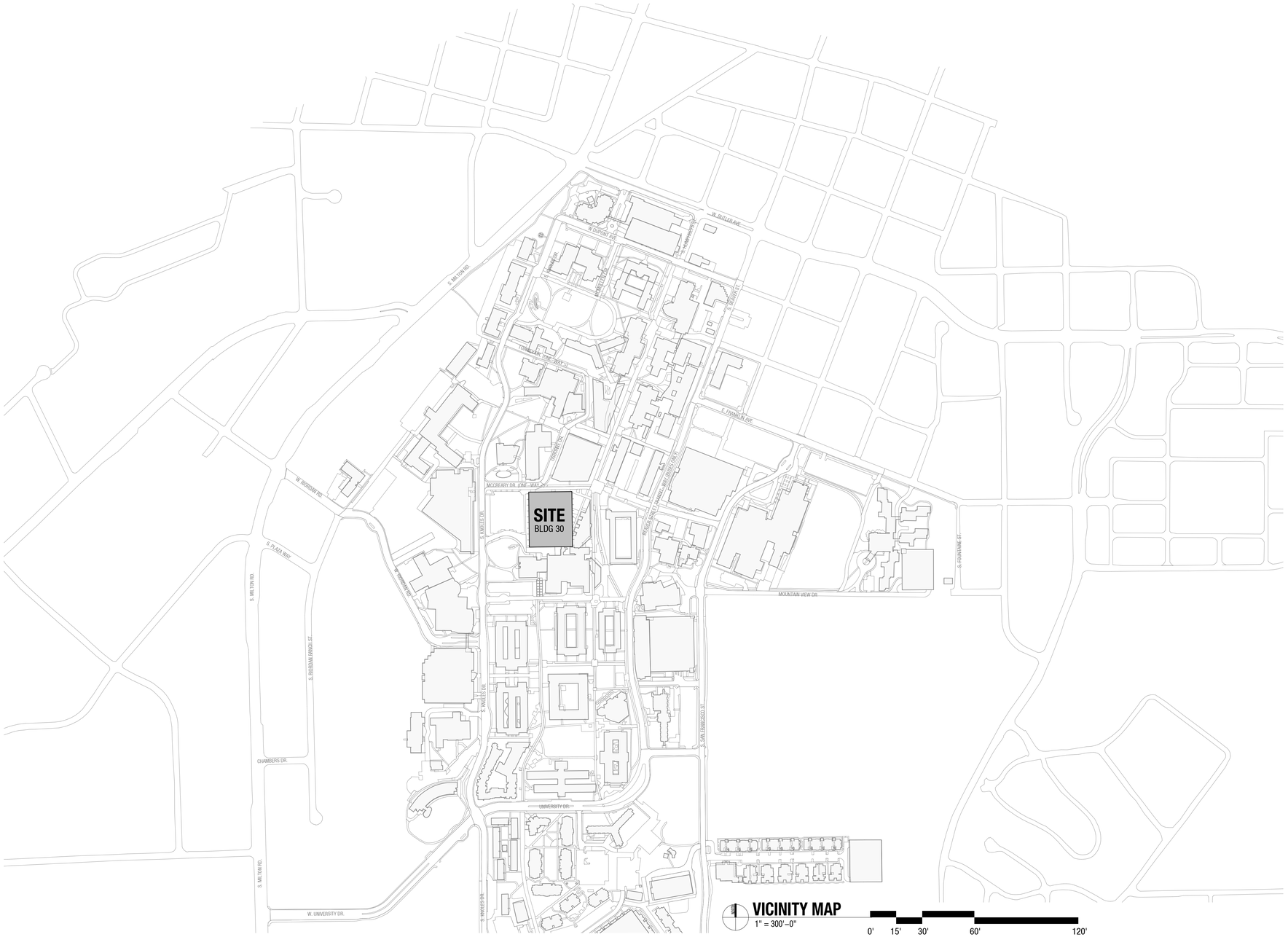
Fieldhouse HVAC Replacement

1050 S KNOLES DR. FLAGSTAFF, AZ 86011



NO.	DESCRIPTION	DATE
--	100% CD ISSUANCE	03.16.2026

LIGHTVOX STUDIO PLLC
o 602 604 6626
info@lightvoxstudio.com
4602 E Thomas Rd Ste 100
Phoenix AZ 85018

LIGHTVOX

REGISTERED ARCHITECT
58628
BENJAMIN M. MULLINGS
STATE OF ARIZONA

PROJECT:
NAU Fieldhouse HVAC Replacement

3001.18.01/09.300.251

1050 S KNOLES DR.
FLAGSTAFF, AZ 86011

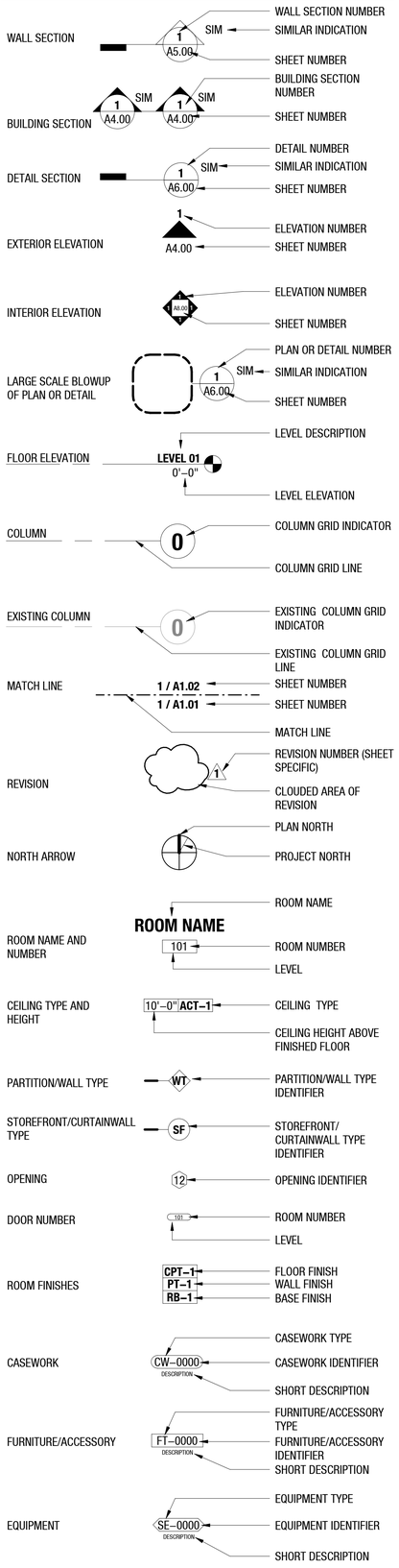
COVER

G0.00

ABBREVIATIONS

AB	ANCHOR BOLT	HWY	HIGHWAY
ABC	AGGREGATE BASE COURSE	ICC	INTERNATIONAL CONSTRUCTION COUNCIL
ACT	ACOUSTICAL CEILING TILE	ID	INSIDE DIMENSION
AD	AREA DRAIN	INCL	INCLUDING
ADDL	ADDITIONAL	INFO	INFORMATION
ADJ	ADJUSTABLE	INSUL	INSULATION
A.F.F.	ABOVE FINISHED FLOOR	JT	JOINT
AL	ALUMINUM	KDHM	KNOCK DOWN HOLLOW METAL
ANOD	ANODIZED	LAM	LAMINATE
ARCH	ARCHITECTURAL	LH	LEFT HAND
BD	BOARD	LIN	LINEAR
BETWN	BETWEEN	LL	LOWER LEVEL
BLDG	BUILDING	LP	LOW POINT
BLK	BLOCK, BLOCKING	LTWT	LIGHT WEIGHT
BM	BENCH MARK	MAX	MAXIMUM
BOT	BOTTOM	MC	MINERAL CORE
BRG	BEARING	MECH	MECHANICAL
BS	BOTH SIDES	MEJ	MASONRY EXPANSION JOINT
BSMT	BASEMENT	MFR	MANUFACTURER
BUR	BUILT–UP ROOFING	MH	MANHOLE
CAB	CABINET	MIN	MINIMUM
CPT	CARPET	MISC	MISCELLANEOUS
CB	CATCH BASIN	MO	MASONRY OPENING
CFMF	COLD FORMED METAL FRAMING	MTD	MOUNTED
CJ	CONTROL JOINT	NIC	NOT IN CONTRACT
CL	CENTER LINE	NLWT	NORMAL WEIGHT
CLG	CEILING	NO	NUMBER
CLR	CLEAR	NOM	NOMINAL
CMT	CERAMIC MOSAIC TILE	NS	NEAR SIDE
CMU	CONCRETE MASONRY UNIT	NTS	NOT TO SCALE
CO	CLEANOUT	O.C.	ON CENTER
COL	COLUMN	OD	OUTSIDE DIAMETER
CONC	CONCRETE	OPNG	OPENING
CONT	CONTINUOUS	OPP	OPPOSITE
CP	CEMENT PLASTER	OH	OPPOSITE HAND
CT	CERAMIC TILE	ORD	OVERFLOW ROOF DRAIN
CU	CUBIC	PR	PAIR
DBL	DOUBLE	PL	PLATE
DEMO	DEMOLITION	PLAM	PLASTIC LAMINATE
DET	DETAIL	PLAS	PLASTER
D.G.	DECOMPOSED GRANITE	PLYWD	PLYWOOD
DIA	DIAMETER	PT	PAINT
DIM	DIMENSION	QT	QUARRY TILE
DF	DRINKING FOUNTAIN	R	RADIUS
DN	DOWN	RCP	REFLECTED CEILING PLAN
DS	DOWNSPOUT	REINF	REINFORCE, REINFORCING
DWG	DRAWING	REF	REFERENCE
EA	EACH	REQD	REQUIRED
EF	EACH FACE	RH	RIGHT HAND
EL	ELEVATION	RD	ROOF DRAIN
ELEC	ELECTRIC	RDL	ROOF DRAIN LEADER
EP	EPOXY PAINT	RM	ROOM
EQ	EQUAL	RO	ROUGH OPENING
EQUIP	EQUIPMENT	SC	SOLID CORE
EWC	ELECTRIC WATER COOLER	SCHED	SCHEDULE
EXIST	EXISTING	SD	SMOKE DETECTOR
EXP	EXPANSION	SEC	SECTION
EXP JT	EXPANSION JOINT	SES	SERVICE ENTRANCE SECTION
EW	EACH WAY	SGT	STRUCTURAL GLAZED TILE
FAAR	FIRE APPARATUS ACCESS	SHT	SHEET
FD	FLOOR DRAIN	SIM	SIMILAR
FDN	FOUNDATION	SM	SHEET METAL
FE	FIRE EXTINGUISHER	SOG	SLAB ON GRADE
FEC	FIRE EXTINGUISHER CABINET	SP	STARTING POINT
FHC	FIRE HOSE CABINET	SPEC	SPECIFICATIONS
FLR	FLOOR	SQ	SQUARE
FS	FAR SIDE	SS	STAINLESS STEEL
FT	FEET	STD	STANDARD
FTG	FOOTING	STL	STEEL
GA.	GUAGE, GAGE	STRUC	STRUCTURAL
GALV	GALVANIZED	ST&V	STAIN & VARNISH
GCB	GYPSUM CEILING BOARD	SUSP	SUSPENDED
GWB	GYPSUM WALL BOARD	TBS	TO BE SELECTED
GL	GLASS	T&B	TOP AND BOTTOM
GMU	GLAZED MASONRY UNIT	THK	THICK
GST	GLAZED STRUCTURAL TILE	T.O.	TOP OF
GP	GYPSUM PLASTER	TYP	TYPICAL
GR	GRADE	UNO	UNLESS NOTED OTHERWISE
HC	HOLLOW CORE	UL	UNDERWRITER'S LABORATORY
HDCP	HANDICAPPED	VCT	VINYL COMPOSITION TILE
HDWD	HARDWOOD	VENT	VENTILATION
HM	HOLLOW METAL	VERT	VERTICAL
HORZ	HORIZONTAL	VEST	VESTIBULE
HP	HIGH POINT	VIF	VERIFY IN FIELD
HR	HOUR	VOL	VOLUME
HT	HEIGHT	VT	VINYL TILE
HTG	HEATING	W/	WITH
HVAC	HEATING/VENTILATION/ AIR CONDITIONING	WC	WALL COVERING
		WD	WOOD
		WH	WALL HEATER
		W/O	WITHOUT
		WWF	WELDED WIRE FABRIC

SYMBOLS LEGEND



PROJECT DESCRIPTION

THE FIELDHOUSE (BUILDING 30) WILL BE RENOVATED TO SUPPORT A FUTURE MULTIPURPOSE FACILITY WITH A SEASONAL ICE RINK. THIS PROJECTS SCOPE WILL INCLUDE MECHANICAL PLATFORMS, AND MECHANICAL UPGRADES TO THE SPACE. THIS PROJECT WILL INCLUDE SELECTIVE DEMOLITION, STRUCTURAL, MECHANICAL, ELECTRICAL.

THE DEMOLITION WORK IN THIS SCOPE CONSISTS OF SELECTIVE REMOVAL OF EXISTING MECHANICAL UNITS AND PLATFORMS.

APPLICABLE CODES

CLIMATE ZONE 5B
SEISMIC DESIGN CATEGORY B

ALL DESIGN AND CONSTRUCTION WORK SHALL BE DONE IN SUCH A MANNER THAT THE COMPLETION OF THE PROJECT IS IN COMPLIANCE WITH THE FOLLOWING CODES AND STANDARDS THE OWNER HAS ADOPTED AS CODE. WHEN REFERENCE HAS BEEN MADE TO "THIS CODE" IT SHALL MEAN ALL THE CODES LISTED BELOW. IN THE EVENT THERE IS A CONFLICT BETWEEN ANY OF THE CODES AND STANDARDS, THE MOST RESTRICTIVE CODE SHALL APPLY.

TYPE	CODE REFERENCE
EXISTING BUILDING	2021 INTERNATIONAL EXISTING BUILDING CODE (IEBC)
ENERGY	2021 INTERNATIONAL ENERGY CONSERVATION CODE (IECC)
PLUMBING	2021 INTERNATIONAL PLUMBING CODE (IPC)
MECHANICAL	2021 INTERNATIONAL MECHANICAL CODE (IMC)
ELECTRICAL	2020 NATIONAL ELECTRICAL CODE (NEC / NFPA 70)
FUEL GAS	2021 INTERNATIONAL FUEL GAS CODE (IFGC)
FIRE	2021 INTERNATIONAL FIRE CODE (IFC)
BUILDING	2021 INTERNATIONAL BUILDING CODE (IBC)
FIRE ALARM	2022 NATIONAL FIRE ALARM CODE 2016 (NFPA 72)
FIRE SPRINKLER	2022 INSTALLATION OF SPRINKLER SYSTEMS (NFPA 13) 2025 NAU FIRE CODE 2012 ARIZONA STATE FIRE CODE (FOR STATE COMPLIANCE REF.)
ACCESSIBILITY	2017 ACCESSIBLE & USABLE BUILDINGS AND FACILITIES (ICC/ANSI A117.1) WHERE CONFLICTS ARISE BETWEEN APPLICABLE ACCESSIBILITY REQUIREMENTS (E.G., 2021 IBC, 2010 ADA STANDARDS, ICC A117.1–2017, NAU TECHNICAL STANDARDS, OR OTHER STATE/FEDERAL REQUIREMENTS), THE MOST RESTRICTIVE PROVISIONS SHALL APPLY. 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN AS APPROVED BY THE DEPARTMENT OF JUSTICE ON JULY 26, 2010 (PUBLISHED IN THE FEDERAL REGISTER ON SEPT 15, 2010)
ELEVATOR	2022 AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) A17.1, SAFETY CODES FOR ELEVATORS AND ESCALATORS (UNLESS OTHERWISE REQUIRED) AZ ELEVATOR ACT – TITLE 23, CHAPTER 2, ARTICLE 12 OF THE ARIZONA REVISED STATUTES (ARS)
ELEVATOR SAFETY	ARIZONA ADMINISTRATIVE CODE R20–5–507 (ADOSH ELEVATOR SAFETY RULES) 2022 AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) A17.1, SAFETY CODES FOR ELEVATORS AND ESCALATORS (UNLESS OTHERWISE REQUIRED)

ADDITIONAL CRITERIA

SUSTAINABILITY	AZ EXECUTIVE ORDER 2008–29 (REAFFIRMS EO 2005–05; REQUIRES ALL NEW STATE–FUNDED BUILDINGS TO ACHIEVE A MINIMUM LEED SILVER CERTIFICATION)
ASHRAE STANDARDS	2023 ASHRAE 55 (THERMAL ENVIRONMENTAL CONDITIONS FOR HUMAN OCCUPANCY) 2019 ASHRAE 62.1 (VENTILATION FOR ACCEPTABLE INDOOR AIR QUALITY) 2022 ASHRAE 90.1 (ENERGY STANDARD FOR BUILDINGS) 2023 ASHRAE 189.1 (HIGH–PERFORMANCE GREEN BUILDINGS) 2024 ASHRAE 202 (HIGH–PERFORMANCE GREEN BUILDINGS) 2024 ASHRAE 362 (VENTILATION IN HEALTH CARE FACILITIES)
STATUTES	ARIZONA REVISED STATUTES (ARS) (AS APPLICABLE TO PUBLIC AND STATE–FUNDED BUILDINGS)
OCCUPATIONAL SAFETY	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA)
MATERIAL SAFETY	NAU MATERIAL SAFETY POLICIES (E.G., PROGRAM MANUALS FOR ASBESTOS, LEAD, PCBS; LATEST EDITIONS UNLESS OTHERWISE REQUIRED)
INDOOR AIR QUALITY	SMACNA IAQ GUIDELINES FOR OCCUPIED BUILDING CONSTRUCTION (LATEST EDITION UNLESS OTHERWISE REQUIRED)
LABORATORY VENTILATION	2022 LABORATORY VENTILATION (ANSI/AIHA Z9.5) (LATEST EDITION UNLESS OTHERWISE REQUIRED)
INDUSTRIAL VENTILATION	ACGIH INDUSTRIAL VENTILATION MANUAL (LATEST EDITION UNLESS OTHERWISE REQUIRED)
NAU STANDARDS	2025 NAU DESIGN GUIDELINES & TECHNICAL STANDARDS (LATEST PUBLISHED VERSION; E.G., MARCH 4, 2025. WHERE DISCREPANCIES ARISE BETWEEN NAU GUIDELINES AND FEDERAL, STATE, OR LOCAL BUILDING CODES, RESOLUTION IS REQUIRED BY THE ARCHITECT/ENGINEER OF RECORD AND NAU'S FACILITIES AND PLANS REVIEW TEAM.) – AZ ELEVATOR ACT (TITLE 23, CHAPTER 2, ARTICLE 12) – LATEST ADOSH ARIZONA ELEVATOR RULES

DEFERRED SUBMITTALS

–N/A–

OWNER DATA

OWNER:	ARIZONA BOARD OF REGENTS NORTHERN ARIZONA UNIVERSITY
PROJECT ADDRESS:	1050 S. KNOLES DR. FLAGSTAFF, AZ 86011
FACILITY NUMBER	BUILDING 30 [FIELDHOUSE]
NAU REP:	NAU FACILITIES SERVICES GABRIEL GURRIOLA

Commissioning requirements

SHEET INDEX

PROJECT DIRECTORY

Architect:

LIGHTVOX STUDIO
4602 E THOMAS RD STE 100 PHOENIX, AZ 85018
contact: BENJAMIN MULLINGS
o. 6 0 2 . 6 0 4 . 6 6 2 6

MEP/FCS/FIRE:

IMEG
9000 E PIMA CENTER PARKWAY, STE 320, SCOTTSDALE, AZ 85258
contact: HUGO A. CHAIREZ
o. 4 8 0 . 5 6 6 . 2 2 6 8

Structural:

RUDOW + BERRY
4032 N MILLER RD STE 100 SCOTTSDALE, AZ 85251
contact: MARK RUDOW
o. 4 8 0 . 9 4 6 . 8 1 7 1

NO.	DESCRIPTION	DATE
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LIGHTVOX STUDIO PLLC
o 602 604 6626
info@lightvoxstudio.com
4602 E Thomas Rd Ste100
Phoenix AZ 85018

REGISTERED ARCHITECT 58628 BENJAMIN M. MULLINGS ARIZONA U.S.A.

LIGHTVOX

PROJECT:
NAU Fieldhouse HVAC Replacement

3001.18.01/09.300.251

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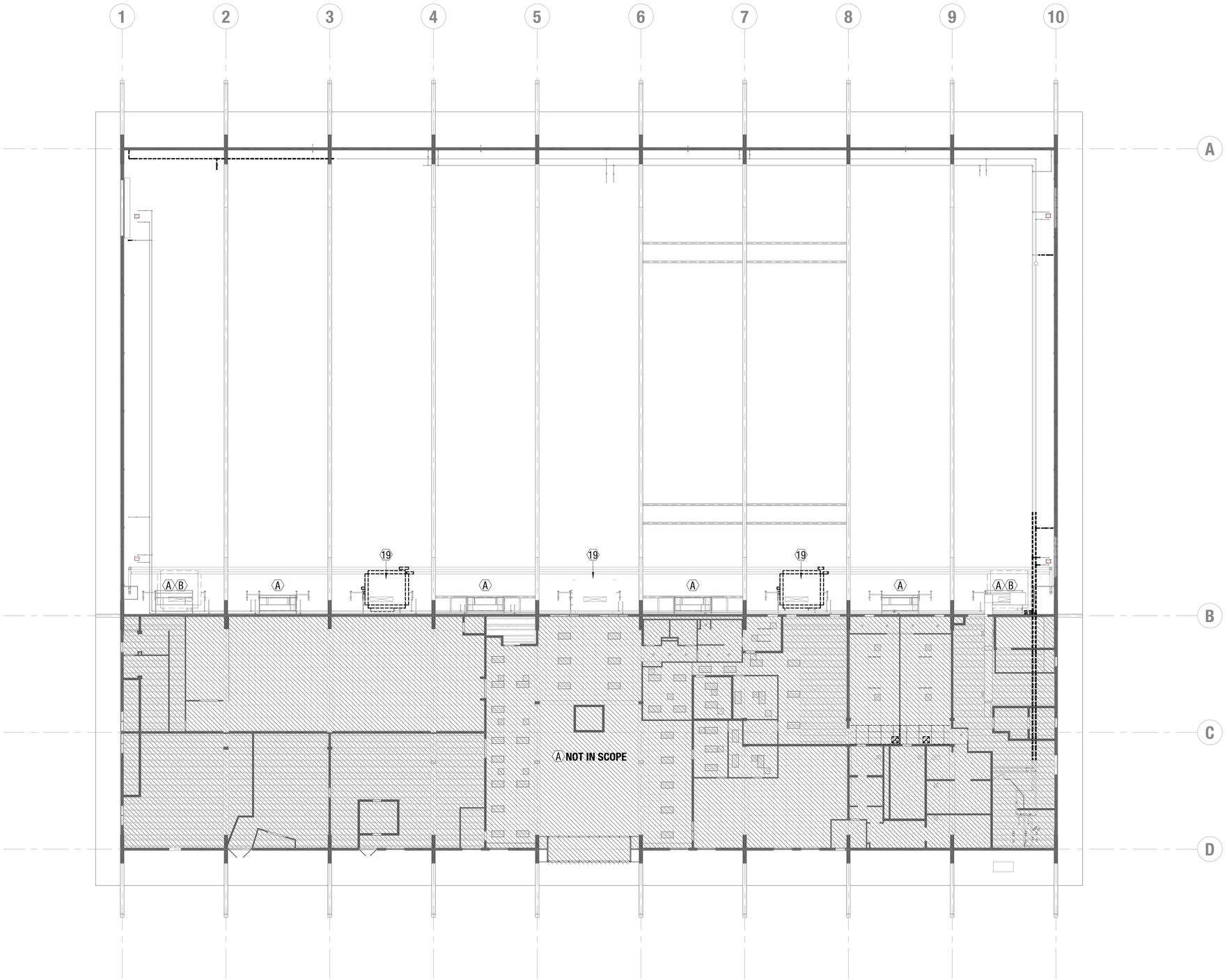
INDEX, LEGEND & GENERAL PROJECT DATA

G0.01

DEMOLITION KEYED NOTES

19 REFERENECE MECHANICAL DEMOLITION PLANS FOR SCOPE
A EXISTING CONSTRUCTION TO REMAIN
B EXISTING EQUIPMENT TO REMAIN.



01 DEMO CEILING PLAN – LEVEL 01
1/16" = 1'–0"

0' 8' 16' 32' 64'

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LIGHTVOX STUDIO PLLC
o 602 604 6626
info@lightvoxstudio.com
4602 E Thomas Rd Ste 100
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REGISTERED ARCHITECT
CERTIFICATE NO.
58928
BENJAMIN M.
MULLINGS
ARIZONA U.S.A.

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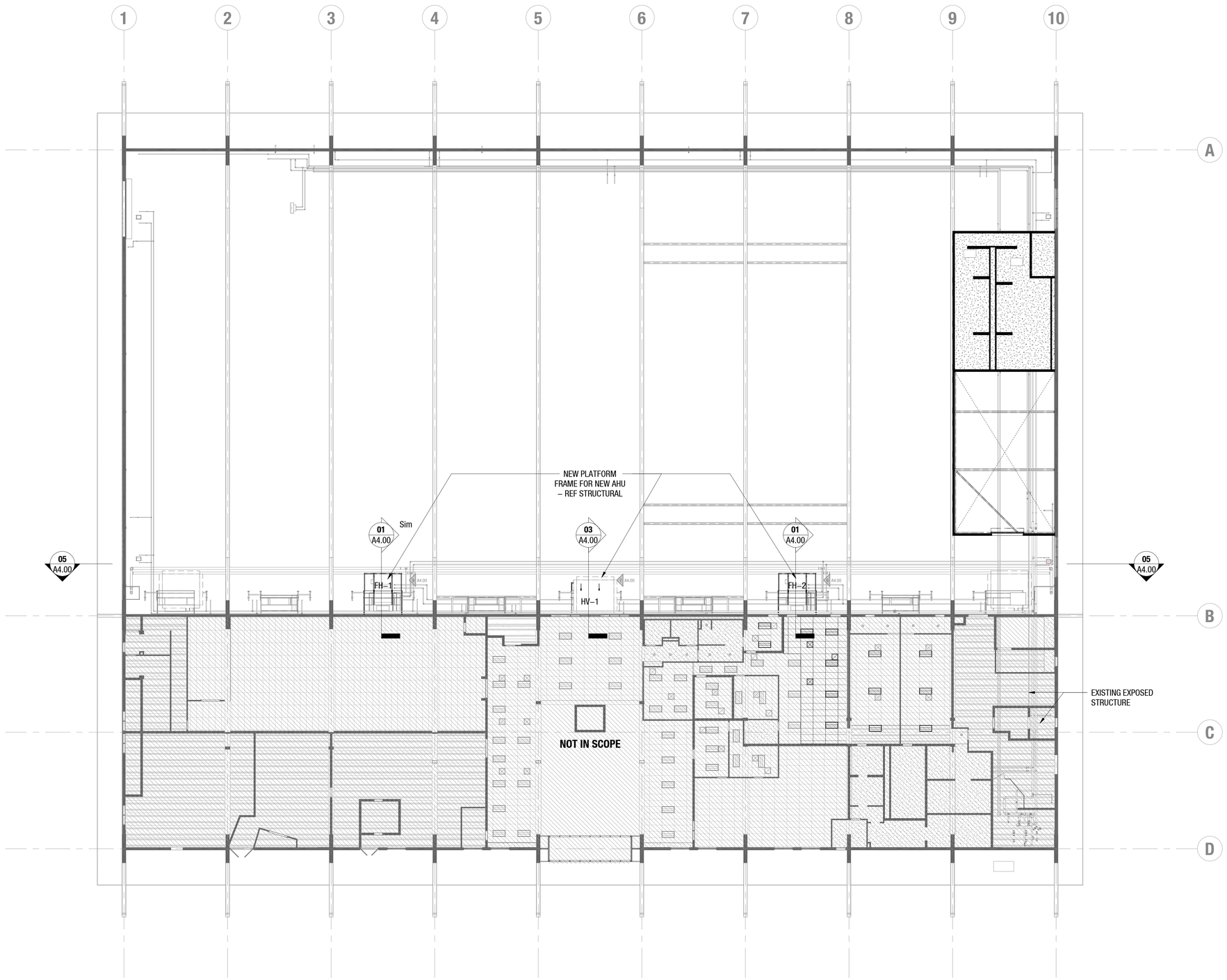
LEVEL 01 DEMOLITION CEILING PLAN

AD2.00



CEILING PLAN NOTES

1. ALL VISIBLE MECHANICAL, ELECTRICAL, PLUMBING AND FIRE SUPPRESION LINES EXPOSED IN CEILING ARE TO BE COORDINATED WITH ARCHITECT. CONTRACTOR TO PROVIDE A ROUTING PLAN PRIOR TO THE START OF WORK
2. ALL GYPSUM CEILINGS TO BE PAINTED PT–1 U.N.O.
3. PROVIDE BLOCKING AS REQUIRED FOR ALL CEILING MTD EQUIPMENT
4. WHERE NOT OTHERWISE INDICATED, LIGHTS, DIFFUSERS AND MECHANICAL EQUIPMENT CAN BE ASSUMED TO BE CENTERED ON OPENING OR SPACE AS SHOWN. REF ELECTRICAL FOR LIGHTING. REF MECHANICAL FOR DISTRIBUTION DEVICES
5. PROVIDE ACCESS DOORS OF APPROPRIATE SIZE, TYPE AND FIRE RATING FOR ALL CONCEALED ITEMS THAT REQUIRE ADJUSTMENT, MAINTENANCE, MONITORING, ETC. COORDINATE LOCATIONS WITH ARCHITECT.
6. CEILING ELEVATIONS NOTED ARE TAKEN FROM LEVEL 0'–0".

01 **LEVEL 01 REFLECTED CEILING PLAN**
1/16" = 1'–0"

0' 8' 16' 32' 64'

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Phoenix AZ 85018

REGISTERED ARCHITECT
59828
BENJAMIN M. MULLINGS
ARIZONA U.S.A.

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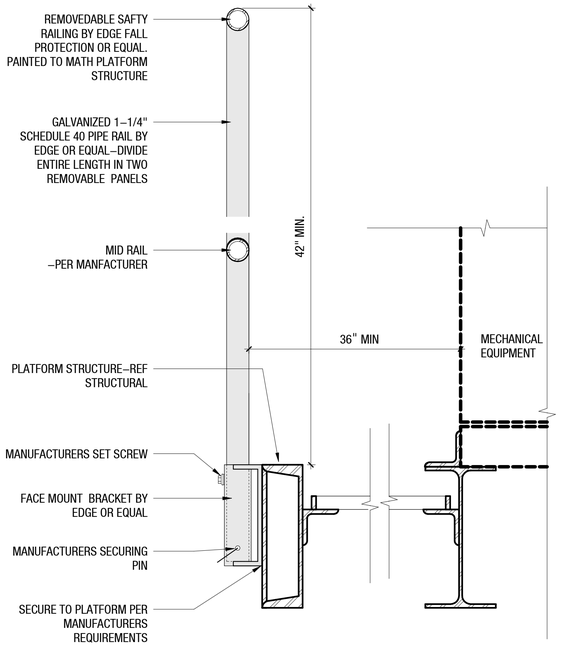
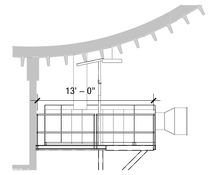
LEVEL 01 OVERALL CEILING PLAN

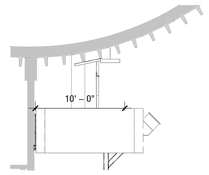
A2.00



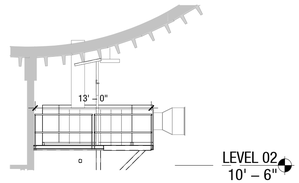
08 TYPICAL REMOVABLE PIPE RAILING
3" = 1'–0"



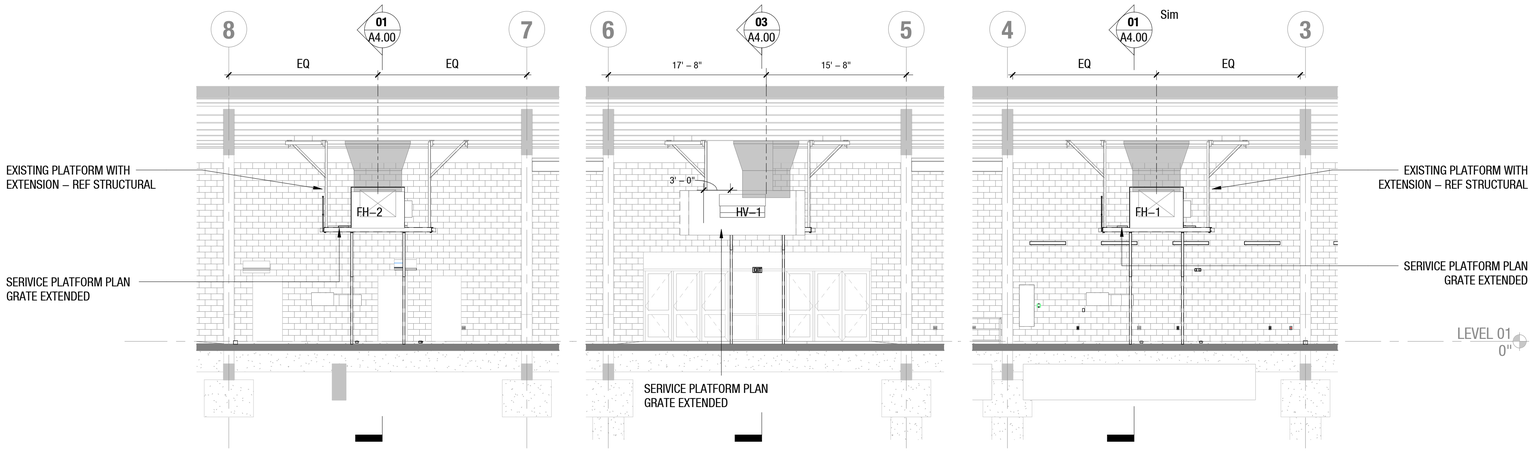
RAILING ELEVATIONS – FH–2



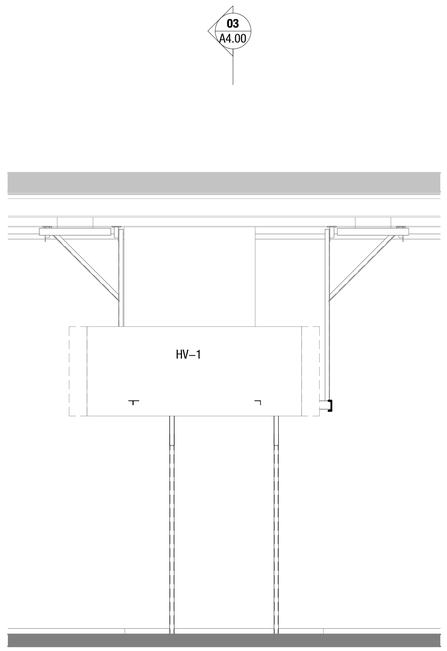
RAILING ELEVATION – HV–1



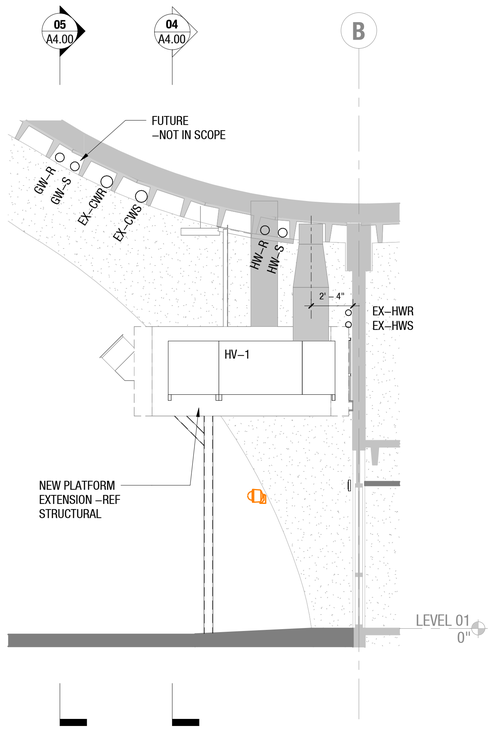
RAILING ELEVATIONS – FH1



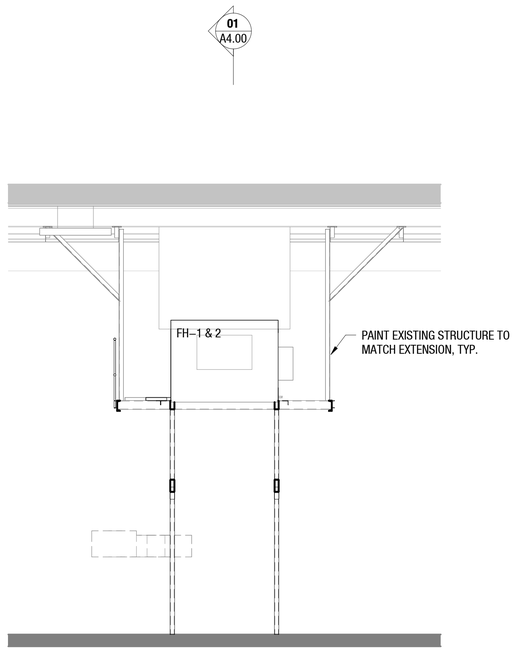
05 BUILDING SECTION
1/8" = 1'–0"



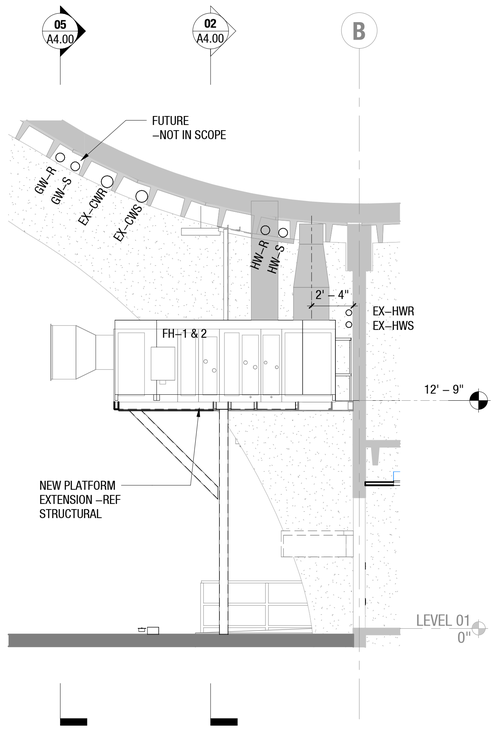
04 MECH STRUCTURE LONGITUDINAL SECTION
1/4" = 1'–0"



03 AHU PLATFORM3
1/4" = 1'–0"



02 MECH STRUCTURE LONGITUDINAL SECTION
1/4" = 1'–0"



01 AHU PLATFORM1
1/4" = 1'–0"

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o 602 604 6626
info@lightvoxstudio.com
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REGISTERED ARCHITECT – CERTIFICATE NO. 58928 – BENJAMIN M. MULLINGS – ARIZONA

LIGHTVOX

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FLAGSTAFF, AZ 86011

BUILDING ELEVATIONS & SECTIONS

A4.00

GENERAL STRUCTURAL NOTES:

I. GENERAL:

A. ALL CONSTRUCTION AND TESTING IS TO BE IN STRICT ACCORDANCE WITH THE 2021 INTERNATIONAL BUILDING CODE AND ALL RELATED PUBLICATIONS OF THE I.C.C.
B. ALL PRODUCT EVALUATION REPORTS REFERENCED ON THIS PROJECT ARE AVAILABLE FREE OF CHARGE AT HTTP://WWW.ICC-ES.ORG OR HTTP://WWW.IAPMOES.ORG/EVALUATIONREPORTS.
C. THE STRUCTURAL DRAWINGS SHOW THE COMPLETED PROJECT. THEY DO NOT INCLUDE COMPONENTS THAT MAY BE NECESSARY FOR CONSTRUCTION SAFETY. THE CONTRACTOR IS RESPONSIBLE FOR SAFETY ON AND AROUND THE JOBSITE DURING CONSTRUCTION.
D. STRUCTURAL NOTES SHALL BE USED ALONG WITH THE SPECIFICATIONS AND DRAWINGS. WHERE THE STRUCTURAL NOTES, STRUCTURAL AND ARCHITECTURAL DRAWINGS OR SPECIFICATIONS DISAGREE, THE CONTRACTOR MAY REQUEST A CLARIFICATION DURING THE BIDDING PERIOD. OTHERWISE THE MORE STRINGENT REQUIREMENTS SHALL CONTROL (AS DETERMINED BY THIS ENGINEER).
E. PROVIDE ALL TEMPORARY BRACING, SHORING, GUYING OR OTHER MEANS TO AVOID EXCESSIVE STRESSES AND TO HOLD STRUCTURAL ELEMENTS IN PLACE DURING CONSTRUCTION.
F. ESTABLISH AND VERIFY ALL OPENINGS AND INSERTS FOR MECHANICAL, ELECTRICAL AND PLUMBING WITH THE APPROPRIATE TRADES, DRAWINGS AND SUBCONTRACTORS PRIOR TO CONSTRUCTION.
G. VERIFY AND COORDINATE ALL DIMENSIONS AND CONDITIONS PRIOR TO STARTING WORK. NOTIFY THE ARCHITECT OF ANY DISCREPANCIES OR INCONSISTENCIES.
H. STRUCTURAL DETAILS: DETAILS ARE APPLICABLE WHERE INDICATED BY SECTION CUT, BY NOTE OR BY DETAIL TITLE. PROVIDE SIMILAR DETAILS AT SIMILAR CONDITIONS UNLESS NOTED OTHERWISE. THE CONTRACTOR MAY REQUEST A CLARIFICATION DURING THE BIDDING PERIOD OTHERWISE THE MORE STRINGENT REQUIREMENTS SHALL CONTROL (AS DETERMINED BY THIS ENGINEER).
I. CONSTRUCTION SHALL BE BORNE BY THE CONTRACTOR.
J. EXISTING CONDITIONS: CONTRACTOR SHALL VERIFY IN THE FIELD ALL DIMENSIONS AND CONDITIONS OF THE EXISTING STRUCTURE PRIOR TO BEGINNING ANY PERTINENT WORK. NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES BETWEEN THE DRAWINGS AND ACTUAL CONDITIONS.

II. DESIGN CRITERIA:

A. BUILDING CODE: 2021 I.B.C.

III. MATERIALS AND EXECUTION:

A. BASEPLATE GROUT: GROUT FOR USE UNDER BASE PLATES IS TO BE HIGH-STRENGTH, NON-METALLIC, NON-SHRINK GROUT. MINIMUM COMPRESSIVE STRENGTH AT 3 DAYS IS TO BE 3000 PSI. GROUT MAY BE INSTALLED EITHER AS A DRYPACK OR FLOWABLE MIXTURE. BUT SHALL BE DRYPACKED AT ALL EXPOSED CONDITIONS. EDGES OF GROUT AT EXPOSED CONDITIONS SHALL BE CUT AT A 15 DEGREE ANGLE FROM VERTICAL SUCH THAT THE GROUT IS THE SAME WIDTH AT THE STEEL PLATE AT THE TOP AND WIDER AT THE BOTTOM.

B. MASONRY: GROUT FILL TO BE 2000 PSI AT 28 DAYS. DESIGN F'M = 2000 PSI PER TMS 602 SPECIFICATION.

C. STRUCTURAL AND MISCELLANEOUS STEEL:

1. MATERIAL PROPERTIES:

a) TO BE ASTM A 36 UNLESS NOTED OTHERWISE.
b) ALL WIDE-FLANGE SHAPES ARE TO BE ASTM A992 - GRADE 50.
c) SQUARE OR RECTANGULAR TUBES ARE TO BE ASTM A 500, GRADE C, FY = 50 KSI.
d) ALL STEEL IS TO BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH A.I.S.C. SPECIFICATIONS, LATEST ADOPTION.

2. WELDING:

a) FOR STRUCTURAL STEEL TO BE IN ACCORDANCE WITH A.W.S. REQUIREMENTS FOR E70XX ELECTRODES.
b) ALL FILLET WELDS UP TO 5/16" SHALL BE MADE AS SINGLE PASS WELDS.
c) ALL EXPOSED WELDING IS TO BE OF ARCHITECTURAL QUALITY AND SUBJECT TO THE APPROVAL OF THE ARCHITECT. GRIND ALL EXPOSED WELDS TO A SMOOTH CONDITION. DO NOT GRIND BEYOND STRUCTURAL THROAT REQUIREMENTS INDICATED.
d) ALL WELD BACKER BARS AND/OR ERECTION AIDS ARE TO BE REMOVED AT ALL CONDITIONS. EXPOSED SURFACES SHALL BE GROUND SMOOTH WITH ANY HOLES OR GOUGES FILLED AND GROUND SMOOTH. BACK-GOUGE AND INSTALL REINFORCEMENT FILLET WELDS WHERE INDICATED IN AWS CJP JOINT REQUIREMENTS.

3. BOLTS AND OTHER FASTENERS:

a) TYPICAL ANCHOR RODS SHALL BE ASTM F1554, GRADE 36, U.N.O. BASE PLATE HOLES AND WASHERS FOR ANCHOR RODS ARE TO BE PER AISC CONSTRUCTION MANUAL TABLE 14-2.
b) ADHESIVE ANCHORS FOR ATTACHMENT TO MASONRY ARE TO BE ASTM A307 OR A36 THREADED RODS WITH SIMPSON "SET-3G" ADHESIVE, INSTALLED IN ACCORDANCE WITH ICC-ES ESR-4844. DRILLED HOLE DIMENSIONS ARE TO BE AS FOLLOWS IN EXISTING SOLID GROUTED MASONRY UNLESS NOTED OTHERWISE. HOLE DEPTH IS MEASURED FROM THE OUTSIDE FACE OF THE MASONRY.

ROD DIA./BAR SIZE	DRILL BIT DIA.	HOLE DEPTH, HEF
1/2"	9/16"	4"
5/8"	11/16"	5"

c) ADHESIVE ANCHORS FOR ATTACHMENT TO CONCRETE ARE TO BE ASTM A307 OR A36 THREADED RODS WITH SIMPSON "SET-3G" ADHESIVE, INSTALLED IN ACCORDANCE WITH ICC-ES ESR-4057. DRILLED HOLE DIMENSIONS ARE TO BE AS FOLLOWS IN EXISTING CONCRETE UNLESS NOTED OTHERWISE. HOLE DEPTH IS MEASURED FROM THE OUTSIDE FACE OF THE CONCRETE.

ROD DIA./BAR SIZE	DRILL BIT DIA.	HOLE DEPTH
1/2"	9/16"	4"
5/8"	11/16"	5"

4. FLOOR PLANKS:

a) FLOOR PLANKS ARE TO BE 1-1/2" X 13 GAGE GALVANIZED STEEL PERF-O GRIP PLANKS BY MCNICHOLS.
b) PLANK WIDTHS AND ARRANGEMENT ARE TO BE AS INDICATED ON THE PLANS.
c) PROVIDE STAIR-TREAD TYPE CLOSED ENDS ON THE EXPOSED ENDS OF THE PLANKS (THE END FURTHEST AWAY FROM THE EXISTING MASONRY WALL).
d) FASTEN PLANKS TO ALL SUPPORTS AT EACH EDGE OF EACH PANEL USING MCNICHOLS STANDARD BOLT SEAT HOLE INSERT WITH #12 SELF-DRILLING, SELF-TAPPING CORROSION-RESISTANT SCREWS INTO THE SUPPORT MEMBER BELOW THE PLANK.

D. SPECIAL INSPECTION:

1. ALL SPECIAL STRUCTURAL INSPECTION SHALL BE PERFORMED IN ACCORDANCE WITH IBC CHAPTER 17 AND AS FOLLOWS. THE PROJECT OWNER OR HIS AGENT SHALL ENGAGE A QUALIFIED INSPECTION AGENCY OR AGENCIES TO PERFORM THE INSPECTIONS THAT ARE LISTED IN THE FOLLOWING PARAGRAPHS. ALL STRUCTURAL INSPECTORS TO BE ENGAGED SHALL BE COMPETENT AND HAVE ADEQUATE TRAINING OR EXPERIENCE. THE INSPECTING AGENCY SHALL PROVIDE WRITTEN DOCUMENTATION OF PRIOR RELEVANT AND SIMILAR EXPERIENCE AND/OR TRAINING TO THIS ENGINEER FOR PRIOR REVIEW AND APPROVAL.
2. STRUCTURAL INSPECTORS OF ALL STRUCTURAL WELDING SHALL BE WELDING INSPECTORS (WI) OR SENIOR WELDING INSPECTORS (SWI) AS DEFINED IN AWS B5.1, OR SHALL BE QUALIFIED UNDER THE PROVISIONS OF AWS D1.1, SECTION 6.1.4. WRITTEN EVIDENCE OF THESE QUALIFICATIONS SHALL BE SUBMITTED TO THIS ENGINEER FOR PRIOR REVIEW AND APPROVAL.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SCHEDULING AND MONITORING OF ALL SPECIAL INSPECTIONS. REASONABLE ADVANCE NOTICE SHALL BE GIVEN TO THE SPECIAL INSPECTOR AND/OR THE INSPECTION AGENCY. NO PERTINENT WORK SHALL PROCEED OR BE COVERED UP BY OTHER WORK UNTIL SPECIAL INSPECTION HAS TAKEN PLACE AND HAS INDICATED COMPLIANCE. COPIES OF ALL WRITTEN SPECIAL INSPECTION REPORTS SHALL BE PROMPTLY FORWARDED TO THIS ENGINEER BY THE INSPECTING AGENCY.

4. SPECIAL INSPECTION IS REQUIRED IN ACCORDANCE WITH I.B.C. CHAPTER 17 FOR THE FOLLOWING ITEMS.

a) STEEL CONSTRUCTION: ALL STEEL CONSTRUCTION IS TO HAVE STRUCTURAL INSPECTION IN ACCORDANCE WITH I.B.C. SECTION 1705.2 AND THE QUALITY ASSURANCE PROVISIONS OF AISC 360, SECTION N5. INSPECTIONS ARE TO INCLUDE ALL FIELD WELDING OF STRUCTURAL STEEL ELEMENTS.

b) ADHESIVE ANCHORS: ALL ADHESIVE ANCHOR INSTALLATION IS TO HAVE SPECIAL STRUCTURAL INSPECTION PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE REFERENCED I.C.C. REPORT.

rudow + berry
structural engineering
4032 north miller road suite 100
scottsdale, arizona 85251
tel 480.946.8171 fax 480.429.0033
www.rudowberry.com
r+b job no.: 18104.4

-- 100% CD ISSUANCE 03.16.26
NO. DESCRIPTION DATE

LIGHTVOX STUDIO PLLC
o 602 604 6626
info@lightvoxstudio.com
4602 E Thomas Rd Ste 100
Phoenix AZ 85018

REGISTERED PROFESSIONAL ENGINEER (CIVIL) CERTIFICATE NO. 19788 MARK A. RUDOW Date Signed 3/16/26 ARIZONA, U.S.A.
EXPIRES 3/31/2028

PROJECT:
NAU FIELDHOUSE HVAC REPLACEMENT

3001.18.01/09.300.251

1050 S KNOLES DR.
FLAGSTAFF, AZ 86011

LIGHTVOX

GENERAL STRUCTURAL NOTES

S0.01

rudow + berry
structural engineering

4032 north miller road suite 100
scottsdale, arizona 85251
tel 480.946.8171 fax 480.429.0033
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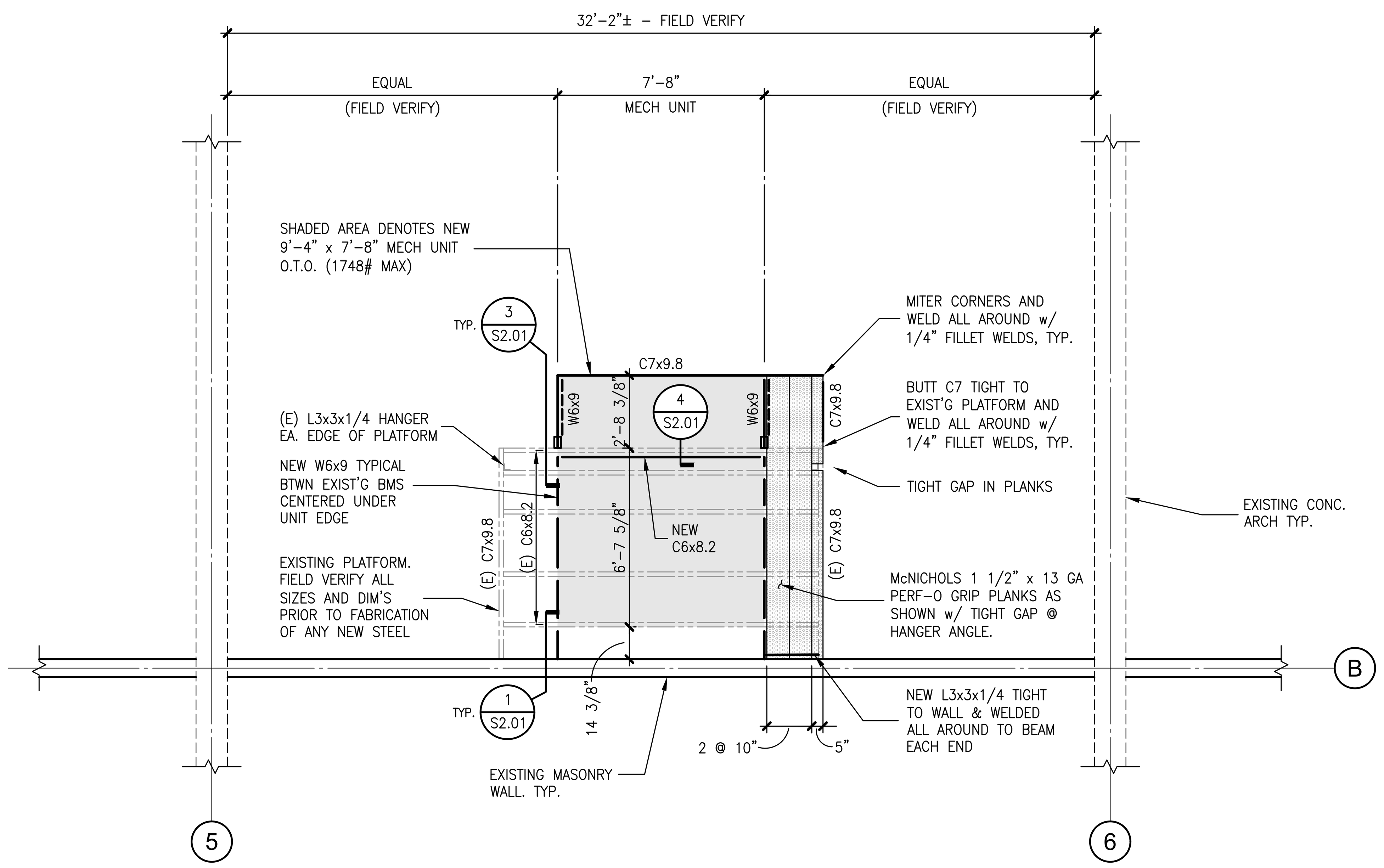
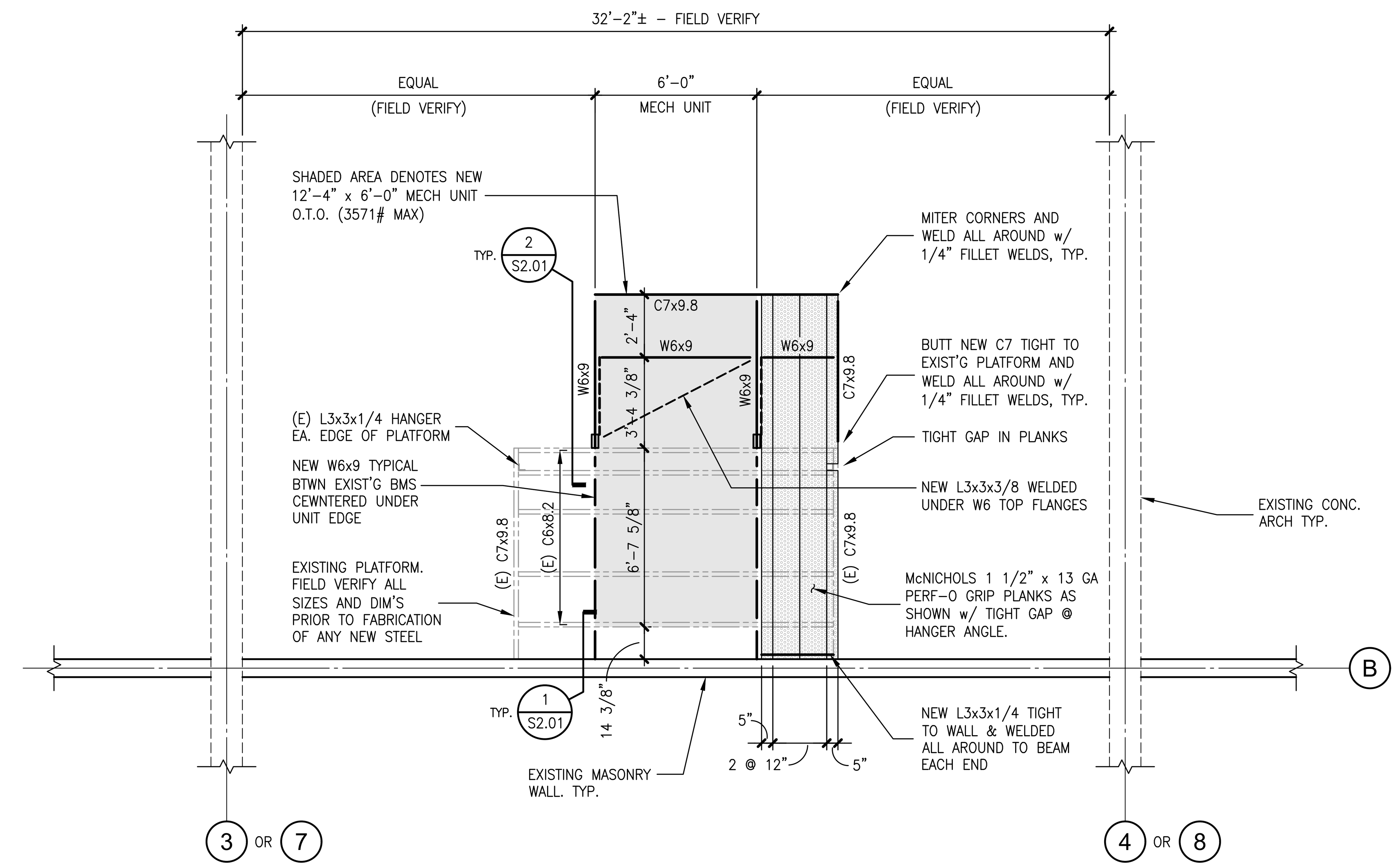


2 MECHANICAL UNIT SUPPORT PLAN (HV-1)

1/4"=1'-0"



1 MECHANICAL UNIT SUPPORT PLAN (FH-1 & FH-2)

1/4"=1'-0"

NO.	DESCRIPTION	DATE
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19788 MARK A. RUDOW
EXPIRES 3/31/2028

LIGHTVOX STUDIO PLLC
o 602 604 6626
info@lightvoxstudio.com
4602 E Thomas Rd Ste 100
Phoenix AZ 85018

LIGHTVOX

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FLAGSTAFF, AZ 86011

ENLARGED MECH'L FRAMING PLANS

S1.01

rudow + berry
structural engineering
4032 north miller road suite 100
scottsdale, arizona 85251
tel 480.946.8171 fax 480.429.0033
www.rudowberry.com
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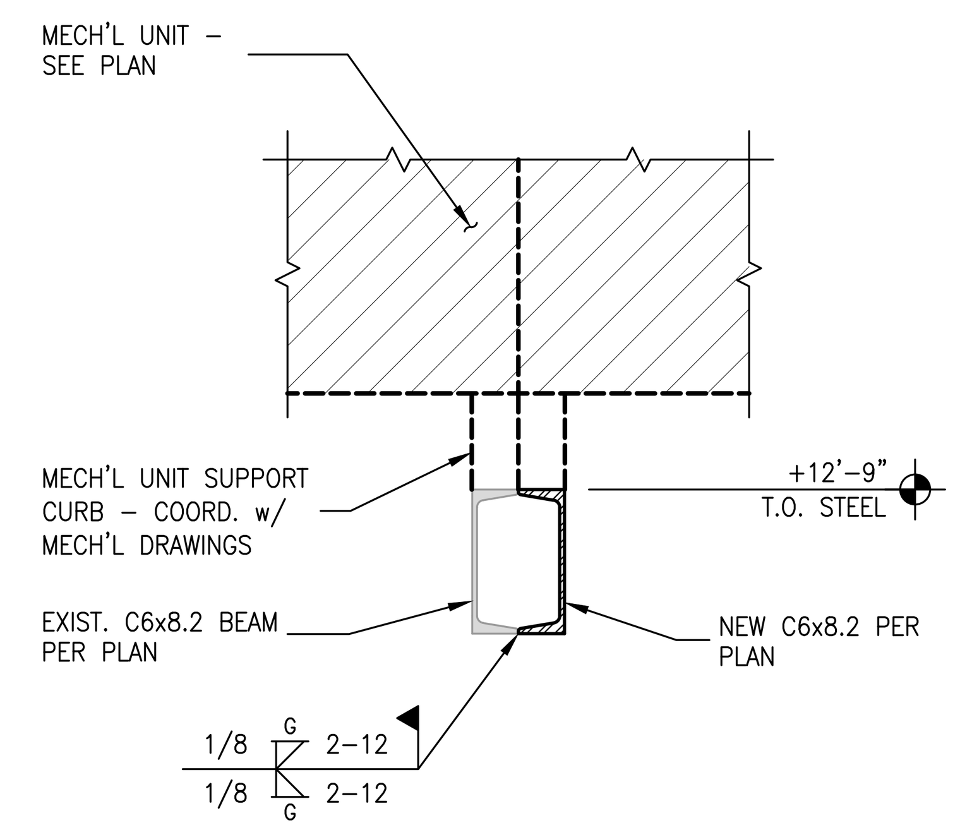

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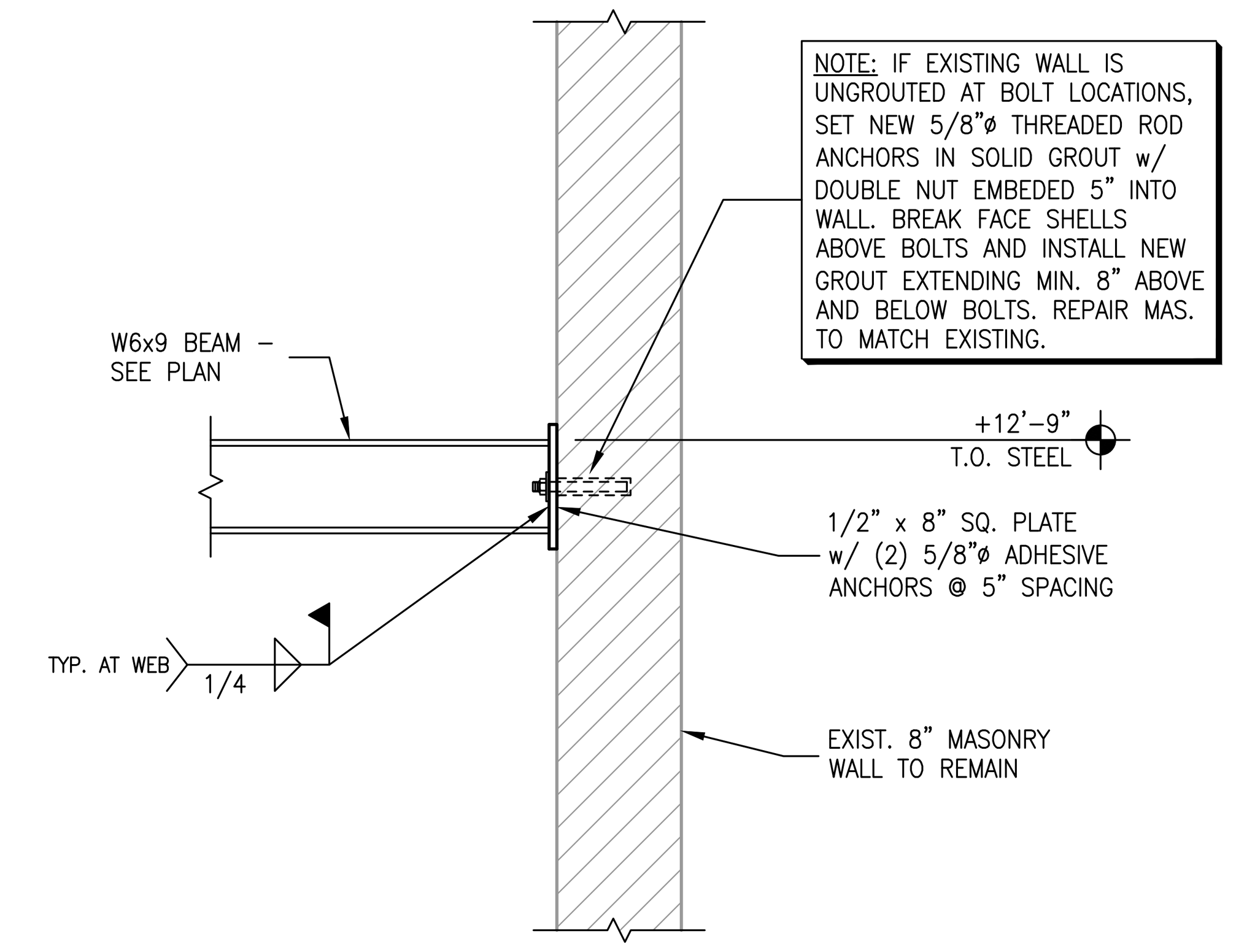

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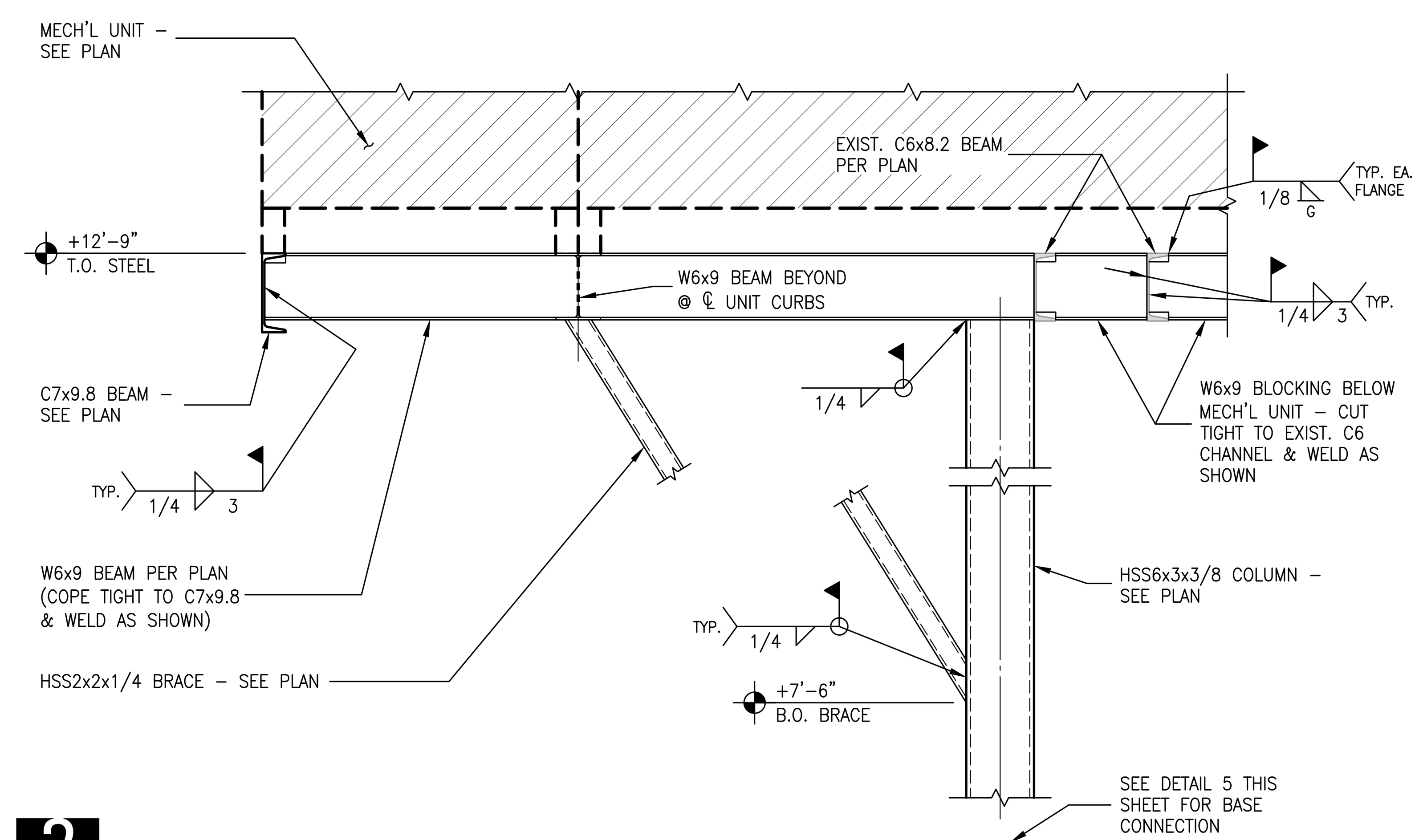

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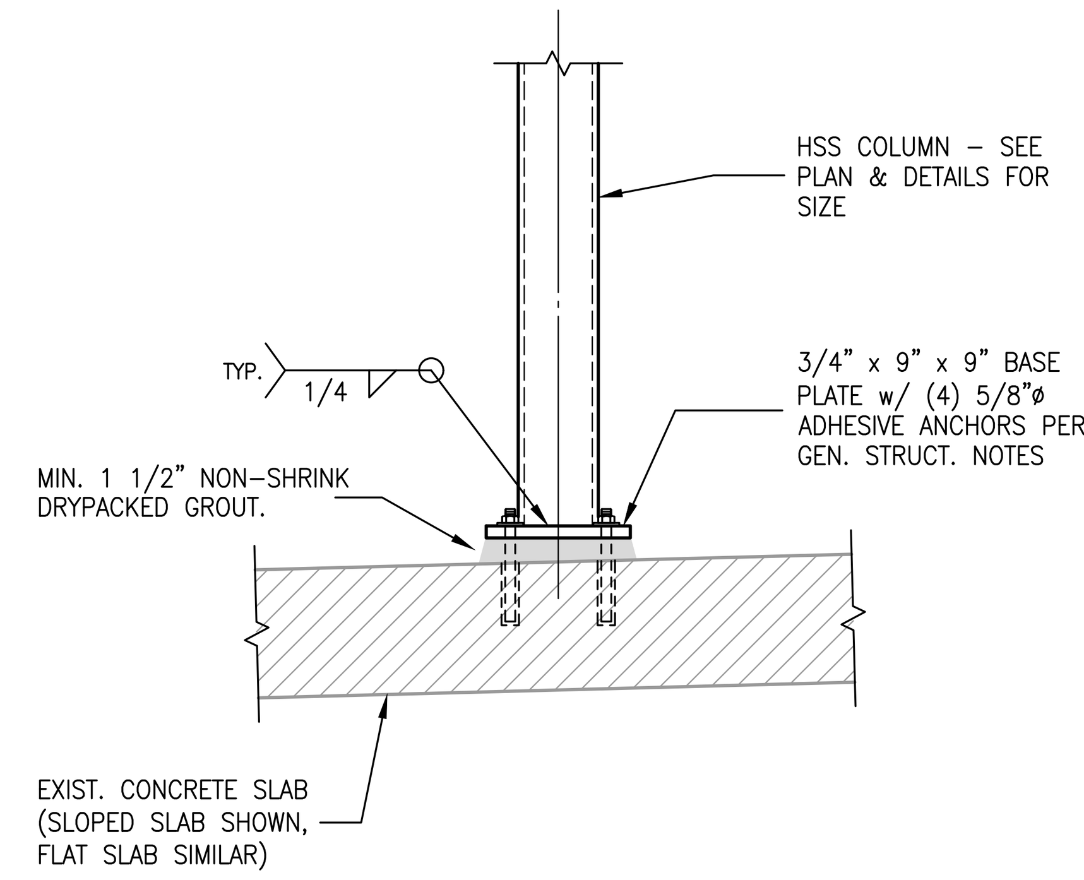

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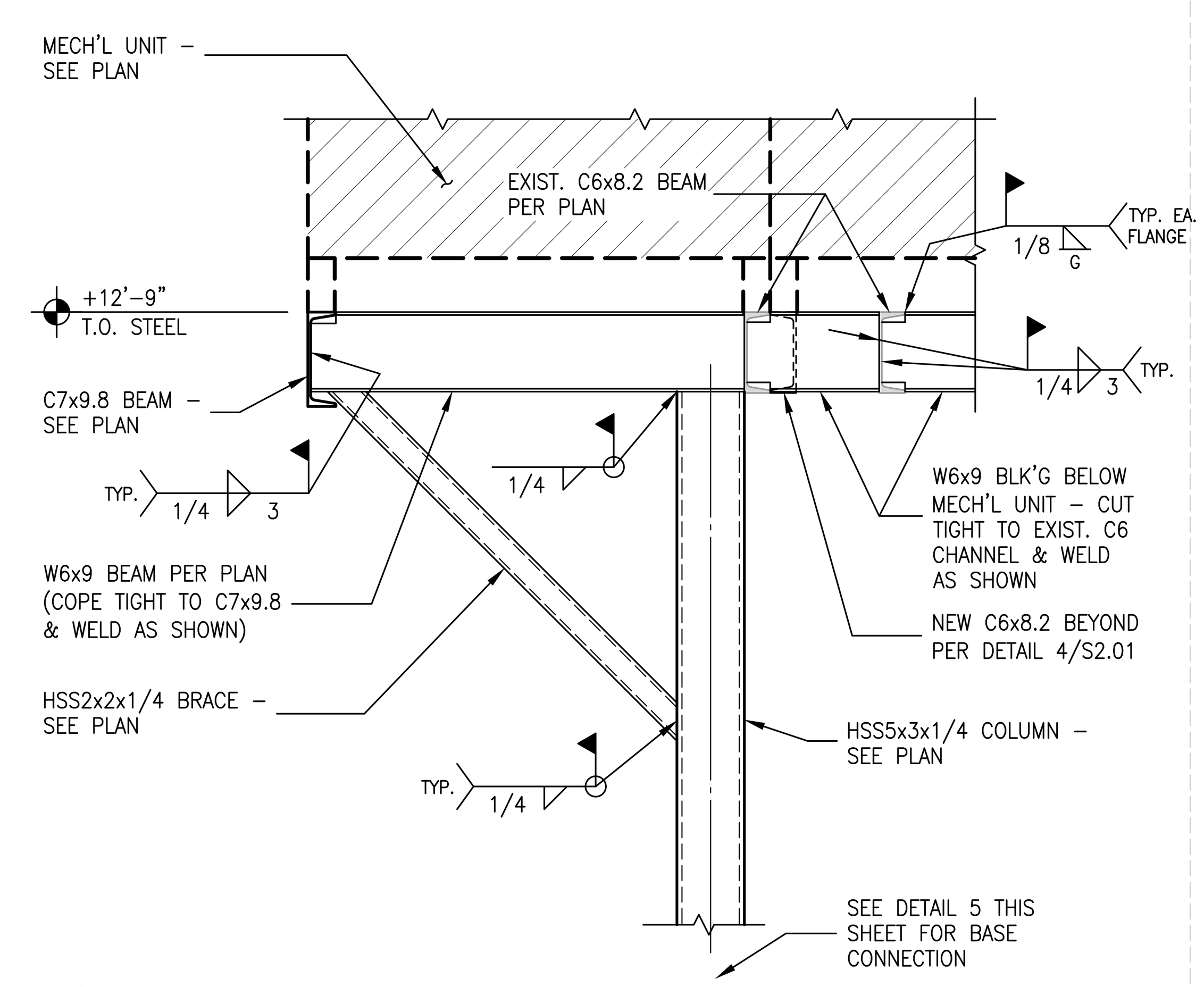


3

NO.	DESCRIPTION	DATE
--	100% CD ISSUANCE	03.16.26

REGISTERED PROFESSIONAL ENGINEER (STRUCTURAL) CERTIFICATE NO. 19788 MARK A. RUDOW ARIZONA, U.S.A.
EXPIRES 3/31/2028

LIGHTVOX STUDIO PLLC
o 602 604 6626
info@lightvoxstudio.com
4602 E Thomas Rd Ste 100
Phoenix AZ 85018

LIGHTVOX

PROJECT:
NAU FIELDHOUSE HVAC REPLACEMENT

3001.18.01/09.300.251

1050 S KNOLES DR.
FLAGSTAFF, AZ 86011

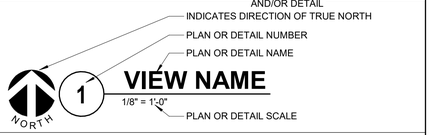
FRAMING DETAILS

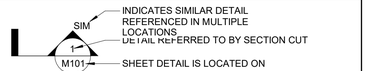
S2.01

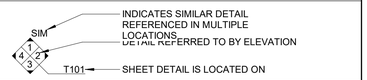
VIEW KEY

NAME — LEVEL NAME
10' - 0" — HEIGHT ABOVE PROJECT 0' - 0"

1 — INDICATES NOTE USED TO DESCRIBE ADDITIONAL INFORMATION ABOUT WORK REQUIRED, SPECIFIC TO THE SHEET AND/OR DETAIL







LINE TYPE KEY:

- NEW WORK BY THIS CONTRACTOR (DARK SOLID LINE)
- NEW WORK UNDERFLOOR OR UNDERGROUND BY THIS CONTRACTOR (DARK LONG DASHED LINE)
- NEW WORK BY OTHERS AND/OR EXISTING TO REMAIN (LIGHT SOLID LINE)
- EXISTING TO BE REMOVED BY THIS CONTRACTOR (DARK SHORT DASHED LINE)

FIRE / SMOKE BARRIER DESIGNATIONS

THE LINE TYPES SHOWN ARE FOR THE CONVENIENCE OF THE CONTRACTOR. THE CONTRACTOR SHALL VERIFY RATINGS WITH THE LATEST SET OF ARCHITECTURAL PLANS AND FURNISH ALL MATERIALS REQUIRED TO COMPLY WITH THOSE RATINGS WHETHER SHOWN OR NOT.

ALL FLOOR ASSEMBLIES SHALL BE DESIGNATED AS HOUR FIRE BARRIER(S), UNLESS NOTED OTHERWISE ON THE PLANS. RATINGS WERE ACQUIRED FROM THE ARCHITECTURAL PLANS.

1 HOUR FIRE BARRIER	— — — — — — — — — — — —

APPLICABLE CODES

CONTRACTOR SHALL COMPLY WITH APPLICABLE CODES AND LOCAL AMENDMENTS INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:

BUILDING CODE:	IBC 2021 EDITION
FIRE CODE:	IFC 2021 EDITION
PLUMBING CODE:	IPC 2021 EDITION
MECHANICAL CODE:	IMC 2021 EDITION
ELECTRICAL CODE:	NFPA 70 (NEC) 2020 EDITION
ENERGY CONSERVATION CODE:	IECC 2021 EDITION
HEALTH DEPARTMENT CODE:	CURRENT EDITION
LOCAL BUILDING CODE:	CURRENT EDITION
STANDARDS:	NAU TECHNICAL STANDARDS CURRENT EDITION

CONTRACTOR ABBREVIATION KEY

ABBR:	DESCRIPTION:
C.M.	CONSTRUCTION MANAGER
E.C.	ELECTRICAL CONTRACTOR
F.P.C.	FIRE PROTECTION CONTRACTOR
G.C.	GENERAL CONTRACTOR
M.C.	MECHANICAL CONTRACTOR

PIPING SYMBOL LIST

NOT ALL SYMBOLS MAY APPLY.

SYMBOL:	DESCRIPTION:
—CWR—	CHILLED WATER RETURN
—CWS—	CHILLED WATER SUPPLY
—CD—	CONDENSATEDRAIN
—GWR—	GLYCOL WATER RETURN
—GWS—	GLYCOL WATER SUPPLY
—HWR—	HEATING WATER RETURN
—HWS—	HEATING WATER SUPPLY
—LPC—	LOW PRESSURE CONDENSATE
—MPS—	LOW PRESSURE STEAM
—PC—	PUMPED CONDENSATE
—PD—	PUMPED DISCHARGE
	PIPE CAP
	PIPE DOWN
	PIPE UP OR UP/DOWN
	PITCH PIPE IN DIRECTION
	DIRECTION OF FLOW IN PIPE
	NEW CONNECTION
	DIELECTRIC CONNECTION
	UNION/FLANGE
	SHUTOFF VALVE NORMALLY OPEN
	SHUTOFF VALVE NORMALLY CLOSED
	THROTTLING VALVE
	BALANCING VALVE (NUMBER INDICATES GPM)
	AUTOMATIC BALANCING VALVE
	MIXING VALVE
	CONTROL VALVE (THREE-WAY)
	CONTROL VALVE (TWO-WAY)
	SOLENOID VALVE
	CHECK VALVE
	SAFETY/RELIEF VALVE
	PRESSURE REDUCING VALVE (LIQUID/GAS)
	PRESSURE REDUCING VALVE (STEAM)
	TRIPLE DUTY VALVE (ANGLE TYPE)
	TRIPLE DUTY VALVE (IN-LINE TYPE)
	PUMP
	VACUUM BREAKER
	"WYE" - STRAINER
	"WYE" - STRAINER W/SHUTOFF VALVE AND HOSE CONNECTION WITH CAP
	BASKET STRAINER
	FLEXIBLE CONNECTION
	PRESSURE/TEMPERATURE TEST PLUG
	REDUCER - REFERENCE SPECIFICATION FOR CONCENTRIC/ECCENTRIC AND FOT/FOB
P	PRESSURE GAUGE (FURNISHED WITH BALL VALVE)
	SUCTION DIFFUSER WITH SUPPORT FOOT
	AUTOMATIC AIR VENT
	MANUAL AIR VENT
	DRAIN VALVE WITH HOSE CONNECTION AND CAP
T	TEMPERATURE SENSOR WITH WELL
T	THERMOMETER WITH WELL (DIAL TYPE)
	THERMOMETER WITH WELL (FILLED TYPE)
FM	FLOW METER
FS	FLOW SENSOR
F	FLOW SWITCH
T T-*	STEAM TRAP (REFER TO SCHEDULE)
T-*	F&T STEAM TRAP (REFER TO SCHEDULE)
T-*	INVERTED BUCKET STEAM TRAP (REFER TO SCHEDULE)
	ALIGNMENT GUIDE
	PIPE ANCHOR
	EXPANSION JOINT
T	THERMOSTAT/SENSOR
T	THERMOSTAT/SENSOR w/HEAVY DUTY ENCLOSURE
	DIFFERENTIAL PRESSURE SENSOR
C	CARBON MONOXIDE SENSOR
C2	CARBON DIOXIDE SENSOR
H	HUMIDISTAT SENSOR
H	HUMIDISTAT/SENSOR (DUCT MOUNTED)
O	OCCUPANCY SENSOR
P	PRESSURE SENSOR/MONITOR
P	PRESSURE SENSOR (DUCT MOUNTED)

MECHANICAL ABBREVIATION KEY

ABBR:	DESCRIPTION:
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
C	COMMON
CO	CLEANOUT
CD-E	CEILING DIFFUSER - EXISTING
DPG (0-2")	DIFFERENTIAL PRESSURE GAUGE (RANGE)
DPS	DIFFERENTIAL PRESSURE SWITCH
FD	FIRE DAMPER
FSD	FIRE/SMOKE DAMPER
EA	EXHAUST/RELIEF AIR
EP	ELECTRICAL TO PNEUMATIC VALVE
MA	MIXED AIR
MV	MIXING VALVE
NC	NEW CONNECTION
N.C.	NORMALLY CLOSED
NIC	NOT IN CONTRACT
N.O.	NORMALLY OPEN
OA	OUTSIDE AIR
PS	PRESSURE SWITCH
TYP	TYPICAL
RA	RETURN AIR
SA	SUPPLY AIR
UNO	UNLESS NOTED OTHERWISE

VENTILATION SYMBOL LIST

NOT ALL SYMBOLS MAY APPLY.

SYMBOL:	DESCRIPTION:
	DIRECTION OF AIR FLOW
	FLEXIBLE DUCT
	MANUAL VOLUME DAMPER
R	RISE IN DIRECTION OF AIR FLOW
D	DROP IN DIRECTION OF AIR FLOW
	DUCT CAP
	DUCT DOWN
	DUCT UP
	SUPPLY/OUTSIDE AIR DUCT SECTION
	RETURN AIR DUCT SECTION
	EXHAUST/RELIEF AIR DUCT SECTION
	4-WAY DIFFUSER WITH BLANKOFF IN ONE DIRECTION
CD-1 6/115	AIR TERMINAL PROPERTIES SYMBOL NECK SIZE/CFM
	OPPOSED BLADE DAMPER (REFER TO SCHEDULE)
	PARALLEL BLADE DAMPER (REFER TO SCHEDULE)
	DIFFERENTIAL PRESSURE SENSOR
C	CARBON MONOXIDE SENSOR
C2	CARBON DIOXIDE SENSOR
H	HUMIDISTAT SENSOR
H	HUMIDISTAT/SENSOR (DUCT MOUNTED)
O	OCCUPANCY SENSOR
P	PRESSURE SENSOR/MONITOR
P	PRESSURE SENSOR (DUCT MOUNTED)
T	THERMOSTAT/SENSOR
T	TEMPERATURE SENSOR (DUCT MOUNTED)
T	THERMOSTAT/SENSOR WITH HEAVY DUTY ENCLOSURE

MECHANICAL RENOVATION NOTES:

THESE NOTES APPLY TO ALL MECHANICAL SHEETS.

1. EXISTING CONDITIONS ARE SHOWN BASED ON INFORMATION OBTAINED FROM FIELD SURVEYS, EXISTING BUILDING DOCUMENTS, AND STAFF. VERIFY EXISTING CONDITIONS AND REPORT ANY CONFLICTS BEFORE PROCEEDING.
2. NOT ALL EXISTING DUCTWORK AND PIPING IS SHOWN. VERIFY EXISTING CONDITIONS BEFORE STARTING WORK. NOTIFY ENGINEER OF ANY CONFLICTS WITH NEW WORK.
3. FIELD VERIFY THE AVAILABLE CLEARANCES FOR PIPING BEFORE FABRICATION. RISES AND DROPS MAY BE NECESSARY BECAUSE OF EXISTING FIELD CONDITIONS.
4. EACH CONTRACTOR SHALL FIELD VERIFY ACCESSIBILITY TO THE AREA OF HIS WORK AND SHALL NOTIFY THE GENERAL CONTRACTOR PRIOR TO BIDDING IF OTHER UTILITIES ARE REQUIRED TO BE REMOVED OR RELOCATED TO ALLOW ACCESS TO HIS AREA OF WORK.
5. WHERE EXISTING MECHANICAL SYSTEMS ARE LOCATED IN AREAS THAT CONFLICT WITH NEW EQUIPMENT OR PIPING TO BE INSTALLED, EACH CONTRACTOR SHALL EITHER ARRANGE NEW EQUIPMENT, PIPING, OR DUCTWORK IN SUCH A FASHION THAT IT DOES NOT CONFLICT WITH EXISTING SYSTEMS, OR REWORK EXISTING MECHANICAL SYSTEMS TO ALLOW FOR INSTALLATION OF NEW EQUIPMENT, PIPING, OR DUCTWORK.
6. PROVIDE TEMPORARY CONNECTIONS TO MAINTAIN EXISTING SYSTEMS IN SERVICE DURING CONSTRUCTION. MAINTAIN ACCESS TO EXISTING MECHANICAL INSTALLTIONS WHICH REMAIN ACTIVE.
7. OBTAIN PERMISSION FROM OWNER BEFORE SHUTTING DOWN ANY SYSTEM FOR ANY REASON. MAINTAIN SERVICE TO ALL COMPONENTS THAT ARE TO REMAIN UNTIL NEW SYSTEMS ARE INSTALLED.
8. MAINTAIN EXISTING SYSTEM IN SERVICE UNTIL NEW SYSTEM IS COMPLETE AND READY FOR TIE IN AND SWITCHOVER. DRAIN SYSTEM ONLY TO MAKE SWITCHOVERS AND CONNECTIONS. OBTAIN PERMISSION FROM OWNER BEFORE PARTIALLY OR COMPLETELY DRAINING SYSTEM. MAKE CHANGEOVER TO NEW SYSTEMS WITH MINIMUM OUTAGE.

MECHANICAL GENERAL NOTES:

THESE NOTES APPLY TO ALL MECHANICAL SHEETS.

1. DRAWINGS SHOWING LOCATIONS OF EQUIPMENT, PIPING, ETC. ARE DIAGRAMMATIC AND MAY NOT ALWAYS REFLECT EXACT INSTALLATION CONDITIONS. DRAWINGS SHOW THE GENERAL ARRANGEMENT OF PIPING, EQUIPMENT, ETC., AND MAY NOT INCLUDE ALL OFFSETS AND FITTINGS REQUIRED FOR COMPLETE INSTALLATION. THE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS ACTUAL BUILDING CONSTRUCTION AND THE WORK OF OTHERS WILL PERMIT.
2. DO NOT SCALE DRAWINGS. VERIFY ALL DIMENSIONS AND CLEARANCES FROM ARCHITECTURAL, STRUCTURAL, SUBMITTALS, AND OTHER APPROPRIATE DRAWINGS OR PHYSICALLY AT SITE. REVIEW ALL DRAWINGS, INCLUDING THOSE OF OTHER TRADES.
3. COORDINATE ALL WORK WITH ALL OTHER TRADES PRIOR TO INSTALLATION TO PROVIDE CLEARANCES REQUIRED FOR OPERATION, MAINTENANCE, CODE COMPLIANCE, AND TO VERIFY NON-INTERFERENCE WITH OTHER WORK. DO NOT FABRICATE PRIOR TO VERIFICATION OF NECESSARY CLEARANCES FOR ALL TRADES. BRING ANY INTERFERENCES OR CONFLICTS TO THE ATTENTION OF THE ARCHITECT/ENGINEER BEFORE PROCEEDING WITH FABRICATION OR EQUIPMENT ORDERS.
4. REVIEW SPACE REQUIREMENTS OF EQUIPMENT SPECIFIED OR SUBSTITUTED AND MAKE REASONABLE ACCOMMODATIONS IN LAYOUT AND POSITIONING TO PROVIDE PROPER ACCESS.
5. ANY CHANGES REQUIRED TO ELIMINATE CONFLICTS OR THAT RESULT FROM A FAILURE TO COORDINATE SHALL BE MADE BY THE CONTRACTOR WITHOUT ADDITIONAL COST OR EXPENSE TO OTHERS.
6. EACH CONTRACTOR IS RESPONSIBLE FOR DAMAGE CAUSED BY THEIR ACTIONS TO WALLS, FLOORS, CEILINGS, AND ROOFS. THE CONTRACTOR WHOSE WORK CAUSES DAMAGE IS RESPONSIBLE FOR PATCHING TO MATCH ORIGINAL CONSTRUCTION, FIRE RATING, AND FINISH.
7. SEAL ALL FLOOR AND WALL PENETRATIONS AIRTIGHT WHERE PIPING PENETRATES. PENETRATIONS THROUGH EXTERIOR WALLS SHALL BE SEALED AIRTIGHT WITH WATERPROOFING MATERIALS RECOMMENDED BY MANUFACTURER FOR OUTDOOR USE.
8. DO NOT SUPPORT EQUIPMENT, PIPING, OR DUCTWORK FROM METAL DECKING OR OTHER NON-STRUCTURAL BUILDING ELEMENTS. ANCHORS EMBEDDED IN CONCRETE SHALL BE CRACKED CONCRETE APPROVED IN ACCORDANCE WITH SPECIFICATIONS.

MECHANICAL SHEET INDEX

NO.	DESCRIPTION	DATE
--	100% CD ISSUANCE	03.16.26

LIGHTVOX STUDIO PLLC
o 602 604 6626
info@lightvoxstudio.com
4602 E Thomas Rd Ste 100
Phoenix AZ 85018

LIGHTVOX

63742 robert j. kiesl 03-16-26 REGISTERED PROFESSIONAL ENGINEER ARIZONA, U.S.A.

EXP. 03-31-2029

PROJECT:
NAU Fieldhouse HVAC Replacement

09.300.251

1050 S KNOLES DR.
FLAGSTAFF, AZ 86011

MECHANICAL COVER SHEET

M000

IMEG
www.imegcorp.com
9000 E PIMA CENTER PARKWAY
SUITE 320
SCOTTSDALE, AZ 85258
P: 480.222.3771

0 1 2 3
REF: SCALE IN INCHES

PROJECT #18003389.00

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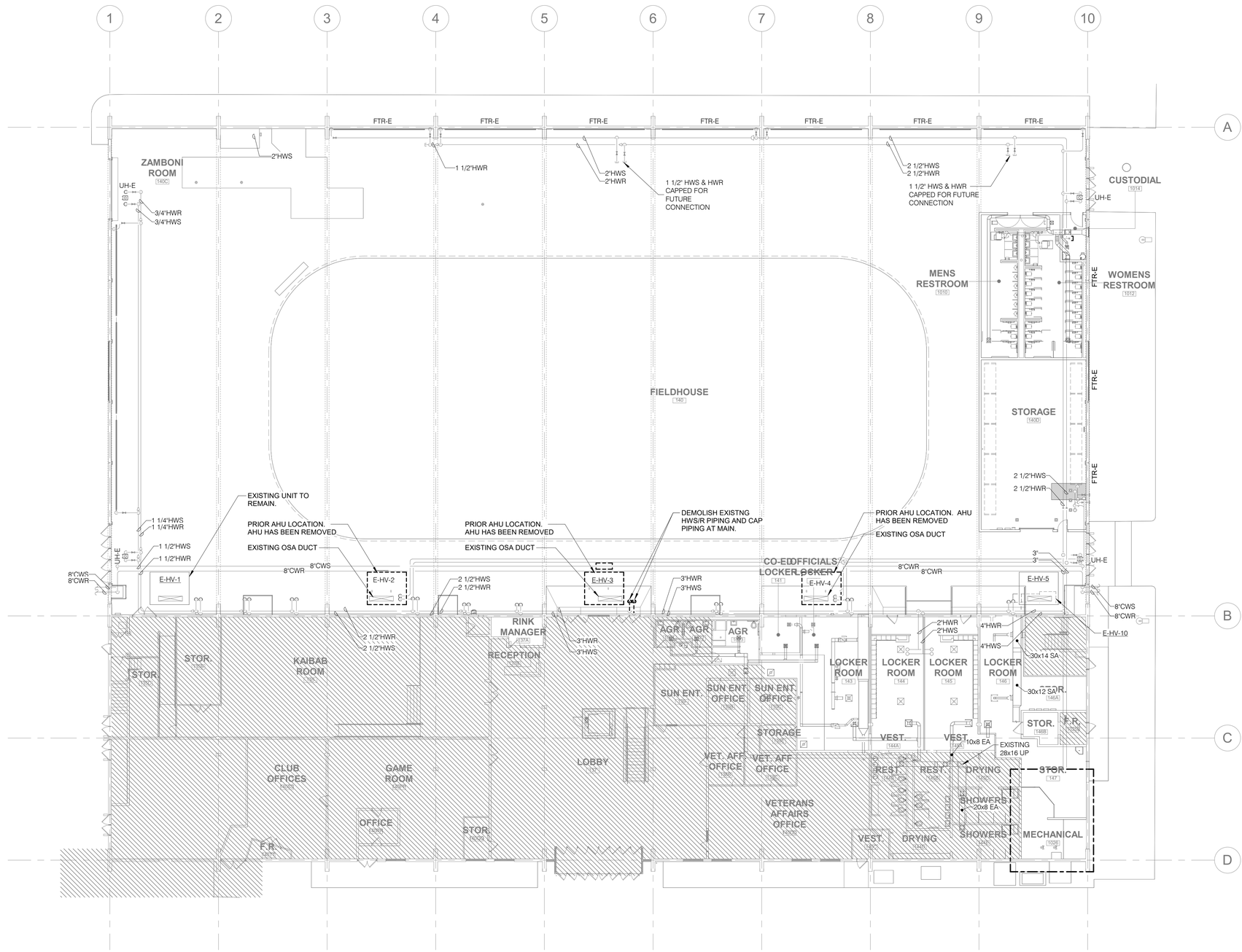

1 MECHANICAL DEMOLITION PLAN

1/16" = 1'-0"

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o 602 604 6626
info@lightvoxstudio.com
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76742
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03-16-26
ARIZONA, U.S.A.
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LIGHTVOX

MECHANICAL DEMOLITION PLAN

MD100

IMEG
www.imegcorp.com
9000 E PIMA CENTER PARKWAY
SUITE 320
SCOTTSDALE, AZ 85258
P: 480.222.3771

0 1 2 3
REF: SCALE IN INCHES
PROJECT #18003389.00

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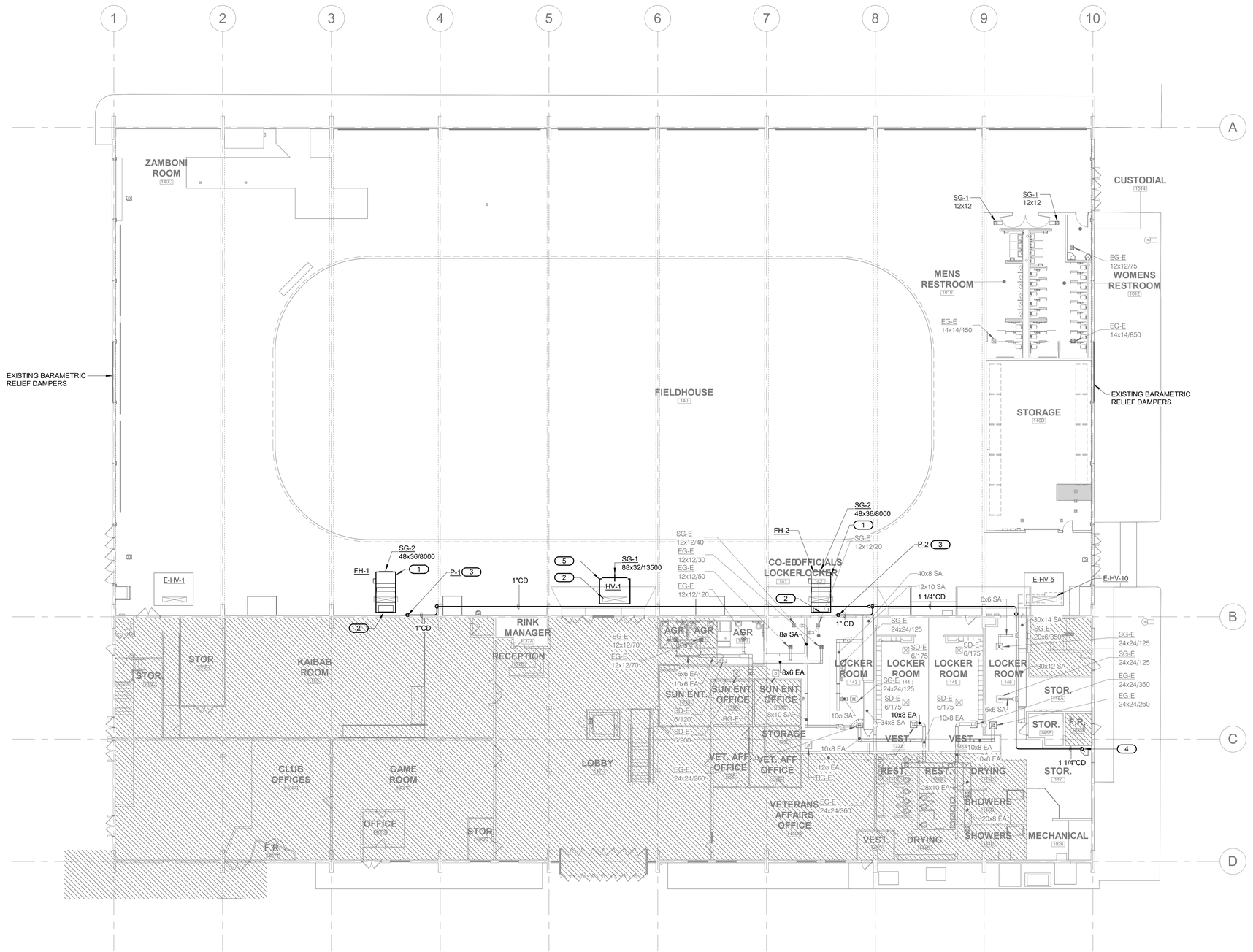
GENERAL SHEET NOTES :

1. ALL EXISTING EQUIPMENT, ROUTING AND LOCATIONS SHOWN ARE BASED ON LIMITED FIELD INVESTIGATION AND ORIGINAL CONSTRUCTION DRAWINGS DATED 12.20.1963. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS.

KEYNOTES (#)

1. INSTALL NEW AIR HANDLING UNIT ON NEW EQUIPMENT PLATFORM. REFER TO STRUCTURAL DRAWING FOR PLATFORM DETAILS.
2. CONNECT EXISTING OUTSIDE AIR DUCT TO NEW AHU.
3. PROVIDE NEW CONDENSATE PUMP. MODEL VCL-45ULS, 115v, 1/5 HP, 3.5 A.
4. ROUTE 1 1/4" CONDENSATE PIPE DOWN TO MOP SINK AND TERMINATE WITH 1" AIRGAP.
5. CONTRACTOR TO MODIFY EXISTING SUPPORT PLATFORM OR REPLACE TO PROVIDE SUPPORT UNDER ENTIRE AHU.



1 MECHANICAL DUCTWORK PLAN

1/16" = 1'-0"

NORTH

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o 602 604 6626
info@lightvoxstudio.com
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Phoenix AZ 85018

REGISTERED PROFESSIONAL ENGINEER
63742
robert j. kiesl
03-16-26
STATE OF ARIZONA U.S.A.
EXP. 03-31-2029

LIGHTVOX

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NAU Fieldhouse HVAC Replacement

09.300.251

1050 S KNOLES DR.
FLAGSTAFF, AZ 86011

MECHANICAL DUCTWORK PLAN

M100

IMEG
www.imegcorp.com
9000 E PIMA CENTER PARKWAY
SUITE 320
SCOTTSDALE, AZ 85258
P: 480.222.3771

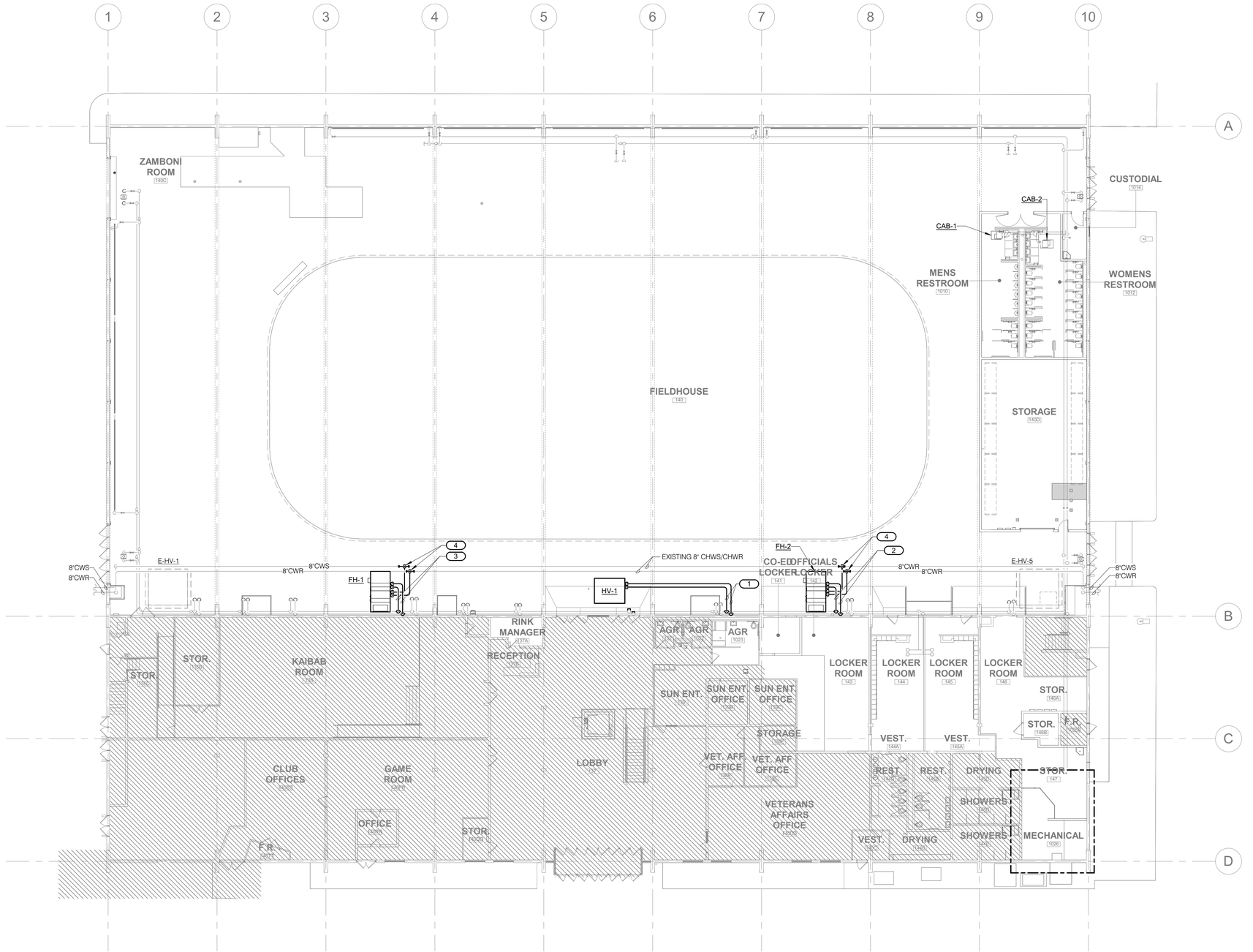
0 1 2 3
REF. SCALE IN INCHES
PROJECT #180033389.00

GENERAL SHEET NOTES :

1. ALL WORK SHOWN SHALL BE CONSIDERED BASE BID.
2. ALL EXISTING EQUIPMENT, ROUTING AND LOCATIONS SHOWN ARE BASED ON LIMITED FIELD INVESTIGATION AND ORIGINAL CONSTRUCTION DRAWINGS DATED 12.20.1963. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS.

KEYNOTES (#)

1. PROVIDE 2" CONNECTIONS W/ISOLATION VALVE ON EXISTING 4" HWS/R MAINS AND ROUTE NEW 2" PIPING TO NEW AHU.
2. PROVIDE 1-1/2" CONNECTIONS W/ISOLATION VALVE ON EXISTING 4" HWS/R MAINS AND ROUTE NEW 1-1/2" PIPING TO NEW AHU.
3. PROVIDE 1-1/2" CONNECTIONS W/ISOLATION VALVE ON EXISTING 2-1/2" HWS/R MAINS AND ROUTE NEW 1-1/2" PIPING TO NEW AHU.
4. CONNECT NEW 2" CWS/R PIPING TO EXISTING 8" CWS/R PIPING. INSTALL SHUT-OFF VALVE AT CONNECTION AND EXTEND NEW 2" CWS/R PIPING TO NEW AHU.



1 MECHANICAL PIPING PLAN

1/16" = 1'-0"

NORTH

NO.	DESCRIPTION	DATE
--	100% CD ISSUANCE	03.16.26

LIGHTVOX STUDIO PLLC
o 602 604 6626
info@lightvoxstudio.com
4602 E Thomas Rd Ste 100
Phoenix AZ 85018

REGISTERED PROFESSIONAL ENGINEER
63742
robert j. kiesl
03-16-26
ARIZONA U.S.A.
EXP. 03-31-2029

LIGHTVOX

PROJECT:
NAU Fieldhouse HVAC Replacement

09.300.251

1050 S KNOLES DR.
FLAGSTAFF, AZ 86011

MECHANICAL PIPING PLAN

M101

IMEG
9000 E PIMA CENTER PARKWAY
SUITE 320
SCOTTSDALE, AZ 85258
P: 480.222.3771
www.imegcorp.com

0 1 2 3
REF. SCALE IN INCHES
PROJECT #18003389.00

AIR HANDLING SCHEDULE

NOTES:
1.PROVIDE SHAFT GROUNDING AS REQUIRED IN THE MOTOR SPECIFICATION 23 05 13.
2.AHU TO BE FURNISHED WITH A GLYCOL COIL. GLYCOL COIL TO BE CONNECTED IN A FUTURE PHASE AND NOT INCLUDED IN THE SCOPE OF THIS PROJECT.

		SUPPLY FAN (NOTE 1)							ELECTRICAL					HEATING COIL - WATER							COOLING COIL											GLYCOL COIL									FILTER				WEIGHT			
											DISCONNECT(S)		CONTROLLER STARTER(S)																												PRE-FILTER							
TAG NAME	AREA SERVED	NO. OF FANS	CFM TOTAL	EXT. S.P.	RPM (NOTE D)	BHP EACH (NOTE E)	MHP EACH (NOTE E)	MINIMUM OUTSIDE AIR CFM	VOLTAGE	PHASES	BY (NOTE A)	TYPE (NOTE B)	BY (NOTE A)	TYPE (NOTE C)	SCCR	EAT °F	LAT °F	EWT °F	LWT °F	GPM	MBH	MAX. A.P.D. IN. W.C.	W.P.D. FEET HEAD	EAT DB °F	EAT WB °F	LAT DB °F	LAT WB °F	EWT °F	LWT °F	GPM	TOTAL MBH	MAX. A.P.D. IN. W.C.	W.P.D. FEET HEAD	CFM	EAT DB °F	EAT WB °F	LAT DB °F	LAT WB °F	EWT °F	LWT °F	GPM	TOTAL MBH	MAX. A.P.D. IN. W.C.	W.P.D. FEET HEAD	GLYCOL %	TYPE	FACE VELOCITY	PRESSURE DROP DIRTY	PRESSURE DROP CLEAN	OPERATING	MANUFACTURER	MODEL	NOTES
FH-1	FIELDHOUSE	2	8000	2.5	2181	4.31	6.97	0	460	3	EC	F	MFR	MS	5000	38.0	96.8	140	100	19.20	396.31	1.00	6.6	63.7	60.0	48.3	48.0	42	56	36.13	255	0.88	17.8	8000	48.3	48.2	38.1	38.1	33	39.1	67.6	178	1.24	9.76	40	MERV 8	406	1.0	0.17	3599	DAIKIN	VISION	1,2
FH-2	FIELDHOUSE	2	8000	2.5	2181	4.31	6.97	0	460	3	EC	F	MFR	MS	5000	38.0	96.8	140	100	19.20	396.31	1.00	6.6	63.7	60.0	48.3	48.0	42	56	36.13	255	0.88	17.8	8000	48.3	48.2	38.1	38.1	33	39.1	67.6	178	1.24	9.76	40	MERV 8	406	1.0	0.17	3599	DAIKIN	VISION	1,2
HV-1	FIELDHOUSE	3	13500	4.3	2570	3.13	6.97	0	460	3	EC	F	MFR	MS	5000	0.0	85.4	140	100	48.40	971.70	0.93	6.2	0.0	0.0	0.0	0.0	0	0	0.00	0	0.00	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0	0.00	0.00	0	MERV 8	486	1.0	0.22	1784	DAIKIN	CAC015GHAM	1

GRILLES REGISTERS & DIFFUSERS SCHEDULE

SYMBOL	MAT'L	TYPE	MARGIN (NOTE 1)	INLET SIZE (INCH)	FACE SIZE (INCH)	VOLUME DAMPER REQ'D	FINISH	MANUFACTURER	MODEL	REMARKS
SG-1	STEEL	DOUBLE DEFLECTION	1 1/4"	SEE DWG.	INLET +2	NO	WHITE	TITUS	132RL	1
SG-2	STEEL	DOUBLE DEFLECTION	1 1/4"	SEE DWG.	INLET +2	NO	WHITE	TITUS	132RL	1

NOTES:
1. CONTRACTOR SHALL DETERMINE PROPER MARGIN STYLE TO MATCH CEILING CONSTRUCTION.

VENTILATION CALCULATION (IMC_2021)

UNIT MARK	SPACE NUMBER	SPACE NAME	SPACE AREA (Az)	OCCUPANT DENSITY	CALCULATED OCCUPANTS	FIXED SEATS	OCCUPANCY (Pz)	OUTDOOR AIR (Rp)	OUTDOOR AIR (Ra)	OUTDOOR AIR (RpPz)	OUTDOOR AIR (RaAz)	EXHAUST AIR	EXHAUST OVERRIDE	EFFECTIVENESS (Ez)	PLUM FIXTURE	FIXTURE EXHAUST	OUTDOOR AIR (Voz)	EXHAUST AIR
	[N/A]	*[N/A]*	*[SQFT]*	*[#/1000 SQFT]*	*[Ppl Qty]*	*[Qty]*	*[Ppl Qty]*	*[CFM/Person]*	*[CFM/SQFT]*	*[CFM]*	*[CFM]*	*[CFM/SQFT]*	*[CFM/SQFT]*	*[N/A]*	*[Qty]*	*[CFM/Fixt.]*	*[CFM]*	*[CFM]*
AHU-1	140	FIELDHOUSE	19490	**0.0**	**0.0**		**0.0**	**0.0**	**0.30**	**0.00**	**5847.00**	**0.5**		**0.8**			**7309**	**9750**
AHU-2	140	FIELDHOUSE	19490	**0.0**	**0.0**		**0.0**	**0.0**	**0.30**	**0.00**	**5847.00**	**0.5**		**0.8**			**7309**	**9750**
TOTAL:																	**14618**	**19500**

SCHEDULE GENERAL NOTES:

A. DISCONNECT AND CONTROLLER STARTER FURNISHED AND INSTALLED BY:
- MFR = MANUFACTURER
- EC = ELECTRICAL CONTRACTOR.
- MC = FURNISHED BY MECHANICAL CONTRACTOR, INSTALLED BY ELECTRICAL CONTRACTOR
- MFR/EC = FURNISHED LOOSE BY MANUFACTURER INSTALLED BY ELECTRICAL CONTRACTOR
- ATC = AUTOMATIC TEMPERATURE CONTROL CONTRACTOR

B. DISCONNECT TYPE:
- F = FUSED
- NF = NON-FUSED

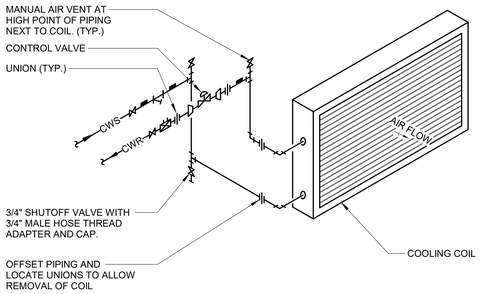
C. CONTROLLER STARTER TYPE:
- FV = FULL VOLTAGE
- WYE = WYE-DELTA
- SS = SOLID STATE (SOFT START)
- MS = MANUAL STARTER
- VFD = VARIABLE FREQUENCY DRIVE
- VFD/B = VARIABLE FREQUENCY DRIVE WITH BYPASS

D. FAN RPM SHALL NOT EXCEED 110% OF SCHEDULED VALUE, WITH THE SCHEDULED WHEEL TYPE. SUBSTITUTION OF BI OR BIA FANS FANS FOR FC IS ACCEPTABLE IF EFFICIENCY IS NOT LOWER.

E. NO EQUIPMENT SHALL BE SELECTED ABOVE 90% OF MOTOR NAME PLATE RATING.

F. MUST BE WITHIN +/- 10% OF SCHEDULED RPM.

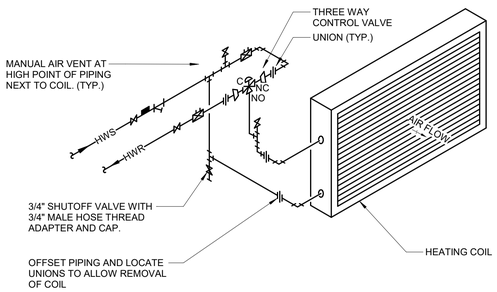
G. CURB TYPE:
- MFR = STANDARD CURB BY MANUFACTURER
- GC = BY GENERAL CONTRACTOR
- SAC = SOUND ATTENUATOR CURB



NOTES:
1. SEE SPECIFICATION SECTION 23 21 00 - HYDRONIC PIPING FOR BALANCE VALVE SIZING REQUIREMENTS.

1 COIL - CHILLED WATER PIPING DIAGRAM W/2-WAY VALVE

NO SCALE



NOTES:
1. SEE SPECIFICATION SECTION 23 21 00 - HYDRONIC PIPING FOR BALANCE VALVE SIZING REQUIREMENTS.

2 COIL - HOT WATER PIPING DIAGRAM W/3-WAY VALVE

NO SCALE

NO.	DESCRIPTION	DATE
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LIGHTVOX STUDIO PLLC
o 602 604 6626
info@lightvoxstudio.com
4602 E Thomas Rd Ste 100
Phoenix AZ 85018

Professional Engineer — ROBERT JAMES KIESL — 63742 — robert j. kiesl — 03-16-26 — Date Signed — ARIZONA, U.S.A.

EXP. 03-31-2029

LIGHTVOX

PROJECT:
NAU Fieldhouse HVAC Replacement

09.300.251

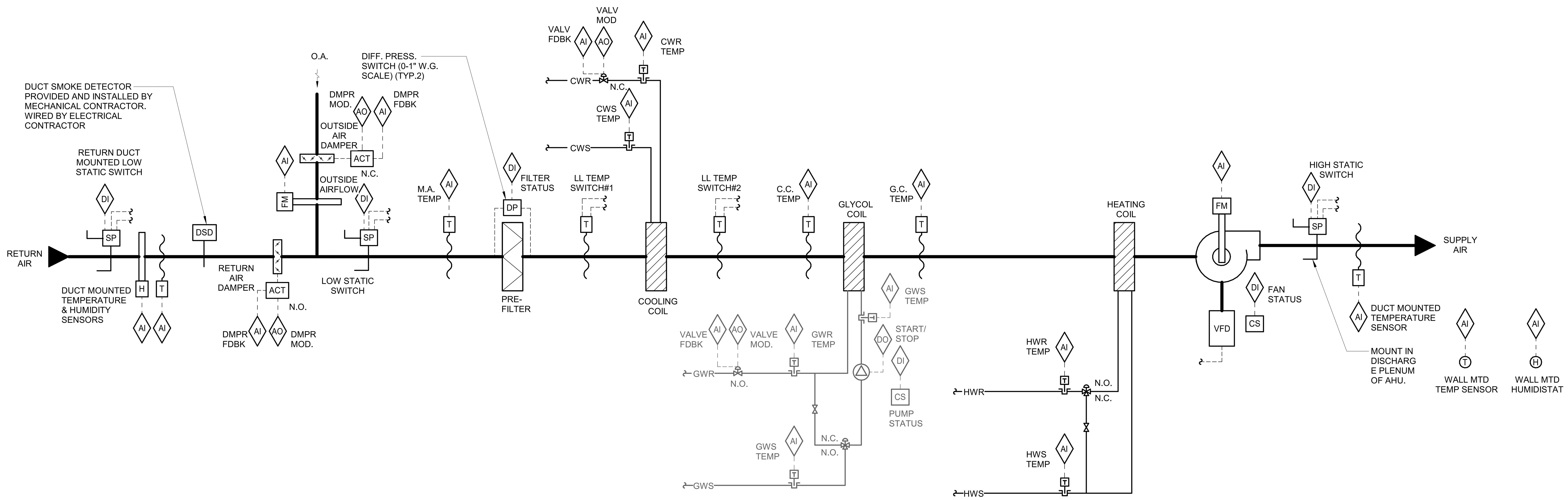
1050 S KNOLES DR.
FLAGSTAFF, AZ 86011

MECHANICAL SCHEDULES & DETAILS

M300

IMEG
www.imegcorp.com
9000 E PIMA CENTER PARKWAY
SUITE 320
SCOTTSDALE, AZ 85258
P: 480.222.3771

0 1 2 3
REF. SCALE IN INCHES
PROJECT #18003389.00



NOTE:
AHU WILL BE FURNISHED WITH GLYCOL COIL. COIL WILL BE CONNECTED TO GLYCOL SYSTEM IN FUTURE PHASE AND NOT INCLUDED IN THIS PROJECT SCOPE OF WORK.

1 SINGLE ZONE AIR HANDLING UNIT - FH-1 & FH-2

NO SCALE

NO.	DESCRIPTION	DATE
--	100% CD ISSUANCE	03.16.26

LIGHTVOX STUDIO PLLC
o 602 604 6626
info@lightvoxstudio.com
4602 E Thomas Rd Ste 100
Phoenix AZ 85018

LIGHTVOX

63742
robert j. kiesl
03-16-26
ARIZONA, U.S.A.
EXP. 03-31-2029

PROJECT:
NAU Fieldhouse HVAC Replacement

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1050 S KNOLES DR.
FLAGSTAFF, AZ 86011

IMEG
9000 E PIMA CENTER PARKWAY
SUITE 320
SCOTTSDALE, AZ 85258
P: 480.222.3771
www.imegcorp.com

0 1 2 3
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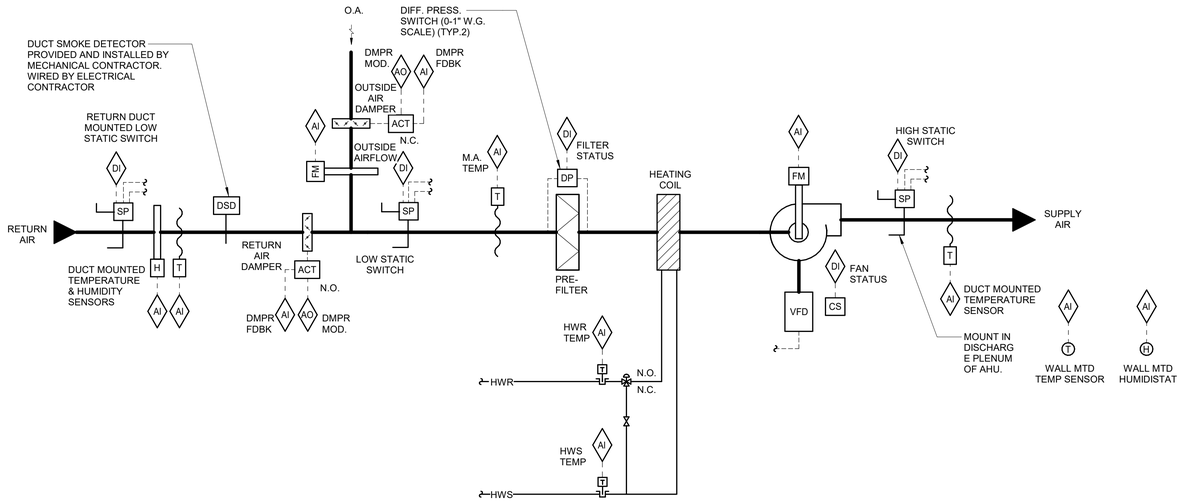
PROJECT #18003389.00

MECHANICAL CONTROLS

M301



1 SINGLE ZONE AIR HANDLING UNIT - HV-3

NO SCALE

NO.	DESCRIPTION	DATE
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LIGHTVOX STUDIO PLLC
o 602 604 6626
info@lightvoxstudio.com
4602 E Thomas Rd Ste 100
Phoenix AZ 85018

LIGHTVOX

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robert j. kiesl
03-16-26
ARIZONA, U.S.A.
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PROJECT:
NAU Fieldhouse HVAC Replacement

09.300.251

1050 S KNOLES DR.
FLAGSTAFF, AZ 86011

MECHANICAL CONTROLS

M302

IMEG
9000 E PIMA CENTER PARKWAY
SUITE 320
SCOTTSDALE, AZ 85258
P: 480.222.3771
www.imegcorp.com

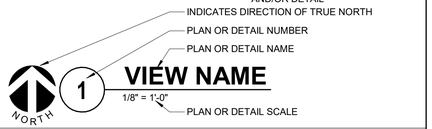
0 1 2 3
REF. SCALE IN INCHES

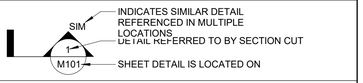
PROJECT #18003389.00

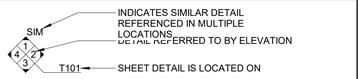
VIEW KEY

NAME
10' - 0"
LEVEL NAME
HEIGHT ABOVE PROJECT 0' - 0"

1
INDICATES NOTE USED TO DESCRIBE ADDITIONAL INFORMATION ABOUT WORK REQUIRED, SPECIFIC TO THE SHEET AND/OR DETAIL







LINE TYPE KEY:

NEW WORK BY THIS CONTRACTOR (DARK SOLID LINE)

NEW WORK UNDERFLOOR OR UNDERGROUND BY THIS CONTRACTOR (DARK LONG DASHED LINE)

NEW WORK BY OTHERS AND/OR EXISTING TO REMAIN (LIGHT SOLID LINE)

EXISTING TO BE REMOVED BY THIS CONTRACTOR (DARK SHORT DASHED LINE)

ELECTRICAL ABBREVIATION KEY

ABBR:	DESCRIPTION:
AFF	ABOVE FINISHED FLOOR
C	CONDUIT
GFI	GROUND FAULT INTERRUPTER
N.C.	NORMALLY CLOSED
NIC	NOT IN CONTRACT
N.O.	NORMALLY OPEN
SV	SOLENOID VALVE
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE

CONTRACTOR ABBREVIATION KEY

ABBR:	DESCRIPTION:
C.M.	CONSTRUCTION MANAGER
E.C.	ELECTRICAL CONTRACTOR
F.P.C.	FIRE PROTECTION CONTRACTOR
G.C.	GENERAL CONTRACTOR
M.C.	MECHANICAL CONTRACTOR

APPLICABLE CODES

CONTRACTOR SHALL COMPLY WITH APPLICABLE CODES AND LOCAL AMENDMENTS INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:

BUILDING CODE:	IBC 2021 EDITION
FIRE CODE:	IFC 2021 EDITION
PLUMBING CODE:	IPC 2021 EDITION
MECHANICAL CODE:	IMC 2021 EDITION
ELECTRICAL CODE:	NFPA 70 (NEC) 2020 EDITION
ENERGY CONSERVATION CODE:	IECC 2021 EDITION
HEALTH DEPARTMENT CODE:	CURRENT EDITION
LOCAL BUILDING CODE:	CURRENT EDITION
STANDARDS:	NAU TECHNICAL STANDARDS CURRENT EDITION

ELECTRICAL SYMBOL LIST

SYMBOL:	TAG:	SPEC SECTION:	DESCRIPTION:
J / J	JB	26 05 33	JUNCTION BOX
E / E	ECONN	26 05 33	ELECTRICAL CONNECTION
	PANEL '###'	26 24 16	PANELBOARD - RECESS MOUNT
	PANEL '###'	26 24 16	PANELBOARD - SURFACE MOUNT
	MX-#/MS-#/FCS-#	26 24 19	MANUAL SWITCH / STARTER / COMBINATION STARTER
	TR-#	26 22 00	TRANSFORMER
	REC-DUP	26 27 26	DUPLEX RECEPTACLE, 125V
	REC-DUP-GFI	26 27 26	DUPLEX GFI RECEPTACLE, 125V
	REC-QUAD	26 27 26	QUAD RECEPTACLE, 125V
	REC-QUAD-GFI	26 27 26	QUAD GFI RECEPTACLE, 125V

ELECTRICAL GENERAL NOTES:

1. ALL WORK AND MATERIALS SHALL BE PER THE LATEST EDITION OF THE NAU TECHNICAL STANDARDS.
2. **##-###** INDICATES ELECTRICAL EQUIPMENT DEFINED IN ELECTRICAL SCHEDULES OR SPECIFICATION. REFER TO DRAWINGS CONTAINING ELECTRICAL SCHEDULES. PERMANENT NAMEPLATE SHALL MATCH FINAL EQUIPMENT NOMENCLATURE, NOT ELECTRICAL EQUIPMENT TAG NAME, REFER TO SPECIFICATIONS.

DEVICE KEY:

DEVICE — A = MOUNTING (IF APPLICABLE)
1 = CIRCUIT NUMBER

*IF LABEL IS ORIENTED HORIZONTALLY A SLASH WILL SEPARATE THIS INFORMATION. EX: A / 1

ELECTRICAL MOUNTING SUBSCRIPT KEY:

A	MOUNT AT +6" TO CENTERLINE ABOVE COUNTER OR BACKSPLASH
C	MOUNT AT CEILING
H	MOUNT ORIENTED HORIZONTALLY
R	MOUNT IN SURFACE RACEWAY

ELECTRICAL INSTALLATION NOTES:

1. THE COMPLETE INSTALLATION SHALL BE IN ACCORDANCE WITH THE ADA STANDARDS FOR ACCESSIBLE DESIGN.
2. CIRCUIT NUMBERS ARE SHOWN FOR CIRCUIT IDENTIFICATION. CIRCUITING SHALL AGREE WITH NUMBERING ON THE PANEL PROVIDED. COMMON NEUTRALS MAY NOT BE USED FOR BRANCH CIRCUITS. BALANCE THE LOAD ON PANEL AS EVENLY AS POSSIBLE BETWEEN EACH PHASE.
3. FLUSH MOUNT ALL DUPLEX RECEPTACLES AND TECHNOLOGY OUTLETS AT +18" FROM FLOOR (CENTERLINE DIMENSION), EXCEPT WHERE OTHERWISE NOTED. RECEPTACLES AND OUTLETS MAY BE SURFACE MOUNTED WHEN CONDUIT IS SPECIFIED EXPOSED.
4. ALL MATERIALS USED TO SEAL PENETRATIONS OF FIRE RATED WALLS AND FLOORS SHALL BE TESTED AND CERTIFIED AS A SYSTEM PER ASTM E814 STANDARDS FOR FIRE TESTS OF THROUGH-PENETRATION FIRESTOPS. REFER TO SPECIFICATION SECTION 26 05 03 FOR ADDITIONAL INFORMATION AND REQUIREMENTS SPECIFIC TO FIRESTOPPING.
5. ELECTRICAL EQUIPMENT AND DEVICES SHALL BE MOUNTED TO AVOID IMPEDANCE OF, OPERATION OF, AND/OR ACCESS TO ELECTRICAL AND MECHANICAL EQUIPMENT. ALL MOUNTING OF ELECTRICAL AND TELECOMMUNICATIONS EQUIPMENT, ON EQUIPMENT SUPPLIED BY ANOTHER CONTRACTOR, SHALL BE APPROVED IN ADVANCE BY THE OTHER CONTRACTOR.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL OPENINGS REQUIRED IN WALLS. ALL OPENINGS SHALL BE REPAIRED TO MATCH EXISTING BY A QUALIFIED CONTRACTOR AT THE EXPENSE OF THIS CONTRACTOR. ALL CONDUITS THROUGH WALLS SHALL BE GROUTED OR SEALED INTO OPENINGS.
7. ALL WELDING SHALL BE ACCORDING TO AMERICAN WELDING SOCIETY STANDARDS. CONTRACTOR SHALL FURNISH TO THE ARCHITECT/ENGINEER CERTIFICATES QUALIFYING EACH WELDER, PRIOR TO START OF WORK. THE ARCHITECT/ENGINEER RESERVES THE RIGHT TO REQUIRE QUALIFYING DEMONSTRATION, AT THE CONTRACTOR'S EXPENSE, OF ANY WELDERS ASSIGNED TO THE JOB.
8. CONTRACTOR SHALL REMOVE AND REINSTALL ALL CEILING TILES AS REQUIRED FOR THE EXECUTION OF ELECTRICAL WORK. CONTRACTOR SHALL REPLACE CEILING TILES WITH IDENTICAL MATERIAL WHERE DAMAGED BY THIS CONTRACTOR.
9. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN, ELECTRICAL, TECHNOLOGY AUDIO/VISUAL, AND OTHER ELECTRICAL PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED DEVICES, OTHER THAN SPRINKLERS.
10. UNLESS OTHERWISE NOTED, ALL SPECIAL SYSTEMS SYMBOLS SHOWN INDICATE BACK-BOX AND RACEWAY SCOPE OF WORK REQUIREMENTS TO BE INCLUDED IN ELECTRICAL CONTRACTOR'S SCOPE OF WORK. ELECTRICAL CONTRACTOR SHALL VERIFY AND COORDINATE EXACT AND COMPLETE POWER, BACK-BOX AND RACEWAY REQUIREMENTS WITH RESPECTIVE SPECIAL SYSTEMS VENDORS AND OWNER.

ELECTRICAL RENOVATION NOTES:

THESE NOTES APPLY TO ALL ELECTRICAL SHEETS AND TRADES, INCLUDING BUT NOT LIMITED TO, LIGHTING, POWER, AND SYSTEMS.

1. EXISTING CONDITIONS ARE SHOWN BASED ON INFORMATION OBTAINED FROM FIELD SURVEYS, EXISTING BUILDING DOCUMENTS, AND STAFF. VERIFY EXISTING CONDITIONS AND REPORT ANY CONFLICTS BEFORE PROCEEDING.
2. NOT ALL EXISTING EQUIPMENT, LUMINAIRES, AND CONDUIT ARE SHOWN. VERIFY EXISTING CONDITIONS AND REPORT ANY CONFLICTS WITH NEW WORK BEFORE STARTING WORK.
3. FIELD VERIFY THE AVAILABLE CLEARANCES FOR CABLE TRAY, BUSWAY AND CONDUITS BEFORE FABRICATION. RISES AND DROPS MAY BE NECESSARY BECAUSE OF EXISTING FIELD CONDITIONS.
4. EACH CONTRACTOR SHALL FIELD VERIFY ACCESSIBILITY TO THE AREA OF HIS WORK AND SHALL NOTIFY THE GENERAL CONTRACTOR PRIOR TO BIDDING IF OTHER UTILITIES ARE REQUIRED TO BE REMOVED OR RELOCATED TO ALLOW ACCESS TO HIS AREA OF WORK.
5. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR CUTTING, REMOVAL AND PATCHING OF ROOFS, WALLS, AND FLOORS ASSOCIATED WITH WORK BY ALL CONTRACTORS. CONTRACTORS SHALL NOTIFY THE GC OF AFFECTED AREAS PRIOR TO BIDDING.
6. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND REPLACEMENT OF CEILINGS, CEILING TILES, AND CEILING GRIDS ASSOCIATED WITH AREAS OF WORK BY ALL CONTRACTORS. NOTIFY THE GENERAL CONTRACTOR OF AFFECTED AREAS PRIOR TO BIDDING.
7. WHERE EXISTING ELECTRICAL SYSTEMS ARE LOCATED IN AREAS THAT CONFLICT WITH NEW EQUIPMENT, PIPING, OR DUCTWORK TO BE INSTALLED, EACH CONTRACTOR SHALL EITHER ARRANGE NEW EQUIPMENT, CONDUIT, OR DUCTWORK IN SUCH A FASHION THAT IT DOES NOT CONFLICT WITH EXISTING SYSTEMS, OR REWORK EXISTING ELECTRICAL SYSTEMS TO ALLOW FOR INSTALLATION OF NEW EQUIPMENT, PIPING, OR DUCTWORK.

ELECTRICAL SHEET INDEX

IMEG
www.imegcorp.com
9000 E PIMA CENTER PARKWAY
SUITE 320
SCOTTSDALE, AZ 85258
P: 480.222.3771

0 1 2 3
REF. SCALE IN INCHES
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--	100% CD ISSUANCE	03.16.26

LIGHTVOX STUDIO PLLC
o 602 604 6626
info@lightvoxstudio.com
4602 E Thomas Rd Ste 100
Phoenix AZ 85018

LIGHTVOX

EXP. 09-30-2026

PROJECT:
NAU Fieldhouse HVAC Replacement

09.300.251

1050 S KNOLES DR.
FLAGSTAFF, AZ 86011

ELECTRICAL COVER SHEET

E000

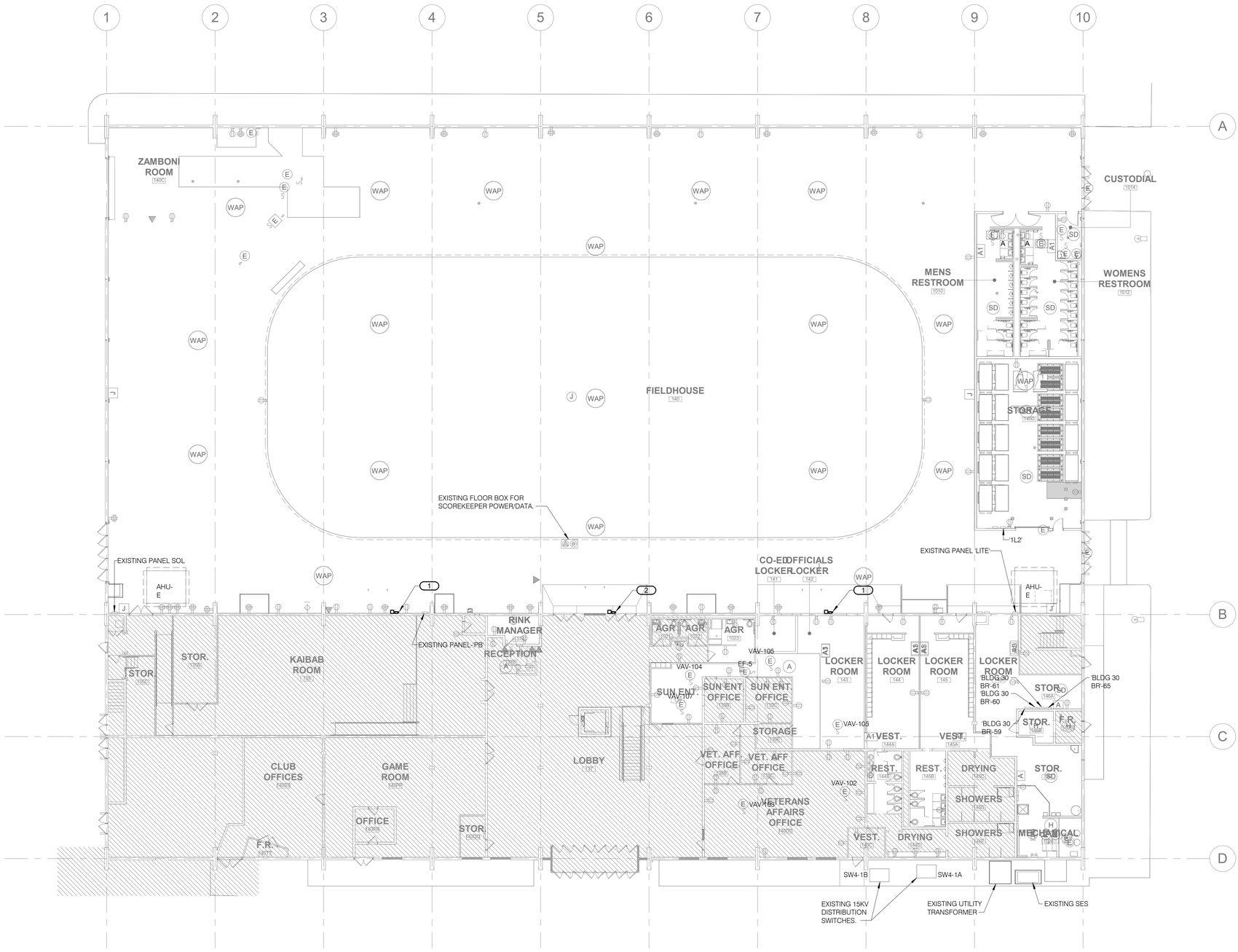
3/16/2026 3:04:46 PM
Autodesk Docs://NAU Fieldhouse HVAC Replacement/MEP25_18003389.00_NAU FMF_C.rvt

GENERAL NOTES :

1. ELECTRICAL CONTRACTOR SHALL FIELD VERIFY COMPLETE DEMOLITION SCOPE OF WORK AND COORDINATE ANY REQUIREMENTS FOR EQUIPMENT AND DEVICE DEMOLITION, RELOCATION, AND/OR REWORK OF EXISTING ELECTRICAL DEVICES, CONDUIT AND JUNCTION BOXES TO ACCOMMODATE NEW WORK.

KEYNOTES: (#)

1. EXISTING MECHANICAL UNIT DEMOLISHED BY OTHERS. DEMOLISH STARTER, DISCONNECT SWITCH AND ASSOCIATED POWER AND CONTROLS TO UNIT. FIELD COORDINATE DISCONNECTION AND EXACT DEMOLITION REQUIREMENTS WITH MECHANICAL CONTRACTOR. MAKE SAFE EXISTING POWER CIRCUIT FOR RE-USE FOR CONNECTION TO NEW REPLACEMENT HVAC UNIT.
2. EXISTING MECHANICAL UNIT TO BE DEMOLISHED BY OTHERS WITH NEW UNIT WITH LARGER ELECTRICAL REQUIREMENTS. DISCONNECT FROM EXISTING CIRCUIT AND DEMOLISH STARTER, DISCONNECT SWITCH AND ASSOCIATED POWER AND CONTROLS TO UNIT. FIELD COORDINATE DISCONNECTION AND EXACT DEMOLITION REQUIREMENTS WITH MECHANICAL CONTRACTOR.



1 ELECTRICAL POWER FLOOR PLAN - DEMOLITION

1/16" = 1'-0"

NORTH

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--	100% CD ISSUANCE	03.16.26

LIGHTVOX STUDIO PLLC
o 602 604 6626
info@lightvoxstudio.com
4602 E Thomas Rd Ste 100
Phoenix AZ 85018

JUSTIN E. DAGERMAN 52646 REGISTERED ELECTRICAL ENGINEER ARIZONA, U.S.A.
03-16-26
EXP. 09-30-2026

PROJECT:
NAU Fieldhouse HVAC Replacement

09.300.251

1050 S KNOLES DR.
FLAGSTAFF, AZ 86011

ELECTRICAL POWER DEMOLITION PLAN

ED100

IMEG
www.imegcorp.com
9000 E PIMA CENTER PARKWAY
SUITE 320
SCOTTSDALE, AZ 85258
P: 480.222.3771

REF. SCALE IN INCHES 0 1 2 3

PROJECT #18003389.00

3/16/2026 3:04:54 PM

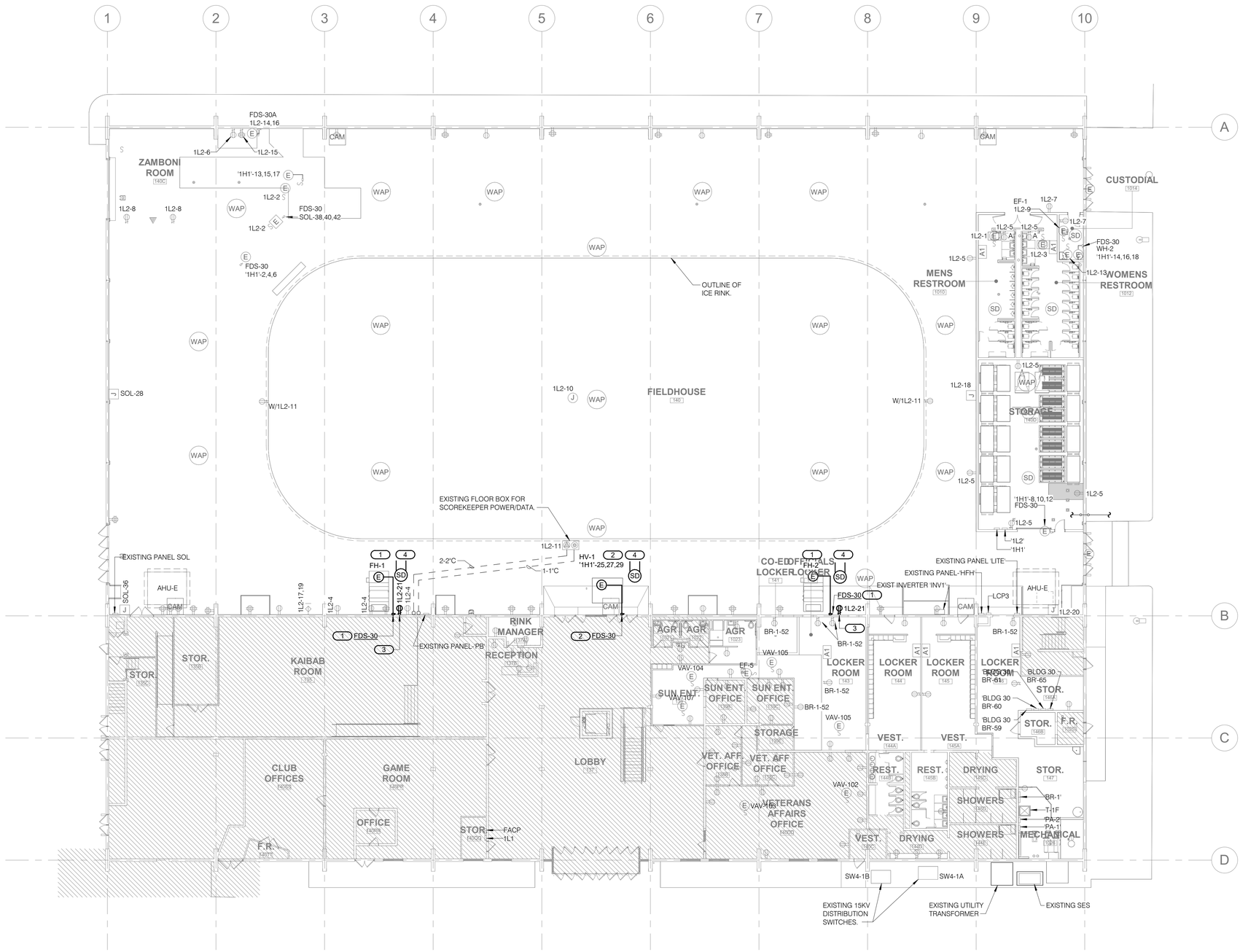
Autodesk Docs://NAU Fieldhouse HVAC Replacement/MEP25_18003389.00_NAU FMF_C.rvt

GENERAL NOTES :

1. ALL EXISTING EQUIPMENT, ROUTING AND LOCATIONS SHOWN ARE BASED ON LIMITED FIELD INVESTIGATION AND ORIGINAL CONSTRUCTION DRAWINGS DATED 12.20.1963. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS.
2. ELECTRICAL CONTRACTOR SHALL VERIFY AND COORDINATE EXACT AND COMPLETE FINAL ELECTRICAL REQUIREMENTS FOR ALL EQUIPMENT POWER SHOWN. CONTRACTOR SHALL FIELD COORDINATE EXACT LOCATIONS, MOUNTING HEIGHTS AND COMPLETE ELECTRICAL POWER, BACK-BOX AND RACEWAY REQUIREMENTS WITH MECHANICAL CONTRACTOR AND OWNER PRIOR TO ALL ROUGH-IN WORK.

KEYNOTES: (#)

1. PROVIDE NEW FUSED DISCONNECT SWITCH WITH COMPLETE ELECTRICAL CONNECTION TO NEW MECHANICAL UNIT MOUNTED ON PLATFORM ABOVE ON WALL. FIELD COORDINATE NEW UNIT ELECTRICAL AND INSTALLATION REQUIREMENTS WITH MECHANICAL CONTRACTOR. RE-USE EXISTING POWER CIRCUIT FROM DEMOLISHED MECHANICAL UNIT FOR CONNECTION TO NEW UNIT.
2. PROVIDE NEW FUSED DISCONNECT SWITCH WITH COMPLETE ELECTRICAL CONNECTION TO NEW MECHANICAL UNIT MOUNTED ON PLATFORM ABOVE DOORS.
3. PROVIDE GFCI POWER RECEPTACLE FOR AHU UNIT CONDENSATE PUMP. FIELD COORDINATE EXACT LOCATION AND MOUNTING HEIGHT WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN WORK.
4. PROVIDE NEW DUCT SMOKE DETECTOR FOR NEW MECHANICAL UNIT. FIELD COORDINATE EXACT LOCATION, INSTALLATION AND WIRING WITH MECHANICAL CONTRACTOR AND OWNER. TIE TO FIRE ALARM SYSTEM AS REQUIRED.



NORTH

1 **ELECTRICAL POWER FLOOR PLAN**

1/16" = 1'-0"

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SUITE 320
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NO.	DESCRIPTION	DATE
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LIGHTVOX STUDIO PLLC
o 602 604 6626
info@lightvoxstudio.com
4602 E Thomas Rd Ste 100
Phoenix AZ 85018

LIGHTVOX

Registered Professional Engineer
52646
JUSTIN C. DAGERMAN
03-16-26
Date Signed
ARIZONA, U.S.A.
EXP. 09-30-2026

PROJECT:
NAU Fieldhouse HVAC Replacement

09.300.251

1050 S KNOLES DR.
FLAGSTAFF, AZ 86011

ELECTRICAL POWER PLAN

E100

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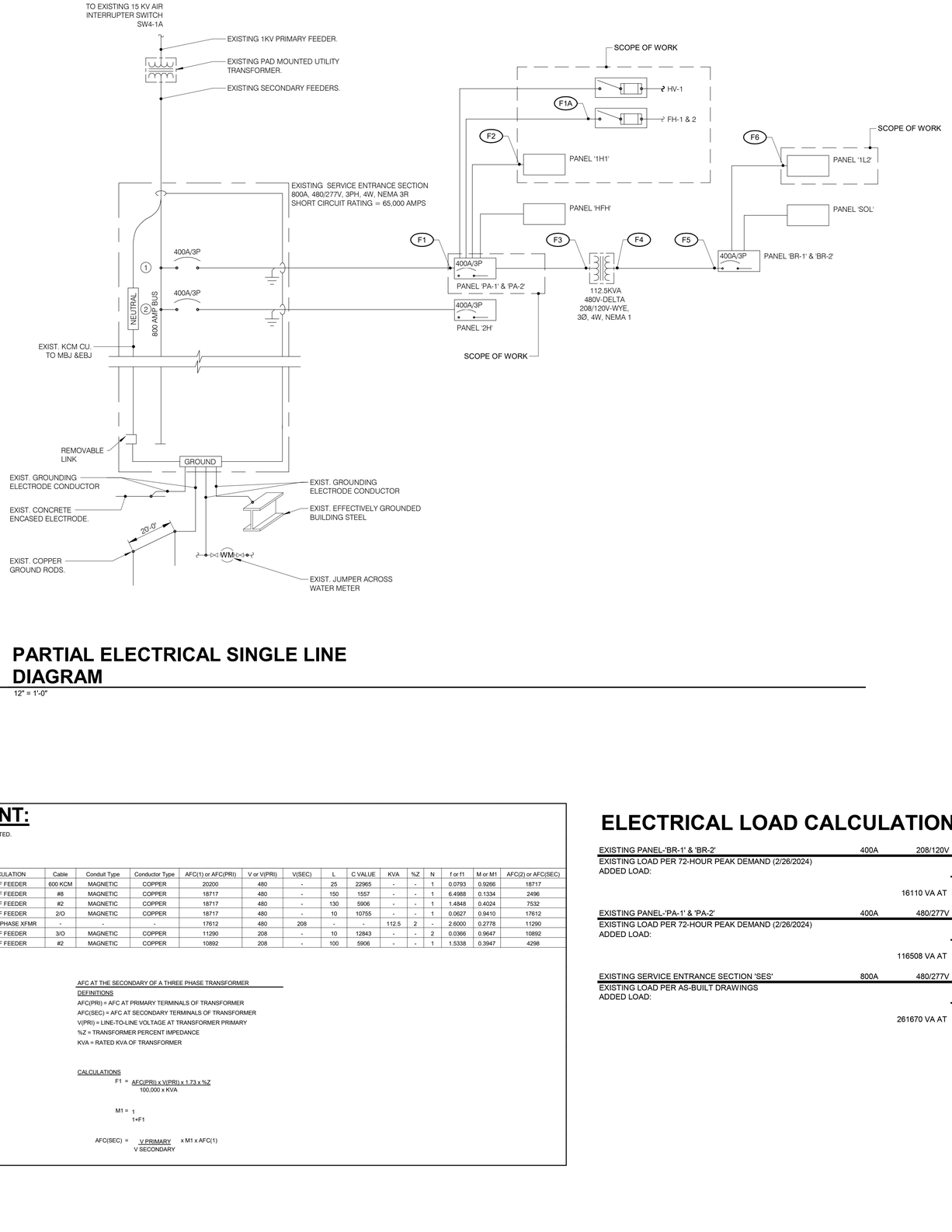

PARTIAL ELECTRICAL SINGLE LINE DIAGRAM

1

12" = 1'-0"

AVAILABLE FAULT CURRENT:

1. ALL VALUES ARE SYMMETRICAL, BASED ON BUSSMANN SPD CALCULATIONS AS INDICATED.
2. ALL EQUIPMENT SHALL BE FULLY RATED.
3. AFC = AVAILABLE FAULT CURRENT.

LABEL	FAULT LOCATION	TYPE OF CALCULATION	Cable	Conduit Type	Conductor Type	AFC(1) or AFC(PRI)	V or V(PRI)	V(SEC)	L	C VALUE	KVA	%Z	N	f or f1	M or M1	AFC(2) or AFC(SEC)
F1	SES TO PANEL-PA-1	AFC AT END OF FEEDER	600 KCM	MAGNETIC	COPPER	20200	480	-	25	22965	-	-	1	0.0793	0.9266	18717
F1A	PANEL-PA-1 TO AHU-1 & AHU-2	AFC AT END OF FEEDER	#8	MAGNETIC	COPPER	18717	480	-	150	1557	-	-	1	6.4988	0.1334	2496
F2	PA-1 TO PANEL-1H1	AFC AT END OF FEEDER	#2	MAGNETIC	COPPER	18717	480	-	130	5906	-	-	1	1.4848	0.4024	7532
F3	PANEL-PA-1 TO 112.5 XFMR T-1F	AFC AT END OF FEEDER	2/O	MAGNETIC	COPPER	18717	480	-	10	10755	-	-	1	0.0627	0.9410	17612
F4	XFMR T-1F SECONDARY	AFC AT SEC. OF 3 PHASE XFMR	-	-	-	17612	480	208	-	-	112.5	2	-	2.6000	0.2778	11290
F5	112.5 XFMR T-1F TO PANEL-BR-1	AFC AT END OF FEEDER	3/O	MAGNETIC	COPPER	11290	208	-	10	12843	-	-	2	0.0366	0.9647	10892
F6	PANEL-BR-1 TO PANEL-1L2	AFC AT END OF FEEDER	#2	MAGNETIC	COPPER	10892	208	-	100	5906	-	-	1	1.5338	0.3947	4298

AFC AT THE END OF A FEEDER

DEFINITIONS

AFC(1) = AFC AT THE BEGINNING OF THE FEEDER
AFC(2) = AFC AT THE END OF THE FEEDER
N = NUMBER OF CONDUCTORS IN PARALLEL PER PHASE
C = "C" VALUE AS DEFINED IN THE BUSSMANN SPD HANDBOOK
V = LINE-TO-LINE VOLTAGE
L = LENGTH OF FEEDER (IN FEET)

CALCULATIONS

$$F = \frac{1.732 \times L \times AFC(1)}{N \times C \times V}$$

$$M = \frac{1}{1+F}$$

$$AFC(2) = AFC(1) \times M$$

AFC AT THE SECONDARY OF A THREE PHASE TRANSFORMER

DEFINITIONS

AFC(PRI) = AFC AT PRIMARY TERMINALS OF TRANSFORMER
AFC(SEC) = AFC AT SECONDARY TERMINALS OF TRANSFORMER
V(PRI) = LINE-TO-LINE VOLTAGE AT TRANSFORMER PRIMARY
%Z = TRANSFORMER PERCENT IMPEDANCE
KVA = RATED KVA OF TRANSFORMER

CALCULATIONS

$$F1 = \frac{AFC(PRI) \times V(PRI) \times 1.73 \times \%Z}{100{,}000 \times KVA}$$

$$M1 = \frac{1}{1+F1}$$

$$AFC(SEC) = \frac{V\ PRIMARY}{V\ SECONDARY} \times M1 \times AFC(1)$$

ELECTRICAL LOAD CALCULATIONS:

EXISTING PANEL-'BR-1' & 'BR-2'	400A	208/120V	3PH	4 WIRE	
EXISTING LOAD PER 72-HOUR PEAK DEMAND (2/26/2024)				X 125% =	15750 VA
ADDED LOAD:				X 100% =	360 VA
				SUB TOTAL =	16110 VA
		16110 VA AT	208/120V	THREE PHASE	45 AMPS
EXISTING PANEL-'PA-1' & 'PA-2'	400A	480/277V	3PH	4 WIRE	
EXISTING LOAD PER 72-HOUR PEAK DEMAND (2/26/2024)				X 125% =	97338 VA
ADDED LOAD:				X 100% =	19170 VA
				SUB TOTAL =	116508 VA
		116508 VA AT	480/277V	THREE PHASE	140 AMPS
EXISTING SERVICE ENTRANCE SECTION 'SES'	800A	480/277V	3PH	4 WIRE	
EXISTING LOAD PER AS-BUILT DRAWINGS				X 100% =	242500 VA
ADDED LOAD:				X 100% =	19170 VA
				SUB TOTAL =	261670 VA
		261670 VA AT	480/277V	THREE PHASE	315 AMPS

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o 602 604 6626
info@lightvoxstudio.com
4602 E Thomas Rd Ste 100
Phoenix AZ 85018

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FLAGSTAFF, AZ 86011

ONE-LINE DIAGRAM

E500

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SUITE 320
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PANEL NAME: PA-2

TYPE: BOLT-ON
MOUNTING: SURFACE
FED FROM:
SCCR: 65,000 AMPS
LOCATION: MECHANICAL 1026

SECTION (2 OF 2)
SOLID NEUTRAL
GROUND BUS

MAIN: 400A/ MLO
VOLTS: 480/277 Wye
PHASE: 3
WIRE: 4

Panel Notes: A. ALL CIRCUIT BREAKERS SHOWN ARE EXISTING WITH EXISTING LOADS, U.N.O.
B. SEE ONE LINE DIAGRAM FOR LOAD CALCULATION.

	CKT NO.	LOAD DESCRIPTION	OVERCURRENT PROTECTION AMPS	P	A		B		C		OVERCURRENT PROTECTION P	AMPS	LOAD DESCRIPTION	CKT NO.	
(1)	1	HVAC UNITS HV#1A/8/10/9, EF-4 & FH-1	50 A	3	0	0					3	50 A	HVAC UNITS #3A/3B/5/6/7 & FH-2	2	(1)
--	3	--	--	--			0	0			--	--	--	4	--
--	5	--	--	--					0	0	--	--	--	6	--
(2)	7	HVAC UNITS HV #4/3C/1C	50 A	3	0	0					3	50 A	SPARE	8	
--	9	--	--	--			0	0			--	--	--	10	--
--	11	--	--	--					0	0	--	--	--	12	--
	13	SPARE	50 A	3	0	0					3	40 A	HEATING WATER PUMPS	14	
--	15	--	--	--			0	0			--	--	--	16	--
--	17	--	--	--					0	0	--	--	--	18	--
	19	PANEL 1F	110 A	3	0	0					1	20 A	EARTHROOM LTG RM 111A, 112A	20	
--	21	--	--	--			0	0			1	20 A	SPARE	22	
--	23	--	--	--					0	0	1	20 A	SPARE	24	
	25	SPACE	--	1	--	0					1	20 A	SPARE	26	
	27	SPACE	--	1			--	0			1	20 A	SPARE	28	
	29	SPACE	--	1					--	0	1	20 A	SPARE	30	
	31	SPACE	--	1	--	0					1	20 A	SPARE	32	
	33	SPACE	--	1			--	--			1	--	SPACE	34	
	35	SPACE	--	1					--	--	1	--	SPACE	36	
	37	SPACE	--	1	--	--					1	--	SPACE	38	
	39	SPACE	--	1			--	--			1	--	SPACE	40	
	41	SPACE	--	1					--	--	1	--	SPACE	42	
				Total Load:	0 kVA		0 kVA		0 kVA						
				Total Amps:	0		0		0						

[Key*:] (1) = EXISTING CIRCUIT BREAKER WITH EXISTING LOAD. LIKE FOR LIKE REPLACEMENT OF FH UNIT. NO NEW LOAD ADDED.
(2) = EXISTING CIRCUIT BREAKER WITH EXISTING LOAD. HV-1 UNIT DEMOLISHED, ALL OTHER LOADS ON CIRCUIT ARE EXISTING TO REMAIN. LOAD REMOVED, NO NEW LOAD ADDED.

PANEL NAME: '1H1'

TYPE: BOLT-ON
MOUNTING: SURFACE
FED FROM: PA-1
SCCR: 18,000 AMPS
LOCATION: Space 3

SOLID NEUTRAL
GROUND BUS

CONNECTED 35.7 kVA
MAIN: 100 MLO
VOLTS: 480/277 Wye
PHASE: 3
WIRE: 4
DEMAND: 35.75 kVA

Panel Notes: A. ALL CIRCUIT BREAKERS ARE EXISTING WITH EXISTING LOADS, UON.

	CKT NO.	LOAD DESCRIPTION	OVERCURRENT PROTECTION AMPS	P	A		B		C		OVERCURRENT PROTECTION P	AMPS	LOAD DESCRIPTION	CKT NO.	
--	1	RESTROOM AND STORAGE LTG	20 A	1	1.25	0.94					3	20 A	OH-DOOR ZAMBONI ROOM	2	--
	3	SPARE	20 A	1			0	0.94			--	--	--	4	--
--	5	ZAMBONI LTG	20 A	1					0.42	0.94	--	--	--	6	--
	7	SPARE	20 A	3	0	0.58					3	20 A	OH DOOR STORAGE ROOM	8	--
--	9	--	--	--			0	0.58			--	--	--	10	--
--	11	--	--	--					0	0.58	--	--	--	12	--
--	13	ZAMBONI ROOM SP-1	20 A	3	0.58	3					3	20 A	WH-2	14	--
--	15	--	--	--			0.58	3			--	--	--	16	--
--	17	--	--	--					0.58	3	--	--	--	18	--
	19	SPARE	20 A	1	0	--					1	--	SPACE	20	
	21	SPARE	20 A	1			0	--			1	--	SPACE	22	
	23	SPARE	20 A	1					0	--	1	--	SPACE	24	
(1)	25	HVAC UNIT HV-1	30 A	3	6.27	--					1	--	SPACE	26	
--	27	--	--	--			6.27	--			1	--	SPACE	28	
--	29	--	--	--					6.27	--	1	--	SPACE	30	
	31	SPACE	--	1	--	--					1	--	SPACE	32	
	33	SPACE	--	1			--	--			1	--	SPACE	34	
	35	SPACE	--	1					--	--	1	--	SPACE	36	
	37	SPACE	--	1	--	--					1	--	SPACE	38	
	39	SPACE	--	1			--	--			1	--	SPACE	40	
	41	SPACE	--	1					--	--	1	--	SPACE	42	
				Total Load:	12.59 kVA		11.37 kVA		11.79 kVA						
				Total Amps:	45.68		41.05		42.82						

[Key*:] (1) NEW CIRCUIT BREAKER WITH NEW LOAD.

DISCONNECT AND STARTER SCHEDULE

NOTE: ALL DISCONNECTS (EXCEPT MANUAL STARTERS) SHALL BE HEAVY DUTY TYPE.

DISCONNECT TYPE:	**REMARKS:**	
FU - FUSED	SA - STANDARD ACCESSORIES (INCLUDES * ITEMS)	PF - PHASE LOSS PROTECTION (5 HP OR GREATER, 3 PHASE MOTOR)
NF - NON-FUSED	*CT - CONTROL TRANSFORMER, FUSED 120V	TO - MELTING THERMAL OVERLOADS (1 PHASE)
CB - CIRCUIT BREAKER	*EO - ELECTRONIC OVERLOAD (3 PHASE MOTORS)	TS - 2 SPEED SELECTOR SWITCH IN DOOR
	*HA - HAND-OFF-AUTO IN DOOR	GP - GREEN (OFF) PILOT LIGHT IN DOOR
STARTER TYPE:	*RP - RED (RUN) PILOT LIGHT IN DOOR	FA - 4-CONVERTIBLE AUXILIARY CONTACTS
FV - FULL VOLTAGE	*TA - TWO CONVERTIBLE AUXILIARY CONTACTS	EI - ELECTRICAL INTERLOCK (2)-N.O. & (2)-N.C.
YD - WYE - DELTA	S/N - INSULATED NEUTRAL ASSEMBLY	SS - START-STOP PUSHBUTTON IN DOOR
RE - REVERSING		HL - HANDLE PADLOCK HASP
TW - 2 SPEED, 2 WINDING		
SW - 2 SPEED, 1 WINDING		
RV - REDUCED VOLTAGE AUTOXFMR		
SS - SOLID STATE		
MS - MANUAL STARTER		
MX - MANUAL SWITCH		
FS - FUSED SWITCH		

ITEM	DISCONNECT TYPE & RATING		CIRCUIT VOLTAGE	POLES	STARTER		NEMA ENCLOSURE	REMARKS	APPROVED MANUFACTURERS
	TYPE	RATING			NEMA SIZE	TYPE			
FDS-30	FU	30 A	480 V	3			1	FUSED PER MFGR'S UL NAMEPLATE LISTING.	SQUARE D 3110 H361 CUTLER-HAMMER TYPE DH GENERAL ELECTRIC TYPE TH SIEMENS TYPE HF

MECHANICAL EQUIPMENT SCHEDULE:

ITEM	EQUIPMENT			EQUIPMENT		DISC. @ UNIT		STARTER		CONDUCTOR AND CONDUIT	REMARKS
MARK	LOAD			VOLT	PH	TYPE	SIZE	TYPE	SIZE	SIZE	
AHU-1 & AHU-2	12.6	FLA		480	3	F	30/3	I		3#8, #10 GND, 3/4"C.	FIELD VERIFY, EXTEND AND MATCH EXISTING WIRING.
AHU-3	18.1	FLA		480	3	F	30/3	I		3#10, #10 GND, 3/4"C.	PROVIDE NEW CIRCUIT AS INDICATED.

GENERAL NOTES:
A. ELECTRICAL CONTRACTOR SHALL CONFIRM FUSE SIZE WITH EQUIPMENT MANUFACTURER. FURNISH & INSTALL UL LISTED FUSE REDUCERS AS REQUIRED FOR COMPLETE UNIT..
B. ELECTRICAL CONTRACTOR SHALL VERIFY CIRCUIT & DISCONNECT SWITCH TO BE INSTALLED IS PROPERLY SIZED FOR EQUIPMENT BASED ON ACTUAL NAME PLATE LISTING PRIOR TO CONDUIT ROUGH IN.
C. ALL DISCONNECT CONNECT SWITCHES SHALL BE 3 POLE
D. FUSED SWITCHES SHALL EMPLOY CLASS RK5 FUSES UNLESS NOTED OTHERWISE
E. ALL EQUIPMENT INSTALLED OUTDOORS OR IN OTHERWISE WET OR DAMP LOCATIONS SHALL BE WEATHERPROOF NEMA 3R.
F. SEE ELECTRICAL SYMBOL SCHEDULE AND SPECIFICATIONS FOR ADDITIONAL EQUIPMENT REQUIREMENTS.

DISCONNECT TYPE ABBREVIATIONS:
T = HORSEPOWER RATED TOGGLE...
M = MANUAL MOTOR STARTER (PROVIDE WITH OL'S BASED ON MOTOR NAMEPLATE)
C = COMBINATION MOTOR STARTER AND FUSED DISCONNECT SWITCH (PROVIDE WITH OL'S BASED ON MOTOR NAMEPLATE)
NF = NON-FUSED SAFETY SWITCH DISCONNECT
F = FUSED SAFETY SWITCH DISCONNECT
Q = PROVIDED WITH EQUIPMENT - VERIFY SIZES WITH MECHANICAL CONTRACTOR PRIOR TO ORDERING EQUIPMENT AND MATERIALS.

STARTER TYPE ABBREVIATIONS:
I = PROVIDED WITH EQUIPMENT
E = PROVIDED BY ELECTRICAL CONTRACTOR
M = PROVIDED BY MECHANICAL CONTRACTOR

PANEL NAME: 1L2

TYPE: BOLT-ON
MOUNTING: SURFACE
FED FROM: BR-1
SCCR: 10,000 AMPS
LOCATION: Space 3

SOLID NEUTRAL
GROUND BUS

CONNECTED 23.1 kVA
MAIN: 100A MLO
VOLTS: 120/208 Wye
PHASE: 3
WIRE: 4
DEMAND: 23.13 kVA

Panel Notes: A. ALL CIRCUIT BREAKERS ARE EXISTING WITH EXISTING LOADS, UON.

	CKT NO.	LOAD DESCRIPTION	OVERCURRENT PROTECTION AMPS	P	A		B		C		OVERCURRENT PROTECTION P	AMPS	LOAD DESCRIPTION	CKT NO.	
	1	CAB-1, RESTROOM	20 A	1	0.09	0.83					1	20 A	UH-1 & EF-2	2	
	3	CAB-2, RESTROOM	20 A	1			0.16	0.54			1	20 A	RECEPTACLES SKATE RENTAL	4	
	5	RECEPTACLES RESTROOMS	20 A	1					1.26	1.8	1	20 A	REC MQ3-45 R.O. SKID	6	
	7	RECEPTACLES RESTROOMS	20 A	1	0.36	0.54					1	20 A	RECEPTACLES ZAMBONI ROOM	8	
	9	EF-1	20 A	1			1.18	1.2			1	20 A	SCOREBOARD - CENTER	10	
	11	RECEPTACLES ICE RINK SCORE KEEPER	20 A	1					0.72	1	1	20 A	LIGHTING CONTROL POWER	12	
	13	CP-2	20 A	1	0.86	2.5					2	30 A	R.O. SKID POWER	14	
	15	REC R.O. SKID	20 A	1			1.8	2.5			--	--	--	16	--
	17	ELEC. SKATE SHARPENING UNIT	20 A	2					1.66	1.2	1	20 A	SCOREBOARD - NORTHWALL	18	
--	19	--	--	--	1.66	1.2					1	20 A	IT POWER	20	
(1)	21	FH-1 & 2 CIRC PUMPS	20 A	1			0.36	0			1	20 A	SPARE	22	
	23	SPARE	20 A	1					0	0	1	20 A	SPARE	24	
	25	SPARE	20 A	1	0	0					1	20 A	SPARE	26	
	27	SPARE	20 A	1			0	0			1	20 A	SPARE	28	
	29	SPARE	20 A	1					0	0	1	20 A	SPARE	30	
	31	SPACE	--	1	--	--					1	--	SPACE	32	
	33	SPACE	--	1			--	--			1	--	SPACE	34	
	35	SPACE	--	1					--	--	1	--	SPACE	36	
	37	SPACE	--	1	--	--					1	--	SPACE	38	
	39	SPACE	--	1			--	--			1	--	SPACE	40	
	41	SPACE	--	1					--	--	1	--	SPACE	42	
				Total Load:	7.91 kVA		7.73 kVA		7.51 kVA						
				Total Amps:	66.23		64.7		62.61						

[Key*:] (1) NEW CIRCUIT BREAKER WITH NEW LOAD.

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LIGHTVOX STUDIO PLLC
o 602 604 6626
info@lightvoxstudio.com
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Phoenix AZ 85018

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9000 E PIMA CENTER PARKWAY
SUITE 320
SCOTTSDALE, AZ 85258
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