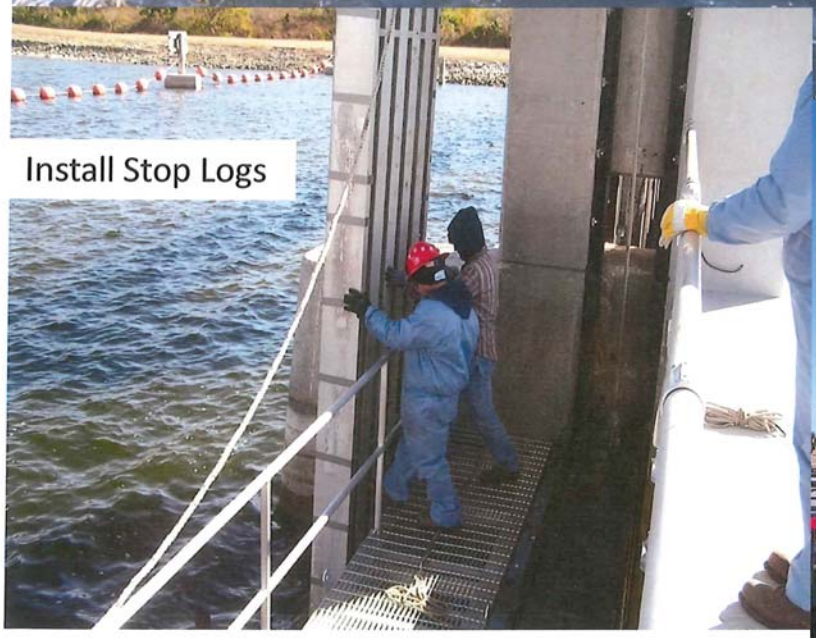




Inspect bottom seal of stop log slot

Install Spreader Beam

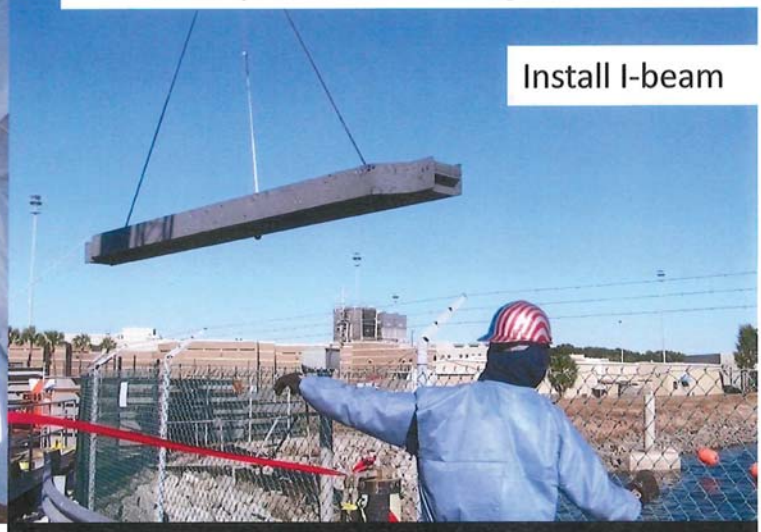
NOTE: Spreader beam weight 1,500 Lbs.



Install Stop Logs

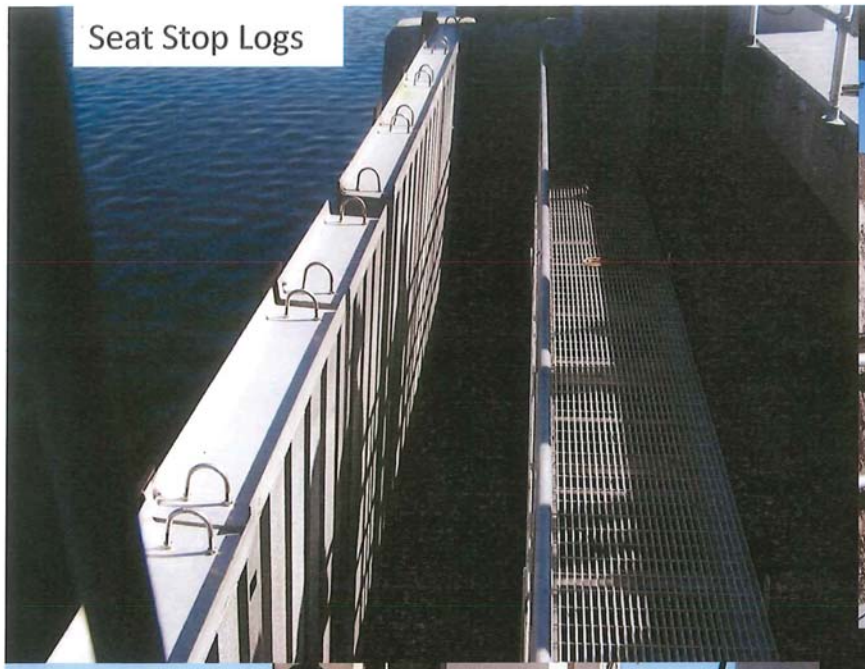
NOTE: 4' Stop log weight 1,800 Lbs.

Install I-beam

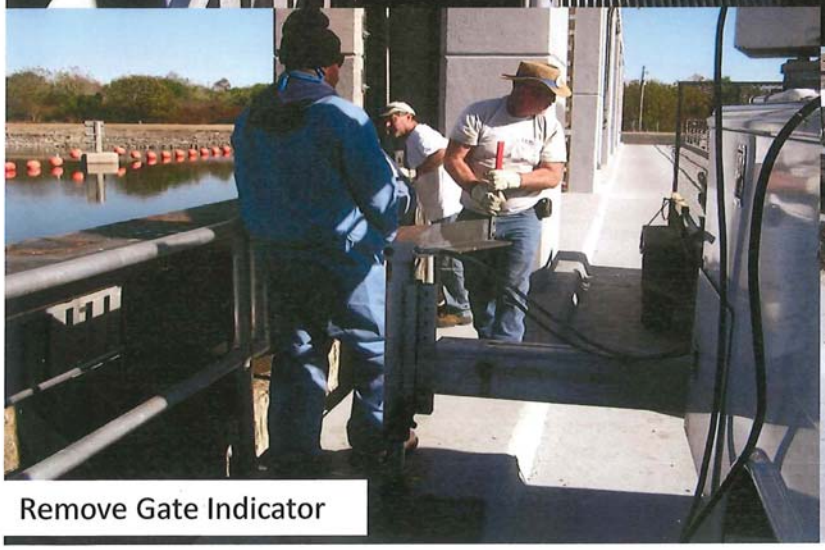


NOTE: I-beam weight 7,500 Lbs.

Seat Stop Logs



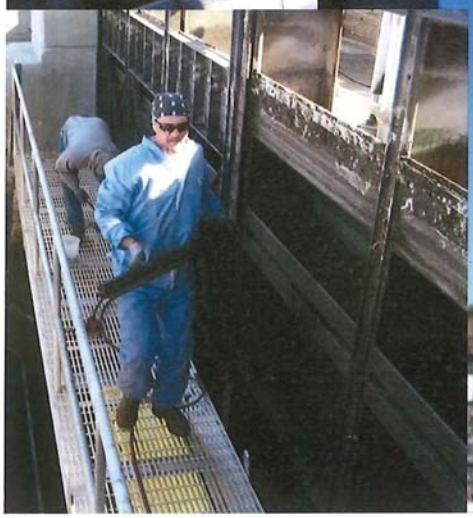
Fully Cycle Gate



Remove Gate Indicator

Operate Gate to Seat Stop Logs

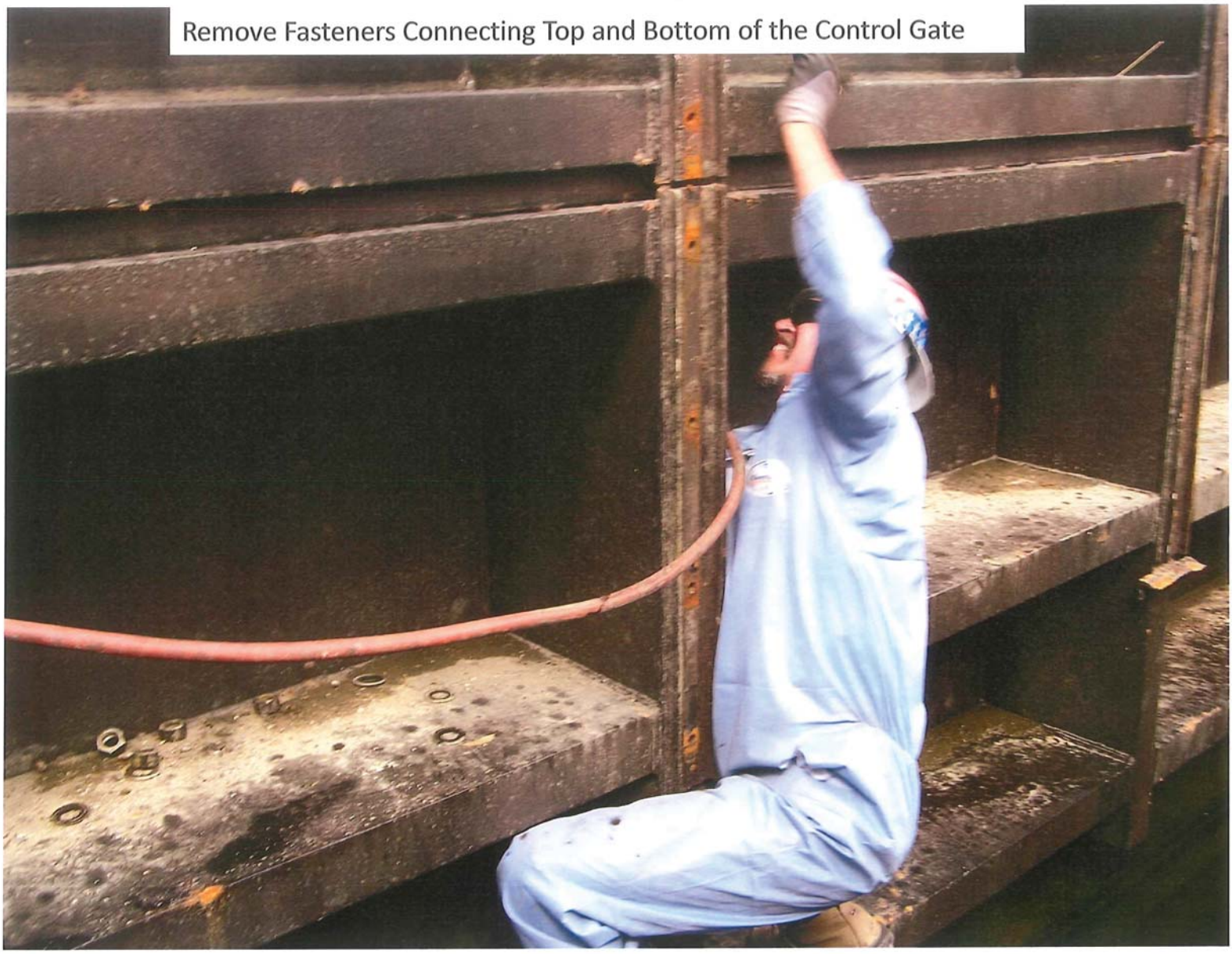
Remove Drop Gates and Spacer Bars



Remove Gate Lift Frame and Idler Sheave Hanger Frame

NOTE: Lift frame with cylinder weight 7,500 Lbs.

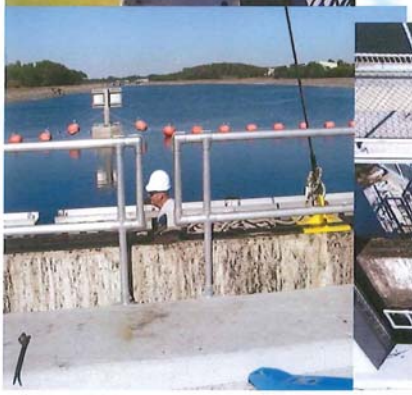
Remove Fasteners Connecting Top and Bottom of the Control Gate



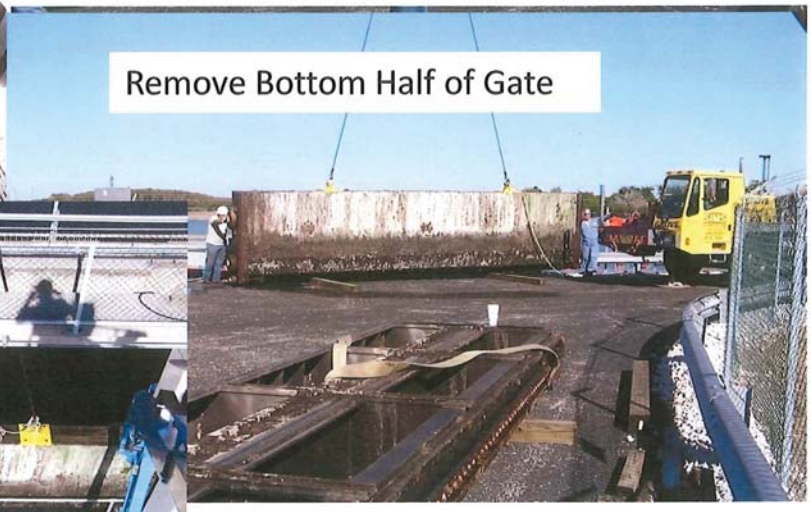
Remove Top Half of Gate

NOTE: Top half of gate weight 11,000 Lbs.

Attach Lift Plates to Bottom Half of Gate



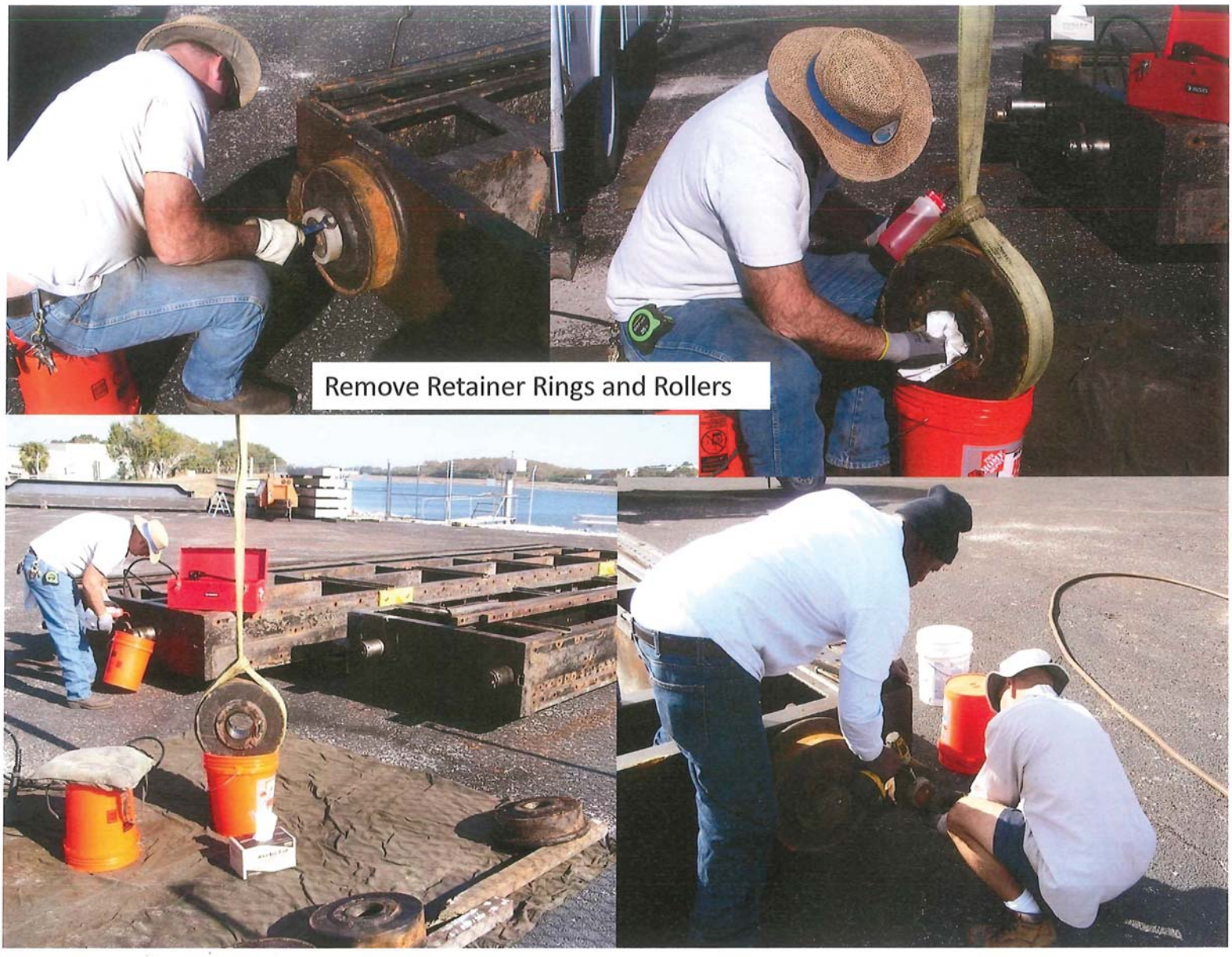
Remove Bottom Half of Gate



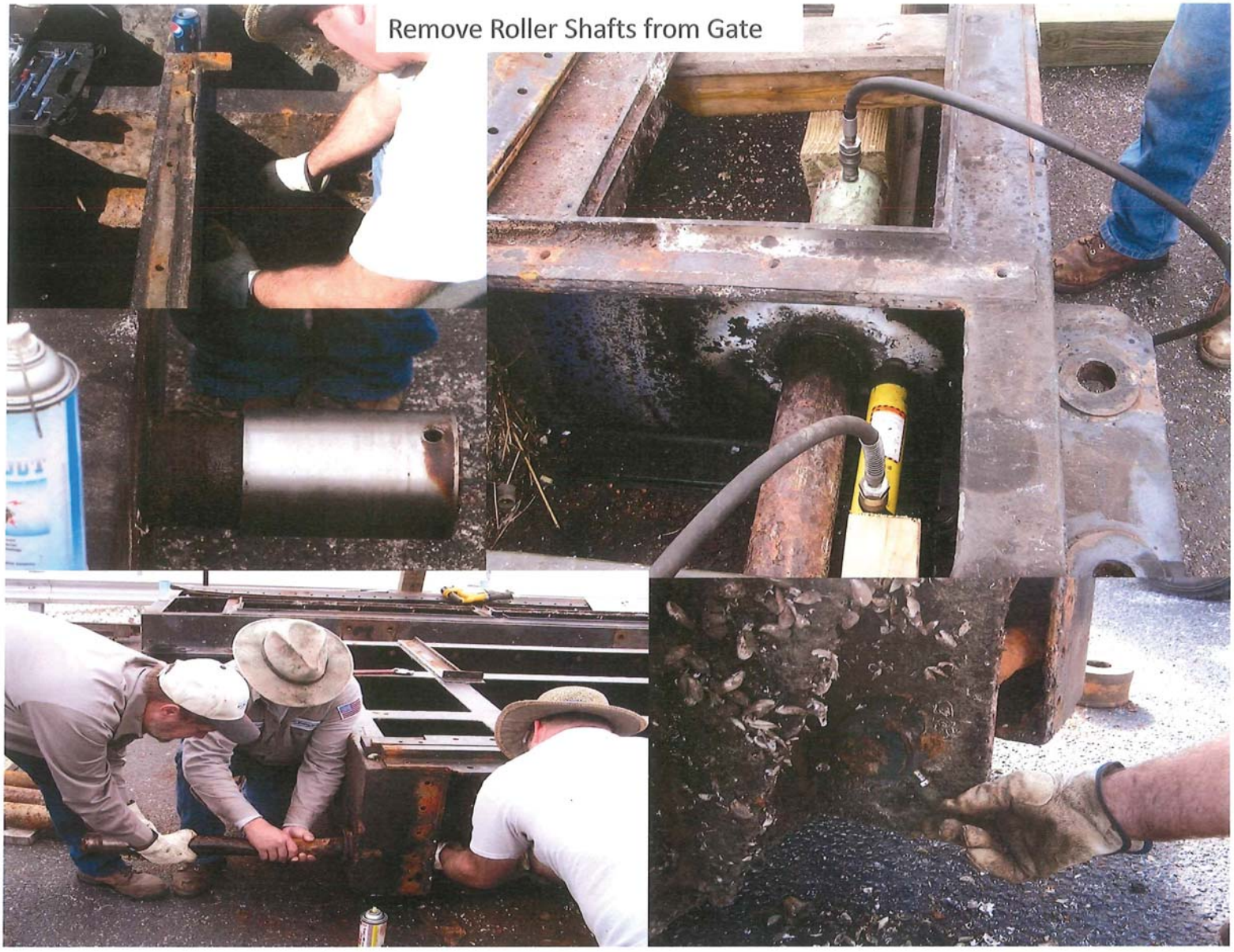
NOTE: Bottom gate 15,000 Lbs.


Remove Control Gate Rails

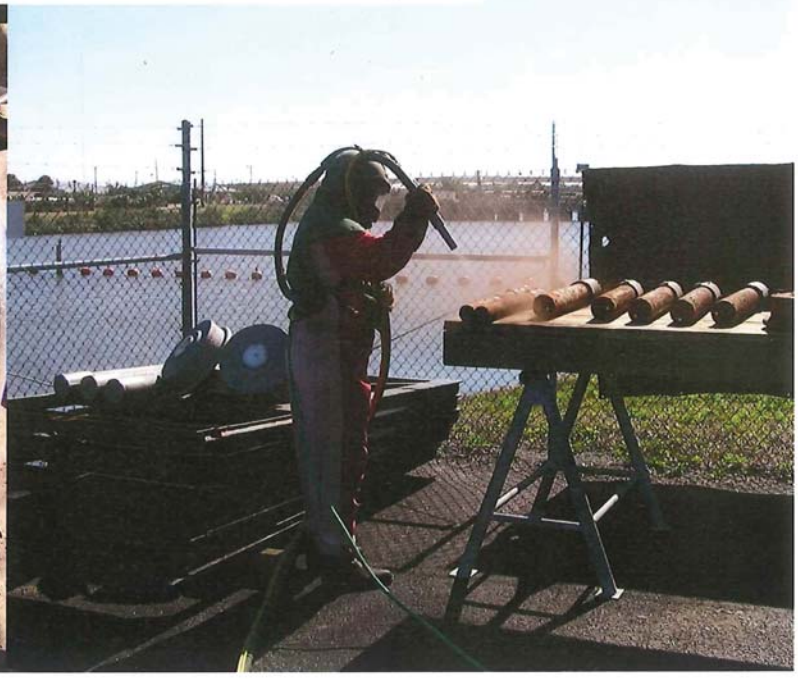
Install Plywood Over Operating Platform Opening


Remove Retainer Rings and Rollers

Remove Roller Shafts from Gate



Attach Protective Covering to Shaft and Roller Bearings

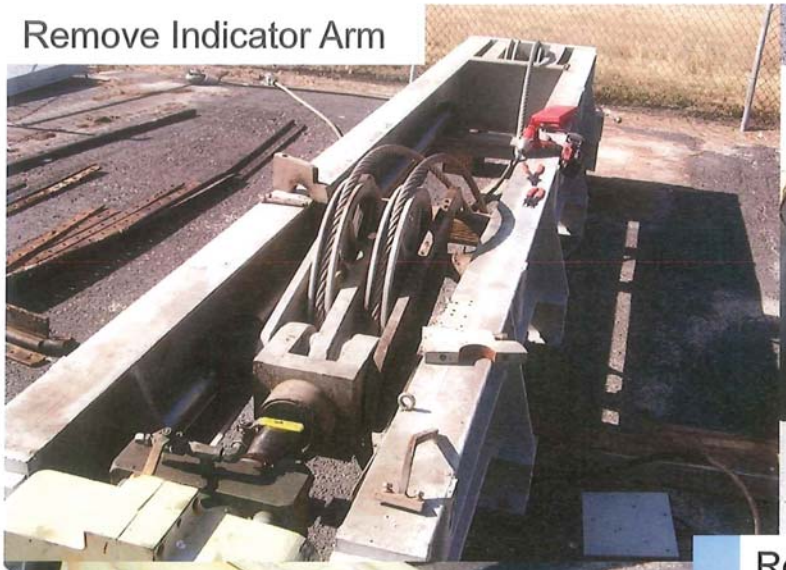


Remove Bottom Seal and Clamp Bar

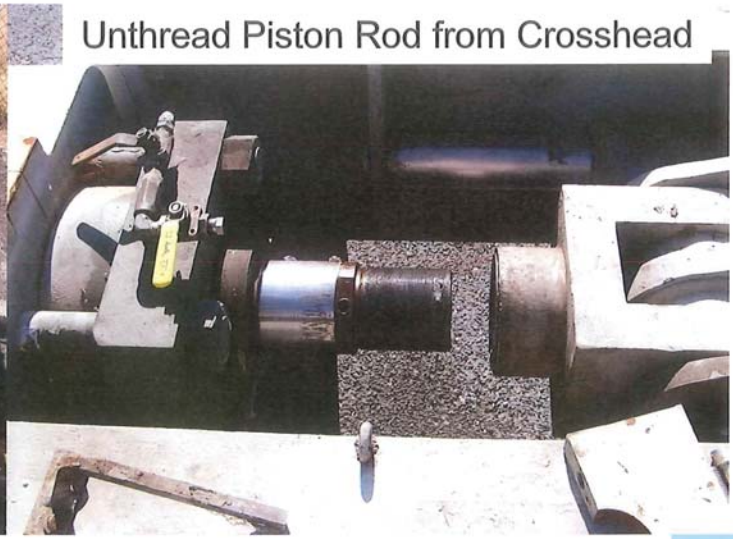
Visually Inspect Control Gate and Components for Metal Loss

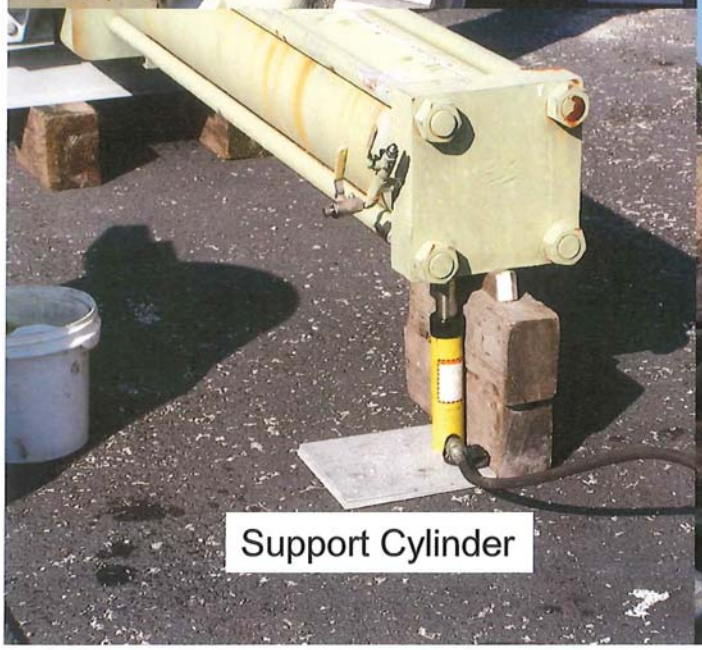
Load Gate and Components on Transport and take to Sandblast and paint Contractor

Remove Indicator Arm



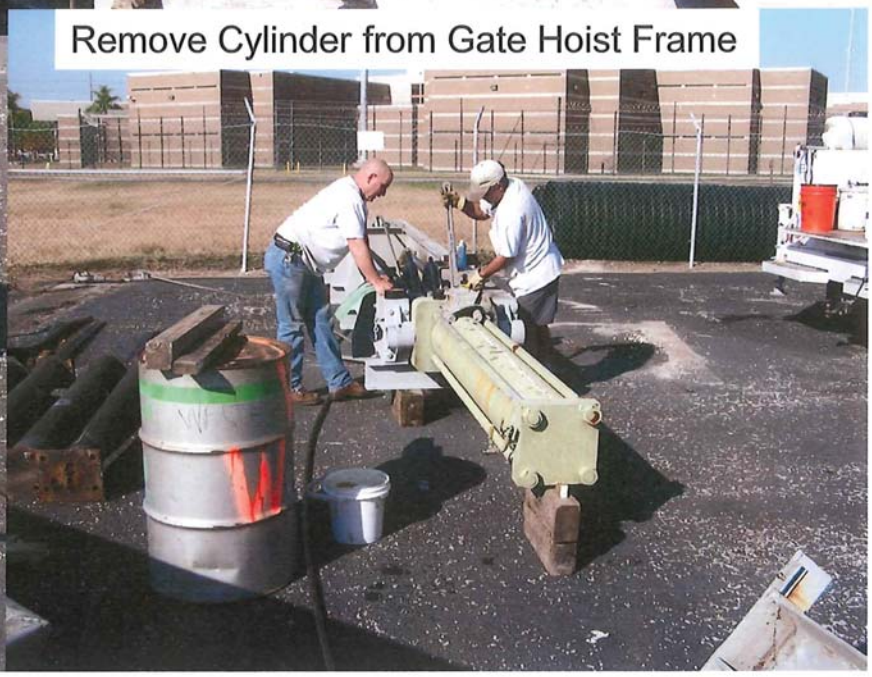
Unthread Piston Rod from Crosshead

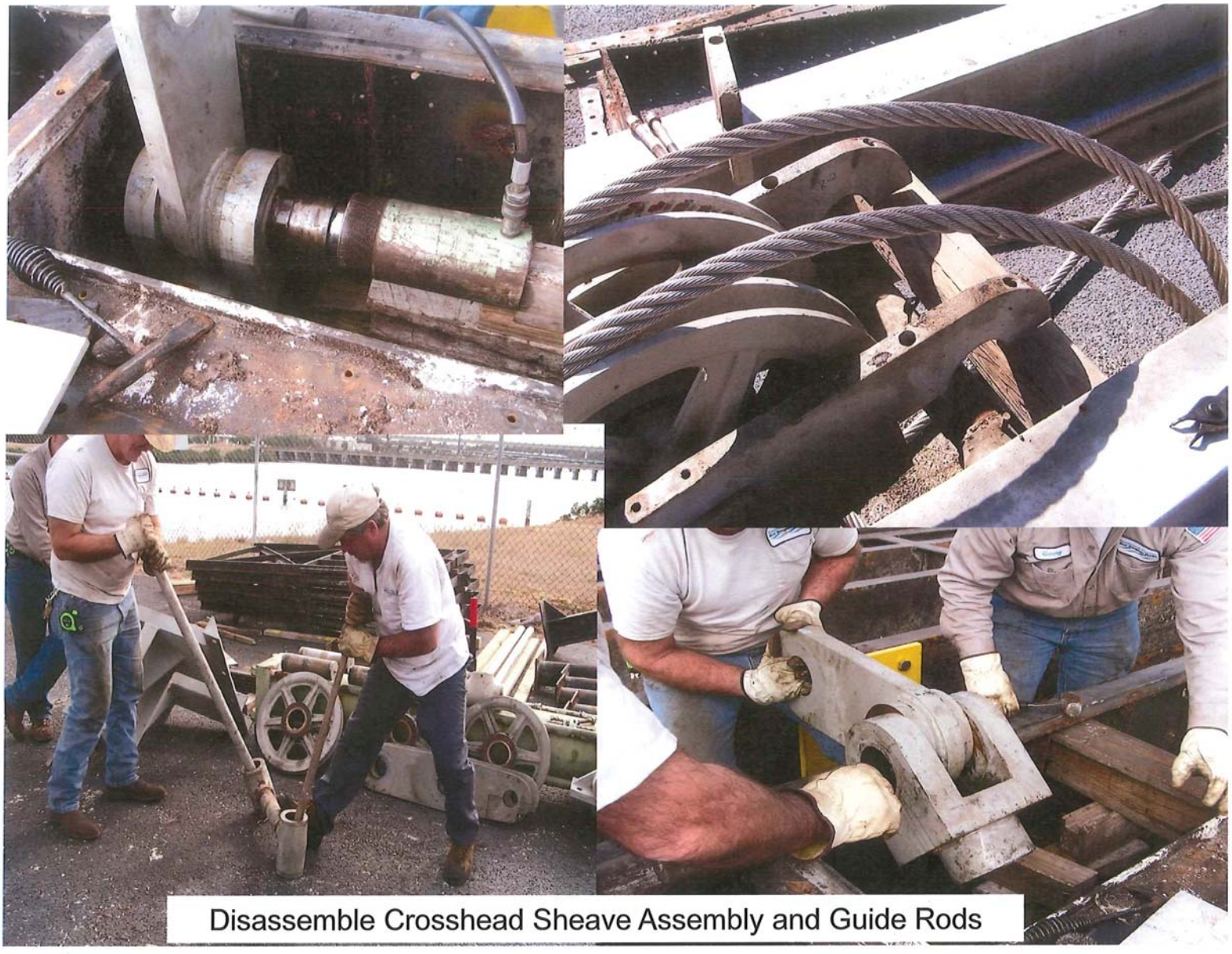




Support Cylinder

Remove Cylinder from Gate Hoist Frame





Disassemble Crosshead Sheave Assembly and Guide Rods

Repair Damaged Areas on Gate and Components

Sandblast Gate and Components

Prime Gate and Components





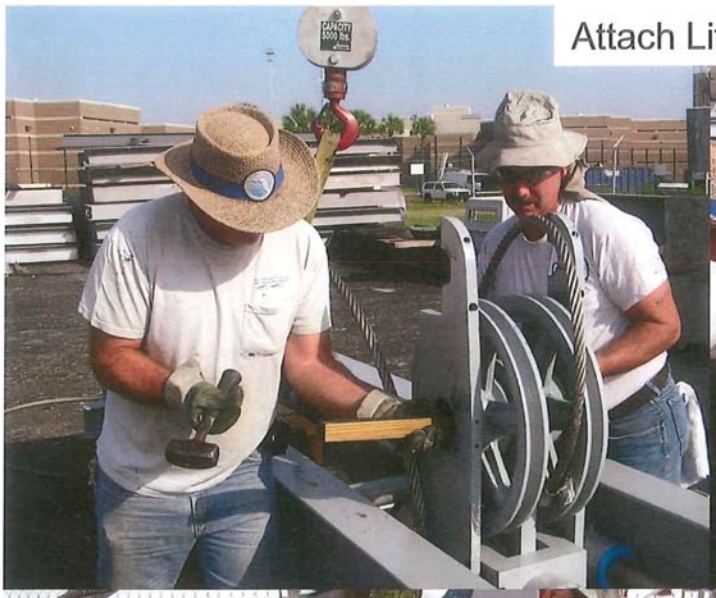




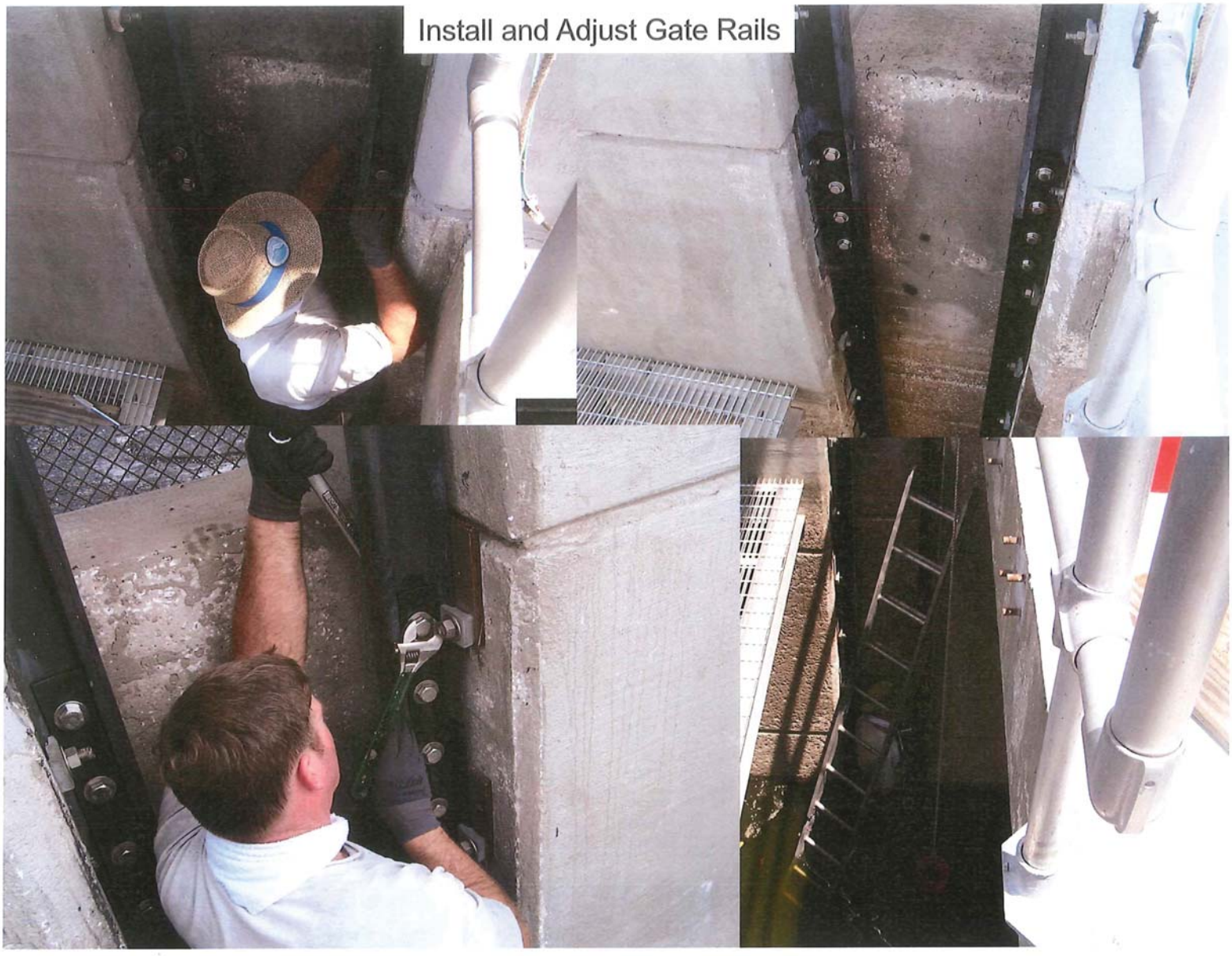
Paint Gate and Components

Reassemble Gate Lift

Attach Lift Cables



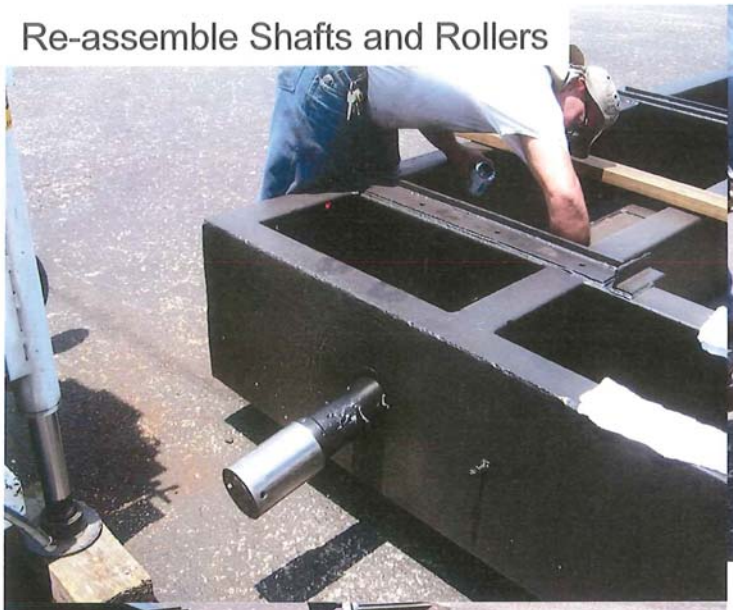
Install and Adjust Gate Rails



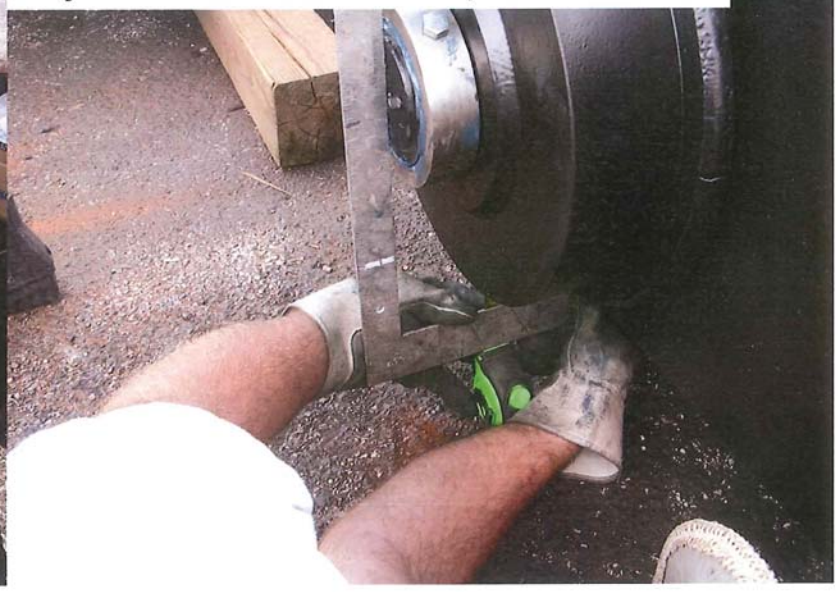
Re-assemble Gate Spacer Bars

Re-assemble Gate Seals

Re-assemble Shafts and Rollers



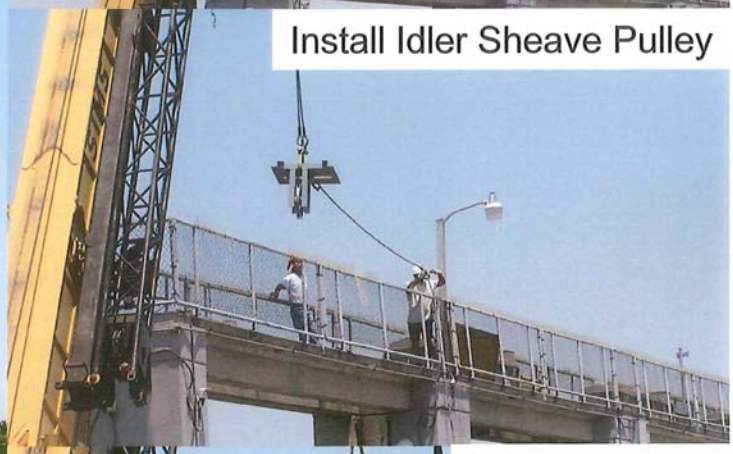
Adjust Roller Shafts for Proper Seal Seats



ıstall Bottom Half of Gate

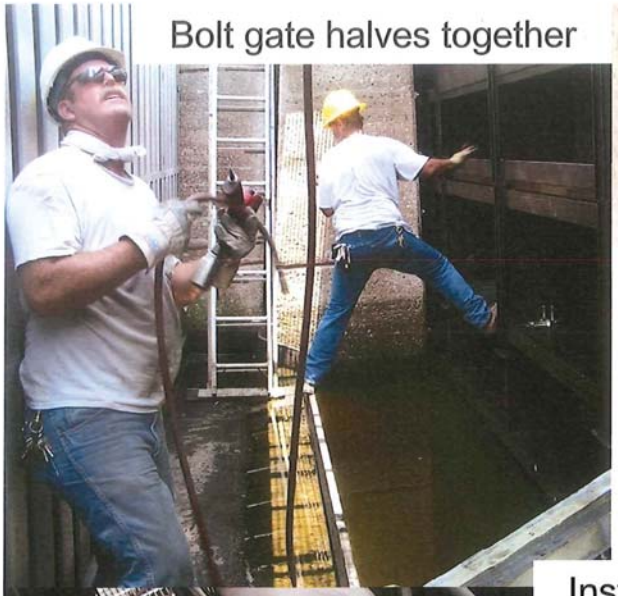
Install Top Half of Gate

Install Idler Sheave Pulley

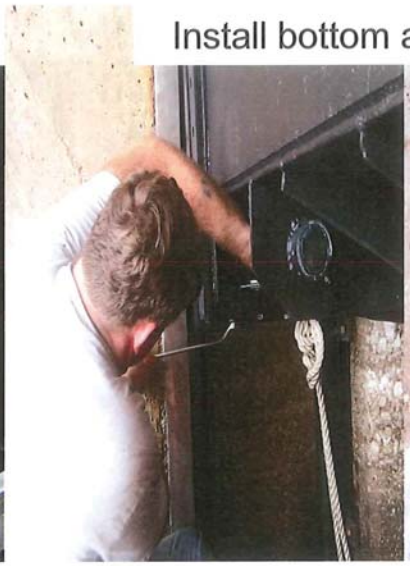


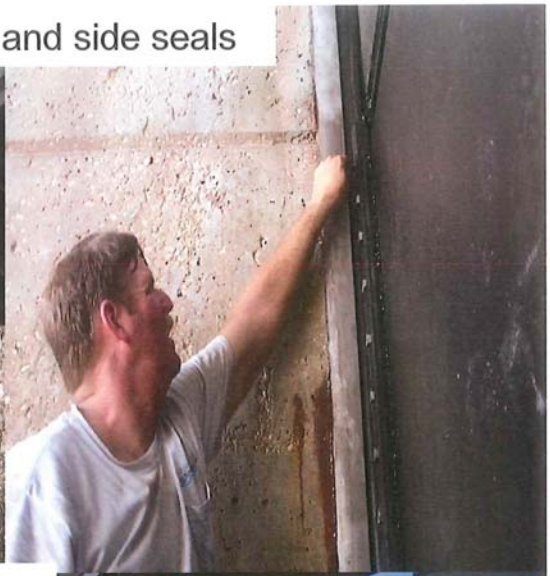
Install Gate Lift

Bolt gate halves together

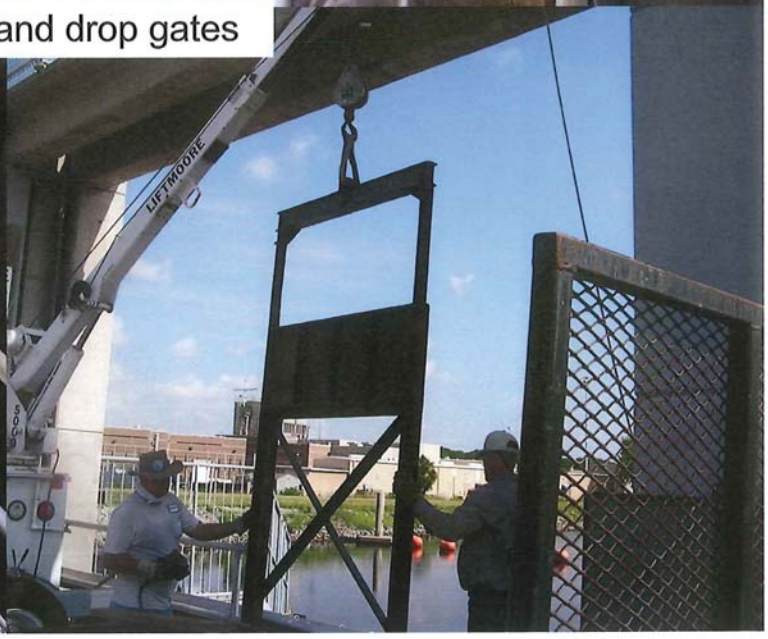


Install bottom and side seals

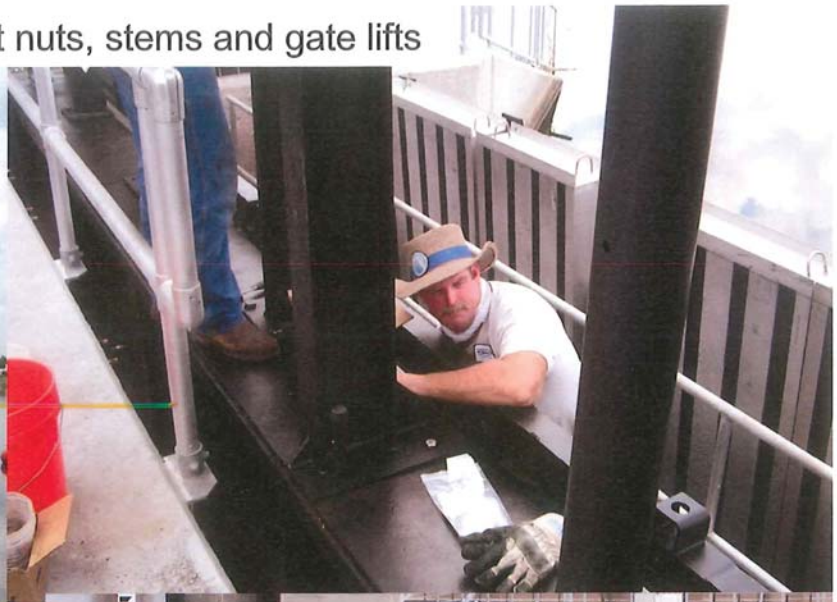




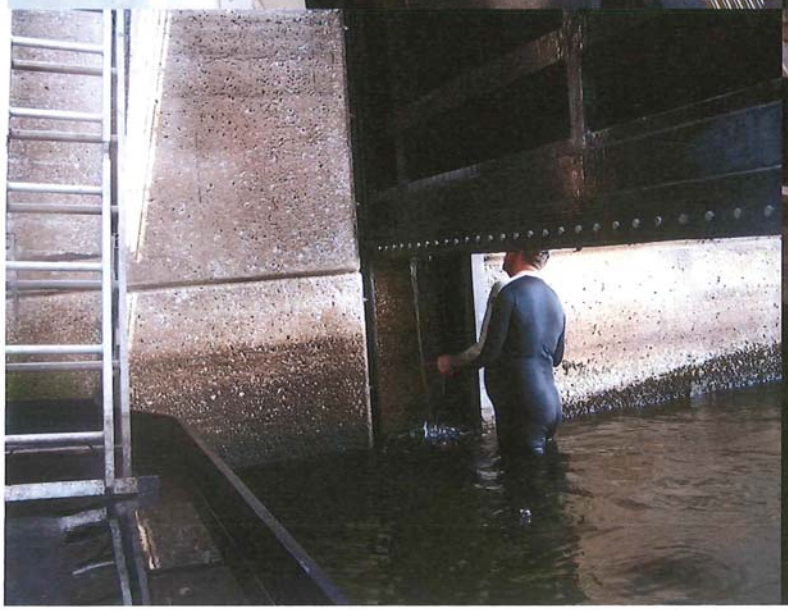
Install tracks and drop gates



Install pedestals, lift nuts, stems and gate lifts



Trial operate gate, inspect for leaks and adjust rollers or tighten bolts as needed



Remove spreader beam, stop logs, scaffold and I-beam