**OWNERSHIP OF INSTRUMENTS OF SERVICE**
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# Interior Lighting Compliance Certificate

## 2012 IECC
## Section 1: Project Information

Project Type: Alterations

## Section 2: Interior Lighting and Power Calculation

| Floor Area (sq. ft.) | Watts per sq. ft. | Allowed Watts | Proposed Watts | Complies |
|---|---|---|---|---|
| 7575 | 1.2 | 9090 | See Below | Yes |

## Section 3: Interior Lighting Fixture Schedule

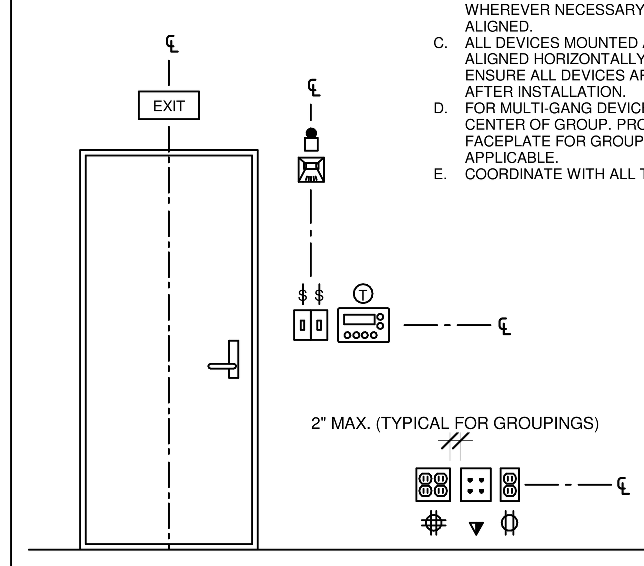
| TYPE | LAMP TYPE | BALLAST / DRIVER | LAMP QTY | COUNT | LOAD | TOTAL LOAD |
|---|---|---|---|---|---|---|
| FF4 | 40W LED, 3500K, 80+ CRI | LUTRON HI-LUME ELECTRONIC DRIVER COMPATIBLE WITH EXISTING LUTRON DIMMING SYSTEM | 1 | 91 | 40 VA | 3640 VA |
| Z1 | 32W LED, 3500K, 80 CRI | LUTRON HI-LUME ELECTRONIC DRIVER COMPATIBLE WITH EXISTING LUTRON DIMMING SYSTEM | 1 | 109 | 33 VA | 3564 VA |
| | | | | | | 7204 VA |

# GENERAL NOTES

A. REFER TO DRAWINGS FOR MOUNTING TYPE, NUMBER OF FACES AND ARROWS OF EXIT SIGNS. VERIFY IN FIELD PRIOR TO INSTALLATION.
B. VERIFY COMPATIBILITY WITH VOLTAGE, CONTROLS, ETC. FOR ALL LUMINAIRE COMPONENTS
C. COORDINATE EACH LUMINAIRE LOCATION WITH EXISTING CEILING AND PROVIDE APPROPRIATE MOUNTING SYSTEM REQUIRED FOR EACH LUMINAIRE. ALSO, PROVIDE PLASTER FRAMES, WALL BRACKETS, SUPPORTS, OR OTHER APPURTENANCES AS REQUIRED FOR PROPER AND COMPLETE INSTALLATIONS.
D. WEAR CLEAN WHITE COTTON GLOVES WHEN HANDLING EXPOSED REFLECTIVE LUMINAIRE SURFACES. REMOVE PLASTIC SHIPPING BAGS ONLY AFTER INTERIOR WORK IS COMPLETE, AND CLEAN ALL SURFACES WITH CLEAN DRY CHEESECLOTH.
E. MOUNTING HEIGHTS INDICATED ARE TO THE BOTTOM OF THE LUMINAIRE, UNLESS OTHERWISE NOTED.
F. PRODUCTS: PROVIDE PRODUCTS INDICATED ON DRAWINGS AND SCHEDULES. WHERE MULTIPLE MANUFACTURER SERIES/MODEL NUMBERS ARE LISTED FOR A SINGLE LUMINAIRE, PROVIDE ONE OF THOSE LISTED. WHERE A SPECIFIC MANUFACTURER SERIES/MODEL NUMBER IS LISTED AS BASIS-OF-DESIGN, AND WHERE IT IS STATED THAT EQUIVALENTS WILL BE CONSIDERED, ANY PROPOSED NON-LISTED LUMINAIRES ARE SUBJECT TO REVIEW BY DESIGN PROFESSIONAL(S), SUBMITTALS FOR WHICH SHALL BE FURNISHED AT LEAST (10) DAYS PRIOR TO BID DUE DATE OR THEY WILL NOT BE CONSIDERED. THESE PRE-BID SUBMITTALS SHALL CLEARLY STATE EXACTLY WHAT IS BEING PROPOSED AND SHALL DEMONSTRATE COMPLIANT EQUIVALENCY. SIMILAR REQUESTS FOR PROPOSED SUBSTITUTIONS MAY BE MADE ONLY AFTER BIDS ARE RECEIVED, AND ONLY IF OWNER CHOOSES TO CONSIDER SUBSTITUTION REQUESTS. DESIGN PROFESSIONAL(S) AND OWNER RESERVE THE RIGHT TO REJECT ALL PRODUCTS THAT ARE NOT DEEMED TO BE FULLY EQUIVALENT TO THE BASIS-OF-DESIGN LISTING(S). SUBMIT ALL REQUESTS AND QUESTIONS THROUGH THE FORMALLY-ESTABLISHED BIDDING PROCESS, NOT DIRECTLY TO ENGINEER.

# ELECTRIC LUMINAIRE SCHEDULE

| TYPE | DESCRIPTION | MANUFACTURER / SERIES | SIZE | HOUSING / MOUNTING | MATERIAL | LENS DESCRIPTION | LAMP QTY | LAMP TYPE | LAMP BASE | BALLAST / DRIVER QTY | BALLAST / DRIVER | FINISH | COMMENTS | FIXTURE LOAD | VOLTAGE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FF4 | WALL MOUNT UPLIGHT | UTOPIA WIOP<br>ALERA<br>FOCAL POINT<br>LITECONTROL<br>FINELITE | 3"x4'x7-1/4" | WALL - SOLID HOUSING | STEEL | WHITE STEEL REFLECTOR | 1 | 40W LED, 3500K, 80+ CRI | 3747 LUMENS | 1 | LUTRON HI-LUME ELECTRONIC DRIVER COMPATIBLE WITH EXISTING LUTRON DIMMING SYSTEM | WHITE | | 40 VA | 120 V |
| Z1 | LED DOWNLIGHT | PRESCOLITE LF6ML2DM<br>UTOPIA LAD6A<br>LITHONIA<br>HALO COMMERCIAL<br>LITEFRAME<br>LIGHTOLIER | 6" DIAx15"x7-1/2" | RECESSED | ALUMINUM | SEMI-SPECULAR REFLECTOR, MEDIUM DOWNLIGHT OPTIC | 1 | 32W LED, 3500K, 80 CRI | 3000 NOMINAL LUMENS | 1 | LUTRON HI-LUME ELECTRONIC DRIVER COMPATIBLE WITH EXISTING LUTRON DIMMING SYSTEM | WHITE | | 33 VA | 120 V |




## GENERAL NOTES:

A. ALIGN ALL DEVICES SHOWN ON PLANS AT SAME DIMENSION FROM DOOR FRAME OR WALL.
B. CONDUIT/CABLES SHALL BE ROUTED WHEREVER NECESSARY TO KEEP DEVICES ALIGNED.
C. ALL DEVICES MOUNTED AT SAME HEIGHT TO BE ALIGNED HORIZONTALLY. ENSURE ALL DEVICES ARE LEVEL AND PLUMB AFTER INSTALLATION.
D. FOR MULTI-GANG DEVICES, ALIGN DEVICES AT CENTER OF GROUP. PROVIDE SINGLE FACEPLATE FOR GROUPS OF DEVICES WHERE APPLICABLE.
E. COORDINATE WITH ALL TRADES CASE-BY-CASE.

260502.00-01 - DEVICE ALIGNMENT DETAIL
SCALE: NONE

# ELECTRIC DESIGN CRITERIA

## APPLICABLE BUILDING CODES

2018 KENTUCKY BUILDING CODE (BASED ON THE INTERNATIONAL BUILDING CODE)
2017 NFPA 70 - NATIONAL ELECTRICAL CODE
2013 NFPA 72 - NATIONAL FIRE ALARM AND SIGNALING CODE
2012 INTERNATIONAL ENERGY CONSERVATION CODE (IECC)

## TESTING/COMMISSIONING FOR LIGHTING CONTROLS

LIGHTING CONTROL DEVICES AND SYSTEMS SHALL BE TESTED TO ENSURE THE HARDWARE AND SOFTWARE IS CALIBRATED, PROGRAMMED, AND IN PROPER WORKING ORDER. INSTALLING CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REQUIRED INSTALLATION CERTIFICATES AND SHALL PROVIDE MANUALS FOR LIGHTING CONTROL DEVICES TO OWNER PRIOR TO PROJECT CLOSE-OUT. INSTALLING CONTRACTOR SHALL BE RESPONSIBLE FOR CONTRACTING WITH APPROPRIATE PARTIES TO ARRANGE FOR TESTING/COMMISSIONING OF THE LIGHTING CONTROL SYSTEMS AND SHALL BE RESPONSIBLE FOR ENSURING ALL REQUIRED FUNCTIONAL TESTING FORMS ARE COMPLETED AND SUBMITTED TO THE OWNER AND LOCAL AHJ PRIOR TO PROJECT CLOSE-OUT.

## GENERAL ELECTRICAL INSTALLATION NOTES

A. CODE COMPLIANCE: PROVIDE ALL ELECTRICAL WORK COMPLIANT WITH ALL PREVAILING CODES.
B. LISTINGS: PROVIDE MATERIALS, COMPONENTS AND ASSEMBLED COMPONENTS WITH LISTINGS AND LABELS FROM A NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL), MANUFACTURED, LISTED AND LABELED FOR THEIR INTENDED USE.
C. RATED BUILDING SURFACES: SEPARATE DEVICE BOXES BY A MINIMUM OF 6 INCHES WHERE INSTALLED BACK-TO-BACK WITHIN DEMISING WALLS TO MAINTAIN REQUIRED FIRE AND SOUND RATING (TYPICAL OF ALL DEVICE BOXES INSTALLED ON DEMISING WALLS). PROVIDE LISTED FIRE-RATED WRAPS AROUND ALL RECESSED OUTLET, DEVICE AND EQUIPMENT BOXES IN FIRE/SMOKE RATED WALLS, CEILINGS AND FLOORS TO MEET OR EXCEED THE RESPECTIVE FIRE/SMOKE RATING OF THE SURFACE.
D. RATED PENETRATIONS: SEAL ALL PENETRATIONS THROUGH FIRE-RATED AND/OR SMOKE-RATED MEMBRANES (FLOORS, WALLS, CEILINGS, ETC.) USING SEALANT PRODUCTS THAT MEET OR EXCEED THE RATING OF THE RESPECTIVE MEMBRANE.
E. GANGED DEVICES: INSTALL WIRING DEVICES GANGED WHEREVER POSSIBLE FOR INSTANCES WHERE THEY ARE SHOWN TOGETHER. THIS INCLUDES LOCATIONS ABOVE COUNTERS AND WORK SURFACES WHERE APPLICABLE.
F. OUTLET BOXES NEAR CORNERS: INSTALL WALL-MOUNTED SWITCHES, CONTROLS, RECEPTACLES, OUTLETS, ETC. AT LEAST 6 INCHES FROM WALL CORNERS.
G. CONCEALMENTS: CONCEAL ALL CONDUIT DROPS AND RISES WITHIN WALLS, AND PROVIDE FLUSH-MOUNTED WALL OUTLET BOXES UNLESS OTHERWISE INDICATED.
H. DOCUMENTS OF OTHER TRADES: REVIEW DOCUMENTS OF OTHER TRADES PRIOR TO SUBMITTING A BID. PROVIDE ELECTRICAL WORK FOR EQUIPMENT, DEVICES, ETC. OF OTHER TRADES AS REQUIRED TO RENDER THEM FULLY OPERATIONAL.
I. SCHEMATIC REPRESENTATIONS: CIRCUITING WORK SHOWN ON DRAWINGS IS FOR SCHEMATIC GENERAL GRAPHIC REPRESENTATION ONLY. DETERMINE SPECIFICS IN FIELD (POINT-TO-POINT ROUTING, HOME-RUN LOCATIONS, METHODS OF CONCEALMENT, ETC.). LOCATIONS AND ROUTING INDICATED ON PLANS ARE SCHEMATIC AND DIAGRAMMATIC IN NATURE. LAYOUT AND INSTALL ALL ELECTRICAL WORK IN STRICT COMPLIANCE WITH CHAPTER 1, PART II, ARTICLE 110.26 OF THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE (NFPA 70).
J. HOME-RUN DESIGNATIONS: HOME-RUN DESIGNATIONS INDICATED ON PLANS ARE SCHEMATIC DESIGNATIONS ONLY. DETERMINE EXACT CIRCUIT ASSIGNMENTS IN FIELD BASED ON FIELD CONDITIONS. PROVIDE COLOR-CODED CONDUCTOR INSULATION ACCORDINGLY, CODED PROPERLY DEPENDING ON SYSTEM, PHASE, NEUTRAL, ETC. PROVIDE EQUIPMENT AND PANELBOARD SCHEDULES THAT ACCURATELY INDICATE INSTALLED CONDITIONS.
K. EQUIPMENT & LOAD COORDINATION: REFER TO AND COORDINATE WITH POWER FLOOR PLANS, EQUIPMENT SCHEDULES (INCLUDING EQUIPMENT COORDINATION SCHEDULES), DRAWINGS OF ALL TRADES, ALL DIVISIONS AND SECTIONS OF SPECIFICATIONS AND INSTALLERS OF ALL TRADES. BASED ON ACTUAL EQUIPMENT BEING PROVIDED, DETERMINE AND PROVIDE APPROPRIATE BREAKERS, FUSES, CONDUCTORS, CONTROLS, POWER DISTRIBUTION EQUIPMENT, ETC. PERFORM THESE SERVICES PRIOR TO FURNISHING POWER DISTRIBUTION EQUIPMENT SUBMITTALS.
L. OVERHEAD WORK: HOLD ALL NEW OVERHEAD ELECTRICAL WORK AS TIGHTLY AS POSSIBLE TO THE BOTTOM OF THE OVERHEAD STRUCTURE. DO NOT INSTALL ANY ELECTRICAL WORK WITHIN SIX INCHES OF ROOF DECKING.
M. JUNCTION AND PULL BOXES: LOCATE JUNCTION AND PULL BOXES SO THAT THEY REMAIN ACCESSIBLE AFTER ALL CONSTRUCTION WORK IS COMPLETE. COORDINATE ALL WORK WITH ALL OTHER TRADES PRIOR TO COMMENCEMENT OF THE WORK. LOCATE BOXES IN A MANNER THAT AVOIDS HAVING TO USE ACCESS PANELS. IF ACCESS PANELS ARE INEVITABLE, PROVIDE THEM RATED TO MEET OR EXCEED THE FIRE AND/OR SMOKE RATINGS OF THE RESPECTIVE CEILING OR WALL, AND OBTAIN APPROVAL OF DESIGN PROFESSIONALS FOR EACH LOCATION..

# DRAWING INDEX


| SHEET NUMBER | SHEET NAME | CURRENT REVISION ISSUED | CURRENT REVISION DATE | CURRENT REVISION DESCRIPTION |
|---|---|---|---|---|
| E-001 | ELECTRIC COVER SHEET | No | 12/05/19 | Construction Doc. |
| ED100 | ELECTRIC DEMOLITION LEVEL 1 PLAN OVERALL | No | 12/05/19 | Construction Doc. |
| EL100 | ELECTRIC LIGHTING LEVEL 1 PLAN OVERALL | No | 12/05/19 | Construction Doc. |
| EL501 | ELECTRIC LIGHTING - DETAILS | No | 12/05/19 | Construction Doc. |
| F-001 | FIRE PROTECTION COVERSHEET | No | 12/05/19 | Construction Doc. |
| F-100 | FIRE PROTECTION LEVEL 1 PLAN OVERALL | No | 12/05/19 | Construction Doc. |
| FD101 | FIRE PROTECTION DEMOLITION LEVEL 1 PLAN OVERALL | No | 12/05/19 | Construction Doc. |
| T-001 | TECHNOLOGY COVER SHEET | No | 12/05/19 | Construction Doc. |
| T-100 | TECHNOLOGY LEVEL 1 PLAN OVERALL | No | 12/05/19 | Construction Doc. |
| T-501 | TECHNOLOGY DETAILS | No | 12/05/19 | Construction Doc. |
| T-541 | TECHNOLOGY DETAILS | No | 12/05/19 | Construction Doc. |
| T-641 | TECHNOLOGY SCHEDULES AND DIAGRAMS | No | 12/05/19 | Construction Doc. |
| T-642 | TECHNOLOGY SCHEDULES AND DIAGRAMS | No | 12/05/19 | Construction Doc. |
| T-643 | TECHNOLOGY SCHEDULES AND DIAGRAMS | No | 12/05/19 | Construction Doc. |
| T-644 | TECHNOLOGY SCHEDULES AND DIAGRAMS | No | 12/05/19 | Construction Doc. |
| T-645 | TECHNOLOGY SCHEDULES AND DIAGRAMS | No | 12/05/19 | Construction Doc. |
| TD100 | TECHNOLOGY DEMOLITION LEVEL 1 PLAN OVERALL | No | 12/05/19 | Construction Doc. |


# ELECTRIC LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| **LIGHTING AND LIGHTING CONTROLS** | |
| | LUMINAIRE (REFER TO THE LUMINAIRE SCHEDULE)<br>NOTE THAT OTHER SHAPES MAY ALSO BE USED TO REPRESENT LUMINAIRES |
| | SHADED LUMINAIRES DENOTE THOSE CONNECTED TO EMERGENCY OR STANDBY POWER AS APPLICABLE (UNSWITCHED LUMINAIRES ARE EGRESS LIGHTS AND/OR NIGHT-LIGHTS THAT OPERATE 24/7) |
| A NL a EL | A = LUMINAIRE TYPE, NL = NIGHT-LIGHT (UNSWITCHED), a = SWITCHING DESIGNATION,<br>EL = EGRESS LUMINAIRE (ILLUMINATES PATH OF EGRESS, ON ALL TIMES SPACE IS OCCUPIED) |
| $ | LIGHTING SWITCH (KEYS: 2 = 2-POLE, 3 = 3-WAY, 4 = 4-WAY, D=DIMMER, K=KEYED, LV = LOW VOLTAGE<br>M = MOMENTARY-CONTACT 1PDT W/CENTER-REST, P = SWITCH W/PILOT LIGHT, T = TIMER SWITCH) |
| KEY | LIGHTING CONTROL SYSTEM CONTROL INTERFACE<br>"KEY" DENOTES ZONE OF FIXTURES CONTROLLED, A "KEY" OF "M" INDICATES A MASTER |
| **RECEPTACLES AND MISCELLANEOUS OUTLETS** | |
| | SINGLE ("SIMPLEX"), DUPLEX, AND DOUBLE DUPLEX ("QUAD") RECEPTACLE RESPECTIVELY |
| H C T 42" W SW L | RECEPTACLE ATTRIBUTES<br>42" = MOUNT RECEPTACLE AT THIS HEIGHT ABOVE GRADE / FINISHED FLOOR<br>C = INSTALL ABOVE COUNTER AND BACKSPLASH<br>H = INSTALL RECEPTACLE HORIZONTALLY<br>L = LIT (PROVIDE ILLUMINATED FACE OR INDICATOR LIGHT TO INDICATE THERE IS POWER TO RECEPTACLE)<br>SW = SPLIT WIRED<br>T = TAMPER-RESISTANT<br>W = WEATHER PROOF WHILE IN USE COVER AND WEATHER RESISTANT RECEPTACLE |
| **WIRE / CABLE / RACEWAY** | |
| LPA-1,3 | BRANCH CIRCUIT HOME RUN WITH PANEL NAME AND CIRCUIT NUMBER(S) |
| | CABLING / RACEWAY INSTALLED CONCEALED IN WALLS OR ABOVE CEILING |
| | CABLING / RACEWAY INSTALLED BELOW FLOOR OR GRADE |

## ABBREVIATIONS

| | | | |
|---|---|---|---|
| (R) | RELOCATE FIXTURE, EQUIPMENT OR DEVICE | IG | ISOLATED GROUND |
| 42" | DISTANCE ABOVE FINISHED FLOOR / GRADE / PAVEMENT | LR | LEGALLY REQUIRED STANDBY |
| AF | AMP FRAME OF FUSED SWITCH OR CIRCUIT BREAKER | LI | LONG - INSTANTANEOUS |
| AFCI | ARC-FAULT CIRCUIT INTERRUPTER | LSI | LONG - SHORT - INSTANTANEOUS |
| AIC | AMPS INTERRUPTING CURRENT | LSIG | LONG - SHORT - INSTANTANEOUS - GROUND FAULT |
| AT | AMP TRIP OF FUSED SWITCH OR CIRCUIT BREAKER | MCB | MAIN CIRCUIT BREAKER |
| ATS | AUTOMATIC TRANSFER SWITCH | MFR | MANUFACTURER |
| | | MLO | MAIN LUGS ONLY |
| | | MTS | MANUAL TRANSFER SWITCH |
| BAS | BUILDING AUTOMATION SYSTEM | MW | MICROWAVE OVEN |
| C.T.C. | WORK UNDER DIVISION 27 OR 28 AS APPLICABLE | NIC | NOT IN CONTRACT (SHOWN FOR REFERENCE ONLY) |
| C/B | CIRCUIT BREAKER | NTS | NOT TO SCALE |
| CH | COUNTER HEIGHT OR SPECIAL HEIGHT DEVICE | | |
| DW | DISHWASHER | OFE | OWNER-FURNISHED EQUIPMENT - INSTALLED AND WIRED BY E.C. |
| E | EMERGENCY | OS | OPTIONAL STANDBY |
| E.C. | WORK UNDER DIVISION 26 | | |
| EMS | ENERGY MANAGEMENT SYSTEM | P.C. | WORK UNDER DIVISION 22 |
| EPO | EMERGENCY POWER OFF | | |
| ER | EQUIPMENT ROOM | (R) | RELOCATED |
| ERM | ENERGY REDUCTION MAINTENANCE SWITCH | | |
| ESP | EMERGENCY STANDBY RATING | S.C. | WORK UNDER DIVISION 21 |
| ETR | EXISTING TO REMAIN | SCCR | SHORT CIRCUIT CURRENT RATING |
| EWC | ELECTRIC WATER COOLER | SPD | SURGE PROTECTIVE DEVICE |
| EX. | EXISTING | ST | SHUNT TRIP |
| FBO | FURNISHED BY OTHERS - INSTALLED AND WIRED BY E.C. | TAAC | TO ABOVE ACCESSIBLE CEILING |
| | | TR | TAMPER RESISTANT |
| FIBO | FURNISHED AND INSTALLED BY OTHERS - WIRED BY E.C. | TTB | TELEPHONE TERMINAL BOARD |
| | | TYP | TYPICAL |
| FP | RECEPTACLE TO BE USED FOR A FLAT PANEL DISPLAY. | UCR | UNDER COUNTER REFRIGERATOR |
| FWE | FURNISHED WITH EQUIPMENT BY OTHERS - INSTALLED AND WIRED BY E.C. | UL | UNDERWRITER'S LABORATORY |
| | | U.L.S.E. | LISTED FOR SERVICE ENTRANCE |
| | | UNO | UNLESS NOTED OR INDICATED OTHERWISE ON DRAWINGS OR IN SPECIFICATIONS |
| GD | GARBAGE DISPOSAL | | |
| GFEP | GROUND FAULT EQUIPMENT PROTECTION | | |
| GFI / GFCI | GROUND FAULT CIRCUIT INTERRUPTER DEVICE | VFD / VSD | VARIABLE FREQUENCY / SPEED DRIVE |
| GND | GROUND | VIF | VERIFY IN FIELD |
| | | VM | VENDING MACHINE |
| H.C. | WORK UNDER DIVISION 23 | VP | VANDAL PROOF |
| H.O.A. | "HAND - OFF - AUTO" SWITCH | | |
| | | W / WP | WEATHERPROOF |
| | | WG | WIRE GUARD |
| | | WR | WEATHER RESISTANT |

## PLAN-VIEW AND GRAPHIC LINE TYPES

WORK SHOWN BOLD-CONTINUOUS INDICATES NEW WORK (UNLESS OTHERWISE INDICATED)

WORK SHOWN FADED INDICATES EXISTING WORK TO REMAIN OR NEW WORK BY OTHERS AS APPLICABLE (UNLESS OTHERWISE INDICATED)

WORK SHOWN BOLD-DASHED INDICATES SELECTIVE DEMOLITION WORK (UNLESS OTHERWISE INDICATED)

# PANEL NAME: 1EL2

**SUPPLY FROM:** T1 | **MAINS RATING (A):** 100 | **FAULT CURRENT (A):** 3095 | **SURGE SUPRESSION:**
**LOCATION:** ELEC | **MAINS TYPE:** THERMAL MAGNETIC | **SHORT CIRCUIT RATING (A):** EXISTING | **ULSE:**
**DISTRIBUTION SYSTEM:** 208/120V 3PH 4W | **FEEDER ID:** X100 | **LUGS TYPE:** | **200% NEUTRAL:**
**FEEDER:** EXISTING FEEDER, AT RATING INDICATED, TO REMAIN UNLESS NOTED OTHERWISE | **ENCLOSURE TYPE:** NEMA 1 | **ISOLATED GROUND:**

| CKT | CIRCUIT DESCRIPTION | VD% | AWG | GND | TRIP | FRAME | POLE | A | A | B | B | C | C | POLE | FRAME | TRIP | GND | AWG | VD% | CIRCUIT DESCRIPTION | CKT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | (EX) LIGHTING 107 | -- | -- | -- | 20 A | -- | 1 | 1.44 | 1.44 | | | | | 1 | -- | 20 A | -- | -- | -- | (EX) LIGHTING 107 | 2 |
| 3 | (EX) LIGHTING 107 | -- | -- | -- | 20 A | -- | 1 | | | 1.44 | 1.44 | | | 1 | -- | 20 A | -- | -- | -- | (EX) LIGHTING 107 | 4 |
| 5 | (EX) LIGHTING 107 | -- | -- | -- | 20 A | -- | 1 | | | | | 1.44 | 1.44 | 1 | -- | 20 A | -- | -- | -- | (EX) LIGHTING STARBUCKS | 6 |
| 7 | (EX) LIGHTING 101 | -- | -- | -- | 20 A | -- | 1 | 1.44 | 1.44 | | | | | 1 | -- | 20 A | -- | -- | -- | (EX) LIGHTING 102 | 8 |
| 9 | (EX) LIGHTING 104 | -- | -- | -- | 20 A | -- | 1 | | | 1.44 | 0.90 | | | 1 | 20 A | 20 A | *#10 | *#10 | 2.6... | (#) LIGHTING BALLROOM 107 | 10 |
| 11 | (EX) 2ND FLOOR LIGHT CONT | -- | -- | -- | 20 A | -- | 1 | | | | | 1.44 | 0.90 | 1 | 20 A | 20 A | *#8 | *#8 | 1.9... | (#) LIGHTING BALLROOM 107 | 12 |
| 13 | (#) LIGHTING BALLROOM 107 | 2.48 | *#10 | *#10 | 20 A | 20 A | 1 | 0.90 | 0.90 | | | | | 1 | 20 A | 20 A | *#8 | *#8 | 2.1... | (#) LIGHTING BALLROOM 107 | 14 |
| 15 | (#) LIGHTING BALLROOM 107 | 2.26 | *#10 | *#10 | 20 A | 20 A | 1 | | | 0.90 | 0.90 | | | 1 | 20 A | 20 A | *#10 | *#10 | 1.8... | (#) LIGHTING BALLROOM 107 | 16 |
| 17 | SPACE | -- | -- | -- | -- | -- | -- | | | | | 0.00 | 0.00 | -- | -- | -- | -- | -- | -- | SPACE | 18 |
| 19 | SPACE | -- | -- | -- | -- | -- | -- | 0.00 | 0.00 | | | | | -- | -- | -- | -- | -- | -- | SPACE | 20 |
| 21 | SPACE | -- | -- | -- | -- | -- | -- | | | 0.00 | 0.00 | | | -- | -- | -- | -- | -- | -- | SPACE | 22 |
| 23 | SPACE | -- | -- | -- | -- | -- | -- | | | | | 0.00 | 0.00 | -- | -- | -- | -- | -- | -- | SPACE | 24 |
| 25 | SPACE | -- | -- | -- | -- | -- | -- | 0.00 | 0.00 | | | | | -- | -- | -- | -- | -- | -- | SPACE | 26 |
| 27 | SPACE | -- | -- | -- | -- | -- | -- | | | 0.00 | 0.00 | | | -- | -- | -- | -- | -- | -- | SPACE | 28 |
| 29 | SPACE | -- | -- | -- | -- | -- | -- | | | | | 0.00 | 0.00 | -- | -- | -- | -- | -- | -- | SPACE | 30 |
| 31 | SPACE | -- | -- | -- | -- | -- | -- | 0.00 | 0.00 | | | | | -- | -- | -- | -- | -- | -- | SPACE | 32 |
| 33 | SPACE | -- | -- | -- | -- | -- | -- | | | 0.00 | 0.00 | | | -- | -- | -- | -- | -- | -- | SPACE | 34 |
| 35 | SPACE | -- | -- | -- | -- | -- | -- | | | | | 0.00 | 0.00 | -- | -- | -- | -- | -- | -- | SPACE | 36 |
| | | | | | | | TOTAL CONNECTED LOAD: | 7.6 kVA | | 7.0 kVA | | 5.2 kVA | | | | | | | | | |

| LOAD CLASSIFICATION | CONNECTED LOAD | DEMAND FACTOR | ESTIMATED DEMAND |
|---|---|---|---|
| Continuous | 0 VA | 0.00% | 0 VA |
| Cooling | 0 VA | 0.00% | 0 VA |
| Heating | 0 VA | 0.00% | 0 VA |
| Kitchen Equipment | 0 VA | 0.00% | 0 VA |
| Lighting | 5400 VA | 125.00% | 6750 VA |
| Motor | 0 VA | 0.00% | 0 VA |
| Non-Continuous | 0 VA | 0.00% | 0 VA |
| Receptacle | 0 VA | 0.00% | 0 VA |

**NOTES:** FINAL LOAD OF 1EL2 IS LESS THAN KVA RATING OF UPSTREAM TRANSFORMER (30 KVA), THEREFORE, EXISTING WIRING AND OVERCURRENT PROTECTION MAY REMAIN.

**BREAKER QUANTITIES (NEW ONLY)**

**PANEL TOTALS**

| | |
|---|---|
| EXISTING CONNECTED LOAD: | 14400 VA |
| EXISTING LOAD DEMAND FACTOR: | 100.00% |
| ADDED CONNECTED LOAD: | 5400 VA |
| DEMOLISHED DEMAND: | 0 VA |
| DEMAND CALCULATION NOTES: | 100% EXISTING |
| TOTAL DEMAND: | 21150 VA |
| TOTAL DEMAND AMPS: | **59 A** |

**DEMOLITION LOAD SUMMARY:**

## PANEL SCHEDULE LEGEND

| | | |
|---|---|---|
| (EX) | = | EXISTING CIRCUIT TO REMAIN |
| (#) | = | NEW CIRCUIT TO EXISTING CIRCUIT BREAKER |
| (G) | = | PROVIDE GROUND-FAULT CIRCUIT INTERRUPTER (GFCI) CIRCUIT BREAKER |
| (GE) | = | PROVIDE GROUND-FAULT EQUIPMENT PROTECTION (GFEP) CIRCUIT BREAKER |
| (ST) | = | PROVIDE SHUNT TRIP CIRCUIT BREAKER |
| (A) | = | PROVIDE ARC FAULT CIRCUIT INTERRUPTER (AFCI) CIRCUIT BREAKER |
| (L) | = | PROVIDE LOCK-ON DEVICE |
| (LT) | = | PROVIDE LOCK-OUT/TAG-OUT DEVICE |
| (->) | = | CONNECT BRANCH CIRCUIT, WHICH WAS DISCONNECTED FROM ANOTHER SOURCE AS PART OF SELECTIVE DEMOLITION, TO POLE SPACE(S) INDICATED, DETERMINE EXACT POLE ASSIGNMENT(S) BASED ON EXISTING COLOR-CODING OF THE BRANCH CIRCUIT CONDUCTOR INSULATION. PROVIDE NEW BREAKER IF REQUIRED. |
| * | = | WIRE SIZED TO COMPENSATE FOR VOLTAGE DROP |
| ** | = | REFER TO DRAWINGS FOR SPECIFICATIONS |
| SL | = | SEE THE SINGLE LINE DIAGRAM / SCHEDULE FOR WIRE SIZE AND VOLTAGE DROP |

## PANEL SCHEDULE GENERAL NOTES

A. PROVIDE HACR RATED BREAKERS ON ALL MOTOR LOADS.
B. PROVIDE LOCKING TYPE BREAKER FOR ALL LIFE SAFETY AND NIGHT LIGHTING BRANCH CIRCUITS.
C. ALL VOLTAGE DROP CALCULATIONS AND COMPENSATED WIRE SIZES ARE BASED ON RIGHT ANGLE CIRCUIT LENGTHS TO THE LAST DEVICE. ACTUAL VOLTAGE DROP VARIES BASED ON INSTALLED WIRE LENGTH.

2" REFERENCE LINE

KLH ENGINEERS
MECHANICAL/ELECTRICAL ENGINEERS
WWW.KLHENGRS.COM
LEXINGTON, KENTUCKY
COLUMBUS, OHIO
NEW YORK, NEW YORK
1538 ALEXANDRIA PIKE, SUITE 11
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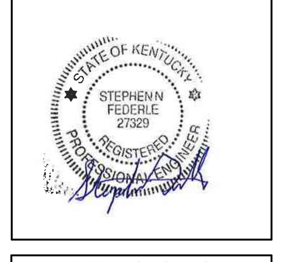
# NKU Student Union Ballroom Upgrades

Nunn Drive
Highland Heights, KY 41099
Northern Kentucky University




| REVISIONS | |
|---|---|
| 12/05/19 | Construction Doc. |

DWN: RTT CHK: DTJ
PROJ. DATE
SHEET DATE 12/05/19
JOB NO. 21514.00

ELECTRIC COVER SHEET

E-001

KLH JOB 21514.00

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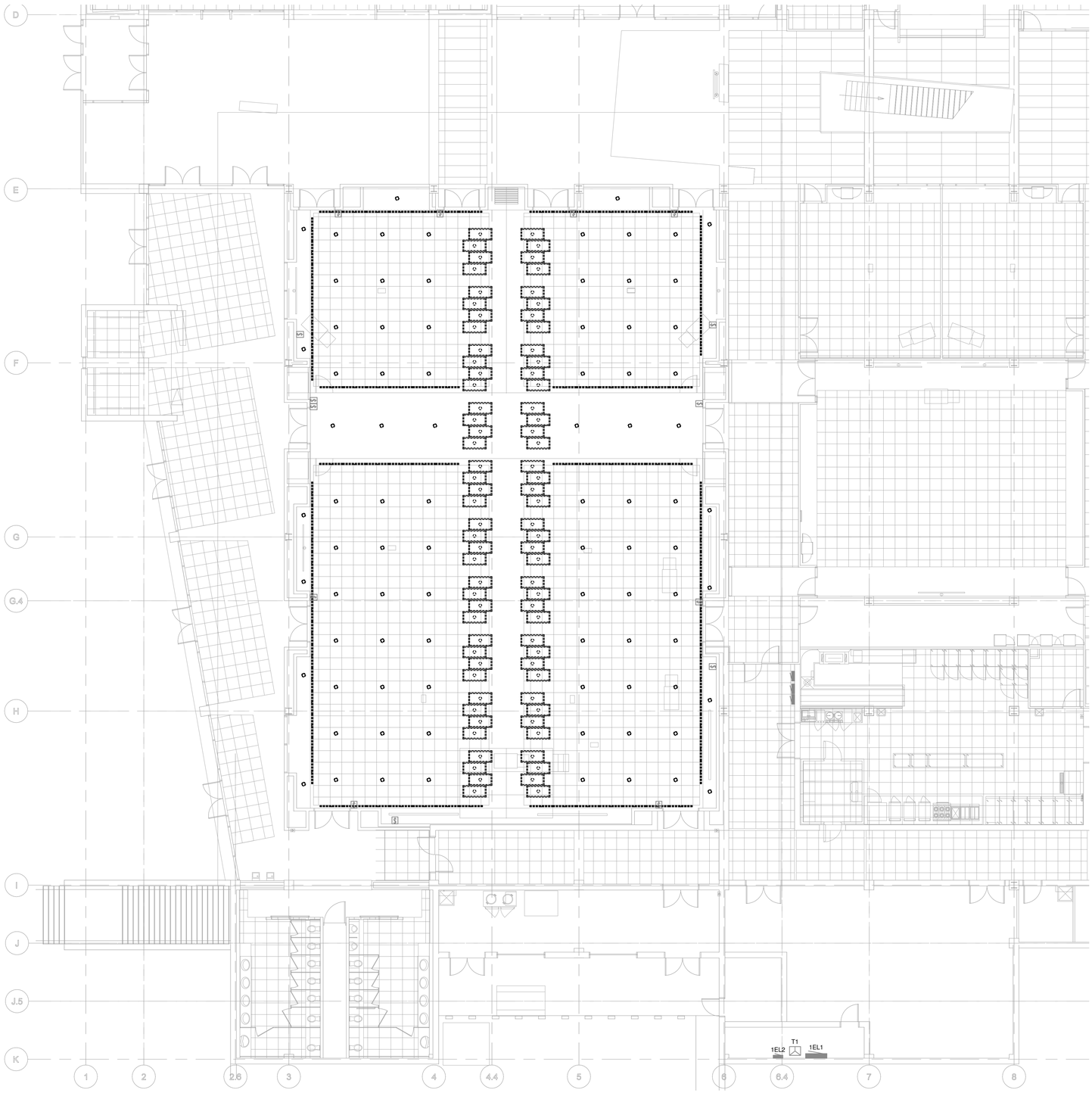
## GENERAL NOTES

A. MAINTAIN CIRCUITING TO ALL EXISTING LIGHT LOCATIONS FOR REUSE. SEE NEW WORK PLAN FOR MORE INFORMATION.
B. PROVIDE ALL NECESSARY DEMOLITION TO MILLWORK AND ARCHITECTURAL ELEMENTS FOR DEMOLITION OF LIGHTING FIXTURES.




1 ED LEVEL 1 - RCP - Overall
1/8" = 1'-0"

2" REFERENCE LINE

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STATE OF KENTUCKY
STEPHENN FEDERLE
27329
REGISTERED
PROFESSIONAL ENGINEER

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ELECTRIC DEMOLITION LEVEL 1 PLAN OVERALL

ED100

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## KEYED NOTES

E1 EXISTING THEATRICAL LIGHTING BAR REPLACED IN NEW LOCATION. COORDINATE FINAL LOCATIONS WITH THEATRICAL LIGHTING CONTRACTOR AND PROVIDE NECESSARY MOUNTING MATERIALS. SEE THEATRICAL LIGHTING RISER FOR MORE INFORMATION.

E2 NEW THEATRICAL LIGHTING BAR. COORDINATE FINAL LOCATIONS WITH THEATRICAL LIGHTING CONTRACTOR AND PROVIDE NECESSARY MOUNTING MATERIALS. SEE THEATRICAL LIGHTING RISER FOR MORE INFORMATION.

E3 EXISTING THEATRICAL LIGHTING BAR REPLACED IN SAME LOCATION. COORDINATE FINAL LOCATIONS WITH THEATRICAL LIGHTING CONTRACTOR AND PROVIDE NECESSARY MOUNTING MATERIALS. SEE THEATRICAL LIGHTING RISER FOR MORE INFORMATION.

E4 THEATRICAL CONTRACTOR SHALL PROVIDE REPLACEMENT FIXTURE IN THIS APPROXIMATE LOCATION, EQUAL TO ETC IRIDEON FPZ, AS WELL AS CUSTOM GOBO WITH NKU LOGO TO MATCH EXISTING. PROVIDE FIXTURE WITH VOLTAGE MATCHING EXISTING CIRCUIT AND UTILIZE EXISTING CIRCUITING AND CONTROL.

E5 PROVIDE NEW DMX LINK BETWEEN LUTRON CONTROL PANELS. PROVIDE NEW DMX JACK AT THEATRICAL CONTROLLER LOCATION AND TIE INTO THIS LINK FOR CONTROL OF HOUSE LIGHTING BY THEATRICAL LIGHTING SYSTEM. CONSULT WITH LUTRON FOR MORE INFORMATION.

E6 PROVIDE (2) NEW 20A CIRCUITS FROM EXISTING LUTRON DIMMING PANELS TO EACH LIGHT BAR LOCATION, CONNECTED TO SPARE BREAKERS AND/OR BREAKERS MADE AVAILABLE UPON DEMOLISHING EXISTING THEATRICAL LIGHTING DIMMING CIRCUITS. DEMOLISHED DIMMING CIRCUITS SHALL BE CONVERTED TO RELAY CIRCUITS BY WIRING TO THE CORRECT TERMINALS. CONSULT LUTRON FOR MORE INFORMATION.

## GENERAL NOTES

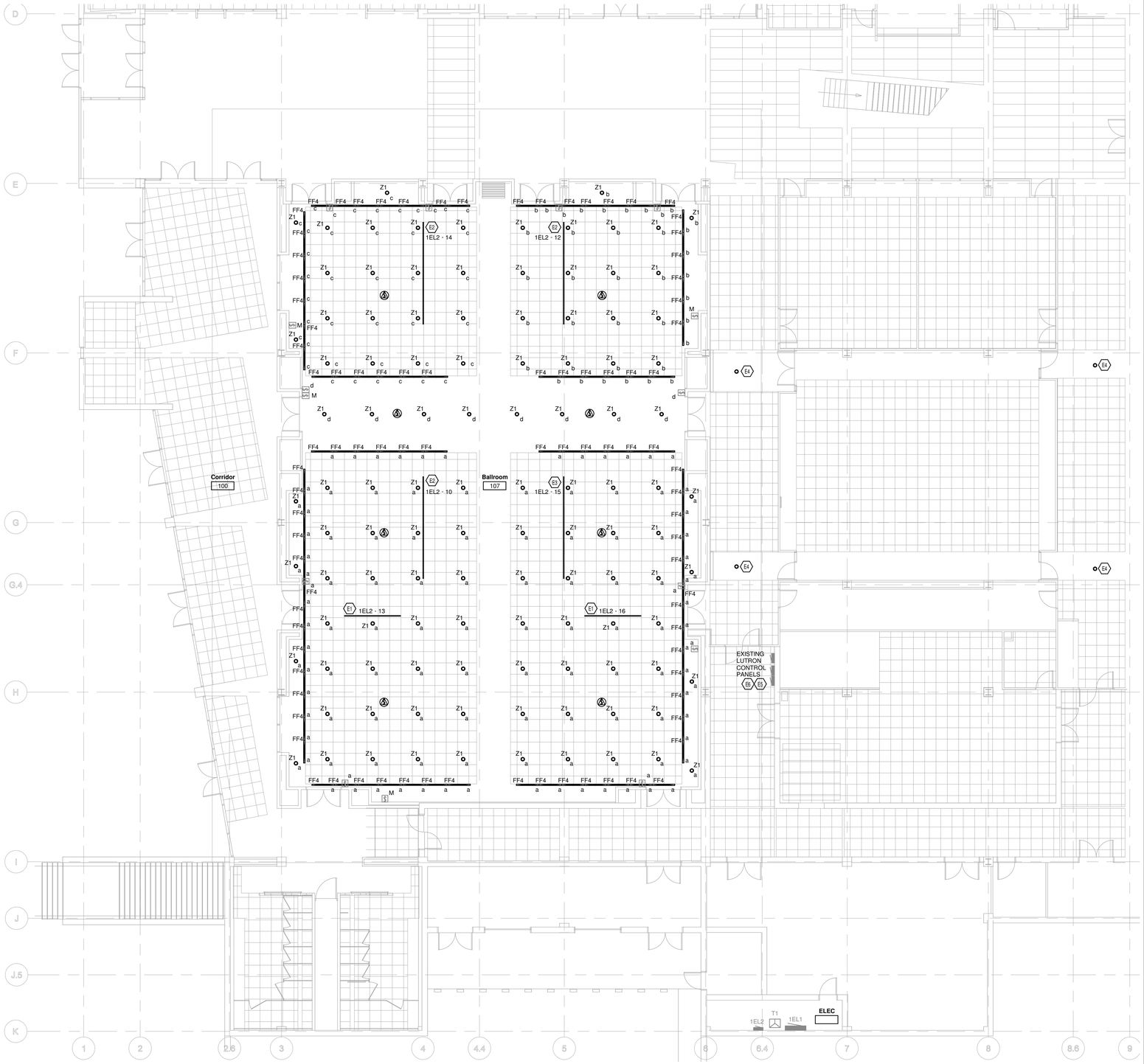
A. CONNECT ALL NEW LIGHTING TO EXISTING CIRCUITS MADE AVAILABLE UPON DEMOLITION. NEW LOAD IS LESS THAN DEMOLISHED LOAD, THEREFORE, EXISTING WIRING AND OVERCURRENT PROTECTION MAY REMAIN. WHERE LIGHT FIXTURES ARE REPLACED IN THE SAME LOCATION, CONNECT TO THE SAME CIRCUIT AS THE DEMOLISHED FIXTURE. FOR NEW LOCATIONS, CONNECT TO NEAREST ADJACENT CIRCUIT. LIGHTING CIRCUITS ARE FED FROM PANEL 1EL2.

B. ALL EXISTING LIGHTING CONTROL DEVICES SHALL REMAIN. MAINTAIN ALL CONTROL WIRING TO REPLACED FIXTURE LOCATIONS, AND EXTEND AS NECESSARY TO INCORPORATE NEW LOCATIONS INTO THE INDICATED ZONES. THE INTENT OF THE DESIGN IS TO KEEP THE CONTROL ZONES THE SAME AS EXISTING, WITH THE EXCEPTION OF INCLUDING NEW FIXTURE LOCATIONS IN NEARBY ZONES.

C. PROVIDE ALL PATCHING AND PAINTING NECESSARY AFTER INSTALLATION OF NEW FIXTURES.

D. IN REPLACED THEATRICAL LIGHTING LOCATIONS, REMOVE EXISTING CONNECTOR STRIPS AND BOTTOM PIPES, REPLACE TOP THREADED ROD BRACKETS WITH CLAMPS, AND REMOUNT EXISTING TOP PIPE WITH NEW BRACKETS.

E. RE-USE EXISTING 19' BOTTOM PIPE FOR (1) NEW LOCATION AND INSTALL (2) NEW PIPES FOR OTHER (2) NEW LOCATIONS.

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ELECTRIC LIGHTING LEVEL 1 PLAN OVERALL

EL100

KLH JOB 21514.00

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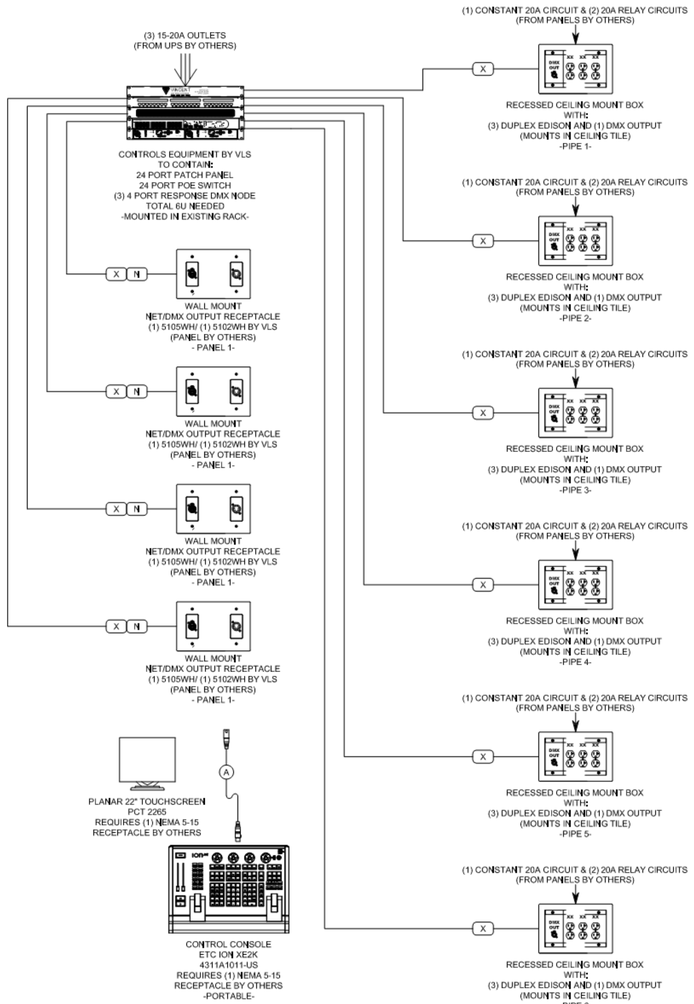


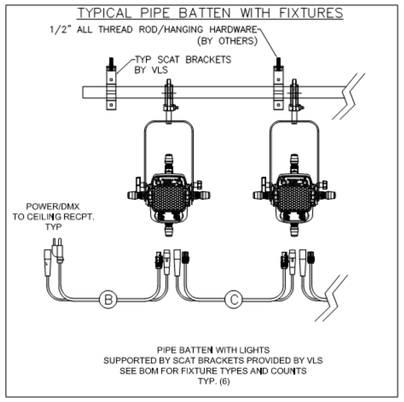


## PROVISIONS:

NO PART OF THIS ELECTRONIC SYSTEM SHALL BE ENERGIZED BEFORE BEING CHECKED AND INSTALLATION APPROVED BY A VINCENT LIGHTING CERTIFIED TECHNICIAN. VINCENT LIGHTING MUST BE NOTIFIED, IN WRITING, A MINIMUM OF TWO WEEKS PRIOR TO THE ACTUAL ENERGIZING OF THE SYSTEM. FAILURE TO OBSERVE THIS PROVISION SHALL AUTOMATICALLY RELIEVE VINCENT LIGHTING OF ANY RESPONSIBILITY CONCERNING THE PROPER OPERATION OF THIS SYSTEM OR ANY PART THEREOF, AND THE REPLACEMENT OF PARTS WHICH MAY HAVE BEEN DAMAGED BY THE PREMATURE ENERGIZING OF THE SYSTEM.

## NOTES:

1. THIS DRAWING DOES NOT INDICATE THE NUMBER OR SIZE OF CONDUITS REQUIRED, BUT THE SEPARATION OF GROUPS OF WIRES. INTERCONNECTING WIRE AND CONDUIT NOT BY VINCENT LIGHTING.
2. WHENEVER CONTROL WIRES SHOWN MUST BE RUN CLOSE TO A.C. CONTROL AND/OR POWER CIRCUITS, THESE CONTROL WIRES MUST BE RUN IN SEPARATE METAL CONDUIT.
3. INCLUDE MINIMUM 10% SPARES IN EACH CONTROL RUN.
4. PROVIDE AN EQUIPMENT GROUND, AS REQUIRED BY THE NATIONAL ELECTRICAL CODE, BETWEEN BUILDING SERVICE ENTRANCE AND EQUIPMENT RACKS.
5. BACK BOXES OF CONTROL STATIONS MUST BE GROUNDED.
6. DIMMING MANUFACTURER REQUIRES SEPARATE NEUTRALS FOR ALL DIMMING CIRCUITS.
7. THESE ARE NON-PLENUM WIRES. CONTACT VINCENT LIGHTING FOR PLENUM WIRE TYPES.
8. VLS RECOMMENDS THE USE OF SEPARATE JACKET COLOR OF CAT5/CAT6/CAT6A FOR DIFFERENT SIGNAL TYPES.
9. ALL NETWORK RUNS SHALL BE CONTINUOUS UNSPLICED RUNS LESS THAN 250 FEET.
10. DMX IS TO BE DAISY-CHAIN ONLY; NO STARS OR T-TAPS PERMITTED. MAXIMUM OF 32 DEVICES PER RUN. MAXIMUM RUN LENGTH NOT TO EXCEED 1,000 FEET.

## WIRES AND CABLES BY E.C.:

CONTROL WIRE LEGEND

| SYMBOL | WIRE TYPE | SIGNAL |
|---|---|---|
| X* | (1) BELDEN 1583A- CAT5E OR CAT6 | DMX OUT |
| N* | (1) BELDEN 1583A- CAT5E OR CAT6 | NETWORK |
| | | |
| | | |
| | | |

* = WIRE IDENTIFICATION NUMBER (NOT QUANTITY)

## EXTENSION CABLES BY VLS:

(A) 25' ETHERCON NETWORK CABLE

(B) BLIZZARD 6' EDISON/POWERCON/5-PIN DMX CABLE

(C) BLIZZARD 6' POWERCON/5-PIN DMX CABLE

DESIGN WAS CURATED BY VINCENT LIGHTING SYSTEMS (VLS). VINCENT LIGHTING SYSTEMS SHALL BE CONSIDERED AS BASIS OF DESIGN FOR ALL THEATRICAL LIGHTING RELATED WORK.

2" REFERENCE LINE

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ELECTRIC LIGHTING - DETAILS

EL501

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**DIVISION 21 - FIRE PROTECTION SPECIFICATION**
**21 05 01.00 - COMMON REQUIREMENTS FOR FIRE SUPPRESSION**
Submittal requirements
Product Data: Provide product datasheets for all fire-suppression materials, components, valves, devices, and equipment.
Shop Drawings: Delegated-Design Submittal: For fire-suppression systems in compliance with performance requirements and design criteria, all applicable codes, the authority having jurisdiction, and NFPA guidelines. Shop Drawings and associated hydraulic calculations shall be signed and sealed by the qualified professional engineer responsible for their preparation. or the Level III NICET certified designer responsible for their preparation.
Include plans, elevations, sections, and hangers, and items listed in NFPA-13
Include water flow test data and calculations on the drawings.
Coordination Drawings: Sprinkler systems, drawn to scale, on which the following items are shown and coordinated with each other.
Items penetrating finished ceiling include the following:
Lighting fixtures.
Air outlets and inlets.
Fire Alarm Devices
Security and IT related components.
Coordinate with all equipment, piping, conduit, ductwork and structural framing.

GENERAL
General Provisions of the Contract including General and Supplementary Conditions and General Requirements apply to work of this section.
PROJECT SCOPE:
The base bid includes furnishing all materials, labor, tools, equipment, permits in the performance of all work required to install a complete fire protection system as outlined herein and shall meet the requirements of the local building department, fire official, and NFPA-13
GUARANTEE
The contractor shall provide a guarantee in written form stating that all work under this section shall be free of defective work, materials, or parts for a period of one year from the date of owner's final acceptance and shall repair, revise or replace at no cost to the owner any such defects occurring within the guarantee period.
QUALITY ASSURANCE
Provide a complete installation in conformance with the following standards.
American Water Works Association, Inc.
Environmental Protection Agency
Factory Mutual
National Institute for Standards and Technology
National Electrical Code by NFPA
National Fire Protection Association
Occupational Safety and Health Administration (U.S. Department of Labor)
Underwriter's Laboratories, Inc.
State Building Code
PERMITS, FEES, INSPECTIONS, LAWS AND REGULATIONS
Permits and fees of every nature required in connection with this work shall be obtained and paid for by this contractor who shall also pay for all the installation fees and similar charges. Laws and regulations, which bear upon or affect the various branches of this work shall be complied with by this contractor and are hereby made a part of this contract. All work, which such laws require to be inspected, shall be submitted to the proper public official for inspection and a certificate of final approval must be furnished.
WORK IN EXISTING SPACES
General: Care shall be taken when working in existing spaces so as not to damage existing walls and ceilings where work is being performed.
Ceilings: Where work is being performed above ceilings, and the architectural drawings do not indicate ceiling modifications by the owner, it shall be the responsibility of this contractor to remove and replace existing ceilings where work is being performed. In those instances, all repair and installation of new grid, ceiling panels, etc. shall be the responsibility of this contractor. Match existing finishes.
Walls & Floors: It shall be the responsibility of this contractor to patch existing walls and floors and match existing finishes where work is being removed or installed and patching is being performed, unless noted otherwise on the drawings.
DEMOLITION
Any sprinklers or equipment to be demolished shall also include the demolition of any and all piping, valves, hangers etc. serving or served by the equipment and all accessories, fire alarm devices, wiring, drain piping, control wiring and power wiring associated with the equipment.
Demolition shall be coordinated with all trades. All materials shall be turned over to the owner or disposed at the owner's direction.
TESTS AND ADJUSTMENTS
No piping or equipment shall be concealed or covered until they have been inspected and approved by the Owner and the inspector who shall be notified by the contractor when the work is ready for inspection.
Work shall be completely installed, tested and leak tight before inspection is required. All tests shall be repeated to the satisfaction of those making the inspection.
PROJECT CONDITIONS
Where new fire protection systems are required to be connected to existing fire protection systems, it is the contractor's responsibility to verify the location, size, pressure, condition, and they shall verify that the existing fire protection system is indeed a fire protection system before any work is done. Provide all necessary camera scoping, dye testing, labor, materials and equipment as necessary. If there is any need for concern, if it is determined that the existing fire protection system is not a fire protection system or not connected to a fire protection system, if the condition of the existing fire protection system is not viable for re-use, or any other condition that would not allow the proper functioning of the new fire protection system, the contractor shall notify the engineer in writing immediately via RFI and wait for direction before proceeding.
Interruption of Existing Fire Protection Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary service according to requirements indicated:
Notify, Architect, Construction Manager, and Owner no fewer than seven days in advance of proposed interruption of service.
Do not proceed with interruption of service without Architect's written permission.
**21 05 03.00 – SUBMITTALS FOR FIRE PROTECTION**

Provide submittals in accordance with the Contract Documents. In addition to Division 01, the Contractor is advised to review and comply with the requirements articulated within each Division and within each section of that Division.

Some Divisions may include a division-specific "Submittal Requirements for …." section. Where this section exists, it articulates additional requirements for submittals that apply to the work of that Division.
The following requirements help to identify, track and keep the project organized for all parties involved. They are necessary to ensure a timely turnaround and an appropriate technical review. Submittals that do not conform to the administrative requirements are rejected and returned, without technical review.

Supply submittals for each section: Submittals shall be supplied on a section-by-section and type-by-type basis. For example, independent product data submittals shall be furnished for each section that requires product data submittals. Independent shop drawing submittals shall be furnished for each section that requires shop drawings. Separate PDF file packages shall be supplied for each section, for each submittal type. Each PDF shall represent a single standalone submittal.

Include a transmittal: Transmittals shall enumerate each submittal for each section of each type and iteration.

Include cover sheet / title page: The cover sheet shall include the information identified in the contract documents. It shall be included as the first page of each electronic and/or hardcopy document-based submittal. An editable and printable PDF form created with editable fields and specification compliant appearance is available from KLH upon request. It is also downloadable from the KLH website at www.klhengrs.com.
Include an index: The index shall enumerate the contents of the submittal.
Include checklists: Where checklists are included with the specifications, complete and include them within the appropriate submittal. Supply complete submittals: Complete submittals of each type are required. Partial submittals will be rejected. Where a section requires a product data submittal, all product data for that section shall be supplied together, at one time, as one complete submittal. When resubmittal is required (e.g. Revise and Resubmit) the revised submittal shall be more complete, more accurate and more contract-compliant than its rejected predecessor.
The submittal number (for each section and type) shall increment for each subsequent submittal (00 – Original submission, 01 – First Resubmission, 02 – Second Resubmission, etc…). Resubmittals shall include a copy of the reviewers comments supplied with the prior submittal rejection and shall be amended with a description of the specific action taken to comply with the reviewer's comments. The absence of this on resubmittal is cause for rejection.
Name electronic files to match the submittal ID and cover sheet: The electronic file name of submittals shall match the submittal ID included on the submittals cover page. For example: The original/first product data submittal for Section 211316 would be labeled as "211316.00-PD-00"; the first resubmittal of same shall be labeled "211316.00-PD-01". The original/first shop drawings submittal file for the same section would be labeled "211316.00-SD-00"; the first resubmittal of same shall be labeled "211316.00-SD-01".
If expressly permitted by the Owner and the terms of the Contract, editable electronic drawings may be made available for the creation of shop and as-built drawings upon request. Drawings will be made available at the discretion of the Engineer.
"Request Drawings" form can be accessed, filled out and submitted at http://www.klhengrs.com (right hand side of page - Contractor Resources).
Direct access to this form can be found here: http://files.klhengrs.com/requestdrawings.html
**21 05 29.00 - HANGERS AND SUPPORTS FOR FIRE SUPPRESSION**

GENERAL
Support all piping and equipment by hangers or brackets. Furnish structural steel members where required to support piping and equipment.
Install hangers, supports, clamps and attachments to support piping properly from building structure. Types, sizes, and spacing requirements to be per the requirements listed in NFPA-13
**21 05 17.00 – SLEEVES AND SLEEVE SEALS FOR FIRE-SUPPRESSION PIPING**

SLEEVES
Steel Pipe: ASTM A795, Schedule 10, plain ends.
Install steel pipe sleeves two sizes larger than pipes passing through floors, rated walls or masonry construction. Sleeves are not required for core drilled holes.
Seal sleeves and piping with material rating equivalent to the wall rating.
**21 13 13.00 – WET PIPE SPRINKLER SYSTEMS**

**PERFORMANCE REQUIREMENTS**
Standard-Pressure Piping System Components: Listed for 175-psig minimum working pressure.
Delegated Design: Design sprinkler system(s), including comprehensive engineering analysis by a qualified professional engineer, or NICET Level 3 Technician.
Sprinkler system design shall be approved by all authorities having jurisdiction.
Margin of Safety for Available Water Flow and Pressure: 10 percent, including losses through water-service piping, valves, and backflow preventers.
Sprinkler Occupancy Hazard Classifications to be per NFPA 13.
Area increases and decreases shall be applied per requirements listed in NFPA-13
Total Combined Hose-Stream Demand Requirement: According to NFPA 13.
**QUALITY ASSURANCE**
NFPA Standards: Sprinkler system equipment, specialties, accessories, installation, and testing shall comply with the following:
NFPA 13, "Installation of Sprinkler Systems." Current Edition
**PROJECT CONDITIONS**
Interruption of Existing Sprinkler Service: Do not interrupt sprinkler service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary sprinkler service according to requirements indicated:
Notify Owner no fewer than seven days in advance of proposed interruption of sprinkler service. Do not proceed with interruption of sprinkler service without Owner's written permission.
Pay for all fees associated and required for system shut-downs and re-activation.
When required provide any fire watches.
**COORDINATION**
Coordinate layout and installation of the sprinklers that penetrates ceilings, including light fixtures, HVAC equipment, and partition assemblies.
Coordinate layout with all structural elements and comply with obstruction rules per NFPA-13
**PRODUCTS**
STEEL PIPE AND FITTINGS
Piping 2" and smaller shall be Schedule 40, Black-Steel Pipe: ASTM A 795 or 53/A 53M, Type E, Grade B. Pipe ends may be factory or field formed to match joining method.
Piping 2" and larger shall be Schedule 10, Black-Steel Pipe: ASTM A135 or ASTM A 795 Schedule 10 in NPS 5 and smaller; and NFPA 13-specified wall thickness in NPS 6 to NPS 10
Black-Steel Pipe Nipples: ASTM A 53/A 53M, standard-weight, seamless steel pipe with threaded ends.
Steel Couplings: ASTM A 865, threaded.
Threaded Fittings: ASME B16.4, Cast Iron Class 125, standard pattern.
Cast-Iron Flanges: ASME 16.1, Class 125.
Steel Flanges and Flanged Fittings: ASME B16.5, Class 150.
Grooved-End Fittings for Steel Piping: ASTM A 47/A 47M, malleable-iron casting or ASTM A 536, ductile-iron casting; with dimensions matching steel pipe.
Grooved-End-Pipe Couplings for Steel Piping: UL 213, rigid pattern, unless otherwise indicated, for steel-pipe dimensions. Include ferrous housing sections, EPDM-rubber gasket, and bolts and nuts.
**SPRINKLER SPECIALTY PIPE FITTINGS**
Branch Outlet Fittings: Mechanical tee or cross type fittings, with grooved or threaded outlets
**SPRINKLERS**
Rooms without Ceilings: Factory brass finish
Finished Rooms with Ceilings:
Ceilings: Recessed pendent sprinklers with factory-painted white or chrome finish on sprinkler and adjustable white or chrome escutcheon. Match existing finishes on existing sprinklers
Walls: Recessed sidewall sprinklers with white or chrome sprinkler finish and white or chrome escutcheon. Match finish on existing sprinklers
**EXECUTION**
**WATER-SUPPLY CONNECTIONS**
Connect sprinkler piping to building's interior water-distribution piping.

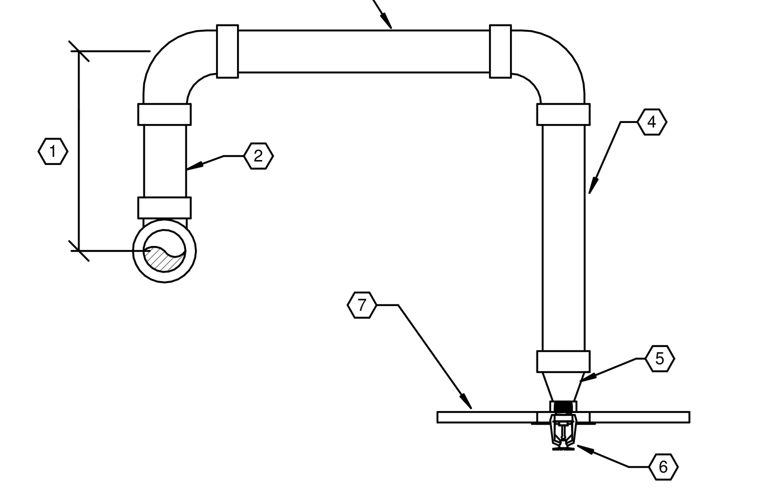
**FIELD QUALITY CONTROL**
**Tests and Inspections: Flush and hydrostatic test sprinkler systems according to NFPA 13 and local AHJ requirements. Sprinkler piping system will be considered defective if it does not pass tests and inspections. Prepare test and inspection reports.**
**Cleaning: Clean dirt and debris from sprinklers. Remove and replace sprinklers that have paint other than factory finish.**

GENERAL FIRE PROTECTION NOTES

A. RENOVATED AREAS SHALL BE 100% SPRINKLERED.
B. COORDINATE CLOSELY WITH OTHER TRADES. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
C. ALL SPRINKLER WORK SHALL BE INSTALLED PER NFPA 13, BUILDING CODE, AND OWNER'S INSURANCE CARRIER REQUIREMENTS.
D. MAKE PROVISIONS FOR DRAINING AND PROVIDE INSPECTOR TESTS AS REQUIRED. ALL DRAIN PIPING SHALL BE PIPED TO OUTSIDE OR INDIRECTLY TO SINK OR FLOOR DRAIN.
E. COORDINATE EXACT LOCATION OF PIPING AND HEADS WITH REFLECTED CEILING PLANS, MECHANICAL AND ELECTRICAL DRAWINGS.
F. ALL HOSE VALVES AND FIRE DEPARTMENT CONNECTIONS SHALL MATCH LOCAL FIRE DEPARTMENT THREADS.
G. ALL FIRE SUPPRESSION WORK SHALL BE PERFORMED BY A FIRE PROTECTION CONTRACTOR LICENSED IN THE STATE OF KENTUCKY.
H. ALL SPRINKLER HEADS SHALL BE LOCATED IN CENTER OF CEILING TILE. PLUS OR MINUS ONE HALF INCH
I. SPRINKLER CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING FOR SPRINKLER WORK IN ALL AREAS OF BUILDING. REFER TO SPECIFICATIONS.
J. ALL ARMOVER PIPING RELATED TO SPRINKLERS TO BE DEMOLISHED, SHALL HAVE ALL PIPING REMOVED BACK TO THE OUTLET ON THE BRANCHLINE.
K. WHEN MODIFYING EXISTING SPRINKLER SYSTEMS, SPRINKLER CONTRACTOR SHALL MAINTAIN THE INTEGRITY OF THE EXISTING SPRINKLER ZONES. COORDINATE WITH NEW FIRE RATING PLANS AS NEEDED.
L. FIRE PROTECTION CONTRACTOR IS REQUIRED TO RAISE/REWORK ALL EXISTING PIPING AS NEEDED TO ACCOMMODATE NEW CEILINGS AND HIGHER CEILING HEIGHTS AS APPLICABLE.

21T-005 - SPRINKLER NOTES
SCALE: NONE

KEYED NOTES:
1. 4" MINIMUM.
2. NEW RISE FROM OUTLET.
3. PIPE TO NEW SPRINKLER LOCATION.
4. NEW DROP.
5. NEW RC.
6. NEW RECESSED PENDENT SPRINKLER WITH ESCUTCHEON.
7. CEILING.




211313.00-17 - PIPE ARMOVER RECESSED PENDENT
SCALE: NONE

## FIRE PROTECTION LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| **PIPING LINE TYPES** | |
| | WORK SHOWN FADED INDICATES EXISTING WORK TO REMAIN OR NEW WORK BY OTHERS AS APPLICABLE |
| | WORK SHOWN BOLD-DASHED INDICATES SELECTIVE DEMOLITION WORK |
| | WORK SHOWN BOLD-CONTINUOUS INDICATES NEW WORK |
| F | WET FIRE PROTECTION PIPING |
| DF | DRY FIRE PROTECTION PIPING |
| PF | PRE-ACTION FIRE PROTECTION PIPING |
| **SPRINKLER HEAD TYPES** | |
| N, X, D | SPRINKLER TAG (NEW, EXISTING TO REMAIN, DEMOLITION) |
| | CONCEALED WHITE PLATE SPRINKLER |
| | RECESSED PENDANT SPRINKLER |
| | BRASS UPRIGHT SPRINKLER |
| | SIDEWALL SPRINKLER |
| | SIDEWALL CONCEALED SPRINKLER |
| | MISCELLANEOUS SPRINKLER |
| | ATTIC SPRINKLER HEAD |
| | EXTENDED COVERAGE CONCEALED WHITE PLATE SPRINKLER |
| | EXTENDED COVERAGE RECESSED PENDENT SPRINKLER |
| | EXTENDED COVERAGE BRASS UPRIGHT SPRINKLER |
| | EXTENDED COVERAGE SIDEWALL SPRINKLER |
| | EXTENDED COVERAGE CONCEALED SIDEWALL SPRINKLER |
| | DRY CONCEALED WHITE PLATE SPRINKLER |
| | DRY RECESSED PENDANT SPRINKLER |
| | DRY BRASS UPRIGHT SPRINKLER |
| | DRY SIDEWALL SPRINKLER |
| | DRY CONCEALED SIDEWALL SPRINKLER |
| | EXTENDED COVERAGE DRY CONCEALED WHITE PLATE SPRINKLER |
| | EXTENDED COVERAGE DRY RECESSED PENDANT SPRINKLER |
| | EXTENDED COVERAGE DRY BRASS UPRIGHT SPRINKLER |
| | EXTENDED COVERAGE DRY SIDEWALL SPRINKLER |
| | EXTENDED COVERAGE DRY CONCEALED SIDEWALL SPRINKLER |
| | EXTENDED COVERAGE BRASS UPRIGHT SPRINKLER ON SPRIG |
| | BRASS UPRIGHT SPRINKLER ON SPRIG |
| | DRY BRASS UPRIGHT SPRINKLER ON SPRIG |
| | EXTENDED COVERAGE DRY BRASS UPRIGHT SPRINKLER ON SPRIG |
| **PIPING ACCESSORIES** | |
| FHV | FIRE PROTECTION SYSTEM STANDPIPE WITH HOSE VALVES |
| TS | CONTROL VALVE WITH TAMPER SWITCH |
| FS | FLOW SWITCH |
| APS | AUTOMATIC PRESSURE SWITCH |
| SPS | SUPERVISORY PRESSURE SWITCH |
| | ALARM CHECK VALVE WITH FLOW SWITCH |
| PIV | POST-INDICATOR VALVE |
| DCDA | DOUBLE CHECK DETECTOR ASSEMBLY |
| | CHECK VALVE |
| FDC | FIRE DEPARTMENT CONNECTION |
| | FIRE HYDRANT |
| | FIRE DEPARTMENT VALVE |
| **HAZARD OCCUPANCY** | |
| LH | LIGHT HAZARD OCCUPANCY |
| OH1 | ORDINARY HAZARD OCCUPANCY GROUP 1 |
| OH2 | ORDINARY HAZARD OCCUPANCY GROUP 2 |
| EH1 | EXTRA HAZARD OCCUPANCY GROUP 1 |
| EH2 | EXTRA HAZARD OCCUPANCY GROUP 2 |
| ACT | ACT CEILING |
| GYP | GYPSUM BOARD CEILING |
| EXP | EXPOSED |
| **MISCELLANEOUS** | |
| | CONNECT TO EXISTING (FIELD VERIFY EXISTING UTILITY SERVICE TYPE, PRIOR TO MAKING CONNECTION) |
| HV | FIRE EXTINGUISHER CABINET WITH HOSE VALVE |
| EB | ELECTRIC ALARM BELL |
| WMG | WATER MOTOR GONG |

2" REFERENCE LINE

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# NKU Student Union Ballroom Upgrades

Nunn Drive
Highland Heights, KY 41099
Northern Kentucky University

STATE OF KENTUCKY
MICHAEL V. ALBANESE
29078
REGISTERED PROFESSIONAL ENGINEER

| REVISIONS | |
|---|---|
| 12/05/19 | Construction Doc. |

DWN: BGK CHK:GRS
PROJ. DATE
SHEET DATE 12/05/19
JOB NO. 21514.00

FIRE PROTECTION COVERSHEET

F-001

KLH JOB 21514.00

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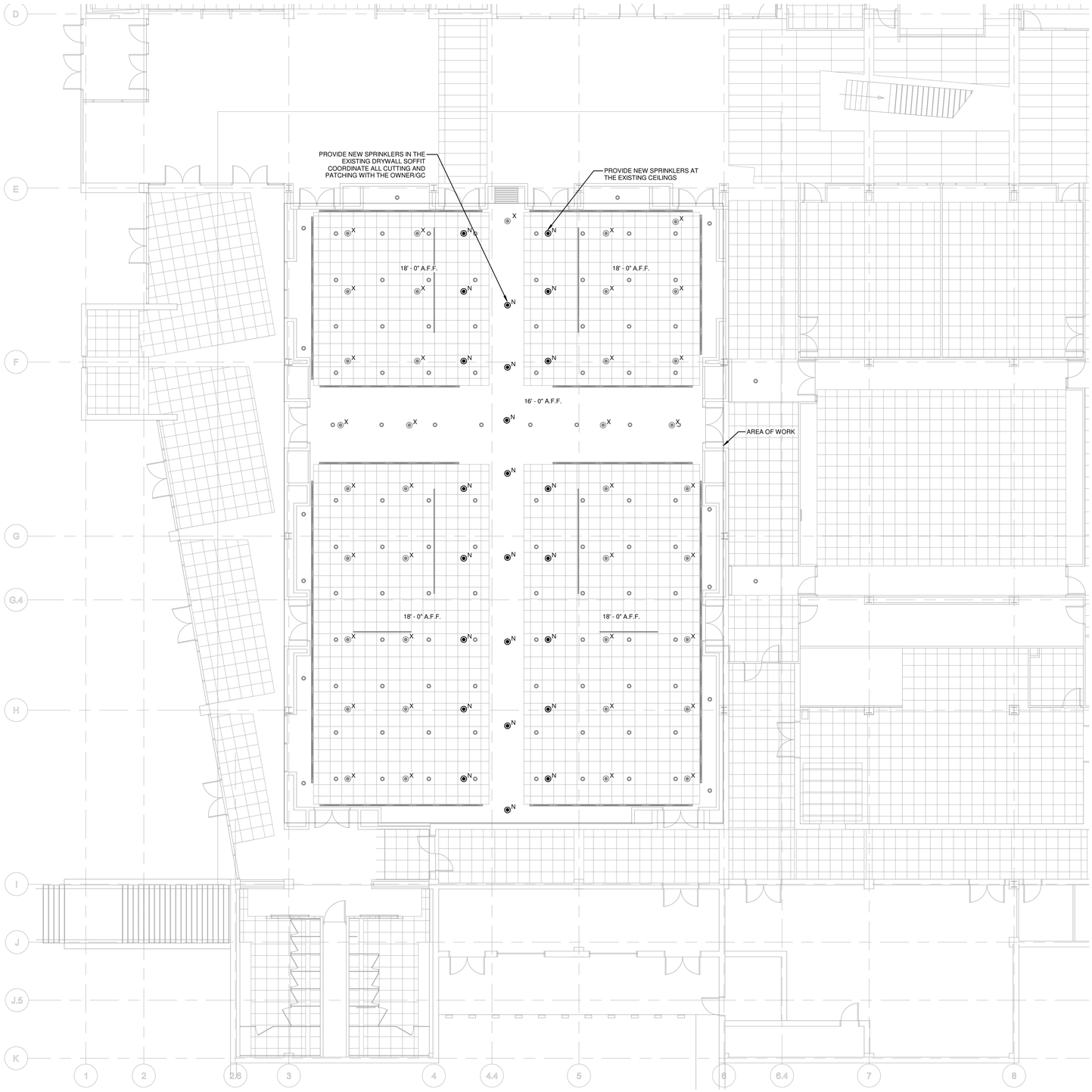
12/5/2019 2:53:50 C:\Users\rterry\Documents\Revit\21514.00-20-MEP-Northern Kentucky University Student Union Ballroom Technology Room Upgrades_rterry.rvt




1 FP LEVEL 1 - RCP - NEW FIRE PROTECTION
1/8" = 1'-0"

2" REFERENCE LINE

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# NKU Student Union Ballroom Upgrades

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|---|---|
| 12/05/19 | Construction Doc. |

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|---|---|
| DWN: BGK | CHK:GRS |
| PROJ. DATE | |
| SHEET DATE | 12/05/19 |
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FIRE PROTECTION LEVEL 1 PLAN OVERALL

F-100

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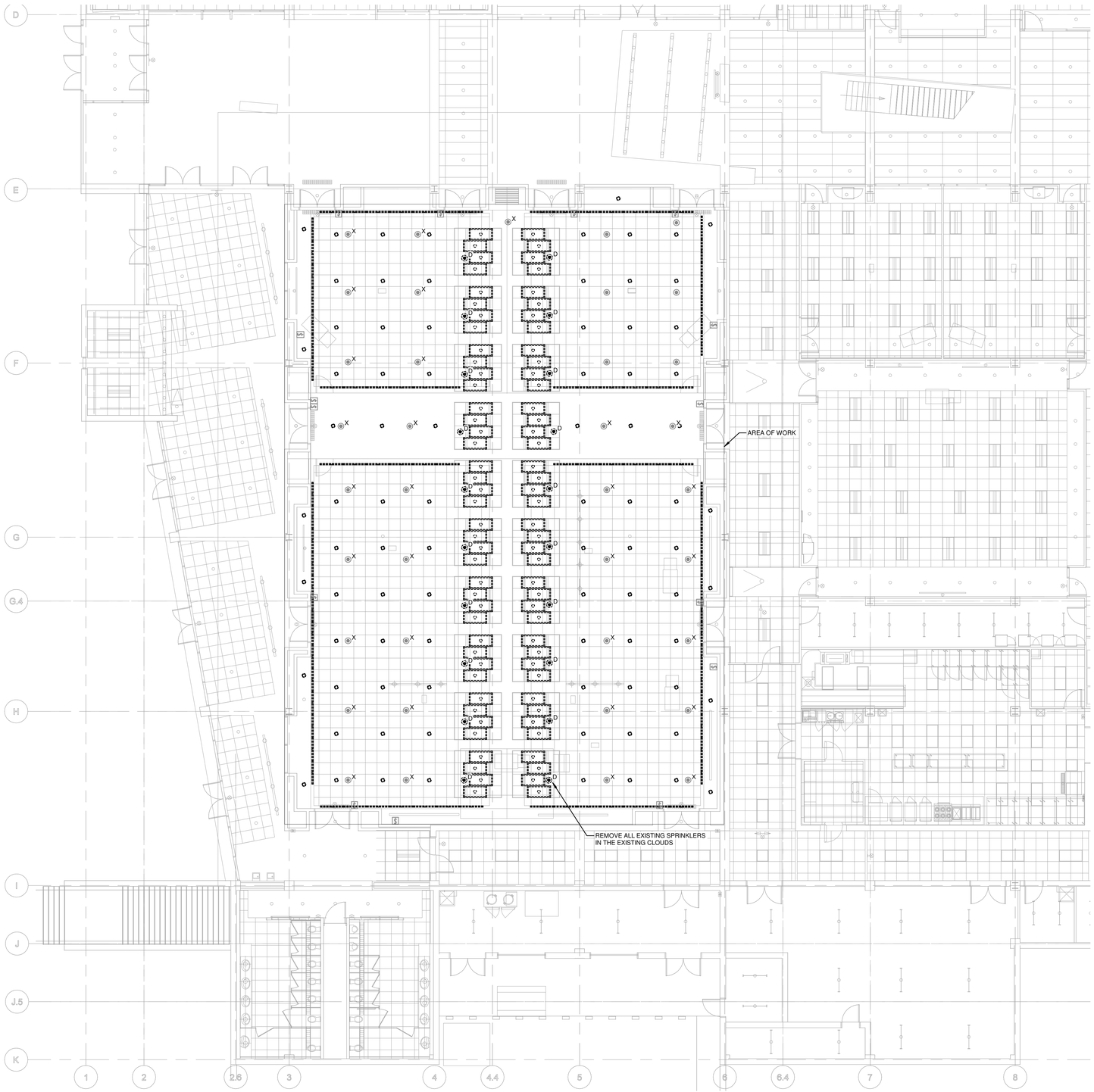


1 FD LEVEL 1 - FIRE PROTECTION DEMO PLAN
1/8" = 1'-0"

2" REFERENCE LINE

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# NKU Student Union Ballroom Upgrades

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MICHAEL V. ALBANESE
28978
LICENSED
PROFESSIONAL ENGINEER

| REVISIONS | |
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| DWN: BGK | CHK:GRS |
| PROJ. DATE | |
| SHEET DATE | 12/05/19 |
| JOB NO. | 21514.00 |

FIRE PROTECTION DEMOLITION LEVEL 1 PLAN OVERALL

FD101

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## SOFTWARE DEVELOPMENT NOTES:

A. THE CONTROL SYSTEM SOFTWARE SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING FEATURES.
   a. ROOM COMBINING
   b. MULTIPLE USER MODES (BASIC, ADVANCED, ETC.)
   c. DYNAMIC AUDIO ROUTING
   d. DYNAMIC VIDEO ROUTING
   e. CONTROL OF ALL SYSTEMS AND COMPONENTS INSTALLED AS PART OF THIS CONTRACT
B. A MINIMUM OF 400 PROGRAMING HOURS SHALL BE PROVIDED.
C. THE CONTRACTOR SHALL INCLUDE A MINIMUM OF 3 MEETINGS WITH THE OWNER AND DESIGN CONSULTANT TO DISCUSS EXACT CONTROL SYSTEM FUNCTIONALITY.

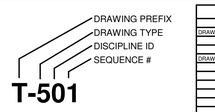
## GENERAL NOTES:

A. NOTHING SET FORTH IN THESE DRAWINGS SHALL RELEASE ANY CONTRACTOR FROM HIS RESPONSIBILITY TO PROVIDE APPROPRIATE QUANTITIES, FIELD MEASUREMENTS, DIMENSIONAL STABILITY, INSTALLATION, ANCHORAGE, AND COORDINATION WITH OTHER TRADES; OR RELEASE HIM FROM HIS RESPONSIBILITY TO IDENTIFY AND RESOLVE DEVIATIONS FROM THE REQUIREMENTS OF THE CONTRACT DOCUMENTS, OR FREE HIM OF HIS RESPONSIBILITY TO ALERT DESIGNER TO ERRORS OR OMISSIONS.
B. CONTRACTOR SHALL UTILIZE THESE DRAWINGS IN CONJUNCTION WITH THE SPECIFICATIONS TO DETERMINE THE FULL SCOPE, INTENT AND REQUIREMENTS OF THE PROJECT. SPECIFICATIONS AND DRAWINGS ARE INTENDED TO BE COMPLEMENTARY, NOT MUTUALLY EXCLUSIVE. WORK SHOWN ON THE DRAWINGS BUT NOT LISTED IN THE SPECIFICATIONS, AND WORK DESCRIBED IN THE SPECIFICATIONS BUT NOT SHOWN ON THE DRAWINGS SHALL BE INTERPRETED AS THOUGH WORK WERE FULLY DESCRIBED IN BOTH PLACES. THE HIGHER QUANTITY, HIGHER QUALITY, MORE LABOR INTENSIVE AND OVERALL MORE STRINGENT AND MORE COSTLY REQUIREMENT SHALL APPLY UNLESS OTHERWISE CLARIFIED IN WRITING PRIOR TO BID.
C. EACH CONTRACTOR SHALL VERIFY IN THE FIELD ALL EXISTING APPLICABLE CONDITIONS AND DIMENSIONS SHOWN ON THE DRAWINGS AND AS PERTINENT TO THE INTENT OF THESE DRAWINGS. ANY DISCREPANCY DISCOVERED SHALL BE BROUGHT TO THE ATTENTION OF THE DESIGNER PRIOR TO THE COMMENCEMENT OF ANY WORK AFFECTED BY, OR RELATED TO, SUCH DISCREPANCY. EACH CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH, OR CAUSED BY HIS FAILURE TO COMPLY WITH THIS REQUIREMENT.
D. EACH CONTRACTOR SHALL BE RESPONSIBLE FOR JOB CLEANLINESS. PROJECT AREAS SHALL BE THOROUGHLY CLEANED AND TRASH DISPOSED OF AT THE END OF EACH WORK DAY. OWNER'S FACILITIES SHALL NOT BE USED FOR WASTE DISPOSAL.
E. EACH CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF ALL SURFACES AND FINISHES IN THE INTERIOR OR EXTERIOR OF THE FACILITY. DAMAGED SURFACES OR FINISHES RESULTING FROM THE PERFORMANCE OF THE WORK OR NEGLIGENCE SHALL BE REPAIRED AT NO COST TO THE OWNER AND BE MADE TO MATCH THE EXISTING FINISHES OR SURFACES TO THE SATISFACTION OF THE OWNER.
F. FOR COORDINATION PURPOSES, OCCASSIONALLY AN ITEM OF WORK WILL BE SHOWN ON THE E SERIES DRAWINGS AND THE T SERIES DRAWINGS. IN ADDITION, THE SAME WORK MAY BE INCLUDED ON MULTIPLE T SERIES DETAIL SHEETS FOR SIMILAR REASONS.
G. FOR MULTI-PHASED PROJECTS. THE CONTRACTOR SHALL MAINTAIN ALL EXISTING UTILITY SERVICES AND BUILDING SYSTEMS. THE CONTRACTOR SHALL COORDINATE WITH THE OWNERS IT REPRESENTATIVE AS NECESSARY TO ALLOW FOR OPERATION ACCEPTABLE TO THE OWNER DURING CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE TEMPORARY WIRING AS NECESSARY.
H. PROVIDE DUST PROTECTION WHEN WORKING IN EXISTING FACILITIES. SEAL OFF ALL WORK AREAS FROM REMAINDER OF THE EXISTING FACILITY.

## GENERAL ROUGH-IN AND PATHWAY NOTES:

A. PROVIDE PATHWAYS FOR COMMUNICATIONS AND SECURITY SYTEMS CABLING. REFER TO SECTIONS "PATHWAYS FOR COMMUNICATIONS".
B. ROUGH-IN/PATHWAYS SHALL BE CLOSELY REVIEWED AND COORDINATED PRIOR TO INSTALLATION. IT IS THE RESPONSIBILITY OF THE ROUGH-IN PROVIDER TO THROUGHLY REVIEW AND UNDERSTAND THE REQUIREMENTS OF THE SYSTEMS THAT WILL USE THE PATHWAYS.
C. WHERE CONDUITS ARE SPECIFIED "TAAC" (TO ABOVE ACCESSIBLE CEILING) THIS SHALL MEAN THAT CONDUITS SHALL BE STUBBED INTO AN ACCESSIBLE CEILING CAVITY WITHIN THE SAME ROOM AS THE DEVICE THE CONDUIT SERVES.
D. WHERE DEVICE CONDUITS ARE SPECIFIED "TAHC" (TO ABOVE ACCESSIBLE HALLWAY/CORRIDOR CEILING) THIS SHALL MEAN THAT CONDUITS SHALL BE RUN CONTINUOUS AND STUBBED OUT INTO AN ACCESSIBLE CEILING CAVITY WITHIN THE NEAREST CORRIDOR FEATURING AN ACCESSIBLE CEILING CAVITY.
E. CONDUIT INSTALLER SHALL INSTALL PULL STRINGS IN ALL CONDUITS IMMEDIATELY AFTER INSTALLATION.
F. WHERE CONDUIT IS SHOWN AND/OR SPECIFIED, PROVIDE PULL BOXES SHOWN ON THE DRAWINGS PLUS ADDITIONAL PULL BOXES FOR EVERY 180 DEGREES OF CONDUIT BEND AND 100 FEET OF CONDUIT.
G. PROVIDE COVER PLATES FOR JUNCTION AND PULL BOXES. COORDINATE MATERIAL AND FINISH OF BLANK PLATES TO MATCH SURROUNDING PLATES.
H. WHERE A MOUNTING HEIGHT MEASUREMENT IS APPLIED TO A ROUGH-IN, THE MEASUREMENT SHALL BE REFERENCED TO THE CENTER OF THE ROUGH-IN DEVICE.
I. PATHWAYS SHALL BE INSTALLED IN A CONCEALED MANNER. EXPOSED CONDUIT SHALL NOT BE PERMITTED IN FINISHED AREAS.
J. PROVIDE CCDE-COMPLIANT FIRE-STOPPING FOR PATHWAYS THROUGH FIRE-RATED WALLS, FLOORS AND CEILINGS.
K. PROVIDE CONDUITS WITH NYLON END-BUSHINGS. INSTALL BUSHINGS AT THE END OF EACH CONDUIT AND EACH ADDITIONAL LOCATION WHERE CABLES COULD BE DAMAGED WHEN PULLING THEM THROUGH THE CONDUIT.
L. DEVICES TO BE INSTALLED AT COUNTER HEIGHT, CASEWORK OR FURNITURE SHALL BE CLOSELY COORDINATED IN THE FIELD WITH ARCHITECT, CASEWORK AND FURNITURE VENDORS PRIOR TO ROUGH-IN.
M. WHERE FLOORBOXES, POWER POLES AND OTHER DUAL SERVICE PATHWAYS ARE INDICATED ON THE DRAWINGS, PATHWAY DEVICES SHALL BE PROVIDED BY THE EC. SEE ELECTRIC DRAWINGS FOR REQUIREMENTS AND ADDITIONAL INFORMATION.
N. MANY COMMUNICATIONS DEVICES ARE INTENDED TO HAVE ADJACENT POWER OR INTEGRAL RECEPTACLES (MULTI-SERVICE) TO SERVE THE SAME EQUIPMENT. COORDINATE THE LOCATION OF SEPARATE DEVICES SO THAT THEY ARE LOCATED ADJACENT AND AT THE SAME ELEVATION. FACEPLATES SHALL BE COORDINATED TO THE SAME TYPE AND COLOR.
O. CONDUITS STUBBED INTO THE CEILING CAVITY SHALL BE MARKED WITH AN INDELIBLE MARKER INDICATING THE CONDUIT'S INTENDED USE. MARK CONDUIT WITHIN SIX INCHES OF THE CONDUIT BUSHING SO AS TO BE READABLE FROM BELOW.
P. LADDER RACK AND OTHER COMMUNICATION TECHNOLOGY CABLING PATHWAYS DEPICTED ON THE ENLARGED FLOOR PLANS SHALL BE PROVIDED AS INDICATED. ADDITIONAL PRODUCTS NECESSARY FOR PROFESSIONAL WIRE MANAGEMENT WITHIN THE MAIN EQUIPMENT ROOM <ER> AND ALL TELECOMMUNICATION ROOMS <TR> SHALL BE ALSO BE PROVIDED AS NECESSARY.
Q. PROVIDE A MINIMUM OF ONE (1) 2-INCH DIAMETER THROUGH-THE-WALL CONDUIT SLEEVES FOR USE AS COMMUNICATION AND SECURITY CABLE PATHWAYS INTO EACH SPACE CONTAINING COMMUNICATION AND SECURITY DEVICES. ROUTE CONDUITS FROM ABOVE ACCESSIBLE CEILING TO THE NEAREST HALLWAY/CORRIDOR FEATURING AN ACCESSIBLE CEILING CAVITY.

## DRAWING IDENTIFICATION:

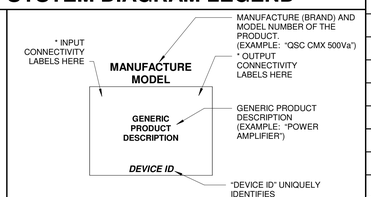



DRAWING IDENTIFICATION IS INTENDED TO PROVIDE AN ORDERLY FORMAT TO DELIVER PROJECT INFORMATION. A MAJORITY OF DRAWINGS CONTAIN INFORMATION THAT IS REQUIRED OR WILL BE BENEFICIAL TO MULTIPLE DISCIPLINES AND / OR CONTRACTORS. LIKEWISE, EACH SPECIFICATION SECTION MAY REQUIRE INFORMATION ON MULTIPLE DRAWINGS TO COMPLETE THE SYSTEM(S).

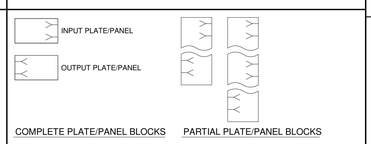
| DRAWING IDENTIFICATION | | |
|---|---|---|
| DRAWING PREFIX | | |
| | T | TECHNOLOGY |
| DRAWING TYPE | | |
| | 0 | LEGEND/INDEX/COMPOSITE |
| | 1 | FLOORPLANS |
| | 2 | ELEVATIONS |
| | 3 | SECTIONALS |
| | 4 | ENLARGED FLOORPLANS AND DETAILS |
| | 5 | DETAILS |
| | 6 | DIAGRAMS |
| | 7 | PATHWAY/ROUGH-IN |
| DISCIPLINE ID | | |
| | 0 | INFORMATION TECHNOLOGY - ALL DISCIPLINES |
| | 1 | STRUCTURED CABLING |
| | 2 | DATA SYSTEMS |
| | 3 | TELEPHONE SYSTEM |
| | 4 | A/V SYSTEMS |
| | 5 | DISTRIBUTED COMMUNICATIONS |
| | 6 | RESERVED |
| | 7 | SECURITY |
| | 8 | SITE/OUTDOOR (OSP) |
| | 9 | RESERVED |
| SEQUENCE # | | |
| | 0 | RESERVED |
| | 1-9 | FIRST-NINTH |
| | A-Z | 10-36 |

## SYSTEM DIAGRAM LEGEND

**TYPICAL PRODUCT**




**PLATES AND PANELS**




## GENERAL CABLING NOTES:

A. PLENUM CABLE REQUIRED. ALL CABLE THAT WILL NOT BE INSTALLED IN A FULLY ENCLOSED CONDUIT SYSTEM SHALL BE RATED FOR INSTALLATION WITHIN A RETURN AIR PLENUM.
B. ALL INSTALLED CABLING SHALL BE CONTINUOUS AND WITHOUT SPLICES, EXCEPT WHERE OTHERWISE NOTED.
C. COLORS OF CABLING USED FOR ALL TECHNOLOGY WORK SHALL BE REVIEWED AND APPROVED PRIOR TO PROCUREMENT AND INSTALLATION.

## TECHNOLOGY LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| **AUDIO-VISUAL SYSTEMS** | |
| AV | WALL AUDIO VISUAL CONNECTION |
| AV | FLOOR AUDIO VISUAL CONNECTION |
| MC | WALL MICROPHONE CONNECTION |
| CP | WALL CONTROL PANEL |
| VP | CEILING VIDEO PROJECTOR |
| S | CEILING SPEAKER |
| S | WALL SPEAKER |
| SS | WALL PROJECTOR SCREEN SWITCH |
| **CABLE / RACEWAY / SPACE** | |
| ER-02-01,13 | CIRCUIT HOME RUN WITH RACK IDENTIFIER AND PORT NUMBER |
| | CABLING / RACEWAY INSTALLED CONCEALED IN WALLS OR ABOVE CEILING |
| | CABLING / RACEWAY INSTALLED BELOW FLOOR OR GRADE |
| | CABLE TRAY |
| | LADDER RACK |
| | SERVICE POLE - POWER AND TECHNOLOGY WHERE APPLICABLE. |
| UP DN | 4" CONDUIT SLEEVE UP OR DOWN THROUGH FLOOR |
| | CONDUIT SLEEVE THROUGH WALL |
| **PLAN-VIEW LINE TYPES** | |
| | WORK SHOWN BOLD-CONTINUOUS INDICATES NEW WORK (UNLESS INDICATED OTHERWISE) |
| | WORK SHOWN FADED INDICATES EXISTING WORK TO REMAIN OR NEW WORK BY OTHERS AS APPLICABLE (UNLESS INDICATED OTHERWISE) |
| | WORK SHOWN BOLD-DASHED INDICATES SELECTIVE DEMOLITION WORK (UNLESS INDICATED OTHERWISE) |

## ABBREVIATIONS

| | | | |
|---|---|---|---|
| (R) | RELOCATE FIXTURE, EQUIPMENT OR DEVICE | HDMI | HIGH DEFINITION MULTIMEDIA INTERFACE |
| 42" | DISTANCE ABOVE FINISHED FLOOR / GRADE / PAVEMENT | IP | INTERNET PROTOCOL |
| | | LI | LOCAL INPUT |
| | | LO | LOCAL OUTPUT |
| ACC | ADMINISTRATIVE CONTROL CONSOLE | | |
| ACD | ACCESS CONTROLLED DOOR | OFE | OWNER FURNISHED EQUIPMENT |
| AFF | ABOVE FINISHED FLOOR | OFCI | OWNER FURNISHED CONTRACTOR INSTALLED |
| AFG | ABOVE FINISHED GRADE | | |
| AVR | AUDIO VISUAL SYSTEM EQUIPMENT RACK | PBB | PRIMARY GROUNDING BUSBAR |
| | | PM | PATIENT MONITOR |
| BAS | BUILDING AUTOMATION SYSTEM | PS | PATIENT STATUS |
| BFC | BELOW FINISHED CEILING | | |
| | | R | ROUGH-IN ONLY |
| C | CONDUIT | | |
| CH | COUNTER HEIGHT OR SPECIAL HEIGHT DEVICE | SBB | SECONDARY GROUNDING BUSBAR |
| | | SER | SECURITY SYSTEM EQUIPMENT RACK |
| DP | DISPLAY PORT | SSR | SOUND SYSTEM EQUIPMENT RACK |
| DS | DIGITAL SIGNAGE | | |
| DVI | DIGITAL VIDEO INTERFACE | TAAC | TO ABOVE ACCESSIBLE CEILING |
| DVR | DIGITAL VIDEO RECORDER | TAHC | TO ABOVE ACCESSIBLE HALLWAY CEILING |
| | | TR | TELECOMMUNICATIONS ROOM |
| EC | ELECTRICAL CONTRACTOR | TBB | TELECOMMUNICATIONS BACKBOARD |
| EF | ENTRANCE FACILITY | | |
| EMR | ELECTRONIC MEDICAL RECORDS | WP | WEATHERPROOF |
| EQR | EQUIPMENT RACK | WG | WIRE GUARD |
| ER | EQUIPMENT ROOM | | |
| ETR | EXISTING TO REMAIN | | |
| EX | EXISTING | | |

2" REFERENCE LINE

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# NKU Student Union Ballroom Upgrades

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Northern Kentucky University

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STEPHEN N. FEDERLE
27303
REGISTERED
PROFESSIONAL ENGINEER

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|---|---|
| 12/05/19 | Construction Doc. |

DWN:MRH CHK:TAB
PROJ. DATE
SHEET DATE 12/05/19
JOB NO. 21514.00

TECHNOLOGY COVER SHEET

T-001

KLH JOB 21514.00

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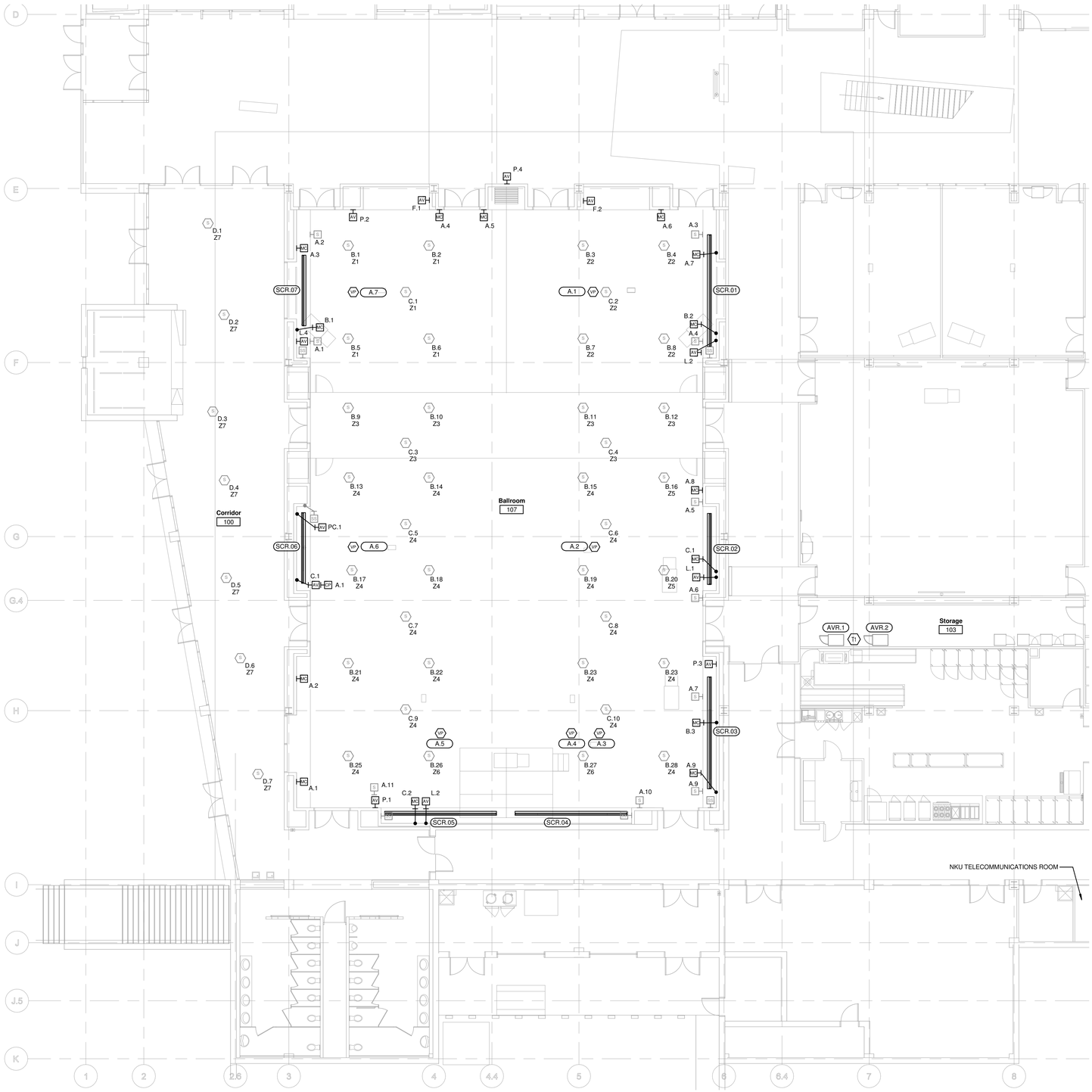
## GENERAL NOTES

A. PROVIDE NEW CUSTOM BLANK COVER PLATES ON ROUGH-IN LOCATIONS THAT AREN'T REUSED.

## KEYED NOTES

T1 EXISTING EQUIPMENT RACKS.




1 TECHNOLOGY LEVEL 1 FLOORPLAN
1/8" = 1'-0"

2" REFERENCE LINE

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TECHNOLOGY
LEVEL 1 PLAN
OVERALL

T-100

KLH JOB 21514.00

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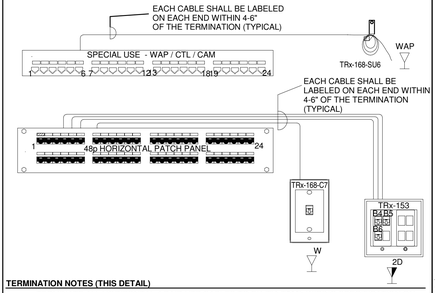
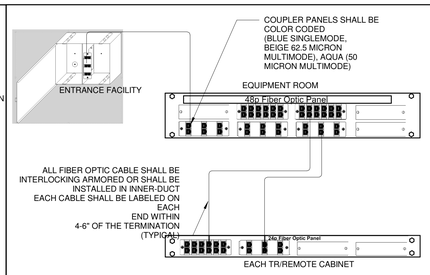



**TERMINATION NOTES (THIS DETAIL)**

A. TERMINATE ALL HORIZONTAL 4 PAIR UTP CABLES TO EIA/TIA T568b WIRING SPECIFICATION ON BOTH ENDS.
B. ALL HORIZONTAL 4 PAIR CABLES SHALL TERMINATE AT THE WORKSTATION ON JACKS AND AT THE ER/TR/REMOTE CABINET ON PANELS.
C. CABLES AND JACKS MAY BE COLOR CODED; SEE DRAWINGS FOR DETAILS.
D. HORIZONTAL 4 PAIR CABLES MAY BE SEGREGATED ON SEPARATE PATCH PANELS SUCH AS "SPECIAL USE", "WAP" "CAM". SEE ENLARGED RACK LAYOUT FOR PROJECT REQUIREMENTS.
E. CABLES SHALL BE LANDED IN ALPHANUMERIC ORDER ON PANELS BY CABLE ID.

271513.00-18 - HORIZONTAL COPPER CABLING

SCALE: NONE

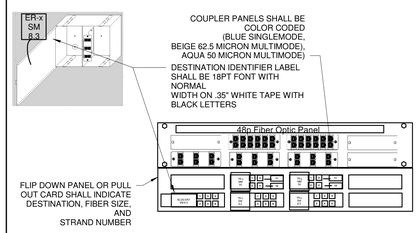



**TERMINATION NOTES (THIS DETAIL)**

A. TERMINATE ALL STRANDS WITH SPECIFIED CONNECTORS ON BOTH ENDS. SC STYLE UNLESS OTHERWISE NOTED.
B. FIBER OPTIC BACKBONE CABLES SHALL TERMINATE BETWEEN THE ER AND EACH REMOTE CABINET IN RACK MOUNTED ENCLOSURES WITH THE APPROPRIATE COLOR CODED COUPLER PANELS.
C. CABLES ENTERING ENCLOSURES SHALL BE SECURED AT THE ENTRY POINT TO THE ENCLOSURE. INTERLOCKING ARMORED CABLE SHALL BE GROUNDED AT BOTH ENDS.
D. WALL MOUNTED ENCLOSURES SHALL BE USED AT THE ENTRANCE FACILITY.
E. SEE BACKBONE DIAGRAM FOR CABLE REQUIREMENTS.

271323.00-01 - FIBER OPTIC BACKBONE CABLING

SCALE: NONE

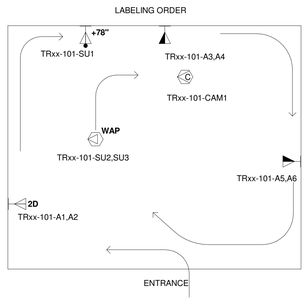



**LABELING NOTES (THIS DETAIL)**

A. DESTINATION IDENTIFIER LABEL SHALL BE PLACED ON EXTERIOR OF ENCLOSURE WHEN ALL TERMINATIONS WITHIN THE ENCLOSURE SHARE THE SAME DESTINATION.
B. INDUSTRY STANDARD COLOR CODING SHALL BE UTILIZED ON ALL COUPLERS.
C. STRANDS SHALL BE CLEARLY NUMBERED ON BOTH ENDS.
D. ALL LABELS SHALL BE APPLIED STRAIGHT.
E. UNLESS OTHERWISE NOTED LABELS SHALL BE BLACK TEXT ON WHITE BACKGROUND.

270553.00-09 - FIBER PANEL LABELING

SCALE: NONE

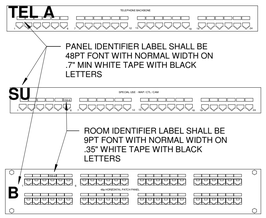



**LABELING NOTES (THIS DETAIL)**

A. WHERE CABLE HAVE THE SAME SOURCE AND DESTINATION (ROOM) THE LABELING ORDER WILL BE CLOCKWISE FROM THE ROOM ENTRANCE. WALL OUTLETS WILL PRECEDE CEILING DEVICES.

270553.00-08 - OUTLET LABELING SEQUENCE

SCALE: NONE

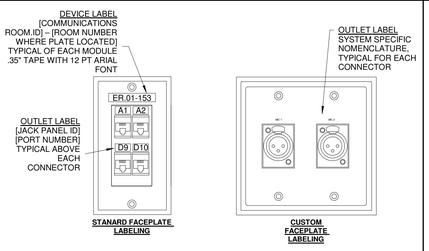



**LABELING NOTES (THIS DETAIL)**

A. PANEL IDENTIFIERS SHALL BE USED TO IDENTIFY THE USE OF PANELS AND TO CREATE A UNIQUE CABLE ID.
B. HORIZONTAL CABLE TERMINATION PANELS SHALL BEGIN WITH PANEL "A" AND CONTINUE ALPHABETICALLY TOP TO BOTTEM.
C. A RACK WILL BE LIMITED ON THE QUANTITY OF PANELS; CONTINUE THE LETTERING SEQUENCE IN THE NEXT RACK.
D. WHERE SO NOTED, SPECIAL USE PANELS MAY BE USED TO SEGREGATE CERTAIN CABLE USES.
E. SPECIAL USE DESIGNATORS MAY BE CAM, WAP, TEL OR SU (WHEN THE PANEL IS USED FOR MORE THAN ONE TYPE).
F. ALL LABELS SHALL BE APPLIED STRAIGHT.
G. UNLESS OTHERWISE NOTED LABELS SHALL BE BLACK TEXT ON WHITE BACKGROUND.

270553.00-04 - PATCH PANEL LABELING

SCALE: NONE

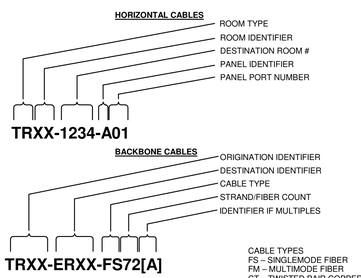



**LABELING NOTES (THIS DETAIL)**

A. SEE LABELING PATTERN EXAMPLES FOR REQUIRED TEXT.
B. ALL LABELS SHALL BE APPLIED STRAIGHT.
C. WHERE DEVICE IS DESIGNED FOR FACTORY INSERTS, ADHESIVE LABEL SHALL BE APPLIED TO THE INSERT.
D. UNLESS OTHERWISE NOTED LABELS SHALL BE BLACK TEXT ON WHITE BACKGROUND.
E. UNLESS OTHERWISE NOTED LABELS ON CUSTOM PLATES SHALL BE ENGRAVED.
F. LABELS SHALL BE .35" TAPE WITH 9 PT ARIAL FONT.

270553.00-03 - FACEPLATE LABELING

SCALE: NONE

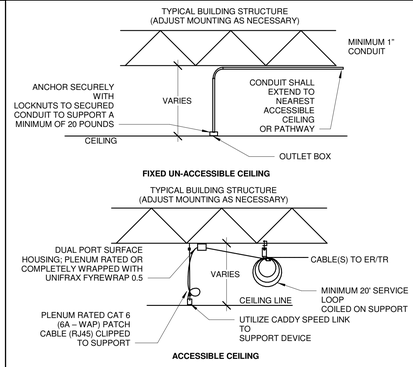



**LABELING NOTES (THIS DETAIL)**

A. LABELING PATTERN EXAMPLES REPRESENT MINIMUM REQUIREMENTS. (CAMPUS PROJECTS SHALL ALSO INCLUDE A BUILDING IDENTIFIER).
B. EVERY CABLE SHALL BE LABELED AT EACH END WITHIN 4 TO 6" OF THE TERMINATION. POSITION AND ORIENT LABEL TO BE READABLE WITHOUT DISASSEMBLY.
C. EXISTING FACILITIES SHALL FOLLOW PRE-EXISTING LABELING PATTERNS; COORDINATE WITH OWNER.

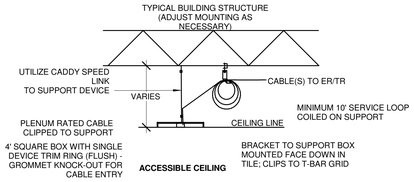
270553.00-01 - CABLE LABEL PATTERNS

SCALE: NONE




**ROUGH-IN NOTES (THIS DETAIL):**

A. SURFACE MOUNTED HOUSING(S) SHALL BE STRAPPED TO BUILDING STRUCTURE AND SERVICE LOOP SUPPORT SHALL BE CLAMPED TO ALLOW RE-POSITIONING AS REQUIRED BY SYSTEM INSTALLER.




SCALE: NONE

2" REFERENCE LINE

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# NKU Student Union Ballroom Upgrades

Nunn Drive
Highland Heights, KY 41099
Northern Kentucky University

STATE OF KENTUCKY
STEPHEN FEDERLE
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PROFESSIONAL ENGINEER

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TECHNOLOGY DETAILS

T-501

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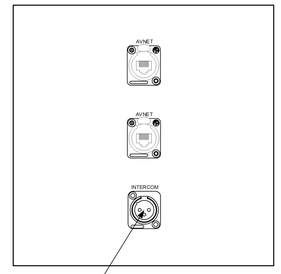
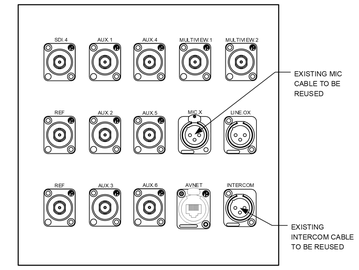
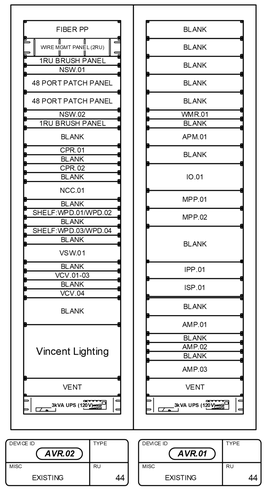


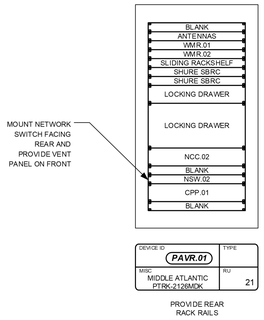

K FACILITATOR AUDIO VISUAL WALLPLATE [AV] - F
1/2 : 1




J PRODUCTION VIDEO CONTROL WALLPLATE [AV] - PC
1/2 : 1



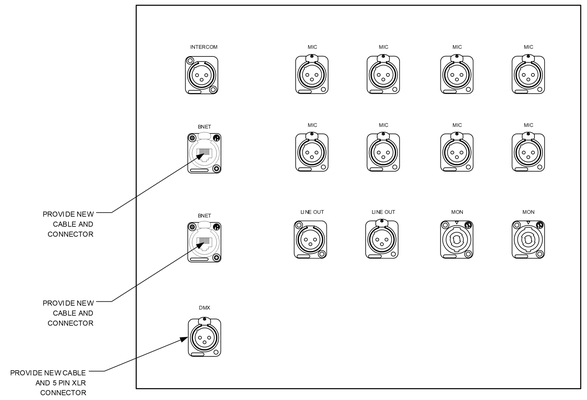

G HEADEND RACK ELEVATION
Scale = NONE




I CONTROL STATION RACK ELEVATION
Scale = NONE

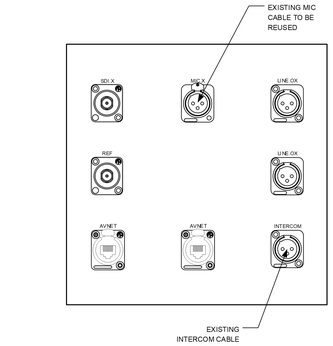
**EXISTING TO REMAIN**

F MICROPHONE TYPE D FLOORBOX [MC] - D
1/2 : 1

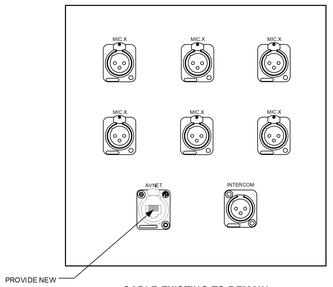



**CABLE EXISTING TO REMAIN. REPLACE PLATE AND CONNECTORS. KEEP EXISTING UNUSED AUDIO CABLE AS SPARE.**

E MICROPHONE TYPE C WALLPLATE [MC] - C
1/2 : 1




H PRESS AUDIO VISUAL WALLPLATE [AV] - P
1/2 : 1

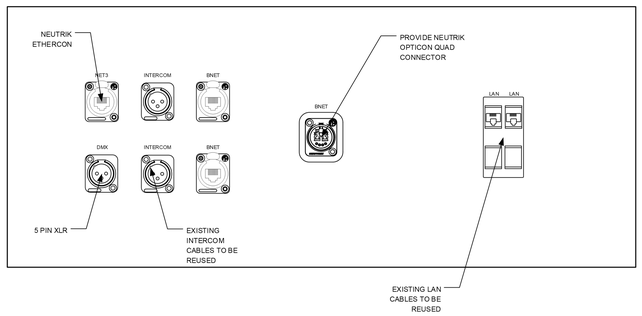



**CABLE EXISTING TO REMAIN. REPLACE PLATE AND CONNECTORS.**

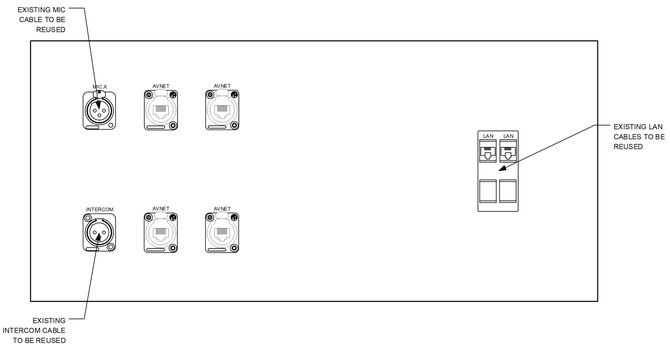
D MICROPHONE TYPE B WALLPLATE [MC] - B
1/2 : 1

**CABLE EXISTING TO REMAIN. REPLACE PLATE AND CONNECTOR.**

C MICROPHONE TYPE A WALLPLATE [MC] - A
1/2 : 1




B CONTROL STATION WALLPLATE [AV] - C
1/2 : 1




A LECTERN AUDIO VISUAL WALLPLATE [AV] - L
1/2 : 1

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# NKU Student Union Ballroom Upgrades

Nunn Drive
Highland Heights, KY 41099
Northern Kentucky University

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TECHNOLOGY DETAILS

T-541

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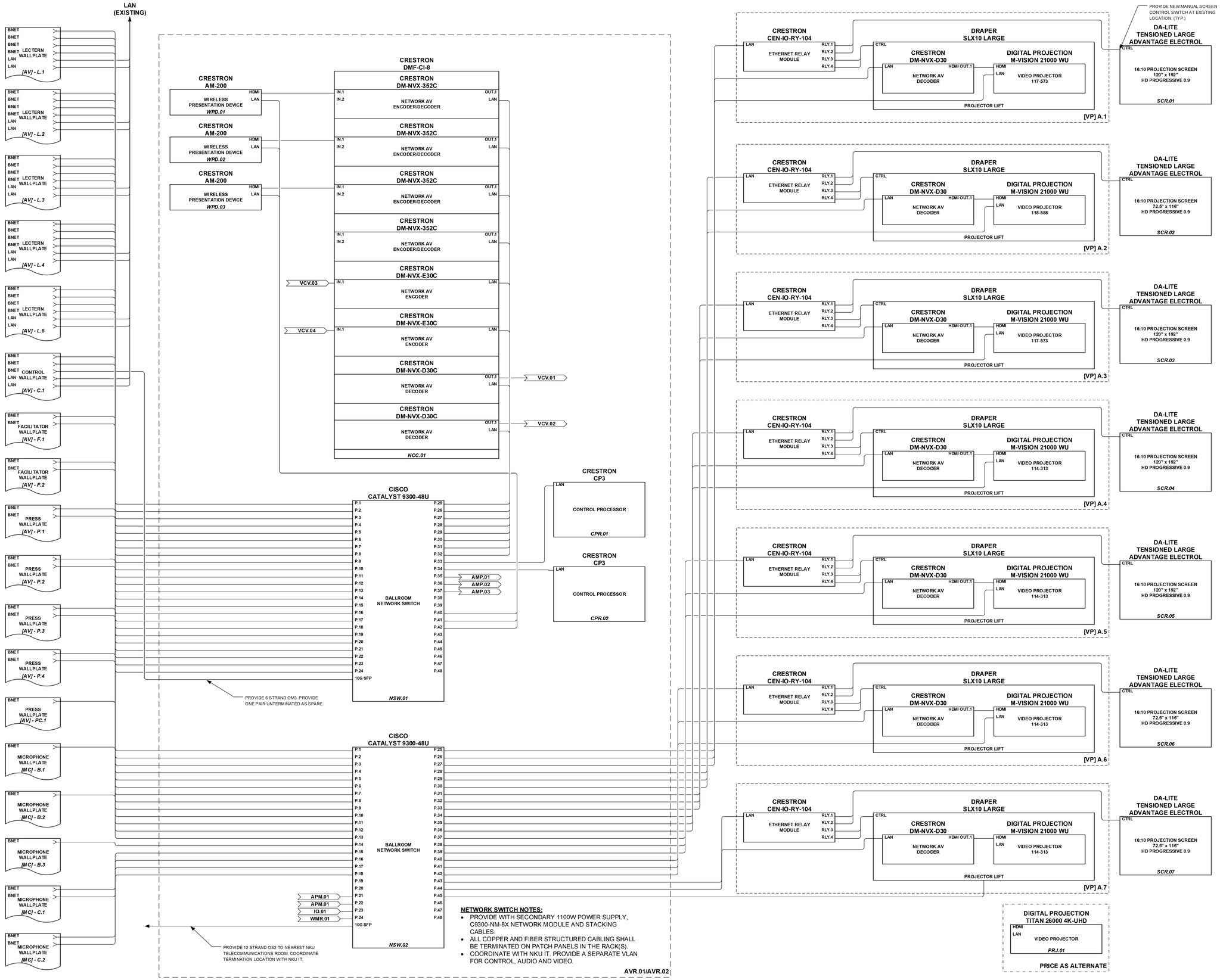


**NETWORK SWITCH NOTES:**

- PROVIDE WITH SECONDARY 1100W POWER SUPPLY, C9300-NM-8X NETWORK MODULE AND STACKING CABLES.
- ALL COPPER AND FIBER STRUCTURED CABLING SHALL BE TERMINATED ON PATCH PANELS IN THE RACK(S).
- COORDINATE WITH NKU IT. PROVIDE A SEPARATE VLAN FOR CONTROL, AUDIO AND VIDEO.

A BALLROOM VIDEO / CONTROL SYSTEM DIAGRAM
Scale = NONE

2" REFERENCE LINE

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TECHNOLOGY SCHEDULES AND DIAGRAMS

T-641

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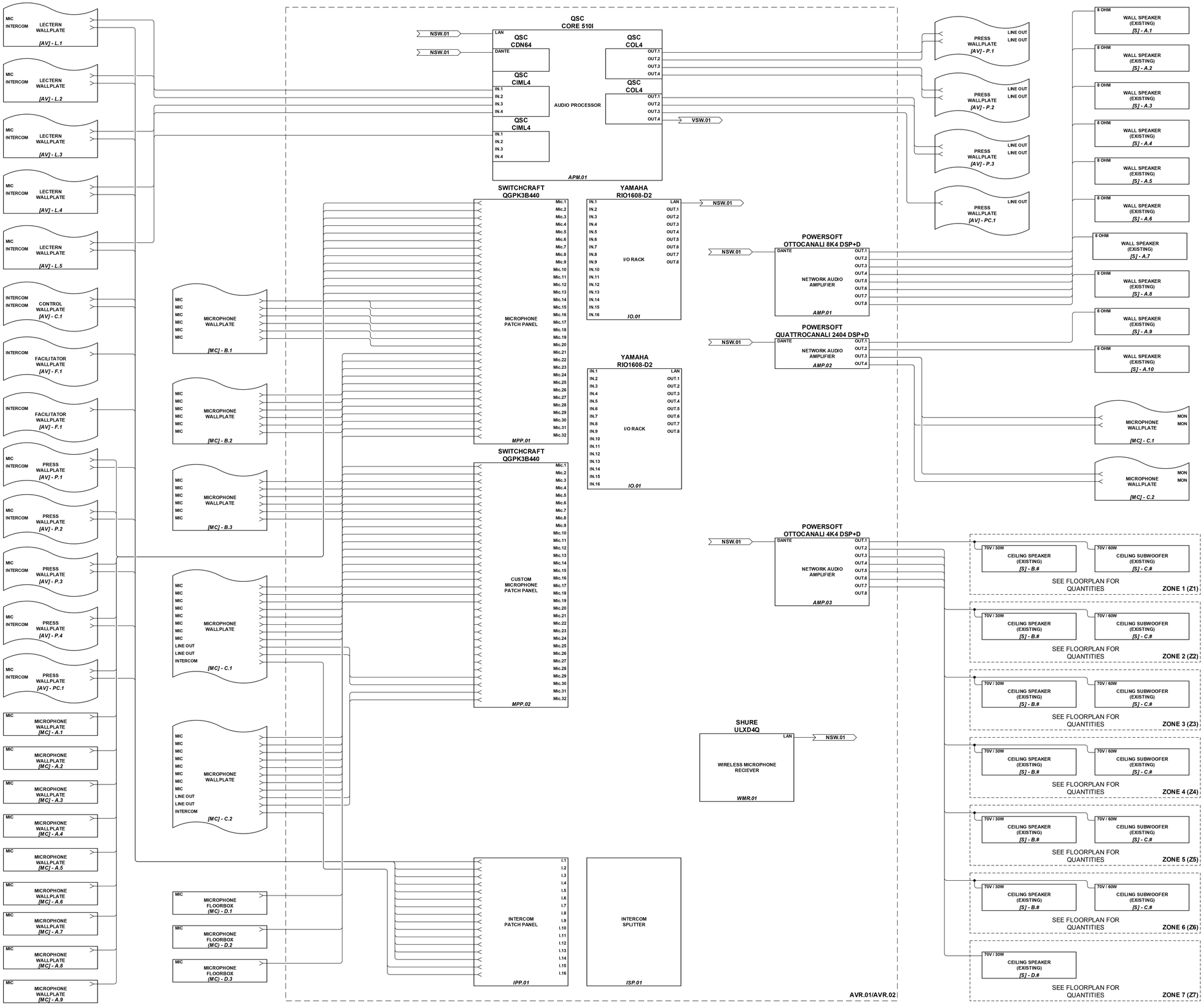


A BALLROOM AUDIO SYSTEM DIAGRAM
Scale = NONE

2" REFERENCE LINE

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TECHNOLOGY SCHEDULES AND DIAGRAMS

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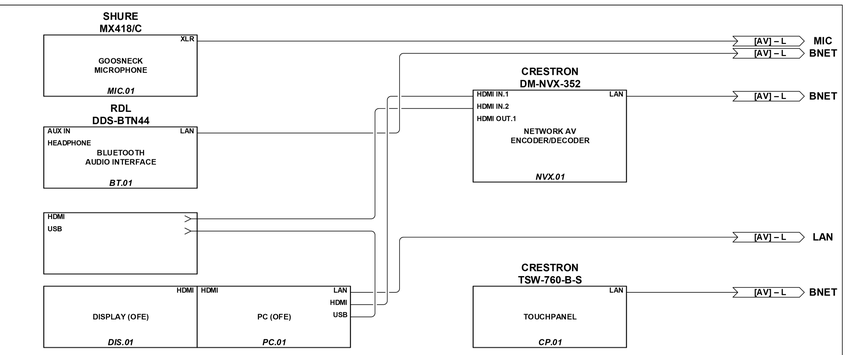
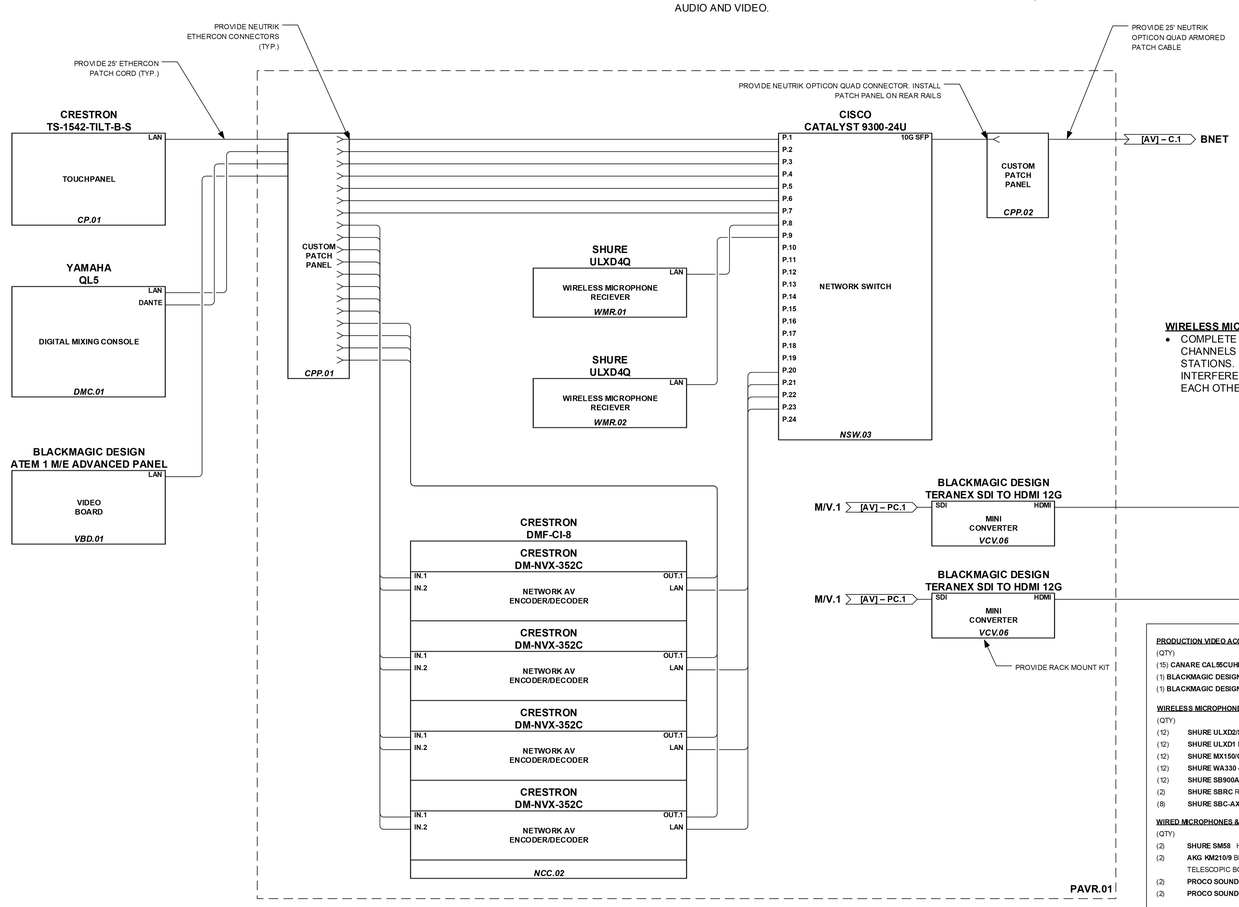



B LECTERN SYSTEM DIAGRAM (QTY 4)
Scale = NONE

**NETWORK SWITCH NOTES:**

- PROVIDE WITH SECONDARY 1100W POWER SUPPLY AND C9300-NM-8X NETWORK MODULE.
- COORDINATE WITH NKU IT. PROVIDE A SEPARATE VLAN FOR CONTROL, AUDIO AND VIDEO.




**WIRELESS MICROPHONE CHANNEL COORDINATION:**

- COMPLETE RF SCAN WITHIN SPACE AND PROPERLY COORDINATE CHANNELS TO PREVENT INTERFERENCE FROM LOCAL TELEVISION STATIONS. COORDINATE FREQUENCIES SUCH THAT HARMONIC INTERFERENCE WHEN TRANSMITTERS ARE IN CLOSE PROXIMITY TO EACH OTHER IS MINIMIZED.

**PRODUCTION VIDEO ACCESSORIES**

(QTY)
(15) **CANARE CAL55CUHD025** 25' 12G-SDI BNC-BNC CABLE
(1) **BLACKMAGIC DESIGN TERANEX MINI SDI TO HDMI 12G** CONVERTER
(1) **BLACKMAGIC DESIGN TERANEX MINI HDMI TO SDI 12G** CONVERTER

**WIRELESS MICROPHONES & ACCESSORIES**

(QTY)
(12) **SHURE ULXD2/SM58** HANDHELD WIRELESS TRANSMITTER
(12) **SHURE ULXD1** BODYPACK TRANSMITTER
(12) **SHURE MX150/C** SUBMINIATURE LAVALIER CARDIOID MICROPHONE
(12) **SHURE WA330** 4-PIN CONNECTOR
(12) **SHURE SB900A** LITIUM-ION RECHARGEABLE BATERY
(2) **SHURE SBRC** RACK MOUNT BATTERY CHARGER
(8) **SHURE SBC-AX** CHARGING MODULE

**WIRED MICROPHONES & ACCESSORIES**

(QTY)
(2) **SHURE SM58** HANDHELD MICROPHONE
(2) **AKG KM210/9** BLACK HEAVY DUTY TRIPOD BASE MIC STAND WITH TELESCOPIC BOOM ARM
(2) **PROCO SOUND M-25** 25' MICROPHONE CABLE
(2) **PROCO SOUND M-50** 50' MICROPHONE CABLE

AUDIO / VISUAL SYSTEM ACCESSORIES

(QTY)
(1) **ALLEN & HEATH DT168** 16 XLR Input / 8 XLR Output – 96kHz Dante Expander
(1) **NEUTRIK NA2-IO-DPRO** 2IN, 2OUT breakout box
(1) **CRESTRON DM-NVX-352** Encoder/Decoder
(4) **PROCO DURASHIELD-50NB45** Cat6A shielded Ethercon to RJ45 cable
(4) **PROCO DURASHIELD-25NBNB** Cat6A shielded Ethercon to Ethercon cable

A CONTROL STATION SYSTEM DIAGRAM
Scale = NONE

2" REFERENCE LINE

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TECHNOLOGY SCHEDULES AND DIAGRAMS

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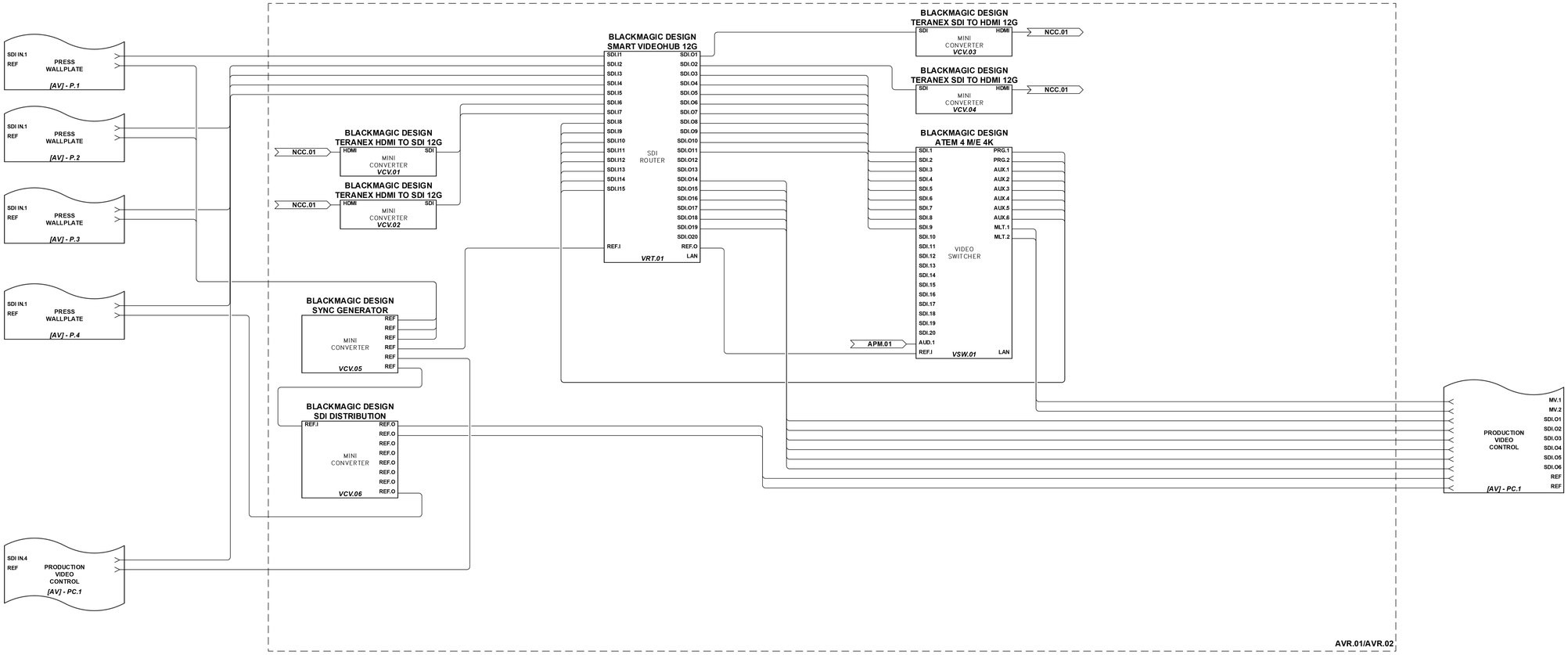
**VIDEO CABLING NOTES:**

- ALL SDI CABLES TO WALLPLATES SHALL BE BELDEN 4731P. PROVIDE 4731RBUHD3 CONNECTORS ON BOTH ENDS.
- ALL REFERENCE CABLES TO WALLPLATES SHALL BE RG6.
- ALL SDI PATCH CABLES SHALL BE RATED FOR 12G.




A PRODUCTION VIDEO SYSTEM DIAGRAM
Scale = NONE

2" REFERENCE LINE

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# NKU Student Union Ballroom Upgrades

Nunn Drive
Highland Heights, KY 41099
Northern Kentucky University

STATE OF KENTUCKY
STEPHEN N. FEDERLE
27329
REGISTERED
PROFESSIONAL ENGINEER

REVISIONS

| | |
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| 12/05/19 | Construction Doc. |

DWN: MRH CHK: TAB
PROJ. DATE
SHEET DATE 12/05/19
JOB NO. 21514.00

TECHNOLOGY SCHEDULES AND DIAGRAMS

T-644

KLH JOB 21514.00

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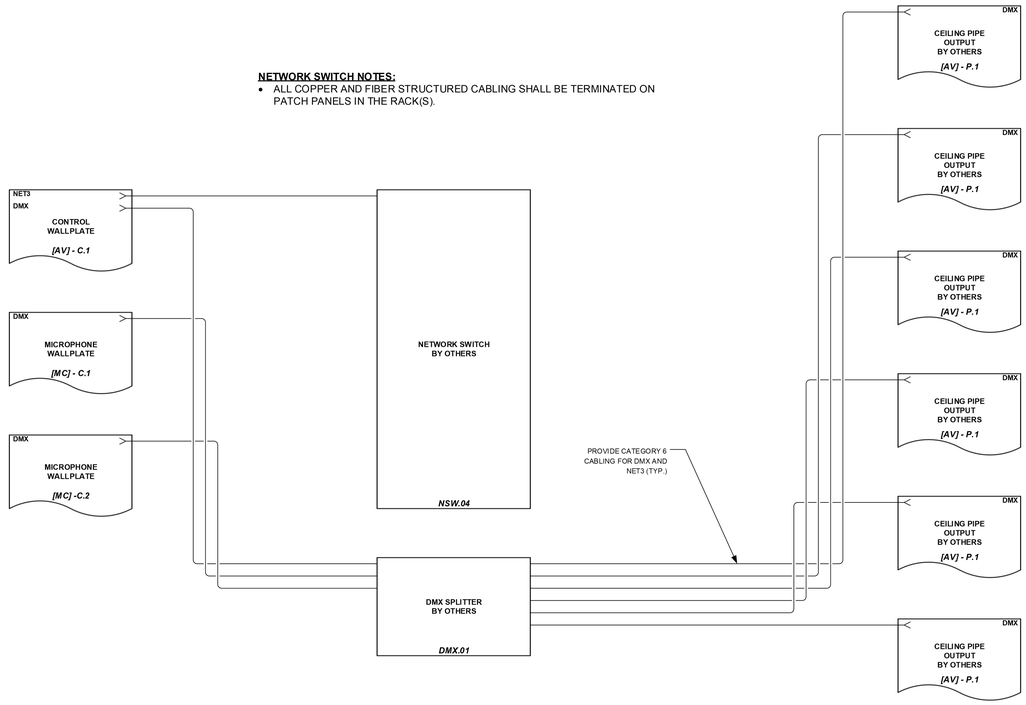
**NETWORK SWITCH NOTES:**

- ALL COPPER AND FIBER STRUCTURED CABLING SHALL BE TERMINATED ON PATCH PANELS IN THE RACK(S).




A LIGHTING CONTROL SYSTEM DIAGRAM
Scale = NONE

2" REFERENCE LINE

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# NKU Student Union Ballroom Upgrades

Nunn Drive
Highland Heights, KY 41099
Northern Kentucky University

STATE OF KENTUCKY
STEPHANIE FEDERLE
27303
LICENSED
PROFESSIONAL ENGINEER

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TECHNOLOGY SCHEDULES AND DIAGRAMS

T-645

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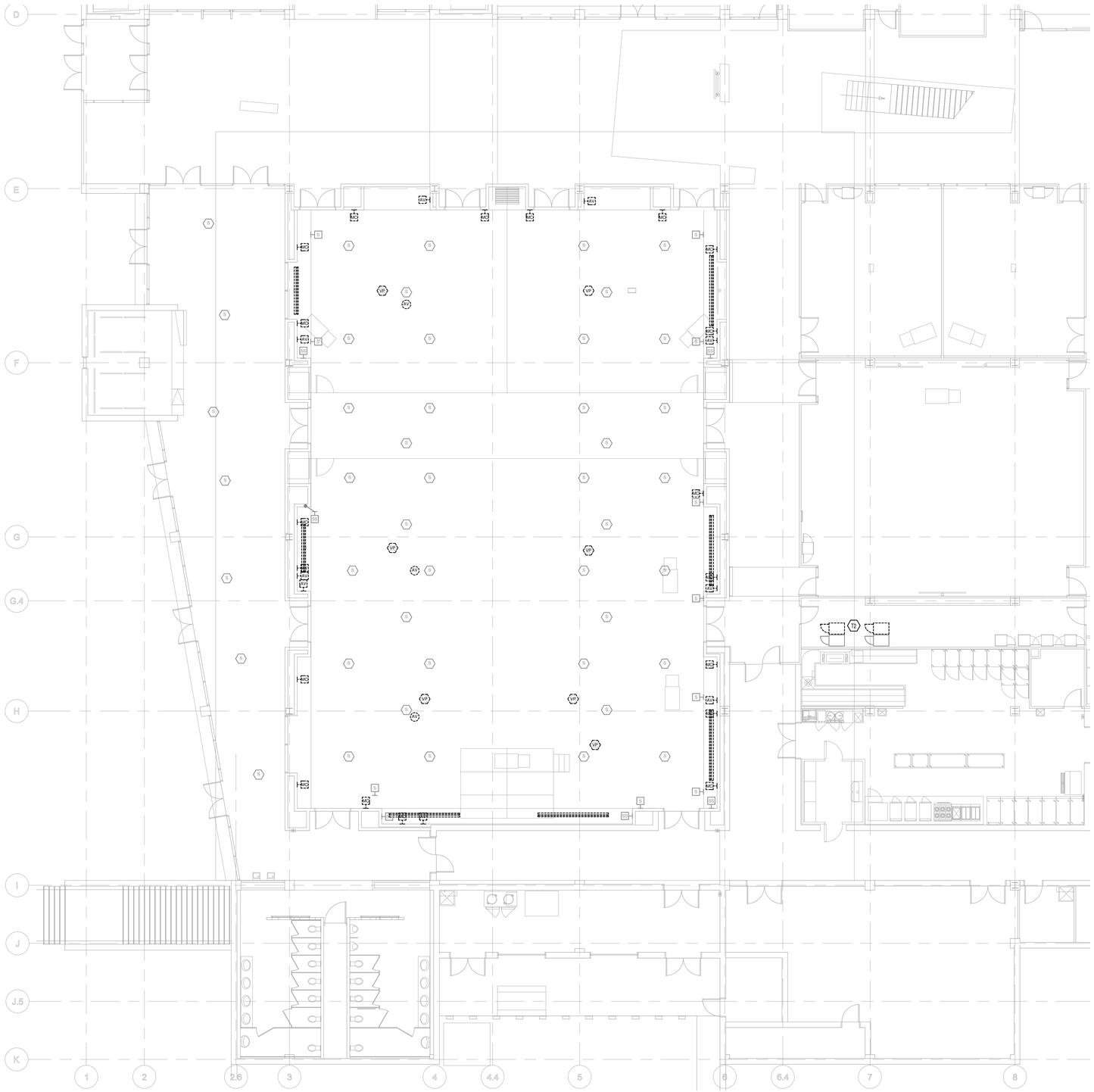
## GENERAL NOTES

A. ROUGH-IN LOCATIONS TO BE USED FOR NEW FACEPLATES. COORDINATE WITH NEW CONSTRUCTION DRAWINGS PRIOR TO DEMOLITION.

## KEYED NOTES

T2 EQUIPMENT RACKS TO BE DEMOLISHED. ANY CABLING EXISTING TO REMAIN SHALL BE MOVED TO THE ADJACENT RACK.




1 TECHNOLOGY DEMOLITION LEVEL 1 FLOORPLAN
1/8" = 1'-0"

2" REFERENCE LINE

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TECHNOLOGY DEMOLITION LEVEL 1 PLAN OVERALL

TD100

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