Construction Contract Contract No. T-707A Capital Project 1644A

DELAWARE RIVER JOINT TOLL BRIDGE COMMISSION ADMINISTRATION BUILDING 110 WOOD & GROVE STREETS MORRISVILLE, PA19067

ADDENDUM NO. 3

This Addendum No. 3, dated February 14, 2018, gives additional information in connection with Contract No. T-707A, Capital Project 1644A, Commission Administration Building at Scudder Falls and Adaptive Reuse of the 1799 Building, and is hereby made a part of the Contract. This Addendum is to be signed by the Contractor below and this Page AD3-1 is to be attached to the bid proposal.

This Addendum including pages **AD3-1** through **AD3-16** is hereby accepted and agreed that it shall become part of **Contract No. T-707A**, **Capital Project 1644A** Documents.

(DATE)

(CONTRACTOR'S NAME)

(SEAL)

BY:_____

ATTEST: _____

A. CONTRACTOR QUESTIONS AND RESPONSES:

Response to Inquiries Submitted as of February 5, 2018.

Item 01: Inquiry: According to Spec 00700 Article 6 Paragraph 6.7 states that the "Contractor will not employ any subcontractor, person or organization ... that the Commission or the Engineer may have reasonable objection. Please submit a list of barred contractors or suppliers so we as Bidding Contractors will know who we cannot accept a bid proposal on this project.

Response: Currently there are no contractors/subcontractors to which the Commission would object. The Commission does not maintain a list of barred contractors, vendors or suppliers. Proposed contractors, vendors or suppliers will be evaluated by the Commission on an individual basis.

Item 02: Inquiry: Please provide a Schedule for Specs 10 14 00.13 & 10.14.23.16 Building Signage and Room Identification Panel Signage since there is no drawing identifying the room names and type of interior signs.

> **Response:** 1. Exterior signage is indicated on the Exterior Elevations. 2. All rooms labeled on the Finish Plans A1-801, A1-802 and A2-800 shall have Room Identification Signs as indicated in Section 10 14 23.16, Article 2.2. Contractor is responsible for the schedule as part of the shop drawing submission.

Item 03: Inquiry: Spec 01500 F. Inspector Field Office; please give update specifications for microcomputer, monitor, copier, fax machine, Document Scanner, Laser Printer, color printer & software which is all, 10 years out of date. In addition, we would like to know why item 21 is needed since the Inspectors are in a Commission Building with running water and toilets.

Response: Refer to Section E - Changes to the Specifications for revisions to the required equipment. Also, Addendum #1 now required that the contractor is to provide a trailer for the Construction Manager.

Item 04: Inquiry: According to the Quality Requirement specification 014000 that the contractor is required to provide specialized testing, please clarify what testing is the responsibility of the contractor. Under good construction practices, both the soils, concrete, masonry and steel testing should be the responsibility of the owner, where the contractor coordinates the testing for the owner.

Response: The Special Tests & Inspections are part of the Contractor's responsibilities as indicate in Section 01 40 00 Quality Requirements. Additional information is provided as part of this Addendum #3. (See Item #62)

Item 05: Inquiry: Specification 07.8101 Sprayed Fire Resistive Materials, none of the details shows fire proofing beams & columns, please clarify.

Response:	Fireproofing of the floor deck is limited to the Mechanical Rooms and Stair towers as indicated on the Egress Plans and the following Drawings:
	a. Drawing A1-011 - Egress Plans - Shaded Areas
	b. Drawings A1-400 thru A1-403 - Building Sections
	c. Drawings A1-430 thru A1-439 - Wall Sections as applicable
	d. Drawing A1-500 - Stair - Enlarged Plans & Sections
	e. Ratings of columns and walls in these areas are indicated on
	the plans and plan details where required.

Item 06: Inquiry: According to Spec 015000 item F, please provide layout of temporary fencing where the Commission requires the contractor to install.

Response: The bidder is directed to the Erosion and Sediment Pollution Control Plans for fencing requirements.

Item 07: Inquiry: According to one of the bidding Glazing/Curtain wall Subcontractors who is an Erie Architectural Products contractor, would like to know that Erie has a 10 month to 12 month lead time to supply the curtain wall after approved shop drawings. This could affect the 15 month total duration of the project. Please clarify if USA Architects would help in the expediting of the submittal.

Response: The Design Team will perform Submittal reviews in accordance with the timeframes included in Division 00 of the Project Manual. The Contractor along with the Construction Manager shall monitor the schedule during construction and alert the Commission if delivery of any material may affect the final completion of the Project. Appropriate action shall be taken at that time.

Item 08: Inquiry: Does USA Architects need a formal mock up since Erie Architectural Products is the prime approved vendor?

Response: In place performance mockups are required per the specifications. Refer to this Addendum #3 for locations of the mockups. The mockups when approved will become part of the project.

Item 9: Inquiry: Since Erie Architectural Products is the prime approved vendor does the subcontractor need to have Laboratory & Field Testing or can we can provide existing test reports from Erie?

Response: Field testing is required to evaluate the performance of installed products and make corrections as necessary. The mockups will serve as the basis of evaluation of the remainder of the project. Test reports are required along with the in-place testing of the identified assemblies.

Item 10: Inquiry: Is the Aluminum new window shown on A2-300 detail 7 to be installed in a stone wall needing window repair detail shown on S2-201? In addition please clarify the quantity of window needing detail 7 on A2-300 for the approve ground windows, since structural calls out 6 but there are only 7 total and only 5 to be replaced on the front of the building.

Response: All of the windows and doors in the existing stone walls require the window and door lintel detail as shown on the Structural Drawings. Additionally, all of the existing windows are to be replaced with aluminum windows as indicated.

Item 11: Inquiry: According to a Structural Steel Fabricator, please clarify the type of primer needed since spec 099100 section 3.10 paragraph C does not reference the type of primer.

Response: Refer to 051200 Structural Steel Specification section 2.4, and 051213 Architecturally Exposed Structural Steel Framing Section 2.3 for types of primers for the structural steel and the surface preparation required.

Item 12: Inquiry: The Structural Steel fabricator would like clarification on spec 05_1200 section 2.9 A. Is the only items which need to be galvanized are the lintels and shelf angles.

Response: Galvanizing to be provided for the structural steel as indicated in the specification 051200 and on the structural drawings section 6.0 Structural steel note #22 on sheet S-002. Steel Angles, plates, lintels, bolts washers, etc. in direct contact with exterior masonry and all exterior exposed structural steel to be galvanized. Refer to note 1 for cooling tower foundation and framing plan on sheet S1-101 for exterior galvanized structural steel.

Item 13: Inquiry: Is this project being done with multiple prime contracts, or is it a single prime?

Response: Single Prime.

Item 14: Inquiry: What is the entire project budget? If this project is being done with multiple primes, what is the GC budget?

Response: The total estimated constriction cost range for this project is \$15,000,000 to \$25,000,000.

Item 15: Inquiry: What is the construction timeline for this project? ?

Response: Refer to the Project Manual, Division 00, Section 00530 Agreement, Article 3 - Contract Time.

Item 16: Inquiry: Is the Owner providing Builders Risk coverage ?

Response: No. Refer to the Project Manual, Division 00, Section 00700 General Conditions, Article 5 – Bonds and Insurance for the insurance requirements.

Item 17: Inquiry: General Conditions, Section 14.4.2 states progress payments will be made within 60 days. Normal payment terms are 30 days. Advise if terms can be changed to 30 days. The Commission endeavors to pay invoices within 30 days of receipt of an approved pay estimate from the construction manager.

Response: No, the parameters of General Conditions, Section 14.4.2 will remain as specified in the General Conditions.

Item 18: Inquiry: Please clarify who is paying for construction permits.

Response: Refer to the General Conditions, paragraph 6.13, the CONTRACTOR will secure and pay for all construction permits and licenses and will pay all governmental charges and inspection fees necessary for the prosecution of the Work, which are applicable at the time of its Bid. There are no permits anticipated for this project other than the NPDES permit that is already in place. The fees for any building or environmental permits that may be required for the project will be paid for by the Commission.

Item 19: Inquiry: Section 05120 - Can the AISC certifications requirement be waived or relaxed?

Response: No.

Item 20: Inquiry: For clarification purposes, I just want to confirm that DRJTBC has determined to sole source the BMS on this project and not the engineer per the attached addendum Item 26? Your confirmation would be appreciated.

Response: Refer to Addendum No. 1, Item 06 that states: The Commission is currently under agreement with Schneider Electric to implement a Schneider Electric BMS Commission-wide as noted under Section 23 09 00, Section 1.2 paragraphs A and B, and further described in Section 1.9. To be consistent with the Commission's system, the BMS for the proposed Administration Building at Scudder Falls shall also be a system provided by Schneider Electric.

Item 21: Inquiry: Please as to why this project is not a multi-prime project as it falls within the parameters of the Separations Act.

Response: The Pennsylvania Separations Act is not applicable to the Delaware River Joint Toll Bridge Commission. The Commission is a bi-state agency created by a bi-state compact executed in December of 1934 between the Commonwealth of Pennsylvania and the State of New Jersey, and consented to by the Congress of the United States of America. For requirements such as those in the Pennsylvania Separations Act to be applicable to the Commission, duplicate legislation would need to be in place in the State of New Jersey, and consented to by the U.S. Congress, which it is not.

Item 22: Inquiry: Please confirm if the posts are to be painted steel or stainless. Their comments below:

> I am going to need some clarification. We are listed all through the specs with our stainless steel Circum railings. But in the drawings the railings are listed as Painted Steel. We do not have a painted steel system. Please clarify. The system itself is listed as painted steel, only the hand rail is stainless. We are not a parts and pieces manufacturer and provide entire systems....

Response: The railing around the Feature Stair in the Main Lobby of the building shall be constructed entirely of stainless steel components, including the railing around the stair well opening on the 2nd Floor.

Item 23: Inquiry: According to Addendum 1 the Inspectors office & supplies are delete now there is a CM trailer of sufficient size to accommodate the needs of the CM Staff. Please clarify how many staff this trailer is to accommodate, & what size trailer is needed, i.e. 10 x 50 with 2 office or 10 x 60 with 2 offices and large conference room or smaller trailer.

Response: Provide a 10' x 60' trailer with 2 offices, a large conference room and a toilet room with toilet and sink with running water.

Item 24: Inquiry: Can we use asphalt paving material from Trap Rock Industries -Pennington, NJ plant, i.e. 25M64 and 9.5M64.

Response: Asphalt paving material from either a PennDOT or NJDOT approved plant, which meets the contract specifications, is acceptable. If an NJDOT approved plant is utilized, asphalt paving materials shall be in accordance with the 2007 NJDOT Manual for Road and Bridge Construction, latest edition.

Item 25: Inquiry: What type of porous asphalt are we using Porous 64 or Porous 76?

Response: Porous 64.

Item 26: Inquiry: The specification for concrete calls for footing, foundation walls and slab on grade to be 3,000 psi. Drawing S-002 calls out 4,000 psi. Which is correct??

Response: Provide 4,000 psi concrete strength as scheduled on Drawing S-002.

Item 27: Inquiry: Specification Section 03 53 00 - Polished concrete floor topping states that the material is to be installed at 3/8" thickness. Please confirm that the concrete is not to be recessed 3/8" for this product.?

Response: Correct. The concrete slab does <u>not</u> need to be recessed.

Item 28: Inquiry: Please clarify Tel-Data Symbol and cable quantities required at Meeting/Conference Rooms and modular furniture seating locations.

Response: Tele-data for the floor box refer to typical floor box detail sheet E802. For tele-Data wiring for modular furniture refer to drawings E-301 and E-302, issued as part of this Addendum #3.

Item 29: Inquiry: Please clarify Key Note #22 on Drawing E1-301.

Response: Provide (2) CAT6 cables from the ATC panel to the nearest IDF room.

Item 30: Inquiry: Please clarify "TV" cabling requirements . . .CAT.6 or RG6 Coaxial cable?

Response: (1) Cat 6 and (1) RG6 Coaxial cable per each TV outlet.

Item 31: Inquiry: What is the cable tray layout/configuration in the MDF & IDF's? Also single tier or double tier?

Response: For cable tray layout in the MDF room, see sheet E1-202. Cable tray for the IDF shall be provided from the conduit sleeve to the top of the cabinet.

Item 32: Inquiry: Are the IDF's getting 2 Post Racks or Cabinets? They are named differently from drawing to drawing.

Response: IDF to be provided with Cabinets.

Item 33: Inquiry: Who supplies the TV in the Lunch Room #148? What is the specification for this TV?

Response: TV to be purchased by the Commission, mounted, wired by the GC. Specification of the TV TBD.

Item 34: Inquiry: Specification Section 01 50 00 - 2.2.1.C.4 - Please clarify what you mean the diesel fuel requirement for all cut-overs.

Response: No diesel fuel indicated in the question is required for the project.

Item 35: Inquiry: Specification Section 01 50 00 - 2.2.1.C.5 - Please clarify sentence related to running portable generators to telecomm, electronic security system and toll equipment.

Response: No portable generator is required for toll equipment.

Item 36: Inquiry: 2/A1-301 has wall elevation between D.1 and F.2 as natural stone veneer. Section 1/A1-438 is referenced on this elevation and shows both a natural stone veneer and a solid composite wall panel above. Please advise which exterior wall type is correct.

Response: The Wall Section referenced on the Elevation 2 between Column lines D & D.2 should be 1 /A1-437.

Item 37: Inquiry: Please clarify where the Fume Recovery System is to be used since the 1799 House and most of the new Commission Building has aluminum standing seam roof and the other portions of the new Commission Bldg has a TPO roof system.

Response: The roof system is not a TPO system. The specified roof system for the flat roofs is a Thermoplastic PVC-KEE Roof System set in hot asphalt, therefore the Fume Recovery System is required. Refer to Specification Section 07 54 16.

Item 38: Inquiry: Specification 08-8300 is asking for tempered mirrors (not a good idea, it may look like a fun house), a Glass & Glazing Subcontractor would recommend standard annealed mirror with safety backing..

Response: Tempered glazing is specified in the Toilet Rooms for safety reasons.

Item 39: Inquiry: Questions from an Interior Carpentry contractor:

1) A1-663 shows all of the glass partitions; however, I do not see anywhere a detail showing the headers and framing above. Is there a detail on this?

2) A1-201/A1-202 RCP does not show a detail on the GWB Ceilings. Can we use drywall grid for installation? If not, please advise.

Response:

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	therefore the all of the gla Provide meta	Type A2 is indicated for the walls adjacent to the glass wall, and a same A2 Wall Type shall continue up to the roof deck and ABOVE ss walls. Provide an 8" metal stud header above the glass wall typical. al stud bracing from the header back to the deck above at 32" O.C. ting shall be above the office ceilings.
	2. Drywall g	rid is acceptable for the GWB ceilings.
Item 40:	Inquiry: an opaque se envelope.	The Instructions to Bidders states that the bid shall be submitted in ealed envelope provided by the COMMISSION'. Please provide this
		An envelope was provided to each plan holder at the time of he thumb drives with the bid documents. Should you require an ease contact Charles Stracciolini, Commission project manager.
Item 41:	Inquiry: equipment st	Please provide Specifications for Plumbing and Mechanical tarters, disconnecting devices, variable frequency drives, etc
	-	Please refer to pump schedule on sheet M-401 for VFD spec. Please section 262816 for disconnect switches spec.
Item 42:	Inquiry: Extinguishin Please clarif	There is no electrical power shown for the Clean-Agent Fire og System to be provided for Server/UPS Room 252 and Room 253. y.
	Response:	Provide 20A-1Pole circuit from panel RP1B.
Item 43	The Importa are different S-002 Seism decimal perc	Reference Section 210548 Vibration and Seismic Controls for Fire Piping and Equipment 1.4 Performance Requirements A.1. thru A.4. nce, Response and Amplification Factors indicated for 2.a.b. and c. than what are indicated for the same Factors on Structural Drawing ic Load Chart. Also the Design Spectral Response Acceleration centage figures indicated for 3. and 4. are also higher than what are the same descriptions on Structural Drawing S-002 Seismic Load e clarify
	-	eismic control for the fire suppression system is exempt. Provide ntrols as indicated in section 210548.
Item 44		Sections 210548 and 230548 have been issued with the Division ection and Division 23 HVAC Specifications for the project calling

21 Fire Protection and Division 23 HVAC Specifications for the project calling out certain vibration and seismic controls for those disciplines. Are vibration and/or seismic controls required for Division 22 Plumbing and/or Division 26 Electrical? Please provide Specifications if required. **Response:** Seismic control for the HVAC, Plumbing, and Electrical systems are exempt. Provide vibration controls as indicated in the respective specification section for each trade.

Item 45: Inquiry:

- On Page 00100-5, Paragraph 10.2, it states that we should include the IBE Required Forms with our bid packet.
- On Pages 010150-3 & 010150-4, Contract Compliance Program, discusses the program in more detail, and in Paragraph D, states that 'All bidders shall select and submit an IBE Contract Compliance Plan I or II. If any or all of the required Compliance Plan documentation is not submitted by 3:00 p.m. local time within two (2) business days of notification by the Commission to the apparent low bidder, the bid may be deemed non-responsive and may not be accepted for consideration.
- Paragraph E on Page 010150-4 goes into more detail regarding the Compliance Plans, referencing forms, etc. These forms are not included in the bid manual, and I have been unable to locate the Plans/Forms on the website provided in Paragraph E.

<u>Question 1</u>: Is the IBE Contract Compliance Plan required to be submitted with our bid or within two (2) business days after notification of being the low bidder?

<u>Question 2:</u> Where can we find the IBE Contract Compliance Plan Forms referenced in Paragraph E?

Response:

1. The IBE Contract Compliance Plan is to be submitted within two (2) business days after notification of being the apparent lowest responsible bidder.

2. The IBE Contract Compliance Plan forms are located on the Commission website at <u>www.drjtbc.org</u>. The forms can be found under Doing Business, select Contract Compliance and the forms are located on that page. Alternatively, go to <u>www.drjtbc.org</u>, on the home page, scroll down to the Quick Links and select Contract Compliance.

Item 46:Inquiry:Mechanical Drawing M503 shows a fuel Island, please clarify with
details & cross sections so we can quote the construction of the island properly.
The Mechanical Drawings say go to the Civil Drawings for details but we cannot
find an details on this Inland except for one note on C-101.3.

Response: The details for the canopy layout are shown on Drawing M-503. The drawings show two sections and a plan. Additionally, there is a Partial Fueling Island Plan on the sheet. Refer to Specification Section 10 73 16 Self-

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Supporting Steel Canopy. The specification requires the design of the canopy to be a delegated design by the manufacturer.

Item 47: In Addition for the fuel Island canopy foundation, this foundation as shown is 42 cubic yards of concrete, what should be used to estimate the rebar tonnage for this foundation since the canopy can have a high lift and moment reactions to the foundation.

Response: Refer to Specification Section 10 73 16 Self-Supporting Steel Canopy. The entire canopy including the design of the foundation for the canopy is a delegated design submittal. The foundation design shall be provided by the canopy manufacturer. Signed and sealed shop drawings and calculations shall be submitted by a licensed Professional Engineer in the State of Pennsylvania or New Jersey.

Item 48: Inquiry: New Building Finish Schedule A1-803, list T-1 for walls in FG-14 group, there is no T-1 shown in Finish legend. What is the wall tile in FG-14 group?.

Response: The Wall Tile for Field Group - 14 shall be T-1.

Item 49: Inquiry: What is the base in Toilet Room 143?

Response: Wall tile selected comes with a base tile. Provide the cove base from the same product line as the specified tile.

Item 50: Inquiry: In Existing Building toilet rooms 101 and 102 does wall tile go on all walls or just wet walls?

Response: Wall tile shall be installed on the wet walls.

Item 51: Inquiry: From an Interior Drywall contractor - On the exterior wall or load bearing walls (EA1, EC1, etc.) it does not show on the drawings or in the specifications what gauge studs are to be used. Please advise.

Response: The structural sections identify exterior 6"CFMF 16 gage at 16" O.C. as a Basis of Design. The exterior CFMF design and detailing is a delegated design submittal and the contractor is to submit signed and sealed shop drawings and calculations to the AOR/EOR for review.

Item 52: Inquiry: According to drawing M2-050 & P2-050 shows disconnecting the washer, dryer, water heater & old boiler, does the Commission back to salvage these items. In addition, who's responsible for removal of the oil in the old tank which is completely full?

Response: The washer, dryer, water heater and old boiler shall be removed and disposed of in accordance with all local, state and federal regulations. The contractor shall be responsible for the removal of and lawful disposal of the oil in the old tank and the old oil tank itself.

Item 53: Inquiry: There is an old water well near the canal just outside the fence, there is nothing on the drawings telling what to do with that old well, please clarify.

Response: The existing well shall be capped and abandoned in accordance with all local and state regulations by a driller licensed in Pennsylvania.

Item 54: Inquiry: Please provide details for the metal stud/drywall partition above the interior glass partitions.

Response: Refer to Item #39 above.

Item 55:Inquiry:From an Interior Drywall contractor - On Drawing A1-101 in the
Main Lobby (Sculpture Wall) it shows Partition Type #2. However, on Drawing
A1-900 detail #1 it references Wall Partition C9. Which is it? Also, does this
wall have any bracing etc. (none seen).

Response: There is no Partition Type 2. Partition Type 'C9' is correct. The studs shall be tied back to floor & roof steel.

Item 56: Inquiry: From a Structural Steel Fabricator –

1. In the drawings it shows the T-1(trusses) to be assemblies and exposed to the weather. The only way we would be able to accomplish them is to make all boltedconnections and galvanize it. The full assembly at about 70' will not fit in the galvanizing vat.

2. The specs call for an AISC certified Fabricator/Erector. If the Erector is a union company do they have to be AISC Certified to erect the steel?

Response: 1. T-1 trusses are not exposed to weather and are enclosed in a soffit and are not to be galvanized, refer to Architectural and Structural details. Decorative truss on exterior of the building is designated as Architecturally Exposed Structural Steel and is to follow the requirements of Specification Section 051213 and not be galvanized.

2. Yes.

Item 57: Inquiry: Please provide details of the existing SFB Air Release Valve Connector Manholes that the proposed ABP 2" sanitary force mains are to tie into. Also, advise if the SFB force main can be shut down or isolated for the tie-in of the proposed ABP 2" force mains. **Response:** The Air Release Valve Connector Manholes will include dual valves to allow for an isolated tie-in of the ABP Sanitary System with the Scudder Falls Bridge (SFB) Sanitary System so that there is no interruption to the SFB Sanitary System during the tie-in. The Air Release Valve Connector Manhole is part of the SFB contract drawings. Refer to the attached "LOW PRESSURE SEWER AIR RELEASE MANHOLE W/ TWO WAY CLEAN OUT DETAIL", provided for **REFERENCE ONLY** from the SFB contract drawings. Contractor shall coordinate his work with the work of the SFB project.

Item 58: Inquiry: The Owner is providing a defibrillator. Contractor to provide cabinet. Please advise if required and how many?

Response: One Defibrillator cabinet is required.

Item 59: Inquiry: Sections 12 24 13.2 Roller Shades calls for manual shades, however Drawing A1-803 indicates motorized shades. Please advise type of shades required.

Response: The shade in Training Room 130 is motorized. All other locations are to be manual.

Item 60: Inquiry: In the Kitchen, who is responsible for removal of the dishwasher & refrigerator, does the Commission want to salvage these items?

Response: The Contractor is responsible for removal and proper disposal of all Kitchen equipment in the 1799 House. The Commission does Not want to salvage any of these items.

B. <u>CHANGES TO PROCUREMENT AND CONTRACTING REQUIREMENTS</u> (DIVISION 00):

Item 61: In the Table of Contents of Volumes 1 and 2, Division 10 - Specialties, **DELETE** the section number "10 73 16", and **INSERT** the section number "10 73 13".

C. CHANGES TO CONDITIONS OF THE CONTRACT:

NONE

D. <u>CHANGES TO GENERAL REQUIREMENTS (DIVISION 01):</u>

- Item 62: In Section Number "01 40 00", DELETE Article 1.8.A.1 thru 4 and INSERT the following:
 - "1. Section 03 30 00 Cast-in-Place Concrete.

- 2. Section 03 30 53 Miscellaneous Cast-in-Place Concrete
- 3. Section 03 35 19 Integrally Colored Concrete
- 4. Section 03 53 00 Polished Concrete Floor Toppings
- 5. Section 03 54 15 Self-Leveling Underlayment
- 6. Section 04 20 00 Unit Masonry
- 7. Section 05 12 00 Structural Steel Framing
- 8. Section 05 12 13 Architecturally Exposed Structural Steel Framing
- 9. Section 05 31 00 Steel Decking.
- 10. Section 05 40 00 Cold-Formed Metal Framing.
- 11. Section 07 24 13 Exterior Insulation and Finish Systems Class PB
- 12. Section 07 25 11 Weather Barriers
- 13. Section 07 81 01 Sprayed Fire-Resistant Materials.
- 14. Section 07 84 13 Firestopping and Firesafing.
- 15. Section 26 05 26 Grounding and Bonding for Electrical Systems
- 16. Section 31 23 16 Excavation.
- 17. Section 31 23 17 Trenching
- 18. Section 31 23 23 Fill
- 19. Section 32 01 16 Flexible Paving Rehabilitation
- 20. Section 32 11 13 Aggregate Base Courses.
- 21. Section 32 12 16 Asphalt Paving"

E. <u>CHANGES TO SPECIFICATIONS:</u>

Item 63:	In Section 015000, DELETE Items 01-1500-2.2.F.3, 6, 11, 12, 13, 14, 15, 16, 17, and 20 in their entirety.
Item 64:	In Section 015000, MODIFY Item 01-1500-2.2.F.1 to read: "Two (2) Work Desks and Two (2) Office Chairs on Casters"
Item 65:	In Section 015000, MODIFY Item 01-1500-2.2.F.2 to read: "One (1) Large conference Table and ten (10) folding chairs."
Item 66:	In Section 015000, MODIFY Item 01-1500-2.2.F.8 to include: "Contractor to provide a potable water service for the trailer, and include restocking the water and drinking cups as necessary."
Item 67:	In Section 015000, MODIFY Item 01-1500-2.2.F.10 to read: "Contractor shall provide a Canon 3325i or equivalent (Copier/Scanner/Fax machine) with letter size and 11x17 capability. Contractor to provide a maintenance / service contract for this equipment that allows for necessary maintenance, repair and cleaning. Service Contract will also maintain paper and ink to keep the machine fully functional at all times."
Item 68:	In Section 015000, MODIFY Item 01-1500-2.2.F.19 to read: "Contractor to provide 'hard line' high speed internet using a provider such as FIOs or Xfinity. Contractor to install and include CAT 6 cabling and

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Item 69:	network/server internal to the trailer, with four (4) drops for computers plus the copier/scanner/fax, all set up for quick plug in and use by the construction manager and owner. Contractor to provide a wireless router so that internet access is available from any location in the trailer." In Section 015000, MODIFY Item 01-1500-2.2.F.21 to include: "Contractor to provide weekly professional janitorial cleaning of trailer (including bathroom). Contractor will restock essential trailer consumables including paper products as a part of this service."
Item 70:	In Section 01 50 00, Part 2, Paragraph 2.1.C, DELETE sub-paragraphs 1 thru 7.
Item 71:	In Section 03 30 00, Part 2, Paragraph 2.12.A.1, DELETE "3000 psi" and INSERT "4000 psi".
Item 72:	In Section 03 30 00, Part 2, Paragraph 2.12.B.1, DELETE "3000 psi" and INSERT "4000 psi".
Item 73:	In Section 03 30 00, Part 2, Paragraph 2.12.C.1, DELETE "3000 psi" and INSERT "4000 psi".
Item 74:	In Section 03 30 00, Part 2, Paragraph 2.12.D.1, DELETE "3000 psi" and INSERT "4000 psi".
Item 75:	DELETE Section 08 51 13 - Aluminum Windows and INSERT the attached Section 08 51 13 - Aluminum Windows in its place.
Item 76:	DELETE Section 23 81 29 - Variable Refrigerant Flow and INSERT the

F. CHANGES TO DRAWINGS:

Item 77:DELETE Drawing M-401 - Mechanical Schedules and INSERT the attached
Drawing M-401 - Mechanical Schedules in its place.

attached Section 23 81 29 - Variable Refrigerant Flow in its place.

- Item 78: DELETE Drawing E-003 SCHEDULES and INSERT the attached Drawing E-003 SCHEDULES in its place.
- Item 79: DELETE Drawing E1-301 FIRST FLOOR LOW-VOLTAGE PLAN and INSERT the attached Drawing E1-301 - FIRST FLOOR LOW-VOLTAGE PLAN in its place.
- Item 80: DELETE Drawing E1-302 SECOND FLOOR LOW-VOLTAGE PLAN and INSERT the attached Drawing E1-302 - SECOND FLOOR LOW-VOLTAGE PLAN in its place.

Item 81: DELETE Drawing E1-701 - PANEL SCHEDULES and INSERT the attached Drawing E1-701 - PANEL SCHEDULES in its place.

G. ATTACHMENTS:

SPECIFICATIONS:

- 1. Section 08 51 13 ALUMINUM WINDOWS
- 2. Section 23 81 29 VARIABLE REFRIGERANT FLOW

DRAWINGS:

- 1. LOW PRESSURE SEWER AIR RELEASE MANHOLE W TWO WAY CLEAN OUT DETAIL
- 2. M-401 MECHANICAL SCHEDULES
- 3. E-003 SCHEDULES
- 4. E1-301 FIRST FLOOR LOW-VOLTAGE PLAN
- 5. E1-302 SECOND FLOOR LOW-VOLTAGE PLAN
- 6. E1-701 PANEL SCHEDULES

END OF ADDENDUM NO. 3

T-707A COMMISSION ADMINISTRATION BUILDING AT SCUDDER FALLS AND ADAPTIVE REUSE OF THE 1799 BUILDING

SECTION 08 51 13 - ALUMINUM WINDOWS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes Architectural Grade aluminum windows of the performance class indicated. Window types required include the following:
 - 1. Double Hung windows. (Fixed)
 - 2. Fixed Windows.
- B. Related Sections include the following:
 - 1. Division 01 Section, "Construction Waste Management"
 - 2. Division 08 Section, "Glazing"

1.3 DEFINITIONS

- A. Performance class designations according to AAMA/WDMA/CSA 101/I.S.2/A440-08:
 - 1. AW: Architectural.
- B. Performance grade number according to AAMA/WDMA/CSA 101/I.S.2/A440-08:
 - 1. Design pressure number in pounds force per square foot (pascals) used to determine the structural test pressure and water test pressure.
- C. Structural Test Pressure: For uniform load structural test, is equivalent to 150 percent of the design pressure.
- D. Minimum Test Size: Smallest size permitted for performance class (gateway test size) or as specified elsewhere in this section, whichever is more stringent. Products must be tested at minimum test size or at a size larger than minimum test size to comply with requirements for performance class. Downsized test reports will not be considered acceptable.

1.4 PERFORMANCE REQUIREMENTS

- A. General: Provide aluminum windows engineered, fabricated, and installed to withstand normal thermal movement, wind loading, and impact loading without failure, as demonstrated by testing manufacturer's standard window assemblies representing types, grades, classes, and sizes required for Project according to test methods indicated.
- B. General: Provide aluminum windows capable of complying with performance requirements indicated, based on testing manufacturer's windows that are representative of those specified, and that are of minimum test size indicated below:
 - 1. Fixed Windows: 60" x 99".
- C. Structural Performance: Provide aluminum windows capable of withstanding the effects of the following loads, based on testing units of the minimum test size specified herein that pass AAMA/WDMA/CSA 101/I.S.2/A440-08, Uniform Load Structural and Uniform Load Deflection Tests:
 - 1. Uniform Load Structural Test: 225 psf (positive and negative).
 - 2. Uniform Load Deflection Test: 150 psf (positive and negative).

1.5 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 01 Specification Sections.
- B. Product Data for each type of window required, including the following:
 - 1. Construction details and fabrication methods.
 - 2. Profiles and dimensions of individual components.
 - 3. Data on hardware, accessories, and finishes.
 - 4. Recommendations for maintaining and cleaning exterior surfaces.
- C. Shop Drawings showing fabrication and installation of each type of window required including information not fully detailed in manufacturer's standard Product Data and the following:
 - 1. Layout and installation details, including anchors.
 - 2. Elevations at 1/4 inch = 1 foot (1:50) scale and typical window unit elevations at 3/4 inch = 1 foot (1:20) scale.
 - 3. Full-size section details of typical composite members, including reinforcement and stiffeners.

- 4. Location of weep holes.
- 5. Panning details.
- 6. Hardware, including operators.
- 7. Window cleaning provisions.
- 8. Glazing details.
- 9. Accessories.
- D. Samples for Selection: The Architect reserves the right to require additional samples that show fabrication techniques, workmanship, and design of hardware and accessories.
- E. Test reports from a qualified independent testing agency indicating that each type, grade, and size of window unit complies with performance requirements indicated based on comprehensive testing of current window units within the last 5 years. Test results based on use of down-sized test units will not be accepted.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who has completed installation of aluminum windows similar in material, design, and extent to those required for this Project and with a record of successful in-service performance.
- B. Product Requirements: For maximum performance, windows for this project must meet both the testing requirements as contained herein and the minimum material requirements specified. Windows that carry the applicable AAMA rating but do not meet the material thicknesses, depths, etc. shall not be acceptable for use on this project.
- C. Source Limitations: Obtain aluminum windows through one source from a single manufacturer.
- D. Product Options: Drawings indicate size, profiles, and dimensional requirements of aluminum windows and are based on the specific system indicated. Do not modify size and dimensional requirements.
 - 1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.
- E. Fenestration Standard: Comply with AAMA/WDMA/CSA 101/I.S.2/A440-08, "Standard/Specification for Windows, Doors, and Unit Skylights" for definitions and minimum standards of performance, materials, components, accessories, and fabrication. Comply with more stringent requirements if indicated.
 - 1. Provide AAMA-certified aluminum windows.

- F. Glazing Publications: Comply with published recommendations of glass manufacturers and with GANA's "Glazing Manual" unless more stringent requirements are indicated.
- G. Preinstallation Conference: If requested, conduct conference at project site to review methods and procedures related to aluminum windows including, but not limited to, the following:
 - 1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 2. Review, discuss, and coordinate the interrelationship of aluminum windows with other exterior wall components.
 - 3. Review and discuss the sequence of work required to construct a watertight and weathertight exterior building envelope.
 - 4. Inspect and discuss the condition of substrate and other preparatory work performed by other trades.
- H. Testing Agency Qualifications: To qualify for approval, an independent testing agency must demonstrate to Architect's satisfaction, based on evaluation of agency-submitted criteria conforming to ASTM E 699, that it has the experience and capability to satisfactorily conduct the testing indicated without delaying the Work.

1.7 PROJECT CONDITIONS

- A. Field Measurements: Check window openings by field measurements before fabrication and show recorded measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
 - 1. Where field measurements cannot be made without delaying the Work, guarantee opening dimensions and proceed with fabricating aluminum windows without field measurements. Coordinate wall construction to ensure that actual opening dimensions correspond to guaranteed dimensions.

1.8 WARRANTY

A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

- B. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace aluminum windows that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Failure to meet performance requirements.
 - b. Structural failures including excessive deflection, water leakage, or air infiltration.
 - c. Deterioration of metals or other materials beyond that which is normal.
 - d. Failure of insulating glass.
 - 2. Warranty Period:
 - a. Window: Ten years from date of Substantial Completion.
 - b. Insulated Glazing: 10 years from date of Substantial Completion.
 - c. Painted Metal Finishes:
 - 1) Twenty years from date of Substantial Completion for AAMA 2605 High Performance Finish.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - 1. Double Hung Windows:
 - a. Architectural Window Manufacturing Corp. the Series 7095i Off-Set Fixed, Basis of Design or approved equal.
 - 2. Fixed Windows:
 - a. Architectural Window Manufacturing Corp. the Series 7090i Fixed, Basis of Design or approved equal.

2.2 MATERIALS

A. Aluminum Extrusions: Alloy and temper recommended by aluminum window manufacturer for strength, corrosion resistance, and application of required finish, but not less than 22,000-psi (150-MPa) ultimate tensile strength, not less than 16,000-psi (110-MPa) minimum yield strength, and not less than 0.080-inch (1.6-mm) thickness at any location for the main frame.

B. Frame Depth: $4\frac{1}{4}$ " minimum frame depth.

1. Meeting Rail: The meeting rail must be off-set with a minimum set back of 2-1/8" between the plane of the lower lite of glazing and exterior face of the meeting rail.

- 2. Frames: Frames must have an integral extruded bevel.
- C. Fasteners: Aluminum, nonmagnetic stainless steel, epoxy adhesive, or other materials warranted by manufacturer to be noncorrosive and compatible with aluminum window members, trim, hardware, anchors, and other components.
 - 1. All fasteners must be concealed except where unavoidable for application of hardware.
 - 2. For application of hardware, where required, use non-magnetic stainless steel phillips machine screws.
- D. Anchors, Clips, and Accessories: Aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions; provide sufficient strength to withstand design pressure indicated.
- E. Compression-Type Weather Stripping: Provide compressible weather stripping designed for permanently resilient sealing under bumper or wiper action and for complete concealment when aluminum window is closed.
 - 1. Weather-Stripping Material: Manufacturer's standard system and materials complying with AAMA/WDMA/CSA 101/I.S.2/A440-08.
- F. Sliding-Type Weather Stripping: Provide woven-pile weather stripping of wool, polypropylene, or nylon pile and resin-impregnated backing fabric. Comply with AAMA 701/702.
 - 1. Weather Seals: Provide weather stripping with integral barrier fin or fins of semirigid, polypropylene sheet or polypropylene-coated material. Comply with AAMA 701/702.
- G. Replaceable Weather Seals: Comply with AAMA 701/702.
- H. Sealant: For sealants required within fabricated windows, provide window manufacturer's standard, permanently elastic, nonshrinking, and nonmigrating type recommended by sealant manufacturer for joint size and movement.

2.3 DOUBLE HUNG WINDOW (FIXED)

- A. Window Type: Fixed Off-Set
- B. AAMA/WDMA Performance Requirements: Provide aluminum windows of performance indicated that comply with AAMA/WDMA/CSA 101/I.S.2/A440-08.
 - 1. Performance Class and Grade: AW-PG150.

- C. Condensation-Resistance Factor (CRF): Provide aluminum windows tested for thermal performance according to AAMA 1503, showing a minimum CRF of 62.
- D. Thermal Transmittance: Provide aluminum windows with a whole-window, U-factor maximum indicated at 15-mph (24-km/h) exterior wind velocity and winter condition temperatures when tested using pyrolitic Low-E glass according to AAMA 1503.
 - 1. U-Factor: 0.39 Btu/sq. ft. x h x deg F or less for whole window.
 - 2. Solar Heat Gain Coefficient: SHGC: 0.34 or Less for whole window.
- E. Air Infiltration: Maximum rate not more than indicated when tested according to AAMA/WDMA/CSA 101/I.S.2/A440-08, Air Infiltration Test.
 - 1. Maximum Rate: 0.1 cfm/sq. ft. of area at an inward test pressure of 6.24 lbf/sq. ft. (300 Pa).
- F. Water Resistance: No water leakage as defined in AAMA/WDMA referenced test methods at a water test pressure equaling that indicated, when tested according to AAMA/WDMA 101/I.S.2/NAFS, Water Resistance Test.
 - 1. Test Pressure: 20 percent of positive design pressure, but not less than 15 lbf/sq. ft..
- G. Forced-Entry Resistance: Comply with Performance Grade 10 requirements when tested according to ASTM F 588.

2.4 FIXED WINDOW

- A. Window Type: Fixed
- B. AAMA/WDMA Performance Requirements: Provide aluminum windows of performance indicated that comply with AAMA/WDMA/CSA 101/I.S.2/A440-05.
 - 1. Performance Class and Grade: AW100.
- C. Condensation-Resistance Factor (CRF): Provide aluminum windows tested for thermal performance according to AAMA 1503, showing a minimum CRF of 62.
- D. Thermal Transmittance: Provide aluminum windows with a whole-window, U-factor maximum indicated at 15-mph (24-km/h) exterior wind velocity and winter condition temperatures when tested using pyrolitic Low-E glass according to AAMA 1503.
 - 1. U-Factor: 0.44 Btu/sq. ft. x h x deg F or less.
- E. Air Infiltration: Maximum rate not more than indicated when tested according to AAMA/WDMA/CSA 101/I.S.2/A440-05, Air Infiltration Test.
 - 1. Maximum Rate: 0.1 cfm/sq. ft. of area at an inward test pressure of 6.24 lbf/sq. ft. (300 Pa).

- F. Water Resistance: No water leakage as defined in AAMA/WDMA referenced test methods at a water test pressure equaling that indicated, when tested according to AAMA/WDMA 101/I.S.2/NAFS, Water Resistance Test.
 - 1. Test Pressure: 20 percent of positive design pressure, but not less than 15 lbf/sq. ft..
- G. Forced-Entry Resistance: Comply with Performance Grade 10 requirements when tested according to ASTM F 588.

2.5 FABRICATION

- A. Fabricate aluminum windows in sizes indicated. Include a complete system for assembling components and anchoring windows.
- B. Fabricate aluminum windows that are reglazable without dismantling framing.
- C. Thermally Improved Construction: Fabricate aluminum windows with an integral, concealed (products with exposed thermal barriers will not be acceptable), low-conductance thermal barrier; located between exterior materials and window members exposed on interior side; in a manner that eliminates direct metal-to-metal contact.
 - 1. All exterior aluminum shall be separated from interior aluminum by a rigid, structural thermal barrier. For purposes of this specification, a structural thermal barrier is defined as a system that shall transfer shear during bending and, therefore, promote composite action between the exterior and interior extrusions.
 - 2. No thermal short circuits shall occur between the exterior and interior.
 - 3. The thermal barrier shall be INSULBAR® or equal, and shall consist of two glass reinforced polyamide nylon 6/6 struts mechanically crimped in raceways extruded in the exterior and interior extrusions.
 - 4. Poured and debridged urethane thermal barriers shall not be permitted.
- D. Mullions: Provide 3 piece structural mullions and cover plates as shown, matching window units, complete with anchors for support to structure and installation of window units. Allow for erection tolerances and provide for movement of window units due to thermal expansion and building deflections, as indicated. Provide mullions and cover plates capable of withstanding design loads of window units.
- E. Subframes: Provide subframes (Panning) with anchors for window units as shown, of profile and dimensions indicated but not less than 0.093-inch- thick extruded aluminum. Provide Alcoa Sills where shown. Finish to match window units. Provide subframes capable of withstanding design loads of window units.
- F. Factory-Glazed Fabrication: Glaze aluminum windows in the factory where practical and possible for applications indicated. Comply with requirements in Division 08 Section "Glazing" and with AAMA/WDMA/CSA 101/I.S.2/A440-08.

G. Glazing Stops: Provide snap-on glazing stops coordinated with Division 08 Section "Glazing" and glazing system indicated. Provide glazing stops to match sash and ventilator frames.

2.6 FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
- C. Exterior of Window:
 - 1. High-Performance Organic Finish: AA-C12C42R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: acid-chromate-fluoride-phosphate conversion coating; Organic Coating: as specified below). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturer's written instructions.
 - a. Fluoropolymer Two-Coat System: Manufacturer's standard two-coat thermocured system consisting of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70% polyvinyl fluoride resin by weight; complying with AAMA 2604
 - a. Color: As selected by Architect from manufacturer's standard (Non-Metallic) colors. (Note: Exterior color may be different from interior color.)
- C. Interior of Window:
 - 1. Baked-Enamel Finish: AA-C12C42R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: acid-chromate-fluoride-phosphate conversion coating; Organic Coating: as specified below). Apply baked enamel complying with paint manufacturer's written instructions for cleaning, conversion coating, and painting.
 - a. Organic Coating: Thermosetting, modified-acrylic enamel primer/topcoat system complying with AAMA 2603 Organic Coating: Thermosetting, modified-acrylic enamel primer/topcoat system complying with AAMA 2603.
 - b. Color: As selected by Architect from manufacturer's standard (Non-Metallic) colors.

PART 3 - EXECUTION

3.1 CONSTRUCTION WASTE MANAGEMENT

A. The contractor, subcontractors, and their personnel shall follow the procedures and practices for waste separation, collection and transport as defined in the contractor's "Waste Management Plan" as required by Division 01 Section "Construction Waste Management."

3.2 EXAMINATION

- A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work. Verify rough opening dimensions, levelness of sill plate, and operational clearances. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure a coordinated, weathertight window installation.
 - 1. Masonry Surfaces: Visibly dry and free of excess mortar, sand, and other construction debris.
 - 2. Wood Frame Walls: Dry, clean, sound, well nailed, free of voids, and without offsets at joints. Ensure that nail heads are driven flush with surfaces in opening and within 3 inches (76 mm) of opening.
 - 3. Metal Surfaces: Dry; clean; free of grease, oil, dirt, rust, corrosion, and welding slag; without sharp edges or offsets at joints.
 - 4. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 INSTALLATION

- A. Comply with Drawings, Shop Drawings, and manufacturer's written instructions for installing windows, hardware, accessories, and other components.
- B. Install windows level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support.
- C. Set sill members in bed of sealant or with gaskets, as indicated, for weathertight construction.
- D. Install windows and components to drain condensation, water penetrating joints, and moisture migrating within windows to the exterior.
- E. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

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3.4 FACTORY TESTING

A. One window for each seventy-five manufactured shall be randomly selected by the Owner and Architect to be tested at the manufacturer's facility for air and water infiltration in order to confirm compliance of the project's windows with the performance requirements contained in these specifications. Bidders are to include the cost of transportation, food, and lodging for four representatives of the Owner and/or Architect to witness these tests.

3.5 ADJUSTING, CLEANING, AND PROTECTION

- A. Manufacturer shall clean all glass and aluminum prior to shipment.
- B. Protection of newly installed windows and/or final cleaning of glass and aluminum to remove any accumulations that may have occurred during the construction period is to be the responsibility of the General Contractor or Owner.
- C. Comply with manufacturer's written recommendations for final cleaning and maintenance.

3.6 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to maintain window system.

END OF SECTION 08 51 13

SECTION 23 81 29 – VARIABLE REFRIGERANT FLOW SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes split-system air-conditioning and heat-pump units consisting of separate evaporator-fan and compressor-condenser components.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include rated capacities, operating characteristics, and furnished specialties and accessories. Include performance data in terms of capacities, outlet velocities, static pressures, sound power characteristics, motor requirements, and electrical characteristics.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
 - 1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 2. Wiring Diagrams: For power, signal, and control wiring.
- C. Samples for Initial Selection: For units with factory-applied color finishes.
- D. Field quality-control reports.
- E. Operation and Maintenance Data: For split-system air-conditioning units to include in emergency, operation, and maintenance manuals.
- F. Warranty: Sample of special warranty.

1.4 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. ASHRAE Compliance:

- 1. Fabricate and label refrigeration system to comply with ASHRAE 15, "Safety Standard for Refrigeration Systems."
- 2. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1, Section 4 -"Outdoor Air Quality," Section 5 - "Systems and Equipment," Section 6 - " Procedures," and Section 7 - "Construction and System Start-Up."
- C. ASHRAE/IESNA Compliance: Applicable requirements in ASHRAE/IESNA 90.1.

1.5 COORDINATION

A. Coordinate sizes and locations of roof curbs, equipment supports, and roof penetrations with actual equipment provided.

1.6 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of split-system air-conditioning units that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period:
 - a. For Compressor: Six year(s) from date of Substantial Completion.
 - b. For Parts: One year(s) from date of Substantial Completion.
 - c. For Labor: One year(s) from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Daikin VRV, indicated on Drawings or comparable product by one of the following:
 - 1. Carrier.
 - 2. Daikin.
 - 3. Trane.
- B. The variable capacity, air conditioning system shall be a Variable Refrigerant Volume (heat and cool model) split system as specified. The system shall consist of multiple evaporators, joints and headers, a two-pipe refrigeration distribution system using PID control and condenser unit. The condenser shall be a direct expansion (DX), air-cooled, multi-zone air-conditioning system with variable speed inverter driven compressors using R-410A refrigerant. All zones are each capable of operating separately with individual temperature control.
- C. The condensing unit shall be interconnected to indoor units in accordance with manufacturer's engineering data book detailing each available indoor unit. The indoor units shall be connected to the condensing unit utilizing manufacturer's specified piping joints and headers to ensure

correct refrigerant flow and balancing. T style joints are not acceptable for a variable refrigerant system.

- D. Operation of the system shall permit cooling or heating of each indoor unit simultaneously. Each indoor unit or group of indoor units shall be able to provide set temperature independently via a local remote controller and a BMS interface.
- E. Defrost Heating Multiple condenser VRV systems shall maintain continuous heating during defrost operation. Reverse cycle (cooling mode) defrost operation shall not be permitted due to the potential reduction in space temperature.
- F. Oil Return Heating Multiple condenser VRV systems shall maintain continuous heating during oil return operation. Reverse cycle (cooling mode) oil return during heating operation shall not be permitted due to the potential reduction in space temperature.
- G. The operating range in cooling will be $5^{\circ}F DB \sim 118^{\circ}F DB$.
- H. Each system as standard shall be capable of onsite reprogramming to allow low ambient cooling operation down to 5°F DB.
- I. The operating range in heating will be $-13^{\circ}FWB 60^{\circ}FWB$.
- J. The units shall be compatible with interfacing with a BMS system via BACnet gateways.

2.2 INDOOR UNITS Heat Pump

- A. Wall-Mounted Units:
 - 1. Cabinet: Painted steel, or coated steel frame covered by a plastic cabinet, with an architectural acceptable finish suitable for tenant occupancy on exposed surfaces.
 - a. Mounting: Manufacturer-designed provisions for field installation.
 - b. Internal Access: Removable panels of adequate size for field access to internal components for inspection, cleaning, service, and replacement.
 - c. Insulation: Manufacturer's standard internal insulation, complying with ASHRAE 62.1, to provide thermal resistance and prevent condensation.
 - 2. Refrigerant Coil:
 - a. Copper tube, with mechanically bonded aluminum fins and thermal-expansion valve. Comply with ARI 210/240.
 - b. The coil shall be of a waffle louver fin and high heat exchange, rifled bore tube design to ensure highly efficient performance.
 - c. The coil shall be a 2-row cross fin copper evaporator coil with 17 FPI design completely factory tested.
 - d. The refrigerant connections shall be flare connections and the condensate will be 1 -1/32 inch outside diameter PVC.
 - e. A condensate pan shall be located under the coil.
 - f. A condensate pump with a 21 inch lift shall be located below the coil in the condensate pan with a built in safety alarm.
 - g. A thermistor will be located on the liquid and gas line
 - 3. Fan: Direct drive, centrifugal.
 - 4. Fan Motors:
 - a. Multitapped, multispeed with internal thermal protection and permanent lubrication.
 - b. Enclosure Type: Totally enclosed, fan cooled.
 - c. NEMA Premium (TM) efficient motors as defined in NEMA MG 1.

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- d. Controllers, Electrical Devices, and Wiring: Comply with requirements for electrical devices and connections specified in Electrical Division Sections.
- e. Mount unit-mounted disconnect switches on interior of unit.
- 5. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1.

2.3 OUTDOOR UNITS Heat Pump

- A. Air-Cooled, Inverter Compressor-Condenser Components:
 - 1. The condensing unit shall be factory assembled in the USA and pre-wired with all necessary electronic and refrigerant controls. The refrigeration circuit of the condensing unit shall consist of inverter scroll compressors, motors, fans, condenser coil, electronic expansion valves, solenoid valves, distribution headers, capillaries, filters, shut off valves, oil separators, service ports, liquid receiver and suction accumulator. Liquid and suction lines must be individually insulated between the condensing and indoor units.
 - a. The condensing unit can be wired and piped with access from the left, right, rear or bottom.
 - b. The connection ratio of indoor units to condensing unit shall be permitted up to 130%.
 - c. Each condensing system shall be able to support the connection of up to 9 indoor units dependent on the model of the condensing unit.
 - d. The sound pressure level standard shall be that value as listed in the Carrier engineering manual for the specified models at 4.3 feet from the front of the unit. The condensing unit shall be capable of operating automatically at further reduced noise during night time or via an external input.
 - e. The system will automatically restart operation after a power failure and will not cause any settings to be lost, thus eliminating the need for reprogramming.
 - f. The unit shall incorporate an auto-charging feature. Manual changing should be support with a minimum of 2 hours of system operation data to ensure correct operation.
 - g. The condensing unit shall be modular in design and should allow for side-by-side installation with minimum spacing.
 - h. The following safety devices shall be included on the condensing unit; high pressure sensor and switch, low pressure sensor, control circuit fuses, crankcase heaters, fusible plug, overload relay, inverter overload protector, thermal protectors for compressor and fan motors, over current protection for the inverter and anti-recycling timers.
 - i. To ensure the liquid refrigerant does not flash when supplying to the various indoor units, the circuit shall be provided with a sub-cooling feature.
 - j. Oil recovery cycle shall be automatic occurring 2 hours after start of operation and then every 8 hours of operation. Each system shall maintain continuous heating during oil return operation.

- k. The condensing unit shall be capable of heating operation at -13°F wet bulb ambient temperature without additional low ambient controls or an auxiliary heat source.
- 2. The multiple condenser VRV systems shall continue to provide heat to the indoor units in heating operation while in the defrost mode
- 3. Casing: Steel, finished with baked enamel in color selected by Architect, with removable panels for access to controls, weep holes for water drainage, and mounting holes in base. Provide brass service valves, fittings, and gage ports on exterior of casing.
- 4. VFD Inverter Control and Variable Refrigerant Temperature Each condensing unit shall use high efficiency, variable speed all "inverter" compressor(s) coupled with inverter fan motors to optimize part load performance. The system capacity and refrigerant temperatures shall be modulated automatically to set suction and condensing pressures while varying the refrigerant volume for the needs of the cooling or heating loads. The control will be automatic and customizable depending on load and weather conditions.
- 5. Compressor: Hermetically sealed with crankcase heater and mounted on vibration isolation device. Compressor motor shall have thermal- and current-sensitive overload devices, start capacitor, relay, and contactor.
 - a. Compressor Type: Scroll. (Inverter)
 - b. Two-speed compressor motor with manual-reset high-pressure switch and automatic-reset low-pressure switch.
 - c. Refrigerant Charge: R-410A.
 - d. Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins and liquid subcooler. Comply with ARI 210/240.
 - e. The inverter scroll compressors shall be variable speed (PVM inverter) controlled which is capable of changing the speed to follow the variations in total cooling and heating load as determined by the suction gas pressure as measured in the condensing unit. In addition, samplings of evaporator and condenser temperatures shall be made so that the high/low pressures detected are read every 20 seconds and calculated. With each reading, the compressor capacity (INV frequency) shall be controlled to eliminate deviation from target value. Non inverter-driven compressors, which may cause starting motor current to exceed the nominal motor current (RLA) and require larger wire sizing, shall not be allowed.
 - f. The inverter driven compressor in each condensing unit shall be of highly efficient reluctance DC (digitally commutating), hermetically sealed scroll "G-type" or "J-type".
 - g. Neodymium magnets shall be adopted in the rotor construction to yield a higher torque and efficiency in the compressor instead of the normal ferrite magnet type. At complete stop of the compressor, the neodymium magnets will position the rotor into the optimum position for a low torque start.
 - h. The compressors' motors shall have a cooling system using discharge gas, to avoid sudden changes in temperature resulting in significant stresses on winding and bearings.
 - i. Each compressor shall be equipped with a crankcase heater, high pressure safety switch, and internal thermal overload protector.
 - j. Oil separators shall be standard with the equipment together with an intelligent oil management system.
 - k. The compressor shall be installed on rubber vibration isolators.

- 1. In the event of compressor failure the remaining compressors shall continue to operate and provide heating or cooling as required at a proportionally reduced capacity. The microprocessor and associated controls shall be designed to specifically address this condition.
- m. In the case of multiple condenser modules, conjoined operation hours of the compressors shall be balanced by means of the Duty Cycling Function, ensuring sequential starting of each module at each start/stop cycle, completion of oil return, completion of defrost or every 8 hours and extending the operating life of the system.
- 6. Heat-Pump Components: Reversing valve and low-temperature-air cutoff thermostat.
- 7. Fan: The condensing unit shall consist of one or more propeller type, direct-drive fan motors that have multiple speed operation via a DC (digitally commutating) inverter.
- 8. Motor: Permanently lubricated, with integral thermal-overload protection.
- 9. Condenser Coil:
 - a. The condenser coil shall be manufactured from copper tubes expanded into aluminum fins to form a mechanical bond.
 - b. The heat exchanger coil shall be of a waffle louver fin and rifled bore tube design to ensure high efficiency performance.
 - c. Coil shall be constructed of aluminum fins mechanically bonded to seamless copper tubes, which are cleaned, dehydrated, and sealed.
 - d. The coil configuration shall be L-shaped, with 2 sides providing access panels for service and maintenance.
 - e. The fins are to be covered with an anti-corrosion blue-fin finish coating as standard with a salt spray test rating of 500hr (ASTM B117 & Blister Rating:10).
 - Low Ambient Kit: Permits operation down to 5 degree F.
- 11. Mounting Base: refer to plans.

2.4 REFRIGERANT PIPING

10.

- A. The system shall be capable of refrigerant piping up to 296 actual feet or 328 equivalent feet from the condensing unit to the furthest indoor unit, with 164 feet maximum vertical difference, without any oil traps.
- B. Piping joints and headers shall be used to ensure proper refrigerant balance and flow for optimum system capacity and performance. T style joints shall not be acceptable as this will negatively impact proper refrigerant balance and flow for optimum system capacity and performance.

2.5 ACCESSORIES

- A. Control equipment and sequence of operation are specified in Mechanical Division Sections "HVAC Instrumentation and Controls" and "Sequence of Operation."
- B. Thermostat: Low voltage with subbase to control compressor and evaporator fan.
- C. Automatic-reset timer to prevent rapid cycling of compressor.

T-707A COMMISSION ADMINISTRATION BUILDING AT SCUDDER FALLS AND ADAPTIVE REUSE OF THE 1799 BUILDING

- D. Refrigerant Line Kits: Soft-annealed copper suction and liquid lines factory cleaned, dried, pressurized, and sealed; factory-insulated suction line with flared fittings at both ends.
- E. Drain Hose: For condensate.
- F. Additional Monitoring: Via Local Panel.
 - 1. Monitor constant and variable motor loads.
 - 2. Monitor variable-frequency-drive operation.
 - 3. Monitor economizer cycle.
 - 4. Monitor cooling and heating load.
 - 5. Monitor air distribution static pressure and ventilation air volumes.

2.6 CAPACITIES AND CHARACTERISTICS: SEE PLAN SCHEDULES

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install units level and plumb.
- B. Install evaporator-fan components using manufacturer's standard mounting devices securely fastened to building structure.
- C. Install ground-mounted, compressor-condenser components on 4-inch-thick, reinforced concrete base that is 4 inches larger, on each side, than unit.
- D. Install wind restraint rail.
- E. Install and connect precharged refrigerant tubing to component's quick-connect fittings. Install tubing to allow access to unit, in accordance with manufacturer recommendations.

3.2 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.
- B. Perform tests and inspections.
 - 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- C. Tests and Inspections:

- 1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
- 2. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
- 3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Remove and replace malfunctioning units and retest as specified above.
- E. Prepare test and inspection reports.
- F. With Integral Condensate Pump.

3.3 STARTUP SERVICE

- A. Perform startup service.
 - 1. Complete installation and startup checks according to manufacturer's written instructions.
 - 2. Work shall be performed by Factory Authorized service technicians.

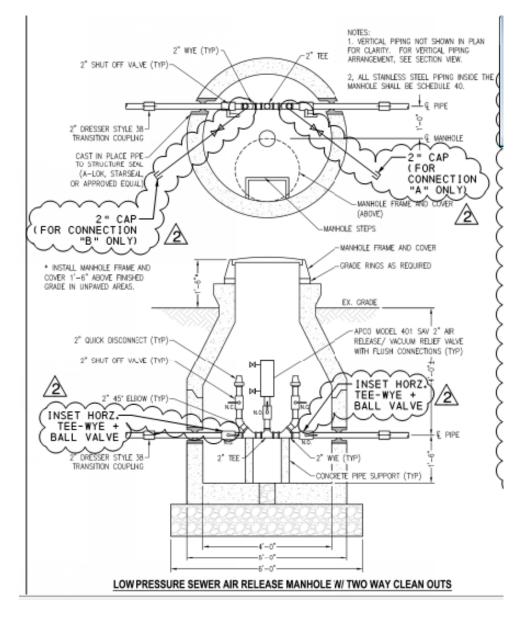
3.4 DEMONSTRATION

A. Train Owner's maintenance personnel to adjust, operate, and maintain units.

END OF SECTION 23 81 29

Delaware River Joint Toll Bridge Commission Administration Building ADDENDUM NO. 3

DETAIL FOR ITEM 57 (RFI 017-01)



Detail per plan entitled, "Utility Construction Details – 10, Revision #2, COP #8 – Detail Revisions", Revised 09/11/2017, Prepared by Michael Baker International.

NOTE: Detail has not been approved for construction at the time of this Addendum.

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1. F 2. F V 3. F 4. F		DRAIN F NTROL C SAFETY 3/4" ID F CONDEN	AN WIT SIRCUIT SWITCH LEXIBLE ISATE P HED	H UL #508 THROUGH H. TUBE ON PIPING SYS	NC CC DISCH TEM.	IARGE F	DU CO (INC	i AS RE	EQUIRED	FOR PROF	PER LIFT		J.
1. F 2. F V 3. F 4. F O JST FAN RPM 1600	ROVIDE ROVIDE VIRE CO ROVIDE ROVIDE RAVITY	DRAIN F NTROL C SAFETY 3/4" ID F CONDEN) SC 5 RPM 1600	AN WIT SIRCUIT SWITCH LEXIBLE ISATE P HED ELECTRI VOLT 115	H UL #508 THROUGH H. TUBE ON PIPING SYS OULE CAL DATA S/Ø M/ AM /1 1.	NC CC DISCH TEM.	DNTACT.	DU CO (INC	AS RE	EQUIRED WEIGHT LBS	FOR PROF	EF X MARKS		J.
1. F 2. F V 3. F 4. F O JST FAN RPM 1600 NS. CTUREF	ROVIDE ROVIDE VIRE CO ROVIDE ROVIDE RAVITY	DRAIN F NTROL C SAFETY 3/4" ID F CONDEN	ATIONS	H UL #508 THROUGH H. TUBE ON PIPING SYS OULE CAL DATA S/Ø M/ AM /1 1.	NC CC DISCH TEM.	DNTACT.	DU CO (INC	AS RE	EQUIRED WEIGHT LBS	FOR PROF	EF X MARKS		J.
1. F 2. F V 3. F 4. F O JST FAN RPM 1600 NS. CTUREF	ROVIDE ROVIDE ROVIDE ROVIDE ROVIDE ROVIDE ROVIDE ROVIDE ROVIDE ROVIDE ROVIDE ROVIDE ROVIDE ROVIDE ROVIDE ROVIDE	DRAIN F NTROL C SAFETY 3/4" ID F CONDEN) SC E S RPM 1600 DMMEND	AN WIT SIRCUIT SWITCH LEXIBLE ISATE P HED ELECTRI VOLT 115 ATIONS	H UL #508 THROUGH 1. TUBE ON PIPING SYS OULE CAL DATA S/Ø MA /1 1.	NC CC DISCH TEM. AX PS 4 E VENT INCH	DRIVE DRIVE DIRECT		AS RE	EQUIRED WEIGHT LBS 47	FOR PROF	EF X MARKS		١.

3 02-08-2018	ADDENDUM #3					
1 01-10-2018	ISSUED FOR B	ID				
USA Architects Signature & License No.			and ac	EW ADMINISTRATION BUILDING APTIVE REUSE OF THE 1799 BUI FOR THE /ER JOINT TOLL BRIDGE CAPITAL PROJECT # 1644A CONTACT # T-707A WOODSIDE ROAD MAKEFIELD TOWNSHIP, BUCK COUN	ILDING E COMMISSION	١
1800 Route 34, S Wall, N			ME	CHANICAL SCHEDUL	ES	
FRENCH & PARRELLO	I Offices	Scale: Drawing Date	01-10-2018	FPA Project No. 11878.001	Drawing No.	M-401

MECHANICAL EQUIPMENT COORDINATION SCHEDULE

				MECH.	ANICAL I	EQUIPME	ENT COC	RDINATION SC	HEDULE				$\langle 1 \rangle \langle 4 \rangle$	
	IDENTIFICATION				ELECTRICAL CH	ARACTERISTICS					LOCA	POWER DISCO		
PLAN ID	DESCRIPTION	VOLTAGE & 🗆	MOTOR HP	HEATING KW	FLA	MCA	MOCP	WIRING	2 AMPS	POLES	FUSE AMPS	NEMA TYPE	SERVICE RECEPTACLE	REMARKS
AC-1A	INDOOR AIR CONDITIONING UNIT	460V / 3	(2) 4.15 BHP EA.		67.4	80.8	125A	SEE PANEL SCHEDULES 8 WIRE SIZE TABLES	200A	3	125A	NEMA 1	NO	
AC-2A	INDOOR AIR CONDITIONING UNIT	460V / 3	(2) 4.15 BHP EA.		67.4	80.8	125A	SEE PANEL SCHEDULES 8 WIRE SIZE TABLES	200A	3	125A	NEMA 1	NO	
AC-1B	OUTDOOR AIR CONDITIONING UNIT	460V / 3	-		2.8	3.5	15A	SEE PANEL SCHEDULES 8 WIRE SIZE TABLES	30A	3	15A	NEMA 3R	YES	
AC-2B	OUTDOOR AIR CONDITIONING UNIT	460V / 3	-		2.8	3.5	15A	SEE PANEL SCHEDULES 8 WIRE SIZE TABLES	30A	3	15A	NEMA 3R	YES	
CT-1	COOLING TOWER	460V / 3	7.5	10.0	11.0 / 12.0	13.8 / 15.0	20A/ 20A	SEE PANEL SCHEDULES & WIRE SIZE TABLES	30A / 30A	3/3	20A / 20A	NEMA 3R	YES	PROVIDE SEPARATE CIRCUITS FOR COOLING TOWER MOTOR AND HEAT
CH-1	WATER COOLED CHILLER	460V / 3			64.9	99.7	125A	SEE PANEL SCHEDULES & WIRE SIZE TABLES	200A	3	125A	NEMA 1	NO	-
CH-2	WATER COOLED CHILLER	460V / 3			64.9	99.7	125A	SEE PANEL SCHEDULES 8 WIRE SIZE TABLES	200A	3	125A	NEMA 1	NO	-
B-1	HOT WATER BOILER	120V / 1			13.0	16.3	20A	SEE PANEL SCHEDULES 8 WIRE SIZE TABLES	30A	1	20A	NEMA 1	NO	6
B-2	HOT WATER BOILER	120V / 1			13.0	16.3	20A	SEE PANEL SCHEDULES 8 WIRE SIZE TABLES	30A	1	20A	NEMA 1	NO	5
B-3	HOT WATER BOILER	120V / 1			13.0	16.3	20A	SEE PANEL SCHEDULES 8 WIRE SIZE TABLES	30A	1	20A	NEMA 1	NO	
ERU-1	ENERGY RECOVERY UNIT	460V / 3			-	9.2	15A	SEE PANEL SCHEDULES & WIRE SIZE TABLES	30A	3	15A	NEMA 1	NO	-
ERU-2	ENERGY RECOVERY UNIT	460V / 3			-	20.9	25A	SEE PANEL SCHEDULES & WIRE SIZE TABLES	2 30A	3	25A	NEMA 1	NO	
HP-1	DUCTLESS SPLIT SYSTEM INDOOR UNIT	230V / 1			N/A	N/A	N/A	SEE PANEL SCHEDULES & WIRE SIZE TABLES	30A	2	25A	NEMA 1	NO	
HP-2	DUCTLESS SPLIT SYSTEM INDOOR UNIT	230V / 1			N/A	N/A	N/A	SEE PANEL SCHEDULES 8	30A	2	25A	NEMA 1	NO	
HP-8	DUCTLESS SPETT SYSTEMITOOOR UNIT	208V / 1			N/A	31/2	35	WIRE SIZE TABLES			35A	NEMAT	NO	1709 HOUSE
CU-1	DUCTLESS SPLIT SYSTEM OUTDOOR UNIT	208V / 1		r		36.0	40A	WIRE SIZE TABLES		2 T	40A	NEMA 3R	YES	IDF ROOM
	NOT USED		Δ		λλ	. / .		WIRE SIZE TABLES	· / · /	. A		. λ		
CU-3	DUCTLESS SPLIT SYSTEM OUTDOOR UNIT	208V / 1				31.4	50A	SEE PANEL SCHEDULES 8	60A	2	50A	NEMA 3R	YES	1799 HOUSE
HWP-1	BOILER PUMP	460V / 3	15		21.0			WIRE SIZE TABLES SEE PANEL SCHEDULES 8		3	20A	NEMA SK		
			15		21.0	26.3	40A	WIRE SIZE TABLES SEE PANEL SCHEDULES 8	2				NO	OPERATIONAL
HWP-2		460V / 3	15		21.0	26.3	40A	WIRE SIZE TABLES SEE PANEL SCHEDULES 8	* 30A	3	20A	NEMA 1	NO	STANDBY
CWP-1	CHILLED WATER PUMP	460V / 3	20		27.0	33.8	50A	WIRE SIZE TABLES SEE PANEL SCHEDULES 8	60A	3	40A	NEMA 1	NO	OPERATIONAL
CWP-2	CHILLED WATER PUMP	460V / 3	20		27.0	33.8	50A	WIRE SIZE TABLES	60A	3	40A	NEMA 1	NO	STANDBY
CTP-1	COOLING TOWER PUMP	460V / 3	15		21.0	26.3	40A	WIRE SIZE TABLES	60A	3	40A	NEMA 1	NO	OPERATIONAL
CTP-2	COOLING TOWER PUMP	460V / 3	15		21.0	26.3	40A	WIRE SIZE TABLES	60A	3	40A	NEMA 1	NO	STANDBY
RPP-1	CIRCULATING PUMP	120V / 1	1/3		7.2	9.0	15A	SEE PANEL SCHEDULES & WIRE SIZE TABLES	30A	1	15A	NEMA 1	NO	OPERATIONAL
RPP-2	CIRCULATING PUMP	120V / 1	1/3		7.2	9.0	15A	SEE PANEL SCHEDULES & WIRE SIZE TABLES	30A	1	15A	NEMA 1	NO	STANDBY
EF-1	EXHAUST FAN	120V / 1	1/4		5.8	7.3	15A	SEE PANEL SCHEDULES & WIRE SIZE TABLES	30A	1	15A	NEMA 1	NO	-
EF-2	EXHAUST FAN	120V / 1			80 WATTS	-	15A	SEE PANEL SCHEDULES & WIRE SIZE TABLES	30A	1	15A	NEMA 1	NO	-
EF-3	EXHAUST FAN	120V / 1			80 WATTS	-	15A	SEE PANEL SCHEDULES & WIRE SIZE TABLES	30A	1	15A	NEMA 1	NO	e
EF-4	EXHAUST FAN	120V / 1			100 WATTS	-	15A	SEE PANEL SCHEDULES 8 WIRE SIZE TABLES	30A	1	15A	NEMA 3R	NO	-
CP-1	CONDENSATE PUMP	120V / 1	1/30		1.5	1.9	15A	SEE PANEL SCHEDULES & WIRE SIZE TABLES	30A	1	15A	NEMA 1	NO	-
CP-2	CONDENSATE PUMP	120V / 1	1/30		1.5	1.9	15A	SEE PANEL SCHEDULES & WIRE SIZE TABLES	30A	1	15A	NEMA 1	NO	-
CP-3	CONDENSATE PUMP	120V / 1	1/30		1.5	1.9	15A	SEE PANEL SCHEDULES 8 WIRE SIZE TABLES	30A	1	15A	NEMA 1	NO	-
CP-4	CONDENSATE PUMP	120V / 1	1/30		1.5	1.9	15A	SEE PANEL SCHEDULES 8 WIRE SIZE TABLES	30A	1	15A	NEMA 1	NO	-
FC-X	FCU-101, 117, 130, 133, 217A, 217B, 217C, 245, 249A AND 249B	277V / 1			6.8	8.5	15A	SEE PANEL SCHEDULES & WIRE SIZE TABLES	30A	1	15A	NEMA 1	NO	
FC-X	FCU-110, 124, 126, 127, 238 AND 250	277V / 1			2.3	2.9	15A	SEE PANEL SCHEDULES & WIRE SIZE TABLES	2× 30A	1	15A	NEMA 1	NO	
FC-X	FCU-114, 131, 223, 228, 241 AND 247	277V / 1			0.8	1.0	15A	SEE PANEL SCHEDULES 8	30A	1	15A	NEMA 1	NO	
FC-X	FCU-115, 118, 137, 140, 222, 240 AND 255	277V / 1			1.1	1.4	15A	WIRE SIZE TABLES SEE PANEL SCHEDULES & WIRE SIZE TABLES		1	15A	NEMA 1	NO	
FC-X	FCU-123 AND 231	277V / 1			1.0	1.3	15A	SEE PANEL SCHEDULES 8		1	15A	NEMA 1	NO	
FC-X	FCU-134, 201, 215, 225 AND 232	277V / 1			3.3	4.1	15A	WIRE SIZE TABLES		1	15A	NEMA 1	NO	
FC-X	FCU-136, 219,227, 230, 235, 242, 243, 244 AND	277V / 1			0.7	0.9	15A	WIRE SIZE TABLES		1	15A	NEMA 1	NO	
FC-X	251 FCU-148A, 148B AND ST1	277V / 1			3.7	4.6	15A 15A	WIRE SIZE TABLES SEE PANEL SCHEDULES 8		1	15A 15A	NEMA 1	NO	
FC-X FC-X	FCU-148A, 148B AND STT FCU-212 AND 224	277V / 1			5.0	6.3	15A 15A	WIRE SIZE TABLES SEE PANEL SCHEDULES 8		1	15A 15A	NEMA 1	NO	
								WIRE SIZE TABLES SEE PANEL SCHEDULES 8	30A					
FC-X	FCU- ST2 AND ST3	277V / 1			0.9	1.1	15A	WIRE SIZE TABLES SEE PANEL SCHEDULES 8	30A	1	15A	NEMA 1	NO	
WH-1		120V / 1			1.8	2.3	15A	WIRE SIZE TABLES	30A	1	15A	NEMA 1	NO	-
WH-2	ELECTRIC WATER HEATER	240 / 1		4.5	18.9	23.4	30A	SEE PANEL SCHEDULES & WIRE SIZE TABLES SEE PANEL SCHEDULES &	30A	2	30A	NEM1	NO	1799 HOUSE
HWR-1	HOT WATER RETURN PUMP	120V / 1			92 WATTS		15A	WIRE SIZE TABLES	30A	1	15A	NEMA 1	NO	
SP-1	ELEVATOR SUMP PUMP	120V / 1	1/2		9.8	12.3	20A	SEE PANEL SCHEDULES & WIRE SIZE TABLES	30A	1	20A	NEMA 1	NO	
SP-2	SINK PUMP	120V / 1	1/3		7.2	9.0	15A	SEE PANEL SCHEDULES 8 WIRE SIZE TABLES	30A	1	15A	NEMA 1	NO	1799 HOUSE
SP-3	SUMP PUMP	120V / 1	1/3		7.2	9.0	15A	SEE PANEL SCHEDULES 8 WIRE SIZE TABLES	30A	1	15A	NEMA 1	NO	1799 HOUSE
WSS-1	WATER SOFTENING SYSTEM	120V / 1					20A	SEE PANEL SCHEDULES 8 WIRE SIZE TABLES	x					
TCS-1	TOWER CLEANING SYSTEM	480V / 3	3		4.8	6.0	15A	SEE PANEL SCHEDULES & WIRE SIZE TABLES	30A	3	15A	NEMA 3R	NO	
-	WET WELL PUMP STATION	460V / 3	2 @ 7HP		22.0	27.5	50A	SEE PANEL SCHEDULES & WIRE SIZE TABLES	60A	3	50A	NEMA 3R	YES	REFER TO CIVIL ENGINEERING DRAWING
	1	120V / 1	1		12	15	20A	SEE PANEL SCHEDULES 8	30A	1	20A	NEMA 3R	N/A	REFER TO CIVIL

C/B TRIP			0V, 3P, 408V, 3F		2	480V, 77/480\	2P, 2W /, 2P, 3 ^v	W			277V,	1P, 2W		
15	DISTANCE IN FEET MINIMUM WIRE SIZE	408 12	630 10	990 8	353 12	545 10	857 8	1333 6	204 12	315 10	495 8	769 6	1154 4	144: 3
20	DISTANCE IN FEET MINIMUM WIRE SIZE	306 12	472 10	742 8	265 12	409 10	643 8	1000 6	153 12	236 10	371 8	577 6	866 4	1082 3
30	DISTANCE IN FEET MINIMUM WIRE SIZE	315 10	495 8	770 6	273 10	429 8	667 6	1000 4	157 10	247 8	385 6	577 4	721 3	866 2
40	DISTANCE IN FEET MINIMUM WIRE SIZE	371 8	577 6	866 4	321 8	500 6	750 4	938 3	185 8	289 6	433 4	541 3	649 2	812 1
50	DISTANCE IN FEET MINIMUM WIRE SIZE	297 8	462 6	693 4	257 8	400 6	600 4	750 3	148 8	231 6	346 4	433 3	519 2	649 1
60	DISTANCE IN FEET MINIMUM WIRE SIZE	385 6	577 4	722 3	333 6	500 4	625 3	750 2	192 6	289 4	361 3	433 2	541 1	
70	DISTANCE IN FEET MINIMUM WIRE SIZE	495 4	619 3	742 2	429 4	536 3	643 2	804 1	247 4	309 3	371 2	464 1		
80	DISTANCE IN FEET MINIMUM WIRE SIZE	433 4	541 3	650 2	375 4	469 3	563 2	703 1	216 4	271 3	325 2	406 1		
90	DISTANCE IN FEET MINIMUM WIRE SIZE	481 3	577 2	722 1	417 3	500 2	625 1		240 3	289 2	361 1			
100	DISTANCE IN FEET MINIMUM WIRE SIZE	433 3	450 2	650 1	375 3	450 2	563 1		216 3	260 2	325 1			

COPPER BRANCH CIRCUIT WIRE SIZING TABLES 480V - 3% VOLTAGE DROP

 DISTANCES ARE TO THE CENTER OF CONCENTRATED LOAD SUCH AS CLASSROOM LIGHTING OR THE MIDPOINT OF DISTRIBUTED LOAD SUCH AS CORRIDOR LIGHTING. 4. EQUIPMENT GROUNDING CONDUCTORS SHALL BE INCREASED IN SIZE PROPORTIONATELY PER N.E.C.

COPPER BRANCH CIRCUIT WIRE SIZIN 208V - 3% VOLTAGE DROP

		200)	570	VUL	IAU	ו שכ	JAC						
C/B TRIP			8V, 3P, 208V, 3F		1	,	2P, 2W /, 2P, 3\	N			120V,	1P, 2W		
15	DISTANCE IN FEET MINIMUM WIRE SIZE	177 12	273 10	429 8	153 12	236 10	371 8	578 6	88 12	136 10	214 8	333 6	500 4	625 3
20	DISTANCE IN FEET MINIMUM WIRE SIZE	132 12	205 10	322 8	115 12	177 10	279 8	433 6	66 12	102 10	161 8	250 6	375 4	469 3
30	DISTANCE IN FEET MINIMUM WIRE SIZE	136 10	214 8	334 6	118 10	186 8	289 6	433 4	68 10	107 8	167 6	250 4	313 3	375 2
40	DISTANCE IN FEET MINIMUM WIRE SIZE	161 8	250 6	375 4	139 8	217 6	325 4	406 3	80 8	125 6	188 4	234 3	281 2	352 1
50	DISTANCE IN FEET MINIMUM WIRE SIZE	129 8	200 6	300 4	111 8	173 6	260 4	325 3	64 8	100 6	150 4	188 3	225 2	281 1
60	DISTANCE IN FEET MINIMUM WIRE SIZE	167 6	250 4	313 3	144 6	217 4	271 3	325 2	83 6	125 4	156 3	188 2	234 1	
70	DISTANCE IN FEET MINIMUM WIRE SIZE	214 4	268 3	322 2	186 4	232 3	279 2	348 1	107 4	134 3	161 2	201 1		
80	DISTANCE IN FEET MINIMUM WIRE SIZE	188 4	235 3	281 2	163 4	203 3	244 2	305 1	94 4	117 3	141 2	176 1		
90	DISTANCE IN FEET MINIMUM WIRE SIZE	208 3	250 2	313 1	181 3	217 2	271 1		104 3	125 2	156 1			
100	DISTANCE IN FEET MINIMUM WIRE SIZE	188 3	225 2	281 1	163 3	195 2	244 1		94 3	113 2	141 1			
NOTES														

NOTES:

1. READ ACROSS TO THE RIGHT FROM C/B TRIP TO DESIRED VOLTAGE CHARACTERISTICS AND NEXT GREATER

DISTANCE THAN CIRCUIT IN QUESTION. 2. READ DOWN TO MINIMUM WIRE SIZE. 3. DISTANCES ARE TO THE CENTER OF CONCENTRATED LOAD SUCH AS CLASSROOM LIGHTING OR THE

MIDPOINT OF DISTRIBUTED LOAD SUCH AS CORRIDOR LIGHTING. 4. EQUIPMENT GROUNDING CONDUCTORS SHALL BE INCREASED IN SIZE PROPORTIONATELY PER N.E.C.

EQUIPMENT SCHEDULE KEY NOTES

- DATA FROM SPECIFIED MANUFACTURER. REFER TO MECHANICAL DRAWINGS
- 2 QUANTITY AND SIZE OF POWER CONDUCTORS BASED ON DATA FROM SPECIFIED MANUFACTURER. PROVIDE GROUND WIRE IN ACCORDANCE WITH THE PROJECT GENERAL NOTES THIS SHEET.
- 3 WHERE A FUSE SIZE IS NOT ENTERED IN COLUMN TITLED "FUSE AMPS", THE DISCONNECT MAY BE UNFUSED.
- 4 EQUIPMENT FURNISHED AND INSTALLED UNDER OTHER SPECIFICATION DIVISIONS, WIRED AND CONNECTED UNDER DIVISION 26. UNLESS NOTED DIVISIONS, WIRED AND CONNECTED UNDER DIVISION 26, UNLESS NOTED OTHERWISE. DISCONNECT SWITCHES FURNISHED UNDER DIVISION 23.
- 5 INDOOR UNIT FED VIA OUTDOOR CONDENSING UNIT. PROVIDE ALL WIRING AS REQUIRED TO MAKE A COMPLETE AND OPERATIONAL
- $\langle 6 \rangle$ PROVIDE DUCT SMOKE DETECTORS.

INSTALLATION.

- $\langle 7 \rangle$ PROVIDE PHASE LOSS PROTECTION IN EACH STARTER.
- 8 EACH FAN COIL UNIT PROVIDED WITH A 1/30 HP CONDENSATE LIFT PUMP. FURNISH AND INSTALL 20A SIMPLEX RECEPTACLE MOUNT ON WALL
- ABOVE CEILING FOR PUMP. CIRCUIT TO FAN COIL UNIT CIRCUIT. 9 REFER TO MECHANICAL SCHEDULES AND FLOOR PLANS FOR FAN COIL UNIT NUMBERS AND LOCATIONS.
- UNIT FURNISHED WITH CORD AND PLUG SET. CONTRACTOR SHALL FURNISH 120V DEDICATED DUPLEX RECEPTACLE FOR SYSTEM.

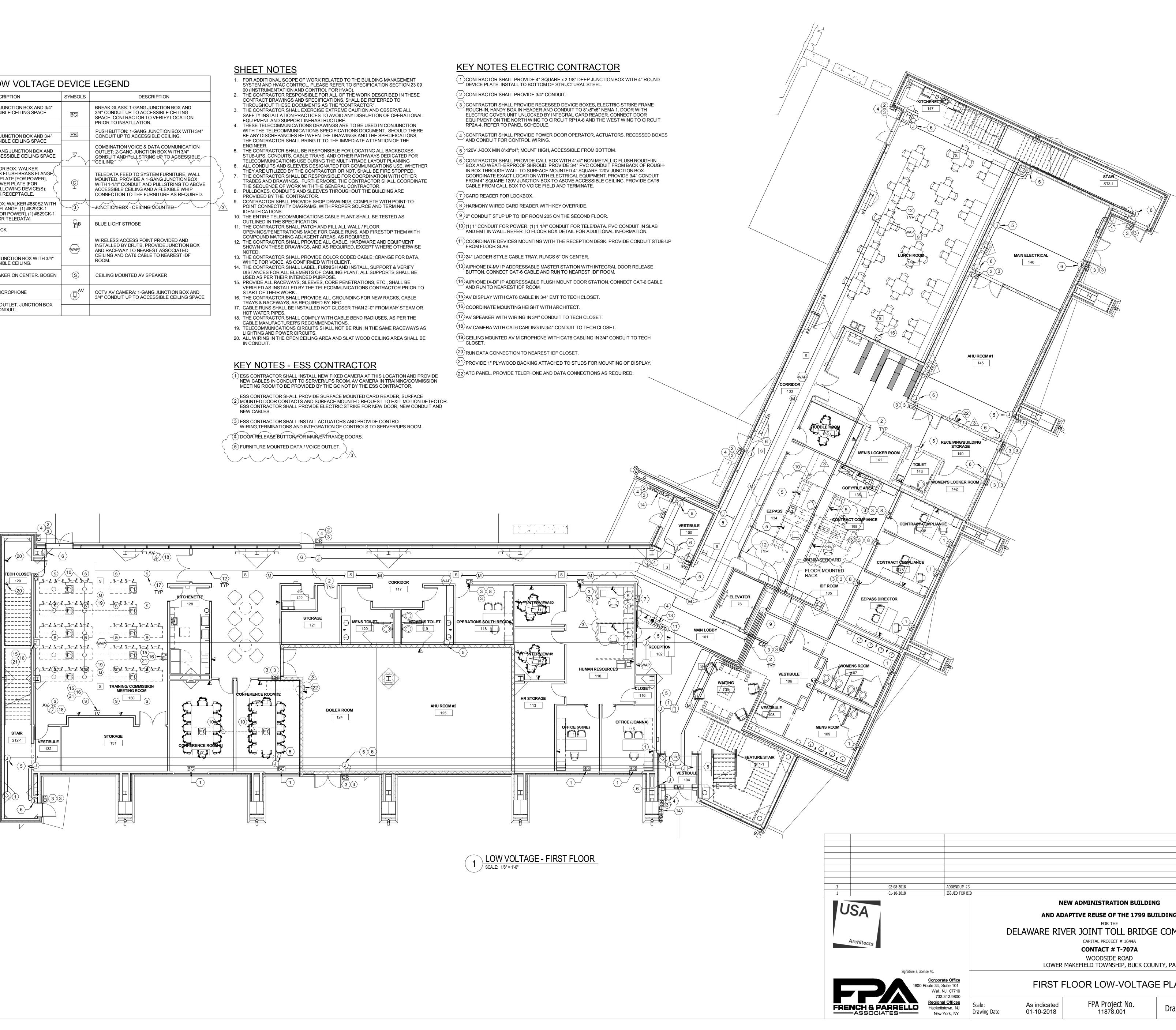
EQUIPMENT SCHEDULE GENERAL NOTES

- REFER TO MECHANICAL AND PLUMBING PLANS FOR EXACT LOCATIONS OF EQUIPMENT. 1.
- THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL 120V CONTROL 2. POWER WIRING FEEDERS AND CIRCUIT BREAKERS REQUIRED FOR THE INSTALLATION OF MECHANICAL EQUIPMENT. STARTERS AND POWER DISCONNECT SWITCHES SHALL BE BY THE MECHANICAL CONTRACTOR. REFER TO DIVISION 15 SPECIFICATION SECTIONS AND COORDINATE WITH THE MECHANICAL CONTRACTOR FOR EXTENT OF WORK REQUIRED.
- DUCT SMOKE DETECTORS SHALL BE PROVIDED AT ALL UNITS OVER 2000 3. CFM AND MOUNTED ON THE SUPPLY AND RETURN DUCT. DETECTORS SHALL BE FURNISHED BY THE ELECTRICAL CONTRACTOR, INSTALLED BY THE MECHANICAL CONTRACTOR AND WIRED BY THE ELECTRICAL CONTRACTOR. COORDINATE EXACT QUANTITY AND LOCATIONS WITH THE MECHANICAL CONTRACTOR AND MECHANICAL DRAWINGS.
- CIRCUIT ELECTRONIC TRAP PRIMERS TO THE CONVENIENCE RECEPTACLE 4. CIRCUIT SERVING THE AREA LOCATED - 2#12 & 1#12 EG IN 3/4"C.

3	02-08-2018	ADDENDUM #3	3				
1	01-10-2018	ISSUED FOR B	ID				
USA Architects	Signature & License No.			and at	IEW ADMINISTRATION BUILDIN DAPTIVE REUSE OF THE 1799 BUI FOR THE VER JOINT TOLL BRIDGE CAPITAL PROJECT # 1644A CONTACT # T-707A WOODSIDE ROAD MAKEFIELD TOWNSHIP, BUCK COUI	ILDING E COMMISSION	J
	1800 Route 34, S Wall, N	a <mark>te Office</mark> Suite 101 JJ 07719 312.9800			SCHEDULES		
FRENCH & PA ASSOCIA	RRELLO Regiona Hacketts	al Offices stown, NJ York, NY	Scale: Drawing Date	12" = 1'-0" 01-10-2018	FPA Project No. 11878.001	Drawing No.	E-003

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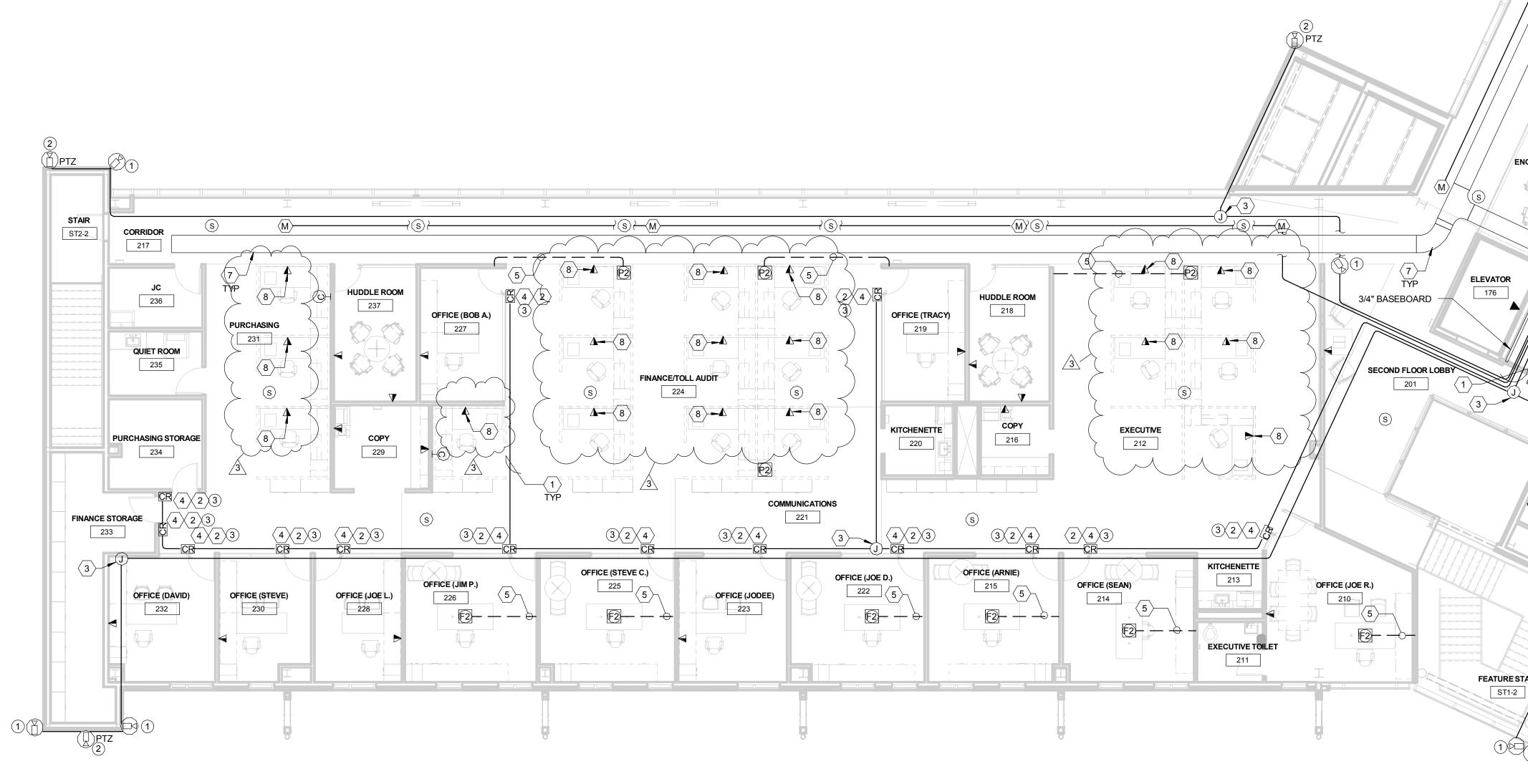
	LOW VOLTAGE D	DEVICE	LEGEND
SYMBOLS	DESCRIPTION	SYMBOLS	DESCRIPTION
CR	CARD READER: 1-GANG JUNCTION BOX AND 3/4" CONDUIT UP TO ACCESSIBLE CEILING SPACE	BG	BREAK GLASS: 1-GANG JUNCTION BOX AND 3/4" CONDUIT UP TO ACCESSIBLE CEILING SPACE. CONTRACTOR TO VERIFY LOCATION
INT	INTERCOM		PRIOR TO INSATLLATION. PUSH BUTTON: 1-GANG JUNCTION BOX WITH 3/4"
Ŕ	CCTV CAMERA: 1-GANG JUNCTION BOX AND 3/4" CONDUIT UP TO ACCESSIBLE CEILING SPACE	PB	CONDUIT UP TO ACCESSIBLE CEILING.
PTZ	CCTV PTZ CAMERA: 1-GANG JUNCTION BOX AND 3/4" CONDUIT UP TO ACCESSIBLE CEILING SPACE		COMBINATION VOICE & DATA COMMUNICATION OUTLET: 2-GANG JUNCTION BOX WITH 3/4" CONDUIT AND PULLSTRING UP TO ACCESSIBLE CEILING:
FJ	3-GANG CAST IRON FLOOR BOX: WALKER #880CS3-1WITH (1) #837B FLUSH BRASS FLANGE, (2)#828R BRASS COVER PLATE [FOR POWER], (1) #828GFITC BRASS COVER PLATE [FOR TELEDATA], AND THE FOLLOWING DEVICE(S): (2) 120V, 1Ø, 20A DUPLEX RECEPTACLE.	©	TELEDATA FEED TO SYSTEM FURNITURE, WALL MOUNTED. PROVIDE A 1-GANG JUNCTION BOX WITH 1-1/4" CONDUIT AND PULLSTRING TO ABOVE ACCESSIBLE CEILING AND A FLEXIBLE WHIP CONNECTION TO THE FURNITURE AS REQUIRED.
Ð	2-GANG STEEL FLOORBOX: WALKER #880S2 WITH (1) #827B FLUSH BRASS FLANGE, (1) #829CK-1 BRASS COVER PLATE [FOR POWER], (1) #829CK-1 BRASS COVERPLATE IFOR TELEDATA]		JUNCTION BOX - CEILING MOUNTED
EML	ELECTRIC MAGNETIC LOCK	БВ	BLUE LIGHT STROBE
M	MOTION SENSOR	WAP	WIRELESS ACCESS POINT PROVIDED AND INSTALLED BY DRJTB. PROVIDE JUNCTION BOX AND RACEWAY TO NEAREST ASSOCIATED
•	PUSH BUTTON: 1-GANG JUNCTION BOX WITH 3/4" CONDUIT UP TO ACCESSIBLE CEILING.		CEILING AND CAT6 CABLE TO NEAREST IDF ROOM.
S	CEILING MOUNTED SPEAKER ON CENTER. BOGEN MODEL #S86T725PG8W.	S	CEILING MOUNTED AV SPEAKER
M	CEILING MOUNTED AV MICROPHONE	AV	CCTV AV CAMERA: 1-GANG JUNCTION BOX AND 3/4" CONDUIT UP TO ACCESSIBLE CEILING SPACE
TV	INTERCOM CCTV CAMERA: 1-GANG JUNCTION BOX AND 3/4" CONDUIT UP TO ACCESSIBLE CEILING SPACE PTZ CCTV PTZ CAMERA: 1-GANG JUNCTION BOX AND 3/4" CONDUIT UP TO ACCESSIBLE CEILING SPACE 3-GANG CAST IRON FLOOR BOX: WALKER #880CS3-1WITH (1) #837B FLUSH BRASS FLANGE (2)#828B BRASS COVER PLATE [FOR POWER], (1) #828GFITC BRASS COVER PLATE [FOR TELEDATA], AND THE FOLLOWING DEVICE(S): (2) 120V, 1Ø, 20A DUPLEX RECEPTACLE. 2-GANG STEEL FLOORBOX: WALKER #880S2 WIT (1) #827B FLUSH BRASS FLANGE, (1) #829CK-1 BRASS COVER PLATE [FOR POWER], (1) #829CK-1 BRASS COVER PLATE [FOR TELEDATA] ELECTRIC MAGNETIC LOCK MOTION SENSOR PUSH BUTTON: 1-GANG JUNCTION BOX WITH 3/4" CONDUIT UP TO ACCESSIBLE CEILING. CEILING MOUNTED SPEAKER ON CENTER. BOGE MODEL #S86T725PG8W.		



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THE 1799 BU	ILDING	
L BRIDGE	COMMISSION	N
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ROAD		
	NTY, PA	
, 2001	,	
VOLTAGI	E PLAN	
ct No.	Drawing No.	E1-301

	LOW VOLTAGE D	DEVICE	LEGEND
SYMBOLS	DESCRIPTION	SYMBOLS	DESCRIPTION
CR	CARD READER: 1-GANG JUNCTION BOX AND 3/4" CONDUIT UP TO ACCESSIBLE CEILING SPACE	M	MOTION SENSOR
INT	INTERCOM	BG	BREAK GLASS: 1-GANG JUNCTION BOX AND 3/4" CONDUIT UP TO ACCESSIBLE CEILING SPACE. CONTRACTOR TO VERIFY LOCATION PRIOR TO INSATLLATION.
	CCTV CAMERA: 1-GANG JUNCTION BOX AND 3/4" CONDUIT UP TO ACCESSIBLE CEILING SPACE	PB	PUSH BUTTON: 1-GANG JUNCTION BOX WITH 3/4" CONDUIT UP TO ACCESSIBLE CEILING.
PTZ	CCTV PTZ CAMERA: 1-GANG JUNCTION BOX AND 3/4" CONDUIT UP TO ACCESSIBLE CEILING SPACE	▼	VOICE COMMUNICATIONS OUTLET: 2-GANG JUNCTION BOX WITH 3/4" CONDUIT AND PULLSTRING UP TO ACCESSIBLE CEILING.
E2	WIREMOLD 6" BRASS POKE THRU #RC4ATCBS WITH (4) COMMUNICATIONS PORTS AND THE FOLLOWING DEVICE(S): (2) 120V, 1-PHASE, 20A DUPLEX RECEPTACLE		COMBINATION VOICE & DATA COMMUNICATION OUTLET: 2-GANG JUNCTION BOX WITH 3/4" CONDULT AND PULL STRING UP TO ACCESSIBLE CEILING.
P2	WIREMOLD BRASS POKE THRU FURNITURE FEED #4FATCBS WITH (1) 3/4" OPENING FOR POWER AND (1) 1-1/4" OPENING FOR TELEDATA	©_⊥	TELEDATA FEED TO SYSTEM FURNITURE, WALL MOUNTED. PROVIDE A 1-GANG JUNCTION BOX WITH 1-1/4" CONDUIT AND PULLSTRING TO ABOVE ACCESSIBLE CEILING AND A FLEXIBLE WHIP
S	PENDANT MOUNTED SPEAKER ON CENTER. BOGEN MODEL #OPS1W.	Øl	CONNECTION TO THE FURNITURE AS REQUIRED.

3



SHEET NOTES

SHALL BE IN CONDUIT.

1. FOR ADDITIONAL SCOPE OF WORK RELATED TO THE BUILDING MANAGEMENT SYSTEM AND HVAC CONTROL, PLEASE REFER TO SPECIFICATION SECTION 23 09 00 (INSTRUMENTATION AND CONTROL FOR

- HVAC).
 THE CONTRACTOR RESPONSIBLE FOR ALL OF THE WORK DESCRIBED IN THESE CONTRACT DRAWINGS AND SPECIFICATIONS, SHALL BE REFERRED TO THROUGHOUT THESE DOCUMENTS AS THE "CONTRACTOR".
 THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION AND OBSERVE ALL SAFETY INSTALLATION PRACTICES TO AVOID ANY DISRUPTION OF OPERATIONAL EQUIPMENT AND SUPPORT INFRASTRUCTURE.
 THESE TELECOMMUNICATIONS DRAWINGS ARE TO BE USED IN CONJUNCTION WITH THE TELECOMMUNICATIONS SPECIFICATIONS
- DOCUMENT. SHOULD THERE BE ANY DISCREPANCIES BETWEEN THE DRAWINGS AND THE SPECIFICATIONS, THE CONTRACTOR SHALL BRING IT TO THE IMMEDIATE ATTENTION OF THE ENGINEER.
 5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL BACKBOXES, STUB-UPS, CONDUITS, CABLE TRAYS, AND OTHER PATHWAYS DEDICATED FOR TELECOMMUNICATIONS USE DURING THE MULTI-TRADE LAYOUT PLANNING
- ALL CONDUITS AND SLEEVES DESIGNATED FOR COMMUNICATIONS USE, WHETHER THEY ARE UTILIZED BY THE CONTRACTOR OR NOT, SHALL BE FIRE STOPPED.
 THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH OTHER TRADES AND DRAWINGS. FURTHERMORE, THE CONTRACTOR SHALL COORDINATE THE SEQUENCE OF WORK WITH THE CONSTRUCTION
- MANAGER.
 8. PULLBOXES, CONDUITS AND SLEEVES THROUGHOUT THE BUILDING ARE PROVIDED BY THE CONTRACTOR.
 9. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS, COMPLETE WITH POINT-TO-POINT CONNECTIVITY DIAGRAMS, WITH PROPER SOURCE AND TERMINAL IDENTIFICATIONS.
 10. THE ENTIRE TELECOMMUNICATIONS CABLE PLANT SHALL BE TESTED AS OUTLINED IN THE SPECIFICATION.
- THE CONTRACTOR SHALL PATCH AND FILL ALL WALL / FLOOR OPENINGS/PENETRATIONS MADE FOR CABLE RUNS, AND FIRESTOP THEM WITH COMPOUND MATCHING ADJACENT AREAS, AS REQUIRED.
 THE CONTRACTOR SHALL PROVIDE ALL CABLE, HARDWARE AND EQUIPMENT SHOWN ON THESE DRAWINGS, AND AS REQUIRED, EXCEPT WHERE OTHERWISE NOTED.
- THE CONTRACTOR SHALL PROVIDE COLOR CODED CABLE: ORANGE FOR DATA, WHITE FOR VOICE, AS CONFIRMED WITH CLIENT.
 THE CONTRACTOR SHALL LABEL, FURNISH AND INSTALL, SUPPORT & VERIFY DISTANCES FOR ALL ELEMENTS OF CABLING PLANT. ALL SUPPORTS SHALL BE USED AS PER THEIR INTENDED PURPOSE.
 ALL RACEWAYS, SLEEVES, CORE PENETRATIONS, ETC., PROVIDED BY OTHERS, SHALL BE VERIFIED AS INSTALLED BY THE TELECOMMUNICATIONS CONTRACTOR PRIOR TO START OF THEIR WORK .
 THE CONTRACTOR SHALL PROVIDE ALL GROUNDING FOR NEW RACKS, CABLE TRAYS & RACEWAYS, AS REQUIRED BY NEC.
- CABLE RUNS SHALL BE INSTALLED NOT CLOSER THAN 2'-0" FROM ANY STEAM OR HOT WATER PIPES.
 THE CONTRACTOR SHALL COMPLY WITH CABLE BEND RADIUSES, AS PER THE CABLE MANUFACTURER'S RECOMMENDATIONS.
 TELECOMMUNICATIONS CIRCUITS SHALL NOT BE RUN IN THE SAME RACEWAYS AS LIGHTING AND POWER CIRCUITS.
 ALL WIRING IN THE OPEN CEILING AREA AND SLAT WOOD CEILING AREA

<u>KEY NOTES</u>

- 1 3/4" X 8'-0" LONG X 4'-0" HIGH FIRE RETARDANT PLYWOOD BACKBOARD AND THREE (3) 4" EMPTY CONDUIT WITH DRAG LINE TO TELEPHONE COMPANY POLE. REFER TO SITE PLAN FOR CONTINUATION.
- (2) (2) 4" EMT WITH DRAG LINE. (3) (2) 4" SLEEVES TO IDF 105 BELOW.

KEY NOTES - ELECTRIC CONTRACTOR

- (1) CONTRACTOR SHALL PROVIDE 3/4" CONDUIT.
- CONTRACTOR SHALL PROVIDE RECESSED DEVICES BOXES, ELECTRICAL STRIKE FRAME ROUGH-IN, HANDY BOX IN HEADER AND CONDUIT TO 8"x8"x6" NEMA 1. DOOR WITH ELECTRIC COVER UNIT UNLOCKED BY INTEGRAL CARD READER. CONNECT DOOR EQUIPMENT ON THE NORTH WING TO CIRCUIT RP1B-15 AND THE WEST WING TO CIRCUIT RP2B-11. REFER TO PANEL SCHEDULE.
- $\langle 3 \rangle$ 120V J-BOX MIN 8"x8"x4"; MOUNT HIGH, ACCESSIBLE FROM BOTTOM.
- 4 HARMONY WIRED CARD READER WITH KEY OVERRIDE.
- (1) 1" CONDUIT FOR POWER. (1) 1 1/4" CONDUIT FOR TELE/DATA. PVC CONDUIT IN SLAB AND EMT IN WALL. REFER TO FLOOR BOX DETAIL FOR ADDITIONAL INFORMATION.
 (6) SERVER CABINET.
- $\sqrt{-2}$ 24" LADDER STYLE CABLE TRAY. RUNGS 6" ON CENTER.
- $\langle 8 \rangle$ FURNITURE MOUNTED DATA / VOICE OUTLET.

KEY NOTES - ESS CONTRACTOR

NEW CABLES IN CONDUIT TO SERVER/UPS ROOM.

 (1) ESS CONTRACTOR SHALL INSTALL NEW FIXED CAMERA AT THIS LOCATION AND PROVIDE NEW CABLES IN CONDUIT TO SERVER/UPS ROOM.
 (2) ESS CONTRACTOR SHALL INSTALL NEW PTX CAMERA AT THIS LOCATION AND PROVIDE

³ESS CONTRACTOR SHALL INSTALL ACTUATORS AND PROVIDE CONTROL WIRING, TERMINATIONS AND INTEGRATION OF CONTROLS TO SERVER/UPS ROOM.

> 1 LOW VOLTAGE - SECOND FLOOR SCALE: 1/8" = 1'-0"

	2				
	PTZ	STAIR ST3-2			
	CORRIDOR 249	R 256			
	5	I.T. STOR	AGE/WORK ROOM		
		OFFICE 255 7		Contraction of the second seco	NOVEC ROOM
	- 8	32 NT. CR	a 1	SERVER/UPS ROOM	2 D T T
M s			T CP JJ	>	
1 TYP	3			OFFICE (JOHN)	
				251	a do
	3 ENG	GINEERING RECORDS			
	M	KITCHENETTE 246	⁴ 5 		
	8-		ENGINEERING STORAGE/COPY		
M 2	S S				
	ENGINEERING		E (RANY) 44	0 00	
		OFFICE (CHIP)			
	TION (CONNIE)	4 0 3 OFFICE (RON)			
GINEERING CONFERENCE					
ROOM 238		OFFICE (KEVIN)	0		
	4				
FLOOR MOUNTED RACK	3 / / / / OFFICE (1	ROY			
J IDF ROOM 205 VESTIBULE					
206 WOMENS ROOM 207		PTZ B2			
TYP					
208 MENS ROOM					
PTZ 2					
	3	02-08-2018 01-10-2018	ADDENDUM # ISSUED FOR B		
		JSA			NEW ADMINISTRAT
		Architects		DEL	FOR THE AWARE RIVER JOINT TO CAPITAL PROJECT
			anco No		Contact # " Woodside Lower Makefield Townsh
		Signature & Lic	<u>Corporate Office</u> Route 34, Suite 101 Wall, NJ 07719		SECOND FLOOR LOV
		ENCH & PARRELLO	732.312.9800 <u>Regional Offices</u> Hackettstown, NJ New York, NY	Scale: Drawing Date	As indicated FPA Project 11878.0

FRATION BUILDIN	G	
E OF THE 1799 BU	ILDING	
OR THE TOLL BRIDGE	COMMISSIO	N
ROJECT # 1644A		
CT # T-707A		
side road Wnship, buck coui	NTY, PA	
-OW-VOLTA	GE PLAN	
Project No. 878.001	Drawing No.	E1-302

ΡΔΝΕΙ ΜΠΡ

	Location: MAIN ELE Supply From: UTILITY C Mounting: Surface Enclosure: Type 1			Volts: 277/48 IER Phases: 3 Wires: 4	30V		м	A.I.C. Ratin Mains Typ ains Ratin MCB Ratin	be: MCB		AKER				
скт	Circuit Description	Pole	BKR.	Branch Circuits		A		В		с	Branch Circuits	BKR.	Pole	Circuit Description	ск
1	SPACE				0 VA	14353								•	2
3	SPACE						0 VA	8811 VA			4#3/0 & 1#6EG IN 2"C	200 A	3	ATS-1	4
5	SPACE								0 VA	5557 VA					6
7					0 VA	0 VA									8
9	SURGE ARRESTOR	3	20 A	4#12 & 1#12EG IN 3/4"C			0 VA	0 VA				200 A	3	SPARE	1(
11									0 VA	0 VA					12
13					80250	0 VA									14
15	ATS-3	3	400 A	SEE ONE LINE DIAGRAM			73847	0 VA				200 A	3	SPARE	16
17									72562	0 VA					18
19					127564	. 0 VA									2
21	ATS-2	3	600 A	SEE ONE LINE DIAGRAM			124312	0 VA						SPACE	22
23									122656	0 VA					24
25					0 VA	0 VA	-								2
27	SPACE						0 VA	0 VA						SPACE	28
29					<u> </u>				0 VA	0 VA					30
31					0 VA	0 VA	0.1/4	0.1/4						004.05	32
33	SPACE						0 VA	0 VA	0.) (A	0.1/4				SPACE	34
35					0.) (A	0.)//			0 VA	0 VA					36
37		2	250 4		0 VA	0 VA	0.1/4	0.1/4							3
39	SOLAR SYSTEM	3	250 A	4#250 & 1#4EG IN 2-1/2"C			0 VA	0 VA	0.1/4	0.1/0				SPACE	40
41				Tatal Laad	0004	07.) (A	0000		0 VA	0 VA	 Tatal 1/2 (A				4
				Total Load: Total Amps:		67 VA 5 A		70 VA 1 A		76 VA 5 A	Total KVA: Total 3-Phase Amps:		763 VA 798 A		

 Notes:

 1. ALL BUSING TO BE COPPER.

 2. BOLT ON BREAKERS ONLY.

 3. CONTRACTOR IS RESPONSIBLE TO COORDINATE THE SHORT CIRCUIT RATING PRIOR TO PURCHASING ANY EQUIPMENT.

 4. ALL WIRE SIZES ARE BASED ON 75 DEGREE WIRE.

 5. SHORT CIRCUIT RATING: PANEL SHALL BE FULLY RATED TO INTERRUPT SYMMETRICAL SHORT CIRCUIT CURRENT AVAILABLE AT TERMINALS.

 6. COORDINATE WIRE SIZES WITH COPPER BRANCH CIRCUIT WIRE SIZING TABLES.

	PANEL EN Location: MAIN Supply From: Mounting: Surfa Enclosure: Type	N ELECTRICAL ace	. 146	Volts: 277/4 Phases: 3 Wires: 4	80V		
СКТ	Circuit Description	Pole	BKR.	Branch Circuits		A	
1					78434	112102	
3	ATS-3	3	400 A	SEE ONE LINE DIAGRAM			
5					0.1/4	0.1/4	Ļ
7	054.05				0 VA	0 VA	╀
9	SPACE						L
11							
13					0 VA	0 VA	
15	SPACE						L
17							
19					0 VA	0 VA	
21	SPACE						
23							
				Total Load:	1905	36 VA	
				Total Amps:	68	9 A	Γ

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 6. COORDINATE WIRE SIZES WITH COPPER BRANCH CIRCUIT WIRE SIZING TABLES.

	PANEL RP	v 3													
	Location: MAIN		46	Volts: 120/2	08V		4	.I.C. Ratir	ng: 65KAI	C					
	Supply From: NEDF			Phases: 3				Mains Typ	-	•					
	Mounting: Surfa			Wires: 4				ains Ratir							
	-			vviies. 4					-						
	Enclosure: Type	I					I	MCB Ratir	ig: 100 A						
Ск	Circuit Description	Pole E	SKR.	Branch Circuits		A		3		0	Branch Circuits	BKR.	Pole	Circuit Description	CI
1	CU-1/HP-1, HP-2	0	40.4	2#0 8 4#4050 101 2/480	3744 VA	1000 VA					2#12 & 1#12EG IN 3/4"C	20 A	1	HEAT TRACE	
3	CU-1/HP-1, HP-2	2 4	40 A	3#8 & 1#10EG IN 3/4"C			3744 VA	696) VA			2#12 & 1#12EG IN 3/4"C	20 A	1	CRP-1	4
٦ 5	EF-1		15 Ą	2#12 & 1#12EG IN 3/4"C					696 VA	696 VA	2#12 & 1#12EG IN 3/4"C	20 A	1	CRP-2	(
V	KF-2		15 A	2#12-& 1#12EG/N-3/4"C	80-VA	100/VA					2#12 & 1#12EG IN 3/4"C	20 A	1	WSS-1	5
9	EF-3	1	15 A	2#12 & 1#12EG IN 3/4"C	-	\smile	80 VA	180 VA			2#12 & 1#12EG IN 3/4"C	20 A	1	CP-1	1
11	EF-4	1 '	15 A	2#12 & 1#12EG IN 3/4"C					100 VA	180 VA	2#12 & 1#12EG IN 3/4"C	20 A	1	CP-2	1
13	WH-1	1 '	15 A	2#12 & 1#12EG IN 3/4"C	216 VA	1560 VA					2#12 & 1#12EG IN 3/4"C	20 A	1	B-1	1
15	HWR-1	1 '	15 A	2#12 & 1#12EG IN 3/4"C			92 VA	1560 VA			2#12 & 1#12EG IN 3/4"C	20 A	1	B-2	1
17	FUEL PUMP		20 A	3#12 & 1#12EG IN 3/4"C					900 VA	1560 VA	2#12 & 1#12EG IN 3/4"C	20 A	1	B-3	1
19	(SHUNT TRIP BREAKER)	2 2	20 A	5#12 & 1#12EG IN 5/4 C	900 VA	500 VA									2
21	VEEDER PANEL	1 2	20 A	2#12 & 1#12EG IN 3/4"C			300 VA	500 VA			4#12 & 1#12EG IN 3/4"C	20 A	3	ATC PANEL	2
23	RPP-1	1 2	20 A	2#12 & 1#12EG IN 3/4"C					864 VA	500 VA					2
25	RPP-2	1 2	20 A	2#12 & 1#12EG IN 3/4"C	864 VA	1440 VA					2#12 & 1#12EG IN 3/4"C	20 A	1	WET WELL CONTROL PANEL	2
27	SPARE	1 2	20 A				0 VA	0 VA				20 A	1	SPARE	2
29	SPARE		20 A						0 VA	0 VA		20 A	1	SPARE	3
31	SPARE		20 A		0 VA	0 VA						20 A	1	SPARE	3
33	SPARE		20 A				0 VA	0 VA				20 A	1	SPARE	3
35	SPARE		20 A						0 VA	0 VA		20 A	1	SPARE	3
37	SPARE		20 A		0 VA	0 VA						20 A	1	SPARE	3
39	SPARE	1	20 A				0 VA	0 VA				20 A	1	SPARE	4
41	SPARE	1 2	20 A						0 VA	0 VA		20 A	1	SPARE	4
				Total Load: Total Amps:)4 VA) A		2 VA 2 A	5496	6 VA 6 A	Total KVA: Total 3-Phase Amps:		052 VA 64 A		

 ALL BUSING TO BE COPPER.
 BOLT ON BREAKERS ONLY.
 CONTRACTOR IS RESPONSIBLE TO COORDINATE THE SHORT CIRCUIT RATING PRIOR TO PURCHASING ANY EQUIPMENT. 4. ALL WIRE SIZES ARE BASED ON 75 DEGREE WIRE.
5. SHORT CIRCUIT RATING: PANEL SHALL BE FULLY RATED TO INTERRUPT SYMMETRICAL SHORT CIRCUIT CURRENT AVAILABLE AT TERMINALS.
6. COORDINATE WIRE SIZES WITH COPPER BRANCH CIRCUIT WIRE SIZING TABLES.

	м	.I.C. Ratin Mains Typ ains Ratin MCB Ratin	e: MCB g: 1000 A	Ą					
	вс				Branch Circuits	BKR.	Pole	Circuit Description	скт
									2
	70130	110290			SEE ONE LINE DIAGRAM	600 A	3	ATS-2	4
			67739	110818					6
									8
L	0 VA	0 VA						SPACE	10
			0 VA	0 VA					12
									14
	0 VA	0 VA						SPACE	16
			0 VA	0 VA					18
									20
	0 VA	0 VA						SPACE	22
			0 VA	0 VA					24
	1804	20 VA	178557 VA		Total KVA:	549	513 VA		
Γ	65	2 A	645 A		Total 3-Phase Amps:		661 A		

	PANEL ERP Location: MAIN ELECTRICAL 146 Supply From: LP1 VIA XFMR T-E Mounting: Surface Enclosure: Type 1			Volts: 120/208VA.I.C. Rating: 65KAICPhases: 3Mains Type: MCBWires: 4Mains Rating: 100 AMCB Rating: 100 A										
Circuit Description	Pole	BKR.	Branch Circuits	4	A		В		C	Branch Circuits	BKR.	Pole	Circuit Description	скт
TOR SUMP PUMP	1	20 A	2#12 & 1#12EG IN 3/4"C	1200 VA	500 VA					2#12 & 1#12EG IN 3/4"C	20 A	1	FIRE ALARM CONTROL PANEL	2
TOR PIT RECEPTACLE	1	20 A	2#12 & 1#12EG IN 3/4"C			360 VA	1000 VA			2#12 & 1#12EG IN 3/4"C	20 A	1	GENERATOR BLOCK HEATER	4
TOR PIT LIGHT	1	20 A	2#12 & 1#12EG IN 3/4"C					100 VA	1000 VA	2#12 & 1#12EG IN 3/4"C	20 A	1	GENERATOR BATTERY CHARGER	6
TOR HVAC	1	20 A	2#12 & 1#12EG IN 3/4"C	500 VA	0 VA								SPACE	8
	1					0 VA	0 VA							10
	1							0 VA	0 VA					12
	1			0 VA	0 VA									14
	1					0 VA	0 VA							16
	1							0 VA	0 VA					18
	1			0 VA	0 VA									20
	1					0 VA	0 VA							22
	1							0 VA	0 VA					24
	1			0 VA	0 VA									26
	1					0 VA	0 VA		0.1/4					28
	1			0.1/4	0.1/4			0 VA	0 VA					30
	1			0 VA	0 VA	0.1/4	0.1/4							32
	1					U VA	U VA	0.1/4	0.)(A					34
	1			0.)/A	0.1/4			U VA	0 VA					36
	1			UVA	UVA	0.1/4	0.1/4							38 40
	1					UVA	UVA	0.1/4	0.1/4					40
-	I	20 A	Total Load:	2200)) / A	126			-					42
											40			
			Total Amps:	19	A	12	2 A	9	A	Total 3-Phase Amps:		13 A	<u> </u>	
	OR SUMP PUMP OR PIT RECEPTACLE OR PIT LIGHT OR HVAC	OR SUMP PUMP 1 OR PIT RECEPTACLE 1 OR PIT LIGHT 1 OR HVAC 1 1	OR SUMP PUMP 1 20 A OR PIT RECEPTACLE 1 20 A OR PIT LIGHT 1 20 A OR HVAC 1 20 A I 20 A 1 20 A OR HVAC 1 20 A I 20 A 1 20 A I 20	OR SUMP PUMP 1 20 A 2#12 & 1#12EG IN 3/4"C OR PIT RECEPTACLE 1 20 A 2#12 & 1#12EG IN 3/4"C OR PIT LIGHT 1 20 A 2#12 & 1#12EG IN 3/4"C OR HVAC 1 20 A 2#12 & 1#12EG IN 3/4"C OR HVAC 1 20 A 2#12 & 1#12EG IN 3/4"C OR HVAC 1 20 A 2#12 & 1#12EG IN 3/4"C OR HVAC 1 20 A 2#12 & 1#12EG IN 3/4"C OR HVAC 1 20 A 2#12 & 1#12EG IN 3/4"C OR HVAC 1 20 A 2#12 & 1#12EG IN 3/4"C Image: State	OR SUMP PUMP 1 20 A 2#12 & 1#12EG IN 3/4"C 1200 VA OR PIT RECEPTACLE 1 20 A 2#12 & 1#12EG IN 3/4"C 0 OR PIT LIGHT 1 20 A 2#12 & 1#12EG IN 3/4"C 500 VA OR HVAC 1 20 A 2#12 & 1#12EG IN 3/4"C 500 VA 1 20 A 2#12 & 1#12EG IN 3/4"C 500 VA OR HVAC 1 20 A 2#12 & 1#12EG IN 3/4"C 500 VA 1 20 A 2#12 & 1#12EG IN 3/4"C 500 VA 1 20 A 2#12 & 1#12EG IN 3/4"C 500 VA 1 20 A 2#12 & 1#12EG IN 3/4"C 500 VA 1 20 A 0 VA 0 VA 1 20 A 0 VA 1 1 20 A 0 VA 1 2	OR SUMP PUMP 1 20 A 2#12 & 1#12EG IN 3/4"C 1200 VA 500 VA OR PIT RECEPTACLE 1 20 A 2#12 & 1#12EG IN 3/4"C Image: constraint of the second	OR SUMP PUMP 1 20 A 2#12 & 1#12EG IN 3/4"C 1200 VA 500 VA OR PIT RECEPTACLE 1 20 A 2#12 & 1#12EG IN 3/4"C 6 360 VA OR PIT LIGHT 1 20 A 2#12 & 1#12EG IN 3/4"C 500 VA 0 VA OR HVAC 1 20 A 2#12 & 1#12EG IN 3/4"C 500 VA 0 VA 1 20 A 2#12 & 1#12EG IN 3/4"C 500 VA 0 VA 1 20 A 2#12 & 1#12EG IN 3/4"C 500 VA 0 VA 1 20 A 2#12 & 1#12EG IN 3/4"C 500 VA 0 VA 1 20 A 2#12 & 1#12EG IN 3/4"C 500 VA 0 VA 1 20 A 0 VA 0 VA 0 VA 1 20 A 0 VA 0 VA 0 VA 1 20 A 0 VA 0 VA 0 VA 1 20 A 0 VA 0 VA 0 VA 1 20 A 0 VA 0 VA 0 VA 1 20 A 0 VA 0 VA 0 VA 1 20 A 0 VA 0 VA 0 VA 1 </td <td>OR SUMP PUMP 1 20 A 2#12 & 1#12EG IN 3/4"C 1200 VA 500 VA 1000 VA OR PIT RECEPTACLE 1 20 A 2#12 & 1#12EG IN 3/4"C 360 VA 1000 VA OR PIT LIGHT 1 20 A 2#12 & 1#12EG IN 3/4"C 500 VA 0 VA 0 VA OR HVAC 1 20 A 2#12 & 1#12EG IN 3/4"C 500 VA 0 VA 0 VA I 20 A 2#12 & 1#12EG IN 3/4"C 500 VA 0 VA 0 VA 0 VA I 20 A 2#12 & 1#12EG IN 3/4"C 500 VA 0 VA 0 VA 0 VA I 20 A 2#12 & 1#12EG IN 3/4"C 500 VA 0 VA 0 VA 0 VA I 20 A 20 A 0 VA 0 VA 0 VA 0 VA I 20 A 0 VA 0 VA 0 VA 0 VA I 20 A 0 VA 0 VA 0 VA 0 VA I 20 A 0 VA 0 VA 0 VA 0 VA I 20 A 0 VA 0 VA 0 VA 0 VA I 20 A 0 VA 0 VA<</td> <td>OR SUMP PUMP 1 20 A 2#12 & 1#12EG IN 3/4"C 1200 VA 500 VA Image: Constraint of the state of</td> <td>OR SUMP PUMP 1 20 A 2#12 & 1#12EG IN 3/4"C 1200 VA 500 VA 1000 VA OR PIT RECEPTACLE 1 20 A 2#12 & 1#12EG IN 3/4"C 360 VA 1000 VA 1000 VA OR PIT LIGHT 1 20 A 2#12 & 1#12EG IN 3/4"C 0 VA 0 VA 0 VA 1000 VA OR HVAC 1 20 A 2#12 & 1#12EG IN 3/4"C 500 VA 0 VA 0 VA 0 VA 0 VA 1 20 A 2#12 & 1#12EG IN 3/4"C 500 VA 0 VA 0 VA 0 VA 0 VA 0 VA 1 20 A 2#12 & 1#12EG IN 3/4"C 500 VA 0 VA 0 VA 0 VA 0 VA 0 VA 1 20 A 2#12 & 1#12EG IN 3/4"C 500 VA 0 VA 0 VA 0 VA 0 VA 0 VA 1 20 A 0 VA 1 20 A 0 VA 1 20 A 0 VA 0 VA 0 VA 0 VA 0 VA</td> <td>OR SUMP PUMP 1 20 A 2#12 & 1#12EG IN 3/4"C 1200 VA 500 VA 360 VA 100 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3/4"C 20 A 1 OR PIT LIGHT 1 20 A 2#12 & 1#12EG IN 3/4"C 500 VA 0 VA 1000 VA 2#12 & 1#12EG IN 3/4"C 20 A 1 OR HVAC 1 20 A 2#12 & 1#12EG IN 3/4"C 500 VA 0 VA 0 VA 2#12 & 1#12EG IN 3/4"C 20 A 1 OR HVAC 1 20 A 2#12 & 1#12EG IN 3/4"C 500 VA 0 VA 0 VA 0 VA 2#12 & 1#12EG IN 3/4"C 20 A 1 OR HVAC 1 20 A 2#12 & 1#12EG IN 3/4"C 20 A 0 VA 0 VA 0 VA </td><td>OR SUMP PUMP 1 20.A 2#12 & 1#12EG IN 3/4*C 1200 VA 500 VA value 2#12 & 1#12EG IN 3/4*C 20.A 1 FIRE ALARM CONTROL PANEL OR PIT RECEPTACLE 1 20.A 2#12 & 1#12EG IN 3/4*C 20.A 1 GENERATOR BLICK HEATER OR PIT LIGHT 1 20.A 2#12 & 1#12EG IN 3/4*C 20.A 1 GENERATOR BLICK HEATER OR PIT LIGHT 1 20.A 2#12 & 1#12EG IN 3/4*C 20.A 1 GENERATOR BLICK HEATER OR PIT LIGHT 1 20.A 2#12 & 1#12EG IN 3/4*C 20.A 1 GENERATOR BLICK HEATER OR PIT LIGHT 20.A 2#12 & 1#12EG IN 3/4*C 20.A 1 GENERATOR BLICK HEATER OR PIT LIGHT 20.A 2#12 & 1#12EG IN 3/4*C 20.A 1 GENERATOR BLICK HEATER OR PIT LIGHT 20.A 2#12 & 1#12EG IN 3/4*C 20.A 1 GENERATOR BLICK HEATER OR PIT LIGHT 20.A 2#12 & 1#12EG IN 3/4*C 20.A 1 GENERATOR BLICK HEATER OR PIT LIGHT 20.A 1 20.A 0 VA 0 VA 0 VA - SPACE 1 20.A 0 VA 0 VA 0 VA 0 VA 0 VA - - SPACE<!--</td--></td></td>	OR SUMP PUMP 1 20 A 2#12 & 1#12EG IN 3/4"C 1200 VA 500 VA 1000 VA OR PIT RECEPTACLE 1 20 A 2#12 & 1#12EG IN 3/4"C 360 VA 1000 VA OR PIT LIGHT 1 20 A 2#12 & 1#12EG IN 3/4"C 500 VA 0 VA 0 VA OR HVAC 1 20 A 2#12 & 1#12EG IN 3/4"C 500 VA 0 VA 0 VA I 20 A 2#12 & 1#12EG IN 3/4"C 500 VA 0 VA 0 VA 0 VA I 20 A 2#12 & 1#12EG IN 3/4"C 500 VA 0 VA 0 VA 0 VA I 20 A 2#12 & 1#12EG IN 3/4"C 500 VA 0 VA 0 VA 0 VA I 20 A 20 A 0 VA 0 VA 0 VA 0 VA I 20 A 0 VA 0 VA 0 VA 0 VA I 20 A 0 VA 0 VA 0 VA 0 VA I 20 A 0 VA 0 VA 0 VA 0 VA I 20 A 0 VA 0 VA 0 VA 0 VA I 20 A 0 VA 0 VA<	OR SUMP PUMP 1 20 A 2#12 & 1#12EG IN 3/4"C 1200 VA 500 VA Image: Constraint of the state of	OR SUMP PUMP 1 20 A 2#12 & 1#12EG IN 3/4"C 1200 VA 500 VA 1000 VA OR PIT RECEPTACLE 1 20 A 2#12 & 1#12EG IN 3/4"C 360 VA 1000 VA 1000 VA OR PIT LIGHT 1 20 A 2#12 & 1#12EG IN 3/4"C 0 VA 0 VA 0 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	Location: MAIN ELEC Supply From: ATS-2 Mounting: Surface Enclosure: Type 1	CTRICA	_ 146	Volts: 277/4 Phases: 3 Wires: 4	30V		l Ma	Mains Typ ains Ratir	ng: 65KAl0 be: MCB ng: 600 A ng: 600 A	C					
скт	Circuit Description	Pole	BKR.	Branch Circuits		A	E	8)	Branch Circuits	BKR.	Pole	Circuit Description	CH
1 3 5	UPS AND PDU PANEL	3	225 A	4#4/0 & 1#4EG IN 2-1/2"C	16670	10404	16670	7152 VA	16670	5406 \/A	4#3 & 1#8EG IN 1-1/2"C	100 A	3	PANEL RP3 VIA T-3	2 4 6
7 9	COOLING TOWER CT-1	3	20 A	4#12 & 1#12EG IN 3/4"C	3050 VA	5820 VA	3050 VA	5820 VA			4#8 & 1#10EG IN 3/4"C	40 A	3	CTP-1	<u></u> {
11 13 15	COOLING TOWER HTR	3	20 A	4#12 & 1#12EG IN 3/4"C	3325 VA	5820 VA	3325 VA	5820 VA	3050 VA	5820 VA	4#8 & 1#10EG IN 3/4"C	40 A	3	CTP-2	1: 1: 1: 1:
17 19 21	 ERU-1	3	15 Δ	_##12&1##2E&IN_3/4"C\	2548 VA	5820 VA	2548 VA	5820 \/A	3325 VA	5820 VA	4#8 & 1#10EG IN 1"C	40 A	3	HWP-1	1 2 2
23 25				Y Y	5290 VA	5820 VA			2548 VA	5820 VA					2
27 29 31	ERU-2 23	3	25 A	4#10 & 1#12EG IN 3/4"C	6100 VA	15825	5790 VA	5820 VA	5790 VA	5820 VA	4#8 & 1#10EG IN 1"C	40 A	3	HWP-2	23
33 35	WET WELL PUMP	3	50 A	4#8 & 1#10EG IN 3/4"C			6100 VA	15825	6100 VA	15825	4#1 & 1#6EG IN 2"C	125 A	3	AC-1A	
67 69 -1	ELEVATOR - SHUNT TRIP BREAKER	3	60 A	4#6 & 1#10EG IN 1"C	7479 VA		7479 VA	776 VA	7479 VA	776 VA	4#12 & 1#12EG IN 3/4"C	20 A	3	AC-1B	
13 15 17	CWP-1	3	50 A	4#8 & 1#10EG IN 1"C	7483 VA		7483 VA	15825	7483 VA	15925	4#1 & 1#6EG IN 2"C	125 A	3	AC-2A	
19 51	CWP-2	3	50 A	4#8 & 1#10EG IN 1"C	7483 VA	776 VA	7483 VA	776 VA			4#12 & 1#12EG IN 3/4"C	20 A	3	AC-2B	Ę
53 55 57	TCS-1	3	15 A	4#12 & 1#12EG IN 3/4"C	750 VA	0 VA	750 VA	0 VA	7483 VA	776 VA				SPACE	5 5 5
59 51					0 VA	0 VA			750 VA	0 VA					6
63 65	SPACE				0.1/0	0 VA	0 VA	0 VA	0 VA	0 VA				SPACE	6
67 69 71	SPACE		 	 	0 VA		0 VA	0 VA	0 VA	0 VA				SPACE	
73 75	SPACE				0 VA	0 VA	0 VA	0 VA						SPACE	7
77 79 31	SPACE		 		0 VA	0 VA	0 VA	0 VA	0 VA	0 VA				SPACE	7 8 8
33				 Total Load:	1275	64 VA	12431		0 VA 1226	0 VA 56 VA	 Total KVA:		 532 VA		8
OLT ONT LL W HOR	USING TO BE COPPER. ON BREAKERS ONLY. RACTOR IS RESPONSIBLE TO COO 'IRE SIZES ARE BASED ON 75 DEGF T CIRCUIT RATING: PANEL SHALL E DINATE WIRE SIZES WITH COPPER	REE WIF BE FULL	RE. IY RATE	ED TO INTERRUPT SYMMET	RIOR TO I			EQUIPME			Total 3-Phase Amps: NALS.		450 A		

SHEET NOTES

ALL WIRE SIZES SHALL BE DERATED PER ACTUAL RUN AS INDICATED ON SHEET E-003.

IIT CURRENT AVAILABLE AT TEF	RMINALS.										
3 02-0	08-2018	ADDENDUM #3									
1 01-1	.0-2018	ISSUED FOR BID									
USA			NEW ADMINISTRATION BUILDING								
USA			AND ADAPTIVE REUSE OF THE 1799 BUILDING								
A			DELAWARE RIVER JOINT TOLL BRIDGE COMMISSION								
Architects			CAPITAL PROJECT # 1644A CONTACT # T-707A								
					WOODSIDE ROAD						
			LOWER MAKEFIELD TOWNSHIP, BUCK COUNTY, PA								
	Signature & License No.	te Office									
	1800 Route 34, S				PANEL SCHEDULES						
	732.3	312.9800									
	RELLO New Y	town N.I Scale.	: ng Date	12" = 1'-0" 01-10-2018	FPA Project No. 11878.001	Drawing No.	E1-701				