



FREDERICK W. SEEBA, PE, MANAGING PARTNER
LAWRENCE SALVESEN, AIA, PARTNER
KEVIN J. WALSH, AIA, PARTNER
KENNETH G. SCHUPNER, AIA, PARTNER
JOSEPH B. RETTIG, AIA, PARTNER
GARY W. SCHIEDE, AIA, PARTNER

January 20, 2026

BID ADDENDUM No. 2

Re: Blind Brook-Rye UFSD
Blind Brook Rye High School Middle
School Bond Improvements Phase 3
BBS File No. 25-142

This addendum contains changes to the requirements of the contract drawings and/or project manual. Such changes shall be incorporated into the contract documents and shall apply to the work with the same meaning and force as if they had been included in the original documents. Wherever this addendum modifies a portion of a paragraph of project manual or any portion of the drawing, the remainder of the paragraph or drawing affected shall remain in force.

The conditions of the basic project manual shall govern all work described in this addendum. Wherever the conditions of work and the quality or quantity of materials or workmanship are not fully described in this addendum, the conditions of work, etc. included in the basic project manual for similar items of work shall apply to the work described in this addendum.

The "Conditions of the Contract" apply to all work described in this addendum.

The following changes shall be and are hereby made:

PROJECT MANUAL MODIFICATIONS

1. "Section 000110 – Table of Contents" attached to this Addendum shall replace the one within the Project Manual.
2. "Section 000200 – Project Directory" attached to this Addendum shall replace the one within the Project Manual.
3. "Section 004100 – Bid Proposal Form" attached to this Addendum shall replace the one within the Project Manual.
4. "Section 265561 – Theatrical Lighting Rigging Drapery" attached to Addendum shall be added to the Project Manual.

CONSTRUCTION DRAWING MODIFICATIONS

1. Drawing “25-142 T0.01 Title Sheet” attached to this Addendum shall replace the one within the Construction Drawings Set.
2. Drawing “25-142a A1.01 First Floor Demolition Plans” attached to this Addendum shall replace the one within the Construction Drawings Set.
3. Drawing “25-142 A1.02 Second Floor Demolition Plans” attached to this Addendum shall replace the one within the Construction Drawings Set.
4. Drawing “25-142a A8.01 Door Schedule” attached to this Addendum shall replace the one with the Construction Drawings Set.
5. Drawing “25-142a E6.01 Electrical Electric Room and Riser Diagram Plan” attached to this Addendum shall replace the one within the Construction Drawings Set.
6. Drawing “25-142a E6.02 Proposed Auditorium Plan” attached to this Addendum shall replace the one within the Construction Drawings Set.
7. Drawing “25-142a E6.05 Proposed Auditorium Plan” attached to this Addendum shall replace the one within the Construction Drawings Set.
8. Drawing “25-142a E6.06 Proposed Auditorium Plan” attached to this Addendum shall replace the one within the Construction Drawings Set.
9. Drawing “25-142a E6.08 Proposed Auditorium Plan” attached to this Addendum shall replace the one within the Construction Drawings Set.

GENERAL QUESTIONS / COMMENTS:

1. New ADA compliant signage shall be furnished and installed by the General Contractor in areas only effected by this project’s scope of work.
2. Fire Extinguishers shown on sheets “A0.01” & A0.02” are existing to remain.
3. Electrical Contractor shall provide and Install New Customer Meter shown on Construction Drawing E5.01. Existing Utility Meter to remain. Field Verify with Utility Company.
4. Electrical Contractor shall coordinate with Owner field verify and furnish and install new clocks that match and work with the existing clock system.

5. **Electrical Contractor shall furnish and install two upgraded annunciator panels. Coordinate final location with owner.**
6. **Electrical Contractor shall provide As-Built drawings and a copy of the updated site specific system software including passwords for the renovated areas, as per note #7 on Construction Drawing E5.01.**

END OF ADDENDUM

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(Not Applicable)

PROJECT DIRECTORY

Architects/Engineers:

BBS Architects, Landscape Architects
and Engineers, P.C.
244 East Main Street
Patchogue, NY 11772
(631) 475-0349
(631) 475-0361 Fax

Superintendent of Schools:

Brian Alm
(914) 937-3600, ext 1002
(914) 937-5871 Fax

Assistant Superintendent for Finance & Facilities:

Laurie Baum
(914) 937-3600
(914) 937-5871 Fax

District Counsel:

Guercio & Guercio, LLP
77 Conklin Street
Farmingdale, NY 11735
(516) 694-3000
(516) 694-4738 Fax

PHASE 3 – BOND IMPROVEMENTS at the MIDDLE SCHOOL-HIGH SCHOOL and the RIDGE STREET ELEMENTARY SCHOOL

NAME OF BIDDER: _____

BUSINESS ADDRESS: _____

TELEPHONE NUMBER: _____ **DATE OF BID:** _____

The bidder mentioned above declares and certifies:

First: That said bidder is of lawful age and the only one interested in this bid, and that no one other than said bidder has any interest herein.

Second: That this bid is made without any previous understanding, agreement, or connection with any other person, firm, or corporation making a bid for the same purpose, and is in all respects fair and without collusion or fraud.

Third: That no member of the Board of Education of the **Blind Brook Union Free School District**, Town of **Rye Brook, New York**, nor any officer or employee or person whose salary is payable as a whole or in part from the treasury of said Board of Education is directly or indirectly interested in this bid or in the supplies, materials, equipment, work, or services to which it relates, or in any portion of the profits thereof.

Fourth: That said bidder has carefully examined the Instruction to Bidders, schedules, and specifications prepared under the direction of the Board of Education, and will, if successful in this bid, furnish and deliver at the prices bid and within the time stated, all materials, supplies, apparatus, goods, wares, merchandise, services, or labor for which this bid is made.

Fifth: Single Prime Contracts: Where the project cost does not exceed \$1,500,000 and the Owner has decided to solicit bids from one general contractor, the Bidder shall submit with its bid a separate sealed list that names each subcontractor that the bidder will use to perform work in the contract, and the agreed-upon amount to be paid to each, for: (A) Plumbing and gas fitting; (B) Steam heating, hot water heating, ventilating and air condition apparatus and (C) Electric wiring and standard illuminating fixtures.

After the low bid is announced, the sealed list of subcontractors submitted with such low bid shall be opened and the names of such subcontractors shall be announced, and thereafter any change of subcontractor or agreed-upon amount to be paid to each shall require the approval of the public owner, upon a showing presented to the public owner of legitimate construction need for such change, which shall be open to public inspection.

Sixth: That the prices quoted are exclusive of all federal, state, and municipal sales and excise taxes.

Seventh: The undersigned further declares that he has received and examined the following addenda:

Addendum No. _____ Dated: _____

Clarification No. _____

Dated: _____

Clarification No. _____

Dated: _____

FOR PROPOSAL FORM TO BE VALID, ALL PAGES OF THE PROPOSAL FORM MUST BE DULY EXECUTED.

Eighth: The Bidder shall check here if the bid has been based upon equivalents in lieu of any kind, type, brand, or manufacturer of material other than those named in the specifications. If checked, the Bidder shall submit the Equivalency Form in accordance with Instructions to Bidders, Paragraph 8B. This item in no way prohibits the Bidder from submitting equivalents after the award of contract.

Ninth: The undersigned further understands and agrees that he is to furnish all labor, materials, equipment, supplies, and other facilities and things necessary and required for the execution and completion of:

PHASE 3 – BOND IMPROVEMENTS at the MIDDLE SCHOOL – HIGH SCHOOL and the RIDGE STREET ELEMENTARY SCHOOL

in strict accordance with the contract documents:

BASE BID GC-1 – GENERAL CONSTRUCTION

The General Contractor shall state the complete price to perform all work including, but not limited to, all general construction, demolition, and abatement as required at the Middle School – High School and the Ridge Street Elementary School, as shown on the drawings and as specified herein.

BASE BID GC-1 BID PRICE = \$ _____

Lump Sum Allowance No.1 (See Section 012100) \$ _____

**TOTAL GENERAL CONSTRUCTION
BASE BID GC-1 BID PRICE =** \$ _____
Total Bid price in dollars and cents

\$ _____
Bid price written in words

BASE BID MC-1 – MECHANICAL CONSTRUCTION

The Mechanical Contractor shall state the complete price to perform all work including, but not limited to, all mechanical work required at the Middle School–High School and the Ridge Street Elementary School, as shown on the drawings and as specified herein.

BASE BID MC-1 BID PRICE = \$ _____

Lump Sum Allowance No.1
(See Section 012100) \$ _____

**TOTAL MECHANICAL CONSTRUCTION
BASE BID MC-1 BID PRICE =** \$ _____
Total Bid price in dollars and cents

\$ _____
Bid price written in words

-

BASE BID PC-1 – PLUMBING CONSTRUCTION

The Plumbing Contractor shall state the complete price to perform all work including, but not limited to, all plumbing work required at the Middle School–High School and the Ridge Street Elementary School, as shown on the drawings and as specified herein.

BASE BID PC-1 BID PRICE = \$ _____

Lump Sum Allowance No.1
(See Section 012100) \$ _____

**TOTAL PLUMBING CONSTRUCTION
BASE BID PC-1 BID PRICE =** \$ _____
Total Bid price in dollars and cents

\$ _____
Bid price written in words

BASE BID EC-1 – ELECTRICAL CONSTRUCTION

The Electrical Contractor shall state the complete price to perform all work including, but not limited to, all electrical work required at the Middle School – High School and the Ridge Street Elementary School, as shown on the drawings and as specified herein.

BASE BID EC-1 BID PRICE = \$ _____

Lump Sum Allowance No.1
(See Section 012100) \$ _____

**TOTAL ELECTRICAL CONSTRUCTION
BASE BID EC-1 BID PRICE =** \$ _____
Total Bid price in dollars and cents

\$ _____
Bid price written in words

Tenth: BID SECURITY

Each bidder shall deposit with his bid a bid bond, bank draft, or certified check in the amount of not less than ten percent (10%) of the Base Bid made payable to:

Board of Education, Blind Brook-Rye UFSD in the amount:

_____ \$(_____)

AND agrees such surety shall be a measure of liquidated damages should he default in delivery of agreement.

Eleventh: COMPLETION (Contractor shall fill in number of days)

It is intended that the work under this contract be completed substantially within _____ consecutive calendar days after receipt of authorized letter of intent issued by the District.

Twelfth: NON-COLLUSIVE BIDDING CERTIFICATION

General Municipal Law, Section 103-d
(Submit with Bid Proposal Form)

- A. By submission of this bid, the bidder and each person signing on behalf of the bidder certifies, and if this is a joint bid each party hereto certifies as to its own organization, under penalty of perjury that to the best of the bidder's knowledge and belief:
 - 1. The prices in this bid have been arrived at independently without collusion, consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor;

Treasurer

IF A FIRM:

NAME OF MEMBERS

ADDRESS

DIVISION 26- ELECTRICAL

SECTION 265561 – THEATRICAL LIGHTING, RIGGING and DRAPERY SYSTEMS

Part 1. GENERAL

1.01 GENERAL REQUIREMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specifications section, apply to work of this section.
- B. It is the responsibility of the Electrical Contractor to fully coordinate the integration and installation of all equipment and furnishings as described in this section with a Theatrical Systems Integrator to ensure proper operation of the system.
- C. One company shall be responsible for the installation of all aspects of the stage rigging equipment. Work under this section shall include furnishing all labor, materials, tools, transportation services, supervision, etc., necessary to complete installation of the stage rigging equipment as well as any other items as herein listed, all as described in these specifications, as illustrated on the accompanying drawings; or as directed by the Owner's Representative.

1.02 WORK INCLUDED

- A. The Electrical Contractor, as part of the work of this section, shall provide, install and test a complete lighting control system as specified herein for areas indicated on the drawings and circuit schedules.
- B. The Electrical Contractor shall furnish all conduit, wire, connectors, hardware and other incidental items necessary for the complete and proper operation of the lighting control system.
- C. Be advised, it is the responsibility of the Electrical Contractor to obtain the services of a Theatrical Systems Integrator to provide the system described herein.
- D. Installation of non-dim modules in existing dimmer rack.
- E. Installation of outlet boxes and their line and low voltage wiring.
- F. The Electrical Contractor is responsible for pulling and terminating all low voltage wiring within the theatrical lighting system.
- G. Bring main power feed into new DIN-Rail enclosure and terminate per manufacturers specifications.
- H. Zone control for the House Lights on existing Johnson System architectural stations.
- I. On-site training of operations personnel on the use and maintenance of the systems and equipment provided as part of this specification.

- J. New control equipment shall be appropriately sized to accommodate all existing loads, as well as leave room for future expansion.
- K. Coordination of all work described in this section shall be the responsibility of the Electrical Contractor, including, but not limited to:
 - 1. General Conditions
 - 2. Electrical Section General Provisions
 - 3. Conduit
 - 4. Wire and Cable

1.03 RELATED WORK

- A. Related work that is not included in this section:
 - 1. Stage power distribution and feeder work.
 - 2. Structural Steel.
 - 3. Architectural lighting fixtures.
 - 4. Emergency lighting and/or backup generators.
 - 5. Low Voltage Electrical Power Conductors and Cable.
 - 6. Grounding and Bonding.
 - 7. Raceways.
- B. Refer to relevant specification sections for information on this and other contract scope.

1.04 QUALITY ASSURANCE

- A. Manufacturer shall be one who has been continuously engaged in the manufacturer of lighting control equipment for a minimum of ten years. All dimmer and cabinet fabrication must take place in a U.S. manufacturing plant.
- B. All equipment, where applicable standards have been established, shall be built to the standards of Underwriters Laboratories, Inc., the National Electric Code and the United States Institute for Theater Technology. Permanently installed power distribution equipment such as dimmer racks and distribution shall be UL and C-UL Listed, and/or CE marked (where applicable) and bear the appropriate labels. Portable equipment such as consoles and fixtures shall be UL and C-UL Listed, ETL Listed and/or CE marked (where applicable) and bear the appropriate labels.

1.05 ACCEPTABLE MANUFACTURERS

- A. The equipment herein specified shall be manufactured by the following, or approved equal:

1. Electronic Theatre Controls
3031 Pleasant View Rd
Middleton, WI 53562-0979
2. Elation Professional
S. Eastern Avenue
Los Angeles, CA 90040 USA

B. Permission to bid does not imply acceptance of the manufacturer. It is the sole responsibility of the Electrical Contractor to ensure that any price quotations received and submittals made are for systems that meet or exceed the specifications.

1.06 SCOPE

- A. Furnish Stage Dimming and Control equipment to Division 26 contractor for Installation.
- B. Stage lighting fixtures, Accessories, Circuit distribution, repertory lighting plot, and hang and focus of fixtures.
- C. Provide Static and Motorized Stage Rigging.
- D. Provide Static Stage Drapery.
- E. Due to the complexity of this renovation and the specific combination of equipment and services required for a professional installation, equipment in this specification shall be purchased from an approved Theater Systems Integrator (TSI)
- F. This is a single source specification, one Theatrical Systems Integrator (TSI) shall be responsible for supplying the stage dimming and control equipment, dead hung rigging, motorized rigging, stage curtains, Project Management, Stage lighting fixtures, hanging, focusing and programming of the system prior to Owner's possession.
- G. The Theatrical Systems Integrator shall be a sub-contractor to and fully coordinated by the Division 26 Electrical Contractor.
- H. The Theatrical Systems Integrator shall be responsible for supervising the installation of the dimming and control equipment. Specifically; provide a dedicated Project Manager, to schedule shipments of equipment, coordinate deliveries, answer system inquiries, and generally oversee the installation of the Dimming and Control equipment, Stage rigging, Curtains and Circuit distribution.
- I. The Theater Systems Integrator, in conjunction with the Manufactures shall provide the following:
 1. Verification of dimensions and conditions in contract documents prior to equipment installation.

Blind Brook Middle-High School
Auditorium Upgrades
Rye, NY

2. Schedule coordination and shipping to job site.
3. Test and verify field and rack-side low voltage terminations.
4. Inspection and adjustment of completed installation by Factory Authorized personnel.
5. Programming of House lighting control system.
6. Electronic PDF sets of shop drawings and a physical set of fabric samples for approval by Architect prior to fabrication.
7. Turn-on/Energization of the theatrical dimming system, initial programming of house lighting control system and training of all theatrical components.
8. Installation of dimming modules and programming of control processors.
9. Coordinate and assist in the installation of all aspects of the rigging equipment as specified. This shall include but not be limited to all motorized rigging and miscellaneous equipment.
10. Coordination with associated trades in the field.

J. Contractor Responsibility Matrix

Part 2	Item	GC		EC		TSI	
		Furnish	Install	Furnish	Install	Furnish	Install
	Demolition						
	Existing Static Rigging Onstage & Front of House		X				
	Existing Static Drapery & Curtain Tracks		X				
	Existing Front of House Tormentors		X				
	Existing Front of House Static Pipe		X				
	Existing Outlet Boxes & SO Cables Onstage and Front of House		X				
	<i>Existing Fire Curtain to Remain</i>						
	<i>Existing Dimming Rack & Architectural Stations to Remain</i>						
	Dimming and Control						
	Power Feeders (TO REMAIN)						
	Power Disconnects (TO REMAIN)						
	Dimming Enclosures (TO REMAIN)						
	Dimming Relays				X	X	
	Lighting Control DIN-Rail				X	X	
	Assembly of DIN-Rail Components				X	X	
	Lighting Control Plug Stations				X	X	
	Lighting Control Plug In Station Backboxes				X	X	
	Line Voltage Wire			X	X		

Blind Brook Middle-High School
Auditorium Upgrades
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Part 2	Item	GC		EC		TSI	
		Furnish	Install	Furnish	Install	Furnish	Install
	Line Voltage Wire Terminations			X	X		
	Low Voltage Wire (DMX & Network)			X	X		
	Low Voltage Terminations (DMX & Network)			X	X		
	Conduit			X	X		
	Lighting Control Console/Accessories					X	X
	<u>Power and Data Distribution</u>						
	Prewired Outlet Boxes				X	X	
	Mounting & Wire Terminations of Outlet Boxes				X		
	Branch and Low Voltage Wiring from Power & Data Control Enclosures to Outlet Boxes.			X	X		
	SO Cable, DMX Cable, & Cable Cradle				X	X	
	Gridiron Junction Boxes				X	X	
	Containment			X	X		
	<u>Static & Motorized Rigging</u>						
	Blck. 1.5" ID Schedule #40 Steel Pipe and Spliced					X	X
	All Suspension & Termination Hardware For Rigging Devices					X	X
	Motorized Hoists & Power Control Distribution Boxes					X	X
	Compression Tube For Motorized Rigging					X	X
	3pH Power & Conduits For Motorheads & Grid Iron Junction Boxes			X	X		
	Unistrut Bridging For Motorized Hoists					X	X
	PE Stamp of Provided Rigging Materials					X	
	<u>Stage Draperies and Track</u>						
	Stage Draperies					X	X
	Drapery Tracks					X	X
	Drapery Rigging and Hanging Hardware					X	X
	<u>Theatrical Lighting Fixtures</u>						
	Theatrical Lighting Fixtures and Accessories					X	X
	Power Extension Cables					X	X
	Data Extension Cables					X	X
	Lighting Plot and Lightwright Paperwork					X	X
	Theatrical Fixture Prep/Hang/Focus					X	X
	Vertical Access for Lighting Focus. (Lifts & Ladders)			X			

Blind Brook Middle-High School
Auditorium Upgrades
Rye, NY

Part 2	Item	GC		EC		TSI	
		Furnish	Install	Furnish	Install	Furnish	Install
	<u>Auditorium House Lighting</u>						
	DMX Controlled House Lighting Fixtures			X	X		
	House Lighting Relays				X	X	
	Low Voltage Control Wire & Terminations			X	X		
	Branch Circuit Wire and Conduit			X	X		
	<u>Miscellaneous</u>						
	Fire Stop			X	X		
	Cutting/Patching/Painting	X	X				
	Protection of Existing Floors/Walls/Surfaces	X	X				
	Disposal/Cleanup/Carting	X	X				
	System Commissioning					X	
	Lighting and Rigging System Training					X	
	Temporary Work Lights and Power			X	X		
	Ventilation	X	X				
	PE Stamp of Existing Structure	X					

2.01 CONTRACTOR COORDINATION

- A. Due to the complex nature of the coordination of the work associated with the work of this contract, the following is a list of responsibility to be divided between the General Contractor (GC), the Theatrical Systems Integrator (TSI), and the Electrical Contractor (EC).
1. The GC shall provide protection for the stage flooring and finish during installation.
 2. All demolition of the existing rigging, drapery, and power distribution boxes shall be performed by the GC.
 3. Installation of any support blocking or modification to existing structure shall be the responsibility of the GC.
 4. The EC shall be responsible for furnishing and installing all wiring to the control and dimming system.
 5. The TSI shall supply all theatrical lighting equipment for installation by the EC.
 6. The TSI shall employ only fully trained and ETCP certified stage riggers and mechanics, for the erection of the stage equipment. Copies of the ETCP certification must be furnished to the General Contractor prior to the start of the installation.
 7. The TSI shall supply all system documentation, system commissioning and end-user training.

2.02 THEATRICAL SYSTEMS INTEGRATOR

- A. General
1. The provider of the system herein described shall be acknowledged in business as a Theatrical Systems Integration Company, hereafter referred to as TSI. This company shall employ full time Systems Integrators and Project Managers with experience in completing work of similar or greater size and scope. The role of the TSI in this project shall be to provide all equipment listed in this section to the Electrical Contractor for installation. The TSI shall furnish a complete working system to the Electrical Contractor, meeting the intent of this specification. The TSI shall coordinate delivery schedules and installation of equipment with the Electrical Contractor. Additionally, the TSI shall be responsible for all documentation for equipment in this section, system record drawings, final testing of the system and training of the Owner's personnel as required by this specification.
- B. Description

1. The TSI shall have experience in the operation and installation of similar equipment associated with the construction and/or renovation of facilities similar in scope to this project.
 2. The TSI shall have been in business for a minimum of 20 consecutive years and shall have no history of bankruptcy.
 3. The TSI shall be an authorized dealer for an adequate number of manufacturers of system products necessary to provide a complete working system meeting the intent of this specification. System products shall include but are not limited to the following:
 - a. Dimming Equipment
 - b. Control Systems
 - c. Theatrical Lighting Fixtures
 - d. Power Distribution Equipment
 - e. Stage Accessories
 - f. Dead Hung & Counterweight Line sets
 - g. Stage Draperies and associated track
 4. The TSI shall be located within 50 miles of the job-site.
 5. The TSI shall have on staff at least two full-time manufacturer-certified field service technicians and have technical support and assistance accessible 24 hours a day, seven days a week.
 6. The TSI shall offer a Maintenance and Service Contract.
 7. Through the Manufacturer's minimum 1-year warranty period, the TSI shall be responsible as the Owner's sole contact for the remedy, repair, or replacement of system deficiencies (through the manufacturer's warranty where applicable).
- C. Project Management
1. The Systems Integration Company shall designate a dedicated Project Manager. The TSI's Project Manager shall be the main contact between the Systems Integrator, Manufacturers, Architects, Engineers and Contractors from contract award until final sign off. The TSI's Project Manager shall be the same person throughout the entire course of the project, unless otherwise approved by the Architect.
 2. The TSI's Project Manager shall attend a Kick-Off Meeting at the project site office or a place to be designated. The objectives of the Kick-Off Meeting are:
 - a. Introduce the Project Team Members
 - b. Review the Project Schedule
 - c. Review the Scope of Work and any additional materials and documents not in the Scope of Work
 - d. Layout the creative intent of the Project

D. Approved Theatrical Systems Integration Companies shall be the following:

1. Barbizon Electric Co., Inc.

643 11th Ave.

New York, NY 10036

Phone: (212) 586-1620

Or approved equal

E. Substitutions

1. Requirements for Approval: Theatrical Systems Integrators seeking acceptance must submit the following information along with the equipment submittal. Failure to submit any of the required information will automatically disqualify the contractor from consideration of approval.
 - a. A listing of 10 equivalent installations including:
 - 1) Name, address, and current telephone number of Owner.
 - 2) Name, address, and current telephone number of Architect or theater consultant associated with the installation.
 - 3) Scope of work of the installation including all sub-contractors and manufacturers.
 - b. A brief written description of the TSI's operation, including facilities, departments and key personnel.
 - c. Biographical information of the Project Manager and integration team members who will be assigned to this project should the contractor be successful.
 - d. A full and complete financial statement sufficient to determine financial viability.
 - e. A list of all sub-contractors who the TSI proposes to use including their qualifications to perform the work.

2.03 SUBMITTALS

- A. Manufacturer shall provide 5 sets of full system submittals. Submittals shall be 11"x17", will be delivered in Adobe PDF format, and include:
 1. Full system riser diagram(s) illustrating interconnection of system components, how the system attaches to building structure, and any special installation considerations.
 2. Full set of technical data sheets.
 3. Detailed set of relay/dimmer schedules
 4. Detailed set of circuit and control schedules, including a complete list of all deviations from specifications.

5. Lighting plots with the information of hung position of new and existing lighting fixtures as well as lens types.
- B. Manufacturer shall provide any additional information, including equipment demonstration, as required by the Architect to verify compliance with specifications.
- C. Samples: The TSI shall submit samples without causing delay in work, as required.
- D. Catalog Cuts: The Contractor shall submit catalog cuts for equipment items. These shall contain full information on dimensions, construction, applications, etc. to permit proper evaluation. In addition, they shall be properly identified as to their intended use. Any options or variations shall be clearly noted
- E. Rigging: Submit shop and installation drawings and schedules showing all information necessary to explain fully the design features, appearance, function, fabrication, installation, and use of system components in all phases of operation. They shall be approved by the Architect before fabrication, installation, or erection has begun. Such approval does not relieve the TSI of the responsibility of providing equipment in accordance with the specifications. Any deviations from the specifications shall be "starred" and noted in 3/8-inch-high letters. Only deviations that are equal or upgrade the quality of the equipment or respond to field conditions will be considered. Approval of submitted equipment shall be obtained prior to equipment purchase or fabrication. If shop drawings are rejected, correct and resubmit in the manner specified. All shop drawing information shall be submitted at the same time; no partial submittal shall be accepted. Drawings shall indicate complete details, dimensions, product types and locations of all equipment, clearances required, guides, cables, sets, Contractor fabricated equipment, and all other details required to completely describe the work to be performed. Submittals drawings shall be presented at a scale not less than 1/4" for equipment layouts and 1/2" = 1'-0" for equipment details, mounting and other details. Each sheet shall allow space for approval stamps and have the name of the project, the contractors and/or the supplier's name, address telephone number, and the date submitted. Submit the following items for Architect's approval, prior to fabrication:
 1. Stage plan view
 2. Stage reflective ceiling plan view
 3. Stage side section view
 4. Details of installation and erection, including adjoining conditions and necessary clearances
 5. Indication by arrow and boxed caption of each variation from contract drawing and specifications, except those indicated as acceptable in specifications or on drawings

2.04 STANDARDS

- A. All Applicable Requirements of the State of New York shall govern work in this Specification

- B. All Equipment and work shall comply with NEC, NEMA, and ANSI codes and Standards
- C. All Equipment shall be UL Listed. Proof of UL listing shall be provided.
- D. All Equipment provided shall be New in the box with full factory warranty. Used and Refurbished equipment will not be accepted.
- E. To ensure uniform installation and single responsibility, all dimming and control equipment shall be the products of Electronic Theater Controls (ETC), or others, to allow integration with the Owner's other school installations.
- F. Catalog Designations of Altman, ETC, ADC, and Pathway, are referenced to establish a basis of design, function, and performance quality. Bidders submitting alternates must meet or exceed the performance standards as listed by these manufactures in catalogs and data sheets.

2.05 WORKMANSHIP

- A. The fabrication of all equipment shall incorporate only new and unused materials. This includes all metal components in various shapes required such as plate, bar, rod, castings, structural, stampings, forging, clamps, bolts, and all other accessories not mentioned.
- B. The mechanical fabrication and workmanship shall incorporate neat and mechanically acceptable practices such as clean drilled and punched holes without flash; hand smooth finish for all sheared, machined, and cut edges; and proper fit of component and contiguous parts without irregularity where matching is intended. Welding shall meet qualifications of AWS D1, 1-81 and shall be without spatter and other evidence of poor practice. All bolts and rivets shall be sized and located in conformity with minimum acceptable standards as set forth in the Machinery's Handbook and all revisions to date.
- C. All moving parts shall have acceptable tolerances, mountings, connections, and accessories coordinated into the system in a manner approved by the Architect. No wood construction or equipment shall be incorporated into the system excepting as may be set forth in the specifications.
- D. All electrical and electronic parts and components selected and installed shall be consistent with good practice and conservatively rated in their use in the circuit design. Each piece of equipment shall meet accepted basic engineering standards.
- E. All low voltage control wire runs shall be one continuous run. No splices are permitted.

2.06 NOTIFICATION

- A. Upon notification of completion of work, the Architect or Architect's Representative will run tests on the Lighting, and Rigging system. If any problem arises during the tests, the Theatrical Equipment Contractor must correct the problem within 5 working days.

2.07 WARRANTY

- A. All systems, including all parts and labor, shall be under full warranty for a period of not less than two (2) years from the date of written final acceptance. In the event that any of the equipment should fail to produce capacities or meet design characteristics as specified, it shall be replaced with equipment that will meet requirements without additional cost. After occupancy, any necessary work performed shall be done at the convenience of the Owner's operational schedule, including overtime, if required.
- B. Two signed copies of the above are required as a condition for final approval of the work.

Part 3. PRODUCTS

3.01 CD80 POWER MODULES

A. GENERAL

- 1. Power Modules are designed for operation with Johnson Systems CD-3000 or CD-2000 control systems. No warranty or product return is available if these products are used, even temporarily, with any OEM controls as they are incompatible. The inferior drive signals in certain controls may damage this equipment. CD80 Power Modules controlled by Johnson Systems CD-3000 or CD-2000 control systems are warranted for two (2) years from ship date and shall be eligible for optional extended warranty up to ten (10) years.
- 2. Power Modules shall be capable of switching two independent general purpose lighting loads including LED and tungsten up to 20 Amps. Each relay shall be protected by a premium 20 Amp magnetic circuit breaker with a UL 489 rating. Full rated operation shall be permitted without compromising product life expectancy.
- 3. Power Modules shall use only premium quality PCB mounted "air-gap" relays rated for operation at 277VAC with 50 Amp tungsten loads. Relay or contactors of lesser rating shall not be considered acceptable. Relay PCB shall have a minimum track thickness of three (3) ounce copper and capable of continuous operation at 200% breaker rating. Relay PCB terminal blocks shall be capable of accepting up to 6 AWG stranded copper wire and be rated at a minimum 52 Amps.
- 4. Power Modules shall be capable of switching on/off with DMX512 control data when used with Johnson Systems CD-3000 or CD-2000 control systems. Turn-on threshold shall be fixed at 50% PWM duty cycle control with a 10% hysteresis to minimize the potential for false trigger.
- 5. Power Module relays shall be manually switchable permitting power "pass through" and operation as constant Power Modules where desired.
- 6. Power Module face panels shall contain two blue LED indicators (one per circuit). These independent LED's shall illuminate when their corresponding relay contact is "closed" permitting "live circuit" indication.

7. Power and Constant Modules feature flush faced, premium dual 20 Amp magnetic breakers with a UL 489 rating. Breakers shall display a highly visible blue trip indication when open and flush finish when closed. Breakers shall be of the "anti-trip" design to protect against unauthorized disconnect. Breakers containing "finger-tip" trip handles shall not be considered acceptable.
8. All models feature an integral face panel handle permitting ease of module removal/insertion.

B. CONTROL PCB

1. The Control PCB shall accept pulse width modulation (PWM) control from the output of a Johnson Systems CD-3000 or CD-2000 control system and provide relay activation/closure at a 50% PWM duty cycle with a 10% hysteresis. Each circuit shall contain a blue LED indicator for active control trigger. Each LED shall illuminate when relay close is active and extinguish when relay is open.
2. The Control PCB shall draw power parasitically via the PWM control source without affecting the PWM control signal amplitude or duty-cycle thus permitting reliable operation in racks not containing AC neutral to each individual module location. Power requirements shall be minute and in compliance with the International Energy Agency's "One Watt Initiative" standby power requirement. Please refer to U.S. Executive Order #13221. Processor standby power shall not exceed 1 Watt.
3. All printed circuit boards (PBC's) shall be FR4/G10 with a UL 94V-0 Flame Class Rating.
4. CD80 Power Modules are ETL compliant and adhere to UL and CSA electrical safety standards.

3.02 EMERGENCY BYPASS DETECTION

- A. The bypass detection kit shall be the Emergency Bypass Detection Kit as manufactured by Electronic Theatre Controls, Inc., or equal.
- B. The Enclosure shall be a surface mounted, constructed of 16-gauge formed steel panels removable front cover finished in fine textured, scratch-resistant, powder coat paint
- C. Accessories for installation, including tap kits and manual reset switch kits shall be available from a single manufacturer.
- D. Emergency Bypass Detection enclosures shall support 100 to 277 volt configurations
 1. EBDK enclosures shall be field configurable for single-phase, bi-phase, and three-phase operation without the need for additional components.
- E. The Emergency Bypass Detection Kit shall be completely pre-wired by the manufacturer. The contractor shall provide input feed and control wiring.

- F. All control wire connections shall be terminated via factory provided connectors.
- G. The Bypass Detection Kit shall be UL and cUL Section 924 Listed for interaction with similarly listed dimming and switching panels

3.03 EDIN ENCLOSURE

A. General

- 1. Basis of Design: eDIN System Enclosure.

B. Electrical

- 1. Regulatory Compliance: CE, UL 0listed, CE, & CSA-listed
- 2. Barrired High-Voltage section for power supplies
- 3. Regulatory Compliance: CE, UL 0listed, CE, & CSA-listed
 - a.

C. Mechanical

1. Housing

- a. Type 1 NEMA enclosure.
- b. Black powder coat steel.
- c. Ten 3/4 inch conduit knockouts.
- d. Steel high voltage barrier.
- e. Mounting: Four round keyholes.
- f. Front cover with four round keyholes and stainless screws.

2. Dimensions

- a. PWENC SHELF HOR
 - 1) Face: EIA 19" (482mm) x 2RU (3.5")
 - 2) Tray: 17" W x 10" D (432mm W x 254mm D)
 - 3) Weight: 5.1 lbs (2.3 kg)
- b. PWENC SML [HOR/VER]
 - 1) 10" W x 13" H x 4.5" D (260mm W x 330mm H x 114mm D)
 - 2) Weight: 8.5 lbs (3.9 kg)
- c. PWENC MED [HOR/VER]
 - 1) 10" W x 23" H x 4.5" D (260mm W x 584mm H x 114mm D)
 - 2) Weight: 13.5 lbs (6.1 kg)
- d. PWENC LRG VER
 - 1) 18.5" W x 31.5" H x 6.25" D (470mm W x 800mm H x 159mm D)
 - 2) Weight: 42.5 lbs (19.3 kg)

D. Environmental

1. RoHS 2011/65/EU:2015/863

3.04 DMX ETHERNET GATEWAY – DIN RAIL GATEWAYS

A. General

1. The lighting control gateway shall be a microprocessor-based unit specifically designed to provide DMX-512 control of lighting systems and transport of RDM configuration and status messages. The gateway shall permit DMX-512 data to be encoded, routed over an Ethernet network and decoded back to DMX-512. The unit shall be a Response Mk2 DIN rail DMX Gateway as provided by ETC, Inc.
2. Gateways shall communicate over Ethernet directly with at least ETC, Inc.'s entertainment and architectural lighting control products and other Ethernet interfaces.
3. Connections shall be made between gateways, consoles, architectural systems, and PCs over standard Ethernet distribution systems using 10/100BaseT.
4. The gateway shall support multiple protocols including:
 - a. ANSI E1.17 Architecture for Control Networks (ACN)
 - b. ANSI E1.31 Streaming ACN (sACN)
 - c. ANSI E1.11 USITT DMX512-A
 - d. ANSI E1.20 Remote Device Management (RDM)
5. The gateway shall be tested to UL standards and labeled ETL Listed.
6. The gateway shall be RoHS Compliant (lead-free).
7. The gateway shall be CE compliant.
8. The gateway shall be UKCA compliant
9. The gateway shall have a graphic OLED display and four buttons for identification (soft-labeling), configuration, status reporting and troubleshooting
 - a. Labeling shall be user configurable using ANSI E1.17 Architecture for Control Network (ACN), or a purpose built software configuration tool.
 - b. The OLED display shall show DMX port configuration indication as well as indicate the presence of valid signal.
 - c. Gateways that do not indicate port configuration (input/output) and valid data shall not be acceptable.
10. Each gateway shall have power and data activity LEDs on the front of the gateway

B. DMX Ports

1. DMX Ports shall comply with the requirements of ANSI E1.11 USITT DMX512-A standards.
2. Each DMX port shall be software or locally-configurable for either input or output functionality.
3. DMX input shall be optically-isolated from the gateway electronics.
4. DMX Port shall provide at least 500V isolation to ground and the rest of the electronics
5. Each port shall incorporate one DMX512-A Connection
6. Network gateways that do not indicate input/ output port configuration or presence of valid data shall not be accepted

C. Processor

1. Each gateway shall have sufficient processing power to manage up to 63,999 universes (32,767,488 addresses).
2. Maximum delay time from input to output shall not be greater than one packet time (approximately 22 mSec.).
3. A minimum DMX update rate of 40Hz shall be sustained under all conditions unless specifically configured for a slower rate for the sake of compatibility with 3rd party DMX devices.

D. Mechanical

1. The DIN Rail mounted gateways shall be included in an extruded plastic enclosure.
2. Three variants of gateways shall be available:
 - a. One Port
 - b. Two Port
 - c. Four Port
3. Two wiring connections shall be required for connection to the lighting system
 - a. Ethernet connection that supports standard Cat5 patch cables
 - b. DMX input or output connection using is terminal strip or IDC-style connector
4. Optional accessories for rack-mount and pipe applications shall be available from the manufacturer. These accessories shall support installation by an end-user

E. Power

1. Power for the gateway shall be provided over the Category 5 (or better) cable, utilizing IEEE 802.3af compliant Power over Ethernet (PoE). Power consumption using shall not be greater than 7 watts.
2. An optional low-voltage DC power input shall be available utilizing an isolated in-line power supply capable of an operating range of 12-24VDC.

F. Configuration

1. The Gateway must support local or remote configuration.
2. Each gateway on the network shall be individually configurable using freely available software configuration tools. The primary configuration tool shall be Net3 Concert configuration software running on a network connected PC. The PC shall only be required for configuration and shall not be required for normal operation of the system.
3. Each port of the DMX gateway shall control up to 512 DMX addresses, within the confines of 63,999 universes.
4. The specific DMX data input or output by the gateway shall be freely configurable by the user.
5. Duplicate outputs of DMX lines (DMX splitter) and discrete outputs shall be fully supported.
6. Multiple DMX universes may be configured with any length up to 512 total addresses. Any range of DMX input addresses shall support selection and routing to the specified sACN output.
7. Multiple sACN sources may be combined with a priority may be assigned to each source sending data to the gateway
8. All relevant routing information shall be stored in non-volatile memory at each gateway. The system shall recover from a power outage without requiring the PC to be online. Gateways that do not support non-volatile storage of data routing shall not be accepted.

G. Network

1. Communications physical layer shall comply with IEEE 802.3i for 10BASE-T, 802.3u for 100BASE-TX and 802.3af for Power over Ethernet specifications.
2. All network cabling shall be Category 5 (or better), conforming to TIA-568A/B, and shall be installed by a qualified network installer.
3. Data transport shall utilize the TCP/IP suite of protocols to transfer the DMX data.
4. ANSI E1.17 Architecture for Control Networks (ACN) and streaming ACN (sACN) shall be supported. Gateways that do not support ANSI E1.17 shall not be acceptable.

5. Each DMX gateway shall control up to 512 DMX addresses, per DMX port within the confines of up to 63,999 universes (32,767,488 addresses) using Streaming ACN (sACN).
 - a. Any range of DMX addresses may be selected for each universe.
 - b. Multiple sources shall be supported by prioritized Highest Takes Precedence (HTP with priority). Each source shall support assignment of priority to allow override of default HTP behavior.
 - c. Each DMX port shall support its own universe and start address.
 6. Gateways shall have built in DMX merger capability on a universe or channel-by-channel basis.
 7. Gateways shall support have built in priority on a per-universe or channel-by-channel basis. Gateways that do not support prioritized merging of multiple network sources at independent priorities shall not be accepted.
- H. Environmental
1. The ambient operating temperature shall be 0° to 40°C (32° to 104°F).
 2. The storage temperature shall be -40° to 70°C (-40° to 158°F).
 3. The operating humidity shall be 5% - 95% non-condensing.
- I. Accessories
1. A Universal Power Supply with international plug-set shall be available. Multiple power supplies shall be able to fit in a vertically stacked power strip.
 2. ETC Net3 Concert Configuration and monitoring Software
- J. System Requirements
1. Provide the quantity and type of gateways required, as scheduled. Gateways and software shall be as manufactured by ETC Inc. of Middleton, WI.

3.05 POE NETWORK SWITCH, EIGHT PORT

- A. General
1. Basis of Design: VIA Ethernet Switch with Eight Ethernet Ports.
 2. Provide network communication and power over ethernet.
- B. Mechanical
1. Mounting: Toolless TS35 DIN rail
 2. Ports:

Blind Brook Middle-High School
Auditorium Upgrades
Rye, NY

- a. Two SFP+ jacks.
 - b. Eight managed power over ethernet RJ45 jacks.
 - c. One 2-pin male header for power in.
 - d. One 204 pin jack.
3. Materials:
 - a. Powder-coat aluminum housing.
 - b. Polycarbonate DIN rail mounting brackets.
 4. Buttons:
 - a. One mechanical momentary contact for factory default.
 - b. One mechanical momentary contact for rescue feature.
- C. Electrical
1. Power in:
 - a. Minimum: 10 watts DC.
 - b. Maximum: 130 watts DC.
 - c. Without powered devices
 - 1) Minimum: 20 volts DC.
 - 2) Maximum: 50 volts DC.
 - d. Power sourcing equipment
 - 1) Minimum: 48 volts DC.
 - 2) Maximum: 50 volts DC.
 2. Topology: Star
 3. Single-color integral LED status indicators:
 4. :
 - a. Eight activity.
 - b. Eight link.
 - c. One processor.
 - d. One power over ethernet.
 5. Tri-color integral LED status indicators:
 - a. Two SFP+.
- D. Functional
1. Programming:
 - a. Protocols
 - 1) Internet Group Management Protocol:
 - a) Querier.

- b) Snooping.
 - 2) Art-Net 2 with trap and convert.
 - 3) Dynamic Host Configuration Protocol.
 - 4) Audinate Dante.
 - 5) Secure Streaming CAN.
 - 6) Link Layer Discovery Protocol.
 - 7) Ethernet Automatic Protection Switching.
 - 8) Rapid Spanning Tree Protocol.
 - b. Firmware updates upload: Via ethernet and third-party computer.
 - c. Static MAC address packet routing.
2. Configuration:
- a. Initial configuration via third-party computer.
 - 1) Subsequent configuration via integral interface, specified herein.
 - b. Port configuration:
 - 1) Port name.
 - 2) VLAN configuration.
 - 3) Link
 - a) Speed.
 - b) Partner.
 - c) Active time.
 - d) Notes.
 - e) Report total bandwidth usage.
 - f) Mode.
 - 4) Power over ethernet allocation.
 - 5) IGMP groups.
3. Processor:
- a. Architecture: Armv8-A.
 - b. Memory:
 - 1) 1 gigabyte DRAM DDR3L 1.35V SDRAM
 - 2) 1 gigabyte non-volatile flash.
4. Network:
- a. Single-chip 10Base-T/100Base-TX physical layer.
 - b. One 8-port ethernet:
 - 1) Eight 10/100/1000 SERDES ports.
 - 2) Quality of service switching fabric.
 - 3) Two 10/100 SFP ports.
 - c. Link layer firewall port isolation.

5. Rescue
 - a. Integral rescue button for backup factory reset.

E. Environmental

1. Operating temperature
 - a. Minimum: 14 degrees Fahrenheit
 - b. Maximum: 118 degrees Fahrenheit
2. Operating non-condensing humidity
 - a. Minimum: 5 percent
 - b. Maximum: 95 percent
3. Cooling method: Passive convection.

3.06 DMX/RDM SPLITTER

A. General

1. Basis of Design: DMX512 Repeater DIN-mount 4 DMX512 Ports.
2. Repeat optically isolated DMX512 and RDM signal.
3. RDM variants:
 - a. Non-RDM.
 - b. RDM capable.

B. Mechanical

1. Housing: UL94 5VA extruded rigid polyvinyl chloride.
2. Mounting: Toolless TS35 DIN rail.
3. Ports:
 - a. Six 5-pin male headers for DMX512.
 - b. One 5-pin male header for power in.
4. Detachable Accessories:
 - a. Six 5-pin male headers to wire stop IDC terminal block.
 - b. Seven 5-pin male headers to screw flange terminal blocks.
5. Non-RDM variant: One single pole slide switch for DMX512 termination.

C. Electrical

1. Power in:
 - a. Minimum: 9 volts DC

- b. Maximum: 36 volts DC.
 - c. Milliamps: 667.
 - 2. Topology: Star.
 - 3. DMX512 port protection
 - a. Fault and overcurrent: 250 volts AC thermal switch.
 - b. Port to port optical isolation: 3000 volts AC.
 - c. DMX512 input to output in-line optical isolation.
 - d. DMX512 input to thru repeated electrically.
 - 4. Single-color integral LED status indicators:
 - a. One Power.
 - b. One DMX512 input.
 - c. Non-RDM variant:
 - 1) Four DMX512 output.
 - 2) One 5-volt isolation.
 - d. RDM capable variant:
 - 1) One processor.
 - 2) One DMX/RDM.
 - 3) Four RDM.
 - 4) Four power isolation.
- D. Functional
 - 1. Standalone and independent operation.
 - 2. Isolated repeated DMX512 communication.
 - 3. RDM capable variant:
 - a. Respond to RDM signal.
 - b. Send RDM signal.
 - 4. DMX512 port communication:
 - a. Non-RDM variant: Simplex DMX512.
 - b. RDM capable variant: Half-duplex DMX/RDM.
 - 5. Single-color integral LED status indicators:
 - a. Blue power
 - 1) On: Receiving power.
 - 2) Off: Not receiving power.
 - b. Green processor
 - 1) On: Normal.
 - 2) Off: Not receiving power.

- c. Blue power and green processor off: Processor failure.
 - d. Amber DMX512 input
 - 1) On: Receiving DMX512 signal.
 - 2) Off: Not receiving DMX512 signal.
 - e. Green DMX512 output
 - 1) On: Transmitting DMX512 signal.
 - 2) Off: Not transmitting DMX512 signal.
 - f. Red isolated power out
 - 1) On: Power out.
 - 2) Off: No power out.
 - g. Amber RDM
 - 1) Flashing: Receiving RDM signal.
 - 2) Off: Not receiving RDM signal.
6. Non RDM variant switch:
- a. On: 120 ohms resistance on DMX512 thru.
 - b. Off: No resistance on DMX512 thru.
7. RDM capable variant processor
- a. Memory: Non-volatile flash.
 - b. Firmware updates upload: Via latched DMX512 input signal.
 - c. Architecture: 8-bit RISC.
 - d. Speed: 16 Megahertz.
 - e. Memory:
 - 1) 8 kilobyte flash.
 - 2) 512 Bytes EEPROM.
 - 3) 1 kilobyte internal SRAM.
8. RS485 transceiver:
- a. Electrical data isolation.
 - b. 500 kilobits per second data rate.
- E. Environmental
- 1. Operating temperature
 - a. Minimum: 14 degrees Fahrenheit
 - b. Maximum: 113 degrees Fahrenheit
 - 2. Operating non-condensing humidity
 - a. Minimum: 5 percent
 - b. Maximum: 95 percent
 - 3. Cooling method: Passive convection.

3.07 SO MULTI-CONDUCTOR CABLES

A. GENERAL

1. The multi-cable assemblies are designed to conduct (6) circuits of power or audio inside a single jacket.
2. The Multi-Cables shall be available for indoor (Type 1) use.
3. The data cable assembly

B. MECHANICAL

1. Each multi-cable assembly shall possess at least one (1) overmolded multi-pin device. Overmold multi-pin devices shall have nineteen (19) pins.
2. The multi-cable assemblies shall possess at least one (1) overmolded multi-pin device with a thermoplastic resin pre-mold.
 - a. The pre-mold creates a bond between cable and device.
 - b. The pre-mold ensures superior strain relief and secure terminations
 - c. The pre-mold ensures pins and sockets cannot be pushed back into the device.
 - d. The pre-mold shall possess a keyed design.
 - 1) Design shall prevent misalignment or circuit conductors
 - 2) Design shall prevent connection of unmateable or mismatched connections.
3. The multi-cable assemblies shall possess at least one (1) overmolded multi-pin device with a thermoplastic elastomer over-mold.
 - a. The over-mold bonds to the pre-mold providing an insulating and secure gripping surface.
 - b. The over-mold shall have a 'keyed' design to prevent misalignment of circuit conductors.
 - c. The over-mold shall allow for custom logo imprinting
4. The multi-pin overmold connector (female) shall have 'tempered spring' contacts
 - a. Tempered spring contacts maintain constant pin pressure ensuring low
5. resistance connections
6. The multi-pin overmold devices shall have silver-plated brass contacts.
 - a. This form of contact ensures high conductivity.
7. The multi-cable assemblies shall feature all black construction.
 - a. Color blends into scenery and backgrounds.

- b. Thermoplastic elastomer over-mold shall be available in additional colors upon request.
8. Multi-cable overmold assemblies shall be available as extensions using multiple cable types.
- a. 12/14 – #12 AWG, 14 Conductor, Type TPR
 - b. 12/18 – #12 AWG, 18 Conductor, Type TPR
 - c. 14/14 – #14 AWG, 14 Conductor, Type TPR
 - d. 16/18 – #16 AWG, 18 Conductor, Type TPR

3.08 POWER DISTRIBUTION – JUNCTION BOXES

A. General

- 1. Gridiron junction boxes shall be fabricated from 16-gauge cold rolled steel with 14 gauge end panels.
- 2. Junction boxes shall be finished with fine-textured, scratch-resistant, black powder coat.
 - a. Boxes for 30 circuits or less shall be 14"H x 14"W x 4"D
 - b. Boxes for 31 to 60 circuits shall be 14"H x 28"W x 4"D.
- 3. Junction boxes shall include mounting brackets and hardware
- 4. Cover(s) shall be 16-gauge cold rolled steel and hinge to allow installer to orient the hinged door to open in any horizontal direction.
- 5. Cover(s) shall be attached with machine screws and Tinnerman retainer nuts.

B. Electrical

- 1. Wiring terminations shall be made using feed through terminals individually labeled with corresponding circuit numbers.
 - a. 20 amp circuits shall use screwless tension clamp terminals listed for 20 – 8 gauge wire.
 - b. 50 amp circuits shall use compression terminals listed for 10 – 1 gauge wire.
 - c. 100 amp circuits shall use compression terminals listed for 8 – 2/0 gauge wire.
 - d. Terminals that place a screw directly on the wire are not acceptable.
- 2. Gridiron junction boxes shall be listed by a nationally recognized test lab (nrtl).
- 3. A low voltage distribution system shall be available to incorporate DMX, Ethernet or other protocols as specified with the gridiron junction box.

- a. Low voltage junction boxes shall attach to gridiron junction boxes to simplify wiring to a discrete device
- b. Low voltage signals shall enter the junction box via a strain relief or connector mounted in a separate low voltage terminal box on the top or bottom of the gridiron junction box.
- c. Up to four low voltage cables shall be supported for each junction box location.

3.09 DATA PLUG-IN STATIONS

A. General

1. The Plug-in Stations shall consist of the appropriate connectors required for the functional intent of the system. These stations shall be available with DMX input or output, Remote Focus Unit, Network, or architectural control connectors. Custom control connectors shall be available.

B. Connector Options

1. The following standard components shall be available for Plug-in Stations:
 - a. 5-Pin male XLR connectors for DMX input
 - b. 5-Pin female XLR connectors for DMX output
 - c. 6-Pin female XLR connectors for RFU and ETCLink connections
 - d. RJ45 connectors for Network connections - Twisted Pair
 - e. 6-Pin female DIN connectors for Unison connections
 - f. DB9 female serial connector for architectural control from a computer
2. Custom combinations and custom control connections shall be available.

C. Physical

1. Station faceplates shall be .80" aluminum, finished in fine texture, scratch-resistant black powder coat. Silk-screened graphics shall be white.
2. The station panel shall mount into an industry standard back box, depending on size and quantity of connectors. A terminal block shall be supplied for contractor terminations.

3.10 LIGHTING CONSOLE AND ACCESSORIES

A. General

1. The lighting control console shall be a microprocessor-based system specifically designed to provide complete control of stage, studio, and entertainment lighting systems. The console shall be the Ion Xe 20 2K as manufactured by Electronic Theatre Controls, Inc., or equal.

2. The system shall provide control of 2,048 outputs on a maximum of 32,768 control channels, which may be any number from 1 to 99,999. Systems that require external co-processing to control 12,288 outputs shall not be acceptable. Output shall be distributed over a 10/100 MB Ethernet network using Net3/ACN, ETCNet2, Avab and/or Art-Net (multi-cast) protocols. The user shall be able to control the application of protocols at an individual address level.
3. The system shall support full bi-directional RDM communication with compatible devices via Net3 DMX/RDM Gateways. RDM communication shall adhere to ANSI standard E1.20-2006 Entertainment Technology – RDM – Remote Device Management over DMX512 Networks. Supported RDM features shall include:
 - a. Discovery and Identification of RDM capable devices
 - b. Setting of start addresses, operating modes and additional settings as exposed by connected devices and controllable via RDM
 - c. Viewing of Sensor data as provided by connected devices
 - d. Error reporting as provided by connected device
4. A maximum of 10,000 cues, 1000 groups, 1000 presets, 4 x 1000 palettes (Intensity, Focus, Colour and Beam), 99,999 macros, 1000 effects, 1000 curves, 1000 Colour Paths and 1000 snapshots may be contained in non-volatile electronic memory and stored to an on-board solid-state hard drive or to any USB storage device.
5. Recorded cue lists may be played back simultaneously on a maximum of 200 faders. Channels shall respond to cue information by last instruction with discrete rate control provided for all cues. The console may be placed in Tracking or Cue Only mode by the user as a system default and overridden on individual record actions as required. HTP/LTP intensity flags, assert, proportional, intensity master or manual master fade control. Priority and Background Priority may be placed on each cue list. It shall also be possible for a cue list to contribute to playback background states or to withhold such contributions.
6. A Master Playback fader pair shall be provided. The 100mm fader pair may execute crossfades or all-fades, with IFCB cue level timing,
7. 20 45mm faders shall be user configurable across 100 pages and provide additional playback faders (up to 200), additive or inhibitive submasters (up to 999), and grand master control. Associated displays provide content identification. Presets and IFCB palettes may be loaded to faders for playback control, either individually or in user-defined lists. Virtual fader control is also provided.

8. A high-resolution level wheel shall be provided to control intensity for selected channels and scrolling within selected displays. Four pageable encoders shall be provided for control of non-intensity parameters. Non-intensity encoders toggle between coarse and fine control. The expand function for frame table devices shall provide a graphic representation of all images and colours in the associated device for instant selection. A graphic shutter representation shall provide additional control of shutter parameters. The display shall also provide an indication of the current value for the associated parameter, based on channel selection. A high-resolution rate wheel, which may also be used for fader paging shall be provided.
9. Control surface buttons shall be backlit. This backlighting provides indication of functional states. Backlight intensity shall be user controllable, and shall automatically dim after a defined period of inactivity.
10. Control and programming features for automated fixtures shall also include: a standard library of fixture profiles, the ability to copy and edit existing profiles and create new profiles, patch displays including channel and output addressing, 16-bit fade resolution, colour characterization allowing colour mixing in up to six different colour spaces.
11. System information, including playback status, live output and blind values for all record targets shall be displayed on a maximum of two external high resolution monitors, which may also be multi-touch touch-screens. Every display shall support three user-definable workspaces. Each of these workspaces shall provide individually configured frames, with size/scaling controls. Any Windows 7 compatible display may be used.
12. A context sensitive on-line Help feature shall explain and provide an example of the operation of each feature of the system. This help system shall be integrated into the on-board user manual via hyperlinks.
13. A fully integrated Virtual Media Server feature shall allow user to map images and animations to a rig array. 40 such maps may be created, each with 12 layers. System that rely on external hardware or software for this functionality shall not be acceptable.
14. User-definable, interactive displays may be created. These displays, which can be used in live and blind operating modes, allow graphical layout of channels, desk buttons and programming tools. Standard symbols are provided, and the user may import their own symbols or graphics. Each symbol may be individually defined with data feedback characteristics. Non-interactive status information, such as a mirror of other user's command lines, may also be included in the display. A graphical browser is provided for fast selection of these views. Multiple zoom factors and placements may be stored and recalled for each display.
15. A detachable alphanumeric keyboard shall be provided. The keyboard shall allow labelling of all show content. An integrated virtual alphanumeric keyboard shall also be provided.

16. Console software upgrades shall be made by the user via flash drive. It shall be possible to install software updates in all consoles, processor units and remotes from one device over the network.
17. The console operating software shall be loaded into program execution memory from the internal hard drive when the console is powered. In the event of an uncontrolled shutdown, the console shall return to its last output state when power is restored. Devices requiring a UPS to provide such protections shall not be acceptable.
18. Integrated dimmer monitoring features shall be provided (in conjunction with ETC's Sensor+, Sensor 3 or FDX dimming systems) to allow indication of dimming system status, error states and dimmer load monitoring. Adjustment of dimmer configuration from the console shall also be supported. Communications with the dimming system shall utilize ANSI E1.17 2006 - Entertainment Technology - Architecture for Control Networks.
19. Integrated RDM device features shall be provided. The console shall discover and patch RDM devices. The console shall monitor RDM devices to allow indication of RDM device online/offline status error states. The console shall be capable of changing settings of RDM devices such as the DMX start address. Communications with the RDM devices shall utilize ANSI E1.20 2006 – Remote Device Management.
20. Network configuration tools shall be provided from within the desk.
21. Show data may be created and modified on a personal computer, using either Windows 7 or higher or a Macintosh platform running OS 10.11 or later via a free offline editing application. The program shall run natively on Apple operating systems. Applications requiring PC emulation programs shall not be acceptable.
22. A PC, using either Windows 7 (or higher), or a Macintosh running OS 10.11 (or later) using the offline software application shall be able to connect to a control system via the network and view or modify current show data in an independent display environment, using an ETCnomad key. When connected without the key, the computer shall operate in Mirror Mode, with the device to be mirrored selectable by the user.
23. Synchronized backup shall be provided via another full console on the network, an ETCnomad/Puck, or by use of a remote processor unit. The backup console/RPU shall maintain synchronized playback with the master and shall take over control of the lighting system upon loss of communication with the master. Use of two RPUs to service and backup system output is also supported.
24. A maximum of 99 users may access and interact with show data simultaneously. Each user shall have an individual workspace. User identification may be assigned to more than one control device, allowing users to work in tandem, or allowing a designer/ALD to mirror the current display format, mode and command line of the associated programmer. Partitioned control allows discrete control of channel/parameter groupings by user. Partitioned control may be easily enabled and disabled with no need to merge show data from multiple users.

25. The system shall support up to 32 individual simultaneous Time Code inputs or Event lists using Show Control Gateways.
26. Systems that do not provide the above capabilities shall not be acceptable.

B. Controls and Playback

1.1 Manual Control and Programming Section

- a. The console keyboard shall be grouped by function. Major groupings shall be record target functions, numeric keys, level assignment functions, display navigation functions and controls, as well as non-intensity parameter controls.
- b. The command keypad shall be fully interactive with direct selects and other virtual controls, which provide “one touch” selection of channels, groups, palettes, presets, effects, snapshots and macros.
- c. Non-intensity parameters may be set numerically via an extensible keypad. This control shall be fully interactive with the moving light encoder controls and the virtual controls. The controls shall also access available modes for each parameter type, min and max values for each parameter as applicable, as well as home position on a parameter basis. Each encoder shall support shift functions for fine control. The range of motion of coarse control may be set by the user. Tactile feedback shall indicate full and half frame positioning of certain controls.
- d. Only those parameters available for control in the active lighting system shall be displayed for control. Displays shall condense or lowlight parameters not available to selected channels. Alternatively, the encoders may be placed in a state allowing parameters not applicable to the current selection to be suppressed.
- e. Lamp controls provide direct access to luminaire functions such as striking and dousing arc lamps and calibrating entire fixtures or individual mechanisms of fixtures, as provided by the luminaire manufacturer. User access to these features is normalized across all manufacturers for ease of use. Use of a “control channel” for accessing these functions shall not be required and systems requiring use of control channels for these functions shall not be acceptable.
- f. Fan functions shall be provided both via command line operation and through encoder controls.
- g. Highlight shall be supported, with user definable highlight values. Lowlight conditions may be defined for selected, but not specified channels. Rem Dim commands, at specific levels by channel, may be optionally and automatically called with the highlight command.

- h. Advanced colour control functions provide colour mixing in any of six different colour spaces. Gel matches are provided via gel picker or by command line control. Tinting tools allow adjusting the colour mix irrespective of the native mixing system. Spectrum tools support adjusting the output of additive colour systems with more than three emitter types, allowing the X/Y coordinate to be held while adjusting the recipe that achieves that mix. Colour Path tools allow the user to control the live fade of fixtures through the colour space.
 - i. The Virtual Media Server function shall allow the user to create layouts of devices, identified as pixel maps. Media content (images, movies, text and procedurally generated effects) may then be applied, manipulated and stored. Stock content is provided and the user may import his own imagery and animations.
 - j. Macros may be set to run as default. Default macros called manually shall post to the command line, but executed via cue lists shall run in the background. The user may override this behaviour by defining the macro to always execute in the foreground or background, regardless of the recall method. Start-up, Shutdown and Disconnect macros may also be defined.
2. Playback Section
- a. The playback faders shall consist of a 100mm Master Fader pair and 20 45mm additional pageable playbacks. Additional playbacks may be defined via external wings and/or virtual controls.
 - b. Up to 200 cue playback faders may be defined on the fader array. Each playback shall have an associated potentiometer and definable buttons.
 - c. Faders may be grouped for playback, with sliders and button action defined by the user.
 - d. It shall be possible to instantaneously halt an active cue, back to the previous cue, manually override the intensity fade or manually override the entire fade.
 - e. It shall be possible for a cue list to contribute to the background state or for the contents of each cue list to be withheld from such. Background and background priority states may be established.
 - f. Playback faders shall have the following associated controls:
 - 1) Freeze, which halts the output of the fader
 - 2) Stop Effect, which stops the action of an effect
 - 3) Filter, to assign filter states to a fader
 - 4) Go To Cue 0, to reset a cue list
 - 5) Off, to turn off the contents of a playback, releasing control to the background state or to set to null.
 - 6) Assert, to replay an active cue
 - 7) Release, to release control to the background and reset the cue list.
 - 8) Timing disable, channel filters, parameter filters, priority and background priority status may also be defined.

- 9) The potentiometer shall be configurable as a proportional master, an intensity master, or manual master. Support for rate, effect rate, effect size and Master Only controls is also provided. Filtered manual timing masters may be configured.
- 10) Rate override and fader paging are supported with a wheel encoder and associated controls.

3. Submasters

- a. Up to 999 proportional, fully overlapping additive or inhibitive submasters may be defined. Submasters shall have coloured LEDs to indicate submaster status. Each submaster may have fade up, dwell and down fade times. Submasters may be set to priority and background priority status.
- b. Submasters may be set to HTP or LTP intensity. Non-intensity parameters on submasters shall be LTP only.
- c. Exclusive mode for a submaster shall prohibit the live contribution of that submaster from storing to cues or other submasters. Shield mode prohibits access of associated channels from any other playback or manual control operations.
- d. A submaster potentiometer may be defined as proportional, master only or intensity master. When set as an intensity master, a mark and unmark feature is supplied.
- e. The submaster blind buffer shall be linked directly to live playback.
- f. It shall be possible to set submaster values directly from the command line.
- g. Submasters may be set to fade to background or to minimum value when the fader is returned toward zero.
- h. Submaster values may contribute to the background state or withheld from such.

4. Grand Master Faders

- a. The location of the Grand Master shall be user definable. The grand master shall have associated blackout and blackout enable buttons.
- b. Blackout shall send all associated intensity outputs to zero. Non-intensity outputs shall not be affected. It shall be possible to exclude channels from Grand Master control.

C. Display Controls

1. Format shall change the view of selected displays.
2. It shall be possible to choose which parameter categories or parameters the user wishes to display.
3. Flexichannel modes shall change which channels are viewed in selected displays, as follows:
 - a. No modes

- b. Masters only/cells only
 - c. Use Partitions
 4. Flexichannel states shall change which channels are viewed in selected displays, modified by the modes, as follows:
 - a. All channels
 - b. Patched channels
 - c. Show channels
 - d. Active/Moved channels
 - e. Selected channels
 - f. Manual Channels
 - g. View channels (user identified list)
 - h. Channels with discrete timing
 5. Expand shall extend the selected view sequentially across connected displays.
 6. [Time] depressed shall display discrete timing data. [Data] suppressed shall display absolute values of referenced data. These functions may be latched.
 7. Displays may also be toggled to show stored data currently manually overridden, the source of the current parameter data, output level, patch assignment, part structure and referenced marking data.
 8. Playback status displays are provided with a variety of different formats. Indications are provided per cue for live moves (lights fading from zero and also moving non-intensity parameters) and dark moves (inactive lights which have stored non-intensity parameter moves).
 9. Display content including which of the workspaces is in focus on any of the three monitors and what views are docked in those workspaces may be instantly recalled using snapshots.
- D. Operating Modes
 1. Live Mode
 - a. Channel lists may be constructed using the +, -, and Thru keys as well as the direct selects. Channel selection and deselection is fully interactive, regardless of the method used.
 - b. Levels may also be set with the keypad, level wheel and non-intensity encoders. "Selected" channels shall be those last addressed and under keypad control. Controls are provided for single button access to the last selected channel list, all channels with manual levels and all active channels.
 - c. Channels may be set at a user defined default level using the Level key. +% and -% keys adjust channels quickly by user definable values.

- d. Channels and/or channel parameters may be captured. Capture mode shall allow the user to selectively capture channel data at specific levels. Captured data shall be indicated on the Live display.
- e. Sneak shall be used to restore specified channels to background states, default values, or to send them to specified values, in user specified times.
- f. Selected channels may be set at a level or held to current values while all other channels are set to zero using Rem Dim. Toggling Rem Dim shall restore all unselected channels to original levels. The Rem Dim level shall be user definable via the command line or with a default setup value.
- g. Channels may be recorded into groups for fast recall of commonly used channels. 1000 groups shall be available. Groups shall store selection order. The Offset function supports rapid creation of ordered groups, including reverse and random order.
- h. Parameter settings may be stored to Intensity, Focus, Color and Beam Palettes and to Presets. All referenced data may be stored to whole numbers or to up to 99 decimal places between each whole number.
- i. The following conditions may be placed on a channel or channel parameter to be included with a cue record action.
 - 1) Discrete fade time and/or delay
 - 2) Block flag
 - 3) Assert flag
 - 4) IFCB Filters, which may be set at a parameter level.
 - 5) Release and Restore
- j. 999 cue lists may be stored. Cues may be recorded in any order. Up to 99 decimal cues may be inserted between any two whole number cues. Each cue may contain a maximum of twenty parts.
- k. It shall be possible to record cues and cue parts with the following information:
 - 1) Any collection of channel data, as determined by the use of "Record", "Record Only" or selective store commands, combined with parameter filters.
 - 2) Cue Level timing and delays for Intensity Up, Intensity Down, Focus, Colour and Beam.
 - 3) Follow or hang time
 - 4) Link instruction
 - 5) Loop value
 - 6) Block, Assert, Preheat, and/or Mark Flag
 - 7) Curve
 - 8) Allfade
 - 9) Label and note
 - 10) Execute list to trigger other activity

- l. Non-intensity channel parameters may be marked (preset), in two ways. Automark presets any parameters transitions in the cue just prior to intensity becoming active. Automark may be disabled on a cue or cue part basis, enabling a "live" move. Alternatively, non-intensity parameters may be marked to a specific cue with a single command instruction. It shall not be necessary to store these parameters directly into the cue in which the movement is to occur.
- m. Any channel parameter may be stored with an effect instruction. These effects may contain relative offsets from current value, or absolute instructions. Effects may be progressive action or on/off states. Entry and exit behaviours shall modify the channel parameters activity when beginning and ending the effect.
- n. Update may be used to selectively add modified parameter data quickly to that parameter's current source. Update may be specified to modify referenced data content or break the link to that content. A dialogue informs the user of the content that will be updated. A trace command may be used to modify the data to the original source of its move instruction. It shall be possible to update inactive record targets.
- o. Recall From quickly pulls specified data from record targets or other channels into the current view.
- p. Copy To quickly copies selected data to specified channels or other record targets.
- q. Address and channel check functions shall be provided.
- r. Channel parameters may be "parked" at levels. Those levels are not added to any live record operations, nor may they be changed until the parked element is "un-parked". Scaled park provides real time proportional adjustment of stored intensity values. Address Park shall also be provided.
- s. About shall provide detailed status of selected channels or specified record targets. This shall include current source, current value, discrete timing, parked value, marked to and for indications. Background levels and current DMX output are also displayed. Channel usage indicates submaster and cue information and also provide a "dark moves" report on a per channel basis.
- t. 1000 snapshots may be stored which instantly recall specified front panel and display configurations.
- u. Live data may be displayed in a summary view or detailed table orientation.
- v. Query shall allow selection of channels by their current or possible state. Keywords and fixture types shall allow quick access to fixtures.
- w. User definable home positions, on a per channel basis, may be defined.
- x. Channel level offset commands provide channel ordering and sub-grouping functions.

- y. Undo shall be used to sequentially step back through manual operations or to undo record and delete actions. It shall be possible to undo multiple commands in one action.
2. Blind
- a. The Blind display allows viewing and modification of all record targets without affecting stage levels.
 - b. Record target data may be displayed in a summary view, a detailed table orientation or a spreadsheet view, which allows quick data comparisons, move and replace functions.
 - c. Changes to blind data shall be automatically stored. Range selection of both record targets and channels shall be supported.
3. Patch Display
- a. Patch shall be used to display and modify the system control channels with their associated library data.
 - b. Each channel may be provided with a proportional patch level, curve, label, swap and invert functions, as well as keywords to service Query.
 - c. Offset functions in patch shall allow selection of channel ranges and shall allow the user to establish a "custom" footprint for any device output.
 - d. Custom colour wheels, colour scrolls and gobo wheels shall be defined in patch. These devices shall be created with a simple table and graphical user interface supported by images of major manufacturers.
 - e. RDM discovery and device monitoring shall be supported.
 - f. Copy to and Move functions shall be supported in patch.
4. Setup/Browser
- a. Setup shall access system, user and device configurations.
 - b. It shall be possible to partially import Eos show files. Users shall be able to select as much or as little of the show file as required, with renumber tools.
 - c. It shall be possible to import ASCII and Lightwright data files. It shall be possible to export as ASCII or .csv.
 - d. Setup shall also access show data storage, import, export, print to .pdf and clear functions, as well as show data utilities.
 - e. The system shall support programming and playback of real time clock events, including cue, submaster and macro execution at specific times of specified days or at a time based on astronomical events.
 - f. A control screen shall be provided for network configuration, selecting date/time, software update controls, selecting functional language and/or keyboard for labelling option, as well as other system level tools.

- g. Available languages for prompts, advisories and help messages shall include English, Bulgarian, German, Spanish, French, Italian, Japanese, Korean, Russian, Chinese, simplified and Chinese, traditional.
- h. Supported keyboards shall include American, United Kingdom, French, German, Italian, Korean, Norwegian, Russian, Slovakian, Turkish, Swiss, Swedish, Finnish and Bulgarian.

E. Dimmer Monitoring and Configuration

- 1. The lighting control system shall provide communication with an ETC Sensor+, Sensor3 or FDX dimming system for remote monitoring and configuration of show specific functions from within the software application.
- 2. Circuit level configuration and monitoring functions shall include but not be limited to:
 - a. Control mode (dimnable, switched, latch-lock, always on, off or fluorescent).
 - b. Curves
 - c. Control threshold
 - d. Min and Max Scale Voltage
 - e. Preheat
 - f. Scale load
- 3. Rack status messages shall include but not be limited to:
 - a. State of UL924 panic closure
 - b. DMX port error/failure
 - c. Network error/failure
 - d. A, B, C Phase below 90 or above 139 volts and headroom warning
 - e. Ambient temperatures out of range
- 4. Circuit status shall include but not be limited to:
 - a. Module type and location
 - b. Output level
 - c. Control Source
 - d. Over-temperature
- 5. Advanced circuit feedback shall include but not be limited to:
 - a. Load higher or lower than recorded value
 - b. DC detected on output
 - c. SCR failed on/off
 - d. Breaker trip
 - e. Module has been removed

- f. Load failure
- g. Shutdown due to over-temperature

F. Interface Options

- 1. The console shall support a variety of local interfaces.
 - a. AC input
 - b. USB (five ports for items such as alpha-numeric keyboard, mouse, touch screens, USB Flash drive)
 - c. Ethernet (two ports)
 - d. Two Display Port output connectors, supporting Windows 7 compliant monitors as 1280x1024 resolution minimum. Touchscreen/multi-touch support of any/all of these monitors is provided.
 - e. Contact Closure trigger via D-Sub connector
 - f. 4 DMX/RDM ports
 - g. Alternative Contact Closure trigger through Gateway
 - h. OSC Transmit/Receive
 - i. MIDI In/Out, MSC and MIDI Notes through Gateway
 - j. SMPTE Timecode through Gateway

G. Accessories

- 1. ETCpad (ETC Portable Access Device)
- 2. iRFR and iRFR Preview (applications for iPhone, iPod Touch and iPad units)
- 3. aRFR (application for Android devices)
- 4. Net3 Remote Video Interface 3
- 5. 20 Fader or 40 Fader non-motorized fader wings
- 6. 10 Fader or 20 Fader motorized fader wings
- 7. Gateways
 - a. Net3/ETCNet 2 to DMX/RDM Gateways (one to four ports)
 - b. MIDI/SMPTE Gateway
 - c. I/O Gateway with 12 analogue inputs, 12 SPDT contact outputs, RS-232 interface

H. Physical

1. All operator controls and console electronics for a standard system shall be housed in a single desktop console, 762mm wide, 381mm deep, 114mm high, weighing 7.5 kg. Console power shall be 90 – 240V AC at 50 or 60Hz, supplied via a detachable locking power cord.

3.11 LIGHTING FIXTURES & INSTALLATION INFORMATION

- A. Refer to fixture schedule bill of materials on drawings.
- B. All fixtures shall be supplied with all appropriate mounting hardware and safety cable.
- C. TSI to provide additional portable power and data control cables needed to properly complete the hang & focus.
- D. TSI Shall provide fixtures listed for project scope. TSI shall unbox, prep, hang, and focus all theatrical portable style fixtures.
 1. Vertical Access (ladders/genie lifts/scaffolding to Overhead Lighting Positions to be provided by EC at direction of TSI.
- E. TSI shall provide PDF light plot showing placement of each fixture, unit number, console control channel, DMX Address and Control Mode of each fixture. TSI shall provide Channel Hookup, Fixture Schedule, and Light Plot for focus crew.

3.12 STAGE CURTAINS AND TRACKS

- A. Onstage Curtains:
 1. Description and Sizes: As shown on drawings.
 2. Main Curtain & Main Valance to be taken down and turned over to school for rehang by ETCP Certified riggers after construction is completed.
 3. Fabric Types:
 - a. Fabrics: 25 oz. Charisma Velour, 100 percent polyester IFR velour, KM Fabrics, color – TBD by Architect.
 - b. Fabric: 22 oz. Encore Velour, 100 percent polyester IFR velour, Rose Brand, color - black
 - c. Fabric: PD Cloth, 100 percent polyester IFR velour, Rose Brand, color - black. Lining for Main Valance & Main Curtain.
 - d. Fabric: Seamless Trevira Muslin, 100 percent polyester IFR, color - white.
 4. Flame Resistance:
 - a. All Polyester fabrics are woven from fibers that are inherently flame retardant for the life of the fabric. These curtains never need to be re-treated for flame retardancy.

- b. A Certificate of Flame Resistance is to be provided for each fabric supplied. The certificates shall be issued by the fabric manufacturer or converter. Certificates issued by the supplier or fabricator are not acceptable.
 - c. Each curtain is to be labeled with a permanent tag giving the flame retardancy information and providing a suggested date for testing, if applicable.
5. Fabrication:
- a. General: Curtains are to be fabricated in the sizes and fabrics shown in the curtain schedule. Curtains are to be stitched with thread matching the color of the curtain using a single needle lock stitched. No less than full widths of fabric are to be used in leg curtains. All fabrics with a grain or pile shall have all strips running in the same direction.
 - b. Fullness: Fullness as listed in the Drapery Schedule is to be in addition to allowances for seams, side hems and turn backs.
 - c. Pleats: Where fullness is indicated in the Drapery Schedule, pleats shall be box type on 12 inch (305 mm) centers. Valances and borders are to have their pleats arranged to conceal the seams.
 - d. Top Finish: 3-1/2 inch (89 mm) jute webbing or 3 inch (76 mm) Poly webbing shall be double stitched to the top of the curtain with 2 inch (50.8 mm) of face fabric turned under the webbing. Brass rustproof grommets shall be inserted in pleat centers (12 inch (305 mm)) centers on flat curtains.
 - e. Track-mounted curtains shall be supplied with plated wire S-hooks or carrier snap hooks. Batten-mounted curtains are to be supplied with 3/8 inch (9.5 mm) braided #4 cotton tie lines. Tie lines shall be black or white to best match the curtains with the center line in an alternate color to aid in hanging curtains.
 - f. Bottom Hems:
 - 1) Valances and borders shall have 4 inch (102 mm) weighted bottom hems.
 - 2) All full height curtains shall have 6 inch (152 mm) bottom hems complete with separate interior pockets filled with weighted steel ribbon weights. Pockets shall be stitched so that the weights ride 2 inch (51 mm) above the finished bottom edge of the curtain.
 - 3) Cycloramas shall have a pipe pocket with slits every 10', and shall be furnished with a 3/4 inch (19 mm) pipe batten, threaded and coupled every 10 feet-0 inch (305 mm).
 - g. Side Hems:
 - 1) All lined traveler curtains shall have 1/2 width of face fabric turned back at the leading edge.
 - 2) All other side hems shall be 2 inch (51 mm).
 - h. Lining: Lining, shall conform to the following requirements.
 - 1) Lining shall be in the same fullness as face fabric.
 - 2) Lining shall finish 2 inch (51 mm) shorter than face fabric.

- 3) Lining shall be attached to the face fabric along the sides and bottom hems with 2" Hook & Loop Velcro.

B. Tracks:

1. 280 Heavy Duty Curtain Track
 - a. Track shall be of 14 ga (1.980 mm) galvanized construction, entirely enclosed except for the slot in the bottom. Each section of track less than 20 ft (6,096 mm) shall be in one continuous piece. Splice clamps shall be permitted for section lengths over 20 ft (6,096 mm).
 - b. Carriers shall be constructed of nylon, supported from two heavy-duty polyethylene wheels held in the ball bearing by a nickel-plated steel rivet. Each carrier shall be equipped with a free-moving swivel and sufficient trim chain to accommodate a curtain S-hook. Each carrier shall have a back-pack. Rubber washers shall be provided between each back-pack and carrier to reduce noise.
 - c. The Master Carrier block shall be constructed of plated steel having two cable clips to clamp the cord to the carrier. Four wheels in pairs identical to the single carrier above shall support the block.
 - d. Live and dead end pulleys shall be adjustable, equipped with oil-impregnated sleeve bearing wheels on adequately guarded plated steel housings. End stops at each track end and one adjustable, demountable floor pulley shall be furnished. Stretch-resistant, fiberglass center operating cord shall be 3/8 inch (9.5 mm) in diameter.
 - e. Track shall be rigged for bi-parting operation with a 36 inch (914.4 mm) center overlap. Hanging clamps shall be provided for suspension at 6 ft (1,829 mm) foot maximum intervals.

3.13 DEAD HUNG RIGGING

A. Schd. 40 Fixed Pipe Batten:

1. All battens shall be 1-1/2 inches (38.1 mm) nominal diameter, schedule 40 and 80 pipe in lengths as indicated on drawings. All pipes to be powder coated black.
2. All joints shall be spliced with 18 inches (457.2 mm) long sleeves with 9 inches (228.6 mm) extending into each pipe and held by two 3/8 inch (9.5 mm) hex bolts and lock nuts on each side of the joint.
3. The batten shall be hung from the overhead steel structure on eight-foot maximum centers using grade 30 Proof Coil chain, adjustable beam clamps, and with a 1/4 inch (6.4 mm) forged screw pin shackle. All shackles to be moused.

4. Trim chains shall be grade 30 Proof Coil chain at 36 inches (914.4 mm) long, made of 1/4 inch (6.4 mm) plated. Chains shall be wrapped one and one half turns around the batten and attached back to the chain at the end of the lift line with a 1/4 inch (6.4 mm) screw pin forged shackle. Adjustment is made by connecting the shackle into a link along the return side of the chain. All shackles to be moused.

3.14 FRONT OF HOUSE TORMENTORS

- A. All pipe shall be Schedule 40, 1½" Black Pipe (1.9" O.D.) fully cleaned and painted black. Pipe wall thickness shall be uniform, and exhibit concentricity. Pipe shall be free from any defects that may compromise its structural integrity. Sizes of tormentor(s) indicated in drawings.
- B. All pipe legs shall be Schedule 40, 1½" Black Pipe (1.9" O.D.) fully cleaned and painted black. Pipe wall thickness shall be uniform, and exhibit concentricity. Pipe shall be free from any defects that may compromise its structural integrity. Pipe legs to be welded to properly sized steel plates. Steel plates to contain pre-punctured holes for mechanical or chemical anchoring installation.
- C. Welding tormentor pipes into place to building steel is required and by Rigging Installer.
- D. Threaded pipe, speed rail, coupled fittings, and speed rail fittings will not be accepted.

3.15 RIGGING COMPACT SELF-CLIMBING HOISTS

- A. General:
- B. Basis of Design: Prodigy FlyPipe. 20 fpm (0.1m per sec) as manufactured by ETC.
 1. Hoists: Self-climbing. Supported Travel: 50 ft (15.24 m). Hoists not self-climbing are not acceptable.
 2. Standards Compliance: UL Listed and tested as a complete system made up of UL listed components.
 3. Dual 1/8 inch (3 mm) Wire Rope Lift Line Sets: Design factor of 10:1. Ultimate Combined Strength: 4200 lb (1905 kg).
 4. Support a 500 lb (227 kg) live load suspended from hoist as follows:
 - a. FlyPipe Drive Section (HxWxL): 26.25 x 14 x 132.5 inches (668 x 356 x 3365 mm). Weight: 140 lb (63 kg).
 - b. FlyPipe End Section (HxWxL): 12 x 5.5 x 85.5 inches (305 x 140 x 2172 mm). Weight: 40 lb (18 kg).
 - c. FlyPipe Span Section (HxWxL): 12 x 5.5 x 120 inches (305 x 140 x 3048 mm). Weight: 60 lb (27 kg).
 5. Aluminum Strut-Compatible Channel: Integrated into bottom of FlyPipe sections. Channel supports point loads up to 250 lb (113 kg).

- a. Hoists not supporting direct connections of stage equipment or lighting fixtures are not acceptable.
6. Major Components:
 - a. Motor section.
 - b. Span sections; if required.
 - c. End section.
 - d. Lift Lines: A set of TwinLines (dual 1/8 inch (3 mm) GAC lift lines) per section.
 - e. Clamps: One TwinLine Clamp per TwinLine set.
7. Powerhead Enclosure: Fully enclosed, powder coated sheet metal preventing contact with moving and electrical parts. Protects against dirt, dust, and debris.
 - a. Powerhead Components: Gear motor, motor brake, limit switches, control electronics, emergency contactor, position sensor slack line detector, and information storage
 - b. Local User Interface:
 - 1) Hoist up/down control.
 - 2) Limit switch override buttons; tool accessible.
 - 3) Address switches.
 - 4) Status LEDs.
8. Gearmotor and Motor Brake: An integral unit from a single manufacturer.
 - a. Operating Voltage: 208 or 480 Volt 60 Hz 3 Phase.
 - b. Motor Brake: Capable of holding 125 percent of motor full load torque.
 - 1) Spring Actuated: To apply and hold braking force.
 - 2) Magnetically released and held open upon actuation.
9. Limit Switch: Mounted in drive section for hard "normal" and "ultimate" end of travel limits.
 - a. Hard End of Travel Limits: Set and adjusted at time of installation. Installation: Aided by indicator light on Powerhead enclosure panel. Any system where limit is set only by audible or tactile means is not acceptable.
10. Position Sensor System: Built into drive section. An encoder sensor providing accurate position information for each batten at power-up of system, and continually throughout normal operation. Hoisting systems requiring re-homing are not acceptable.
11. Slack Line Detector: Built into Powerhead enclosure. When a slack line condition in excess of 24 inches (610 mm) develops in a lift line, the detector removes power from the hoist. Hoist is allowed to move in the upward direction to allow removal of the slack line fault cause.
12. Information Storage: Within Powerhead.

- a. Record of severe fault conditions with date and time stamp.
 - b. Record of E-stops, overloads, moves and power cycles.
 - c. Record of travel distance since installation and inspection.
13. Over Speed Load Arrest Brake: When an over speed mechanism detects a runaway condition, it trigger a load arresting device to stop the load.
- a. Brake noise shall not be audible at any time in operational cycle of hoist.
 - b. Normal hoist operation must not be limited by load brake heat or noise.
14. Wire Rope Cable Drum: Each drive, span, and end section contain one drum.
- a. Each Drum: Accommodate two, 1/8 inch (3 mm) diameter 7x19 galvanized aircraft utility wire rope lift lines up to 50 ft (15.24 m) long in a compact manner on cable drum.
 - b. Drum Design: Prevent wire rope pairs from tangling or crossing over.
15. Hoist Power and Control Cables: Each drive section requires a power cord and Cat 5e or better connection between receptacles mounted in hoist and hoist power and communication distribution (PCD) equipment by ETC.
- a. PCD Equipment: Must have barrier between high and low voltage components.
 - b. Strain relief at drive section must be provided.
 - c. Breaker: 20 amp 3-phase located in the PCD.
16. Cable Management for Hoist Power and Control: Supplied motor power and control wiring is fed to motor control enclosure by multi-conductor SO cable and Cat 5e or better cable. Each cable is to be held in place at enclosure by a dedicated strain relief assembly.
- a. Helix. See "Cable Management" article in this specification.
 - b. Traditional Cable Management. See "Cable Management" article in this specification.
17. Power and Data Distribution: Hoist and hoist cable management system allows attachment of dedicated circuit and data distribution equipment, UL listed for this application. All cables to be UL Listed.
18. Cable Management System for Electrics: Helix.
- C. Cable Management System for Electrics: Helix.
1. Load Circuits and Data Wiring: Fed to power distribution equipment by UL listed helix cable management system.
 2. Helix allows feeder cable and data wiring to stack and store without imposing a direct physical load on connector strip.

3. A series of steel ribs connected to each other with nylon straps allowing entire distance of travel required by batten; up to 75 ft (22.86 m).
 - a. Nylon Straps: Attach directly to building structure.
 - b. At bottom, helix attaches to a steel plate in a manner imposing no additional physical load on power distribution equipment.
4. Helix must support two pairs of cables.
 - a. One hoist power and data pair. Factory-installed connectors at each end.
 - b. One distribution power and data pair which are unterminated.
 - 1) Distribution Power Cable: Support three or six 20 A circuits. Circuits may be 120 V, 208 V, or a combination of the two.
 - 2) Data Distribution Cable: Single Cat 5e. Transmit DMX or Ethernet.
 - c. Hoist and Distribution Power Cables: Multi-conductor SO cables.
 - d. SO and Data Cables: Secured with a dedicated strain relief assembly.
 - e. Support each pair on opposite ends of each steel rib, managing cables within required NEC bending radii.
 - f. Ribs: Stack and separate as batten is lowered or raised and do not impede movement of line set.
 - g. Cables must never heat in excess of rated temperature maximum of cable when all circuits are loaded at maximum electrical capacity.
 - h. Circuit and Data Terminations between Helix and Distribution Equipment: Performed in the field.

3.16 RIGGING HOISTS WITH COMPRESSION TUBE

A. General

1. Hoists shall be purpose-designed and fabricated for overhead lifting of theatre lights, equipment, curtains and scenic elements, whether used on stage, in the auditorium or other places of public assembly where people shall move beneath the suspended or moving load. The systems shall incorporate mechanical, electrical and safety features that shall be inherent to this equipment; they shall provide an engineered, efficient device for overhead lifting. The mechanical, electrical and safety features of this hoisting and control system shall establish the standard of quality, performance and safety by which hoisting systems of other manufacture shall be evaluated.
2. Each hoist shall be fully tested under full rated load throughout its full travel distance with all its lift lines terminated to the hoist before the hoist is shipped from the manufacturer. Only hoists that successfully pass the following pre-shipment testing shall be sent to any job site. Hoists that are not tested as a complete system with the wire rope and loft blocks that will install with the hoist in the field shall not be acceptable. Testing shall include:

- a. Hoist operation
 - b. Hoist/motor speed
 - c. Lift line terminations under load
 - d. Braking and stopping under load
 - e. Load cell functions
 - f. Slack line detection
 - g. Position sensing
 - h. Hoist noise
3. A record of testing and its results shall be available for review at the manufacturer's facility.
 4. A copy of all testing results must be furnished by the installing contractor to the architect or owner representative at the time of system commissioning. Manufacturers who cannot provide testing results shall not be acceptable.
 5. Paint as required under this section shall be the manufacturer's standard finish and color except as noted.
 6. All equipment items shall be new and conform to applicable provisions of Underwriters' Laboratories (UL), American Standards Association (ASA), American National Standards Institute (ANSI), National Fire Protection Association (NFPA) Life Safety Code 01, National Electric Code (NEC) and PLASA.
 - a. Where acceptable equipment items are specified by catalog number only, device shall meet all published manufacturer's specifications. Where quantities or sizes are not given, refer to drawings. Where two or more products are listed, contractor may use either, at his discretion. Equipment shall not be substituted without specific written approval by the Architect under the substitution paragraphs of these specifications.
 - b. All pipe battens shall be fabricated from 1.5" Schedule 40 pipe.
 - c. All turnbuckles and cable clips shall be drop forged.
 - d. All turnbuckles and clips, tracks, chains and other items of incidental hardware shall be furnished plated or painted. Wire rope shall be galvanized. Fasteners, chain, and other miscellaneous hardware shall be either cadmium or zinc plated.
 - e. All materials used in this project shall be new, unused and of the latest design. Refurbished materials are not permitted.
 - f. In order to establish minimum standards of safety, a minimum factor of 10 shall be required for all equipment and hardware used on this project. In addition, the following factors shall be used:

Cables and fittings	10 Design Factor
Cable bending ratio	26 times diameter
Max. fleet angle	2 degrees
Steel	1/5 of yield

Bearings

Two times required load at full for 2000 hours

B. HOISTS

1. Each wire rope lift line shall adhere to a design factor of 10:1 with an ultimate strength of 4200 pounds. All load path components between the building structure and the batten shall exceed the breaking strength of the wire rope. The motor brake shall be rated at least at 125% of the motor torque.
2. Hoists shall be capable of supporting the following loads:
 - a. General purpose 30 fpm 800 pound capacity in standard configuration. Powerhead shall measure 16" high x 16" w x 47 1/2" long and weigh 395 pounds
 - b. Stage Electric 30 fpm 1900 pound capacity in standard configuration. Powerhead shall measure 16" high x 18" w x 53 1/2" long and weigh 580 pounds
3. The standard general purpose hoist shall consist of the following major components: 1) Powerhead, 2) compression tube with beam clamps, loft blocks, lift line and lift line terminations, Right Angle Cable Adjuster (RACA) and 3) pipe batten.
4. The standard stage electric hoist shall consist of the following major components: 1) Powerhead, 2) Compression Tube with beam clamps, cable management system, loft blocks, lift line and lift line terminations Right Angle Cable Adjuster (RACA), 3) pipe batten and power/control distribution strip
5. The hoist shall include the following features:
 - a. A Powerhead containing the following elements: the gear motor, motor brake, load brake, limit switches operating electronics, load cell, slack line detector, absolute position sensors, cable drum assembly, and wire rope.
 - b. A Compression Tube that prevents hoist system lateral forces from transferring to the building. Hoists or hoisting systems that impose a lateral load on the building shall not be acceptable.
 - c. The hoist shall incorporate a built-in load cell.
 - d. The hoist shall incorporate a built-in slack line sensor.
 - e. The hoist shall include the emergency contactor built into the hoist.
 - f. Hoists that do not include built-in load cell, built-in slack line detection, and an emergency contactor shall not be acceptable.
 - g. Hoists that do not use absolute position encoders shall not be acceptable.
6. The hoist shall be manufactured from UL Listed components and shall be UL Listed and tested as a complete system (not just UL listed parts).

C. POWERHEAD

1. The Powerhead shall be a fully enclosed, powder coated sheet metal housing that shall prevent contact with moving and electrical parts and shall provide protection against dirt, dust and debris.
2. Hoist assemblies that do not have metal housings prohibiting access to moving parts shall not be acceptable.
3. For setup and maintenance, the following functions shall be available from the Powerhead: power and operating switches, address setting knobs, limit switch setting knobs, limit switch override button, indicators for power, status and communication. Each of these functions shall be clearly labeled.

D. GEARMOTOR AND MOTOR BRAKE

1. The gear motor and motor brake shall be an integral unit from a single manufacturer. It shall operate on 208 Volt or 480 Volt 60 Hz, 3 phase current for fixed speed units and 480 Volt, 60 Hz, 3 phase current for variable speed hoists.
2. The motor brake shall be integral to the gear motor and shall be capable of holding 125% of the motor full load torque.
3. The motor brake shall be spring actuated to apply and hold braking force.
4. The motor brake shall be magnetically released and held open upon actuation.

E. SOFT START/STOP (OPTIONAL)

1. The hoist shall support an optional motor drive for soft start and stop operation of fixed-speed models:
 - a. The starting speed shall be 4 fpm, accelerating to the maximum hoist speed at a rate of 9 f/s^2
 - b. The alternate drive shall maintain the hoist braking distance during normal operation and when an emergency stop is triggered
 - c. The alternative drive will be configured such that the hoist will not move in the event of an electrical fault in either the variable frequency drive (VFD) or the variable speed drive (VSD)

F. LOAD BRAKE

1. Fixed Speed Hoists
 - a. The rotary disk load brake shall bring the moving load to a complete stop and shall hold the load in position in the event of a mechanical failure of the motor, motor brake or gearbox.
 - b. Noise from the load brake shall be minimally audible at any time in the operational cycle.
 - c. Normal hoist operation shall not be limited by heat or noise caused by the load brake.

- d. The load brake shall be electrically released when the load is moving in the up direction. The load brake shall always be engaged when the load has stopped moving either up or down.

G. WIRE ROPE DRUM

1. The drum shall be capable of wrapping up to eight 3/16" diameter 7 x 19 galvanized aircraft (utility) wire rope lift lines up to 50' long in a compact manner. They shall be managed by a wire rope (cable) keeper integral to the Powerhead. The drum design shall prevent wire rope from tangling or crossing over itself.

H. LIMIT SWITCH

1. A limit switch assembly shall be mounted within the Powerhead for hard "normal" and "ultimate" end of travel limits. Hard end of travel limits shall be set/adjusted at the time of installation aided by an indicator light visible on the bottom panel of the Powerhead cover. Any system that indicates that the limit has been set by audible or tactile means only shall not be acceptable.

I. LOAD SENSOR/LOAD PROFILING.

1. A load sensor shall be built into the Powerhead to create a profile of the actual load on the hoist as it travels through its normal cycle. The profile may be changed by "re-training" the profiling system whenever the suspended load is changed on the batten by activating a key-switch operated training cycle on the motor controller. The load sensor shall continuously monitor the load when load sensing is turned on.

J. POSITION SENSOR

1. A position sensing system shall be built into the Powerhead to provide accurate position information. The system shall consist of two absolute sensor types that provide accurate position information for each batten at power-up of the system. Hoisting systems that require re-homing shall not be acceptable. Incremental encoders shall not be acceptable for position readout purposes.

K. SLACK LINE DETECTOR

1. The slack line detector shall be built into the Powerhead. When a slack line condition in excess of 15" develops in a lift line, the slack line detector shall remove power from the hoist. The batten shall be allowed to move only in the upward direction to allow removal of the cause of the slack line fault.

L. LOCAL USER INTERFACE TO POWERHEAD

1. User interface at the Powerhead control panel at the rear of the hoist shall include:
 - a. Hoist Up/Down Control
 - b. Limit Switch override buttons (tool accessible)

- c. Address switches
- d. Status LED's

M. INFORMATION STORAGE WITHIN POWERHEAD

- 1. Record of severe fault conditions with date and time stamp
- 2. Record of E-stops, overloads, moves and power cycles
- 3. Record of travel distance and peak loads since installation/inspection
- 4. Hoist systems that do not record the above data shall not be acceptable.

N. COMPRESSION TUBE AND BEAM CLAMPS

- 1. The Compression Tube shall be a continuous channel of extruded aluminum engineered in conjunction with the beam clamps to neutralize rigging-generated lateral forces on the building.
- 2. The Compression Tube shall support the system loft blocks.
- 3. Compression Tube sections shall be joined into a continuous assembly by a pair of dedicated splicing plates at each tube joint.
- 4. The Compression Tube shall be installed only by means of dedicated beam clamps that allow the Compression Tube to snap into place and to fractionally move horizontally under load.
- 5. Beam clamps shall be capable of attaching to horizontal beams, joists, truss flanges or flat steel plates measuring from 1/4" thick up to 1" thick and from 4" wide up to 14" wide placed no more than 14'-0" apart. P650E, P800G, P1000E and P1300G Powerheads may be mounted on 1/4" thick x 4" wide or larger steel structures if deemed sufficient by a structural engineer. P1500E, P1900G and V1000S hoists must be mounted on 3/8" x 6" wide or larger steel if deemed sufficient by a structural engineer. Support structures must be deemed sufficient by a structural engineer to support any forces imposed by the hoisting systems. Beam clamps shall accommodate up to 1/2" vertical misalignment.
- 6. Hoist systems that do not neutralize hoist generated lateral forces on the building shall not be accepted for this project.

O. LOFT BLOCKS

- 1. Each loft block shall be an assembly of steel side plates, a wire rope idler, sheave, bearings, shaft locked against rotation and support hardware. Each loft block shall be inserted into the slot on the bottom of the Compression Tube. The blocks shall be positioned no closer than 4'-0" from each other, unless muled.

2. Loft block sheaves shall measure 5" in diameter and contain a pair of press fit sealed ball bearings. Lift lines shall travel in a groove shaped and sized for 3/16" diameter wire rope per the latest edition of the Wire Rope Users' Manual as published by the Wire Rope Technical Board. The loft block sheave shall be concentric about the hub and shall be evenly balanced for ease of rotation.
3. An idler shall be incorporated into the top assembly of the loft block to guide and support lift lines as they pass the block.
4. Hoisting systems requiring the loft blocks to be mounted directly to the facility structure shall not be accepted for this project.

P. LIFT LINE TERMINATIONS

1. Each lift line shall be terminated in the Powerhead via a standard copper oval compression sleeve installed/crimped at the factory.
2. Lift lines shall be terminated at the load hanger with a low profile Right Angle Cable Adjuster (RACA)™, thimble and copper oval compression sleeve. The RACA and cable terminations at the batten shall be installed at the time of hoist installation.
3. Batten trim shall be adjustable up to 6" via the RACA.
4. Systems utilizing turnbuckles or chain to trim the batten shall not be accepted for this installation.

Q. HANGERS

1. Raceway hangers shall be specially shaped flat bar that shall support the wire rope termination hardware and secure the raceway and the pipe batten.

R. Cable Management System for Electrics: Traditional Cable Management.

1. Load Circuits and Data Wiring: Fed to standard stage distribution trough by multi-conductor SO cable supported by Traditional Cable Management systems suspended from one of the Prodigy hoist lift lines. SO Cable: Held in place at distro with a dedicated strain relief assembly.
2. Single or multiple multi-conductor SO cables and multiple Traditional Cable Management systems can be suspended from a single lift line with Cable Cradle so long as Working Load Limit (WLL) of lift line is not exceeded.

S. PIPE BATTEN

1. The pipe batten shall be 1½" schedule 40 grade A, seamless pipe fabricated in the largest possible lengths without splices. Battens of greater length shall be spliced by means of .120 x 1 9/16 dia. DOM tube 18" long with 9" of tube inserted into each half of the splice. The tight fitting splice tube shall be held in place by a pair of 3/8 x 2 ½" grade 5 hex bolts on each side of the joint. The bolts shall pass through the pipe at an angle of 90° to each other. There shall be two bolts on each side of the joint spaced 1" and 8" from the joint. Alternatively, one pair of bolts on one side of the joint may be replaced with either plug welds or tight fitting steel rivets. Pipes shall be straight and painted flat black.
2. A safety-yellow batten cap shall be installed at each end of each pipe batten.
3. The manufacturer shall provide up to four self-adhesive labels for each batten on which the rated batten load shall be written by the installer.

T. POWER AND CONTROL DISTRIBUTION (PCD)

1. Each hoist shall receive power and control via a pair of 8'-0" long cables extending from the Powerhead to the source outlets. Receptacles shall be installed in a sheet metal junction box or trough with outlets. Each outlet shall be located no more than 6'-0" away from the rear face of each hoist.
2. Each Powerhead shall include a power cord hardwired to the hoist with an appropriately sized grounded twist-lock connector at the PCD end and a removable control cable with a circular 9 pin connector at each end. An appropriately rated 3 phase breaker in the PCD is included. The wiring and connectors shall be barriered between high and low voltage.
3. The power/distribution channel shall be UL LISTED for this application.

3.17 RIGGING CONTROLS

- A. Basis of Design: QuickTouch+ Mk2 rigging motor control system manufactured by ETC, Inc.
1. General: For controller.
 - a. Purpose-built to manage and operate motors designed for overhead lifting.
 - b. UL Listed and fabricated from UL Listed components.
 - c. Incorporate mechanical, electrical and safety features inherent to equipment.
 - d. Controller supports up to 12 motors depending on model.
 - e. QuickTouch+ Mk2 Control System: Surface, flush, or rack mounted primary control panel and up to four remote E-stop stations.
 - f. Controller Features:
 - 1) LCD display for feedback and operating information.
 - 2) Key operated power switch.

- 3) Key operated motor load profile training and enable switch.
 - 4) Backlit latching motor selection buttons.
 - 5) Backlit hold-to-operate, dead-man, up and down buttons.
 - 6) Dedicated E-stop button.
 - 7) Connection port for wired remote.
 - 8) Rotary speed adjustment encoder.
 - 9) Recessed speed adjustment slide-pot.
 - 10) Rotary data entry encoder.
 - g. Control System: QuickTouch+ Mk2 controller, power and control distribution, and motors. Separate drive cabinets or motor-starters is not acceptable.
2. Enclosure: Back box and face panel. 16 ga powder coated sheet steel formed to provide support for installation and components installed within housing.
- a. QuickTouch+ Mk2 Face Panel: Steel panel with labels identifying function of buttons on control station.
 - 1) Identify system as QuickTouch+ Mk2 controller for stage rigging.
 - 2) Color: Charcoal with blue highlights. Ring surrounding E-stop button to be safety yellow, and Backlit.
 - b. Steel panel to which switches are mounted to be removable via screws in surface located underneath the face panel film.
3. LCD Screen: Communicates information in readable text. Backlit with configurable intensity level.
4. Motor Selection / Operation Buttons: Backlit when motor is selected.
5. Key Switches:
- a. Power Switch: Controls power to control system. Key must be in lock and key turned to "ON" to operate motoring system.
 - b. Load Profiling Switch:
 - 1) Key must be in lock and turned to "ON" for load profiling to function.
6. Emergency Stop (E-Stop): Hardwired NFPA-79 compliant mushroom head button with illuminated ring surrounding button.
- a. Ring will blink in case of E-stop condition, illumination level is adjustable
 - b. Software or serial bus E-Stop systems are not acceptable.
 - c. Controller to support up to four remote E-stop stations.
7. System Diagnostics and Monitoring:
- a. Automatic Self-Tests.
 - b. System Inspection Reminder.

- c. Faults and Failures.
 - d. System and Individual Motor History.
- 8. Fixed Speed Remote Control Pendant: 50 ft (15.24 m) long attached cable and plug.
- 9. Trim Positions: Store or delete up to five trim positions per motor.
- 10. Speed Control:
 - a. Motor controller to provide a rotary speed adjustment dial.
 - b. Motor controller to provide a recessed speed adjustment slider
- 11. System Commissioning: Capable of commissioning basic system functionality without a laptop computer or additional software.

Part 4. EXECUTION

4.01 INSTALLATION

- A. It shall be the responsibility of the Electrical Contractor to receive and store the necessary materials and equipment for installation of the dimmer system. It is the intent of these specifications and plans to include everything required for proper and complete installation and operation of the dimming system, even though every item may not be specifically mentioned. The contractor shall deliver on a timely basis to other trades any equipment that must be installed during construction.
- B. The Electrical Contractor shall be responsible for field measurements and coordinating physical size of all equipment with the architectural requirements of the spaces into which they are to be installed.
- C. The Electrical Contractor shall be responsible for removal and disposal of all waste materials created by this installation process including but not limited to:
 - 1. Shipping and packaging materials.
 - 2. Items removed from existing system.
- D. The Electrical Contractor shall be responsible for all lifts, ladders, scaffolding and/or other devices required for the complete installation of this system.
- E. The Electrical Contractor shall be responsible for all painting and patching that may be required as a product of this installation process.
- F. The Electrical Contractor shall run all conduit so that it is concealed above hung ceiling, below floors or in walls whenever possible. Any exposed conduit shall be run in an aesthetically pleasing manner and painted to match existing conditions.

- G. The Electrical Contractor shall install all lighting control and dimming equipment in accordance with manufacturer's approved shop drawings. All minimum spacing requirements between 120/208V and various low voltage wire types must be maintained. All installation must be in accordance with National, State and Local codes.
- H. The Electrical Contractor shall be responsible for resolving all Union disputes and jurisdictional issues.
- I. It shall be the responsibility of the Electrical Contractor to provide all bonding, job permits and related fees as applicable.
- J. The Electrical Contractor shall provide a copy of their License to operate as an Electrical Contractor in the state of New York. The Electrical Contractor shall also submit an Insurance Certificate for this project.
- K. The Electrical Contractor shall be responsible for coordinating the installation and configuration of this system with the Theatrical Systems Integrator.
- L. All work shall be performed in accordance with OSHA and local codes.
- M. Any on site welding shall only be performed per current AWS D1.1 standards and with advanced approval from the architect or Owner's representative.
- N. Theatrical lighting fixtures and accessories shall be unboxed, prepped including addressing DMX, hung and focused by:
 - 1. Qualified and professional full crew of stagehands provided by Theatrical System Integrator.
 - 2. The Electrical Contractor
 - 3. Owner's rep along with professional lighting supervisors provided by Theatrical System Integrator.
 - 4. Owner's rep.

4.02 THEATRICAL SYSTEMS INTEGRATOR'S SERVICES

- A. Upon completion of the installation, including testing of load circuits, the contractor shall notify the TSI's Project Manager that the system is available for formal checkout by the dimming system manufacturer.
- B. Notification shall be provided in writing, 21 days prior to the time factory-trained personnel are needed on the job site.
- C. No power is to be applied to the dimming system unless specifically authorized by written instructions from the TSI's Project Manager.
- D. The purchaser shall be liable for any return visits by the factory engineer as a result of incomplete or incorrect wiring.

- E. Upon completion of the formal check-out, the factory engineer shall demonstrate operation and maintenance of the system to the owner's representatives. Training session shall not exceed four working hours. For venues with motorized rigging, the training session shall not exceed eight working hours.
- F. Training session shall not exceed four working hours. Additional training shall be available upon request. Scheduling for training sessions shall be made in writing, 21 days prior to the time factory-trained personnel are needed on the job site.

4.03 RIGGING INSTALLATION

- A. Installation of this equipment shall only be performed by an ETCP recognized rigging company or an authorized representative or dealer of the approved manufacturer. The contractor shall have been installing stage rigging systems for a period of five years or more, and shall have completed at least ten installations of this type and scope. Installation shall be performed in a workmanlike manner and shall strictly adhere to the standards of these specifications and the manufacturers installation requirements. Where necessary, the installer may make adjustments to accommodate unforeseen impediments to installation. The completed work must achieve all electrical, safety and appearance requirements as established in these specifications.
- B. Work shall be performed in accordance with OSHA and local codes.
- C. On site welding shall only be performed per AWS D1.1 standards and with advanced approval from the architect or Owner's representative.
- D. Signage with basic operating instructions and warnings shall be posted in the area where the equipment shall be operated. Signage shall be in conformance with ANSI-Z535.

E. DIVISION OF RESPONSIBILITIES

- 1. The RIGGING contractor shall be responsible for providing and installing:
 - a. Arbors, Head Blocks, & Loft Blocks
 - b. Counterweight Bricks
 - c. Wire rope lift lines and terminations
 - d. On electrics line sets: Cable Management system for distribution raceways, including low-voltage, ground and data wiring
 - e. On electrics line sets: Factory prewired distribution raceway mounted at the bottom of the wire rope on the stage electrics sets
 - f. Pipe batten attachments.
 - g. Pipe end caps
 - h. Batten labels
 - i. Curtain Tracks & Drapery
 - j. ADD/ALT Motorized Rigging Hoist

2. The ELECTRICAL contractor shall be responsible for providing and installing:
 - a. All pipe, wiring and termination providing line voltage to all the Power and Control Distribution boxes
 - b. All pipe and wiring connecting data lines between the first Power and Control Distribution Box and the Control station
 - c. Pipe and wiring connecting data lines between Control Station and first E-Stop Station
 - d. All pipe and wiring connecting data lines between all E-Stop Stations
 - e. Back boxes for all Power and Control Distribution Boxes, the Control Stations and all E-Stop Stations
 - f. All pipe and wiring and all terminations of line voltage of dimmed and non-dimmed circuits that terminate at the termination boxes mounted on/near the Compression Tube.
3. The GENERAL contractor shall be responsible for providing and installing:
 - a. Any required Supplementary Steel, Unistrut Bridging for overhead work
 - b. Demolition of existing theatrical light fixtures, rigging, curtain tracks, and drapery

4.04 RECORD DRAWINGS AND DATA

A. Record Drawings

1. The TSI shall submit a set of Record Drawings to the owner for final acceptance. These drawings shall be fully revised and reflect the actual finished installation. The drawing set shall be 100% complete and shall include all schematics, details and Bill of Materials for future maintenance and repair of all systems supplied by the TSI. This drawing set is to be submitted in Adobe PDF Format.
 - a. Each drawing shall be dated and stamped as a Record Drawing.
 - b. Prints shall be full sized, stapled into sets. They shall be fully legible.
 - c. Any future revisions or modifications during the warranty period shall require that the owner's Record Drawings be updated also.
2. Theatrical Systems Integrator shall provide a Repertory Lighting Plot for the purpose of hanging and focusing theatrical lighting fixtures prior to project completion.
3. The contractor or their representative, fully knowledgeable and qualified in Lighting Systems operation, shall provide, per school, (2) sessions instruction to the Owner-designated personnel on the use and operation of this System. Sessions shall be 4-hours long, as described in Designated instruction times shall be arranged through the Architect.

B. Manuals

1. Manuals shall be provided on archive quality digital media such as a data CD or a portable USB flash storage device. The TSI shall also retain copies of all media for any eventual replacement, should the need arise.
2. The TSI shall provide a digital set of Instructions and Maintenance manuals to the Owner in Adobe PDF Format. The manuals shall consist of, but not be limited to:
 - a. Entire System Description
 - b. User Operating Instructions
 - c. User Maintenance Instructions
 - d. Catalogue Cut Sheets from all equipment purchased
 - e. Spare Parts Listing
 - f. 11" x 17" reduced drawings of all system assemble drawings needed to perform system maintenance.

4.05 WARRANTY

- A. Manufacturers shall warrant products under normal use and service to be free from defects in materials and workmanship for a period of two years from date of delivery.
- B. Warranty shall cover repair or replacement of such parts determined defective upon inspection.
- C. Warranty does not cover any product or part of a product subject to accident, negligence, alteration, abuse or misuse. Warranty does not cover any accessories or parts not supplied by the manufacturer.
- D. Warranty shall not cover any labor expended or materials used to repair any equipment without manufacturer's prior written authorization.
- E. Installation shall be warranted by the installing contractor as required by the project specifications.
- F. All warrantees shall be in effect on from the date of system commissioning.
- G. Rigging-Specific Guarantee
 1. The Contractor shall guarantee all of the work that is performed under this contract, including all materials, and workmanship, for a period of three (3) years from the date of full acceptance of the work in accordance with the following conditions.
 2. Warranty shall be in effect on materials and equipment for three years from the date of system commissioning under the following conditions:
 - a. Maintaining the warranty in effect requires annual inspection of the system by a factory trained and certified contractor. Continuing annual inspection is strongly encouraged.

Blind Brook Middle-High School
Auditorium Upgrades
Rye, NY

- b. The three-year warranty is contingent upon annual inspection at the end of the first and second years of service. The end user is responsible for making arrangements for each inspection with the contractor identified on the Motor Controller or a factory certified inspector/installer.
 - c. In the event annual inspection is not requested and performed at the end of the first or second year of service, the warranty shall become void at the end of that year of service.
 - d. Each warranty inspection report must be sent to the factory by the inspecting contractor within 10 days of completing the inspection.
3. Nothing in this guarantee shall cause repair or replacement by the Contractor where negligence, neglect or improper operation by the Owner has caused the failure of any equipment installed under this contract.

END OF SECTION

BLIND BROOK - RYE UNION FREE SCHOOL DISTRICT

DISTRICT ADMINISTRATION OFFICES

390 NORTH RIDGE STREET, RYE BROOK, NY 10573

PHASE 3 - BOND IMPROVEMENTS

AT

MIDDLE SCHOOL - HIGH SCHOOL

840 KING STREET
 RYE BROOK, NY 10573
 SED No.: 66-19-05-02-0-002-022

BRUNO M. PONTERIO
 RIDGE STREET ELEMENTARY SCHOOL

390 NORTH RIDGE STREET
 RYE BROOK, NY 10573
 SED No.: 66-19-05-02-0-001-018

LIST of DRAWINGS

MIDDLE SCHOOL - HIGH SCHOOL

ARCHITECTURAL

- A0.01 FIRST FLOOR CODE COMPLIANCE PLAN
- A0.02 SECOND FLOOR CODE COMPLIANCE PLAN
- A1.01 FIRST FLOOR DEMOLITION PLANS
- A1.02 SECOND FLOOR DEMOLITION PLANS
- A2.00 PARTITION TYPES
- A2.01 PROPOSED FLOOR PLANS
- A2.02 ENLARGED TOILET ROOM PLANS
- A2.03 PLAN DETAILS
- A3.01 SKYLIGHT REPLACEMENT PLANS and DETAILS
- A7.01 ENLARGED ELEVATOR PLANS and SECTION
- A8.01 DOOR SCHEDULE and DETAILS
- A9.00 FINISH SCHEDULE
- A9.01 FINISH FLOOR PLANS and REFLECTED CEILING PLANS
- A11.00 CASEWORK PLAN NOTES and DETAILS
- A11.01 CASEWORK ELEVATIONS
- A11.03 FURNITURE NOTES and DETAILS

MECHANICAL

- M0.01 MECHANICAL GENERAL NOTES, LEGEND, and KEY PLAN
- M1.01 MECHANICAL DEMOLITION and NEW 1st FLOOR PLANS
- M1.02 MECHANICAL DEMOLITION and NEW 2nd FLOOR PLANS
- M1.03 MECHANICAL DEMOLITION and NEW TOILET ROOM PLANS
- M6.01 MECHANICAL SCHEDULES and DETAILS

PLUMBING

- P0.01 PLUMBING GENERAL NOTES, KEY PLAN, and DETAILS
- P1.01 PLUMBING DEMOLITION and NEW TOILETS PLANS and SCHEDULE
- P1.02 PLUMBING DEMOLITION and NEW 1st FLOOR PLAN
- P1.03 PLUMBING DEMOLITION and NEW 2nd FLOOR PLAN

ELECTRICAL

- E0.01 ELECTRICAL GENERAL NOTES PLAN
- E1.01 ELECTRICAL DEMOLITION PLAN
- E1.02 ELECTRICAL DEMOLITION PLAN - AUDITORIUM
- E3.01 ELECTRICAL PROPOSED LIGHTING PLAN
- E4.01 ELECTRICAL PROPOSED POWER PLAN
- E5.01 ELECTRICAL PROPOSED SPECIAL SYSTEM PLAN
- E6.01 ELECTRICAL ROOM AND RISER DIAGRAM PLAN
- E6.02 ELECTRICAL PROPOSED PLAN - AUDITORIUM
- E6.03 ELECTRICAL PROPOSED PLAN - AUDITORIUM
- E6.04 ELECTRICAL PROPOSED PLAN - AUDITORIUM
- E6.05 ELECTRICAL PROPOSED PLAN - AUDITORIUM DETAILS
- E6.06 ELECTRICAL PROPOSED PLAN - AUDITORIUM DETAILS
- E6.07 ELECTRICAL PROPOSED PLAN - AUDITORIUM DETAILS
- E6.08 ELECTRICAL PROPOSED PLAN - AUDITORIUM RIGGING SECTION AND ELEVATION

TECHNOLOGY

- E9.00 TECHNOLOGY GENERAL NOTES
- E9.01 TECHNOLOGY DATA PLAN

RIDGE STREET ELEMENTARY SCHOOL

ARCHITECTURAL

- A0.01 BASEMENT and LOWER LEVEL CODE COMPLIANCE PLAN
- A1.01 DEMOLITION and PROPOSED PLANS
- A8.01 DOOR SCHEDULE and DETAILS
- A8.00 FINISH SCHEDULE NOTES and DETAILS
- A8.01 FINISH FLOOR PLANS and REFLECTED CEILING PLANS

MECHANICAL

- M0.01 MECHANICAL GENERAL NOTES, LEGEND, and KEY PLAN
- M1.01 MECHANICAL DEMOLITION AND NEW PLANS
- M6.01 MECHANICAL SCHEDULES
- M6.02 MECHANICAL DETAILS

ELECTRICAL

- E0.01 ELECTRICAL GENERAL NOTES PLAN
- E6.01 ELECTRICAL DEMO and PROPOSED PLAN - LOWER LEVEL
- E6.02 ELECTRICAL DEMO and PROPOSED PLAN - FIRST FLOOR
- E6.03 ELECTRICAL PROPOSED POWER PLAN

TECHNOLOGY

- E9.00 TECHNOLOGY GENERAL NOTES
- E9.01 TECHNOLOGY DATA PLAN
- E10.01 TECHNOLOGY DETAILS

LOCATION MAP



RIDGE ST. ELEMENTARY

MIDDLE SCHOOL-HIGH SCHOOL

MAP DATA © GOOGLE

BBS ARCHITECTS
 LANDSCAPE ARCHITECTS
 ENGINEERS

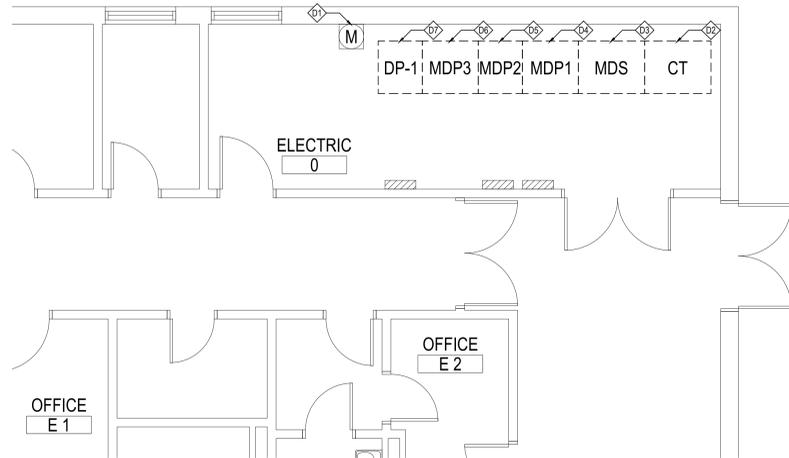
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 100 GREAT OAKS BLVD., SUITE 115 | ALBANY | NEW YORK 12203 | T. 518.621.7650 | F. 518.621.7655

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ARCHITECTS CERTIFICATION
 THE UNDERSIGNED CERTIFIES THAT TO THE BEST OF HIS KNOWLEDGE, INFORMATION,
 AND BELIEF, THE PLANS AND SPECIFICATIONS ARE IN ACCORDANCE WITH
 APPLICABLE REQUIREMENTS OF THE NEW YORK STATE UNIFORM FIRE PREVENTION
 AND BUILDING CODE, THE NEW YORK STATE ENERGY CONSERVATION CONSTRUCTION
 CODE, THE CONSTRUCTION STANDARDS OF THE EDUCATION DEPARTMENT, NEW
 YORK STATE DEPARTMENT OF LABOR RULE 56, EPA AND AHERA REQUIREMENTS.

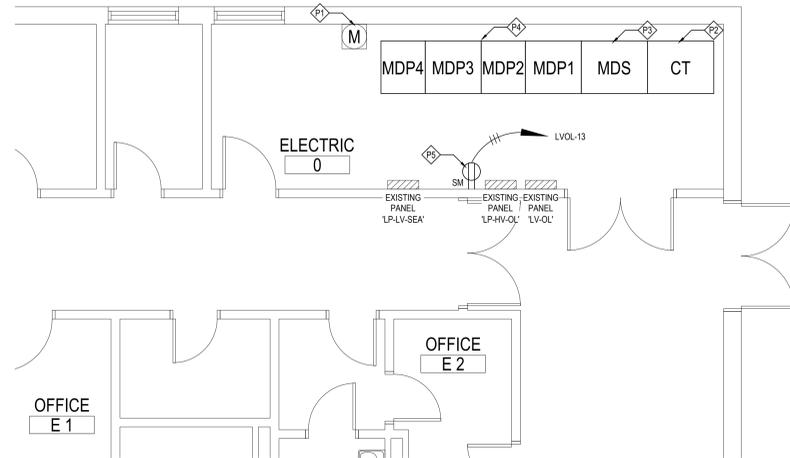
JOHN PRENTICE, A.I.A. LIC. No. 029824

BBS FILE No. 25-142 a,b
 ISSUED FOR BID: DECEMBER 15, 2025



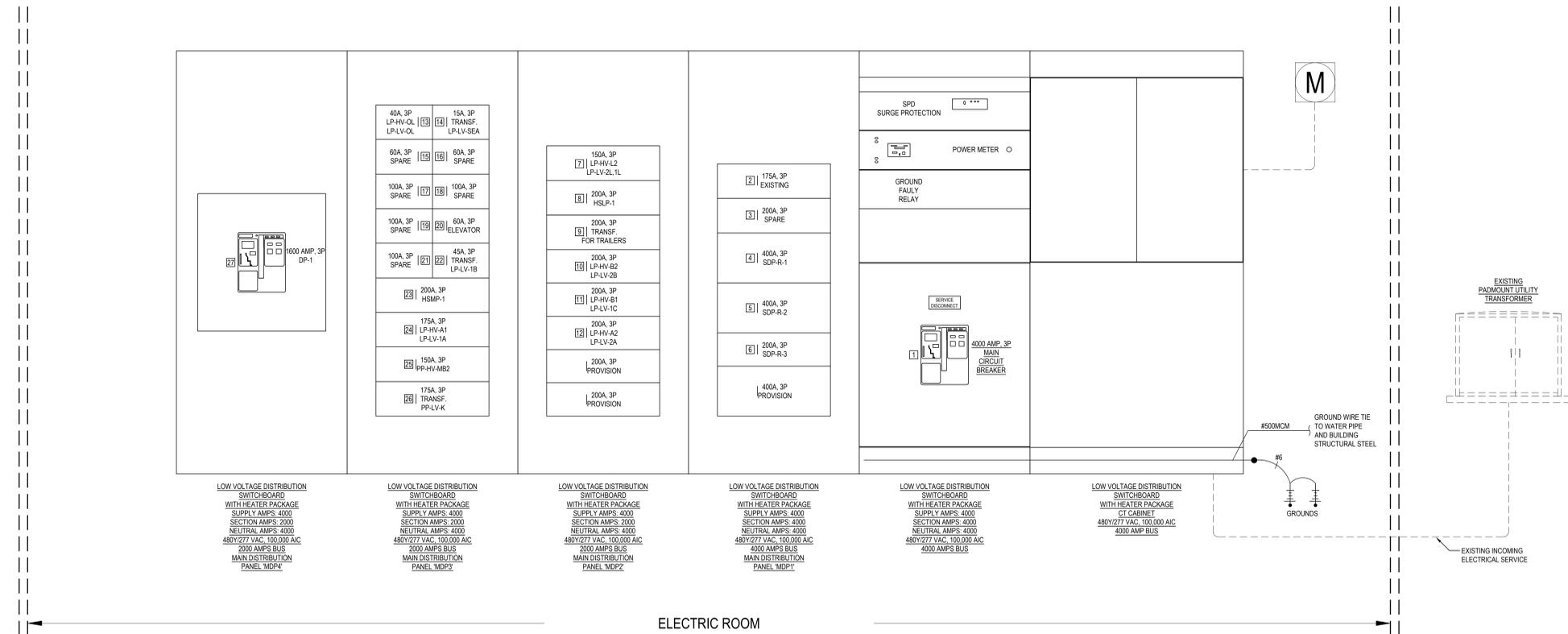
ELECTRICAL DEMOLITION PLAN - ELECTRIC ROOM

SCALE: 1/4" = 1'-0"



ELECTRICAL PROPOSED PLAN - ELECTRIC ROOM

SCALE: 1/4" = 1'-0"



ELECTRIC ROOM

SCALE: NTS

RISER DIGRAM

- NOTE:
1. DASHED LINES INDICATE EXISTING EQUIPMENT TO REMAIN UNLESS INDICATED OTHERWISE. SOLID LINES INDICATE NEW EQUIPMENT TO BE FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR. THE SPECIAL/SPECIFIC ITEMS SHOWN ON THE DRAWING FOR THE CONTRACTOR TO ACT ON WERE FOUND BY SURVEY. FIELD VERIFY AVAILABILITY OF EXISTING EQUIPMENT SHOWN IN THIS DRAWING, CONTACT THE ENGINEER FOR ALTERNATE OPTIONS IN CASE OF ANY DISCREPANCY. THE ELECTRICAL CONTRACTOR SHALL ALLOW FOR THIS IN HIS BID PRICE.
 2. EXISTING MAIN DISTRIBUTION PANELS ARE WITH FUSIBLE PANEL MOUNT SWITCHES. CONTRACTOR SHALL FIELD VERIFY NEW BRANCH CIRCUIT BREAKER SIZE (THE SIZES WERE ACCORDING TO EXISTING DRAWINGS) IN NEW MAIN DISTRIBUTION PANELS. PROVIDE AND INSTALL NEW SIZE OF CIRCUIT BREAKERS AS REQUIRE.
 3. CONTRACTOR SHALL PIECE OUT EXISTING WIRES TO NEW CONNECTION AS REQUIRED USING DOUBLE INDENT HYDRAULIC CONNECTORS (SPLIT BOLT OR BUG NUT ARE DISALLOWED).
 4. THE DISTRIBUTION PANEL SCHEDULES AND NAME TAGS SHOWN ON DRAWING ARE ACCORDING TO EXISTING. FIELD VERIFY AND TONE OUT AND IDENTIFY ALL EXISTING CIRCUITS WITH AND WITHOUT IDENTIFICATION. PROVIDE AND INSTALL NEW PRINT NAME TAGS FOR NEW DISTRIBUTION PANELS AND CIRCUIT BREAKERS. PROVIDE AND INSTALL NEW PRINT TAG 277480 VOLTS ON EVERY SECTION OF SWITCHGEAR. HAND WRITING NOT ALLOWED. FURNISH A SIGN "SERVICE DISCONNECT" AT MAIN CIRCUIT BREAKER.

ELECTRICAL SERVICE NOTES

1. THIS PROJECT HAS BEEN APPLIED TO UTILITY COMPANY "Con Edison". Con Edison CASE NUMBER IS: MC-845288.
2. THE REQUIREMENTS OF THE LATEST EDITIONS OF Con Edison'S "A CUSTOMER GUIDE TO ELECTRIC SERVICE INSTALLATION" (AKA "ELECTRIC BLUEBOOK") SHALL BE CONSIDERED PART OF THE PROJECT SPECIFICATIONS. OBTAIN FREE DOWNLOAD AT WWW.CONED.COM WEBSITE.
3. THE PROJECT ARE INVOLVING WITH BUILDING MAIN DISTRIBUTION PANELS. DURING POWER OUTAGE, CONTRACTOR SHALL PROVIDE TEMPORARY POWER SOURCE TO KEEP INCLUDE BUT NOT LIMIT BUILDING FIRE ALARM SYSTEM, SECURITY SYSTEM, DATA RACK, ETC. AND PROVIDE TEMPORARY POWER TO KITCHEN REFRIGERATORS AND FREEZERS.

DEMOLITION KEYED NOTES

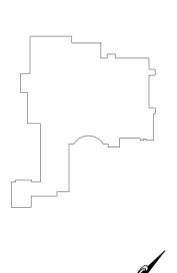
1. EXISTING METER. COORDINATE WITH UTILITY COMPANY (Con Edison). PROVIDE AND INSTALL NEW METER ASSOCIATED EQUIPMENT AS REQUIRE. NEW METER BY UTILITY COMPANY. EXISTING EXTERIOR PAD MOUNTED UTILITY TRANSFORMER TO REMAIN.
2. DE-ENERGIZED EXISTING 285460 VOLTS CT CABINET FOR REMOVAL. PROTECT EXISTING SECONDARY WIRING FROM PAD MOUNTED TRANSFORMER FOR FUTURE CONNECTION. PROTECT EXISTING WIRING TO UTILITY METER. PROVIDE NEW AS REQUIRE. FIELD VERIFY EXISTING CABLE LIMITER LUGS. PROVIDE NEW AS REQUIRE. CONTACT WITH UTILITY COMPANY "Con Edison" FOR THE WORK.
3. EXISTING 480 VOLTS. 4000 AMP. 3 POLE MAIN SERVICE DISCONNECT SWITCH TO BE DE-ENERGIZED AND REMOVED.
4. EXISTING 277480 VOLTS. 4000 AMP MAIN DISTRIBUTION PANEL SECTION 1 (MDP1) WITH (1) 200 AMP, 3 POLE, 175 AMP FUSED, (1) 200 AMP, 3 POLE SPARE, (2) 600 AMP, 3 POLE, 400 AMP FUSED AND (1) 600 AMP, 3 POLE, 150 AMP FUSED FUSIBLE PANEL MOUNT SWITCHES TO BE DE-ENERGIZED AND REMOVED. EXISTING BUS TAP FOR SUB-DISTRIBUTION PANEL DP-1 1600 AMP, 3 POLE MAIN SERVICE CIRCUIT BREAKER INCLUDE WIRING TO BE REMOVED. PROTECT EXISTING BRANCH WIRING FOR FUTURE CONNECTION.
5. EXISTING 277480 VOLTS. 2000 AMP MAIN DISTRIBUTION PANEL SECTION 2 (MDP2) WITH (1) 200 AMP, 3 POLE, 150 AMP FUSED, (2) 200 AMP, 3 POLE, 200 AMP FUSED AND (3) 400 AMP, 3 POLE, 200 AMP FUSED FUSIBLE PANEL MOUNT SWITCHES TO BE DE-ENERGIZED AND REMOVED. PROTECT EXISTING BRANCH WIRING FOR FUTURE CONNECTION.
6. EXISTING 277480 VOLTS. 1000 AMP MAIN DISTRIBUTION PANEL SECTION 3 (MDP3) WITH (1) 60 AMP, 3 POLE, 40 AMP FUSED, (1) 60 AMP, 3 POLE, 15 AMP FUSED, (2) 60 AMP, 3 POLE SPARES, (4) 100 AMP, 3 POLE SPARES, (1) 100 AMP, 3 POLE, 60 AMP FUSED, (1) 100 AMP, 3 POLE, 45 AMP FUSED, (1) 200 AMP, 3 POLE, 200 AMP FUSED, (2) 200 AMP, 3 POLE, 175 AMP FUSED AND (1) 200 AMP, 3 POLE, 150 AMP FUSED FUSIBLE PANEL MOUNT SWITCHES TO BE DE-ENERGIZED AND REMOVED. PROTECT EXISTING BRANCH WIRING AND PULL BOX FOR FUTURE CONNECTION.
7. EXISTING 277480 VOLTS. 1600 AMP, 3 POLE MAIN SERVICE CIRCUIT BREAKER FOR EXISTING DISTRIBUTION PANEL DP-1 TO BE DE-ENERGIZED AND REMOVED. PROTECT EXISTING BRANCH WIRING FOR FUTURE CONNECTION.

PROPOSED KEYED NOTES

1. UTILITY ELECTRIC METER.
2. NEW "Con Edison" COMPLIANT 600 VAC, MINIMUM 100,000 AMP SYMMETRICAL INTERRUPTING RATING, 4000 AMP CT CABINET. TRAIN AND TERMINATE EXISTING SECONDARY WIRING WITH CABLE LIMITER LUGS FROM PAD MOUNTED TRANSFORMER TO NEW BUSES. WIRE UTILITY METER. PROVIDE NEW WIRING AS REQUIRE. CONTACT WITH UTILITY COMPANY "Con Edison" FOR THE WORK.
3. NEW 480 VOLTS. MINIMUM 100,000 AMP SYMMETRICAL INTERRUPTING RATING, 4000 AMP, 3 POLE MAIN SERVICE DISCONNECT SWITCH.
4. NEW 480V/277 VAC, MINIMUM 100,000 AMP SYMMETRICAL INTERRUPTING RATING, 3 PHASE, 4 WIRE, 4000 AMP, NEMA 1, FOUR SECTIONS MAIN DISTRIBUTION PANELS. SEE IN THE DRAWING RISER DIAGRAM FOR MORE INFORMATION. TRAIN AND TERMINATE EXISTING MAIN DISTRIBUTION PANELS BRANCH WIRING WITH MATCH EXTEND WIRES (REMOVE ANY WIRING VIOLATIONS) AND CONDUITS TO NEW MAIN DISTRIBUTION PANELS NEW LIKE CIRCUIT BREAKERS.
5. PROVIDE AND INSTALL SURFACE MOUNT TAMPER-RESISTANT DUPLEX ELECTRICAL OUTLET FOR CONVENIENCE POWER WITH CHROME PLATED STEEL FACEPLATE, NEMA 500P. DISCONNECT BY HUBBELL. WIRE TO EXISTING PANEL LV-OL. SPARE 20 AMP, 1 POLE CIRCUIT BREAKER WITH 3 #12 IN 3/4"C.

REV.	DATE	ITEM
01	01/20/20	BID ADD. NO. 02

NOTICE
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KEY PLAN
 NOT TO SCALE

PROJECT
 BLIND BROOK UNION FREE SCHOOL DISTRICT
 PHASE 3 - BOND IMPROVEMENTS
 BLIND BROOK MIDDLE/HIGH SCHOOL
 RYE BROOK, WESTCHESTER COUNTY, NEW YORK

DWG TITLE
 ELECTRICAL
 ELECTRIC ROOM AND RISER DIAGRAM PLAN

DRAWING BY: LW
 CHECK BY: ---

NOTICE
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BBS
 ARCHITECTS
 LANDSCAPE ARCHITECTS
 ENGINEERS

244 EAST MAIN STREET
 PATCHOGUE
 NEW YORK 11772
 T. 631.475.0349
 F. 631.475.0361

187 WOLF ROAD, STE. 205
 ALBANY
 NEW YORK 12205
 T. 518.621.7650
 F. 518.621.7655

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POWER CONSTRUCTION NOTES

1. THE WIRES ARE 2 #12 - 1 #12(G) IN 3/4" UNLESS INDICATED OTHERWISE. NEW CIRCUIT BREAKERS INSTALLED IN EXISTING PANELBOARD(S) SHALL BE LISTED/LABELLED FOR USE WITH THE EXISTING PANELBOARD(S). MATCH AIC RATING.
2. THE MOUNTING HEIGHT OF THE RECEPTACLES IS 18" ABOVE FINISHED FLOOR UNLESS INDICATED ON THE DRAWING.
3. COLOR, TYPE & FINISH OF ALL RECEPTACLES, DEVICES & FACE PLATES SHALL BE AS APPROVED BY ENGINEER AND ARCHITECT.
4. ELECTRICAL CONTRACTOR SHALL REFER TO ALL FURNITURE DRAWINGS BEFORE INSTALLING RECEPTACLES.
5. SEE MECHANICAL AND PLUMBING DRAWINGS FOR MECHANICAL AND PLUMBING EQUIPMENT DETAILS AND NOTES.
6. ELECTRICAL CONTRACTOR SHALL CONNECT ALL ELECTRICAL OPERATED MECHANICAL EQUIPMENT VIA STARTERS, VARIABLE FREQUENCY DRIVE (VFD), DISCONNECT, HEATERS, ETC. PROVIDE BY MECHANICAL CONTRACTOR. COOPERATE WITH MECHANICAL CONTRACTOR AND FIELD VERIFY ALL DEVICES LOCATION.
7. EACH PRIME CONTRACTOR IS RESPONSIBLE FOR THE PREPARATION OF JOINTLY PRODUCED COORDINATION DRAWINGS - NO EXCEPTIONS - REFER TO THE SPECIAL PROVISIONS OF THE CONTRACT FOR ALL CONTRACTUAL REQUIREMENTS SPECIFIC TO THE COORDINATION OF EACH TRADES WORK WITH ALL OTHER CONTRACTORS.

SED No: 66-19-05-02-0-002-022

DISTRICT: BLIND BROOK UNION FREE SCHOOL DISTRICT

PROJECT: PHASE 3 - BOND IMPROVEMENTS

DWG TITLE: ELECTRICAL ELECTRIC ROOM & RISER PLAN

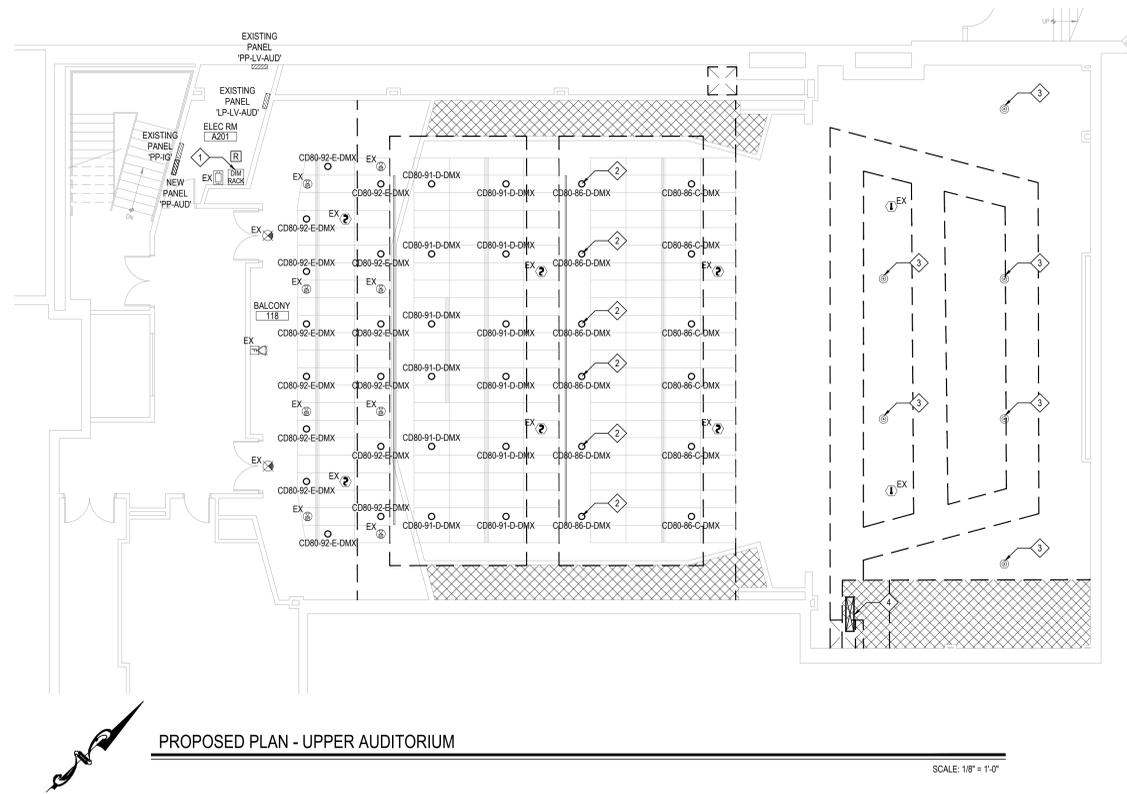
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DATE: AUGUST 2025

BID PICK UP: DECEMBER 15, 2025

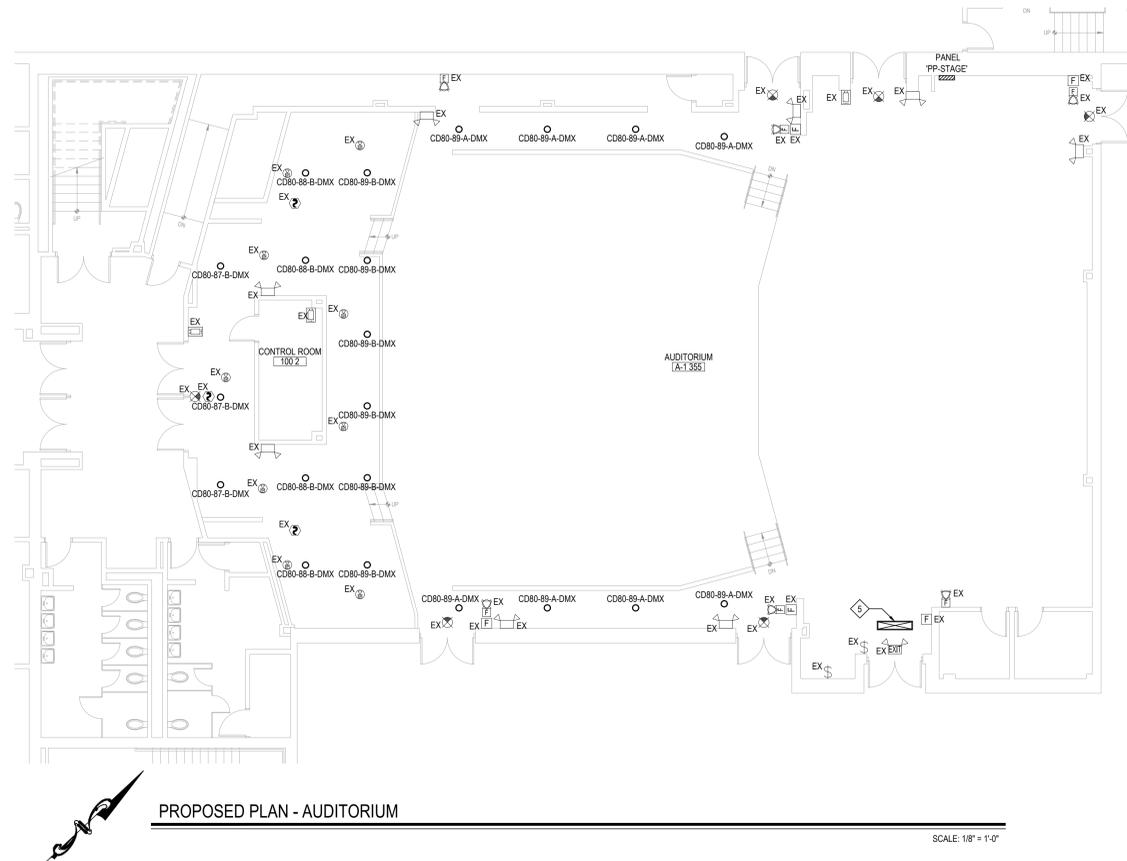
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E6.01



PROPOSED PLAN - UPPER AUDITORIUM

SCALE: 1/8" = 1'-0"



PROPOSED PLAN - AUDITORIUM

SCALE: 1/8" = 1'-0"

LIGHTING LEGEND		
TYPE	SYMBOL	DESCRIPTION
A	○	RECESSED LED DOWN LIGHTING FIXTURE - ZN-75-30-70-D-B-M-7-N-HEX WITH 76.2 WATTS OUTPUT LED LAMPS, ELECTRICAL DRIVER AND CEILING RECESSED MOUNTING COMPLETE KIT BY AQUARI
B	○	RECESSED LED DOWN LIGHTING FIXTURE - ZN-75-30-110-D-B-M-7-N-HEX WITH 74.8 WATTS OUTPUT LED LAMPS, ELECTRICAL DRIVER AND CEILING RECESSED MOUNTING COMPLETE KIT BY AQUARI
C	○	RECESSED LED DOWN LIGHTING FIXTURE - ZN-75-30-36-D-B-M-7-N-HEX WITH 75.7 WATTS OUTPUT LED LAMPS, ELECTRICAL DRIVER AND CEILING RECESSED MOUNTING COMPLETE KIT BY AQUARI
D	○	PENDANT LED DOWN LIGHTING FIXTURE - ZN-50-30-70-D-B-M-4-F-N-HEX WITH 52.2 WATTS OUTPUT LED LAMPS, ELECTRICAL DRIVER AND CEILING RECESSED MOUNTING COMPLETE KIT BY AQUARI
E	○	RECESSED LED DOWN LIGHTING FIXTURE - ZN-50-30-70-D-B-M-7-N-HEX WITH 52.2 WATTS OUTPUT LED LAMPS, ELECTRICAL DRIVER AND CEILING RECESSED MOUNTING COMPLETE KIT BY AQUARI
G	▬	SURFACE CEILING MOUNT 4" LED LIGHTING FIXTURE - SD4-LED-40-FL-UNV-DM1-35-80CR-GRD HGR WITH 30 WATTS OUTPUT LED LAMP AND 0-10V DIMMING DRIVER BY LSI INDUSTRIES INC.
G1	▬	PENDANT MOUNT 4" LED LIGHTING FIXTURE - SD4-LED-40-FL-UNV-DM1-35-80CR-GRD HGR WITH 30 WATTS OUTPUT LED LAMP AND 0-10V DIMMING DRIVER BY LSI INDUSTRIES INC.
	⊙	EXISTING PENDANT MOUNT LIGHTING FIXTURE WITH ENERGY EFFICIENT LED LIGHT ENGINE RETROFIT KIT. RETRO-PASSIVE 2.0 500 WITH E26 BASE, 3000K, NO LENSES.
	⊙	EXISTING EXIT SIGN.
	EXIT	EXISTING EXIT SIGN/EMERGENCY COMBO.
	⌋	EXISTING EMERGENCY WALL PACK LIGHTING FIXTURE.
	▬	PANEL.
	AUDIT BACK	AUDITORIUM LIGHTING CONTROL RACK.
	Ⓜ	TOUCH SCREEN WALL STATION.
	Ⓜ	SMOKE DETECTOR WITH BASE.
	Ⓜ	HEAT DETECTOR WITH BASE.
	Ⓜ	WALL MOUNT FIRE ALARM HORN / STROBE NOTIFICATION DEVICE.
	Ⓜ	PULL STATION.
	Ⓜ	CEILING MOUNT PUBLIC ADDRESS SYSTEM SPEAKER.

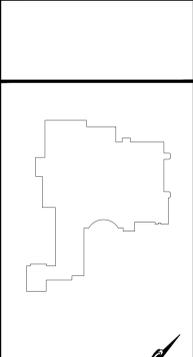
LIGHTING WIRING LEGEND	
SYMBOL	DESCRIPTION
CD80-86-A-DMX	LIGHT FIXTURE WIRING FORMAT: "PANEL NAME"-"CKT BRK NUMBER"-"FIXTURE TYPE"-"SWITCH LETTER" "CD80" - "86" - "A" - "DMX" N=1 = FIXTURE BACK UP BY INVERTER DMX = DIGITAL MULTIPLEX CONTROL NL = FIXTURE TO BE WIRED DIRECTLY TO CIRCUIT, BYPASSING ALL CONTROLS Z1 = ZONE 1 OF ROOM CONTROLLER DIM = DIMMER RACK CONTROL PC = PHOTOCELL TC = TIME CLOCK LCP = LIGHTING CONTROL PANEL EX = EXISTING PANEL, EXISTING CKT BRK, EXISTING FIXTURE TYPE

- DRAWING KEYED NOTES**
- EXISTING 'STRAND' CD80 SUPERVISOR DIMMER RACK WITH NEW NON-DIM POWER MODULES. SEE DRAWING E6.04 FOR AUDITORIUM THEATRICAL LIGHTING CONTROL RISER FOR MORE INFORMATION. PROVIDE AND INSTALL FIRE ALARM RELAY FOR AUDITORIUM LIGHTING CONTROL SYSTEM.
 - PROVIDE AND INSTALL ALL SUPPLEMENTAL STEEL ASSOCIATED WITH MOUNTING FIXTURE ON AUDITORIUM ABOVE CEILING BUILDING STRUCTURE. FIELD VERIFY FIXTURE MOUNTING LENGTH. PROVIDE AND INSTALL FIXTURE MOUNTING KIT TO PREVENT SWING.
 - STAGE PENDANT LIGHTING FIXTURES TO BE RETROFITTED WITH LED RETROFIT KITS. CONTRACTOR SHALL FIELD VERIFY EXISTING. ANY DISCREPANCY SHALL BE BROUGHT TO ARCHITECT / ENGINEERS ATTENTION BEFORE BID SUBMITTAL.
 - WIRE PENDANT 4" LIGHTING FIXTURE TO EXISTING LIGHTING CIRCUIT AND CONTROL.
 - WIRE SURFACE CEILING MOUNT 4" LIGHTING FIXTURE TO EXISTING LIGHTING CIRCUIT AND CONTROL.

- LIGHTING CONSTRUCTION NOTES**
- THE WIRES ARE 2 #12 + 1 #12(G) IN 3/4" UNLESS INDICATED OTHERWISE. SEE DRAWING E6.03 AND E6.04 FOR LIGHTING CONTROL DEVICE LOCATIONS AND WIRING DIAGRAMS.
 - ALL FIXTURES SHALL BE WIRED TO BE INDEPENDENT FROM ONE ANOTHER, I.E. NO DAISY CHAIN WIRING AND FIXTURE SHALL NOT BE UTILIZED AS A RACEWAY. CIRCUIT NUMBERS ARE REFERENCING EXISTING DRAWINGS, FIELD VERIFY TO CONFIRM.
 - CONTRACTOR SHALL PROVIDE, INSTALL AND WIRE AUDITORIUM THEATRICAL EQUIPMENT AS SHOWN. CONTRACTOR SHALL PROVIDE AND INSTALL DMX CABLES FOR AUDITORIUM NEW HOUSE RECESSED LED LIGHTS.
 - GENERAL CONTRACTOR SHALL PROVIDE AND INSTALL NEW MATCH CEILING TILES. COLOR BLACK, FOR AUDITORIUM DAMAGED CEILING TILES.
 - CONTRACTOR SHALL PROVIDE AND INSTALL ALL ELECTRICAL LIGHTING FIXTURES AND ASSOCIATED COMPONENTS AND WIRING AS SHOWN ON ELECTRICAL DRAWINGS UNLESS NOTED OTHERWISE.
 - EACH PRIME CONTRACTOR IS RESPONSIBLE FOR THE PREPARATION OF JOINTLY PRODUCED COORDINATION DRAWINGS. NO EXCEPTIONS - REFER TO THE SPECIAL PROVISIONS OF THE CONTRACT FOR ALL CONTRACTUAL REQUIREMENTS SPECIFIC TO THE COORDINATION OF EACH TRADES WORK WITH ALL OTHER CONTRACTORS.

REV.	DATE	ITEM
01	01/16/20	BID ADD NO. 02

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KEY PLAN
NOT TO SCALE

BLIND BROOK UNION FREE SCHOOL DISTRICT
PHASE 3 - BOND IMPROVEMENTS
BLIND BROOK MIDDLE/HIGH SCHOOL
RYE BROOK, WESTCHESTER COUNTY, NEW YORK

ELECTRICAL
PROPOSED PLAN - AUDITORIUM

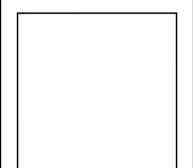
DRAWING BY: LW
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LANDSCAPE ARCHITECTS
ENGINEERS

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PATCHOGUE | ALBANY
NEW YORK 11772 | NEW YORK 12205
T. 631.475.0349 | T. 518.621.7650
F. 631.475.0361 | F. 518.621.7655

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SED No: 66-19-05-02-0-002-022

DISTRICT: BLIND BROOK UNION FREE SCHOOL DISTRICT

PROJECT: PHASE 3 - BOND IMPROVEMENTS

DWG TITLE: ELECTRICAL PROPOSED PLAN

SCALE: AS NOTED

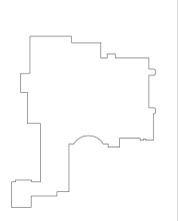
DATE: AUGUST 2025

BID PICK-UP: DECEMBER 15, 2025

FILE No: 25-142a

REV.	DATE	ITEM
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KEY PLAN
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PROJECT
 BLIND BROOK UNION FREE SCHOOL DISTRICT
 PHASE 3 - BOND IMPROVEMENTS
 BLIND BROOK MIDDLE/HIGH SCHOOL
 RYE BROOK, WESTCHESTER COUNTY, NEW YORK

DWG TITLE
 ELECTRICAL
 PROPOSED PLAN - AUDITORIUM DETAILS

DRAWING BY: LW
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 LANDSCAPE ARCHITECTS
 ENGINEERS

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 187 WOLF ROAD, STE. 205 ALBANY, NEW YORK 12205
 T. 518.621.7650 F. 518.621.7655
 F. 518.475.0349 F. 518.621.7650
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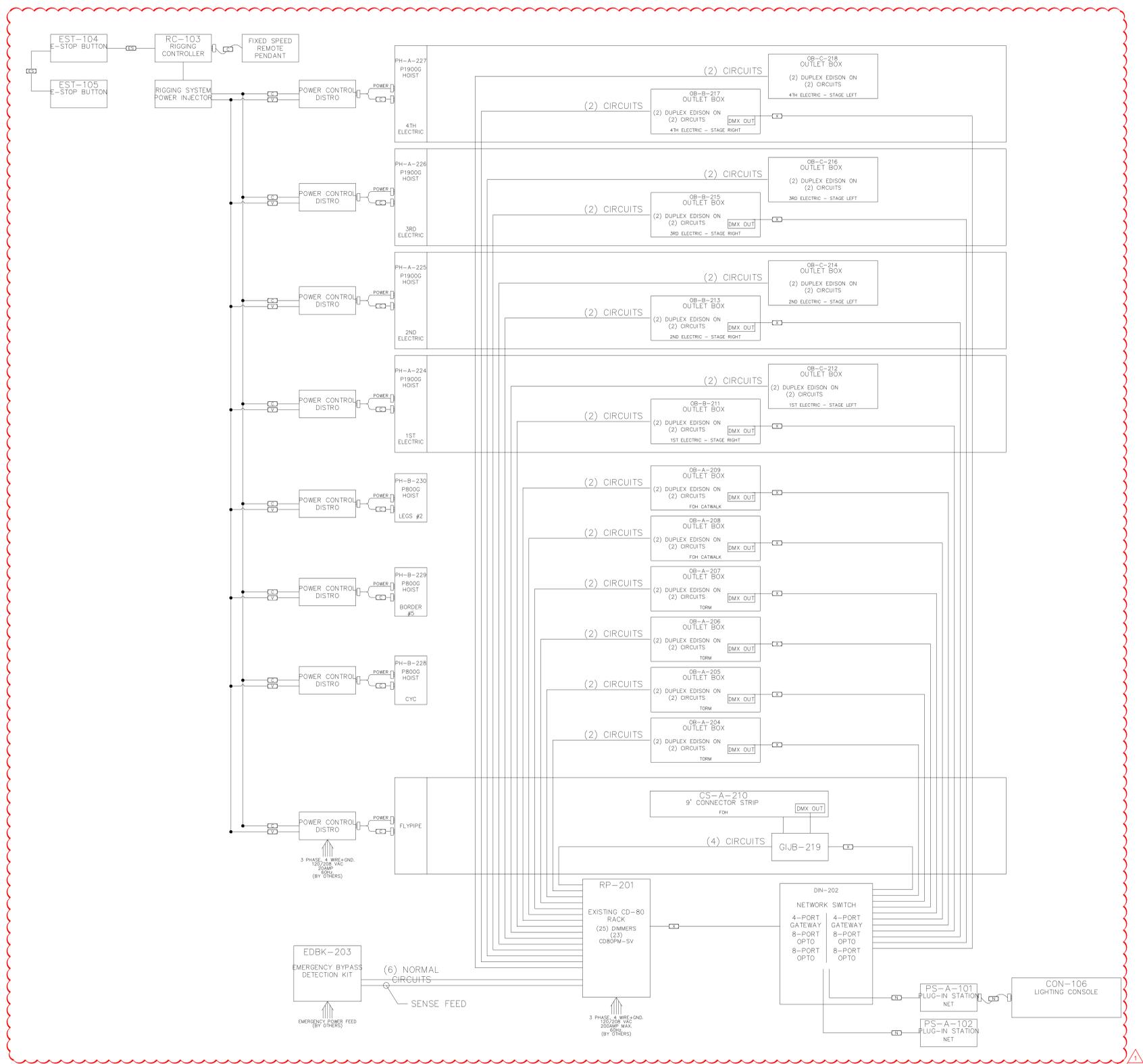
SED No: 66-19-05-02-0-002-022
DISTRICT: BLIND BROOK UNION FREE SCHOOL DISTRICT
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E6.05

LIGHTING DEVICE SCHEDULE			
BOX NUMBER	DEVICE	DESCRIPTION	MOUNTING
101 THRU 102	PS-A	NET PLUG-IN STATION	SURFACE
103	RC	RIGGING CONTROLLER	SURFACE
104 THRU 105	EST	E-STOP BUTTON	SURFACE
106	CON	ETC IOPN XE 20 W/ (2) 24" LCD TOUCHSCREENS	----
201	RP	EXISTING STRAND CD-80 RACK	SURFACE
202	DIN	DIN-RAIL ENCLOSURE	SURFACE
203	EBDK	EMERGENCY BYPASS DETECTION KIT	SURFACE
204 THRU 209	OB-A	OUTLET BOX W/ (2) DUPLEX EDISON & (1) DMX OUT	PIPE
210	CS-A	FOH CONNECTOR STRIP	PIPE
211, 213, 215, 217	OB-B	SR OUTLET BOX W/ (2) DUPLEX EDISON & (1) DMX OUT	PIPE
212, 214, 216, 218	OB-C	SL OUTLET BOX W/ (2) DUPLEX EDISON	PIPE
219 THRU 223	GIJB	GRID IRON JUNCTION BOX	SURFACE
224 THRU 227	PH-A	ONSTAGE ELECTRIC HOIST	SURFACE
228 THRU 230	PH-B	GENERAL PURPOSE HOIST	SURFACE

NOTE: INSTALLER TO VIF ALL LOCATIONS.

PROTOCOL WIRE KEY		
LABEL	DESCRIPTION	SIGNAL
(X)	(1) BELDEN #9729 (HOME-RUNS, NO WIRE SPLICES, MAX 1000FT.)	DMX OUT
(N)	(1) BELDEN #1583A (HOME RUN, NO WIRE SPLICES, MAX 300FT.)	NET
(C)	(1) BELDEN #1583A (HOME RUN, NO WIRE SPLICES, MAX 300FT.)	CONTROL
(V)	3-PHASE 208V 60HZ 3-WIRE + GND	POWER

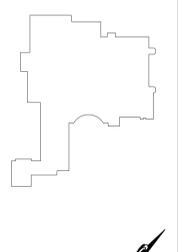


1 LIGHTING POWER AND CONTROL RISER

SCALE: NOT TO SCALE

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BLIND BROOK UNION FREE SCHOOL DISTRICT
 PHASE 3 - BOND IMPROVEMENTS
 BLIND BROOK MIDDLE/HIGH SCHOOL
 RYE BROOK, WESTCHESTER COUNTY, NEW YORK

PROJECT
 DWG TITLE

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 LANDSCAPE ARCHITECTS
 ENGINEERS
 244 EAST MAIN STREET ALBANY, NY 12205
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 NEW YORK 11722 T. 518.621.7650
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SED No: 66-19-05-02-0-002-022
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 FILE No: 25-142a

E6.06

EXISTING CD80 RACK: RP-A-101																										
UPPER SECTION										LOWER SECTION																
SLOT	CIRCUIT	MODULE TYPE	ADDRESS UNI	ADDRESS ADD	ZONE	DESCRIPTION	FIXTURE			EM	LOAD PHASING			CIRCUIT	MODULE TYPE	ADDRESS UNI	ADDRESS ADD	ZONE	DESCRIPTION	FIXTURE			EM	LOAD PHASING		
							CALLOUT	TYPE	QTY		LOAD	A	B							C	CALLOUT	TYPE		QTY	LOAD	A
1	1	CD80PM-SV	1	1		HOUSE LIGHTS				0				51	CD80PM-SV	1	51		OB-B-216				0			
2	2		1	2		HOUSE LIGHTS				0				52		1	52		OB-B-216				0			
3	7	CD80PM-SV	1	7		CS-A-210				0				57	CD80PM-SV	1	57		OB-B-218				0			
4	8		1	8		CS-A-210				0				58		1	58		OB-B-218				0			
5	13	CD80PM-SV	1	13		OB-A-205				0				63	DIMMER	1	63		EXISTING MODULE				0			
6	14		1	14		OB-A-205				0				64		1	64		EXISTING MODULE				0			
7	19	CD80PM-SV	1	19		OB-A-208				0				69	DIMMER	1	69		EXISTING MODULE				0			
8	20		1	20		OB-A-208				0				70		1	70		EXISTING MODULE				0			
9	25	DIMMER	1	25		EXISTING MODULE				0				75		1	75		EXISTING MODULE				0			
10	26		1	26		EXISTING MODULE				0				76	DIMMER	1	76		EXISTING MODULE				0			
11	31	DIMMER	1	31		EXISTING MODULE				0				81		1	81		EXISTING MODULE				0			
12	32		1	32		EXISTING MODULE				0				82	DIMMER	1	82		EXISTING MODULE				0			
13	37	CD80PM-SV	1	37		OB-B-211				0				87		1	87		EXISTING MODULE				0			
14	38		1	38		OB-B-212				0				88	DIMMER	1	88		EXISTING MODULE				0			
15	43	CD80PM-SV	1	43		OB-B-213				0				93		1	93		EXISTING MODULE				0			
16	44		1	44		OB-B-214				0				94		1	94		EXISTING MODULE				0			
17	49	CD80PM-SV	1	49		OB-B-215				0				5	CD80PM-SV	1	5		HOUSE LIGHTS				0			
18	50		1	50		OB-B-216				0				6		1	6		HOUSE LIGHTS				0			
19	55	CD80PM-SV	1	55		OB-B-217				0				11	CD80PM-SV	1	11		OB-A-204				0			
20	56		1	56		OB-B-218				0				12		1	12		OB-A-204				0			
21	61	DIMMER	1	61		EXISTING MODULE				0				17	CD80PM-SV	1	17		OB-A-207				0			
22	62		1	62		EXISTING MODULE				0				18		1	18		OB-A-207				0			
23	67	DIMMER	1	67		EXISTING MODULE				0				23	DIMMER	1	23		EXISTING MODULE				0			
24	68		1	68		EXISTING MODULE				0				24		1	24		EXISTING MODULE				0			
25	73	DIMMER	1	73		EXISTING MODULE				0				29	DIMMER	1	29		EXISTING MODULE				0			
26	74		1	74		EXISTING MODULE				0				30		1	30		EXISTING MODULE				0			
27	79	DIMMER	1	79		EXISTING MODULE				0				35	CD80PM-SV	1	35		OB-B-211				0			
28	80		1	80		EXISTING MODULE				0				36		1	36		OB-B-211				0			
29	85	DIMMER	1	85		EXISTING MODULE				0				41	CD80PM-SV	1	41		OB-B-213				0			
30	86		1	86		EXISTING MODULE				0				42		1	42		OB-B-213				0			
31	91	DIMMER	1	91		EXISTING MODULE				0				47		1	47		OB-B-215				0			
32	92		1	92		EXISTING MODULE				0				48	CD80PM-SV	1	48		OB-B-215				0			
33	3	CD80PM-SV	1	3		HOUSE LIGHTS				0				53	CD80PM-SV	1	53		OB-B-217				0			
34	4		1	4		HOUSE LIGHTS				0				54		1	54		OB-B-217				0			
35	9	CD80PM-SV	1	9		CS-A-210				0				59	DIMMER	1	59		EXISTING MODULE				0			
36	10		1	10		CS-A-210				0				60		1	60		EXISTING MODULE				0			
37	15	CD80PM-SV	1	15		OB-A-206				0				65	DIMMER	1	65		EXISTING MODULE				0			
38	16		1	16		OB-A-206				0				66		1	66		EXISTING MODULE				0			
39	21	CD80PM-SV	1	21		OB-A-209				0				71	DIMMER	1	71		EXISTING MODULE				0			
40	22		1	22		OB-A-209				0				72		1	72		EXISTING MODULE				0			
41	27	DIMMER	1	27		EXISTING MODULE				0				77	DIMMER	1	77		EXISTING MODULE				0			
42	28		1	28		EXISTING MODULE				0				78		1	78		EXISTING MODULE				0			
43	33	DIMMER	1	33		EXISTING MODULE				0				83	DIMMER	1	83		EXISTING MODULE				0			
44	34		1	34		EXISTING MODULE				0				84		1	84		EXISTING MODULE				0			
45	39	CD80PM-SV	1	39		OB-B-212				0				89	DIMMER	1	89		EXISTING MODULE				0			
46	40		1	40		OB-B-212				0				90		1	90		EXISTING MODULE				0			
47	45	CD80PM-SV	1	45		OB-B-214				0				95		1	95		EXISTING MODULE				0			
48	46		1	46		OB-B-214				0				96	DIMMER	1	96		EXISTING MODULE				0			

1 CD80 RACK PANEL SCHEDULE

SCALE: NOT TO SCALE

BLIND BROOK MSHS CONTRACTOR RESPONSIBILITY MATRIX

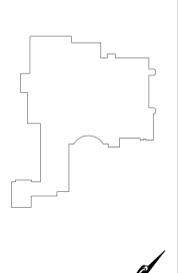
Item	GC		EC		TSI	
	Furnish	Install	Furnish	Install	Furnish	Install
Demolition						
Existing Static Rigging					X	
Existing Static Drapery & Curtain Tracks					X	
Existing Front of House Terminals					X	
Existing Front of House Static Pipe					X	
Existing Outlet Boxes & SO Cables Onstage and Front of House				X		
Existing Fire Curtain to Remain						
Existing Dimming Rack & Architectural Stations to Remain						
Dimming and Control						
Power Feeders (TO REMAIN)						
Power Disconnects (TO REMAIN)						
Dimming Enclosures (TO REMAIN)						
Dimming Relays				X	X	
Lighting Control DIN-Rail				X	X	
Assembly of DIN-Rail Components				X	X	
Lighting Control Plug Stations				X	X	
Lighting Control Plug in Station Backboxes				X	X	
Line Voltage Wire			X	X		
Line Voltage Wire Terminations			X	X		
Low Voltage Wire (DMX & Network)			X	X		
Low Voltage Terminations (DMX & Network)			X	X		
Conduit			X	X		
Lighting Control Console/Accessories					X	X
Power and Data Distribution						
Prewired Outlet Boxes				X	X	
Mounting & Wire Terminations of Outlet Boxes				X		
Branch and Low Voltage Wiring from Power & Data Control Enclosures to Outlet Boxes			X	X		
SO Cable, DMX Cable, & Cable Cradle				X	X	
Gridiron Junction Boxes				X	X	
Containment			X	X		
Static & Motorized Rigging						
Block 1 1/2" ID Schedule #40 Steel Pipe and Spliced					X	X
All Suspension & Termination Hardware For Rigging Devices					X	X
Motorized Hoists & Power Control Distribution Boxes					X	X
Compression Tube For Motorized Rigging					X	X
3ph Power & Conduits For Motorheads & Grid Iron Junction Boxes			X	X		
Unistrut Bridging For Motorized Hoists					X	X

BLIND BROOK MSHS CONTRACTOR RESPONSIBILITY MATRIX

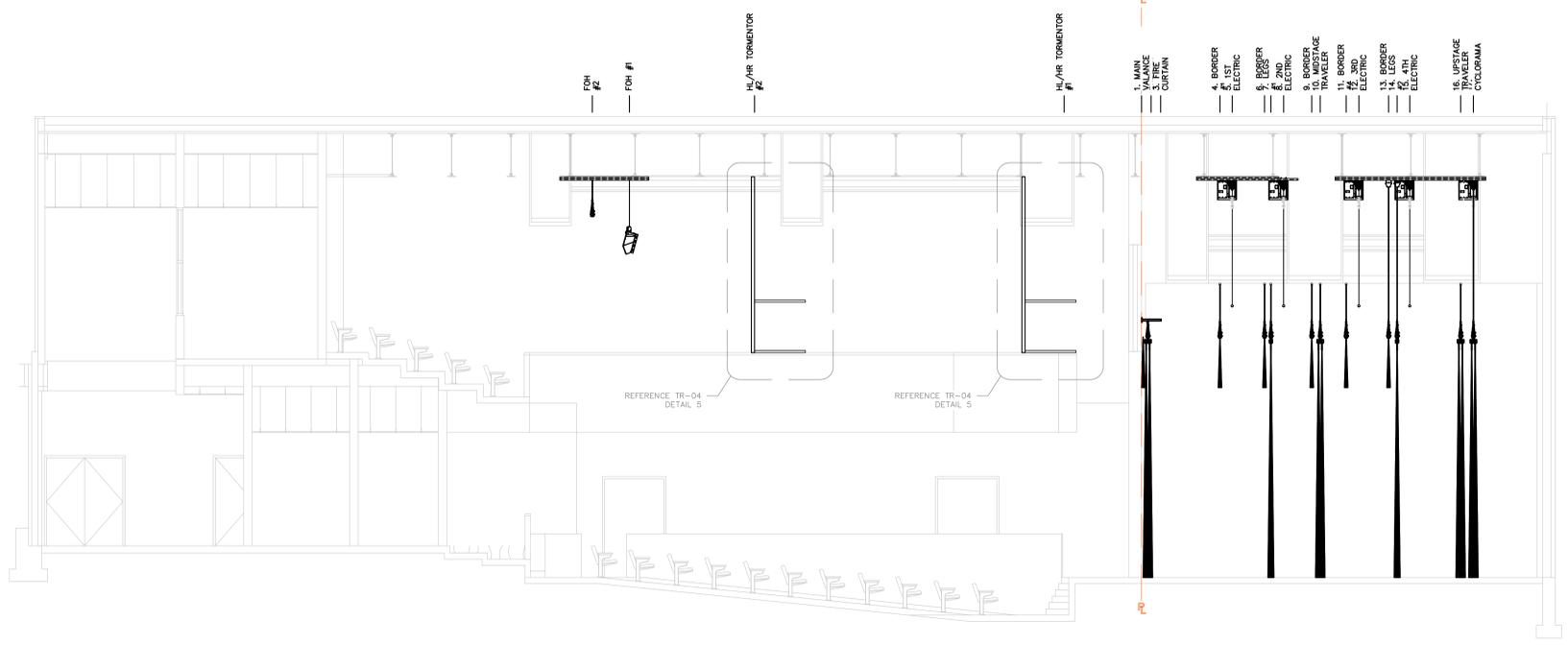
Item	GC		EC		TSI	
	Furnish	Install	Furnish	Install	Furnish	Install
PE Stamp of Provided Rigging Materials					X	
Stage Draperies and Track						
Stage Draperies					X	X
Drapery Track					X	X
Drapery Rigging and Hanging Hardware					X	X
Theatrical Lighting Fixtures						
Theatrical Lighting Fixtures and Accessories					X	X
Power Extension Cables					X	X
Data Extension Cables					X	X
Lighting Plot and Lightweight Paperwork					X	X
Theatrical Fixture Prep/Hang/Focus					X	X
Vertical Access for Lighting Focus. (Lifts & Ladders)			X			
Auditorium House Lighting						
DMX Controlled House Lighting Fixtures				X	X	
House Lighting Relays				X	X	
Low Voltage Control Wire & Terminations			X	X		
Branch Circuit Wire and Conduit			X	X		
Miscellaneous						
Fire Stop			X	X		
Cutting/Patching/Painting	X	X				
Protection of Existing Floors/Walls/Surfaces	X	X				
Disposal/Cleanup/Carting	X	X				
System Commissioning						X
Lighting and Rigging System Training						X
Temporary Work Lights and Power			X	X		
Ventilation	X	X				
PE Stamp of Existing Structure	X					

REV.	DATE	ITEM
01	01/16/26	BID ADD NO. 02

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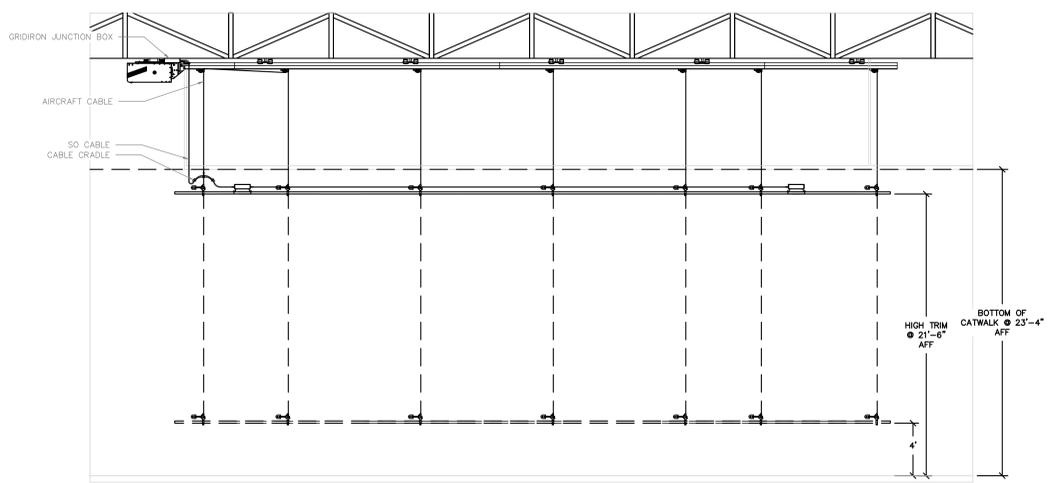


KEY PLAN
 NOT TO SCALE



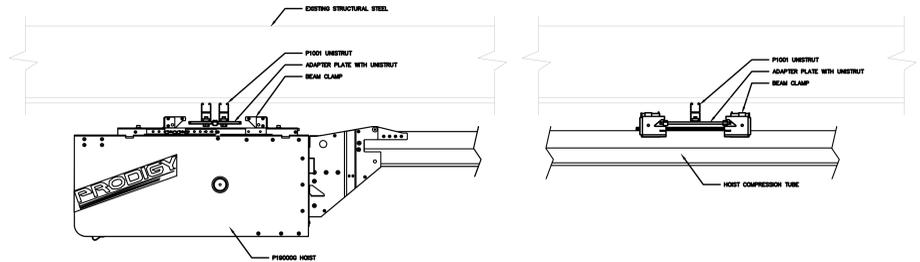
1 THEATRICAL LIGHTING RIGGING SECTION

SCALE: 3/16" = 1'-0"



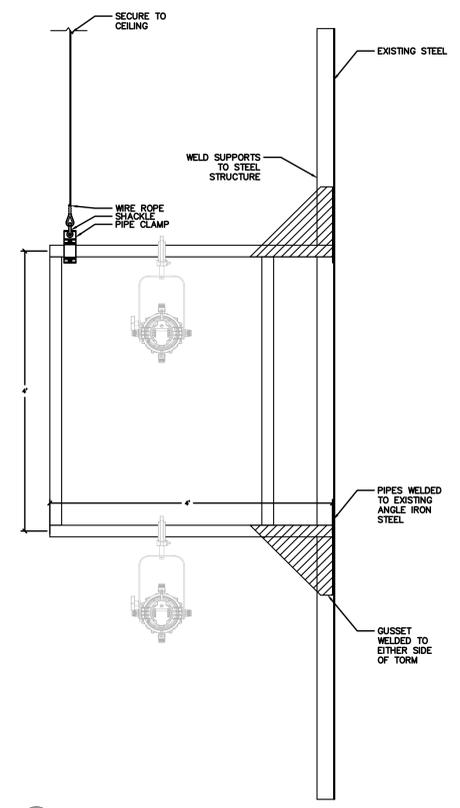
2 THEATRICAL LIGHTING RIGGING ELEVATION - ONSTAGE MOTORIZED (TYPICAL)

SCALE: 3/16" = 1'-0"

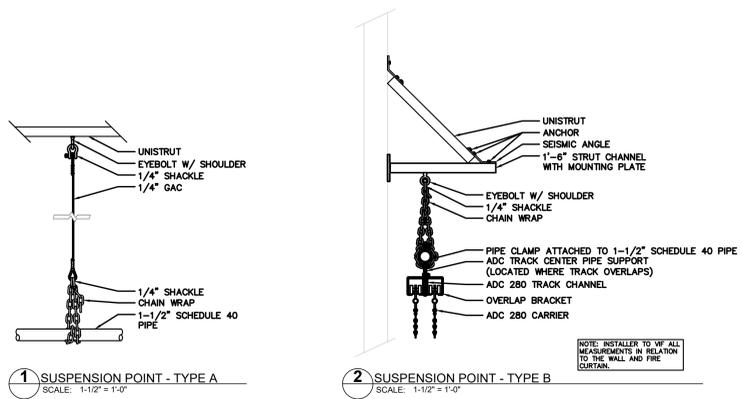


3 SUSPENSION POINT - TYPE C
 SCALE: 1-1/2" = 1'-0"

4 SUSPENSION POINT - TYPE D
 SCALE: 1-1/2" = 1'-0"



5 TORM DETAIL (ELEVATION) TYPICAL
 SCALE: 1-1/2" = 1'-0"



1 SUSPENSION POINT - TYPE A
 SCALE: 1-1/2" = 1'-0"

2 SUSPENSION POINT - TYPE B
 SCALE: 1-1/2" = 1'-0"

3 THEATRICAL LIGHTING RIGGING DETAILS
 SCALE: AS NOTED

RIGGING DEVICE SCHEDULE											
Line Set #	Pipe Distance from Plaster Line	Description	Bottom Length	Rigging	Curtain Height	Curtain Width	Fullness	Material	Color	Lining	Other Notes or Accessories
-4	-43'-2"	FOH #2	42'-0"	STATIC	-	-	-	-	-	-	REPLACING EXISTING AUDIO STATIC PIPE IN SAME LOCATION
-3	-40'-3"	FOH #1	19'-0"	MOTORIZED	-	-	-	-	-	-	PRODIGY FLYPIPE W/ HELIX CABLE MANAGEMENT
-2	-39'-0"	HL/HR TORMENTOR #2	2 @ 4'-0"	STATIC	-	-	-	-	-	-	2 PIPES WELDED TO STEEL PER TORM LOCATION
-1	-6'-1"	HL/HR TORMENTOR #1	2 @ 4'-0"	STATIC	-	-	-	-	-	-	2 PIPES WELDED TO STEEL PER TORM LOCATION
Plaster Line	0'-0"										
1	0'-0"	MAIN VALANCE	96'-0"	STATIC	9'-0"	51'-0"	50%	25 OZ. IFR VELOUR	TBD	IFR LINING	MOUNTED TO BACK OF PROSCENIUM W/ WOOD GROUND
2	0'-0"	MAIN CURTAIN	96'-0"	STATIC	19'-0"	2 @ 29'-4"	50%	25 OZ. IFR VELOUR	TBD	IFR LINING	UNISTRUT ARMS TO BACK OF PRO. ADC 280 ROPE OP. BI-PART TRACK - MILL FINISH
3	1'-0"	FIRE CURTAIN	-	-	-	-	-	-	-	-	EXISTING FIRE CURTAIN TO REMAIN
4	0'-0"	BORDER #1	51'-0"	STATIC	9'-0"	51'-0"	50%	22 OZ. IFR VELOUR	BLACK	-	TRADITIONAL CABLE MGMT. CABLE CRADLE
5	7'-2"	1ST ELECTRIC	51'-0"	MOTORIZED	-	-	-	-	-	-	TRADITIONAL CABLE MGMT. CABLE CRADLE
6	9'-8"	BORDER #2	49'-10"	STATIC	9'-0"	51'-0"	50%	22 OZ. IFR VELOUR	BLACK	-	TRADITIONAL CABLE MGMT. CABLE CRADLE
7	10'-2"	LEGS #1	(2) @ 11'-4"	STATIC	19'-0"	2 @ 7'-9"	50%	22 OZ. IFR VELOUR	BLACK	-	TRADITIONAL CABLE MGMT. CABLE CRADLE
8	11'-2"	2ND ELECTRIC	51'-0"	MOTORIZED	-	-	-	-	-	-	TRADITIONAL CABLE MGMT. CABLE CRADLE
9	13'-0"	BORDER #3	47'-10"	STATIC	9'-0"	51'-0"	50%	22 OZ. IFR VELOUR	BLACK	-	TRADITIONAL CABLE MGMT. CABLE CRADLE
10	14'-1"	UPSTAGE TRAVELER	47'-0"	STATIC	19'-0"	2 @ 28'-3"	50%	22 OZ. IFR VELOUR	BLACK	-	ADC 280 ROPE OP. BI-PART TRACK - MILL FINISH
11	16'-1"	BORDER #4	46'-4"	STATIC	9'-0"	51'-0"	50%	22 OZ. IFR VELOUR	BLACK	-	TRADITIONAL CABLE MGMT. CABLE CRADLE
12	17'-1"	3RD ELECTRIC	51'-0"	MOTORIZED	-	-	-	-	-	-	TRADITIONAL CABLE MGMT. CABLE CRADLE
13	19'-0"	BORDER #5	51'-0"	MOTORIZED	9'-0"	51'-0"	50%	22 OZ. IFR VELOUR	BLACK	-	TRADITIONAL CABLE MGMT. CABLE CRADLE
14	20'-1"	LEGS #2	51'-0"	MOTORIZED	19'-0"	2 @ 8'-0"	50%	22 OZ. IFR VELOUR	BLACK	-	TRADITIONAL CABLE MGMT. CABLE CRADLE
15	21'-1"	4TH ELECTRIC	51'-0"	MOTORIZED	-	-	-	-	-	-	TRADITIONAL CABLE MGMT. CABLE CRADLE
16	23'-1"	UPSTAGE TRAVELER	41'-0"	STATIC	19'-0"	2 @ 22'-4"	50%	22 OZ. IFR VELOUR	BLACK	-	ADC 280 ROPE OP. BI-PART TRACK - MILL FINISH
17	26'-1"	CYCLOPAMA	45'-0"	MOTORIZED	19'-0"	41'-0"	0%	IFR MUSLIN	WHITE	-	SEWN FLAT & SEAMLESS

*IF DRAPERY DIMENSIONS BEFORE FABRICATION OF CURTAINS

3 THEATRICAL LIGHTING RIGGING LINESSET SCHEDULE

NOTE: INSTALLER TO VERIFY ALL MEASUREMENTS BEFORE PROCEEDING.

SCALE: NOT TO SCALE

PROJECT
 BLIND BROOK UNION FREE SCHOOL DISTRICT
 PHASE 3 - BOND IMPROVEMENTS
 BLIND BROOK MIDDLE/HIGH SCHOOL
 RYE BROOK, WESTCHESTER COUNTY, NEW YORK

DWG TITLE
 ELECTRICAL
 PROPOSED PLAN - AUDITORIUM RIGGING SECTION AND ELEVATION

DRAWING BY: LW
 CHECK BY: ---

NOTICE
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BBS
 ARCHITECTS
 LANDSCAPE ARCHITECTS
 ENGINEERS
 244 EAST MAIN STREET ALBANY, NY 12205
 PATCHOGUE, NY 11772
 T. 518.475.0349 F. 518.475.0351
 T. 518.621.7650 F. 518.621.7655
 www.BBSARCHITECTURE.com

SED No: 66-19-05-02-0-002-022
 DISTRICT: BLIND BROOK UNION FREE SCHOOL DISTRICT
 PROJECT: PHASE 3 - BOND IMPROVEMENTS
 DWG TITLE: ELECTRICAL PROPOSED PLAN
 SCALE: AS NOTED
 DATE: AUGUST 2025
 BID PICK-UP: DECEMBER 15, 2025
 FILE No: 25-142a

E6.08