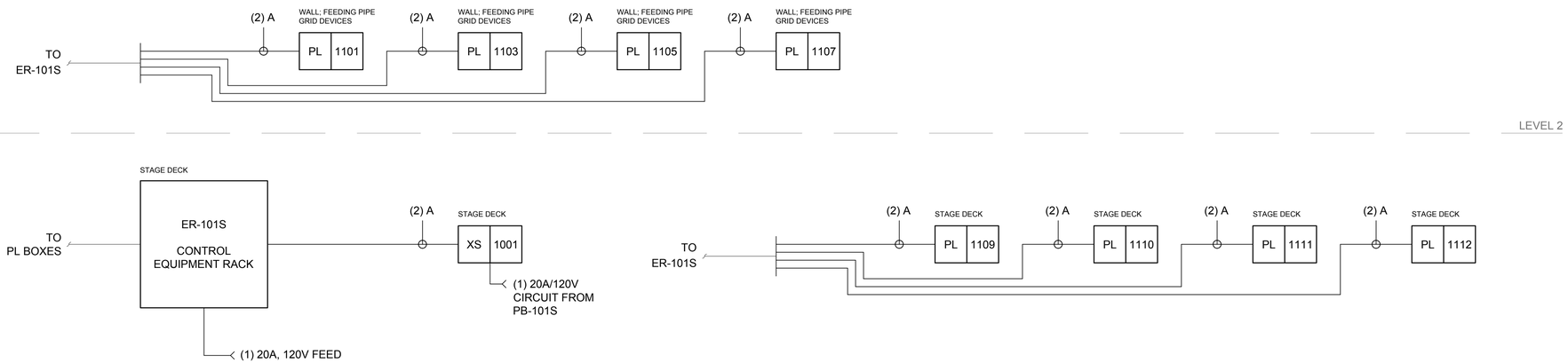


[1] INTERCONNECTION DIAGRAM
N.T.S.

SOUND STAGE PL CONTROL DEVICE BOX SCHEDULE

BOX NUMBER	BOX TYPE	LOCATION	FINISH	BACK BOX TYPE	MOUNTING HEIGHT	CONDUIT SIZE (BY E.C.)	WIRE & CABLE QUANTITY (BY E.C.)						PANEL CONNECTION	NOTES
							A	B	C	D	E	F		
1001	XS	STAGE DECK	BLACK	SURFACE	1'-6" A.F.F.		4	0	0	0	0	0	ER-101S & PB-101S	ONE UTILITY CIRCUIT TO PB-101S

SOUND STAGE PL OUTLET DEVICE BOX SCHEDULE

BOX NUMBER	BOX TYPE	BOX VERSION	LOCATION	20A/120V UTILITY	60A/208Y UTILITY	CIRCUIT / ZONE NUMBERS	FINISH	BACK BOX TYPE	MOUNTING HEIGHT	CONDUIT SIZE (BY E.C.)	WIRE QTY & SIZE (BY E.C.)	PANEL CONNECTION	NOTES
1101	PL	A	CEILING	6	0	1-6	BLACK	SURFACE	CEILING			PB-101S, ER-101S	CEILING JUNCTION BOX
1102	PL	B	PIPE GRID	6	0	1-6	BLACK	PIPE	SEE DWGS			PL #1101	EDISON RECEPTACLES
1103	PL	A	CEILING	6	0	7-12	BLACK	SURFACE	CEILING			PB-101S, ER-101S	CEILING JUNCTION BOX
1104	PL	B	PIPE GRID	6	0	7-12	BLACK	PIPE	SEE DWGS			PL #1103	EDISON RECEPTACLES
1105	PL	A	CEILING	6	0	13-18	BLACK	SURFACE	CEILING			PB-101S, ER-101S	CEILING JUNCTION BOX
1106	PL	B	PIPE GRID	6	0	13-18	BLACK	PIPE	SEE DWGS			PL #1105	EDISON RECEPTACLES
1107	PL	A	CEILING	6	0	19-24	BLACK	SURFACE	CEILING			PB-101S, ER-101S	CEILING JUNCTION BOX
1108	PL	B	PIPE GRID	6	0	19-24	BLACK	PIPE	SEE DWGS			PL #1107	EDISON RECEPTACLES
1109	PL	C	STAGE DECK	1	1	25; 31,33,35	BLACK	PIPE	SEE DWGS			PB-101S, ER-101S	EDISON AND 60A, 3-PH PIN & SLEEVE
1110	PL	C	STAGE DECK	1	1	26; 32,34,36	BLACK	PIPE	SEE DWGS			PB-101S, ER-101S	EDISON AND 60A, 3-PH PIN & SLEEVE
1111	PL	C	STAGE DECK	1	1	27; 37,39,41	BLACK	PIPE	SEE DWGS			PB-101S, ER-101S	EDISON AND 60A, 3-PH PIN & SLEEVE
1112	PL	C	STAGE DECK	1	1	28; 38,40,42	BLACK	PIPE	SEE DWGS			PB-101S, ER-101S	EDISON AND 60A, 3-PH PIN & SLEEVE

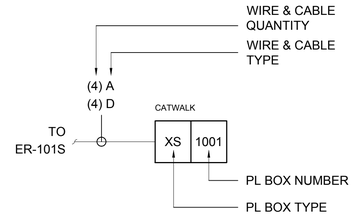
NOTES:

1. THIS DIAGRAM SHOWS THE LAYOUT AND INTERCONNECTION OF THE COMPONENTS IN THE THEATRE LIGHTING CONTROL SYSTEMS TO CONVEY DESIGN INTENT ONLY. FINAL WIRE QUANTITIES, TYPES AND TOPOLOGY SHALL BE DETERMINED BY THE EQUIPMENT MANUFACTURER.
2. ADDITIONAL PORTABLE EQUIPMENT, INCLUDING CONTROL CONSOLES, HAND-HELD REMOTES & STAGE LIGHTING FIXTURES ARE NOT SHOWN.
3. LOW VOLTAGE WIRING SHALL BE RUN IN SEPARATE CONDUIT FROM VIDEO AND LINE VOLTAGE WIRING.
4. MAXIMUM ACCEPTABLE CABLE LENGTH FOR CAT6a ETHERNET CABLE (BELDEN #2148A) IS 300'-0". INSTALLATION AND TERMINATION PRACTICES SHALL BE IN COMPLIANCE WITH ANSI/TIA/EIA 568A AND AS/NZS 3080 STANDARDS.

WIRE & CABLE SCHEDULE:

A (1) BELDEN #2148A CAT6a ETHERNET CABLE

PL BOX DEVICE LEGEND



PL BOX TYPE LEGEND

XS CONSOLE STATION

PL PERFORMANCE LIGHTING OUTLET DEVICE

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1.	ISSUE FOR BUDGETING	06/04/2018

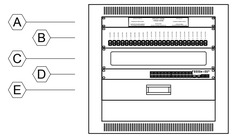
SEAL

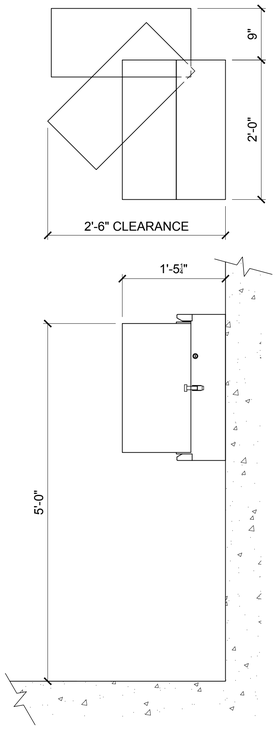
PROJECT
INTERIOR RENOVATION
MUSIC SOUND STAGE

DATE:	06/18/2018
PROJECT NO:	DA 1845 / SU-062518
DRAWN BY:	MCR
CHECKED BY:	AS
SCALE:	AS NOTED

DRAWING TITLE
PERFORMANCE LIGHTING SYSTEM INTERCONNECTION DIAGRAM AND SCHEDULES

SHEET NO.
TE1.01



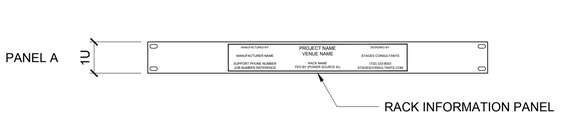


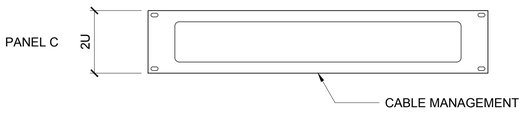
NOTES:
1. ALL EQUIPMENT MUST FIT IN A SINGLE MIDDLE ATLANTIC DWR-10-17 RACK FRAME.
2. PROVIDE MATTE BLACK BLANK PANELS FOR ALL OPEN SPACES.
3. PROVIDE LOCKING DOOR.
4. EQUIPMENT RACK FED WITH 20A, 120V FEED.

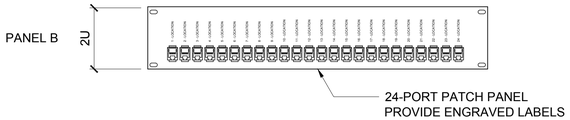
[1] CONTROL EQUIPMENT RACK ER-101S
1" = 1'-0"

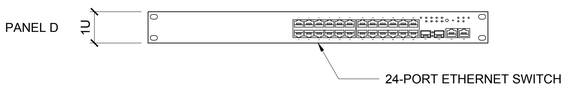
CONTROL EQUIPMENT RACK ER-101S SCHEDULE

PANEL	DESCRIPTION	NOTES	RACK SPACES	QUANTITY
A	RACK ID NAMEPLATE	LIST OF PROJECT INFO, SUPPORT CONTACT, AND CONSULTANT / INSTALLER CONTACT.	1u	1
B	ETHERNET PATCH W/ LEGEND	RJ45 AND FIBER RECEPTACLES AS REQUIRED. ENGRAVED LEGEND SHALL IDENTIFY LOCATION OF FINAL RUN.	2u	1
C	ETHERNET CABLE MANAGEMENT	USE MIDDLE ATLANTIC BRUSH GROMMET PANEL OR EQUAL.	2u	1
D	ETHERNET SWITCH	24-PORT, FANLESS, 802.3AF COMPLIANT SWITCH.	1u	1
E	LOCKING RACK DRAWER	5U RACK DRAWER WITH MATTE BLACK FINISH.	5u	1









[2] CONTROL EQUIPMENT RACK ER-101S DETAILS
3" = 1'-0"

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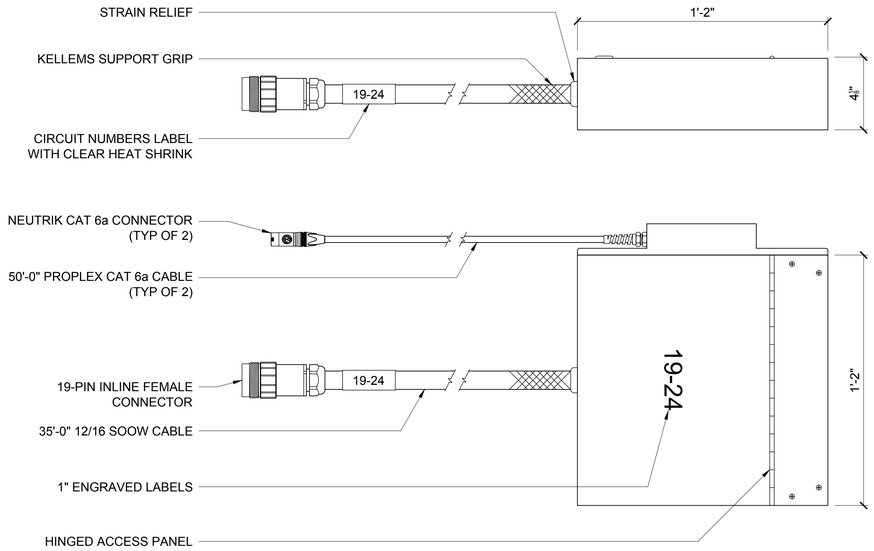
SCALE:	AS NOTED

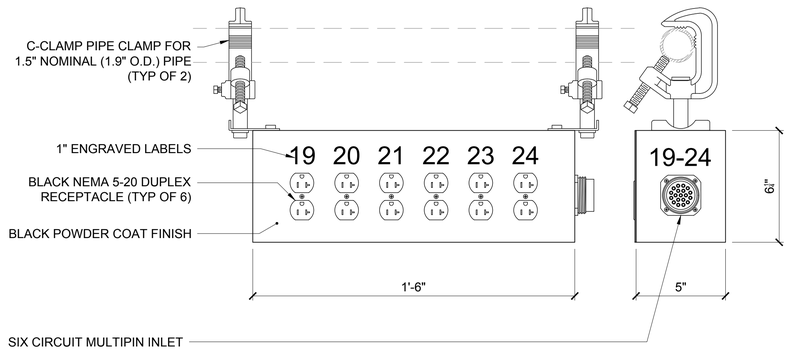
DRAWING TITLE
PERFORMANCE LIGHTING SYSTEM DEVICE DETAILS

SHEET NO.
TE1.02



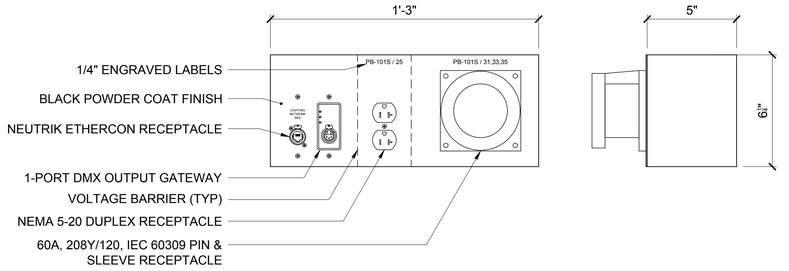
SEE SCHEDULE FOR QUANTITIES AND CONFIGURATIONS

[1] OUTLET DEVICE "PL" TYPE A
3" = 1'-0"

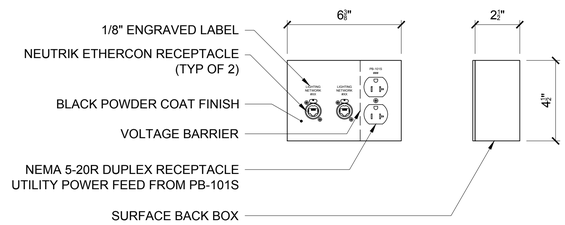


SEE SCHEDULE FOR QUANTITIES AND CONFIGURATIONS

[2] OUTLET DEVICE "PL" TYPE B
3" = 1'-0"

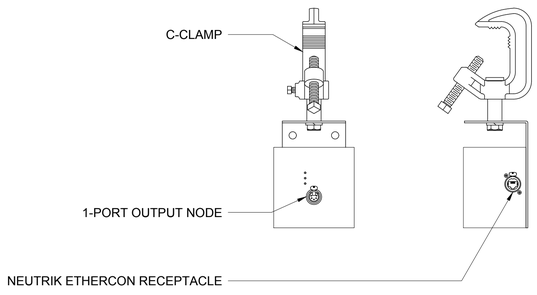


SEE SCHEDULE FOR QUANTITIES AND CONFIGURATIONS



SEE SCHEDULE FOR QUANTITIES AND CONFIGURATIONS

[3] OUTLET DEVICE "PL" TYPE C
3" = 1'-0"



(6) ASSEMBLIES REQUIRED

[4] CONSOLE STATION "XS"
3" = 1'-0"

[5] PORTABLE ONE-PORT DMX OUTPUT GATEWAYS
3" = 1'-0"

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DRAWING TITLE
PERFORMANCE LIGHTING SYSTEM DEVICE DETAILS

SHEET NO.
TE1.03

SECTION 260961

PERFORMANCE LIGHTING SYSTEMS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. DRAWINGS AND GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION 01 SPECIFICATION SECTIONS, APPLY TO THIS SECTION.

1.2 SUMMARY

A. THIS SECTION INCLUDES FURNISHING THE FOLLOWING EQUIPMENT FOR INSTALLATION AS DESCRIBED UNDER SECTION 260963:

1. PORTABLE DIMMER PACKS
2. EQUIPMENT RACKS
3. LIGHTING CONTROL CONSOLE & ACCESSORIES
4. ETHERNET NETWORK SYSTEM
5. CONTROL DEVICE FACEPLATES
6. PERFORMANCE LIGHTING DEVICE FACEPLATES
7. CABLE ASSEMBLIES
8. SPARE PARTS

B. RELATED SECTIONS INCLUDE THE FOLLOWING:

1. PERFORMANCE LIGHTING SYSTEMS INSTALLATION
2. COMMON WORK RESULTS FOR ELECTRICAL
3. PERFORMANCE LIGHTING FIXTURES
4. RIGGING SYSTEMS AND CONTROLS
5. COMMISSIONING OF ELECTRICAL SYSTEMS

1.3 FULLY WORKING SYSTEMS

A. REVIEW DRAWINGS AND SPECIFICATIONS THAT AFFECT WORK IN THIS SECTION.

B. NOTIFY ARCHITECT UPON INDICATION THAT WORK IN THIS SECTION CANNOT BE COMPLETED AS SPECIFIED OR SCHEDULED.

C. PROVIDE ADDITIONAL PARTS OR DEVICES REQUIRED FOR FUNCTIONAL REQUIREMENTS OF CONTROL SYSTEMS AT NO EXTRA COST TO OWNER.

1.4 DEFINITIONS

A. DATA COMMUNICATION PROTOCOL: SIGNAL THAT PROVIDES CONTROL AND FEEDBACK COMMUNICATIONS BETWEEN DEVICES IN CONTROL SYSTEM.

B. DMX 512: DATA COMMUNICATIONS PROTOCOL COMPLIANT TO USITT DMX-512/1990 SPECIFICATION (ANSI E1.11-2004).

C. RDM: DATA COMMUNICATIONS PROTOCOL COMPLIANT TO ANSI/PLASA REMOTE DEVICE MANAGEMENT SPECIFICATION (ANSI/PLASA E1.20 RDM).

D. ACN: DATA COMMUNICATIONS PROTOCOL COMPLIANT TO ANSI/PLASA ARCHITECTURE FOR CONTROL NETWORKS SPECIFICATION (ANSI E1.17-2006 ACN & E1.31 STREAMING ACN).

E. POE / POWER OVER ETHERNET: 802.3AF COMPLIANT SCHEME OF POWERING DEVICES ON AN ETHERNET SYSTEM.

1.5 QUALITY ASSURANCE AND STANDARDS

A. REFERENCES TO CODE, STANDARDS, SPECIFICATIONS, AND RECOMMENDATIONS OF TECHNICAL SOCIETIES, TRADE ORGANIZATIONS, AND GOVERNMENTAL AGENCIES WILL REFER TO THE LATEST EDITION OF SUCH PUBLICATIONS ADOPTED AND PUBLISHED PRIOR TO BID SUBMITTAL. ALL CODES AND STANDARDS WILL BE CONSIDERED A PART OF THIS SPECIFICATION AS IF THEY WERE FULLY INCLUDED.

B. WORK AND MATERIALS SHALL COMPLY WITH RULES AND RECOMMENDATIONS OF:

1. PREVAILING NATIONAL, STATE AND LOCAL BUILDING CODES.
2. UL, ETL, CUL, CSA AND CE LABELS - WHERE MATERIALS AND EQUIPMENT ARE AVAILABLE UNDER THE CONTINUING INSPECTION AND LABELING SERVICE OF APPLICABLE INDEPENDENT PRODUCT TESTING AND CERTIFICATION SERVICES, PROVIDE SUCH LABELS, MATERIALS, AND EQUIPMENT.
3. NATIONAL FIRE PROTECTION ASSOCIATE (NFPA) PUBLICATION: NATIONAL ELECTRICAL CODE, NFPA70 AS APPLICABLE TO INSTALLATION AND CONSTRUCTION OF PERFORMANCE LIGHTING AND CONTROL EQUIPMENT.
4. NEMA COMPLIANCE PERTAINING TO COMPONENTS OF PERFORMANCE LIGHTING EQUIPMENT.
5. UNITED STATES INSTITUTE FOR THEATRE TECHNOLOGY, INC. (USITT) DMX512/1990 (ANSI E1.11-2004).
6. ANSI/PLASA REMOTE DEVICE MANAGEMENT (ANSI/PLASA E1.20 RDM) AND ARCHITECTURE FOR CONTROL NETWORKS (ANSI E1.17-2006 ACN & E1.31 STREAMING ACN) STANDARDS.
7. INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC. (IEEE) 802.3 AND 802.11N.

1.6 SUBMITTALS

A. BID SUBMITTALS

1. BILL OF MATERIALS: IDENTIFY PARTS BY COMMON INDUSTRY STANDARD NUMBERS AND DESCRIPTIONS.
2. CUT SHEETS: MANUFACTURER'S CATALOG DATASHEETS OF ALL PRODUCTS LISTED IN BILL OF MATERIALS.
3. STATEMENT: MANUFACTURER AGREES TO WARRANTY PROVISIONS.
4. PROJECTED TIMETABLE: LIST TIME IN WEEKS FOR FOLLOWING ACTIVITIES:
   a. SHOP DRAWING PREPARATION
   b. FABRICATION
   c. SHIPPING TO SITE
   d. SYSTEM COMMISSIONING
   e. AS-BUILT DRAWING PREPARATION

B. SHOP DRAWINGS

1. FORMAT: UNIFORM SHEET SIZE.
2. BINDING: BIND SHOP DRAWINGS OF MORE THAN FIVE DRAWINGS.
3. SHOP DRAWINGS SHALL INCLUDE:
   a. PICTORIAL DRAWINGS: ALL MAJOR COMPONENTS, SUB-ASSEMBLIES, PARTS LIST, DIMENSIONS, MATERIAL AND FINISH NOTES, QUALITY ASSURANCE LISTINGS.
   b. WIRING DIAGRAMS: COMPONENTS AND INTERCONNECTIONS TO OTHER COMPONENTS.
   c. BILL OF MATERIALS: ACCESSORIES AND SPARE PARTS NOT DRAWN.
   d. NOT ACCEPTABLE: CATALOG CUT SHEETS.
4. REVIEW: FABRICATION SHALL NOT COMMENCE UNTIL THEATRE CONSULTANT AND ARCHITECT DETERMINE THAT THE SHOP DRAWINGS ARE IN COMPLIANCE WITH DESIGN INTENT OF CONTRACT DOCUMENTS.
5. REVISIONS: RESUBMIT AS REQUIRED.

C. MANUALS

1. FORMAT: LETTER AND/OR TABLOID SIZE PAPER.
2. BINDING: STANDARD 3-RING BINDER.
3. ELECTRONIC FORMAT: PDF FILES ON USB FLASH DRIVE.
4. MANUALS SHALL INCLUDE:
   a. SYSTEM DESCRIPTION.
   b. OPERATION INSTRUCTIONS, INCLUDING SAFETY MEASURES.
   c. MAINTENANCE INSTRUCTIONS, INCLUDING RECOMMENDED PROCEDURES AND SCHEDULES FOR INSPECTING SYSTEM COMPONENTS.
   d. CATALOG CUT SHEETS FOR ALL PURCHASED EQUIPMENT.
   e. RECOMMENDED SPARE PARTS LIST.

D. AS-BUILT DRAWINGS

1. FORMAT: LETTER AND/OR TABLOID SIZE PAPER.
2. BINDING: STANDARD 3-RING BINDER.
3. ELECTRONIC FORMAT: PDF FILES ON USB FLASH DRIVE.
4. DELIVERY: WITHIN ONE MONTH OF SYSTEM ACCEPTANCE.
5. AS-BUILT DRAWINGS SHALL INCLUDE:
   a. DRAWINGS OF ALL SYSTEM COMPONENTS.
   b. CONTROL SCHEMATICS AND RISERS.
   c. BILL OF MATERIALS.

1.7 PROJECT CONDITIONS

A. SUBMIT: WRITTEN CONFIRMATION THAT RELATED ELECTRICAL WORK, AS SHOWN ON DRAWINGS, PROVIDES NECESSARY PHYSICAL ACCOMMODATIONS OR INSTALLATION AND OPERATION OF EQUIPMENT.

B. DELIVERY: WITHIN THREE WEEKS OF AWARD OF CONTRACT.

1.8 WARRANTY

A. MANUFACTURER SHALL WARRANT EQUIPMENT AS FOLLOWS:

1. ACCORDING TO GUARANTEE PROVISIONS IN GENERAL CONDITIONS.
2. FOR TWO YEARS FROM ACCEPTANCE OF SYSTEMS, PROVIDE SERVICES DETAILED BELOW:
   a. TECHNICAL AND OPERATIONAL ASSISTANCE HOTLINE: SHALL BE AVAILABLE DURING NORMAL WORKING HOURS, EVENING, AND WEEKENDS AT NO ADDITIONAL COST.
   b. IN-STOCK SPARE PARTS: AVAILABLE FOR MAJOR ASSEMBLIES WITHIN 24 HOURS OF CONTACT.
      1) ADDITIONAL COST: NO CHARGE DURING DURATION OF WARRANTY FOR EXCHANGES NOT CAUSED BY MISUSE.
      2) SERVICE VISIT SHALL CONSIST OF:
         a) CONSULT WITH OWNER
         b) INSPECT SYSTEM
         c) PERFORM NECESSARY MAINTENANCE AND REPAIR.
      3) REPORT: SUBMIT TO OWNER AND THEATRE CONSULTANT AFTER EACH VISIT. REPORT SHALL INCLUDE RECOMMENDED INSPECTION AND MAINTENANCE SCHEDULES BASED ON EQUIPMENT'S ACTUAL USE.
   c. WARRANTY PERIOD: COMMENCE UPON FINAL ACCEPTANCE BY OWNER.

PART 2 – PRODUCTS

2.1 ACCEPTABLE MANUFACTURER

A. THE EQUIPMENT SHALL BE MANUFACTURED BY THE FOLLOWING:

1. ELECTRONIC THEATRE CONTROLS
   3031 PLEASANT VIEW ROAD
   MIDDLETON, WI 53562
   608.831.4116

B. THE EQUIPMENT SHALL BE SUPPLIED BY ONLY ONE OF THE FOLLOWING:

1. 4WALL
   35 STATE STREET
   MOONACHIE, NJ 07074
   201.329.9878
2. BARBIZON
   456 W 55TH STREET
   NEW YORK, NY 10019
   212.586.1620
3. BMI SUPPLY
   571 QUEENSBURY AVE
   QUEENSBURY, NY 12804
   518.793.6706
4. CANDELA CONTROLS
   15 OWENO PLACE
   MAHWAH, NJ 07430
   201.529.2423

C. ADDITIONAL COMPANIES WISHING TO BID SHALL SUBMIT THE FOLLOWING 10 DAYS BEFORE SUBMISSION OF BIDS, FOR REVIEW AND APPROVAL BY THEATRE CONSULTANT:

1. FIRM HISTORY.
2. LIST OF COMPLETED INSTALLATIONS, COMPARABLE IN SCOPE TO THE JOB DESCRIBED HERE.
3. MINIMUM OF 5 REPRESENTATIVE SHOP DRAWING SHEETS.
4. IF REQUESTED, A CURRENT CERTIFIED FINANCIAL STATEMENT SHOWING SUFFICIENT FINANCIAL BASE FOR THE SIZE OF JOB DESCRIBED HERE.

D. FURNISHING: EQUIPMENT AND SERVICES SHALL BE PROVIDED BY ONE MANUFACTURER.

E. EXPERIENCE: MANUFACTURER SHALL HAVE BEEN CONTINUOUSLY ENGAGED IN PRODUCTION OF PERFORMANCE LIGHTING AND CONTROL EQUIPMENT FOR AT LEAST 20 YEARS.

F. EMERGENCY SUPPORT: MANUFACTURER SHALL HAVE A TOLL-FREE, 24 HOUR EMERGENCY PHONE LINE. RESPONSE SHALL BE WITHIN 30 MINUTES OF PHONE CALL.

G. SUBSTITUTIONS: SUBSTITUTED EQUAL PRODUCTS SHALL NOT BE ALLOWED WITHOUT PRIOR APPROVAL OF ARCHITECT, ELECTRICAL ENGINEER, THEATRE CONSULTANT, OR OWNER.

H. NEW PRODUCTS: PROVIDE LATEST MODEL OF SPECIFIED PRODUCTS PROVIDED LATEST MODEL RETAINS OR EXCEEDS CHARACTERISTICS OF PRODUCTS SPECIFIED HEREIN. MANUFACTURER SHALL PROVIDE DEMONSTRATION FOR ARCHITECT, ELECTRICAL ENGINEER, THEATRE CONSULTANT, OR OWNER.

I. TESTING: TEST AND LABEL ALL EQUIPMENT AT FACTORY PRIOR TO SHIPMENT.

2.2 PARTS

A. ALL MATERIALS AND EQUIPMENT PROVIDED SHALL BE NEW AND OF HIGH QUALITY.

2.3 GROUNDING

A. THESE SYSTEMS SHALL BE GROUNDED, AS SHOWN ON DRAWINGS AND IN ACCORDANCE WITH APPLICABLE CODES AND REGULATIONS AND/OR AT THE ADVICE OF THE MANUFACTURER.

2.4 IDENTIFICATION LABELS

A. PROVIDE LABELING AND SIGNAGE FOR EQUIPMENT AS DESCRIBED HEREIN AND/OR NOTED ON THE DRAWINGS.

1. EQUIPMENT DESIGNATIONS AND HEADINGS: 1/4" HEIGHT.
2. SECONDARY INFORMATION: 3/16" HEIGHT.

2.5 PORTABLE DIMMER PACKS

A. BASIS OF DESIGN

1. 750W: ETC SOURCE FOUR DIMMER ES750
2. 1,800W: LEX PRODUCTS SLIM DIMMER PLUS

B. DIMMER SHALL BE A SILENT, VOLTAGE REDUCING YOKE OR C-CLAMP MOUNT DIMMER. DIMMER SHALL REGULATE INCOMING POWER TO MAXIMUM 115V OUTPUT.

C. DIMMER SHALL BE A SELF-CONTAINED UNIT, SUITABLE FOR PORTABLE USE.

D. DIMMER SHALL BE CONVECTION COOLED AND SHALL OPERATE WITHOUT COOLING FANS OR FILTERS.

E. DIMMER SHALL BE CONTROLLED VIA A MICROPROCESSOR BASED PROGRAMMABLE LIGHTING CONTROLLER WITH A DMX512 INTERFACE.

F. PROVIDE THE FOLLOWING:

1. (6) 750W DIMMER PACKS WITH C-CLAMP AND SAFETY CABLE
2. (4) 1,800W DIMMER PACKS WITH C-CLAMP AND SAFETY CABLE

2.6 EQUIPMENT RACKS

A. BASIS OF DESIGN:

1. MIDDLE ATLANTIC PRODUCTS DWR SERIES FOR SWING FRAME RACKS

B. GENERAL

1. EQUIPMENT RACK SHALL BE EIA COMPLIANT 19", STEEL CABINET.
2. COLOR: POWDER COAT BLACK
3. RACKRAIL TYPE: 10-32
4. MAXIMUM DIMENSIONS: 24" HIGH X 24" WIDE X 18" DEEP.
5. USABLE DEPTH: AS REQUIRED FOR SPECIFIED EQUIPMENT
6. BLANK FILLER PLATES: PROVIDE IN UN-USED SPACES. INTERNAL SPACE BEHIND FILLER PLATES SHALL NOT BE OBSTRUCTED OR USED.
7. PANEL LEGENDS AND LINES: ENGRAVED AND FILLED WITH ENGRAVER'S ENAMEL.
8. PROVIDE NON-COMBUSTIBLE BRACKETS, SHELVES, AND OTHER SUPPORTS FOR HEAVY COMPONENTS AND INTERNAL WIRING ASSEMBLIES AND HARNESSES. PROVIDE INTERIOR MOUNTING ANGLES TO SUPPORT WORK-WRITING TOPS AND DRAWERS.
9. COMPONENT WIRING: 36" LONG FLEXIBLE CABLE HARNESS TO NUMBERED BARRIER TERMINAL BLOCK. TERMINAL BLOCK SHALL BE ATTACHED TO FRAMES IN LINE WITH ASSOCIATED PANELS AND SHALL NOT INTERFERE WITH ADJACENT COMPONENTS OR FILLER PANELS.
10. SIGNAGE: PERMANENTLY ATTACHED TO EQUIPMENT WITH FOLLOWING INFORMATION:
    a. PROJECT NAME
    b. PERFORMANCE VENUE NAME
    c. EQUIPMENT DESIGNATION
    d. FEED SIZE AND SOURCE IDENTIFICATION
    e. MANUFACTURER NAME, TOLL-FREE SERVICE PHONE NUMBER, AND JOB REFERENCE NUMBER
    f. "DESIGNED BY STAGES CONSULTANTS" STATEMENT WITH PHONE NUMBER AND WEB ADDRESS

2.7 LIGHTING CONTROL CONSOLE [OPTION 3]

A. BASIS OF DESIGN: ETCNOMAD PUCK

B. GENERAL

1. LIGHTING CONTROL CONSOLE SHALL BE A MICROPROCESSOR-BASED SYSTEM SPECIFICALLY DESIGNED TO PROVIDE COMPLETE CONTROL OF PERFORMANCE LIGHTING SYSTEMS.
2. MINIMUM CAPACITIES:
   a. CONTROL OUTPUTS: 512
   b. PROGRAMMABLE FADERS: 20
   c. MASTER PLAYBACK FADERS: 2
   d. ROTARY ENCODERS: 4
   e. EXTERNAL MULTI-TOUCH SCREEN CAPABILITY
   f. REMOTE VIDEO SUPPORT
   g. LIGHTING NETWORK DEVICE CONTROL
      1) DIRECT CONTROL OF THIRD PARTY SACN/ACN DEVICES
      2) DMX512 / RDM HARDWARE INTERFACES
      3) SUPPORT MIDI, SMPTE AND RS-232 INTERFACES
3. USER INTERFACE SHALL BE FULLY GRAPHICAL WITH COMMAND LINE. CONTROL COMMANDS SHALL BE ACCEPTED AS EITHER COMMAND LINE OR DIRECT ENTRY.
4. THE MAIN CONTROL SHALL CONSIST OF NUMERIC KEYPAD, DEDICATED CONTROL KEYS, CONTEXT SENSITIVE SOFT KEYS, LEVEL CONTROL WHEEL, AND POINTING DEVICE.
5. A BLIND DISPLAY MODE SHALL ALLOW VIEWING AND MODIFICATION OF ALL RECORDABLE ATTRIBUTES WITHOUT AFFECTING LIVE STAGE LEVELS.
6. A PATCH DISPLAY MODE SHALL BE USED TO DISPLAY AND MODIFY SYSTEM CONTROL CHANNELS WITH THEIR ASSOCIATED DATA.
7. CONTROL AND PROGRAMMING FEATURES FOR AUTOMATED FIXTURES SHALL INCLUDE A STANDARD LIBRARY OF FIXTURE PROFILES; ABILITY TO COPY AND EDIT EXISTING PROFILES AND CREATE NEW PROFILES; AND PATCH DISPLAYS INCLUDING CHANNEL AND OUTPUT ADDRESSING, 16-BIT FADE RESOLUTION, COLOR CHARACTERIZATION ALLOWING COLOR MIXING AND STORING IN HUE AND SATURATION OR NATIVE DEVICE VALUES.
8. CONTROL CHANNEL DATA SHALL BE RECORDABLE AS CUES, GROUPS, SUBMASTERS, PALETTES, EFFECTS, MACROS, CURVES, AND PATCH CONTAINED IN NON-VOLATILE ELECTRONIC MEMORY AND STORED AS SHOW DATA TO INTERNAL STORAGE OR USB STORAGE DEVICE.
9. SIMULTANEOUS PLAYBACK OF RECORDED CUE LISTS SHALL BE POSSIBLE ON UP TO 200 FADERS.
10. THE CONSOLE SHALL BE CAPABLE OF BEING PLACED IN TRACKING OR CUE ONLY RECORD MODE BY THE USER.
11. INTEGRATED, INTEGRAL VIRTUAL MEDIA SERVER SHALL ALLOW MAPPABLE IMAGES AND ANIMATIONS TO RIG ARRAY. SYSTEM SHALL BE CAPABLE OF 40 MAPS, 12 LAYERS EACH.
12. USER DEFINABLE, INTERACTIVE MAGIC SHEET DISPLAYS SHALL ALLOW GRAPHICAL LAYOUT OF CHANNELS, DESK FUNCTIONS, AND PROGRAMMING TOOLS IN LIVE AND BLIND OPERATING MODES. PROVIDE STANDARD SYMBOL LIBRARY AND USER-IMPORT TOOL FOR CUSTOM GRAPHICS.
13. A FREELY AVAILABLE OFFLINE EDITING APPLICATION SHALL BE PROVIDED FOR CREATION AND MODIFICATION OF SHOW DATA ON A PERSONAL COMPUTER.
14. A PERSONAL COMPUTER RUNNING CLIENT SOFTWARE APPLICATION SHALL BE ABLE TO CONNECT TO A CONTROL SYSTEM VIA THE NETWORK AND VIEW CURRENT SHOW DATA IN A MIRRORED DISPLAY ENVIRONMENT.
15. THE SYSTEM SHALL ALLOW REMOTE CONTROL FROM A WIRELESS HANDHELD REMOTE.
16. THE SYSTEM SHALL SUPPORT CONFIGURATION AND OPERATION OF TWO CONSOLES OR A CONSOLE AND A DEDICATED PROCESSOR AS A MAIN AND FULLY TRACKING BACKUP.

C. PROVIDE WITH THE CONSOLE (2) EXTERNAL 22" MULTI-TOUCH MONITORS, KEYBOARD, MOUSE, AND TASK LIGHTS.

D. PROVIDE PROGRAMMING WING AND 20 FADER WING HARDWARE INTERFACES.

E. FURNISH THE FOLLOWING CONSOLE ACCESSORIES:

1. CABLES FOR CONTROL CONSOLE
   a. 25'-0" POWER: 1
   b. 25'-0" ETHERNET: 1
2. SURGE PROTECTED POWER STRIPS FOR CONSOLE AND ACCESSORIES: 1
3. 4 GB CAPACITY USB STORAGE KEYS: 1

2.8 ETHERNET NETWORK

A. PROVIDE A FULLY FUNCTIONING ETHERNET SYSTEM. SYSTEMS USING PROPRIETARY FORMATS OR PROTOCOLS OTHER THAN TCP/IP SHALL NOT BE ACCEPTED.

B. NETWORK COMPONENTS

1. PROVIDE IEEE 802.3AF 10/100/1000 L3 SWITCHES IN QUANTITIES AND LOCATIONS SHOWN IN THE DRAWINGS AND DESCRIBED HEREIN.
   a. SWITCHES SHALL CONTAIN AUTO-SENSING PORTS SUPPORTING 10BASE-T, 100BASE-T, AND 1000BASE-T. SWITCHES SHALL SUPPORT IEEE 802.3AB TYPE 1000BASE-T STANDARD.
   b. SWITCHES SHALL BE RACK MOUNTED IN STANDARD 19" RACKS.

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NO.	REVISION/ISSUE	DATE
2.	ISSUE FOR BID	06/18/2018
1.	ISSUE FOR BUDGETING	06/04/2018

SEAL

PROJECT

INTERIOR RENOVATION
MUSIC SOUND STAGE

DATE:	06/18/2018
PROJECT NO:	DA 1845 / SU-062518
DRAWN BY:	MCR
CHECKED BY:	AS
SCALE:	AS NOTED

DRAWING TITLE

PERFORMANCE LIGHTING SYSTEM SPECIFICATIONS

SHEET NO.

TE2.01

c. SWITCHES SHALL HAVE UTP PORTS ON THE FRONT FACE FOR CONNECTION TO OTHER NETWORK DEVICES VIA STANDARD 19" PATCH PANELS.

d. SWITCHES SHALL HAVE HIGH MEAN TIME BETWEEN FAILURE (MTBF) VALUE AS COMPARATIVELY ANALYZED WITH INDUSTRY STANDARD 802.3AF PRODUCTS.

e. PROVIDE MEDIA CONVERTER MODULES AS REQUIRED FOR UTP TO FIBER-OPTIC CONVERSION.

f. SWITCHES SHALL BE CONVECTION COOLED TO RUN SILENT.

g. PROVIDE SWITCHES IN QUANTITIES AND CONFIGURATIONS HAVING SUFFICIENT UTP PORTS FOR SIMULTANEOUS CONNECTION OF ALL PATCH BAY PORTS ASSIGNED TO LIGHTING NETWORK DEVICES.

h. ACCEPTABLE MANUFACTURER SHALL BE CISCO SYSTEMS OR APPROVED EQUAL.

2. PROVIDE CATEGORY 6A OR BETTER PATCH BAYS AS REQUIRED FOR TERMINATION OF NETWORK CABLING.

a. PATCH BAYS SHALL BE RACK MOUNTED IN STANDARD 19" RACKS.

b. PROVIDE CATEGORY 6A OR BETTER PATCH CORDS AS REQUIRED FOR CONNECTION BETWEEN THE PATCH BAYS, SWITCHES, AND OTHER NETWORK DEVICES.

c. PROVIDE RACK MOUNTED STANDARD 19" CABLE MANAGEMENT SYSTEMS FOR EACH PATCH PANEL.

d. ACCEPTABLE MANUFACTURER SHALL BE HUBBELL OR APPROVAL EQUAL.

3. PROVIDE DMX GATEWAYS IN QUANTITIES AND TYPES AS SHOWN ON DRAWINGS.

a. GATEWAYS SHALL BE INTELLIGENT ETHERNET DEVICES PROVIDING DMX & RDM DATA DISTRIBUTION OVER ETHERNET DATA NETWORK. NODES SHALL BE CONNECTED USING CATEGORY 6A OR BETTER WIRE, AND POWERED VIA ETHERNET CONNECTION USING POWER OVER ETHERNET (IEEE 802.3AF). ETHERNET CONNECTION RECEPTACLE SHALL BE NEUTRIK ETHERCON D-SERIES CAT5E RECEPTACLE.

b. GATEWAYS SHALL DIRECTLY SUPPORT ANSI E1.31 (SACN) AND ANSI E1.17 (ACN) NETWORK PROTOCOLS. GATEWAYS THAT DO NOT SUPPORT THESE PROTOCOLS SHALL NOT BE ACCEPTED.

c. THERE SHALL BE AS STANDARD DMX512 5-PIN XLR CONNECTORS ON THE FRONT PANEL, OR AS SHOWN ON THE DRAWINGS. IT SHALL BE POSSIBLE TO FACTORY CONFIGURE THE CONNECTORS TO BE MALE OR FEMALE TO MEET PROJECT REQUIREMENTS.

d. GATEWAYS SHALL BE REMOTELY CONFIGURED VIA NETWORK SYSTEM WIRING USING MANUFACTURER'S SOFTWARE, CONTROL CONSOLE INTERFACE, OR STANDARD WEB BROWSER. SPECIFIC DMX CHANNELS INPUT OR OUTPUT BY NODE SHALL BE FREELY CONFIGURABLE BY USER. CONFIGURATION OF NODE SHALL BE STORED IN NON-VOLATILE MEMORY.

e. PORTABLE NODES SHALL BE PROVIDED WITH APPROPRIATE MOUNTING HARDWARE FOR 1.9" (48MM) O.D. PIPE AS SHOWN ON DRAWINGS.

f. PORTABLE NODES SHALL BE SUPPLIED WITH 5'-0" (1.5M) CATEGORY 6A OR BETTER CABLE EXTENSION FOR EACH NODE.

2.9 PERFORMANCE LIGHTING CONTROL DEVICE FACEPLATES

A. FACEPLATE: 1/8" (3MM) ALUMINUM COMPONENT MOUNTING PANEL.

B. SURFACE BACK BOXES: SUPPLIED BY PERFORMANCE LIGHTING MANUFACTURER

C. FLOOR BOXES: AS SHOWN ON DRAWINGS

D. COLOR: POWDER COAT BLACK, OR AS SHOWN ON DRAWINGS

E. LEGENDS: ENGRAVED IN COMPONENT MOUNTING PANEL AND FILLED WITH ENGRAVER'S ENAMEL OF CONTRASTING COLOR. LEGENDS IN BLACK PANELS SHALL BE WHITE.

F. COMPONENTS: AS SHOWN ON DRAWINGS

G. DMX RECEPTACLES: NEUTRIK B-SERIES XLR RECEPTACLES.

H. ETHERNET RECEPTACLES: NEUTRIK ETHERCON CAT6A RECEPTACLES.

I. LOW VOLTAGE BARRIER: INSTALL BETWEEN CONTROL AND POWER RECEPTACLES

J. MOUNTING HARDWARE: COORDINATE DEVICE MOUNTING REQUIREMENTS AS NOTED ON DRAWINGS AND PER FIELD CONDITIONS.

2.10 PERFORMANCE LIGHTING OUTLET DEVICES

A. FACEPLATE: 1/8" (3MM) ALUMINUM COMPONENT MOUNTING PANEL.

B. SURFACE BACK BOXES: SUPPLIED BY PERFORMANCE LIGHTING MANUFACTURER

C. FLOOR BOXES: AS SHOWN ON DRAWINGS

D. COLOR: POWDER COAT BLACK, OR AS SHOWN ON DRAWINGS

E. LEGENDS: ENGRAVED IN COMPONENT MOUNTING PANEL AND FILLED WITH ENGRAVER'S ENAMEL OF CONTRASTING COLOR. LEGENDS IN BLACK PANELS SHALL BE WHITE.

F. COMPONENTS: AS SHOWN ON DRAWINGS

1. FLUSH RECEPTACLES: INDIVIDUALLY MOUNTED, READILY REPLACEABLE, AND INSTALLED OFF-CENTER TO ALLOW SPACE FOR CIRCUIT IDENTIFICATION LABELS.

2. PIGTAIL RECEPTACLES: SUITABLE STRAIN RELIEF GRIPS FOR SOOW CABLES THAT ENGAGES CABLE'S OUTER JACKET.

3. PIGTAIL LENGTH: 18" (0.5M) OR AS SHOWN ON DRAWINGS.

G. TERMINALS: PROVIDE NUMBERED SCREW TERMINALS ON BARRIER TERMINAL BLOCKS FOR FIELD CONNECTIONS WITHIN EACH DEVICE. DEVICES SHALL BE INTERNALLY WIRED BY MANUFACTURER.

H. MOUNTING HARDWARE: COORDINATE DEVICE MOUNTING REQUIREMENTS AS NOTED ON DRAWINGS AND PER FIELD CONDITIONS.

2.11 MULTICABLE

A. FURNISH CABLE IN QUANTITIES AND TYPES AS SHOWN ON THE DRAWINGS.

B. ALL ASSEMBLIES SHALL BE TESTED AFTER FABRICATION TO ASSURE WIRE CONTINUITY AND CORRECT POLARITY OF CONNECTIONS.

PART 3 – EXECUTION

3.1 SUPERVISION OF INSTALLATION

A. MANUFACTURER SHALL PROVIDE INSTRUCTION AND SUPERVISION TO THE DIVISION 26 CONTRACTOR AS IT PERTAINS TO THE INSTALLATION OF THESE SYSTEMS. PROVIDE THE NECESSARY PERSONNEL FOR COORDINATION MEETINGS AND SITE VISITS AS REQUESTED BY THE DIVISION 26 CONTRACTOR.

3.2 COMMISSIONING

A. MANUFACTURER SHALL PROVIDE THE SERVICES OF A QUALIFIED ON-SITE ENGINEERING REPRESENTATIVE WHO SHALL PERFORM THE FOLLOWING:

1. SUPERVISE AND INSTRUCT EQUIPMENT INSTALLER IN ALL MANUFACTURER'S REQUIREMENTS AND SPECIFICATIONS.

2. PRIOR TO SYSTEM ENERGIZATION, INSPECT THE FINISHED INSTALLATION AND CONFIRM THAT THE INSTALLATION CONFORMS TO MANUFACTURER'S REQUIREMENTS AND SPECIFICATIONS. SUPERVISE CORRECTION OF ANY DEFICIENCIES AND RETEST DEFICIENT ITEMS.

3. MANUFACTURER'S ENGINEERING REPRESENTATIVE SHALL BE PRESENT DURING ENERGIZATION OF THE SYSTEM.

4. VERIFY OPERATION OF ALL CONTROL DEVICES AND NETWORK WIRING.

5. CONFIGURE ALL HARDWARE AND SOFTWARE TO A "SHOW READY" STATE, INCLUDING:

a. NETWORK DEVICE ADDRESSING

b. ETHERNET SWITCHES CONFIGURED FOR INDUSTRY STANDARD CONTROL PROTOCOLS

c. LIGHTING CONTROL CONSOLE PATCHED 1 TO 1 FOR ALL CONTROL CHANNELS IN SYSTEM

d. DMX NODE/GATEWAY PATCH, PRIORITY, AND SOFT LABELING

B. PROVIDE TO THE ARCHITECT AND THEATRE CONSULTANT A WRITTEN REPORT CONFIRMING THAT THE SYSTEM HAS BEEN PROPERLY INSTALLED AND SUCCESSFULLY ENERGIZED WITHIN FOURTEEN (14) DAYS OF ENERGIZATION.

3.3 DEMONSTRATION AND ACCEPTANCE

A. THE ARCHITECT AND THEATRE CONSULTANT (OR THEIR REPRESENTATIVES) SHALL WITNESS A FULL DEMONSTRATION BY THE MANUFACTURER OF EACH FEATURE OF EACH PIECE OF EQUIPMENT IN THE SYSTEM. COMPLY WITH THE FOLLOWING CONDITIONS:

1. THE MANUFACTURER SHALL PROVIDE ALL NECESSARY PERSONNEL AND EQUIPMENT, INCLUDING LIFTS AND LADDERS, TO DEMONSTRATE FULLY THE SYSTEM'S COMPLIANCE TO THE SPECIFICATIONS.

2. CONTRACTOR'S PROJECT REPRESENTATIVE SHALL BE PRESENT DURING TESTING AS REQUIRED.

3. FULL AND UNINTERRUPTED ACCESS TO ALL AREAS SHALL BE PROVIDED AS NECESSARY FOR COMPLETE TESTING AND DEMONSTRATION.

4. ALL LOOSE EQUIPMENT PROVIDED UNDER THIS SECTION SHALL BE ON SITE AND AVAILABLE FOR TESTING.

5. ALL ARCHITECTURAL LIGHTING FIXTURES CIRCUITED TO THE DIMMING SYSTEM SHALL BE INSTALLED AND LAMPED.

B. SUBJECT TO SATISFACTORY ON-SITE DEMONSTRATION, THE OWNER'S REPRESENTATIVE SHALL ACCEPT THE EQUIPMENT ON BEHALF OF THE OWNER.

C. SHOULD THE DEMONSTRATION PROVE UNSATISFACTORY, THE THEATRE CONSULTANT AND THE ARCHITECT SHALL INFORM THE MANUFACTURER IN WRITING, AND THE MANUFACTURER SHALL RECTIFY THE PROBLEMS. PROBLEMS SHALL BE RECTIFIED IN THE SHORTEST TIME POSSIBLE. DURING THIS PERIOD OF REMEDIAL WORK, THE OWNER SHALL HAVE BENEFICIAL USE OF THE EQUIPMENT. THE WARRANTY PERIOD SHALL COMMENCE UPON FINAL ACCEPTANCE BY THE OWNER.

3.4 TRAINING

A. PROVIDE A FACTORY FIELD SERVICE REPRESENTATIVE TO OFFER INSTRUCTION TO THE OWNER'S STAFF IN THE PROPER OPERATION AND MAINTENANCE OF THE SYSTEMS AND SOFTWARE FOR AT LEAST 2 FULL DAYS AT A DATE AND TIME CONVENIENT TO THE OWNER.

END OF SECTION

SECTION 260963

PERFORMANCE LIGHTING SYSTEMS INSTALLATION

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. DRAWINGS AND GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION 01 SPECIFICATION SECTIONS, APPLY TO THIS SECTION.

1.2 SUMMARY

A. THE WORK OF THIS SECTION INCLUDES ALL LABOR, MATERIALS, EQUIPMENT AND SERVICES NECESSARY TO INSTALL THE ELECTRICAL WORK ASSOCIATED WITH THE PERFORMANCE LIGHTING SYSTEMS, AS DESCRIBED IN SECTION 260961 AND SHOWN ON THE DRAWINGS.

B. RELATED SECTIONS INCLUDE THE FOLLOWING:

1. PERFORMANCE LIGHTING SYSTEMS

2. COMMON WORK RESULTS FOR ELECTRICAL

3. ARCHITECTURAL LIGHTING FIXTURES

4. RIGGING SYSTEMS AND CONTROLS

1.3 QUALITY ASSURANCE AND STANDARDS

A. REFERENCES TO CODE, STANDARDS, SPECIFICATIONS AND RECOMMENDATIONS OF TECHNICAL SOCIETIES, TRADE ORGANIZATIONS AND GOVERNMENTAL AGENCIES WILL REFER TO THE LATEST EDITION OF SUCH PUBLICATIONS ADOPTED AND PUBLISHED PRIOR TO SUBMITTAL OF THE BID. ALL SUCH CODES AND STANDARDS WILL BE CONSIDERED A PART OF THIS SPECIFICATION AS IF THEY WERE FULLY INCLUDED HEREIN.

B. WORK AND MATERIALS SHALL COMPLY WITH THE RULES AND RECOMMENDATIONS OF:

1. PREVAILING NATIONAL, STATE AND LOCAL BUILDING CODES.

2. UL, ETL, CUL, CSA AND CE LABELS - WHERE MATERIALS AND EQUIPMENT ARE AVAILABLE UNDER THE CONTINUING INSPECTION AND LABELING SERVICE OF APPLICABLE INDEPENDENT PRODUCT TESTING AND CERTIFICATION SERVICES, PROVIDE SUCH LABELS, MATERIALS, AND EQUIPMENT.

3. NATIONAL FIRE PROTECTION ASSOCIATE (NFPA) PUBLICATION: NATIONAL ELECTRICAL CODE, NFPA70 AS APPLICABLE TO INSTALLATION AND CONSTRUCTION OF PERFORMANCE LIGHTING AND CONTROL EQUIPMENT.

4. NEMA COMPLIANCE PERTAINING TO COMPONENTS OF PERFORMANCE LIGHTING EQUIPMENT.

5. UNITED STATES INSTITUTE FOR THEATRE TECHNOLOGY, INC. (USITT) DMX512/1990 (ANSI E1.11-2004).

6. ANSI/PLASA REMOTE DEVICE MANAGEMENT (ANSI/PLASA E1.20 RDM) AND ARCHITECTURE FOR CONTROL NETWORKS (ANSI E1.17-2006, E1.31) STANDARDS.

7. INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC. (IEEE) 802.3AF AND 802.11N.

1.4 CERTIFICATIONS

A. THE CONTRACTOR SHALL SUBMIT (AS PART OF THE OWNER'S MANUAL) CERTIFICATES FROM THE MANUFACTURER STATING THAT THE INSTALLED SYSTEM IS OPERATING PROPERLY AND COMPLIES WITH THE MANUFACTURER'S RECOMMENDATIONS. THIS INFORMATION SHALL BE INCORPORATED IN THE OWNER'S MANUAL, AS DESCRIBED IN 260961

B. THE CONTRACTOR SHALL SUBMIT A CERTIFICATE THAT THE ETHERNET SYSTEM HAS BEEN TESTED AND COMPLIES WITH ALL IEEE 802.3, ISO/IEC 8802-3 AND PLASA STANDARDS. THIS INFORMATION SHALL BE INCORPORATED AS AN APPENDIX TO THE OWNER'S MANUAL, AS DESCRIBED IN THEATRICAL LIGHTING CONTROLS.

1.5 WARRANTY

A. IN ADDITION TO THE PERFORMANCE LIGHTING CONTROLS MANUFACTURER'S WARRANTY, PROVIDE WARRANTY OF THE SYSTEMS AND EQUIPMENT TO BE FREE OF FAULTY WORKMANSHIP OR IMPROPER ADJUSTMENT FOR A PERIOD OF ONE YEAR FROM THE DATE OF OWNER'S ACCEPTANCE.

B. REPLACE ITEMS SHOWING EVIDENCE OF DEFECTIVE MATERIALS OR WORKMANSHIP WITHIN THIRTY DAYS AFTER NOTIFICATION. MAKE REPAIRS WITHOUT ANY COST TO THE OWNER.

C. RESOLVE ANY CONDITIONS THAT MIGHT PRESENT A SERIOUS HAZARD TO HUMAN LIFE WITHIN 24 HOURS OF NOTIFICATION BY OWNER.

PART 2 – PRODUCTS

2.1 MATERIALS

A. MATERIALS AS SPECIFIED UNDER DIVISION 26.

PART 3 – EXECUTION

3.1 PROTECTION OF EQUIPMENT

A. PROTECT THE EQUIPMENT IN THIS AND RELATED SECTIONS FROM DAMAGE AND DETERIORATION DURING ALL PHASES OF THE WORK, FROM THE TIME OF MANUFACTURE TO THE ACCEPTANCE OF THE COMPLETED INSTALLATION.

B. THE PERFORMANCE LIGHTING SYSTEMS EQUIPMENT FURNISHED UNDER SECTION 260961 WILL BECOME RESPONSIBILITY OF THE INSTALLER UNTIL OWNER'S FINAL ACCEPTANCE.

3.2 INSTALLATION

A. INSTALL PERFORMANCE LIGHTING CONTROLS SYSTEM AS LOCATED ON THE DRAWINGS. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS, RECOGNIZED INDUSTRY PRACTICE, AND APPLICABLE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE AND UL STANDARDS.

B. ALL LOAD CIRCUIT CONDUCTORS AND DATA WIRING FOR THESE SYSTEMS SHALL BE INSTALLED IN METALLIC CONDUIT, METAL WIREWAYS, SURFACE METAL RACEWAYS, OR OTHER APPROVED CABLE CONTAINMENT. USE OF METAL-SHEATHED OR ARMORED CABLE SHALL NOT BE ACCEPTED WITHOUT PRIOR APPROVAL.

C. VOLTAGE SEPARATION SHALL BE MAINTAINED BETWEEN LINE VOLTAGE, LOW VOLTAGE AND DATA WIRING.

D. ALL LOAD CIRCUIT CONDUCTORS SHALL BE CONTINUOUS FROM THE PANELBOARD TO THE OUTLET DEVICES.

E. ALL LOAD CIRCUITS MUST HAVE INDIVIDUAL NEUTRAL CONDUCTORS. NEUTRAL CONDUCTORS MUST BE ROUTED DIRECTLY ADJACENT TO THE LIVE CONDUCTORS OF EACH CIRCUIT.

F. ALL DATA WIRING SHALL BE CONTINUOUS FROM TERMINATION POINT TO TERMINATION POINT; NO SPLICES OR INLINE CONNECTORS SHALL BE ALLOWED.

G. FIELD TERMINATIONS IN THESE SYSTEMS SHALL BE AS FOLLOWS:

1. BRANCH LOAD WIRES SHALL TERMINATE ON SCREW TERMINALS ON BARRIER TERMINAL BLOCKS, CIRCUIT BREAKERS AND SWITCHES.

2. CONTROL WIRES SHALL TERMINATE ON SCREW TERMINALS ON BARRIER TERMINAL BLOCKS AND SWITCHES, OR AS NOTED.

3. ETHERNET CABLES SHALL BE INSTALLED AND TESTED IN COMPLIANCE WITH ALL IEEE 802.3.ISO/IEC 8802-3 AND ETSA STANDARDS.

H. WIRE NUTS AND FIELD SOLDERED CONNECTIONS, EXCEPT WHERE NOTED, ARE NOT ACCEPTABLE IN THESE SYSTEMS.

I. THESE SYSTEMS SHALL BE GROUNDED, AS SHOWN ON DRAWINGS AND IN ACCORDANCE WITH APPLICABLE CODES AND REGULATIONS AND/OR AT THE ADVICE OF THE MANUFACTURER.

J. NETWORK CABLING

1. PERFORMANCE LIGHTING SYSTEM DATA CABLING SHOWN IN DRAWINGS TO CONVEY DESIGN INTENT ONLY. FINAL QUANTITIES, TYPES, AND TOPOLOGIES SHALL BE PER THE MANUFACTURER'S APPROVED SHOP DRAWINGS.

2. PROVIDE FIBER OPTIC CABLE AS REQUIRED FOR ALL RUNS GREATER THAN 90 METERS (300') OR AS SPECIFICALLY SHOWN IN THE DRAWINGS.

a. CONFIRM ALL CABLE ROUTING DISTANCES TO DETERMINE APPROPRIATE USE OF FIBER RUNS.

b. CABLE SHALL BE 62.5/125µM FIBER OPTIC CABLE AS REQUIRED TO SUPPORT NETWORK COMPONENTS.

c. CABLE SHALL EXCEED THE IEEE802.3Z GIGABIT ETHERNET FIBER SPECIFICATION FOR 62.5/125µM FIBER.

d. CABLE SHALL EXCEED THE TIA/EIA 568B FIBER SPECIFICATION.

3. PROVIDE UTP CABLE AS REQUIRED FOR ALL RUNS UNDER 90 METERS (300') UNLESS SPECIFICALLY SHOWN AS FIBER OPTIC CABLE IN THE DRAWINGS.

a. COPPER CABLING AND CONNECTING HARDWARE SHALL FULLY COMPLY WITH TIA/EIA 568B STANDARDS AND WITH THE STANDARD INSTALLATION OF CATEGORY 6A PRODUCTS.

3.3 COMMISSIONING

A. PRIOR TO ENERGIZATION OF THE SYSTEM, PERFORM THE FOLLOWING TESTS AND INSPECTIONS FOLLOWING THE INSTRUCTIONS OF THE EQUIPMENT MANUFACTURER'S ON-SITE ENGINEERING REPRESENTATIVE. CORRECT DEFICIENCIES AND RETEST DEFICIENT ITEMS.

1. INSPECT EACH OUTLET, FACEPLATE, DEVICE AND LOOSE EQUIPMENT FOR DEFECTS, FINISH FAILURE, CORROSION, PHYSICAL DAMAGE, CORRECT LABELING, AND NAMEPLATE.

2. PERFORM OPERATIONAL TESTS ON MECHANICAL PARTS AND OPERABLE DEVICES ACCORDING TO MANUFACTURER'S INSTRUCTIONS OR ROUTINE FUNCTIONAL OPERATION.

3. CHECK TIGHTNESS OF ELECTRICAL CONNECTIONS WITH TORQUE WRENCH CALIBRATED WITHIN THE PREVIOUS SIX (6) MONTHS USING MANUFACTURER'S RECOMMENDED TORQUE VALUES.

4. PERFORM CONTINUITY TESTING OF EACH BRANCH LOAD CIRCUIT RECEPTACLE, DETERMINING CORRECT POLARITY OF WIRING AND CORRESPONDENCE BETWEEN CIRCUIT NUMBERS AND LABELING. CONTINUITY TEST REPORT SHALL BE AVAILABLE UPON REQUEST. ANY PROBLEM(S), I.E. OPEN CIRCUIT, SHORT CIRCUIT, WRONG TERMINATION, ETC. SHALL BE RECTIFIED IN A TIMELY MANNER AND RE-TESTED.

5. TEST AND CERTIFY ETHERNET NETWORK FOR COMPLIANCE WITH ALL IEEE 802.3, ISO/IEC 8802-3 AND ANSI/PLASA STANDARDS. NETWORK COMPLIANCE TEST REPORT SHALL BE AVAILABLE UPON REQUEST. ANY PROBLEM(S), I.E. CABLE LENGTH EXCEEDING STANDARDS, OPEN CIRCUIT, SHORT CIRCUIT, WRONG TERMINATION, ETC. SHALL BE RECTIFIED IN A TIMELY MANNER AND RE-TESTED. SUBMIT FINAL TEST REPORT DATA AND LETTER OF CERTIFICATION FOR INCLUSION AS AN APPENDIX TO THE MANUFACTURER'S INSTRUCTION AND MAINTENANCE MANUAL.

B. ENERGIZATION OF THE SYSTEM SHALL ONLY COMMENCE FOLLOWING WRITTEN APPROVAL OF THE MANUFACTURER, AND SHALL TAKE PLACE IN THE PRESENCE OF THE MANUFACTURER'S ON-SITE ENGINEERING REPRESENTATIVE.

3.4 DEMONSTRATION AND ACCEPTANCE

A. THE ARCHITECT AND ITS REPRESENTATIVE SHALL WITNESS A FULL DEMONSTRATION OF EACH FEATURE OF EACH PIECE OF EQUIPMENT IN THE SYSTEM.

1. CONTRACTOR SHALL PROVIDE ALL NECESSARY PERSONNEL AND EQUIPMENT TO DEMONSTRATE FULLY THE SYSTEM'S COMPLIANCE TO THE SPECIFICATIONS.

2. CONTRACTOR'S PROJECT REPRESENTATIVE SHALL BE PRESENT DURING TESTING AS REQUIRED.

3. FULL AND UNINTERRUPTED ACCESS TO ALL AREAS SHALL BE PROVIDED AS NECESSARY FOR COMPLETE TESTING AND DEMONSTRATION.

4. ALL LOOSE EQUIPMENT PROVIDED UNDER THIS AND RELATED SECTIONS SHALL BE ON SITE AND AVAILABLE FOR TESTING.

B. SUBJECT TO THE ON-SITE DEMONSTRATION BEING SATISFACTORY, THE OWNER'S REPRESENTATIVE SHALL ACCEPT THE EQUIPMENT ON BEHALF OF THE OWNER.

C. SHOULD THE DEMONSTRATION PROVE UNSATISFACTORY, THE THEATRE CONSULTANT AND THE ARCHITECT WILL INFORM THE CONTRACTOR IN WRITING, AND THE CONTRACTOR SHALL RECTIFY THE PROBLEMS. PROBLEMS SHOULD BE RECTIFIED IN THE SHORTEST TIME POSSIBLE. DURING THIS PERIOD OF REMEDIAL WORK, THE OWNER SHALL HAVE BENEFICIAL USE OF THE EQUIPMENT. THE WARRANTY PERIOD SHALL COMMENCE UPON FINAL ACCEPTANCE BY THE OWNER.

END OF SECTION

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NO.	REVISION/ISSUE	DATE
2.	ISSUE FOR BID	06/18/2018
1.	ISSUE FOR BUDGETING	06/04/2018

SEAL

PROJECT

INTERIOR RENOVATION
MUSIC SOUND STAGE

DATE:	06/18/2018
PROJECT NO:	DA 1845 / SU-062518
DRAWN BY:	MCR
CHECKED BY:	AS
SCALE:	AS NOTED

DRAWING TITLE

PERFORMANCE LIGHTING SYSTEM & INSTALLATION SPECIFICATIONS

SHEET NO.

TE2.02