

JEA

Northside Generating Station

JACKSONVILLE, FLORIDA

**JEA NGS N03
Isolated Phase Bus
Cleaning Inspection and Repair Fall 2026**

Technical Specifications

**Revision 0 5/11/2026
Revision 1 5/13/2026 Disconnect Caps to Electrically Test.
Revision 2 6/18/2026 Final Edits and Flex Links
Revision 4 6/23/2026**

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General Requirements and Scope of Work

1.1 Overall Site Description

The Northside Generating Station (NGS) is located north of downtown Jacksonville on 4377 Heckscher Drive, Jacksonville, FL 32226, in Duval County. JEA's NGS has four combustion turbines (CT's) (Units N33, N34, N35, and N36) that have been in service since Circa 1975 and three steam turbine units (N01, N02 and N03) that have been in service since 1965, 1972, and 1977 respectively.

1.2 Contractor's Scope of Work

This scope of work includes inspecting, cleaning and testing the Isolated Phase Bus (IPB) system between the Generator Terminals and the step-up power transformers. The Bidder shall furnish all equipment, supervision, labor, transportation, tools and expendables to clean by removing all foreign matter, inspect and make repair recommendations, for the existing IPB. The purpose is to ensure that the duct, bus, flex-links and insulators are sufficiently clean and that the duct is properly sealed against moisture intrusion. This bus shall be cleaned by hand. No dry ice blasting shall be performed on this bus system. If any equipment is found to be damaged, it will be up to the JEA Project Manager (PM) to decide if the equipment is to be left as-is, repaired or replaced. It is expected that any existing damage, corrosion or any other issue(s) that might have previously affected reliability, or issues that may affect reliability in the future be brought to the attention of the PM immediately. Prior to any work on the IPB, the Foreman shall walk down the clearance with the PM and Engineer to gain an understanding of JEA's Lock Out Tag Out (LOTO) and to ensure safety prior to starting work. A daily meeting shall be completed with the JEA PM to go over any safety issues, discovery work, project status, and the project schedule.

Electrical Testing – The bus was manufactured by Delta Star / H.K. Porter Circa 1977. It is a 3 phase, 18kV, 60Hz, 110kV BIL, 22kA forced-air cooled system with a 2kA tap bus for station service. The three phase system is roughly 400 feet in length making this approximately 1200 feet of IPB. The conductors were designed to operate at 105C. A megger (**MIT515** or equivalent) test shall be performed before the 40kV DC High Potential testing (Hi-Pot), both before, and after the cleaning, to provide an indication of whether the bus is ready to go back into service or not. The bus is expected to meg in the Giga-Ohm range at the end of the job based on previous results. The megger used, shall be able to read in the Giga-Ohm magnitude and the Hi-Pot test machine (High Voltage **PTS-80 DC Hipot Tester** or equivalent) shall be capable of delivering results in sub micro-amp magnitude. **The megger – Hipot plan, shall be prepared by the contractor and shared with the JEA PM for approval. Before Megging or Hipot testing the capacitors shall be disconnected from the system in the PT cabinets.** All readings will be shared with the JEA PM and be included in the final report. Electrical testing results will be used to understand the initial condition of the system and then to prove that all insulators are intact and have been properly cleaned and that there are no grounds on the system at completion of work. DLRO testing of bolted connections shall be performed after torquing to document each connections resistance. Documentation can be hand written or photographed. JEA PM and or Engineer shall be present for high potential testing.

IPB Inspection - N03 IPB will be inspected from the outside, next to TG3A and TG3B, to the inside of the turbine building, underneath the generator, unless rain or weather makes starting work inside more practical. If work starts inside the turbine building, every effort must be made to begin work outside as most of the discovery is expected to be found outside of the turbine building. Ideally, the work will start on top of the step up transformers, TG3A & B, and work toward the wall plate adjacent to the N03 switchgear room. After the visual inspection is completed, electrical isolation will be verified between the generator, the IPB, and the step up power transformers TG3A & B. An initial megger will be conducted to have a base point recorded and to see if there are any points of electrical tracking. Each accessible location where it is possible for physical contact with the bus, shall be either manned with an employee, or protected with red danger tape and a barricade information tag that states the hazard information and JEA PM or Engineers cell phone number. All seals, insulators and connections shall be visually inspected using a bore scope and documented with photographs both **before and after cleaning**. The photographs will be edited (adding pointer, circles, notes and location references) to show any found deficiencies. A copy of the photo log shall be included in the final report. **The report shall detail the entire project and list all work performed,**

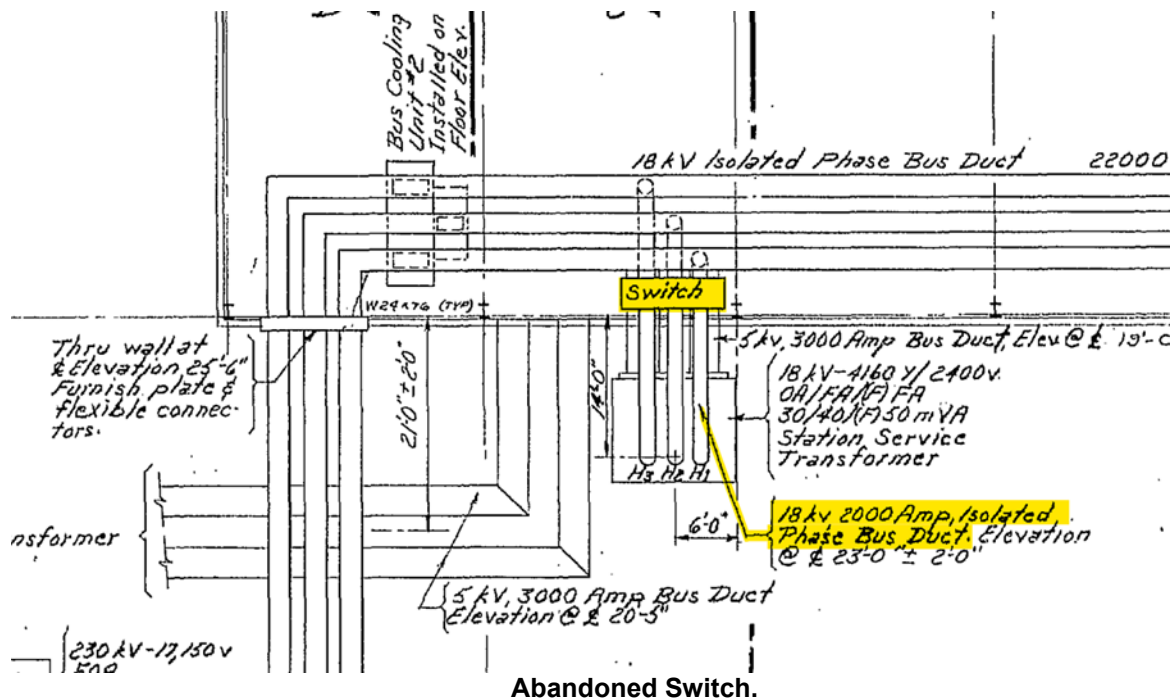
quantities and types of materials used, repair processes, and any unresolved issues that should be addressed in the future. Final payment shall be contingent on JEA's acceptance of the final report.

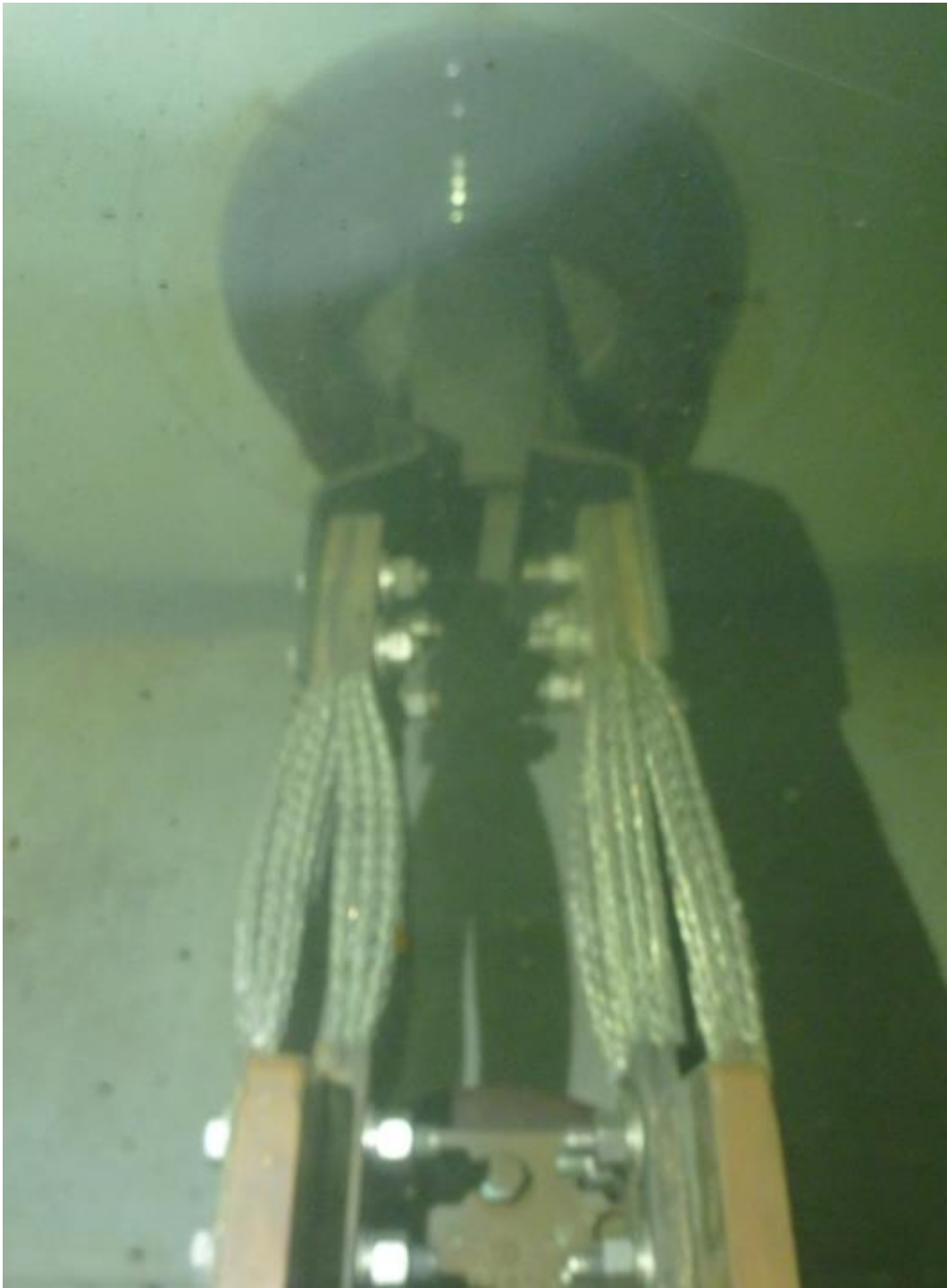
IPB Repairs – The discovery work found during the inspection shall be discussed in detail with the JEA PM and Engineer prior to commencing any repairs. The awarded contractor shall have the ability to receive any required flex links and all hardware within 5 business days after the inspection is complete. This is to ensure that the outage will not be extended. All bolts shall be torqued to the OEM's specification. The first and last set of connections shall be left removed until after the final Hi-Pot. The existing drawings shall be printed out and red-lined to create as-built's drawings if any repairs are accomplished.

After the discovery work is addressed and sufficiently complete the PM shall give permission to start the final Megger and Hi-Pot tests. If the IPB test results show that the bus is ready to be put back in service, the remaining flex links shall be installed and the access points shall be properly closed. If there are questionable results (megger results above 50 M-Ohm and below 500 M-Ohm) with greater than 40% difference between phases), it will be expected to isolate the problem area and correct the issue before the job is complete. All testing shall be done with either the PM or Engineer present.

An abandoned switch shall be removed and replaced with 6061 or equivalent Aluminum bar rated for a minimum of 2000A. This switch is located in the N03 switchgear room and is accessed from above very close to the ceiling which is roughly eighteen feet 18' above grade. Each phase is in a junction box which have Plexi-glass covers that can be removed to gain access.

New laminates will need to be manufactured in order to connect the existing four inch tubular bus bar to the new bar that is mounted on top of the existing B50 insulators.

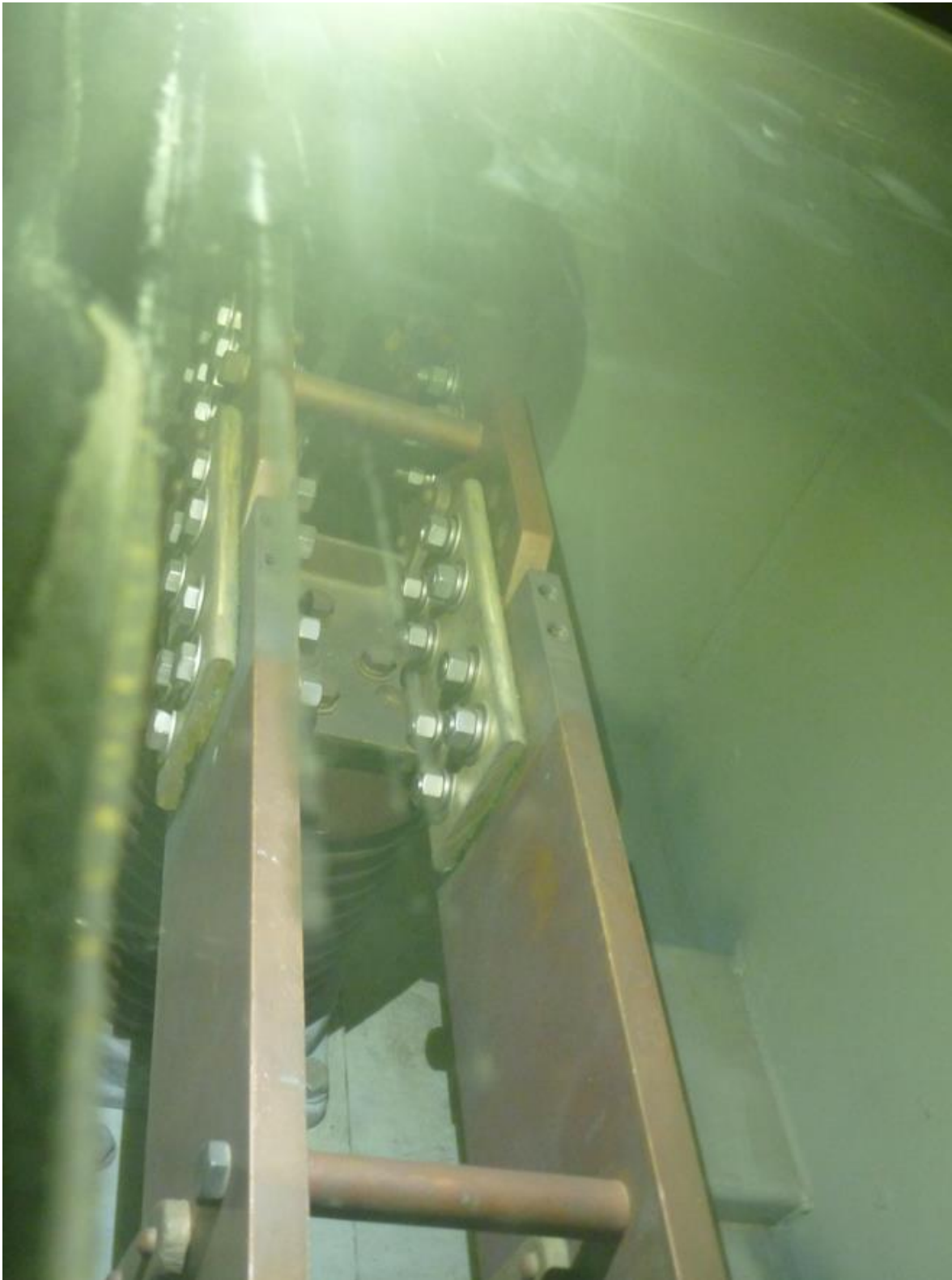




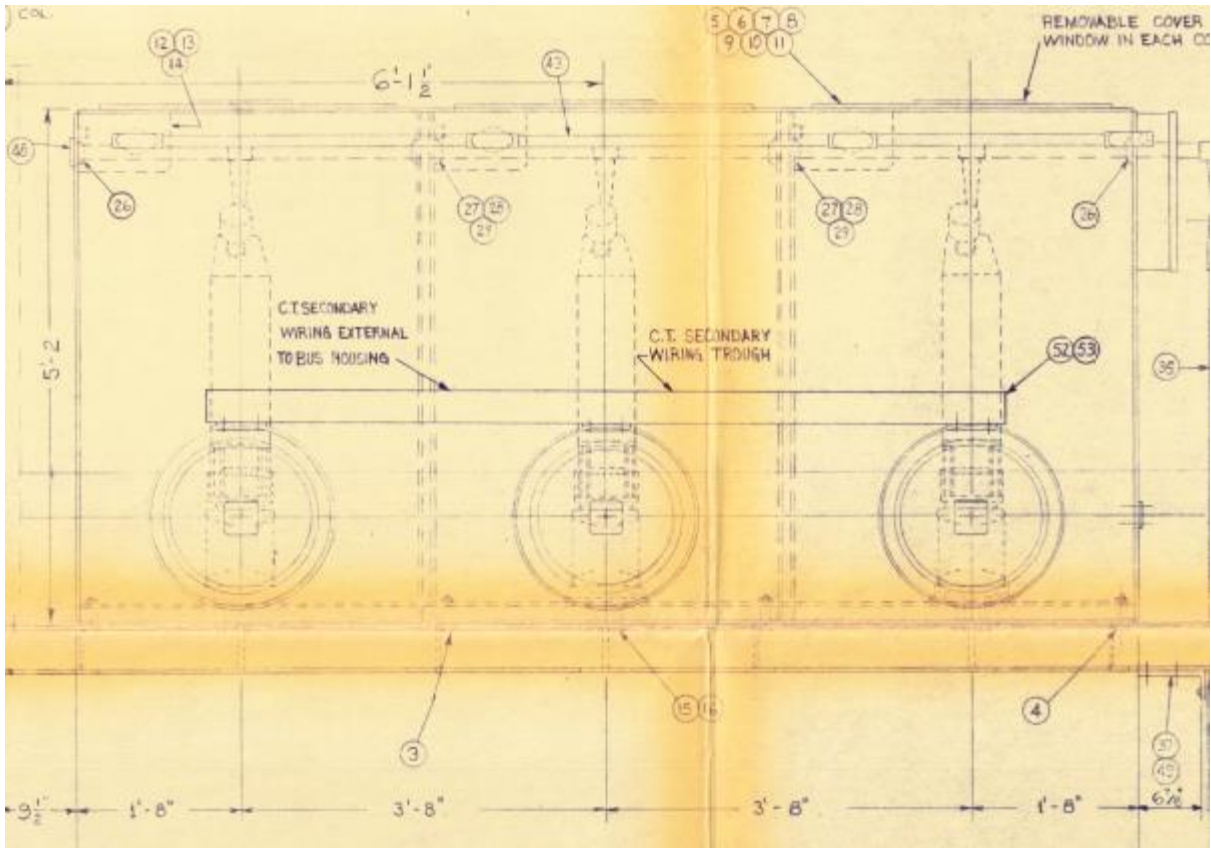
End near bushing.



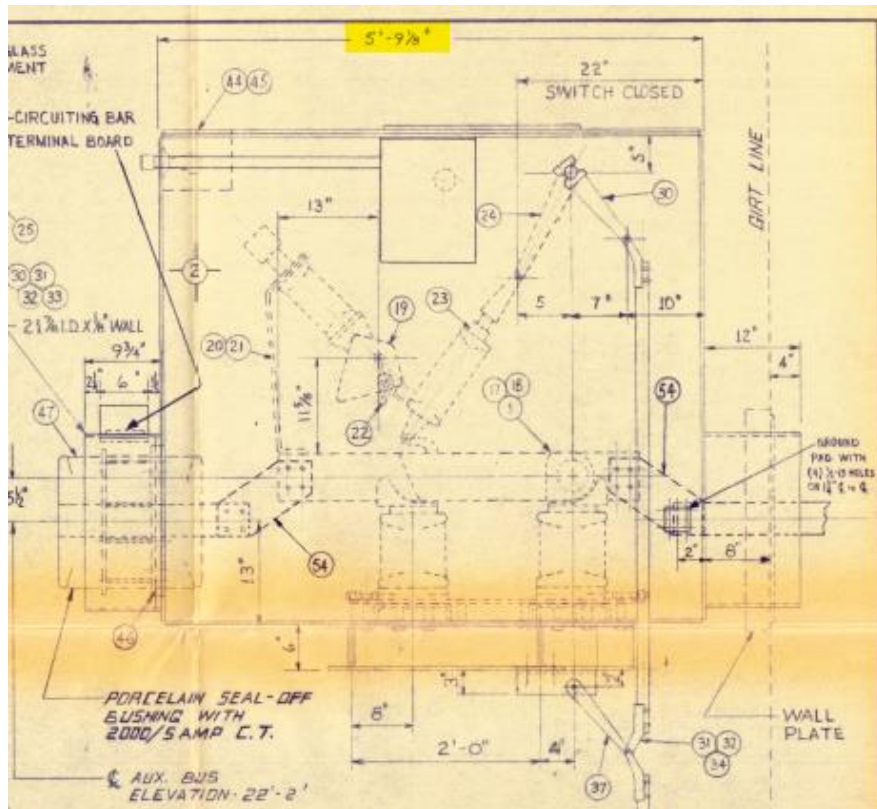
Middle of abandoned switch.



Modified to abandon switch.



Grid 11 Abandoned Switch width and height.



Abandoned Switch depth.

Equipment List – The equipment list is intended to be a partial list with special notes on the scope of work. It is not intended to provide an exhaustive list.

1. Access hatches and gaskets - All access hatches (165) are to be removed and be left loose until the JEA PM directs the contractor to permanently reinstall them. All gaskets will be replaced with new EPDM gaskets. The covers will be placed back into position at the end of each day or shift. All hardware will be replaced with 316 stainless steel supplied by the contractor. Any silicone applications shall be done with Dow Corning 739.
2. Insulators and Bushings – The insulators for the 20 5/8” conductors (162) are Delta Star class “B-50” high creep and the insulators for the 4” square tap bus (25) are also class “B-50” high creep bushings. Look for any damage using bore scope to see both sides. All hardware will be replaced with 316 stainless supplied by the contractor. There are eighteen (18) bushings in the IPB.

Five (5) of the insulators located next to the abandoned switch in the switchgear room are extremely difficult to get to. The contractor shall cut open the enclosure and weld a new access port for each of these three insulators.

The insulators shall be cleaned by hand. No cryogenic cleaning will be done on this bus.

If any insulators are to be replaced, a wooden structure shall be constructed to support the bus such that near by insulators are not damaged in the process.



Five hard to access insulators.



Five hard to access insulators.

3. Isolated Phase Bus – The current carrying conductors are painted aluminum pipe. This electrical bus and the inside of the surrounding grounded duct is to be thoroughly cleaned using lint free rags, and vacuum cleaners to remove all foreign matter where accessible from the access hatches.
4. Flexible shunts braids - All (224) of the flexible shunts (flex braids) internal to the IPB shall be indexed such that, they could be re-installed in the exact location and orientation that they were removed from. This is to make sure that the face to face connections have the same amount of contact if the original links are put back in place. A thin layer of Mobil 28 shall be applied to each electrical connection and then wiped off so that no dripping occurs. This is only expected to be enough grease to fill porosity voids. All hardware is to be replaced with 316 stainless, including stainless steel conical washers. While flex braids are disconnected, they shall be stored inside of plastic bins with cardboard between them as to protect them from scratches and damaged braids. The bins shall be water proof and the contractor shall label them so that the location for the flex links inside is easily identified. An accurate list of type and quantity of hardware shall be delivered with the report and shall detail where the hardware was used.

There are 21 original flex links that connect the isolated phase bus to the TG3A and TG3B bushings. **Three of these were replaced in 2019** with four links per that are only 2.5 inches wide. The original flex links are shown on the drawing labeled, "GRID 20 TG3 A B FLEXIBLE CONN ASSEMBLY". The flex links that are bolted to the bottom of the IPB are of a different design with an approximate two inch offset that the others do not have. Only twelve of these are needed. Seventy two of the style with a very small offset are needed as well. For bidding purposes, these flex links are 5/8" x 2.5" x 19" and have 4 5/8" ferrules. There are two 3/4 inch holes on each end of each link and the radius of the bubble is one inch. **The contractor shall provide a total of 72 of the style with a very small offset and a total of 12 with the larger offset.**

5. Grounding Connections – All bolts that are used for grounding connections shall be re-torqued to manufacturer recommendations.

6. 18 kV Connections – All electrical bolted connections in the bus duct are believed to be silver plated copper or copper clad silver plated aluminum to AMS 2451, MIL-Std. 865 or JEA approved equivalent. If damaged, it will be up to the JEA PM to decide if the stab/connector is to be repaired or cut out and replaced with a new silver plated connector. All stainless steel conical washers and hardware to be replaced with 316 stainless steel.
7. Enclosures and Seals – The transformer termination enclosures, the disconnect inside the switchgear room, and the dog houses on the mezzanine have seals that will have to be replaced.
8. Torque All Bolts – After inspection and upon reassembly, all new bolts that are used for the 18 kV electrical connections will be torqued to manufacturer recommendations. In the absence of any manufacturer recommendations:

5/8" 55Ft-lbs

1/2" 45Ft-lbs

The bolts shall not be tightened with electric impact tools. It is too easy to over-tighten and is not practical to test for overtightening with a torque wrench.

9. Grounding – The exterior of the IPB is grounded. The ground connections shall be inspected and tightened or checked for tightness.
10. Cleaning – All insulators, bushings and connections and shall be wiped down and cleaned to remove all FME (foreign material). The inside of the bus duct that can be reached by hand and with mops from the access hatches shall also be cleaned. Sufficient cleanliness shall be defined as the inability to wipe dust off of a surface before any access point is closed. It is expected that outside the turbine building will require cleaning first with ECOLINK or approved equivalent and second with denatured. In the past, this section of bus could not be cleaned with denatured only. However, it was recently cleaned in 2019.
11. Welding – A hole was repaired in the top of the IPB during the Fall 2019 outage. Any other holes in the duct shall be welded shut by the contractor. A new bellow was welded in during the fall 2019 outage as well. An inspection of the new bellow shall be inspected as well as the bellows in the phases beside it. An OEM welding specification will be provided for reference, however it will be expected that the Contractor has welded bus and bus duct in the past and currently has an established procedure in place to safely perform the welds. The Contractor shall possess the AWS D1.2/D1.2M certification for welding aluminum.

For the final cleaning, the contractor shall supply and use the following products or approved equivalent to wipe down the insulators and bushings:

JEA DESCRIPTION - CLEANER, DIELECTRIC SOLVENT & DEGREASER,
ECOLINK (p/n 0296).

Denatured Alcohol.

12. Drain system – Each drain will need to be cleaned and inspected.

Preliminary Reports – during the cleaning and inspection, the contractor will keep JEA informed of any damaged equipment along with recommendations on their disposition, including how to repair or replace damaged equipment.

Final Report – The contractor shall prepare a final written report that includes a copy of the as found and as left photos of each insulator and each flex link. The pictures shall include insulators as found, all cleaned insulators and all equipment identified as having flaws before and after repair of all work done.

Extra work – It is anticipated that repair work will be necessary. The contractor shall provide unit costs for each of the following items:

1. Inspect additional connections.
2. Clean additional electrical connections.
3. Copper/Silver re-plating of aluminum connectors 16 Sq inches.
4. Silver re-plating of electrical connections 180 Sq. inches.
5. Replace damaged or missing 18 kV connection bolts (316 SS, not 304).
6. Replace cracked or damaged insulators - Delta Star B50 or equivalent.
7. Replace insulator hardware.
8. Replace hatch cover bolts.

1.3 Site Conditions

The Contractor acknowledges that it has investigated prior to bidding and satisfied itself as to the conditions affecting the Work, including but not restricted to those bearing upon transportation, disposal handling and storage of materials, availability of labor, roads, or storage areas. Any failure by the Contractor to acquaint itself with the available information will not relieve them from responsibility for estimating properly the difficulty or cost of successfully performing the Work. JEA assumes no responsibility for any conclusions or interpretations made by the Contractor on the basis of the information made available by JEA. Site parking will be available on the property in an area designated by the JEA PM. Site access will be available 7 days per week. Site water and power are available for cleaning. Contractor must provide their own telephone services, office spaces and or portable restroom facilities. Any staging areas or work areas that are required to be created due to the existing conditions are the responsibility of the Contractor. Access to work areas require ladders and JEA provided scaffolding. The scaffolding will be staged per the contractor's direction one week before the start of the project. **Contractor shall provide their own rental restroom and hand washing stations.**

1.4 Safety, Health, and Accident Prevention

The bus duct electrical connections were originally made with Zinc – Chromate grease, part number D-50H47. It is expected to find the grease at the face-to-face electrical connections and that the Contractor shall dispose of it by wiping down with rags and disposing of in marked plastic trash bags so that the appropriate disposal can be accomplished by JEA. Due to the unknown condition of the interior of the bus duct, it shall be required to initially open the duct wearing a respirator and face-shield, mitigating any possibility of dust inhalation or dust entering face orifices. This is a precaution. It is not expected to be in constant contact with a known carcinogen. Gloves shall be worn and Tyvek suits shall be on-site in the event that they are needed.

Contractor shall take all JEA required contractor safety and site specific safety training. **JEA has only non-smoking sites so there are no areas to use any kind of tobacco or vaping products.**

All JEA contractors, and their subcontractors performing safety sensitive work on our projects will adhere to our safety practices and guidelines. Every person who works on any JEA project is expected to follow these practices to ensure their personal safety as well as the safety of every other person on a site or in the nearby community.

Contractors must be safety qualified **before** their bid will be accepted for this scope of work. **Safety qualification is necessary** for contractors and subcontractors for this project.

Every JEA safety qualified vendor **must re-qualify annually.**

1.5 Forced Shutdown

JEA reserves the right to shut down the activities at no additional cost to JEA due to one or more of the following conditions:

- Potential safety concerns.
- Weather
- The need to terminate the unit outage prematurely.

1.6 Site Security

Site security is provided by JEA on a 24 hour, 7day per week basis. All contractor employees will pass thru security and vehicle inspections may occur.

1.7 Schedule

The NGS outage is scheduled for October 1, 2026 through November 14, 2026. It is anticipated that this work may begin on the fourth day of the outage, October 5th, and must be complete by end of business November 10th, 2026. No extensions will be granted.

The Contractor shall not commence any work until a notice to proceed is received. A project schedule for this Contract shall be prepared and maintained by the Contractor to provide coordination, to establish the basis for measuring and monitoring Contractor progress and to detect problems for the purpose of taking corrective action. Contractor shall provide JEA with weekly updates. These updates shall include the following:

- Current status of the job progress
- Three day Look-Ahead Schedule
- Report the planned and actual progress of the current week
- Report all planned work that is to be accomplished during the follow week
- Changes in the Work
- Safety and Quality Control issues
- Problem areas or concerns

1.8 Minimum Qualifications

The bidders shall have successfully completed five (5) similar projects as stated in the technical specifications totaling \$200,000 or more within the past three (3) years, ending May 30th, 2026. Any projects completed for JEA must be included and will count as a similar project no matter the cost. References for each project shall be submitted with the bids. As a part of the reference, safety performance shall be impeccable. Any IPB or Nonseg project performed for JEA shall be submitted as a reference regardless of price.

The bidders shall work for the company that will be on site actually performing the labor and shall possess a quality management certification for silver plating. These certifications can be AMS 2451, MIL-Std. 865 or a JEA approved equivalent.

The bidders shall also have a current aluminum AWS D1.2 welding certification.