ADDENDUM NO. 3

April 4, 2023

SCHOOL TOWN OF HIGHLAND G.O. BOND 2022 PROJECTS
Highland, IN 46322

TO: ALL BIDDERS OF RECORD

This Addendum forms a part of and modifies the Bidding Requirements, Contract Forms, Contract Conditions, the Specifications, and the Drawings dated February 13, 2023, by Schmidt Associates. Acknowledge receipt of the Addendum in the space provided on the Proposal Form. Failure to do so may subject the Bidder to disqualification.

This Addendum consists of Pages ADD 3-1 through 3-2 and attached, revised specification section 26 55 61 – Stage Lighting & Controls.

GENERAL NOTE: This Re-Bid is ONLY for Bid Category No. 4 – Electrical. Bid opening is April 25, 2023 at 11:00AM (CST) at the School Town of Highland Administration Office Board Room".

A. NOTICE OF BIDDING DEADLINE CHANGE

1. All references to the Bidding Deadline or the Bids Received Date are to change to April 25, 2023. Bids are due at 11:00AM (CST) and will be publicly read aloud immediately following the deadline.

    a. Modify references in Specification Section - 00 00 10.

B. SPECIFICATION SECTION 00 00 20 - TABLE OF CONTENTS

1. **Replace:**

    Specification Section 26 55 61 – Stage Lighting and Controls

B. SPECIFICATION SECTION 00 02 00 - NOTICE TO BIDDERS

2. **Replace:**

Specification Section 00 02 00 - Notice to Bidders with attached revised section.

C. SPECIFICATION SECTION 00 31 00 - BID FORM

1. **Replace**:

Specification Section 00 31 00 - Bid Form with attached revised section.

D. SPECIFICATION SECTION 01 23 00 - ALTERNATES

1. **ADD**:

H. ALTERNATE NO. 8: Exterior Door Monitoring System
State the cost to provide the Exterior Door Monitoring System per Specification Section 28 13 00.99 – Electronic Access Control System (ACS) and as indicated on the construction documents.

2. Replace:

C. ALTERNATE NO. 3: Additional General Stage Lighting Fixtures
State the cost for the material and labor for the Work Described in Specification 265561 "STAGE LIGHTING AND CONTROLS" Part 1.2.A.2

D. ALTERNATE NO. 4: Additional General Stage Lighting Fixtures
State the cost for the material and labor for the Work Described in Specification 265561 "STAGE LIGHTING AND CONTROLS" Part 1.2.A.3

3. DELETE:

E. ALTERNATE NO. 5 in its entirety

F. ALTERNATE NO. 6 in its entirety

G. ALTERNATE NO. 7 in its entirety

E. SPECIFICATION SECTION 01 32 00 - SCHEDULES AND REPORTS

1. **Replace**:
The Guideline Schedule in its entirety with the attached, revised Guideline Schedule.

SECTION 00 02 00 - NOTICE TO BIDDERS

NOTICE TO BIDDERS

Notice is hereby given that sealed bids will be received:

By: School Town of Highland
9145 Kennedy Avenue
Highland, IN 46322

For: School Town of Highland G.O. Bond 2022 Projects – Multiple Locations
Re-Bid Bid Category No. 4 – Electrical

At: School Town of Highland
9145 Kennedy Avenue
Highland, IN 46322

Until: 11:00AM (CST) on April 25, 2023

Bid Opening: Bids will be publicly opened and read aloud at 11:00AM (CST) on **April 25, 2023** in the School Town of Highland Administration Office Board Room, located at 9145 Kennedy Avenue, Highland, IN 46322.

All work for the complete construction of the Project will be under one or more prime contracts with the Owner based on bids received and on combinations awarded. The Construction Manager will manage the construction of the Project.

Construction shall be in full accordance with the Bidding Documents which are on file with the Owner and may be examined by prospective bidders at the following locations:

Office of the Construction Manager
The Skillman Corporation
8006 Aetna Street
Merrillville, IN 46410

The Skillman Plan Room

www.skillmanplanroom.com

Prime and Non-Prime Contract Bidders must place an order on **www.skillmanplanroom.com** to be able to download documents electronically or request printed documents. There is no cost for downloading the bidding documents. Bidders desiring printed documents shall pay for the cost of printing, shipping and handling. Reprographic Services are provided by:

Reprographic Arts, 2824 E. Michigan Blvd., Michigan City, IN 46360, Phone (219) 872-9111

Bid security in the amount of ten percent (10%) of the Bid must accompany each Bid in accordance with the Instructions to Bidders.

The successful Bidders will be required to furnish Performance and Payment Bonds for one hundred percent (100%) of their Contract amount prior to execution of Contracts.

Contractors submitting bids for the performance of any Work as specified in this building Project should make such Bids to **School Town of Highland**. Contractors are advised that the Contract as finally entered into with any successful Bidder may be entered into with either the School Corporation or the Building Corporation or certain portions of the Contract may be entered into by both the School Corporation and the Building Corporation.

The Owner reserves the right to accept or reject any Bid (or combination of Bids) and to waive any irregularities in bidding. All Bids may be held for a period not to exceed **60** days before awarding contracts.

School Town of Highland

By: Dr. Brian J. Smith, Superintendent

END OF SECTION 00 02 00

CONTRACTOR'S BID FOR PUBLIC WORKS FORM NO. 96

Format (Revised 2013)
(Amended for HCSC)

School Town of Highland
G.O. Bond Projects – Multiple Locations

PART I

(To be completed for all bids. Please type or print)

Date (month, day, year):_____

BIDDER (Firm) _____

Address _____ P.O. Box _____

City/State/Zip _____

Telephone Number: _____ Email Address: _____

Person to contact regarding this Bid_____

Pursuant to notices given, the undersigned offers to furnish labor and/or materials necessary to complete the public works project of:

_____
Insert Category No. (s) and Name(s)

Of public works project, ***School Town of Highland G.O. Bond Projects – Multiple Locations***, in accordance with Plans and Specifications prepared by ***Schmidt Associates, 415 Massachusetts Ave., Indianapolis, IN 46204***, as follows:

BASE BID

For the sum of _____
(Sum in words)

_____DOLLARS ($_____)
(Sum in figures)

The undersigned acknowledges receipt of the following Addenda:
Receipt of Addenda No. (s) _____

PROPOSAL TIME

Bidder agrees that this Bid shall remain in force for a period of sixty (60) consecutive calendar days from the due date, and Bids may be accepted or rejected during this period. Bids not accepted within said sixty (60) consecutive calendar days shall be deemed rejected.

Attended pre-bid conference YES _____ NO_____

Has visited the jobsite YES _____ NO_____

The Bidder has reviewed the Guideline Schedule in Section 01 32 00 and the intent Of the schedule can be met.

YES _____ NO_____

Bidder has included their Written Drug Testing Plan that covers all employees of the bidder who will perform work on the public work project and meets or exceeds the requirements set in IC 4-13-18-5 or IC 4-13-18-6.

YES _____ NO_____

The Skillman Corporation's diversity initiative is to create a program to encourage, assist and measure the active participation of Minority- Owned, Women-Owned, Veteran – Owned and Disabled Individual-Owned Businesses. The Program is to ensure that MWVDBEs are provided full and equal opportunity to participate in all Skillman Corporation's Projects.

Bidder has included:

DBE: YES _____% NO _____
MBE: YES _____% NO _____
WBE: YES _____% NO _____
VBE: YES _____% NO _____

The undersigned further agrees to furnish a bond or certified check with this Bid for an amount specified in the Notice to Bidders. If Alternate Bids apply, submit a proposal for each in accordance with the Plans and Specifications.

If additional units of material included in the contract are needed, the cost of units must be the same as that shown in the original contract if accepted by the governmental unit. If the bid is to be awarded on a unit bases, the itemization of the units shall be shown on a separate attachment.

The contractor and his subcontractors, if any, shall not discriminate against or intimidate any employee, or applicant for employment, to be employed in the performance of this contract, with respect to any matter directly or indirectly related to employment because of race, religion, color, sex, national origin, or ancestry. Breach of this covenant may be regarded as a material breach of the contract.

CERTIFICATION OF USE OF UNITED STATES STEEL PRODUCTS
(if applicable)

I, the undersigned bidder, or agent as a contractor on a public works project, understand my statutory obligation to use steel products made in the United States (I.C. 5-16-8-2). I hereby certify that I and all subcontractors employed by me for this project will use U.S. steel on this project if awarded. I understand that violations hereunder may result in forfeiture of contractual payments.

ALTERNATE BIDS

A blank entry or an entry of "No Bid", "N/A", or similar entry on any Alternate will cause the bid to be rejected as non-responsive only if that Alternate is selected. If no change in the bid amount is required, indicate "No Change".

****MARK "ADD" OR "DEDUCT" FOR EACH ALTERNATE****

Alternate Bid No. 1 – Johnston Elem. Rooftop HVAC Replacement

Change the Base Bid the sum of_____
(sum in words)

_____DOLLARS ($_____) ADD DEDUCT
(sum in figures)

Alternate Bid No. 2 – Warren Elem. Rooftop HVAC Replacement

Change the Base Bid the sum of_____
(sum in words)

_____DOLLARS ($_____) ADD DEDUCT
(sum in figures)

Alternate Bid No. 3 – TH-1 Additional general stage lighting fixtures

Change the Base Bid the sum of_____
(sum in words)

_____DOLLARS ($_____) ADD DEDUCT
(sum in figures)

Alternate Bid No. 4 – TH-2 Followspots and additional moving light fixtures

Change the Base Bid the sum of_____
(sum in words)

_____DOLLARS ($_____) ADD DEDUCT
(sum in figures)

Alternate Bid No. 5 – DELETED

Change the Base Bid the sum of _____
(sum in words)

_____ DOLLARS ($_____) ADD / DEDUCT
(sum in figures)

Alternate Bid No. 6 – DELETED

Change the Base Bid the sum of _____
(sum in words)

_____ DOLLARS ($_____) ADD / DEDUCT
(sum in figures)

Alternate Bid No. 7 – DELETED

Change the Base Bid the sum of _____
(sum in words)

_____ DOLLARS ($_____) ADD / DEDUCT
(sum in figures)

Alternate Bid No. 8 – Exterior Door Monitoring System

Change the Base Bid the sum of _____
(sum in words)

_____ DOLLARS ($_____) ADD / DEDUCT
(sum in figures)

PART II

(For projects of $150,000 or more – IC 36-1-12-4)

These statements to be submitted under oath by each bidder with and as a part of his bid. (Attach additional pages for each section as needed.)

SECTION I EXPERIENCE QUESTIONNAIRE

1. What public works projects has your organization completed for the period of one (1) year prior to the date of the current bid?

Contract Amount	Class of Work	Completion Date	Name and Address of Owner

2. What public works projects are now in process of construction by your organization?

Contract Amount	Class of Work	Completion Date	Name and Address of Owner

3. Have you ever failed to complete any work awarded to you?_____If so, where and why?

_____

_____

_____

4. List references from private firms for which you have performed work.

_____

_____

_____

SECTION II PLAN AND EQUIPMENT QUESTIONNAIRE

1. Explain your plan or layout for performing proposed Work. (Examples could include a narrative of when you could begin, complete the project, number of workers, etc. and any other information which you believe would enable the governmental unit to consider your bid.)

2. Please list the names and addresses of all subcontractors (i.e. persons or firms outside your own firm who have performed part of the work) that you have used on public works projects during the past five (5) years along with a brief description of the work done by each subcontractor.

3. If you intend to sublet any portion of the work, state the name and addresses of each subcontractor, equipment to be used by the subcontractor, and whether you will required a bond. However, if you are unable to currently provide a listing, please understand a listing must be provided prior to contract approval. Until the completion of the proposed project, you are under a continuing obligation to immediately notify the governmental unit in the event that you subsequently determine that you will use a subcontractor on the proposed project.

4. What equipment do you have available to use for the proposed Project? Any equipment used by subcontractors may also be required to be listed by the governmental unit.

5. Have you into contracts or received offers for all materials which substantiate the prices used in preparing your proposal? If not, please explain the rationale used which corroborate the process listed.

SECTION III CONTRACTOR'S FINANCIAL STATEMENT

Attachment of Bidder's financial statement is mandatory. Any Bid submitted without said financial statement as required by statute shall thereby be rendered invalid. The financial statement provided hereunder to the governing body awarding the Contract must be specific enough in detail so that said governing body can make a proper determination of the Bidder's capability for completing the Project if awarded.

SECTION IV CONTRACTOR NON-COLLUSION AFFIDAVIT

The undersigned Bidder or agent, being duly sworn on oath, says that he has not, nor has any other member, representative, or agent of the firm, company, corporation or partnership represented by him, entered into any combination, collusion or agreement with any person relative to the price to be bid by anyone at such letting nor to prevent any person from bidding nor to induce anyone to refrain from bidding, and that this Bid is made without reference to any other bid and without any agreement, understanding or combination with any other person in reference to such bidding.

He further says that no person or persons, firms, or corporations has, have, or will receive directly or indirectly, any rebate, fee, gift, commission, or thing of value on account of such contract.

SECTION V OATH AND AFFIRMATION

I HEREBY AFFIRM UNDER THE PENALTIES OF PERJURY THAT THE FACTS AND INFORMATION CONTAINED IN THE FOREGOING BID FOR PUBLIC WORKS ARE TRUE AND CORRECT

Dated at _____this _____ day of _____, 20

_____
(Name of Organization)

By

_____

_____
(Title of Person Signing)

ACKNOWLEDGEMENT

STATE OF _____)
) SS:
COUNTY OF _____)

Before me, a Notary Public, personally appeared the above-named

_____

Swore that the statements contained in the foregoing document are true and correct.

Subscribed and sworn to before me this _____ day of _____,

_____
(Title)

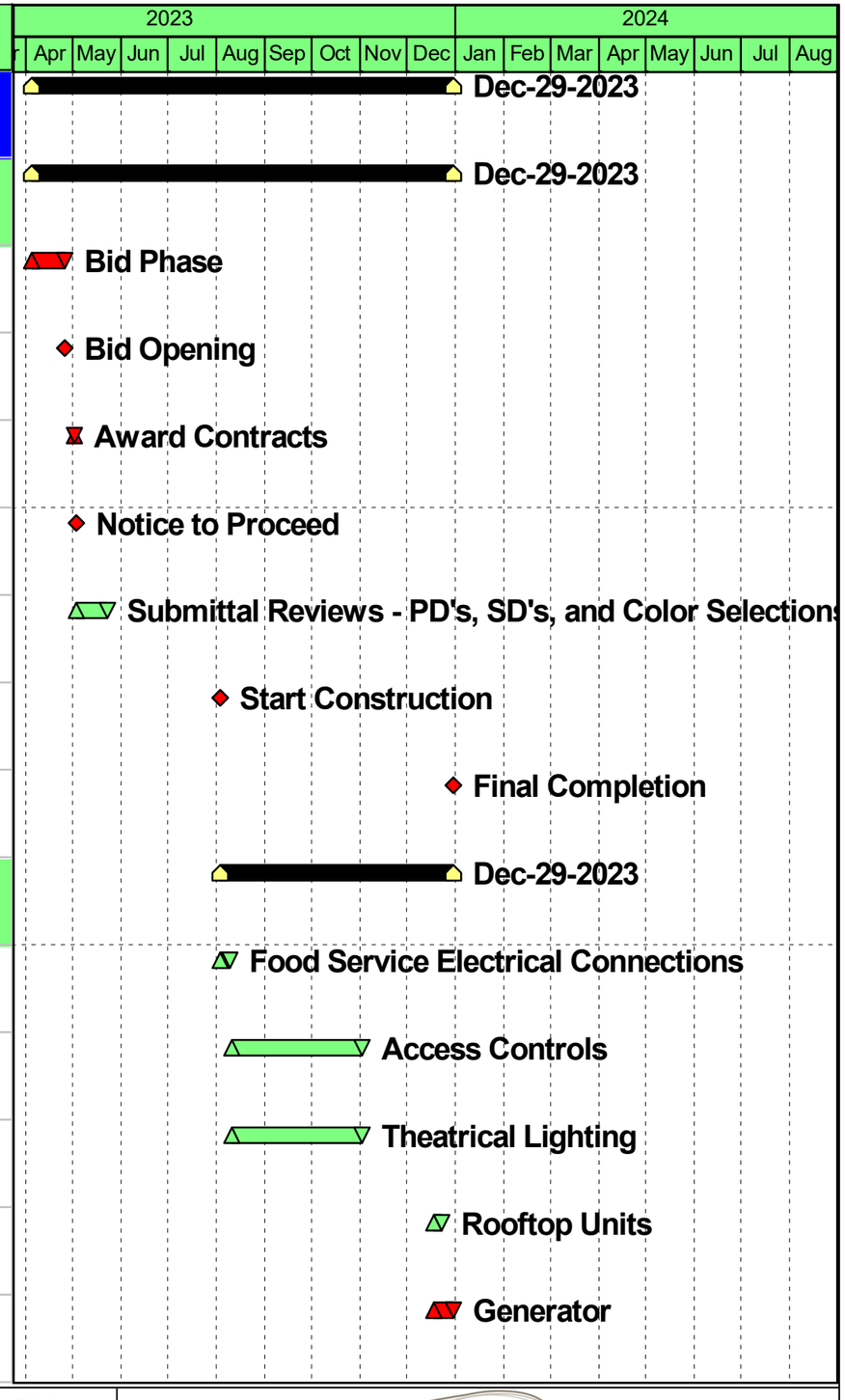
_____
Notary Public

My Commission Expires: _____

County of Residence: _____

END OF SECTION 00 31 00

Activity Name	Original Duration	Start	Finish
School Town of Highland 2022 Bond Projects - Electrical Re-Bid	**192**	**Apr-05-2023**	**Dec-29-2023**
Project Administration	**192**	**Apr-05-2023**	**Dec-29-2023**
Bid Phase	15	Apr-05-2023	Apr-25-2023
Bid Opening	0		Apr-25-2023
Award Contracts	1	May-02-2023	May-02-2023
Notice to Proceed	0	May-03-2023	
Submittal Reviews - PD's, SD's, and Color Selections	15	May-03-2023	May-23-2023
Start Construction	0	Aug-03-2023	
Final Completion	0		Dec-29-2023
Construction	**107**	**Aug-03-2023**	**Dec-29-2023**
Food Service Electrical Connections	5	Aug-03-2023	Aug-09-2023
Access Controls	60	Aug-10-2023	Nov-01-2023
Theatrical Lighting	60	Aug-10-2023	Nov-01-2023
Rooftop Units	5	Dec-18-2023	Dec-22-2023
Generator	10	Dec-18-2023	Dec-29-2023



Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

222080 - School Town of Highland 2022 Bond Projects - Electrical Re-Bid
Guideline Schedule Apr-05-2023

SKILLMAN

SECTION 26 5561 – STAGE LIGHTING AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

B. Q series drawings

C. E series drawings

1.2 SUMMARY

A. To ensure a fully-functional system, it is the intent of the specification that this package of equipment be purchased through a qualified theatrical dealer/integrator.

1. Base Bid
   a. Stage Lighting Power Control
      1) Existing dimmer racks (Strand CD80SV, qty 2)
         a) (2) OEM processor upgrades including installation
         b) (2) OEM fan upgrades including installation
         c) (2) Clean racks
   b. Control infrastructure:
      1) (9) DMX outputs (see drawings for mounting and locations)
      2) (4) NET ports (booth, stage manager's panel)
      3) (1) network switch
      4) (2) network to DMX gateways, 8 ports
      5) Install network switch and gateways in existing equipment rack/stage manager's panel at stage right. Note: it may be necessary to provide a power strip.
      6) Commissioning

   c. Wall Controls
      1) Existing ETC Paradigm system to remain
      2) Update project program

   d. Power Distribution Devices
      1) (4) double duplex wall-mount receptacles

   e. Control console
      1) Specified Console
      2) Required Accessories
      3) Setup & Training

   f. Portable theatrical fixtures
      1) General, each fixture
         a) Unpack, hang, cable, address
         b) Provide with 10 foot DMX cable
         c) Provide with stage pin male to Edison female adapter
      2) Front of house catwalks
         a) (20) LED ellipsoidal spotlights with 19 degree lens tubes (front of house catwalks)
         b) (2) LED moving light
      3) On-stage front and side lighting
         a) (6) LED zoom PAR fixtures (side walls)
         b) (10) LED ellipsoidal spotlights with 26 degree lens tubes (stage electrics)
      4) (7) LED Cyclorama wash fixtures
      5) (5) LED zoom PAR fixtures (stage electrics)

6) Accessories (in addition to items provided with fixtures):
   a) (10) 10’ DMX cables
   b) (4) 25’ DMX cables
   c) (2) 50’ DMX cables
   d) (30) 10’ PowerCON True1 jumper cable
   e) (10) 5’ PowerCON True1 jumper cable
   f) (40) Strand CD80SV Dual 20A Relay Modules
   g) (1) 3000 foot spool 1/8” unglazed black tie line

2. Alternate TH-1 – Additional general stage lighting fixtures
   a. General, each fixture
      1) Unpack, hang, cable, address
      2) Provide with 10 foot DMX cable
      3) Provide with stage pin male to Edison female adapter
   b. (8) LED ellipsoidal spotlights with 19 degree lens tubes (front of house catwalks)
   c. (4) LED zoom PAR fixtures (side walls)
   d. (5) LED zoom PAR fixtures (stage electric #4)
   e. (2) LED Cyclorama wash fixtures

3. Alternate TH-2 – Followspots and additional moving light fixtures
   a. General, each fixture
      1) Unpack, hang/install, cable, address
      2) Provide each moving light with 10 foot DMX cable
      3) Provide each moving light with stage pin male to Edison female adapter
   b. (4) LED moving light
   c. (2) LED follow spotlights

1.3 ACTION SUBMITTALS

A. With bid:

1. Bill of materials

B. Shop drawings shall be submitted electronically or, if paper, in no less than four (4) copies for approval unless additional copies are required by the General Conditions. One set will be returned to the Architect for transmittal to the Contractor from the Consultant marked "No Exceptions Taken", "Make Corrections Noted", or Resubmit Rejected". Drawings marked other than "No Exceptions Taken" shall be revised and resubmitted until no exceptions are taken. Fabrication may begin on items marked "Make Corrections Noted" while drawings are being revised and resubmitted for final approval. Include:

1. Product Data: Indicate compliance with reference standards, current performance data, application recommendations and product limitations.
2. Shop Drawings: Assembly and installation drawings showing product components in assembly. General system drawings shall be scaled no less than 1/4"=1’-0”. Details shall be scaled as necessary to clearly illustrate Contractor’s intent.

C. As-Built Drawings and Maintenance/Operation Manuals shall be furnished as required by Division 1. Items to be included in the Manuals are:

1. Safety rules and safety directions for operation. Maximum load limits for all assemblies.
2. As-built drawings and schematic diagrams.
3. List of components for all assemblies, with part/model numbers, including manufacturers' addresses and phone numbers.
4. Inspection check sheets with maintenance schedules.
5. Name, address, and telephone number of manufacturer, installer, architect, and consultant for guidance of future service personnel.

1.4 QUALITY ASSURANCE

A. Standards:

1. All applicable requirements of Division 1 govern all work in this section.
2. All equipment and work: comply with “Codes and Standards”.
3. All equipment and components: approved and listed by a Nationally Recognized Testing Laboratory (NRTL) where applicable standards have been established.
4. All equipment: manufactured and tested in accordance with the applicable portions of the latest editions of U/L, NEMA, ASA, AIEE, and IPECA standards.
5. National Fire Protection Association. "National Electrical Code" (NEC) as adopted by the State of Indiana.
6. International Building Code as applicable and as adopted by the State of Indiana.
7. Trade Standards, including the latest revisions of all applicable standards and codes published by the following organizations:

    a. American National Standards Institute (ANSI)
    b. American Society for Testing Materials (ASTM)
    c. American Iron and Steel Institute (AISI)
    d. National Electrical Manufacturers Association (NEMA)
    e. American Society of Mechanical Engineers (ASME)
    f. Society of Automotive Engineers (SAE)
    g. Society of Motion Picture and Television Engineers (SMPTE)

B. Where devices and material are mentioned by name and/or model number, it shall be interpreted as referring to that particular item as completely specified in the manufacturer's published data as though that data and literature were printed herein in their entirety.

C. Any cabinets, racks, or other components which must be separated from contiguous parts to enable shipment and/or handling at the site shall be furnished complete with all necessary connecting hardware, bus bars, wire jumpers, etc., to provide a complete, functioning system when reassembled in the building.

D. All Equipment: the products of one supplier; complete with all required apparatus, devices, controls, accessories, etc.

1.5 PRODUCT SUBSTITUTION REQUESTS

A. Unless specifically stated, specified products are assumed to have no “or equals” products for this project.

B. Bidders are advised that proposals to substitute equivalent theatrical equipment will be considered subject to the provisions of Division 0 and 1 as they apply to Product Substitution requests. In no event will substitution requests less than ten (10) business days prior to the bid be considered. All proposals will be judged on the basis of equivalent quality, performance, track record and price. The Consultant and Architect shall be the sole judges of such equivalency.

C. Proposals to substitute equipment shall include sufficient catalogue data, specifications, technical data and samples to enable the Theatre Consultant and Architect to evaluate them.

D. The initial sample submittal shall be the basis upon which the qualifications of the bid will be determined. One (1) sample submission from any given Bidder will be permitted. Subsequent quality escalation through repeated sample submittals from the same bidder will not be allowed nor will modification of the original samples be permitted.

E. The Architect or Consultant reserves the right to make such examination of the samples as he may consider necessary to determine their quality and compliance with the specification, even to the destruction of the samples, and such determination by the Architect or Consultant shall be final. The acceptable samples shall be retained for comparison with the equipment ultimately furnished and will be returned afterward to the bidder at their request and at their expense. Bidders will not be allowed to examine the samples of another bidder.

1.6 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.

PART 2 - PRODUCTS

2.1 DMX/ETHERNET NODE, RACK MOUNTED

A. General

1. Provide eight-port DMX nodes to permit DMX512 and RDM data to be encoded, routed and decoded over a conventional 10/100Base-T Cat5 (twisted pair copper) Ethernet network.
2. Each node shall incorporate four (4), six (6), or eight (8) gold-plated 5-pin rear-mounted XLR-type female connectors, or four (4), six (6), or eight (8) Phoenix-type rear-mounted screw terminal connectors, or four (4), six (6), or eight (8) EtherCon™ rear-mounted RJ-45 female connectors, for DMX/RDM ports.
3. Each node shall also incorporate one external 10/100 Ethernet port utilizing a rear-mounted EtherCon™ RJ-45 type female jack.
4. Nodes shall incorporate a manual user interface consisting of an encoder knob with integral pushbutton and a backlit graphical LCD display for identification (soft-labeling) and status reporting. Labeling shall be user configurable.
5. Nodes shall be capable of encoding or decoding DMX data to or from any industry standard Ethernet lighting control protocol and certain commonly used proprietary Ethernet protocols.

B. DMX Ports

1. DMX ports shall comply with the requirements of the ANSI E1.11 DMX512-A standard, and the USITT DMX512 (1990) standard.
2. DMX ports shall be fully electrically isolated from the Ethernet network infrastructure and chassis ground.
3. DMX ports shall be capable of being user-configured as inputs, outputs or not used (available).
4. Each DMX port shall include three front panel LEDs to indicate port direction, data activity and isolated power status.
5. The DMX output update (refresh) rate shall be user-selectable between rates of 31Hz, 36Hz, 40Hz, and 44Hz (maximum possible rate). The update rate shall be user selectable on a port-by-port basis.
6. DMX ports configured as outputs shall support ANSI E1.20 RDM (Remote Device Management).
7. DMX ports shall provide connections for signal common, the primary data pair, and connection points only for the secondary (optional) data pair.

C. Ethernet Port

1. The Ethernet port shall comply with the requirements of the IEEE 802.3 10/100Base-T standard.
2. The Ethernet port shall include LED indicators for Link status and 10/100 speed status.

D. Processor

1. Each node shall have sufficient processing power to merge up to four (4) incoming DMX universes with respect to each output port.
2. The CPU shall be capable of processing up to sixteen (16) megabits per second of network traffic without any dropped packets.
3. Maximum delay time from input to output shall not be greater than one DMX packet time (approximately 30 mSec.).
4. Node firmware shall be stored in non-volatile (Flash) memory. It shall be possible to upload new firmware files via the Ethernet port.

E. Mechanical

1. The node housing shall be constructed of die-cast aluminum and steel.

2. Nodes shall be of pleasing appearance, suitable for high-visibility locations.
3. Nodes shall be designed to mount in a single unit of 19” rack space and shall include all necessary mounting hardware for this purpose.
4. It shall be possible to mount two nodes side-by-side in a single unit of 19” rack space and all necessary mounting hardware for this purpose shall be included.
5. Nodes shall be provided in satin black textured powder-coat finish.

F. Electrical

1. There shall be 2500-volt electrical isolation between power supply and low voltage circuits.
2. There shall be 1500-volt electrical isolation between adjacent DMX I/O sections.
3. Each DMX I/O port shall be capable of withstanding the continuous application of up to 48V, and transient application of up to 250V, without damage to internal components. Protection shall be of a self-resetting type, rated for 250V. Replaceable fuses are not acceptable.

G. Configuration

1. Node identification (naming), DMX port direction, universe patching and all other configuration shall be accomplished using a personal computer connected to the Ethernet port. The node manufacturer shall provide the configuration software for this function (see Section 11).
2. All nodes on the same network shall be remotely configurable from a personal computer connected to the Ethernet network.
3. Once configuration is done, the nodes shall not require a computer to be present on the network for proper operation.
4. All configuration and operational data shall be stored in non-volatile memory in each node.
5. It shall be possible for a personal computer connected to the Ethernet network, to download from a system of all connected nodes, all their configuration and operational data, such that a complete new system configuration file can be created and saved in the computer.
6. It shall be possible to make configuration changes at any time during live performance without interrupting or otherwise adversely affecting the flow of DMX data through the system, with the exception of the specific port(s) directly affected by the changes.

H. DMX Routing

1. It shall be possible for the user to route complete DMX universes from any input port to any DMX output port at any node. It shall be possible to route universes to any number of nodes. Routing shall be configured from a personal computer running the configuration software.
2. It shall further be possible to route individual DMX channels (or ranges of channels) from any input port to any output port. Routing shall be configured from the configuration software.
3. It shall be possible to merge whole universes or individual DMX channels to any output port.
4. It shall be possible to prioritize input universes or individual channels routed to any output port.
5. Where two or more control sources are prioritized with respect to a given DMX channel or universe, the system shall be capable of cross-fading between sources as they are
6. The computer shall only be required for configuration and signal routing assignment, and shall not be required for the normal operation of the system.
7. All relevant routing information shall be stored in non-volatile memory at each node. The system shall recover from a power outage without requiring a computer to be online.

I. Network

1. Communications physical layer shall comply with the IEEE 802.3 10/100Base-T Ethernet specification. Products offering only 10Base-T connectivity shall not be acceptable.
2. All network cabling shall be Cat5e or Cat6 conforming to TIA-568A/B, and shall be installed and certified by a qualified network installer.
3. Data transport shall utilize the TCP/IP suite of protocols to transfer the DMX and RDM data.
4. Nodes shall support industry standard ANSI E1.31 Streaming ACN.
5. Nodes shall also support ETCNet3, Pathport Protocol, Art-Net, and Strand ShowNet.
6. Nodes shall be capable of accepting DMX level data from any or all of the above named protocols simultaneously.

J. Management Software

1. Provide and install node management software to allow the user to discover, configure and monitor all nodes in the system.
2. The software shall be capable of managing individual nodes or all installed nodes in the system simultaneously.
3. Software that can manage only one node at a time shall not be acceptable.
4. The software shall provide an intuitive graphical user interface for all configuration and monitoring functions.
5. The software shall include an RDM master controller function.
6. The software shall provide a comprehensive log of all user-initiated and system-generated status and error messages to aid in troubleshooting.
7. The software shall include password protection to prevent unauthorized access.
8. The software shall be compatible with Windows, Macintosh and Linux operating systems.

K. System Requirements

1. Provide the quantity and type of nodes required, as indicated on the drawings and schedules.

L. Compliance

1. The DMX/RDM Gateway nodes shall be compliant with the RoHS directive.
2. The DMX/RDM Gateway nodes shall conform to all FCC and CE requirements.

M. Manufacturers:

1. Pathway Connectivity
2. Strand Lighting
3. Electronic Theater Controls

2.2 RETROFIT PROCESSOR

1. Rack Electronics, Physical.
   a. The main dimmer control electronics shall be housed in a Rack Processor Module (RPM). The dimmer control electronics shall be completely digital without employing any digital to analog demultiplexing schemes or analog ramping circuits.
   b. All rack setup and preset data shall be stored in a non-volatile manner and may be transferred to a replacement Rack Processor Module without losing data.
   c. All DMX512 & RS485 communication ports and remote contact input connections shall be optically isolated from all processor electronics by a minimum of 2,500V RMS isolation.
2. Rack Electronics, Control and Communications.
   a. The control electronics shall provide the following control and communication inputs as standard:
      1) An Ethernet control input. This input can support a connection to a Strand ShowNet system. Each Ethernet control input can generate Reporting messages for the dimmer rack. This input shall also allow for local connection to a personal computer, providing setup, playback, dimming reporting features, and the ability to load rack-operating software.
      2) Two optically isolated DMX512 control inputs. The first input shall accept DMX512 only. The second DMX512 input may be configured to accept DMX512, or Strand Lighting's Vision.net architectural protocol.
      3) Optically isolated contact inputs, for external switching interfaces (24V 100ma). These closures are dedicated for:
         a) PANIC ON Momentary Turns Panic On.
         b) PANIC OFF Momentary Turns Panic Off.
         c) FIRE ALARM Maintained Turns Panic On, no Override.
3. Manufacturer & Model: Vari-Lite, C21 Processor Retrofit 76702 (NO EQUAL)

2.3 NON-DIM (RELAY) MODULES

1. The dimmer modules shall be fully plug-in and factory wired. Dimmer modules shall be of rugged and heavy-duty construction enclosed by a formed aluminum chassis. Power and signal pins shall be recessed in a self-aligning housing to avoid handling, storage, and insertion damage. A contoured handle shall be provided for ease of insertion and withdrawal. All chassis parts, except heat sinks, shall be properly treated, primed and finished in fine texture, scratch resistant, coating. Each module

shall be labeled with the Philips Strand Lighting logo and rating. Modules constructed of molded plastic for structural support shall not be acceptable. Dimmer modules shall be ETL and cETL listed and CE marked devices.

2. Dimmer modules shall be keyed so that dimmer modules of greater capacity shall not be interchangeable.
3. Non-Dim modules shall be available to provide dedicated non-dim circuits not employing SSR devices. Dual modules shall be available providing non-dim/non-dim configurations. Each non-dim shall be provided with a primary circuit breaker of the appropriate rating. Non-dims shall be designed so they can be used for inductive loads.
4. Relay modules must be compatible with Strand CD80 SV racks.
5. Manufacturer & Model: Vari-Lite, CD80 Dual Non-Dim 72399 (NO EQUAL)

2.4 WIRE AND CABLE

A. Building Wire in Raceways: Comply with requirements specified in Division 16 Section "Low-Voltage Electrical Power Conductors and Cables."

B. Portable Power Cable: Listed and labeled by an NRTL; flexible stage and lighting power cable; Type SO, SOW, or SOOW; 600 V; multiconductor; 60 deg C temperature rating.

C. Ethernet Cabling: Comply with requirements specified in Division 16 Section "Control-Voltage Electrical Power Cables."
   1. For 10/100BaseT, comply with provisions for UTP cable and hardware.
   2. All exposed wire is to be black.

D. ANSI E1.11 (USITT DMX512-A) Control Cabling: Comply with requirements specified in Division 26 Section "Control-Voltage Electrical Power Cables."

2.5 CONTROL CONSOLE

A. General Description.

1. The lighting control console shall be microprocessor based and specifically designed to provide complete control of stage, studio and entertainment lighting systems. An open architecture system using non-proprietary interfaces to permit upgradeability shall be used.
2. The system shall provide control of up 100 Universes of DMX (51,200 output parameters) over 25,000 control channels. Output shall be distributed over a 10/100/1024 MB Ethernet network using Philips Strand Lighting ShowNet, E1.31 (sACN), Pathport, KiNet 1 & 2, ArtNet, simultaneously as well as E1.11 -2008 USITT DMX 512/1990-A outputs over four (4) DMX 5pin XLR outputs.
3. The system shall support full bi-directional RDM communication with compatible RDM Network devices via the four (4) DMX connections on the Neo control console. RDM communication shall adhere to ANSII standard E1.20-2006 Entertainment Technology – RDM – Remote Device Management over DMX512 Networks.
4. An infinite number of cues, cue lists, groups, presets, palettes, macros, effects, snapshots may be contained in non-volatile electronic memory and stored to an onboard solid-state hard drive and to Recorded cue lists (Unlimited) may be played back simultaneously on up to 95 faders (including optional wing faders). Channels shall, by default, respond to cue information by last instruction, with timing control provided for all cues.
5. The Neo control console may be programmed in Tracking, Hybrid Tracking or Cue Only mode by the user as a system default and overridden on individual record actions as required.
6. A Master A/B motorized fader set shall be provided. The 60mm motorized fader set can execute move fades. Five (5) Additional 60mm motorized playback faders are also provided for multiple cue playback options over an unlimited number of fader pages.
7. Ten (10) 60mm motorized multifunction faders are also provided in addition to the above. These multifunction faders give the end user additional playback faders, additive, inhibitive or effect submasters. Two (2) dedicated, addressable motorized grand masters and one rate master are provided as well.
8. A rate master shall be provided. The 60mm motorized fader can be set to execute all master timing across the console functionality allowing for “on the fly” busking timing.

9. A set of four (4) push button soft touch encoders and companion LCD play back screens shall be included for control of multichannel luminaires. Each LCD playback screen will give the user feedback on the rotary encoders state, value, and graphic. Encoders may be operated in coarse or fine mode. Tactile feedback for full frame operations shall be provided. .
10. A high-resolution level wheel shall be provided to control intensity for selected channels and scrolling/zoom for some displays.
11. An integrated track ball and alpha-numeric keyboard shall be included for screen navigation, software interaction, cue labeling, patch labeling, or non -numeric command line functions using the Alpha numeric text call up function feature.
12. Each Control Console shall support up to three (3) HD multi-touch monitors and support HDMI, DVI, and Display Port device outputs. Each display is user definable.
13. Control surface buttons shall be backlit. The backlighting shall provide indication of functional states through both color change and intensity. Back lit buttons shall also indicate “follow me” programming which will allow the novice user to follow the next key press sequences needed when command line programming.
14. Control and programming features for intelligent lighting fixtures shall also include: a standard library of fixture profiles, the ability to copy and edit existing profiles and create new profiles and patch displays.
15. User-definable, interactive displays may be created – magic sheet view. These displays, which can be used in live and blind operating modes, allow graphical layout of channels and system shortcuts such as Palettes and Groups.
16. Software upgrades shall be made by the user via USB flash drive; changing internal components shall not be required.
17. Show data may be created and modified on a personal computer, using either Windows 7, or Windows 8 operating systems, with a free offline editing application. The program shall also allow output to visualization software supporting the same protocols as the lighting system.
18. FTB (full tracking back up) Synchronized backup shall be provided via another full console on the network or by use of a remote processor unit. The backup console or Rack mount controller shall maintain synchronized playback with the master and shall take over control of the lighting system upon loss of communication with the master, either automatically or upon user confirmation.
19. Multiple users may access show data from the main control console. 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 remote access user to mirror the current display format and mode.
20. Show files are simultaneously saved across the system to each mapped integral hard drive, flash drives and external network drives.
21. The control console shall provide a pull out drawer housing an external alpha-numeric keypad and USB Charging and Data Port.
22. The lighting control console shall feature a flexible hardware and software design. Control channel counts, automated lighting support, help files, and additional control hardware shall be easily upgradeable.
23. Minor revisions of operating software and an off-line editor shall be available to the user via download from the manufacturer's web site at no additional cost. Console software shall be upgradeable in the field via Internet download.
24. The lighting control console software shall feature a familiar and easy-to use Windows graphical user interface (GUI) based on the Windows operating system. Software features shall include Off-line Editor, Remote Video, Media Player, Web Browser, and PDF Reader.
25. The dedicated Windows processor architecture shall deny access to operating system, but shall allow access to an open hard drive for show files. Processor back up shall be supported by the use of any Windows 7, or later, computer running the PC version of the lighting control console software.

B. PHYSICAL

1. Console Physical & Electrical.

   a. The console controls and electronics shall be a desktop configuration and shall use a high density multicore Intel microprocessor.
   b. The console shall be constructed of steel with an aluminum face panel. All internal control components shall be fully modular to permit simple removal and exchange. The top panel shall be easily removed via thumb screws to allow for easy access to the internal components of the console.

c. The central processor shall be fully integrated into the main console in a separate removable enclosure for rapid removal and exchange. The processor shall include a 120GB solid state hard drive (minimum), standard computer I/O and an integrated USB hub for connection of all console control electronics to the system processor.
d. The Control Console shall be universal in power requirements and shall support from 90-240 volt 50-60Hz power systems. The integrated power supply shall also support the power requirements of additional future accessories.
e. The Measure of the control console shall not exceed 20” (508 mm) x 31” (787.4mm) x 5” (127mm)

C. Required accessories:
1. Dust Cover
2. (2) Console lights
3. (1) 25’ Ethernet cable
4. Keyboard (either integral or wireless)
5. Wireless Mouse
6. (2) 22” touch screens

D. Manufacturers & Models

1.	Strand Lighting:	Model:	NEO X5
2.	Electronic Theater Controls:	Model:	IonXE 20 – 2k

2.6 WALL CONTROLS

A. SYSTEM OVERVIEW
1. ETC Paradigm system exists and will remain.
2. Refer to drawings for a general sequence of operations update.

2.7 LED ELLIPSOIDAL:

A. Finish:

1. Black

B. Supply each fixture with:

1. 5 foot power cable with Edison connector
2. 10 foot long DMX cable
3. C-clamp
4. Safety cable
5. 10 foot power jumper with compatible connectors
6. Color frame.
7. Soft focus pattern holder.
8. Lens tube per part 1.

C. Manufacturers & Models

1.	Altman Lighting:	Model:	PHX3.5 LED RGBW
2.	Chauvet Professional:	Model:	E-910FC
3.	Electronic Theater Controls:	Model:	Source Four LED Series 3 Lustr

2.8 LED PAR:

A. Finish:

1. Black

B. Supply each fixture with:
1. 5 foot power cable with Edison connector
2. 10 foot long DMX cable
3. C-clamp

4. Safety cable
5. 10 foot power jumper with compatible connectors

C. Manufacturers & Models

1.	Strand Lighting:	Model:	VL800 ProPAR
2.	Chauvet Professional	Model:	COLORado 3 Solo
3.	Electronic Theater Controls:	Model:	Desire Fresnel

2.9 LED CYCLORAMA LIGHT:

A. Finish:

1. Black

B. Supply each fixture with:
1. 5 foot power cable with Edison connector
2. 10 foot long DMX cable
3. C-clamp
4. Safety cable
5. 10 foot power jumper with compatible connectors

C. Manufacturers

1.	Altman Lighting:	Model:	Spectra Cyc 200
2.	Strand Lighting:	Model:	Coda Cyc
3.	Chauvet Professional	Model:	Ovation Cyc 1 FC

2.10 LED MOVING LIGHT:

A. Finish:

1. Black

B. Supply each fixture with:

1. 5 foot power cable with Edison connector
2. 10 foot long DMX cable
3. 2, C-clamps
4. Safety cable
5. 10 foot power jumper with compatible connectors

C. Manufacturers:

1.	Vari-Lite	Model:	VL800 EventProfile
2.	High End Systems	Model:	Lonestar

2.11 FOLLOWSPOTS

A. Supply each fixture as a kit with:
1. Followspot
2. Color Changer
3. Tripod with Casters
4. Iris
5. Dowser/Dimmer
6. 10 foot (minimum) power cord with Edison connector installed
7. 15 foot long DMX cable

B. Manufacturers:

1.	Altman Lighting:	Model:	AFS-700
2.	Lycian Stage Lighting:	Model:	1280 Superstar LED
3.	Strong Lighting	Model:	iChip 600 LT

2.12 C-CLAMPS

A. All C-clamps shall be permanently marked with a load rating. Cast C-clamps are not acceptable.

B. The Light Source Mega-Clamp or equal.

2.13 DMX CABLES

A. 10'-0" long unless specified otherwise.

B. 5 pin XLR-type connectors.

C. Heavy-duty cable construction intended for use as a portable data cable in a stage environment.

D. Manufacturers:

1. LEX Products
2. FourStar Wire and Cable

2.14 CONNECTORS

A. NEMA 5-15 ("Edison") unless otherwise noted.

2.15 ETHERNET CABLES

A. 10'-0" long unless specified otherwise.

B. RJ-45 connector

C. Heavy-duty construction intended for use as a portable data cable in a stage environment.

D. Manufacturers:

1. LEX Products
2. FourStar Wire and Cable

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions for compliance with requirements.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Set permanently mounted items level, plumb, and square with ceilings and walls.

3.3 INSTALLATION & SETUP, FIXTURES

A. Unpack, assemble, and hang fixtures at designated locations.

B. Set DMX addresses and personalities (LED fixtures).

C. Generally aim fixtures to stage.

D. Install data cabling as required.

E. Test all fixtures for correct function with facility controls.

3.4 COMMISSIONING

A. All Ethernet runs must be checked for proper operation.

B. All DMX runs must be checked for proper operation.

C. Configure all permanent and portable nodes.

D. Create base console patch

3.5 WORKMANSHIP

A. The fabrication of all equipment: incorporate only new and unused materials. This includes all metal components in various shapes required such as plate, bar, rod, castings, structural shapes, stampings, forgings, clamps, bolts, and all other accessories not mentioned.

B. The mechanical fabrication and workmanship: 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: have acceptable tolerances, mountings, connections, and accessories coordinated into the system in a manner approved by the Owner and Consultant. No wood construction or equipment shall be incorporated into the system except as may be set forth in the specifications.

3.6 PAINTING

A. Manufacturer’s standard.

3.7 COMPLETION

A. Consultant’s post construction closeout supervision will include but not be limited to:

1. Final inspection, inventory and punch list.

B. The final inspection shall be by the Consultant. Completion of all items and acceptance of the theatrical systems as substantially complete shall be required prior to the instruction of the Owner’s representatives/users.

C. If inspection reveals any detail of construction or fabrication not in strict accord with the specification or the contract requirements, approval and payment will be withheld in accordance with the General Conditions. The cost of any additional inspections on the part of the Architect/Consultant caused by the theatrical system not being completed when the inspection is called will be borne by the Contractor.

D. Turn over all loose accessories to Owner. Store as directed. Obtain a receipt for materials.

E. Notify Architect and Consultant of completion schedule.

F. Provide the following demonstration and instruction periods in cooperation with Consultant:

1. Lighting System: 6 hours.
2. Training to be video recorded and the video to be included with closeout submittals.

G. Provide two additional training sessions at the convenience of the Owner’s schedule:

1. Video recording of these additional sessions is not required, though the Owner may do so.
2. 2 hours, not sooner than 2 months following nor more than 4 months following the initial training.
3. 2 hours, not sooner than 4 months following nor more than 8 months following the initial training.

H. At the completion of work this Contractor shall remove all rubbish and accumulated materials not caused by other trades from the building and shall leave the work areas in a clean, orderly, and acceptable condition. Materials remaining the property of the Owner will be stored as directed.

I. Furnish all required operation/maintenance manuals.

END OF SECTION 26 5561