ALF SORENSEN
LOBBY & PRESCHOOL
HVAC MODIFICATIONS

PWP# WA-2023-311
BID #22/23-033

1400 BARING BLVD
SPARKS, NEVADA
89434

SHEET INDEX

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KH PROJECT NO.: 192079002
DRAWN BY: AS
REVIEWED BY: MCM
DATE: 04/12/2023

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HVAC MODIFICATIONS
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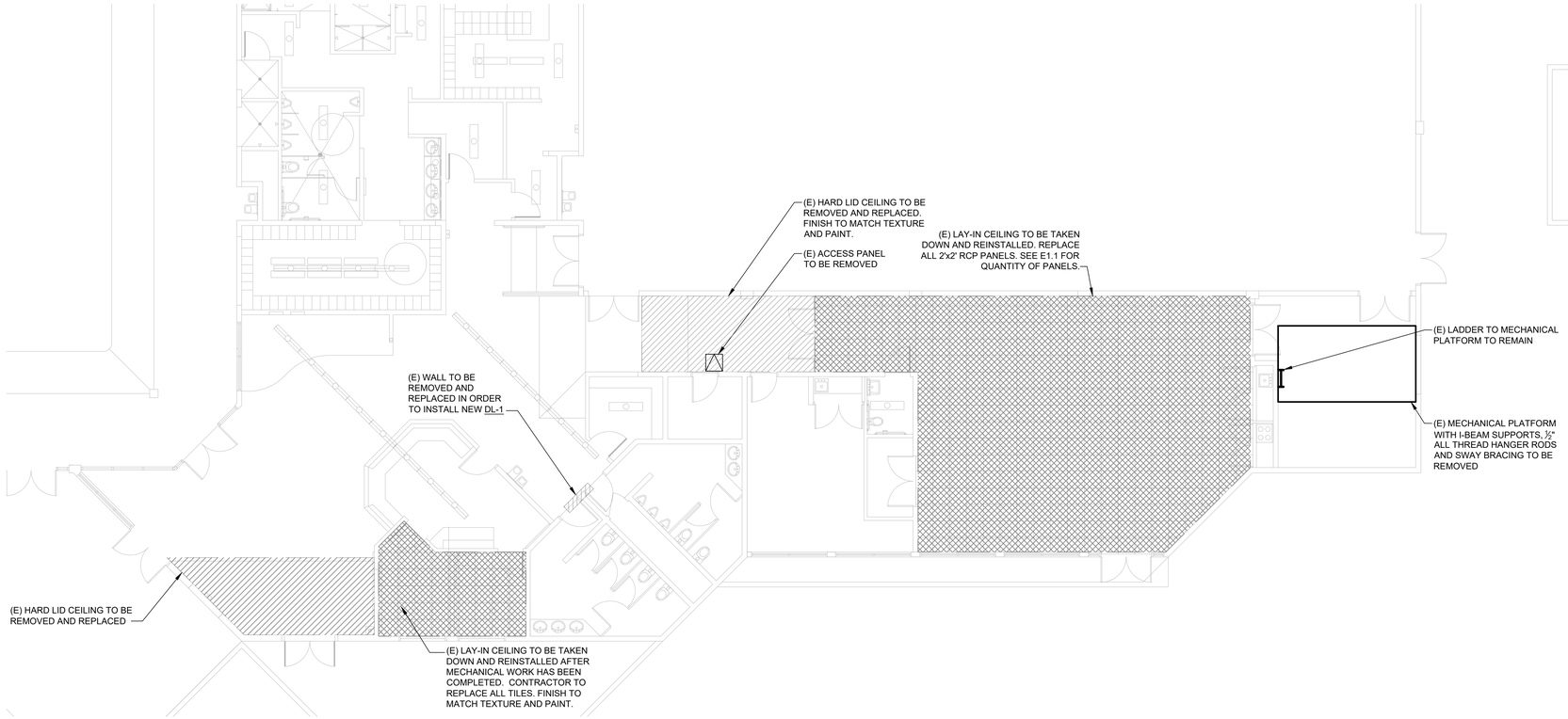
TITLE SHEET - GENERAL INFO

T1.0



1 G1.1 **FLOOR PLAN 1**

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

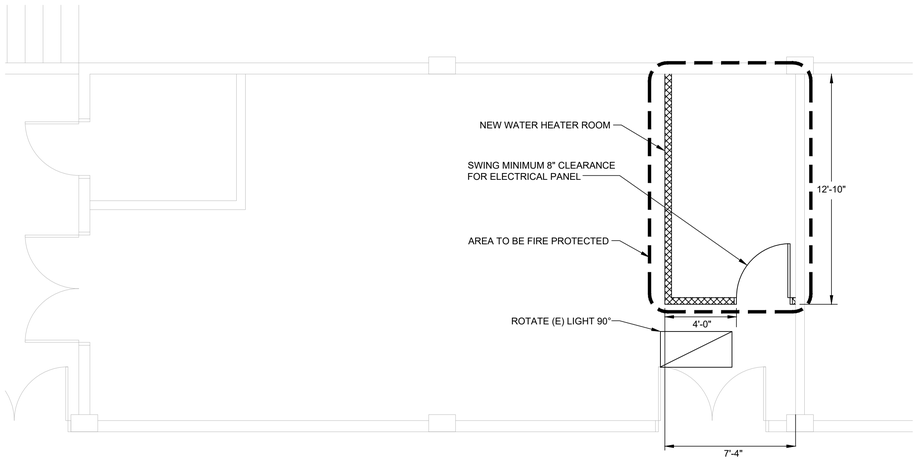
NORTH

GENERAL NOTE

1. ALL CEILINGS INDICATED ON THIS PLAN ARE TO BE REPLACED OR REINSTALLED AFTER MECHANICAL AND PLUMBING WORK HAS BEEN COMPLETED. CONTRACTOR TO REPLACE ALL TILES BROKEN DURING DEMOLITION. HARD LID CEILINGS ARE TO REPLACED COMPLETE.
2. CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR 1-HR RATED NEW WATER HEATER ROOM FOR APPROVAL.

FIRE PROTECTION SPECIFICATIONS

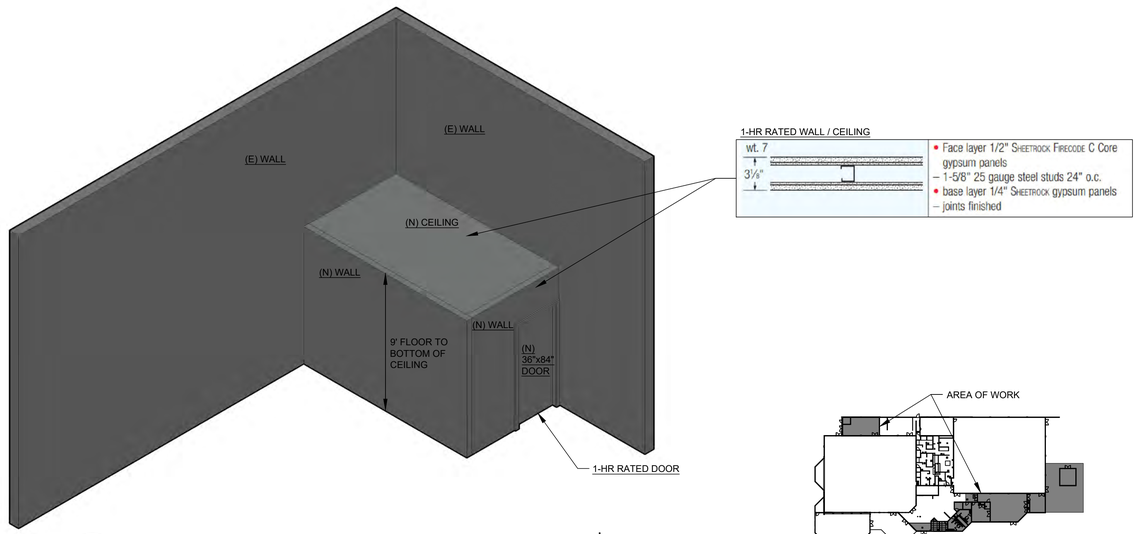
1. THIS IS A PERFORMANCE SPECIFICATION AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL PERMITS, FEES, DESIGN, MATERIAL, FABRICATION, STORAGE, INSTALLATION AND TESTING FOR A COMPLETE AND OPERABLE FIRE SPRINKLER SYSTEM.
2. IT IS THE FIRE PROTECTION CONTRACTOR'S RESPONSIBILITY TO REVIEW ALL DOCUMENTS INCLUDING (BUT NOT LIMITED TO) ARCHITECTURAL, CIVIL, ELECTRICAL, PLUMBING, MECHANICAL, AND STRUCTURAL DISCIPLINES WHEN DESIGNING THE FIRE PROTECTION SYSTEM. THE FIRE PROTECTION CONTRACTOR SHALL ACKNOWLEDGE ON THEIR SHOP DRAWINGS THAT THEY HAVE REVIEWED ALL DESIGN DOCUMENTS AS PART OF THE PREPARATION OF THE FIRE PROTECTION SYSTEM DESIGN.
3. SYSTEM SHALL MEET THE REQUIREMENTS OF NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 13, 24, THE NATIONAL ELECTRICAL CODE (NEC), AS WELL AS LOCAL BUILDING OFFICIALS, WATER DEPARTMENT AND STATE FIRE MARSHAL REQUIREMENTS AS APPLICABLE.
4. SUBMIT COMPLETE SET OF SHOP DRAWINGS INCLUDING NECESSARY CALCULATIONS AND CATALOG CUTS OF MATERIALS TO THE ENGINEER AND THE AUTHORITY HAVING JURISDICTION FOR APPROVAL. OBTAIN APPROVAL PRIOR TO INSTALLATION. DRAWINGS AND CALCULATIONS SHALL BE CERTIFIED BY A MINIMUM NATIONAL INSTITUTE FOR CERTIFICATION ENGINEERING TECHNOLOGY LEVEL III TECHNICIAN.
5. SYSTEM SHALL BE HYDRAULICALLY DESIGNED. CONTRACTOR SHALL OBTAIN LATEST WATER SUPPLY INFORMATION AND DETERMINE SPRINKLER HEAD SPACING AND DESIGN DENSITIES FOR HYDRAULIC CALCULATIONS. REQUIRED SYSTEM PRESSURE SHALL BE A MINIMUM OF 10% BELOW THE AVAILABLE PRESSURE AT SYSTEM DEMAND.
6. PLANS FOR INSTALLATION OF ANY FIRE ALARM, OR FIRE SPRINKLER SYSTEM SHALL BE SUBMITTED UNDER SEPARATE PERMIT BY CONTRACTORS LICENSED BY THE NEVADA STATE FIRE MARSHAL'S OFFICE TO DO THIS WORK, A SEPARATE PERMIT IS REQUIRED FOR EACH TYPE OF SYSTEM.
7. CONTRACTOR SHALL HOLD A VALID NEVADA CONTRACTORS LICENSE FOR THE TYPE OF WORK BEING PERFORMED.
8. ALL PIPING SHALL BE SUSPENDED AND BRACED IN STRICT ACCORDANCE WITH NFPA 13, 2018 IBC, AND ASCE 7.
9. CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO BID, IN ORDER TO DETERMINE THE EXACT SCOPE OF WORK
10. THE CONTRACTOR GUARANTEES THAT ALL WORK INSTALLED SHALL BE FREE OF ALL DEFECTS IN WORKMANSHIP AND MATERIAL FOR A PERIOD OF ONE YEAR FROM THE DATE OF THE CERTIFICATION OF COMPLETION AND ACCEPTANCE OF WORK.
11. AFTER SYSTEM IS COMPLETELY INSTALLED, IT SHALL BE FILLED AND TESTED IN ACCORDANCE WITH LOCAL REQUIREMENTS, NFPA 13, AND THE REQUIREMENTS OF THE APPLICABLE NFPA BULLETINS.
12. ALL SPRINKLER HEADS TO BE SEMI-RECESS TYPE WITH ESCUTCHEON. COORDINATE WITH ARCHITECT ON HEAD AND ESCUTCHEON COLORS. ALL PIPING IS TO BE CONCEALED ABOVE FINISH CEILING AREAS. SPRINKLER HEADS SHALL BE ALIGNED WITH LIGHTS, DIFFUSERS, AND OTHER EQUIPMENT SO AS TO PRESENT A NEAT AND SYMMETRIC APPEARANCE. SPRINKLER HEADS TO BE CENTERED IN CEILING TILE.
13. IN LIEU OF RIGID PIPE OFFSETS OR RETURN BENDS FOR SPRINKLER DROPS, MULTIPLE-USE FLEXIBLE STAINLESS STEEL SPRINKLER DROP SYSTEM MAY BE USED TO LOCATE SPRINKLERS AS REQUIRED BY FINAL FINISHED CEILING TILES AND WALLS. THE DROP SYSTEM SHALL CONSIST OF A BRAIDED OR UNBRAIDED (CORRUGATED) TYPE 304 STAINLESS STEEL FLEXIBLE TUBE, A ZINC PLATED STEEL 1" NPT MALE THREADED NIPPLE FOR CONNECTION TO BRANCHLINE PIPING, AND A ZINC PLATED STEEL REDUCER WITH A 1/2" OR 3/4" NPT FEMALE THREAD FOR CONNECTION TO THE SPRINKLER HEAD. THE BRAIDED DROP SYSTEM SHALL BE FM APPROVED FOR SPRINKLER SERVICES TO 200 PSI AND CAN BE INSTALLED WITHOUT THE USE OF TOOLS, AND THE CORRUGATED SYSTEM SHALL BE UL LISTED FOR SPRINKLER SERVICES TO 175 PSI. ALL HOSES SHALL BE FACTORY-PRESSURE TESTED TO 400 PSI.



2 G1.1 **FLOOR PLAN 2**

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

NORTH



3 G1.1 **FLOOR PLAN 3D VIEW**

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

NORTH

KEY PLAN

NO.	REVISIONS	DATE

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REGISTERED PROFESSIONAL ENGINEER
MATTHEW C. MYRES
Exp. 12/31/23
MECHANICAL
STATE OF NEVADA No. 16816

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GENERAL INFORMATION

G1.1

MECHANICAL SYMBOL LIST

(NOTE: ALL OF THE SYMBOLS INDICATED BELOW MAY NOT APPEAR ON THIS PROJECT)

12" X 12" OR 12" X 12"		DUCT W/ SIZE INDICATED (FIRST FIG. IS SIDE SHOWN)
V.D.	V.D.	MANUAL VOLUME / BALANCING DAMPER
		DUCT WITH ACOUSTIC LINING
F	F.D.R.	FIRE DAMPER
SD	S.D.	SMOKE DAMPER
FSD	F.S.D.	COMBINATION FIRE / SMOKE DAMPER
EX.	EX.	EXTRACTOR
12" X 12" 12" OR		SQUARE TO ROUND DUCT TRANSITION
	TR	DUCT SIZE TRANSITION
		FLEXIBLE DUCT CONNECTOR
	FLEX	FLEXIBLE DUCT
	SD	SPLITTER DAMPER
TV	T.V.'S	TURNING VANES
	S.A.	SUPPLY AIR DUCT DOWN
	S.A.	SUPPLY AIR DUCT UP
	R.A.	RETURN AIR DUCT DOWN
	R.A.	RETURN AIR DUCT UP
	E.A.	EXHAUST AIR DUCT DOWN
	E.A.	EXHAUST AIR DUCT UP
M	M.D.	MOTORIZED DAMPER
O.B.D.	O.B.D.	OPPOSED BLADE DAMPER
RD	RD	REFRIGERANT DISCHARGE PIPING
RL	RL	REFRIGERANT LIQUID PIPING
RS	RS	REFRIGERANT SUCTION PIPING
	S.T.R.	STRAINER
	S.T.R.	STRAINER WITH 3/4" HOSE END DRAIN VALVE
	P.T.R.	PRESSURE - TEMPERATURE RELIEF VALVE
	RV	PRESSURE RELIEF VALVE
	2VAL	2-WAY CONTROL VALVE
	3VAL	3-WAY CONTROL VALVE
	P.R.G.	PRESSURE GAUGE WITH GAUGE COCK
	TH.	THERMOMETER
	A.A.V.	AUTOMATIC AIR VENT
	M.A.V.	MANUAL AIR VENT
	V.B.	VACUUM BREAKER
	P.D.	PIPING TEE DOWN
	P.U.	PIPING TEE UP
	P.U.	PIPING ELBOW UP
	P.D.	PIPING ELBOW DOWN
		BRANCH - TOP CONNECTION
	POC	POINT OF CONNECTION
	POD	POINT OF DISCONNECT
		BRANCH - BOTTOM CONNECTION
		BRANCH - SIDE CONNECTION
OR		ARROW INDICATES DIRECTION OF FLOW
	A.P.	ACCESS PANEL
EQ		MECHANICAL EQUIPMENT INDICATED (SEE SCHEDULE)
		PLUMBING FIXTURE SCHEDULE - (SEE PLUMBING SCHEDULE)
1		DIFFUSER OR GRILLE INDICATED (SEE SCHEDULE)
T	T.	THERMOSTAT
S	S.E.N.	SENSOR
SD	S.D.E.T.	SMOKE DETECTOR
	T.C.C.	TEMPERATURE CONTROL PANEL

AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
BDD	BACKDRAFT DAMPER
BHP	BRAKE HORSEPOWER
BTUH	BRITISH THERMAL UNITS PER HOUR
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CLG	CEILING
DB	DRY BULB TEMPERATURE
DN	DOWN
(E)	EXISTING
EAT	ENTERING AIR TEMPERATURE
ESP	EXTERNAL STATIC PRESSURE
GA	GAUGE
GAL	GALLON
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
HSPF	HEATING SYSTEM PERFORMANCE FACTOR
KW	KILOWATTS
LAT	LEAVING AIR TEMPERATURE
MAX	MAXIMUM
MBH	BRITISH THERMAL UNITS PER HOUR (THOUSANDS)
MIN	MINIMUM
MOCP	MAXIMUM OVER CURRENT PROTECCTION
MUA	MAKE-UP AIR
(N)	NEW
NOM	NOMINAL
OA	OUTSIDE AIR
PD	PRESSURE DROP
RPM	REVOLUTION PER MINUTE
SP	STATIC PRESSURE
STD	STANDARD
T	TEMPERATURE
TBR	TO BE REMOVED
TYP	TYPICAL
WB	WET BULB TEMPERATURE
WC	WATER COLUMN
W.P.D.	WATER PRESSURE DROP

GENERAL MECHANICAL NOTES

1. DUE TO THE SMALL SCALE OF THE DRAWINGS, IT IS IMPOSSIBLE TO SHOW ALL REQUIRED OFFSETS, ELEVATIONS, ETC. IT IS THEREFORE THE CONTRACTORS RESPONSIBILITY TO VERIFY THE EXACT ROUTING, AND PLACEMENT OF ALL EQUIPMENT, PIPING AND ASSOCIATED COMPONENTS. CONTRACTOR SHALL PROVIDE REQUIRED OFFSETS INSTALLED IN ACCORDANCE WITH SMACNA STANDARDS AND THE SPECIFICATIONS TO MEET THE INTENT OF THE DESIGN.

2. CONTRACTOR SHALL BE RESPONSIBLE FOR THE CUTTING, SAWCUTTING OPENINGS OF WALLS, CEILINGS, SOFFITS AS REQUIRED FOR THE INSTALLATION OF EQUIPMENT, PIPING AND DUCTWORK AS REQUIRED.

3. ALL FACTORY PRODUCED AIR DUCT SHALL BE A CLASS '0' OR CLASS '1' IN ACCORDANCE WITH THE ADOPTED MECHANICAL CODE. ALL DUCTWORK CONSTRUCTION SHALL BE IN STRICT ACCORDANCE WITH THE RECOMMENDATIONS AND REQUIREMENTS OF THE DUCT MANUAL AND SHEET METAL CONSTRUCTION FOR VENTILATING-AIR CONDITIONING SYSTEMS, LATEST EDITION, AS ISSUED BY THE SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION, INC. (SMACNA). LOW PRESSURE ROUND DUCTS SHALL BE UNITED SHEET METAL SPIRAL UNIRIB DUCT WITH UNITED UNIWELD FITTINGS. MATERIALS SHALL BE GALVANIZED STEEL OF GAUGES SHOWN IN THE LOW PRESSURE MANUAL UNLESS SPECIFICALLY NOTED OTHERWISE ON PLANS.

4. THE CONTRACTOR SHALL KEEP INSTALLATION INSTRUCTIONS FOR ALL LISTED EQUIPMENT ON THIS PROJECT AT THE JOBSITE AND SHALL HAVE THEM ACCESSIBLE FOR THE FIELD INSPECTOR UPON REQUEST.

MECHANICAL SHEET LIST

NO. | REVISIONS | DATE

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MECHANICAL SYMBOLS AND ABBREVIATIONS

M0.1

MECHANICAL SPECIFICATIONS

A. GENERAL

1. THE INFORMATION INDICATED ON THESE DRAWINGS AS EXISTING IS BASED UPON INFORMATION TAKEN FROM AS-BUILT DRAWINGS, FIELD INVESTIGATION, AND INFORMATION OBTAINED FROM SUBMITTAL DATA, ETC. THE PLANS DO NOT GUARANTEE ACCURACY BUT ARE ONLY AN INDICATION OF EXISTING CONDITIONS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY EXACT CONDITIONS SUCH AS EQUIPMENT PLACEMENT, DUCTWORK (SIZE, ROUTING, AND ELEVATION), PIPING (SIZE, ROUTING, AND ELEVATION), ETC. THE DRAWINGS ARE INTENDED TO PROVIDE THE CONTRACTOR AN INDICATION OF THE SYSTEM INSTALLED IN THE FACILITY TO DATE. IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO MAKE ADJUSTMENTS TO THE DRAWING INFORMATION AS REQUIRED TO MATCH EXISTING FIELD CONDITIONS.
2. THE CONTRACTOR SHALL INSTALL THE NEW EQUIPMENT, DUCTWORK, AND PIPING AROUND ALL EXISTING OBSTACLES INCLUDING: ELECTRICAL CONDUIT, DOMESTIC WATER PIPING, WASTE AND VENT PIPING, ACID WASTE AND VENT PIPING, CHILLED AND HEATING WATER PIPING, AND FIRE SPRINKLER PIPING. PROVIDE OFFSETS TO AVOID RELOCATION OF OTHER UTILITIES. RELOCATE UTILITIES IF THEY ARE IN CONFLICT WITH THE MECHANICAL SYSTEM INSTALLATION, CAUSE DEVIATIONS IN THE DESIGN INTENT, UNSATISFACTORY OPERATION, NOISY CONDITIONS, OR INTERFERE WITH MAINTENANCE. IT IS THE MECHANICAL CONTRACTOR'S RESPONSIBILITY TO COORDINATE ANY UTILITY RELOCATION WITH THE APPROPRIATE SUBCONTRACTOR.
3. PROVIDE ALL NECESSARY LABOR, MATERIALS, EQUIPMENT, SERVICES AND INSURANCES TO COMPLETE THE HEATING, VENTILATING AND AIR CONDITIONING WORK WITHIN THE FULL INTENT OF THE DRAWINGS AND SPECIFICATIONS CONTAINED HEREON AND TO THE ENTIRE SATISFACTION OF THE ARCHITECT/ENGINEER.
4. PROVIDE ALL PERMITS AND FEES AS REQUIRED FOR THE MECHANICAL WORK.
5. CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH THE PROJECT BEFORE BIDDING.
6. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2018 INTERNATIONAL BUILDING CODE (IBC), 2018 INTERNATIONAL ENERGY CONSERVATION CODE (IECC), 2018 INTERNATIONAL FIRE CODE (IFC), 2018 UNIFORM MECHANICAL CODE (UMC), 2018 UNIFORM PLUMBING CODE (UPC), 2017 NATIONAL ELECTRICAL CODE (NEC), NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) STANDARDS, AND ALL OTHER APPLICABLE CODES, RULES, AND LOCAL REQUIREMENTS.
7. GUARANTEE ALL WORK AND MATERIALS FOR A PERIOD OF ONE YEAR.
8 ALL DIMENSIONS AND MEASUREMENTS SHALL BE VERIFIED AT THE JOBSITE BEFORE FABRICATION AND/OR INSTALLATION OF THE EQUIPMENT.
9 PROVIDE AND INSTALL ALL EQUIPMENT, DUCT, PIPING, AND CONTROLS AS SHOWN ON THE DRAWINGS.

B. SUBMITTALS

1. FURNISH SIX (6) SETS OF SUBMITTALS (BOUND WITH COVER) OF MANUFACTURER'S DATA SHEETS FOR ALL MATERIALS AND EQUIPMENT FOR APPROVAL OF THE ARCHITECT/ENGINEER PRIOR TO PURCHASE AND INSTALLATION. INCOMPLETE SUBMITTALS WILL NOT BE REVIEWED.
2. ELECTRONIC SUBMITTALS IN ADOBE PDF FORMAT, IN LIEU OF PAPER COPIES, WILL ONLY BE ACCEPTED IF PRIOR WRITTEN AUTHORIZATION IS GRANTED BY THE OWNER, ARCHITECT, AND GENERAL CONTRACTOR.
3. SUBSTITUTED ITEMS SHALL BE SUBMITTED WITH MANUFACTURER'S DESCRIPTIVE DATA AND MUST SHOW EQUALITY TO EQUIPMENT SPECIFIED. INFORMATION ON SUBSTITUTED ITEMS MUST BE COMPLETE, INCLUDING, BUT NOT LIMITED TO: DESIGN, CONSTRUCTION MATERIALS, CONSTRUCTION QUALITY, AND SOUND LEVELS. ENGINEER WILL NOT RESEARCH INFORMATION REQUIRED TO COMPARE EQUIPMENT. ENGINEER RESERVES THE RIGHT TO REQUIRE SPECIFIED EQUIPMENT.
4. SUBMIT MANUFACTURER'S DESCRIPTIVE DATA WITHIN TEN (10) WORKING DAYS AFTER AWARD OF THE CONTRACT. MATERIALS AND EQUIPMENT SHALL NOT BE ORDERED PRIOR TO SUBMITTAL APPROVAL. ALLOW TEN (10) WORKING DAYS AFTER RECEIPT OF SUBMITTALS IN THE ENGINEER'S OFFICE BEFORE REVIEWED SUBMITTALS WILL BE RETURNED.
5. UPON COMPLETION OF THE PROJECT, AND PRIOR TO FINAL ACCEPTANCE PAYMENT, SUBMIT ONE (1) SET OF AS-BUILT DRAWINGS AND THREE SETS OF OPERATING AND MAINTENANCE INSTRUCTIONS (BOUND IN 3-RING BINDERS).

C. WORKMANSHIP

1. ALL WORK TO BE PERFORMED BY QUALIFIED PERSONNEL NORMALLY ENGAGED IN THE RESPECTIVE LINE OF WORK.
2. PERFORM ALL WORK IN A MANNER NOT TO DISTURB THE NORMAL OPERATION OF THE BUILDING.
3. COORDINATE ALL WORK WITH THE OWNER'S REPRESENTATIVE.
4. COORDINATE ALL WORK WITH THE OTHER TRADES.
5. THE MECHANICAL CONTRACTOR IS RESPONSIBLE FOR PERFORMING ALL WORK ACCEPTABLE TO THE OWNER'S REPRESENTATIVE.

D. DEMOLITION

1. DEMOLITION WORK SHALL NOT CREATE ANY DUST PROBLEMS IN THE WORKING SPACES.
2. ALL EXISTING EQUIPMENT REMOVED DURING THE COURSE OF THIS PROJECT BECOMES THE PROPERTY OF THIS CONTRACTOR AND SHALL BE REMOVED FROM THE SITE.

E. CUTTING, PATCHING, AND PAINTING

1. ALL CUTTING AND PATCHING TO BE PERFORMED BY THE GENERAL CONTRACTOR.
2. CUTTING OF ALL OPENINGS SHALL BE COORDINATED WITH THE OWNER'S ENGINEERING REPRESENTATIVE.
3. WATER WILL NOT BE USED FOR CONCRETE CUTTING WITHOUT THE DIRECT SUPERVISION OF THE OWNER'S ENGINEERING REPRESENTATIVE.
4. WALL SURFACES SHALL BE PRIMED AND PAINTED. PAINT TYPE AND COLOR SHALL BE AS SPECIFIED BY THE OWNER'S REPRESENTATIVE.

F. PRODUCT HANDLING

1. USE ALL MEANS NECESSARY TO PROTECT ALL MATERIALS AND EQUIPMENT BEFORE, DURING, AND AFTER INSTALLATION AND TO PROTECT THE MATERIALS AND WORK OF THE OTHER TRADES.
2. IN THE EVENT OF DAMAGE, IMMEDIATELY MAKE ALL REPAIRS AND REPLACEMENTS NECESSARY TO THE APPROVAL OF THE ENGINEER AND AT NO ADDITIONAL COST TO THE OWNER.

G. SEISMIC RESTRAINTS

1. ALL EQUIPMENT, DUCTWORK, PIPING, AND CONDUIT SHALL BE SEISMICALLY RESTRAINED PER THE 2018 IBC.
2. REFERENCES: INTERNATIONAL BUILDING CODE (IBC) SECTION 1613.1, AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE 7) SECTION 13.6, SHEET METAL AND AIR CONDITIONING CONTRACTOR'S NATIONAL ASSOCIATION (SMACNA) SEISMIC RESTRAINT MANUAL, AND AMERICAN SOCIETY OF PLUMBING ENGINEERS (ASPE) PLUMBING ENGINEERING DESIGN HANDBOOK.

H. EQUIPMENT

1. EQUIPMENT SHALL BE AS SPECIFIED IN THE EQUIPMENT SCHEDULE OR AN APPROVED EQUAL IF NOTED.
2. INSTALL EQUIPMENT PER MANUFACTURER'S INSTRUCTIONS.
3. ALL UNITS ON ROOF SHALL BE SET ON LEVEL CURBS OR SUPPORTS AT ROOF.
4. SECURELY FASTEN ALL EQUIPMENT TO PREVENT MOVEMENT DUE TO WIND OR SEISMIC FORCES.
5. PROVIDE 10'-0" MINIMUM CLEARANCE BETWEEN OUTSIDE AIR INTAKE AND ANY EXHAUST AIR OUTLETS OR PLUMBING VENTS.

I. DUCTWORK

1. AIR DISTRIBUTION DUCT SHALL BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH CURRENT EDITIONS OF THE ASHRAE GUIDE AND WITH S.M.A.C.N.A. DUCT CONSTRUCTION STANDARDS.
2. RECTANGULAR AND ROUND DUCTWORK SHALL BE CONSTRUCTED FROM GALVANIZED STEEL IN ACCORDANCE WITH THE LATEST EDITION S.M.A.C.N.A. "HVAC DUCT CONSTRUCTION STANDARDS" FOR 2" W.G. PRESSURE SYSTEMS. FIBERGLASS DUCT WILL NOT BE PERMITTED.
3. DUCTS LINED WITH INSULATION SHALL BE INCREASED IN SIZE TO ALLOW FOR INSULATION THICKNESS SO THAT DIMENSIONS SHOWN ON DRAWINGS WILL BE NET INSIDE DIMENSIONS.
4. FITTINGS: ROUND TO RECTANGULAR DUCT CONNECTIONS SHALL BE MADE AS SHOWN ON DRAWINGS OR WITH CONICAL SHAPED PREFORMED FITTINGS. TURNING VANES SHALL BE USED FOR ALL MITERED ELBOWS IN RECTANGULAR DUCT. CENTERLINE RADIUS OF ALL ELBOWS SHALL BE ONE AND ONE HALF TIMES THE DIAMETER OF THE DUCT.
5. DUCTS SHALL BE PROVIDED WITH HANGERS TO PREVENT ANY BENDING OR SAGGING. HANGERS SHALL BE GALVANIZED STRAP IRON LOOPS WHICH SHALL BE FASTENED TO OVERHEAD CONSTRUCTION IN A SECURE MANNER. SIZE, GAUGE, AND SPACING SHALL BE PER S.M.A.C.N.A. STANDARDS.
6. ALL DUCT JOINTS SHALL BE SEALED WITH S.M.A.C.N.A. APPROVED TAPE AND POLYMER ADHESIVES AIR SEAL #33 OR DESIGN POLYMERICS #DP1010 WATER BASED DUCT SEALANT OR APPROVED EQUAL.
7. AT ALL DUCT CONNECTIONS TO UNITS, AND WHERE INDICATED, FURNISH AND INSTALL HEAVY FLEXIBLE CONNECTIONS 6" MINIMUM LENGTH. MATERIAL USED FOR FLEXIBLE CONNECTIONS SHALL BE VENTFAB AS MANUFACTURED BY VENTFABRIC, METALFAB AS MANUFACTURED BY DURODYNE, OR APPROVED EQUAL.
8. FLEXIBLE DUCTWORK LOCATED IN UNCONDITIONED SPACE SHALL BE A FACTORY FABRICATED ASSEMBLY CONSISTING OF A FLAME RESISTANT, DOUBLE LAMINATION OF POLYESTER INNER LINER BONDED TO A COATED SPRING STEEL WIRE HELIX, 2½" THICK FIBERGLASS INSULATION FOR AN INSULATING VALUE OF R8, AND AN OUTER VAPOR BARRIER JACKET OF METALIZED POLYESTER FILM. FLEXIBLE DUCT TO BE ATCO UPC-031. FLEXIBLE DUCT RUNOUTS SHALL NOT EXCEED 5 FEET IN LENGTH.
9. MANUAL VOLUME DAMPERS: AIR BALANCE INC. MODELS AC-111 AND AC-112 OR APPROVED EQUAL. DAMPERS SHALL BE FURNISHED WITH INSULATION STANDOFFS AND LOCKING QUADRANT HANDLES. RESIDENTIAL TYPE WILL NOT BE PERMITTED.
10. ALL WALL AND ROOF PENETRATIONS SHALL BE FLASHED AND COUNTERFLASHED WATERTIGHT.

J. GRILLES, REGISTERS, AND DIFFUSERS

1. AN AIR DISTRIBUTION SCHEDULE IS SHOWN ON DRAWINGS. UNITS OF EQUAL PERFORMANCE, CONSTRUCTION, AND SOUND CRITERIA BY MAJOR MANUFACTURERS WILL BE CONSIDERED FOR APPROVAL. SEE SUBSTITUTION REQUIREMENTS.
2. COORDINATE LOCATIONS WITH CEILING GRID DESIGN AND LIGHT FIXTURE PATTERN.

K. PIPING

1. EQUIPMENT DRAIN PIPING TO BE TYPE 'M' HARD DRAWN COPPER WITH WROT COPPER FITTINGS. USE 95/5 SOLDER. SLOPE PIPING 1/8" PER FOOT TOWARDS DRAIN.
2. PROVIDE SPLIT RING HANGERS AT 6'-0" CENTERS AND AT ALL CHANGES IN DIRECTION.
3. ISOLATE ALL DISSIMILAR METALS WITH DIELECTRIC UNIONS OR APPROVED METHOD.
4. ISOLATE ALL COPPER PIPING FROM DISSIMILAR SUPPORTS.
5. HYDRONIC, SIZES UP TO 2": ASTM B88, TYPE 'L', HARD DRAWN COPPER WITH WROT COPPER SOLDER JOINT FITTINGS OR COPPER PRESS FITTINGS.

L. DUCT INSULATION

1. ACCEPTABLE MANUFACTURERS: CERTAINTEED, KNAUF, JOHNS MANVILLE, AND OWENS CORNING.
2. ROUND SUPPLY AND RETURN DUCT AND FITTINGS LOCATED WITHIN THE CONDITIONED SPACE SHALL BE EXTERNALLY INSULATED WITH JOHNS MANVILLE MICROLITE 75 (OR EQUAL) 1½" THICK, 3/4# DENSITY FIBERGLASS BLANKET INSULATION WITH FSK VAPOR BARRIER JACKET. ROUND SUPPLY AND RETURN DUCT AND FITTINGS EXPOSED WITHIN THE AREA THAT IT SERVES SHALL NOT BE INSULATED.
3. RECTANGULAR SUPPLY AND RETURN DUCT AND FITTINGS LOCATED WITHIN THE CONDITIONED SPACE SHALL BE INTERNALLY LINED WITH JOHNS MANVILLE PERMACOTE LINACOUSTIC R-300 (OR EQUAL) 1" THICK, 1½# DENSITY ACOUSTICAL DUCT LINER. ADJUST DUCT SIZE TO ACCOMMODATE LINER AND GIVE NET DIMENSIONS SHOWN ON DRAWINGS.
4. ROUND SUPPLY AND RETURN DUCT AND FITTINGS LOCATED IN UNCONDITIONED SPACE SHALL BE EXTERNALLY INSULATED WITH JOHNS MANVILLE MICROLITE 100 (OR EQUAL) 2" THICK, R-6 MINIMUM INSTALLED INSULATING VALUE, 1# DENSITY FIBERGLASS BLANKET INSULATION WITH FSK VAPOR BARRIER JACKET.
5. RECTANGULAR SUPPLY AND RETURN DUCT AND FITTINGS LOCATED IN UNCONDITIONED SPACE SHALL BE INTERNALLY LINED WITH JOHNS MANVILLE PERMACOTE LINACOUSTIC R-300 (OR EQUAL) 1½" THICK, R-6 MINIMUM INSULATING VALUE, 1½# DENSITY ACOUSTICAL DUCT LINER. ADJUST DUCT SIZE TO ACCOMMODATE LINER AND GIVE NET DIMENSIONS SHOWN ON DRAWINGS.
6. OUTSIDE AIR DUCT AND FITTINGS SHALL BE EXTERNALLY INSULATED WITH JOHNS MANVILLE MICROLITE 75 (OR EQUAL) 1½" THICK, 1# DENSITY FIBERGLASS BLANKET INSULATION WITH FSK VAPOR BARRIER JACKET.
7. ROUND SUPPLY DUCT AND FITTINGS SHOWN AS LINED ON THE DRAWINGS SHALL BE INTERNALLY LINED WITH JOHNS MANVILLE SPIRACOUSTIC (OR EQUAL) 1" THICK, 1# DENSITY ACOUSTIC DUCT LINER. ADJUST DUCT SIZE TO ACCOMMODATE LINER AND GIVE NET DIMENSIONS SHOWN ON DRAWINGS.
8. EXTERIOR DUCT AND FITTINGS SHALL BE EXTERNALLY INSULATED WITH 2" THICK RIGID POLYISOCYANURATE OR POLYSTYRENE FOAM INSULATION (R-8 MINIMUM) WITH MINIMUM 20 GAUGE ALUMINUM OR GALVANIZED STEEL JACKET. LAP AND SEAL EXTERIOR JACKET JOINTS. INTERNALLY LINE DUCT (WHERE SHOWN ON DRAWINGS) WITH JOHNS MANVILLE PERMACOTE LINACOUSTIC R-300 (OR EQUAL) 1" THICK, 1½# DENSITY ACOUSTICAL DUCT LINER. ADJUST DUCT SIZE TO ACCOMMODATE LINER AND GIVE NET DIMENSIONS SHOWN ON DRAWINGS.

M. OTHER MATERIAL

1. ALL OTHER MATERIAL, NOT SPECIFICALLY DESCRIBED BUT REQUIRED FOR A COMPLETE JOB, SHALL BE NEW AND FIRST QUALITY, FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR.

N. TESTING AND BALANCING

1. TEST & BALANCE TO BE CONDUCTED BY RAGLEN SYSTEM BALANCE OR A MEMBER OF THE ASSOCIATED AIR BALANCE COUNCIL, AND THEY SHALL SUBMIT THREE (3) COPIES OF A FINAL SYSTEM PERFORMANCE REPORT TO THE ENGINEER FOR APPROVAL AND BEFORE THE FINAL INSPECTION.
2. AFTER COMPLETION OF THE INSTALLATION WORK, TEST AND REGULATE ALL COMPONENTS OF THE NEW SYSTEMS TO THE SATISFACTION OF THE OWNER'S ENGINEERING REPRESENTATIVE.
3. AIR BALANCE CONTRACTOR TO SUPPLY NEW DRIVE COMPONENTS REQUIRED TO PROVIDE AIR FLOWS INDICATED. THE DRIVE SHALL BE SELECTED AT NOT LESS THAN TWO TIMES THE RATE NAME PLATE HORSEPOWER OF THE FAN MOTOR AND BE FIXED PITCH (VARIABLE PITCH SHEAVES WILL NOT BE PERMITTED EXCEPT TO DETERMINE PROPER SHEAVE SIZE).
4. AIR SYSTEM: ALL COMPONENTS SHALL BE TESTED AND ADJUSTED TO -0 TO +10%. REPORT SHALL INCLUDE SCHEDULED (NAMEPLATE) AND TESTED DATA. PROVIDE FAN/MOTOR RPM, AIR PRESSURE DROP FOR INDIVIDUAL COMPONENTS, TSP, ESP, CFM, VOLTAGE, AMPS, HP, AND SHEAVE SIZES (AS APPLICABLE) FOR ALL EQUIPMENT, AIR OUTLETS, AND AIR INLETS.
5. DIFFUSERS, GRILLES, REGISTERS: ADJUST THROW PATTERN AS SHOWN ON THE DRAWINGS. ADJUST AIR QUANTITIES WITHIN -0 TO +10% OF THE DESIGN AIR QUANTITIES.

O. IDENTIFICATION

1. PLASTIC NAMEPLATES: LAMINATED THREE LAYER WITH ENGRAVED BLACK LETTERS ON A LIGHT CONTRASTING BACKGROUND COLOR. INSTALL PLASTIC NAMEPLATES WITH CORROSION RESISTANT MECHANICAL FASTENERS, OR ADHESIVE.
2. METAL TAGS: BRASS WITH STAMPED LETTERS. TAG SIZE MINIMUM 1½" DIAMETER WITH SMOOTH EDGES. INSTALL TAGS USING CORROSION RESISTANT CHAIN. NUMBER TAGS CONSECUTIVELY BY LOCATION.
3. LABELS: POLYESTER, SIZE AS REQUIRED, ADHESIVE BACKED WITH PRINTED IDENTIFICATION. INSTALL LABELS WITH SUFFICIENT ADHESIVE TO ENSURE PERMANENT PLACEMENT.
4. IDENTIFY ALL EQUIPMENT WITH PLASTIC NAMEPLATES.
5. IDENTIFY PIPING WITH LABELS.
6. IDENTIFY CONTROL PANELS AND MAJOR COMPONENTS OUTSIDE PANELS WITH PLASTIC NAMEPLATES. TAG AUTOMATIC CONTROLS, INSTRUMENTS, AND RELAYS. KEY TO CONTROL SCHEMATIC.

P. RELATED WORK

1. ELECTRICAL CONTRACTOR TO PROVIDE AND INSTALL ALL POWER WIRING AND EQUIPMENT DISCONNECTS, UNLESS INCLUDED WITH EQUIPMENT, TO MAKE SYSTEM OPERATIONAL.

Q. CONTROLS

1. CONTROLS TO BE PROVIDED BY BUILDING CONTROLS SERVICES, INC. (775-826-8998) AS PART A SEPARATE CONTRACT.

R. PIPE INSULATION

1. INTERIOR HOT WATER PIPING SHALL BE INSULATED WITH FIBERGLASS PIPE INSULATION WITH ALL SERVICE JACKET. 1½" THICK ON PIPES SIZES UP TO AND INCLUDING 1¼". 2" THICK ON PIPE SIZES OVER 1¼". JACKET SHALL HAVE A SELF SEALING LAP AND A FLAME SPREAD RATING OF 25 OR LESS AND A SMOKE DEVELOPED RATING OF 50 OR LESS. INSULATE FITTINGS WITH PVC PRE-MOLDED INSULATED COVERS USING VAPOR BARRIER MASTIC AND TAPE. INSULATE FLANGES AND UNIONS.

O. VALVES AND SPECIALTIES

1. BALL VALVES: BRONZE BODY, CHROME PLATED BRASS BALL, TEFLON SEATS, FULL PORT, TWO PIECE LEVER HANDLE.
2. CHECK VALVES (UP TO 2"): BRONZE BODY, BRONZE SWING DISC, SCREWED ENDS.
3. FLOW CONTROL VALVES (UP TO 2"): BELL & GOSSETT MODEL "CB" CIRCUIT SETTER, BRONZE BODY, BRASS BALL, PRESSURE DIFFERENTIAL READOUT PORTS, 1/4" NPT TAPPED DRAIN/PURGE PORT, MEMORY STOP, NAMEPLATE WITH CALIBRATED SETTING POSITIONS, AND SCREWED ENDS.
4. DIELECTRIC UNION: WATTS, WILKINS, OR APPROVED EQUAL UNION WITH NONCONDUCTIVE INSULATING MATERIAL BETWEEN COPPER AND FERROUS MATERIALS.
5. AUTOMATIC AIR VENTS: BELL & GOSSETT OR EQUAL BRASS BODY, COPPER FLOAT, STAINLESS STEEL VALVE AND VALVE SEAT, SUITABLE FOR SYSTEM OPERATING TEMPERATURE AND PRESSURE, WITH ISOLATING VALVE.
6. STRAINERS (UP TO 2"): BRASS BODY, Y-PATTERN, 1/32" STAINLESS STEEL PERFORATED SCREEN, SCREWED ENDS.
7. TEMPERATURE CONTROL VALVES TO BE SUPPLIED BY CONTROL CONTRACTOR.

NO.	REVISIONS	DATE

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REGISTERED PROFESSIONAL ENGINEER
MATTHEW C. MYRES
No. 16816
Exp. 12/31/23
MECHANICAL
STATE OF NEVADA

STAMP

KH PROJECT NO.:	192079002
DRAWN BY:	AS
REVIEWED BY:	MCM
DATE:	04/12/2023

ALF SORENSEN PRESCHOOL
HVAC MODIFICATIONS
1400 BARING BLVD
SPARKS, NV 89434

MECHANICAL SPECIFICATIONS

M0.2

VAV BOX SCHEDULE

UNIT DESIGNATION	MAKE AND MODEL NUMBER	STANDARD FEATURES AND OPTIONAL ACCESSORIES	UNIT SIZE	CONTROL VALVE TYPE	MAX AIR FLOW (CFM) @ 1.0" W.G.	MIN AIR FLOW (CFM) @ 0.03" W.G.	REHEAT AIR VOLUME (CFM)	REHEAT COIL									CONTROLS	INLET STATIC (in wc)	DISCHARGE SOUND CRITERIA		RADIATED SOUND CRITERIA	
								CAPACITY (MBH)	EAT (°F)	LAT (°F)	WPD. (ft. wg)	COIL APD. (IN W.C.)	FLOW (GPM)	EWT (°F)	LWT (°F)	ROWS			SOUND PWR. LVL. (OCTAVES 2-7)	NC	SOUND PWR. LVL. (OCTAVES 2-7)	NC
VAV 1	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, 1/2" THICK FIBERGLASS INSULATION, 22 GAUGE UNIT CASING, NEMA 1 WIRING ENCLOSURE, UL TRANSFORMER, HOT WATER REHEAT COIL, MODULATING CONTROL VALVE PACKAGE INCLUDING ISOLATION BALL VALVES, UNIONS, AND P/T PORTS	22	3-WAY	5,500	450	2,000	67.2	55	90.62	3.83	0.30	6.5	180	158.3	1	DIGITAL ELECTRONIC	1	72,69,66,63,59,57	28	60,61,59,50,44,38	34
VAV 2	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, 1/2" THICK FIBERGLASS INSULATION, 22 GAUGE UNIT CASING, NEMA 1 WIRING ENCLOSURE, UL TRANSFORMER, HOT WATER REHEAT COIL, MODULATING CONTROL VALVE PACKAGE INCLUDING ISOLATION BALL VALVES, UNIONS, AND P/T PORTS	14	3-WAY	2,500	250	1,250	40.0	55	88.96	1.35	0.20	4.0	180	159.3	1	DIGITAL ELECTRONIC	1	67,60,58,54,50,48	18	54,50,45,40,36,32	19

AIR HANDLING UNIT SCHEDULE

AHU ~	UNIT DATA			SUPPLY AIR BLOWER					COOLING										HEATING				ELECTRICAL	
	MANUFACTURER	MODEL	OPERATING WEIGHT (lb)	SUPPLY AIR (CFM)	OUTSIDE AIR (CFM)	RATED POWER (HP)	BLOWER RPM	E.S.P. (in. wg.)	TEMPERATURE (°F)					CAPACITY (MBH)		EER	SEER/ IEER	REFRIGERANT	TEMPERATURE (°F)		HEATING GAS (MBH)		VOLTS/Ø/Hz	MCOP
									ENT. AIR		UNIT Lvg. AIR		OD Amb	TOTAL	SENS.				Ent. DB	Lvg. DB	INPUT	OUTPUT		
									DB	WB	DB	WB												
3	JOHNSON	J25ZJS40P4C2ACA2C1	3,220	8,000	2,750	10	1,015	1.5	83.9	62.0	52.5	49.5	100	276.5	271.5	10.6	12.0	R410A	60.0	97.0	400	320	460/3/60	70

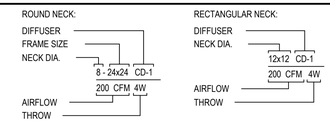
DESCRIPTION

1. 25 TON, FOUR STAGE COOLING PACKAGED R-410A AIR CONDITIONER
2. STAINLESS STEEL BURNER WITH TWO STAGE GAS HEAT
3. SINGLE WALL CONSTRUCTION
4. SPEED CONTROL OF THE VFD BASED ON STAGES OF COOLING.
5. PROVIDES SINGLE ZONE VAV FAN OPERATION AS DEFINED BY ASHRAE 90.1 SECTION 6.4.3.10.
6. DRY BULB LOW LEAK ECONOMIZER WITH HOOD (NO BAROMETRIC RELIEF DAMPER OR HOOD) WITH ECONOMIZER FAULT DETECTION & DIAGNOSTIC (MEETS ASHRAE 90.1-2013, IECC 2015, CALIFORNIA TITLE 24, AMCA 511)
7. 10 HP STANDARD STATIC BELT DRIVE BLOWER
8. 2" PLEATED FILTERS (MERV 8)
9. EQUIPMENT CONTROLLER INCLUDING DISCHARGE AIR, RETURN AIR, AND OUTDOOR AIR TEMPERATURE SENSORS. BACNET MS/TP, MODBUS AND N2 COMMUNICATION CARD.
10. HACR CIRCUIT BREAKER/DISCONNECT
11. HINGED & TOOL FREE FILTER, BLOWER, MOTOR AND ELECTRICAL ACCESS PANELS
12. GALVANIZED STEEL DRAIN PAN

OPTIONS

1. PROVIDE UNIT WITH BIRDSCREEN ON O.A. INTAKE AND E.A. OUTLET.
2. INSTALL SUPPLY AND RETURN AIR DUCT SMOKE DETECTORS. INTERLOCKED AS REQUIRED TO SHUT DOWN UNIT UPON DETECTION OF SMOKE.
3. PROVIDE WITH RAWAL VALVE TO PROVIDE CONTINUOUS COOLING CAPACITY MODULATION.
4. SIDE DUCTWORK CONNECTIONS.
5. POWER EXHAUST KIT WITH BAROMETRIC RELIEF AND EXHAUST HOOD.

AIR DISTRIBUTION SCHEDULE



TAG	MANUF.	TYPE	FACE	FRAME	MODEL	REMARKS
CD-1	KRUEGER	SUPPLY	PLAQUE	LAY-IN	5PLQ	ALUMINUM
CD-2	KRUEGER	SUPPLY	PLAQUE	SURFACE	5PLQ	ALUMINUM
DL-1	TITUS	SUPPLY	DRUM LOUVER	SIDEWALL	DL	PROVIDE W/INTEGRAL OPPOSED BLADE DAMPER
LSD-1	KRUEGER	SUPPLY	LINEAR SLOT	STYLE 'B'	1900	5' LONG, 1/2" SLOTS, 8"Ø OVAL INLET BOOT

NO. | REVISIONS | DATE

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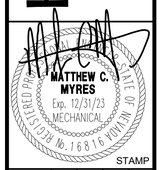

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KH PROJECT NO.: 192079002
DRAWN BY: AS
REVIEWED BY: MCM
DATE: 04/12/2023

ALF SORENSEN PRESCHOOL
HVAC MODIFICATIONS
1400 BARING BLVD
SPARKS, NV 89434

MECHANICAL SCHEDULES

M0.3

COMcheck Software Version 4.1.5.1

Mechanical Compliance Certificate

Project Information

Energy Code:	2018 IECC
Project Title:	ALF SORENSEN PRESCHOOL MODIFICATIONS
Location:	Sparks, Nevada
Climate Zone:	5b
Project Type:	Alteration

Construction Site:
1400 BARING BLVD
SPARKS, NV 89434

Owner/Agent:
CITY OF SPARKS

Designer/Contractor:
MATTHEW MYRES
KIMLEY-HORN
5370 KIETZKE LN
RENO, NV 89511
(775) 636-7835

Mechanical Systems List

Quantity **System Type & Description**

1 AHU-1 (Multiple-Zone):
Heating: 1 each - Duct Furnace, Gas, Capacity = 328 kBtu/h
Proposed Efficiency = 81.00% Ec, Required Efficiency: 80.00 % Ec
Cooling: 1 each - Single Package DX Unit, Capacity = 200 kBtu/h, Air-Cooled Condenser, Air Economizer
Proposed Efficiency = 10.80 EER, Required Efficiency: 10.80 EER + 12.2 IEER
Fan System: FAN SYSTEM 1 -- Compliance (Motor nameplate HP method) : Passes

Fans:
FAN 1 Supply, Single-Zone VAV, 3850 CFM, 3.3 motor nameplate hp, 0.0 fan efficiency grade
FAN 2 Supply, Single-Zone VAV, 2150 CFM, 3.3 motor nameplate hp, 0.0 fan efficiency grade

3 WH-1:
Gas Storage Water Heater, Capacity: 100 gallons, Input Rating: 199 kBtu/h w/ Circulation Pump
Proposed Efficiency: 97.00 % Et, Required Efficiency: 80.00 % Et

Mechanical Compliance Statement

Compliance Statement: The proposed mechanical alteration project represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2018 IECC requirements in COM*check* Version 4.1.5.1 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Name - Title _____ Signature _____ Date _____

COMcheck Software Version 4.1.5.1

Inspection Checklist

Energy Code: 2018 IECC

Requirements: 100.0% were addressed directly in the COM*check* software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
C103.2 [PR2][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the mechanical systems and equipment and document where exceptions to the standard are claimed. Load calculations per acceptable engineering standards and handbooks.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C103.2 [PR3][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the service water heating systems and equipment and document where exceptions to the standard are claimed. Hot water system sized per manufacturer's sizing guide.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Footing / Foundation Inspection	Complies?	Comments/Assumptions
C403.12.2, C403.12.3 [FO9][1]	Snow/ice melting system and freeze protection systems have sensors and controls configured to limit service for pavement temperature and outdoor temperature. future connection to controls.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Plumbing Rough-In Inspection	Complies?	Comments/Assumptions
C404.5, C404.5.1, C404.5.2 [PL6][1]	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C404.5, C404.5.1, C404.5.2 [PL6][1]	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C404.6.1, C404.6.2 [PL3][1]	Automatic time switches installed to automatically switch off the recirculating hot-water system or heat trace.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C404.6.3 [PL7][1]	Pumps that circulate water between a heater and storage tank have controls that limit operation from startup to <= 5 minutes after end of heating cycle.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C404.6.3 [PL7][1]	Pumps that circulate water between a heater and storage tank have controls that limit operation from startup to <= 5 minutes after end of heating cycle.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C404.7 [PL8][1]	Demand recirculation water systems have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water piping to 104°F.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C404.7 [PL8][2]	Demand recirculation water systems have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water piping to 104°F.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C402.2.6 [ME41][3]	Thermally ineffective panel surfaces of sensible heating panels have insulation >= R-3.5.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.11.3 [ME61][2]	HVAC piping insulation insulated in accordance with Table C403.11.3. Insulation exposed to weather is protected from damage and is provided with shielding from solar radiation.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Piping within HVAC equipment.
C403.8.1 [ME65][2]	HVAC fan systems at design conditions do not exceed allowable fan system motor nameplate hp or fan system bhp.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. *See the Mechanical Systems list for values.*
C403.8.3 [ME117][2]	Fans have efficiency grade (FEG) >= 67. The total efficiency of the fan at the design point of operation <= 15% of maximum total efficiency of the fan.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.8.4 [ME142][2]	Motors for fans that are not less than 1/12 hp and less than 1 hp are electronically commutated motors or have a minimum motor efficiency of 70 percent. These motors have the means to adjust motor speed.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.8.5 [ME143][2]	Each DX cooling system > 65 kBtu and chiller water/evaporative cooling system with fans > 1/4 hp are designed to vary the indoor fan airflow as a function of load and comply with detailed requirements of this section.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.12.1 [ME71][2]	Systems that heat outside the building envelope are radiant heat systems controlled by an occupancy sensing device or timer switch.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.2.3 [ME55][2]	HVAC equipment efficiency verified.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Mechanical Systems list for values.*
C403.2.1 [ME112][3]	Zone isolation devices and controls installed where applicable.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.5.5 [ME113][2]	Fault detection and diagnostics installed with air-cooled unitary DX units having economizers.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.2.2 [ME59][1]	Natural or mechanical ventilation is provided in accordance with International Mechanical Code Chapter 4. Mechanical ventilation has capability to reduce outdoor air supply to minimum per IMC Chapter 4.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C403.7.1 [ME59][1]	Demand control ventilation provided for spaces >500 ft2 and >25 people/1000 ft2 occupant density and served by systems with air side economizer, auto modulating outside air damper control, or design airflow >3,000 cfm.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.7.2 [ME115][1]	Enclosed parking garage ventilation has automatic contaminant detection and capacity to stage or modulate fans to 50% or less of design capacity.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.7.3 [ME140][1]	Units that provide ventilation air to multiple zones and operate in combination with zone heating and cooling systems do not use heating or heat recovery to warm supply air to a temperature greater than 60°F when representative building loads or outdoor air temperatures indicate that the majority of zones require cooling.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.7.6 [ME141][1]	HVAC systems serving guestrooms in Group R-1 buildings with > 50 guestrooms: Each guestroom is provided with controls that automatically manage temperature setpoint and ventilation (see sections C403.7.6.1 and C403.7.6.2).	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.7.4 [ME57][1]	Exhaust air energy recovery on systems meeting Table C403.7.4(1) and C403.7.4(2).	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.7.5 [ME116][1]	Kitchen exhaust systems comply with replacement air and conditioned supply air limitations, and satisfy hood rating requirements and maximum exhaust rate criteria.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.11.1, C403.11.2 [ME60][2]	HVAC ducts and plenums insulated in accordance with C403.11.1 and constructed in accordance with C403.11.2, verification may need to occur during Foundation Inspection.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.5, C403.5.1, C403.5.2 [ME62][1]	Air economizers provided where required, meet the requirements for design capacity, control signal, ventilation controls, high-limit shut-off, integrated economizer control, and provide a means to relieve excess outside air during operation.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.5.3.3 [ME124][1]	Air economizers automatically reduce outdoor air intake to the design minimum outdoor air quantity when outdoor air intake will not reduce cooling energy usage. See Table C403.5.3.3 for applicable device types and climate zones.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.5.3.4 [ME125][1]	System capable of relieving excess outdoor air during air economizer operation to prevent overpressurizing the building. The relief air outlet located to avoid recirculation into the building.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

NO. | REVISIONS | DATE

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1400 BARING BLVD
SPARKS, NV 89434

MECHANICAL COMPLIANCE CERTIFICATE

M0.4

Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C403.5.3.5 [ME126][1]	Return, exhaust/relief and outdoor air dampers used in economizers have motorized dampers that automatically shut when not in use and meet maximum leakage rates. Reference section C403.7.7 for details.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.4.1.1 [ME75][2]	Hydronic and multizone HVAC system controls areVAV fans driven by mechanical or electrical variable speed drive per Table C403.4.1.1.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.4.1.2 [ME67][2]	VAV fans have static pressure sensors located so controller setpoint <=1.2 w.c..	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.4.1.3 [ME24][2]	Reset static pressure setpoint for DDC controlled VAV boxes reporting to central controller based on the zones requiring the most pressure.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.4.4 [ME68][3]	Hydronic systems greater than 300,000 Btu/h designed for variable fluid flow. See section language for full details.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.6.1 [ME130][3]	Supply air systems serving multiple zones have VAV systems with controls configured to reduce the volume of air that is reheated, recooled or mixed in each zone. See section for details.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.6.2 [ME131][3]	Single-duct VAV systems use terminal devices configured to reduce the supply of primary supply air before reheating or recooling takes place.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.6.3 [ME132][3]	Systems that have 1 warm air duct and 1 cool air duct use terminal devices configured to reduce the flow from one duct to a minimum before mixing of air from the other duct takes place.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.6.4 [ME133][3]	Individual dual-duct or mixing heating and cooling systems with a single fan and with total capacities > 90,000 Btu/h not equipped with air economizers.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.6.5 [ME134][3]	Multiple zone HVAC systems have supply air temperature reset controls.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

1 High Impact (Tier 1) | 2 Medium Impact (Tier 2) | 3 Low Impact (Tier 3)

Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C403.6.7 [ME136][3]	Parallel-flow fan-powered VAV air terminals have automatic controls configured to 1) turn off the terminal fan except when space heating is required or where required for ventilation, 2) turn on the terminal fan as the first stage of heating before the heating coil is activated, and 3) during heating for warmup or setback temperature control, either operate the terminal fan and heating coil without primary air or, reverse the terminal damper logic and provide heating from the central air handler by primary air.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.6.8 [ME137][3]	Systems with DDC of individual zones reporting to the central control panel configured to reset the static pressure setpoint based on zone requiring the most pressure. The DDC is capable of monitoring zone damper positions or have an alternative method of indicating the need for static pressure. See section for details.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.6.9 [ME138][3]	Static pressure sensors used to control VAV fans located such that the controller setpoint is <= 1.2 inches w.c.. Where this results in one or more sensors being located downstream of major duct splits, not less than one sensor located on each major branch.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.6.6 [ME135][3]	Multiple zone VAV systems with DDC of individual zone boxes have static pressure setpoint reset controls.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. *See the Mechanical Systems list for values.*
C403.4.1.4 [ME63][2]	Heating for vestibules and air curtains with integral heating include automatic controls that shut off the heating system when outdoor air temperatures > 45F. Vestibule heating and cooling systems controlled by a thermostat in the vestibule with heating setpoint <= 60F and cooling setpoint >= 80F.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.3.3 [ME35][1]	Hot gas bypass limited to: <=240 kBtu/h – 50% >240 kBtu/h – 25%	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C404.2.1 [ME111][2]	Gas-fired water-heating equipment installed in new buildings: where a singular piece of water-heating equipment >= 1,000 kBtu/h serves the entire building, thermal efficiency >= 90 Et. Where multiple pieces of water-heating equipment serve the building with combined rating >= 1,000 kBtu/h, the combined input-capacity-weighted-average thermal efficiency >= 90 Et. Exclude input rating of equipment in individual dwelling units and equipment <= 100 kBtu/h.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.

1 High Impact (Tier 1) | 2 Medium Impact (Tier 2) | 3 Low Impact (Tier 3)

Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C408.2.2.1 [ME53][3]	Air outlets and zone terminal devices have means for air balancing.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.5, C403.5.1, C403.5.2 [ME123][3]	Refrigerated display cases, walk-in coolers or walk-in freezers served by remote compressors and remote condensers not located in a condensing unit, have fan-powered condensers that comply with Sections C403.5.1 and refrigeration compressor systems that comply with C403.5.2..	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.

Additional Comments/Assumptions:

1 High Impact (Tier 1) | 2 Medium Impact (Tier 2) | 3 Low Impact (Tier 3)

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.6 [EL26][2]	Low-voltage dry-type distribution electric transformers meet the minimum efficiency requirements of Table C405.6.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C405.7 [EL27][2]	Electric motors meet the minimum efficiency requirements of Tables C405.7(1) through C405.7(4). Efficiency verified through certification under an approved certification program or the equipment efficiency ratings shall be provided by motor manufacturer (where certification programs do not exist).	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C405.8.2, C405.8.2.1 [EL28][2]	Escalators and moving walks comply with ASME A17.1/CSA B44 and have automatic controls configured to reduce speed to the minimum permitted speed in accordance with ASME A17.1/CSA B44 or applicable local code when not conveying passengers.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C405.9 [EL29][2]	Total voltage drop across the combination of feeders and branch circuits <= 5%.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1 High Impact (Tier 1) | 2 Medium Impact (Tier 2) | 3 Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C303.3, C408.2.5.3 [FI8][3]	Furnished O&M manuals for HVAC systems within 90 days of system acceptance.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.2.2 [FI27][1]	HVAC systems and equipment capacity does not exceed calculated loads.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.2.4.1 [FI47][1]	Heating and cooling to each zone is controlled by a thermostat control. Minimum one humidity control device per installed humidification/dehumidification system.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.4.1.2 [FI38][1]	Thermostatic controls have a 5 °F deadband.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.2.4.1.3 [FI20][1]	Temperature controls have setpoint overlap restrictions.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.2.4.2 [FI39][1]	Each zone equipped with setback controls using automatic time clock or programmable control system.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.2.4.2.1, C403.2.4.2.2 [FI40][1]	Automatic Controls: Setback to 55°F (heat) and 85°F (cool): 7-day clock, 2-hour occupant override, 10-hour backup	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.2.4.2.3 [FI41][1]	Systems include optimum start controls.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C404.3 [FI11][1]	Heat traps installed on supply and discharge piping of non-circulating systems.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C404.4 [FI25][2]	All piping insulated in accordance with section details and Table C403.11.3.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C404.6.1 [FI12][1]	Controls are installed that limit the operation of a recirculation pump installed to maintain temperature of a storage tank. System return pipe is a dedicated return pipe or a cold water supply pipe.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

1 High Impact (Tier 1) | 2 Medium Impact (Tier 2) | 3 Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C408.1.1 [FI57][1]	Building operations and maintenance documents will be provided to the owner. Documents will cover manufacturers' information, specifications, programming procedures and means of illustrating to owner how building, equipment and systems are intended to be installed, maintained, and operated.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.1 [FI28][1]	Commissioning plan developed by registered design professional or approved agency.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.3.1 [FI31][1]	HVAC equipment has been tested to ensure proper operation.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.3.2 [FI10][1]	HVAC control systems have been tested to ensure proper operation, calibration and adjustment of controls.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.3.3 [FI32][1]	Economizers have been tested to ensure proper operation.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.4 [FI29][1]	Preliminary commissioning report completed and certified by registered design professional or approved agency.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.5.1 [FI7][3]	Furnished HVAC as-built drawings submitted within 90 days of system acceptance.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.5.3 [FI43][1]	An air and/or hydronic system balancing report is provided for HVAC systems.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.5.4 [FI30][1]	Final commissioning report due to building owner within 90 days of receipt of certificate of occupancy.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1 High Impact (Tier 1) | 2 Medium Impact (Tier 2) | 3 Low Impact (Tier 3)

NO. | REVISIONS | DATE

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REGISTERED PROFESSIONAL ENGINEER
MATTHEW C. MYRES
Exp. 12/31/23
MECHANICAL
STATE OF NEVADA
No. 16816

STAMP

KH PROJECT NO.:	192079002
DRAWN BY:	AS
REVIEWED BY:	MCM
DATE:	04/12/2023

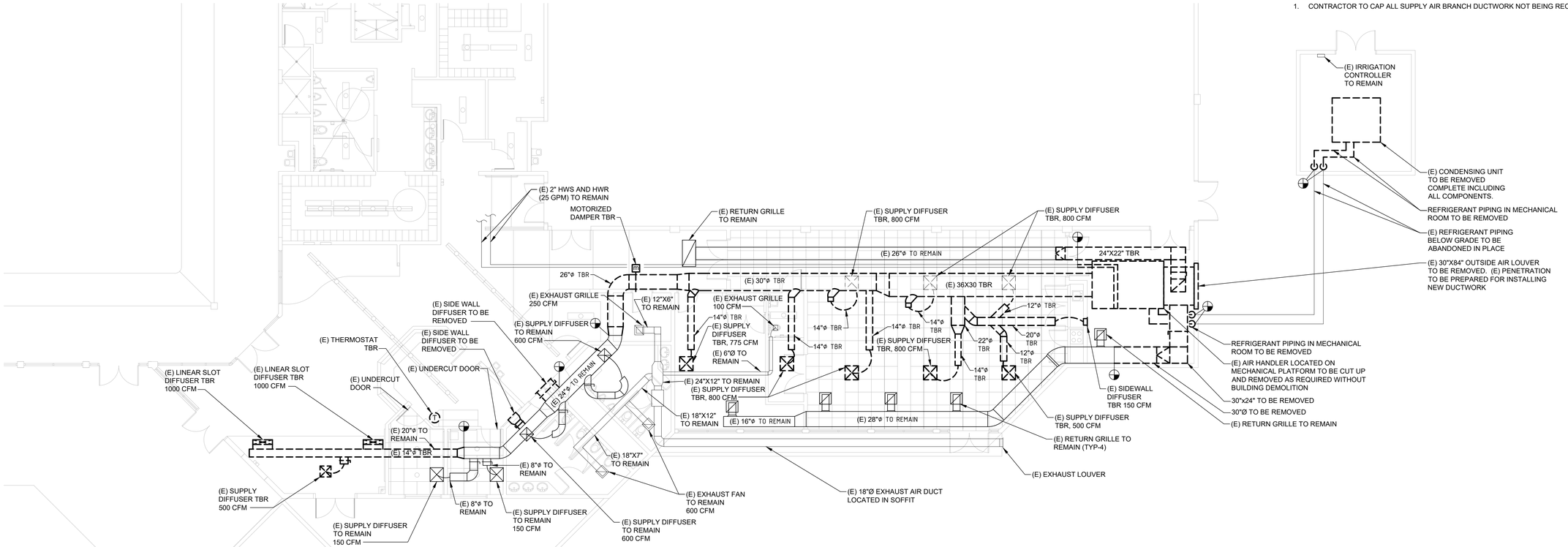
ALF SORENSEN PRESCHOOL
HVAC MODIFICATIONS
1400 BARING BLVD
SPARKS, NV 89434

MECHANICAL COMPLIANCE CERTIFICATE (2)

M0.5

GENERAL NOTE

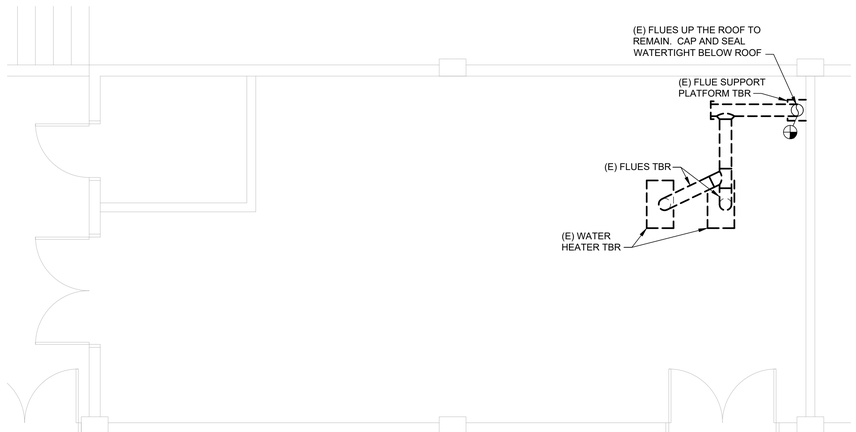
1. CONTRACTOR TO CAP ALL SUPPLY AIR BRANCH DUCTWORK NOT BEING RECONNECTED.



1 M1.1 MECHANICAL DEMOLITION PLAN 1

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

NORTH



2 M1.1 MECHANICAL DEMOLITION PLAN 2

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

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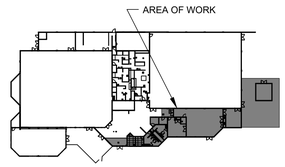

KEY PLAN

NO.	REVISIONS	DATE

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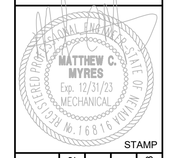

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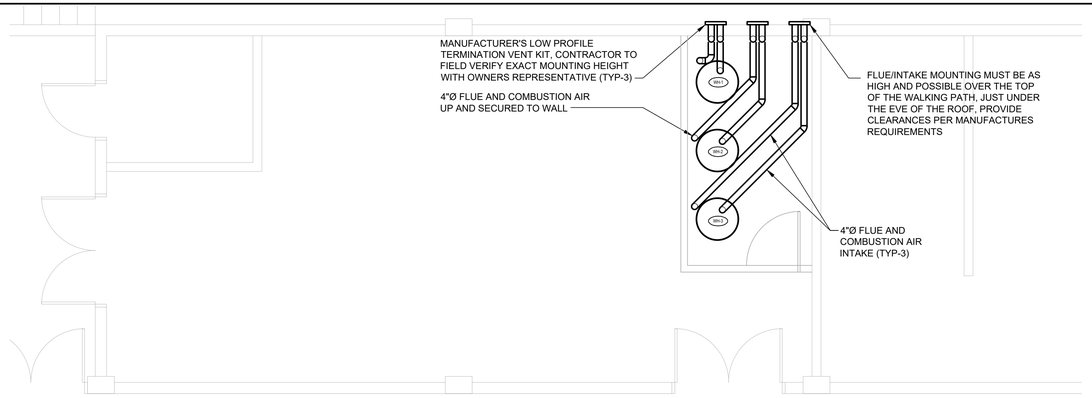
MECHANICAL DEMOLITION PLANS

M1.1



1 M2.1 MECHANICAL FLOOR PLAN 2

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

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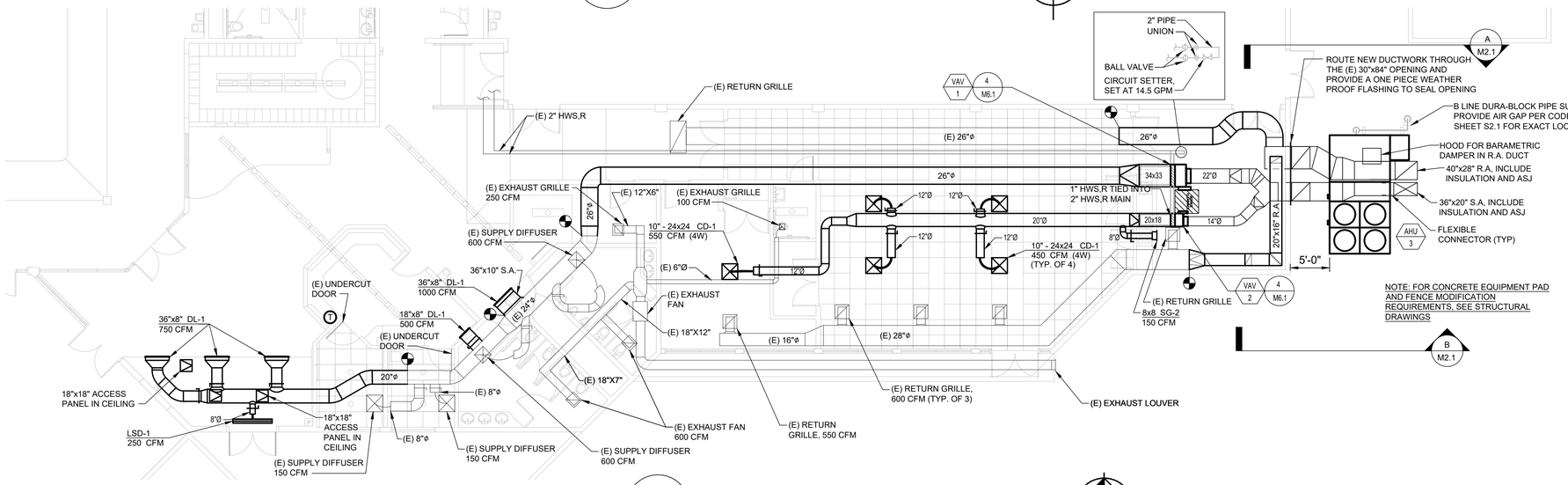
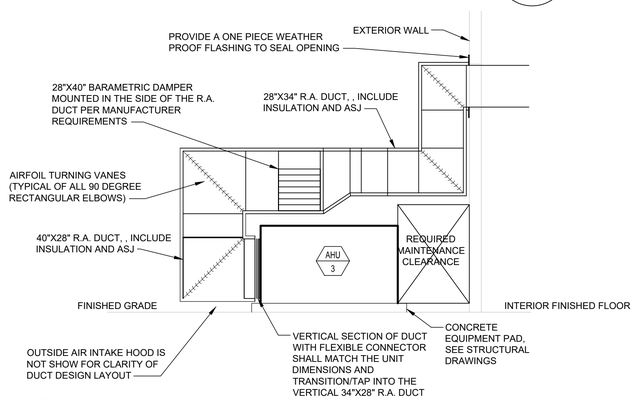


2 M2.1 MECHANICAL FLOOR PLAN 1

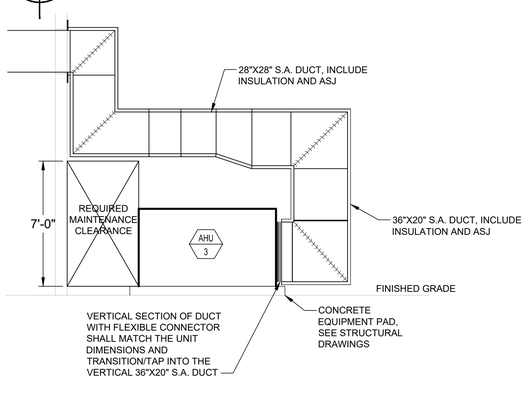
SCALE: 1/8" = 1'-0"

NORTH



A M2.1 AIR HANDLER RETURN AIR DUCT DETAIL

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

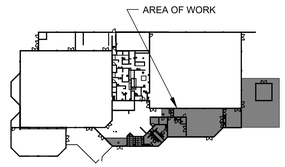


B M2.1 AIR HANDLER SUPPLY AIR DUCT DETAIL

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

GENERAL NOTES

1. FOR DIFFUSER INSTALLATION, SEE DETAIL: 1 / M6.1
2. FOR ACCEPTABLE LOW PRESSURE DUCT FITTINGS, SEE DETAIL: 2 / M6.1
3. FOR DUCT SUPPORTS, SEE DETAIL: 3 / M6.1



KEY PLAN

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REGISTERED PROFESSIONAL ENGINEER — MATTHEW C. MYRES — Exp. 12/31/23 — MECHANICAL — No. 16816 — STATE OF NEVADA

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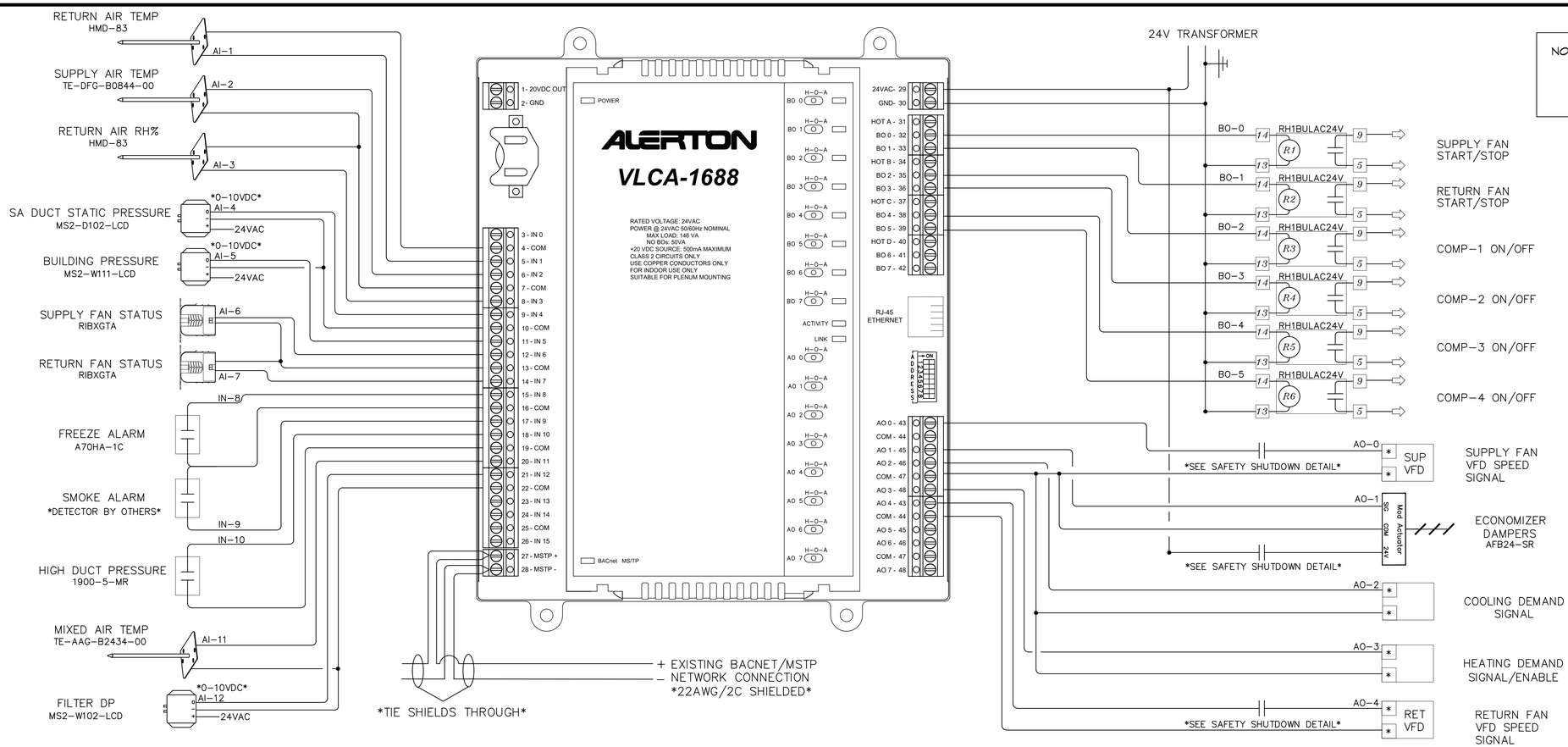
ALF SORENSEN PRESCHOOL
HVAC MODIFICATIONS
1400 BARING BLVD
SPARKS, NV 89434

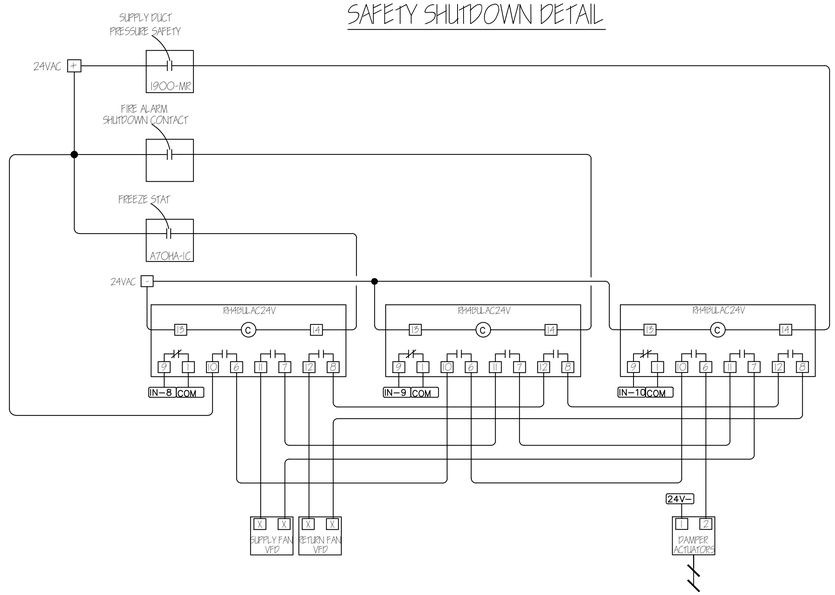
MECHANICAL FLOOR PLANS AND SECTIONS

M2.1



NOTE: CONTROLS SHALL BE ALERTON TO MATCH EXISTING CITY OF SPARKS STANDARDS. BY OTHERS

SAFETY SHUTDOWN DETAIL



1 AHU-3 CONTROL DIAGRAM
SCALE: NONE

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MECHANCIAL CONTROLS

M5.1

ALF SORENSON CHILD CARE VAV AIR HANDLER SEQUENCE OF OPERATION

1.1 OCCUPIED MODE

A. THE AIR HANDLER UNIT SUPPLY FAN SHALL BE ENABLED AT THE OCCUPIED TIME (UNLESS IT IS ENABLED EARLIER UTILIZING THE OPTIMUM START PROGRAM). THE SUPPLY FAN VFD SHALL BE MODULATED FROM 20% TO 100% OF MAXIMUM SPEED (FROM 12 TO 60 HZ) AS REQUIRED TO MAINTAIN THE DUCT STATIC PRESSURE SETPOINT (APPROXIMATELY 1.0" W.C., ADJUSTABLE – AS DETERMINED BY TEST AND BALANCE CONTRACTOR).

B. THE SUPPLY FAN SHALL BE SHEAVED AND BALANCED AS SUCH THAT WHEN BALANCED TO THE DESIGN SUPPLY AIR CFM (DURING MINIMUM OUTSIDE AIR MODE), THE SUPPLY FAN VFD IS OPERATING AS CLOSE AS POSSIBLE TO 100% SPEED (TO MAXIMIZE THE CONTROL RANGE ON THE SUPPLY FAN VFD).

C. BMS SHALL SEND SIGNAL AIR HANDLER UNIT INTEGRAL CONTROLLER TO ENABLE COOLING. AIR HANDLER CONTROLLER SHALL CONTROL COMPRESSORS (HEAT PUMP IN COOLING) TO MAINTAIN THE SUPPLY AIR TEMPERATURE (55°F, ADJUSTABLE THROUGH BMS).

1.2 ECONOMIZER MODE

A. THE ECONOMIZER MODE SHALL BE ENABLED WHENEVER THE OUTSIDE AIR TEMPERATURE IS 2F BELOW THE RETURN AIR TEMPERATURE (WITH A 2°F DEADBAND, DISABLED WHEN OUTSIDE AIR TEMPERATURE EQUALS THE RETURN AIR TEMPERATURE). DURING ECONOMIZER MODE THERE SHALL BE AN ADDITIONAL CONTROL PARAMETER THAT MANAGES THE OUTSIDE AIR AND RETURN AIR DAMPER POSITIONS SUCH THAT THE MIXED AIR TEMPERATURE DOES NOT FALL BELOW THE MIXED AIR TEMPERATURE LOW LIMIT SETPOINT (50°F, ADJUSTABLE) AT ANY TIME.

B. WHENEVER THE AIR HANDLER UNIT IS OPERATING IN ECONOMIZER MODE THE ECONOMIZER DAMPERS SHALL BE FULLY OPEN BEFORE THE UNIT MODULATES ITS COMPRESSORS ON.

C. WHENEVER THE OUTSIDE AIR TEMPERATURE IS BELOW 30°F, THE OUTSIDE AIR ECONOMIZER DAMPER SHALL BE LIMITED SUCH THAT IT DOES NOT EXCEED 50% OPEN, AND THE AIR HANDLER UNIT COMPRESSORS SHALL BE OFF.

D. EXHAUST/RETURN FAN VFD SHALL MAINTAIN BUILDING PRESSURE OF 0.02" W.C (ADJUSTABLE).

1.3 UNOCCUPIED MODE

A. THE AIR HANDLER UNIT FANS ARE DISABLED, THE CONTROL VALVES ARE CLOSED, THE OUTSIDE AIR DAMPER IS CLOSED, THE EXHAUST DAMPER IS CLOSED, AND THE RETURN AIR DAMPER IS OPEN.

1.4 UNOCCUPIED COOLING MODE

A. THE AIR HANDLER UNIT SUPPLY FAN IS ENABLED, THE OUTSIDE AIR DAMPERS ARE FULLY CLOSED, THE RETURN AIR DAMPER IS FULLY OPEN, AND THE RETURN FAN IS DISABLED. THE AIR HANDLER UNIT SUPPLY AIR TEMPERATURE IS CONTROLLED TO THE OCCUPIED MODE SETPOINT (55°F, ADJUSTABLE).

B. IF THE OUTSIDE AIR TEMPERATURE IS BELOW THE ECONOMIZER MODE ENABLE SETPOINT, THE AIR HANDLER UNIT AND THE RETURN FAN SHALL OPERATE IN ACCORDANCE WITH THE NORMAL ECONOMIZER MODE CONTROL SEQUENCE.

1.5 UNOCCUPIED OVERRIDE MODE

A. WHENEVER ONE OF THE ROOM SENSOR OVERRIDE BUTTONS IS PRESSED DURING THE UNOCCUPIED TIME PERIOD THE AIR HANDLER UNIT SHALL BE ENABLED AND CONTROLLED IN THE NORMAL OCCUPIED MODE FOR A PERIOD OF 2 HOURS (ADJUSTABLE). THE VAV TERMINAL THAT INITIATED THE OVERRIDE (AND ANY OTHER TERMINALS THAT ARE SUBSEQUENTLY OVERRIDDEN) SHALL CONTROL TO THE OCCUPIED MODE ROOM TEMPERATURE SETPOINT. ALL OTHER VAV TERMINALS ASSOCIATED WITH THAT ROOFTOP UNIT SHALL CONTROL TO THE UNOCCUPIED MODE ROOM TEMPERATURE SETPOINT (I.E., BE CONTROLLED AT THE MINIMUM CFM SETPOINT WITH THE REHEAT VALVE MODULATED AS REQUIRED TO MAINTAIN THE UNOCCUPIED MODE HEATING SETPOINT).

1.6 OPTIMUM START MODE (MORNING WARM–UP AND MORNING COOL–DOWN MODES)

A. DURING MORNING WARM–UP AND/OR MORNING COOL–DOWN MODES THE AIR HANDLER UNIT SHALL OPERATE IN ACCORDANCE WITH THE APPROPRIATE UNOCCUPIED MODE SEQUENCE (UNOCCUPIED HEATING MODE OR UNOCCUPIED COOLING MODE) AND SHALL BE ENABLED AT SUCH A TIME THAT ALL ZONES ARE AT THE OCCUPIED MODE SETPOINT AT THE OCCUPIED TIME. THE OPTIMUM START PERIOD SHALL BE LIMITED TO A MAXIMUM OF FOUR HOURS (ADJUSTABLE).

1.7 SAFETIES

A. WHENEVER THE TEMPERATURE AT THE AVERAGING SENSOR (LOCATED DOWNSTREAM OF THE HEATING COIL) FALLS BELOW SETPOINT (40°F, ADJUSTABLE) THE OUTSIDE AIR AND EXHAUST DAMPERS SHALL CLOSE, THE RETURN AIR DAMPER SHALL OPEN. ONCE THE OUTSIDE AIR TEMPERATURE RISES TO 40F THE AIR HANDLER UNIT SHALL BE RELEASED TO OPERATE IN THE NORMAL MODE.

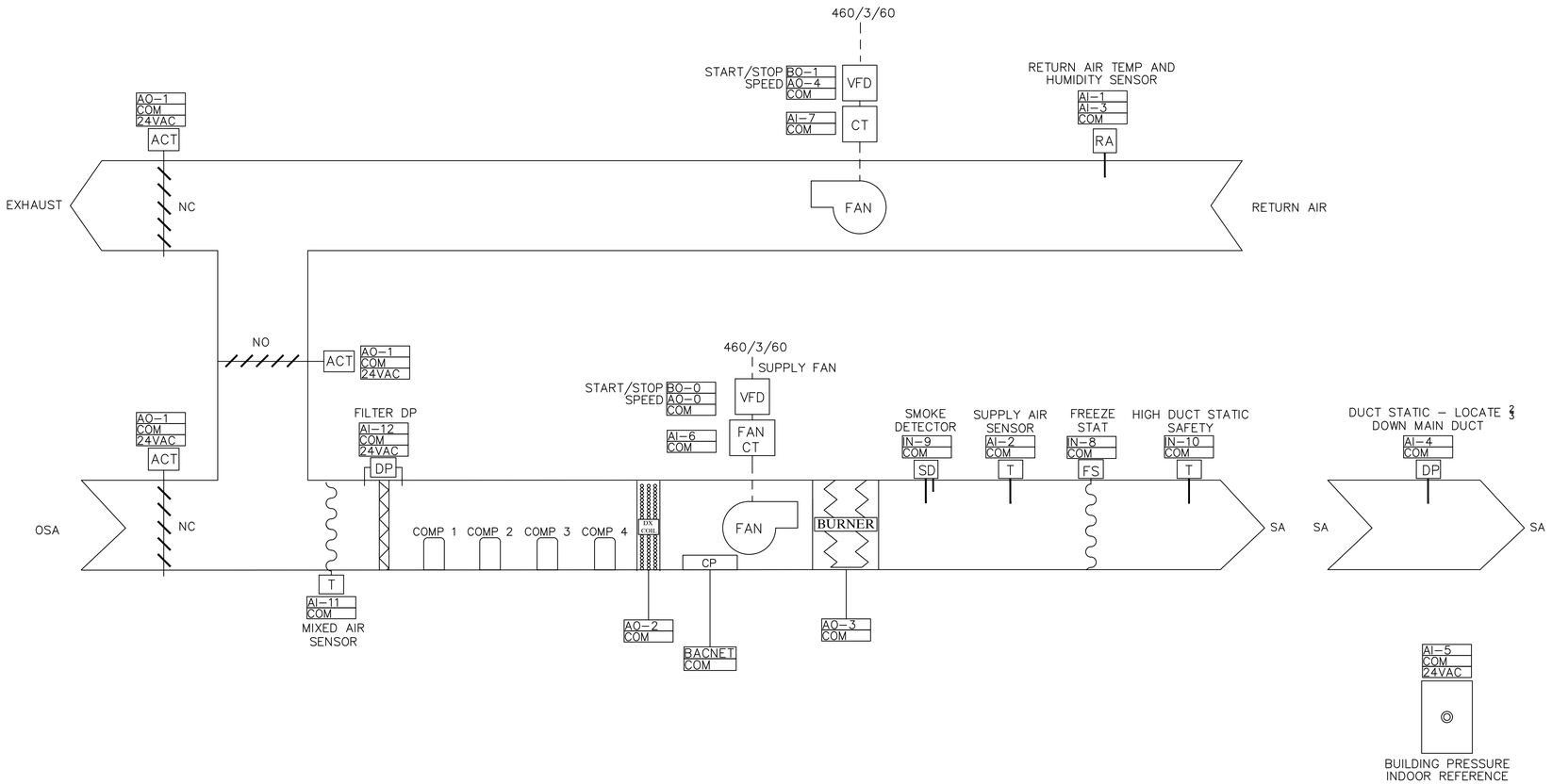
B. WHENEVER THE MANUAL RESET FREEZE THERMOSTAT (LOCATED DOWNSTREAM OF THE HEATING COIL) FALLS BELOW SETPOINT (APPROXIMATELY 35°F) THE SUPPLY & RETURN FAN SHALL BE DISABLED, THE OUTSIDE AIR AND EXHAUST DAMPERS SHALL CLOSE, THE RETURN AIR DAMPER SHALL OPEN, THE HEATING WATER VALVE SHALL BE FULLY OPEN, AND AN ALARM CONDITION SHALL BE INDICATED.

C. THE SUPPLY FAN HIGH STATIC PRESSURE SENSOR/CONTROL (MANUAL RESET) SHALL DISABLE THE FANS WHENEVER THE DUCT STATIC PRESSURE EXCEEDS SETPOINT (3.5" W.C.).

D. THE INTEGRAL FACTORY PROVIDED SUPPLY AND RETURN AIR DUCT–MOUNTED SMOKE DETECTOR SHALL DISABLE THE FANS AND DAMPERS WHENEVER SMOKE IS DETECTED.

1.8 DUCT STATIC PRESSURE SETPOINT RESET

A. THE DUCT STATIC PRESSURE SETPOINT SHALL BE RESET BASED ON THE VAV BOX WITH THE HIGHEST DUCT STATIC PRESSURE DEMAND (RESET LOWER UNTIL ONLY ONE VAV BOX DAMPER IS REQUIRED TO BE FULLY OPEN). THE DUCT STATIC PRESSURE SETPOINT SHALL BE RESET BETWEEN THE UPPER LIMIT SETPOINT (APPROXIMATELY 1.0°W.C., ESTABLISHED BY THE TEST AND BALANCE CONTRACTOR) AND THE LOWER LIMIT SETPOINT (APPROXIMATELY .50°W.C.).



2 AHU-3 CONTROL LAYOUT
SCALE: NONE

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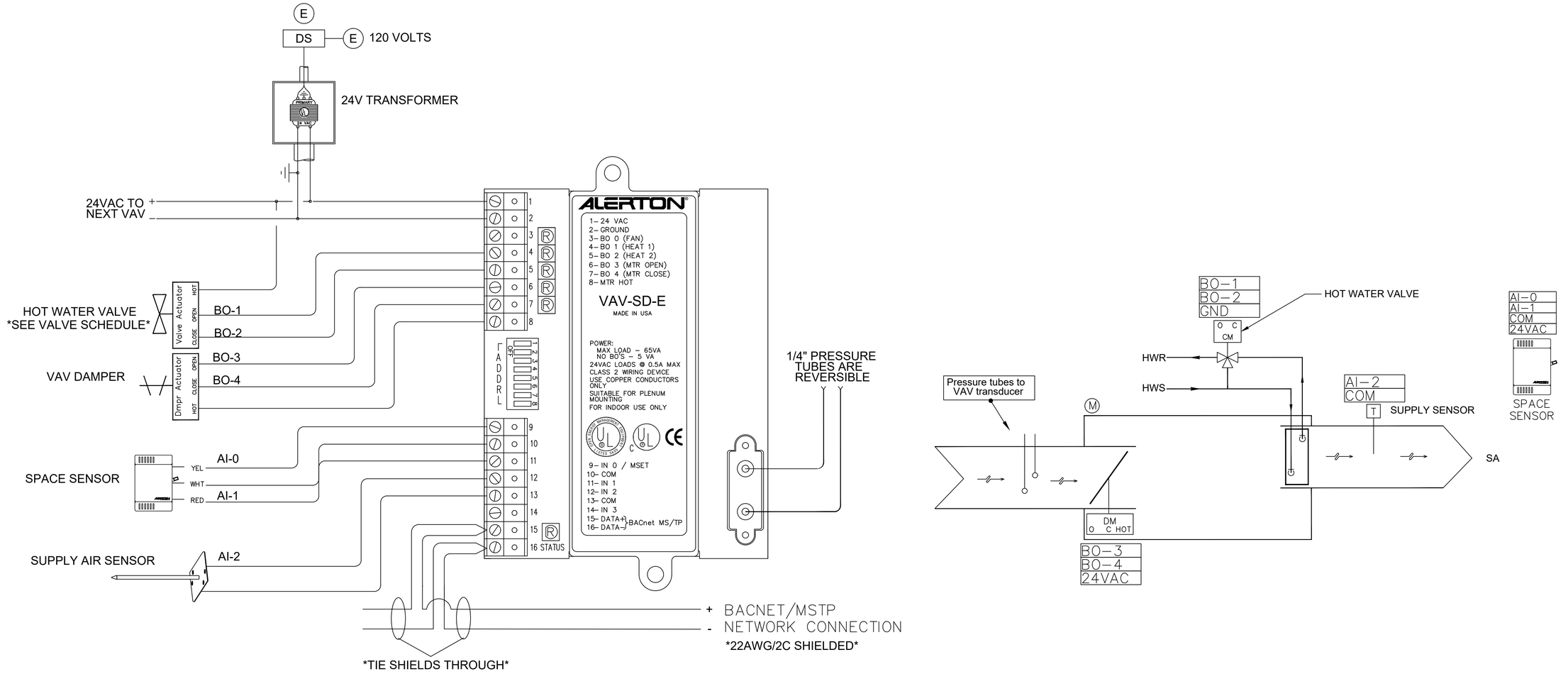
MECHANICAL CONTROLS (2)

M5.2



3 VAV-1 AND VAV-2 CONTROL DIAGRAM

SCALE: NONE

DATE

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MATTHEW C. MYRES
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MECHANICAL
REGISTERED PROFESSIONAL ENGINEER
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STATE OF NEVADA

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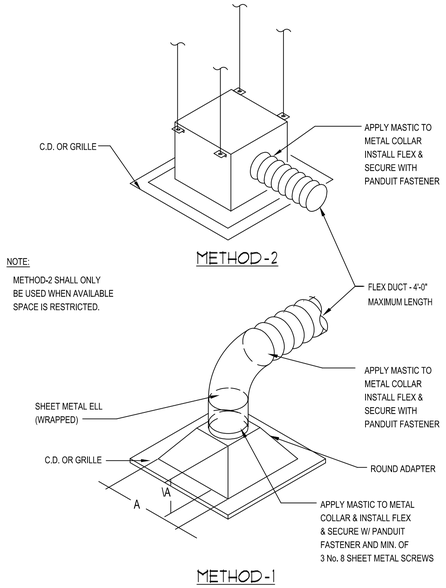
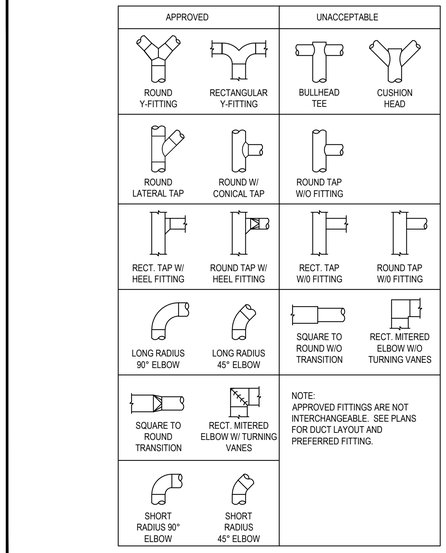
MECHANICAL CONTROLS (3)

M5.3



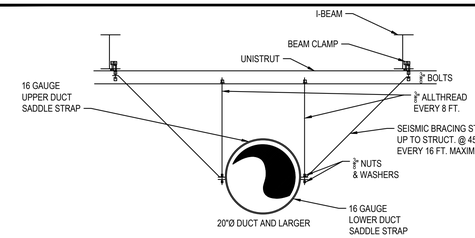
1 LAY IN DIFFUSER DETAIL

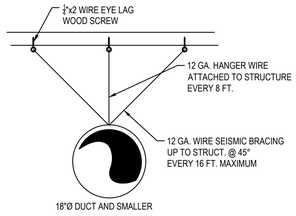
SCALE: N.T.S.



2 LOW PRESSURE DUCT FITTINGS

SCALE: N.T.S.





ROUND DUCT GAUGE (SPIRAL SEAM)	
POSITIVE PRESSURE (+2" W.G.)	
DUCT DIAMETER, IN.	GAUGE
<=8"Ø	28
9"Ø-14"Ø	28
15"Ø-26"Ø	26
27"Ø-36"Ø	24
NEGATIVE PRESSURE (-2" W.G.)	
<=15"Ø	28
16"Ø-17"Ø	26
18"Ø-23"Ø	24
24"Ø-30"Ø	22

PER SMACNA STANDARDS

A. VERTICAL DUCTS

MAX SIDE OF RECTANGULAR DUCT	METAL STRAP OR ANGLE BRACKET	MAX DIAMETER OF ROUND DUCTS	STRAP
24"	1" x 1/8" STRAP	10"	0.047" (18GA.) GAL. STEEL 2" WIDE
36"	1" x 1" x 1/8" ANGLE	20"	0.058" (16GA.) GAL. STEEL 2" WIDE
48"	1 1/2" x 1 1/2" x 1/8" ANGLE	40"	3/8" STEEL X 1 1/2"

B. HORIZONTAL DUCTS

MAX SIDE OF RECTANGULAR DUCT	METAL STRAP OR ANGLE BRACKET	MAX DIAMETER OF ROUND DUCTS	STRAP
18"	1" x 18 GA.	10"	SAME GAUGE AS GAL. STEEL DUCT, 1" WIDE OR 18GA GAL. STEEL WIRE ON 10' CENTERS
30"	1" x 18 GA.		
48"	1" x 1/8"	20"	SAME GAUGE AS GAL. STEEL DUCT, 1" WIDE OR 18GA GAL. STEEL WIRE ON 10' CENTERS
60"	1" x 1/8"	40"	
80"	1" x 1/8"		

*DUCT MATERIAL AND GAUGE SHOULD COMPLY WITH CHAPTER 6 OF CALIFORNIA MECHANICAL CODE AND CONSTRUCTED IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE.

3 DUCT SUPPORT AND GAUGE

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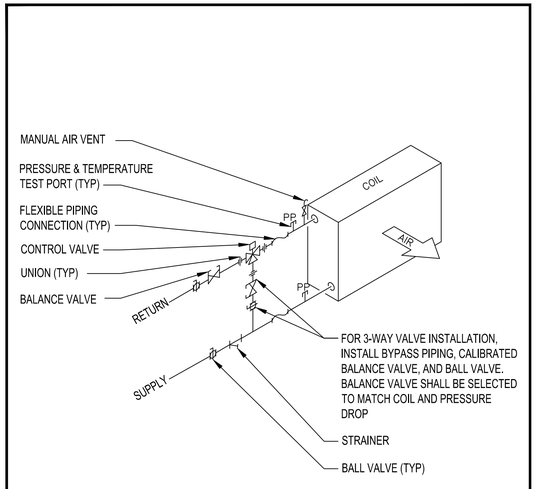
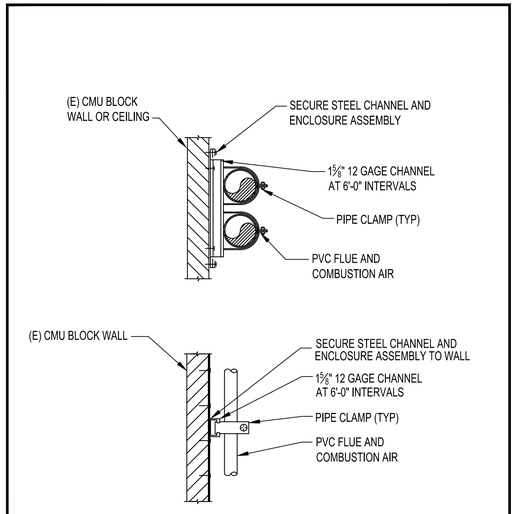


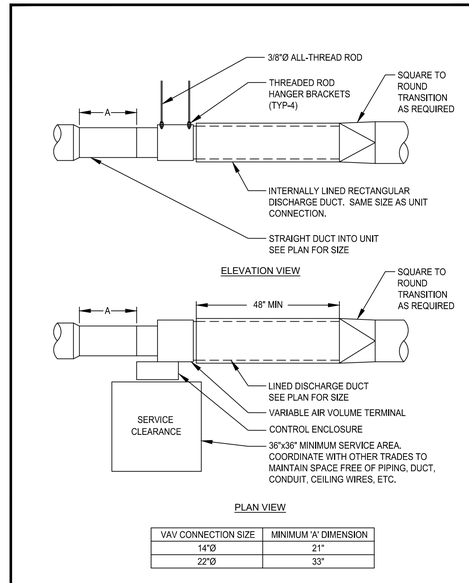
4 3 WAY HOT WATER COIL PIPING DETAIL

SCALE: N.T.S.



7 WALL OR CEILING MOUNTED PIPING SUPPORT DETAIL

SCALE: N.T.S.



VAV CONNECTION SIZE	MINIMUM 'A' DIMENSION
14"Ø	21"
22"Ø	33"

8 VAV INSTALLATION DETAIL

SCALE: N.T.S.

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MECHANICAL DETAILS

M6.1

PLUMBING SYMBOL LIST

	S or W	SOIL OR WASTE PIPING (BELOW GRADE / FLOOR)
	S or W	SOIL OR WASTE PIPING (ABOVE GRADE / FLOOR)
	V	SOIL OR WASTE VENT PIPING
D	D	DRAIN PIPING
C	CD	CONDENSATE DRAIN PIPING
	CW	COLD WATER PIPING
	HW	HOT WATER PIPING (105° - 125° F)
	HWR	HOT WATER RECIRCULATION PIPING (SPECIFY TEMP)
T	T	TEMPERED WATER (105° F)
MG	MG	GAS - MEDIUM PRESSURE (2-3 PSI)
	G.V.	GATE VALVE
	GLV	GLOBE VALVE
	BLV	BALL VALVE
	ANV	ANGLE VALVE
	B.F.V.	BUTTERFLY VALVE
	C.H.V.	CHECK VALVE
	G.C.	GAS COCK, GAS STOP
	B.V.	BALANCING VALVE
	H.B.	HOSE BIBB
	S.O.V.	SHUT-OFF VALVE IN RISER
	BP	DOUBLE CHECK BACKFLOW PREVENTION ASSEMBLY
	R.P.B.P.	REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY
	G.P.R.	GAS PRESSURE REDUCING VALVE
	S.T.R.	STRAINER
	S.T.R.V.	STRAINER WITH 3/4" HOSE END DRAIN VALVE
	P.T.R.	PRESSURE - TEMPERATURE RELIEF VALVE
	RV	PRESSURE RELIEF VALVE
	U	UNION
	P.R.G.	PRESSURE GAUGE WITH GAUGE COCK

T	TH.	THERMOMETER
	F.C.O.	FLOOR CLEANOUT
	P.D.	PIPING TEE DOWN
	P.U.	PIPING TEE UP
	P.U.	PIPING ELBOW UP
	P.D.	PIPING ELBOW DOWN
		BRANCH - TOP CONNECTION
		BRANCH - BOTTOM CONNECTION
		BRANCH - SIDE CONNECTION
	P.T.	PLUGGED TEE
	C.O.P.	CAP ON END OF PIPE
OR		ARROW INDICATES DIRECTION OF FLOW
	F.L.S.	FLOOR SINK
	F.D.	FLOOR DRAIN
		PLUMBING FIXTURE SCHEDULE - (SEE SCHEDULE)

AFF	ABOVE FINISHED FLOOR
BTUH	BRITISH THERMAL UNITS PER HOUR
CD	CONDENSATE DRAIN PIPING
CFH	CUBIC FEET PER HOUR
DN	DOWN
(E)	EXISTING
GA	GAUGE
GAL	GALLON
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
HD	HEAD
HR	HOUR
MAX	MAXIMUM
MBH	BRITISH THERMAL UNITS PER HOUR (THOUSANDS)
MIN	MINIMUM
(N)	NEW
NOM	NOMINAL
PD	PRESSURE DROP
TYP	TYPICAL
WC	WATER COLUMN

PLUMBING SPECIFICATIONS

A. GENERAL

1. THE INFORMATION INDICATED ON THESE DRAWINGS AS EXISTING IS BASED UPON INFORMATION TAKEN FROM AS-BUILT DRAWINGS, FIELD INVESTIGATION, AND INFORMATION OBTAINED FROM EXISTING SUBMITTAL DATA, ETC. THE PLANS DO NOT GUARANTEE ACCURACY BUT ARE ONLY AN INDICATION OF EXISTING CONDITIONS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY EXACT CONDITIONS SUCH AS FIXTURE AND EQUIPMENT PLACEMENT, PIPING (SIZE, ROUTING, AND ELEVATION), ETC. THE DRAWINGS ARE INTENDED TO PROVIDE THE CONTRACTOR AN INDICATION OF THE SYSTEM INSTALLED IN THE FACILITY TO DATE. IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO MAKE ADJUSTMENTS TO THE DRAWING INFORMATION AS REQUIRED TO MATCH EXISTING FIELD CONDITIONS.
2. THE CONTRACTOR SHALL INSTALL THE NEW FIXTURES, EQUIPMENT, AND PIPING AROUND ALL EXISTING OBSTACLES INCLUDING: ELECTRICAL CONDUIT, DUCTWORK, CHILLED AND HEATING WATER PIPING, AND FIRE SPRINKLER PIPING. PROVIDE OFFSETS TO AVOID RELOCATION OF OTHER UTILITIES. THE UTILITIES WILL NEED TO BE RELOCATED IF THEY ARE IN CONFLICT WITH THE INSTALLATION OF THE PLUMBING SYSTEMS CAUSING DEVIATIONS IN THE DESIGN INTENT, UNSATISFACTORY OPERATION, NOISY CONDITIONS, OR INTERFERE WITH MAINTENANCE. IT IS THE PLUMBING CONTRACTOR'S RESPONSIBILITY TO COORDINATE ANY UTILITY RELOCATION WITH THE APPROPRIATE SUBCONTRACTOR.
3. PROVIDE ALL NECESSARY LABOR, MATERIALS, EQUIPMENT, SERVICES AND INSURANCES TO COMPLETE THE PLUMBING WORK WITHIN THE FULL INTENT OF THE DRAWINGS AND SPECIFICATIONS CONTAINED HEREON AND TO THE ENTIRE SATISFACTION OF THE ARCHITECT/ENGINEER.
4. PROVIDE ALL PERMITS AND FEES AS REQUIRED FOR THE PLUMBING WORK.
5. CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH THE PROJECT BEFORE BIDDING.
6. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2018 INTERNATIONAL BUILDING CODE (IBC), 2018 INTERNATIONAL ENERGY CONSERVATION CODE (IECC), 2018 INTERNATIONAL FIRE CODE (IFC), 2018 UNIFORM MECHANICAL CODE (UMC), 2018 UNIFORM PLUMBING CODE (UPC), 2017 NATIONAL ELECTRICAL CODE (NEC), NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) STANDARDS, AND ALL OTHER APPLICABLE CODES, RULES, AND LOCAL REQUIREMENTS.
7. GUARANTEE ALL WORK AND MATERIALS FOR A PERIOD OF ONE YEAR.
8. ALL DIMENSIONS AND MEASUREMENTS SHALL BE VERIFIED AT THE JOBSITE BEFORE FABRICATION AND/OR INSTALLATION OF THE FIXTURES.
9. DRAWINGS ARE DIAGRAMMATIC TO SHOW BASIC SIZING. COORDINATE THE RUNNING OF ALL MAINS WITH THE ENGINEER. ANY MAJOR REROUTING SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE FOR APPROVAL.
10. DRAWINGS ARE DIAGRAMMATIC; DETERMINE LOCATIONS OF SYSTEMS AND COMPONENTS IN FIELD.
11. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE HIS WORK WITH THAT OF ALL OTHER TRADES, INCLUDING (BUT NOT LIMITED TO); ELECTRICAL, HVAC PROCESS PIPING, SPRINKLER, PLUMBING, STRUCTURAL, AND GENERAL ARCHITECTURE.
12. ANY INTERFERENCE SHALL BE BROUGHT TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND THE OWNER'S REPRESENTATIVE AND SHALL BE RESOLVED PRIOR TO THE INSTALLATION OF THE WORK INVOLVED.
13. NO WORK SHALL BE INSTALLED IN VIOLATION OF GOVERNING CODES. ANY WORK SHOWN ON THE DRAWINGS IN VIOLATION OF THESE CODES SHALL BE BROUGHT TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND THE OWNER'S REPRESENTATIVE AND SHALL BE RESOLVED PRIOR TO THE INSTALLATION OF THE WORK INVOLVED.
14. MANUFACTURER'S MODEL NUMBERS ARE SPECIFIED SOLELY TO ESTABLISH STANDARDS OF QUALITY FOR PERFORMANCE AND MATERIALS.
15. ALL PIPING ABOVE GRADE SHALL BE PROPERLY SUPPORTED BY THE BUILDING STRUCTURE AND SHALL NOT REST ON CEILING TILES OR CEILING STRUCTURE.
16. CONTRACTOR SHALL COORDINATE ELECTRICAL CHARACTERISTICS AND REQUIREMENTS OF ALL PLUMBING EQUIPMENT WITH THE ELECTRICAL DRAWINGS AND SHALL FURNISH EQUIPMENT WIRED FOR VOLTAGES HEREIN.
17. PROVIDE CLAMPS, OFFSETS, EXPANSION JOINTS, ANCHORS AND GUIDES AS NECESSARY TO PREVENT STRESS ON PIPING.
18. PIPING SHALL NOT RUN OVER ELECTRICAL PANELS AND SHALL BE COORDINATED WITH OTHER WORKS OF TRADE.
19. SLEEVE WALL PENETRATIONS, SAL INTERSTITIAL SPACE.

B. SUBMITTALS

1. ELECTRONIC SUBMITTALS IN ADOBE PDF FORMAT, IN LIEU OF PAPER COPIES, WILL BE ACCEPTED.
2. SUBSTITUTED ITEMS SHALL BE SUBMITTED WITH MANUFACTURER'S DESCRIPTIVE DATA AND MUST SHOW EQUALITY TO ITEM SPECIFIED. INFORMATION ON SUBSTITUTED ITEMS MUST BE COMPLETE, INCLUDING, BUT NOT LIMITED TO: DESIGN, CONSTRUCTION MATERIALS, AND CONSTRUCTION QUALITY. ENGINEER WILL NOT RESEARCH INFORMATION REQUIRED TO COMPARE EQUIPMENT. ENGINEER RESERVES THE RIGHT TO REQUIRE SPECIFIED ITEM.
3. SUBMIT MANUFACTURER'S DESCRIPTIVE DATA WITHIN TEN (10) WORKING DAYS AFTER AWARD OF THE CONTRACT. MATERIALS AND FIXTURES SHALL NOT BE ORDERED PRIOR TO SUBMITTAL APPROVAL. ALLOW TEN (10) WORKING DAYS AFTER RECEIPT OF SUBMITTALS IN THE ENGINEER'S OFFICE BEFORE REVIEWED SUBMITTALS WILL BE RETURNED.
4. SHOP DRAWINGS TO BE SUBMITTED AND APPROVED BY THE ENGINEER AND ARCHITECT PRIOR TO ORDERING, PURCHASING, OR FABRICATING ANY MECHANICAL EQUIPMENT.

C. WORKMANSHIP

1. ALL WORK TO BE PERFORMED BY QUALIFIED PERSONNEL NORMALLY ENGAGED IN THE RESPECTIVE LINE OF WORK.
2. PERFORM ALL WORK IN A MANNER NOT TO DISTURB THE NORMAL OPERATION OF THE BUILDING.
3. COORDINATE ALL WORK WITH THE OWNER'S REPRESENTATIVE.
4. COORDINATE ALL WORK WITH THE OTHER TRADES.
5. THE PLUMBING CONTRACTOR IS RESPONSIBLE FOR PERFORMING ALL WORK ACCEPTABLE TO THE OWNER'S REPRESENTATIVE.

D. DEMOLITION

1. DEMOLITION WORK SHALL NOT CREATE ANY DUST PROBLEMS IN THE WORKING SPACES.
2. ALL EXISTING EQUIPMENT REMOVED DURING THE COURSE OF THIS PROJECT BECOMES THE PROPERTY OF THIS CONTRACTOR AND SHALL BE REMOVED FROM THE SITE.

E. CUTTING, PATCHING, AND PAINTING

1. ALL CUTTING AND PATCHING TO BE PERFORMED BY THE GENERAL CONTRACTOR.
2. CUTTING OF ALL OPENINGS SHALL BE COORDINATED WITH THE OWNER'S ENGINEERING REPRESENTATIVE.
3. WATER WILL NOT BE USED FOR CONCRETE CUTTING WITHOUT THE DIRECT SUPERVISION OF THE OWNER'S ENGINEERING REPRESENTATIVE.

F. PRODUCT HANDLING

1. USE ALL MEANS NECESSARY TO PROTECT ALL MATERIALS AND FIXTURES BEFORE, DURING, AND AFTER INSTALLATION AND TO PROTECT THE MATERIALS AND WORK OF THE OTHER TRADES.
2. IN THE EVENT OF DAMAGE, IMMEDIATELY MAKE ALL REPAIRS AND REPLACEMENTS NECESSARY TO THE APPROVAL OF THE ENGINEER AND AT NO ADDITIONAL COST TO THE OWNER.

G. PIPING

1. WASTE AND VENT PIPING BELOW GRADE WITHIN 5 FEET OF BUILDING SHALL BE SCHEDULE 40 PVC PIPE AND FITTINGS CONFORMING TO ASTM D2665 OR D2729 WITH SOLVENT WELD JOINTS MEETING ASTM D2855 USING ASTM D2564 SOLVENT CEMENT. PIPE SHALL BE BEDDED IN 12" OF SAND.
2. GRADE WASTE PIPING 2% (1/4") PER FOOT OR AS APPROVED BY THE ENGINEER AND LOCAL CODE AUTHORITY.
3. PROVIDE 10'-0" MINIMUM CLEARANCE BETWEEN PLUMBING VENTS AND ANY OUTSIDE AIR INTAKES.
4. WATER PIPING ABOVE GRADE SHALL BE ASTM B88, TYPE "L", HARD DRAWN COPPER WITH WROUGHT COPPER FITTINGS.
5. NATURAL GAS PIPING ABOVE GRADE SHALL BE A120 SCHEDULE 40 BLACK STEEL PIPE.

H. HANGERS & SUPPORTS

1. PROVIDE SPLIT RING HANGERS FOR ALL PIPING. HANGER SPACING SHALL BE PER UPC TABLE 3-2 AND SHALL BE LOCATED AT ALL CHANGES IN DIRECTION.
2. SUPPORT ALL PIPING IN WALLS WITH HOLD-RITE PIPE SUPPORT SYSTEM OR EQUAL.
3. PIPING AT FLUSH VALVES SHALL BE HELD SECURELY IN PLACE TO PREVENT ANY MOVEMENT.

I. VALVES & SPECIALTIES

1. BALL VALVES (UP TO 2"): BRONZE BODY, STAINLESS STEEL BALL, TEFLON SEATS, FULL PORT, THREADED ENDS, LEVER HANDLE. VALVE TO BE "LEAD-FREE" COMPLIANT PER THE REDUCTION OF LEAD IN DRINKING WATER ACT.
2. CHECK VALVES (UP TO 2"): BRONZE BODY, BRONZE SWING DISC, THREADED ENDS. VALVE TO BE "LEAD-FREE" COMPLIANT PER THE REDUCTION OF LEAD IN DRINKING WATER ACT.
3. PRESSURE RELIEF VALVES: BRONZE BODY, TEFLON SEAT, STEEL STEM AND SPRINGS, AUTOMATIC, DIRECT PRESSURE AND TEMPERATURE ACTUATED, CAPACITIES ASME CERTIFIED AND LABELED.
4. GAS COCKS (UP TO 2"): IRON BODY AND PLUG, LEVER HANDLE, THREADED ENDS, UL LISTED.
5. GAS COCKS (OVER 2"): IRON BODY AND PLUG, LEVER HANDLE, FLANGED ENDS, UL LISTED.

J. ISOLATION

1. ISOLATE ALL DISSIMILAR METALS WITH ISOLATORS EQUALING OR EXCEEDING THE QUALITY OF "EPCO" DIELECTRIC UNIONS.
2. ISOLATE ALL COPPER PIPING FROM DISSIMILAR SUPPORTS.
3. ISOLATE ALL PIPING THROUGH CONCRETE WITH 1/2"" THICK CLOSED CELL FOAM.
4. ISOLATE ALL PIPING AT STUDS WITH POLYETHYLENE PIPE INSULATORS.

K. INSULATION

1. ACCEPTABLE MANUFACTURERS: CERTAINTEED, KNAUF, JOHNS MANVILLE, AND OWENS CORNING.
2. COLD WATER PIPING IN PLENUM SPACE ABOVE CEILING SHALL BE INSULATED WITH FIBERGLASS PIPE INSULATION WITH VAPOR BARRIER AND PRE-MOLDED PVC FITTING COVERS. DO NOT INSULATE VALVES, UNIONS, ETC.
3. HOT WATER AND HOT WATER RETURN PIPING SHALL BE INSULATED WITH FIBERGLASS PIPE INSULATION WITH VAPOR BARRIER AND PRE-MOLDED FITTING COVERS. DO NOT INSULATE VALVES, UNIONS, ETC.
4. ALL PIPE INSULATION SHALL MEET OR EXCEED THE REQUIREMENTS LISTED IN THE TITLE 24 REPORT.

L. SEISMIC RESTRAINTS (REFER TO STRUCTURAL DRAWINGS)

1. ALL EQUIPMENT, PIPING, AND CONDUIT SHALL BE SEISMICALLY RESTRAINED PER THE OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT (OSHPD).
2. REFERENCES: CALIFORNIA BUILDING CODE (CBC) SECTION 1616A.1.24, AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE 7) SECTION 13.6, SHEET METAL AND AIR CONDITIONING CONTRACTOR'S NATIONAL ASSOCIATION (SMACNA) SEISMIC RESTRAINT MANUAL, AND AMERICAN SOCIETY OF PLUMBING ENGINEERS (ASPE) PLUMBING ENGINEERS DESIGN HANDBOOK.

M. OTHER MATERIAL

1. ALL OTHER MATERIAL, NOT SPECIFICALLY DESCRIBED BUT REQUIRED FOR A COMPLETE JOB, SHALL BE NEW AND FIRST QUALITY, FURNISHED AND INSTALLED BY THE PLUMBING CONTRACTOR.

N. TESTING & CHLORINATION

1. ALL PIPING SHALL BE TESTED IN THE PRESENCE OF AN INSPECTOR BEFORE WORK IS CONCEALED. NOTIFY THREE DAYS PRIOR TO TESTS.
2. FLUSH ALL PIPING TO REMOVE ANY FOREIGN MATERIAL.
3. CHLORINATE ALL NEW WATER PIPING PRIOR TO USE FOR 24-HOUR PERIOD WITH A MINIMUM OF 50 PARTS PER MILLION OR AS REQUIRED TO ACHIEVE A CHLORINE RESIDUAL OF 10 MILLIGRAMS PER LITER AT COMPLETION OF A 24-HOUR PERIOD. ALL PROCEDURES SHALL BE IN ACCORDANCE WITH AWWA STANDARD C651 AND THE STATE HEALTH DEPARTMENT.
4. TEST PIPING AT COMPLETION OF ROUGHING-IN, IN ACCORDANCE WITH THE FOLLOWING SCHEDULE:
   WASTE AND VENT 10' HIGH WATER COLUMN
   WATER 100 PSI W/WATER
   GAS 60 PSI W/AIR

O. RELATED WORK

1. ELECTRICAL CONTRACTOR TO PROVIDE AND INSTALL ALL POWER WIRING AND EQUIPMENT DISCONNECTS, UNLESS INCLUDED WITH EQUIPMENT, TO MAKE SYSTEM OPERATIONAL.

PLUMBING EQUIPMENT SCHEDULE

SYM	DESCRIPTION	MANUFACTURER & MODEL NO.	TRIM	CONNECTIONS				ELECTRICAL	
				W	V	HW	CW	LOAD	VOLTS / Ø / Hz
WH-1	GAS FIRED POWER VENTED WATER HEATER	STATE MODEL NO. SUF100-199E	POWER DIRECT VENTED, 100 GALLON, 199 MBH INPUT, 705 GPH RECOVERY @ 100°F RISE, 97% THERMAL EFFICIENCY. VENT USING PVC, PROVIDE WITH OPTIONAL SIDEWALL VENTING KIT AND CONDENSATE NEUTRALIZATION KIT.	N/A	N/A	1½"	1½"	5 AMPS	120/1/60
TMV-1	THERMOSTATIC MIXING VALVE, 115 DEGREE F SETPOINT	LAWLER 805 MODEL No. 86106	BRONZE BODY, THERMOSTATIC TYPE, REPLACEABLE CORROSION RESISTANCE COMPONENTS, SLIDING PISTON CONTROL, STAINLESS STEEL PISTON AND LINER, 5 GPM LOW FLOW, LEAD FREE AND UPC CSA CERTIFIED. UNIT TO INCLUDED DIAL THERMOMETER, SHUT-OFF VALVE, UNION ON TEMPERED OUTLET AND SURFACE MOUNTED CABINET	N/A	N/A	2"	2"	N/A	N/A
CP-1	HOT WATER RETURN CIRCULATION PUMP	BELL & GOSSETT INLINE CIRCULATOR MODEL No. PL-36	UNIT SHALL BE LEAD FREE BRASS SUITABLE FOR USE IN POTABLE WATER SYSTEMS AND 1" FLANGES 2-BOLT CONNECTIONS. PUMP SHALL BE RATED FOR 2.0 GPM AND 15 FEET TDH. INSTALL COMPLETE WITH MANUFACTURERS ADJUSTABLE TEMPERATURE SENSOR AND TIMER, TO TURN PUMP ON AT 100°F AND TURN OFF AT 120°F	N/A	N/A	1"	N/A	1.4 FLA	120/1/60

PLUMBING SHEET LIST

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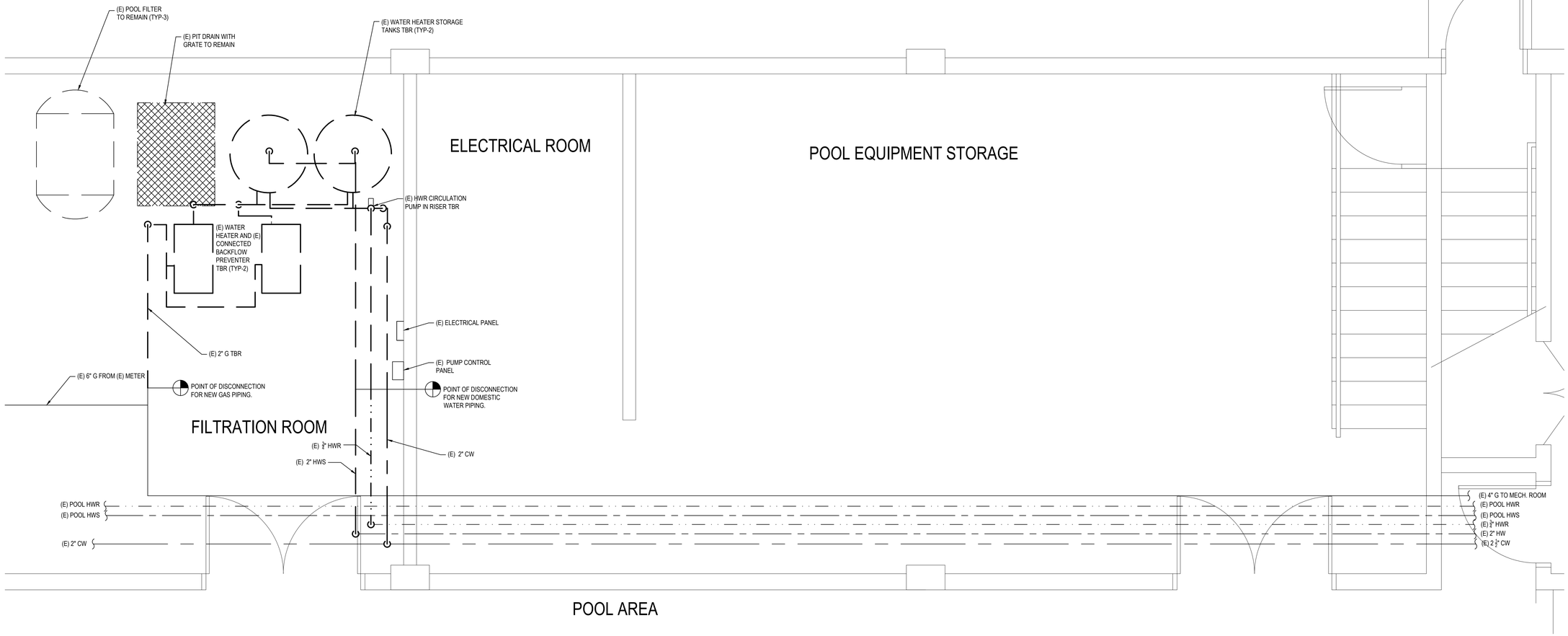
PLUMBING NOTES, SCHEDULES AND ABBREVIATIONS

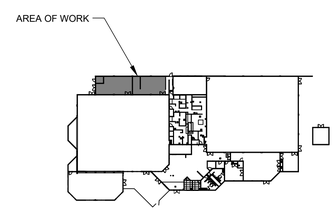
P0.1



1 P1.1 **PLUMBING DEMOLITION PLAN**

SCALE: 1/2" = 1'-0"

NORTH



KEY PLAN

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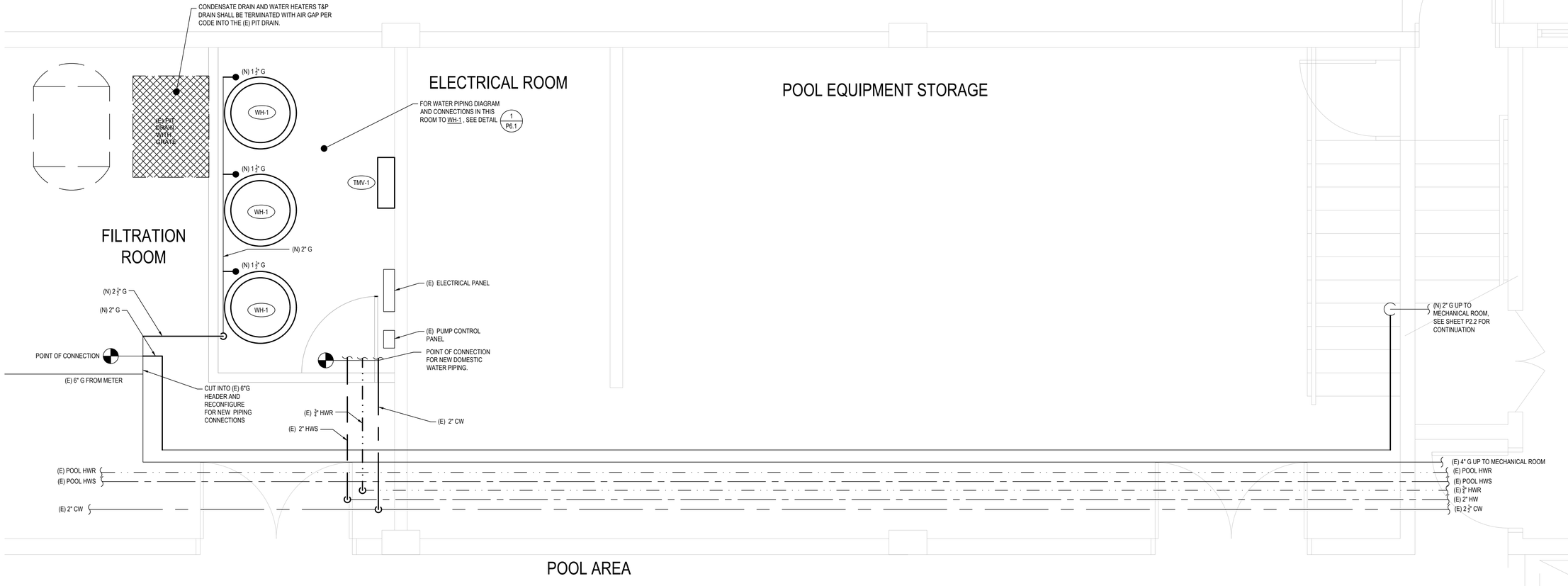
REVIEWED BY:	MCM
DATE:	04/12/2023

ALF SORENSEN PRESCHOOL
HVAC MODIFICATIONS
1400 BARING BLVD
SPARKS, NV 89434

PLUMBING DEMOLITION PLAN

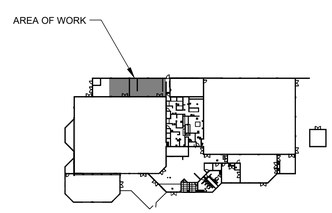
P1.1



1/P2.1 PLUMBING FLOOR PLAN

SCALE: 1/2" = 1'-0"

NORTH



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REGISTERED PROFESSIONAL ENGINEER
STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/23
MECHANICAL
No. 16816
STAMP

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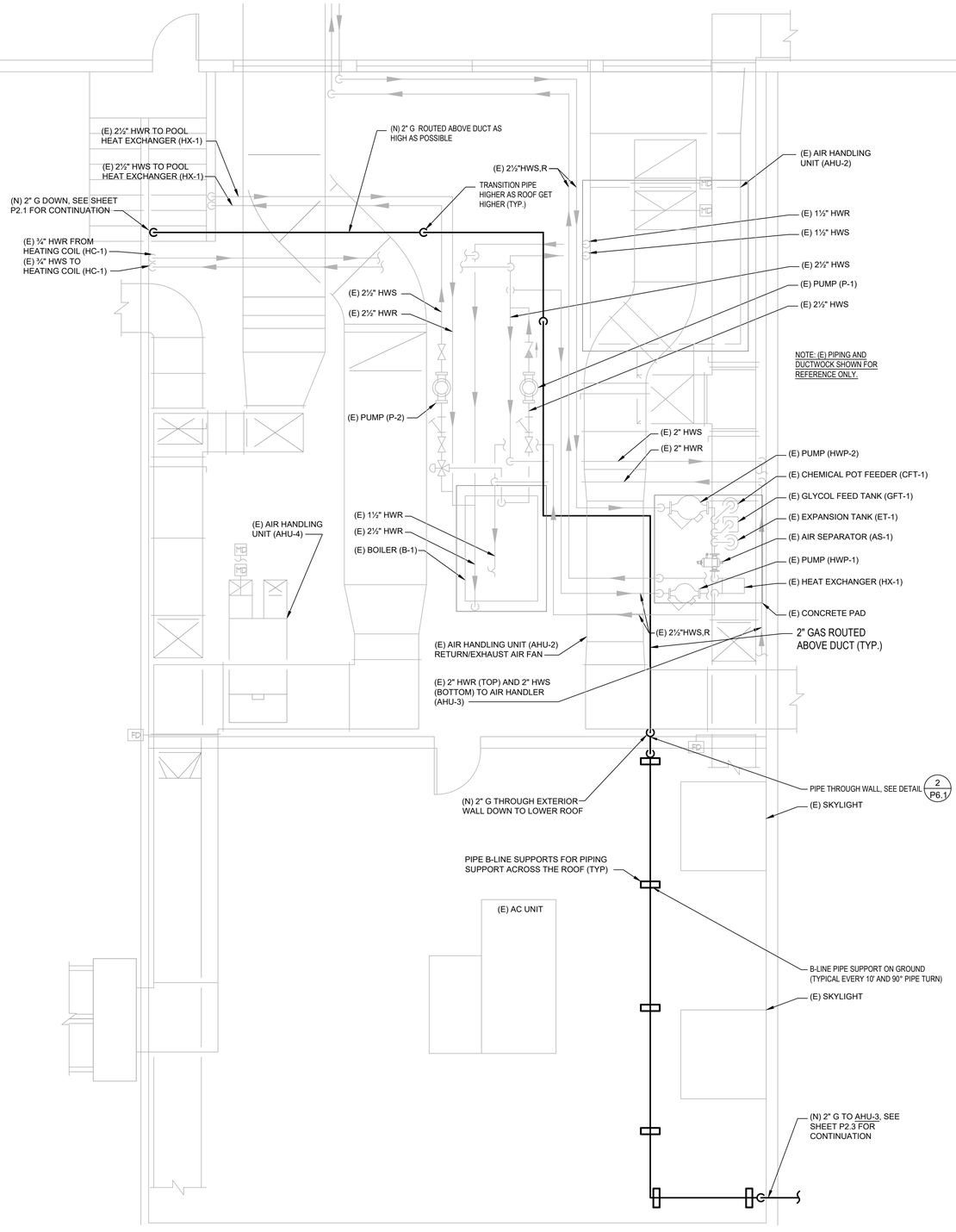
PLUMBING FLOOR PLAN

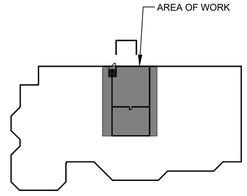
P2.1



1 P2.2 **ENLARGED PLUMBING FLOOR PLAN**

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

NORTH



2ND FLOOR KEY PLAN

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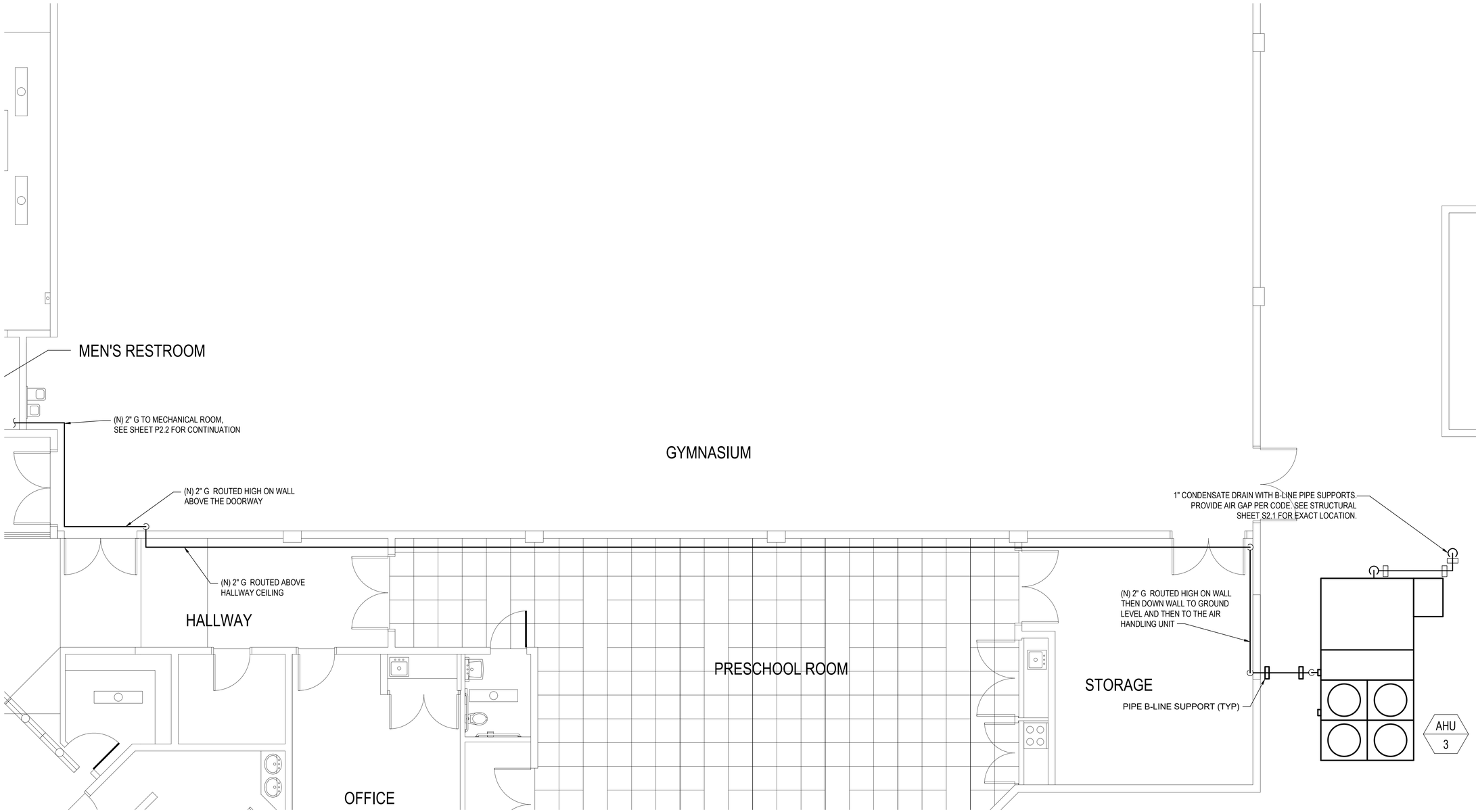
ENLARGED PLUMBING FLOOR PLAN

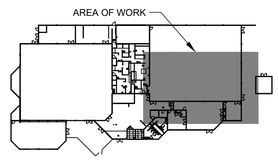
P2.2



1 P2.3 **PLUMBING FLOOR PLAN**

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

NORTH



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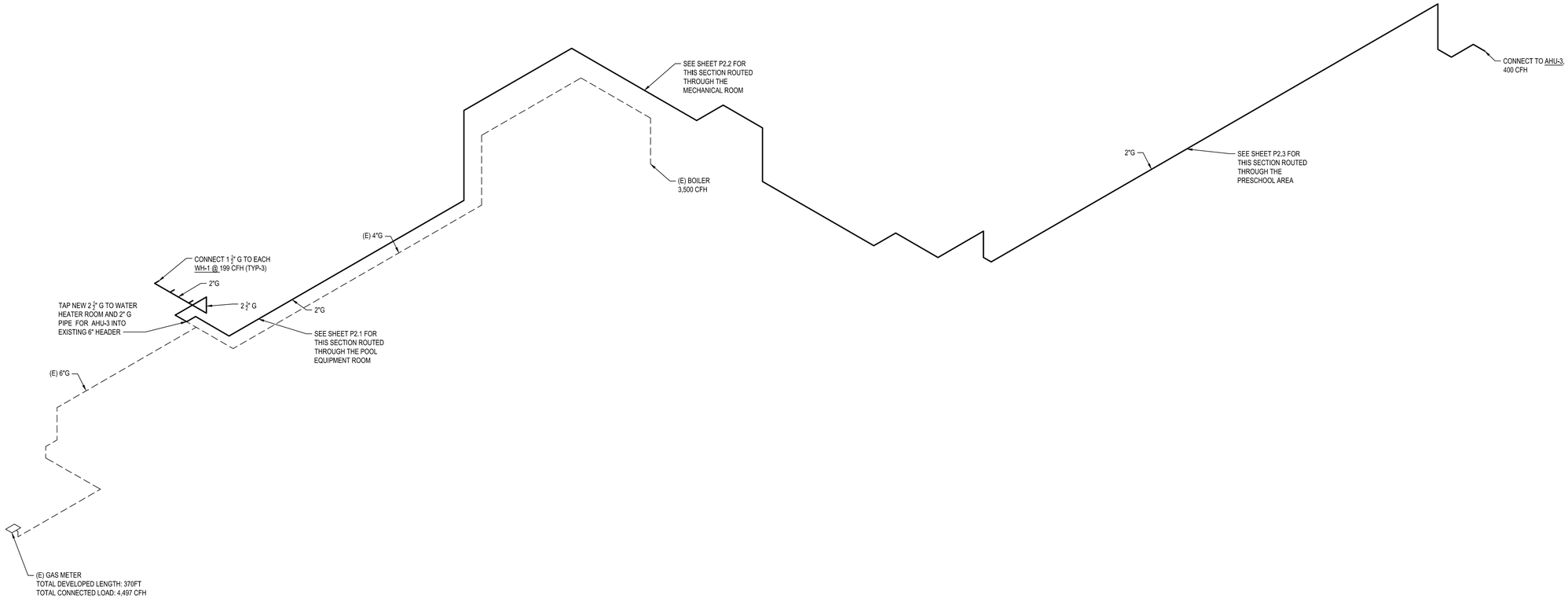
ENLARGED PLUMBING FLOOR PLAN

P2.3



1
P3.1

GAS ISOMETRIC

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

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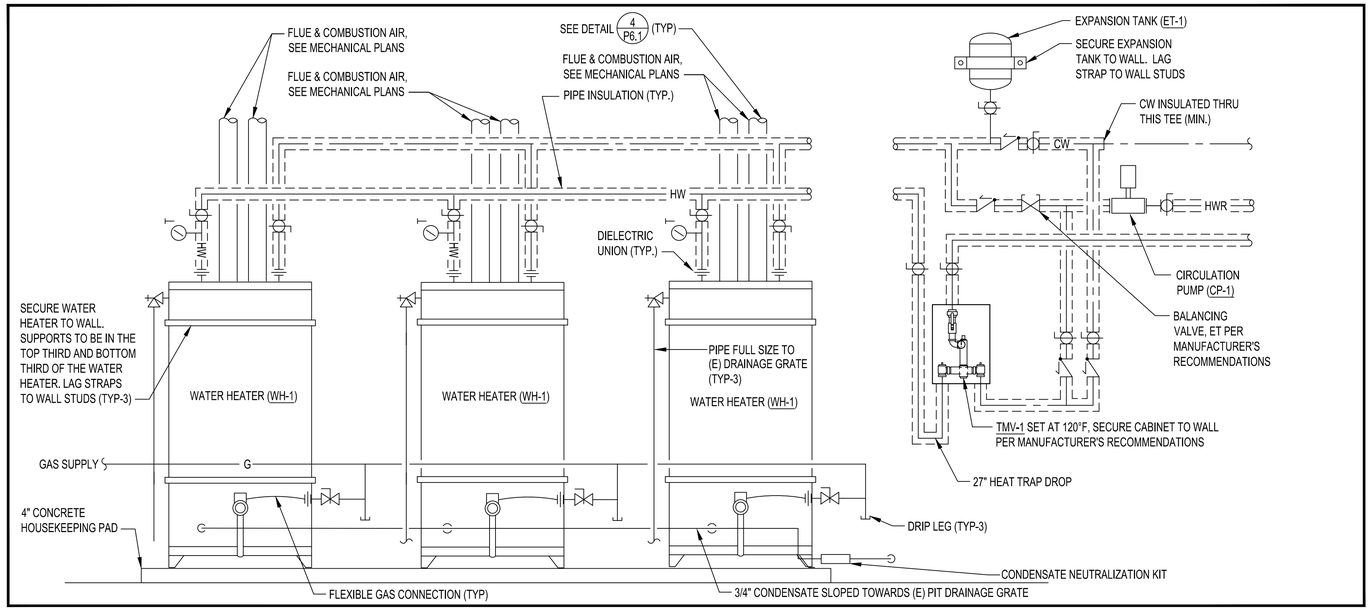
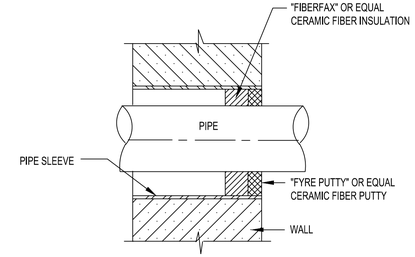
GAS ISOMETRIC

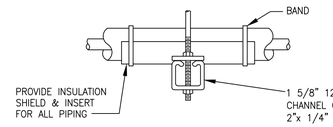
P3.1



1 WATER HEATER PIPING DETAIL
SCALE: N.T.S.



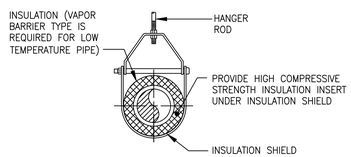
2 PIPE THROUGH WALL DETAIL
SCALE: N.T.S.



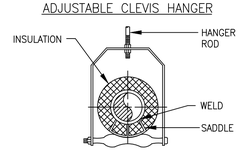
SIDE VIEW

HANGER RODS	
NOMINAL PIPE OR TUBE SIZE (INCHES)	MINIMUM ROD DIAMETER (INCHES)
1/2 – 4	3/8
5 – 8	1/2
10 – 12	5/8

TRAPEZE HANGER FOR UP TO 1000 LB. UNIFORM LOAD



ADJUSTABLE CLEVIS HANGER



ADJUSTABLE ROLLER HANGER

MAXIMUM PIPE/TUBING SUPPORT SPACING				
PIPE MATERIAL	HORIZONTAL		VERTICAL	
	SIZE (INCHES)	SPACING (FEET)	SIZE (INCHES)	SPACING (FEET)
COPPER PIPE OR TUBING	1–1/2 AND SMALLER	6	ALL	EACH FLOOR, NOT TO EXCEED 10 FEET
	2 AND LARGER	10		
BLACK STEEL	1/2	6	1/2	6
	3/4 – 1	8	3/4 – 1	8
	1–1/4 AND LARGER	10	1–1/4 AND LARGER	EVERY FLOOR LEVEL
ABS	ALL	4*	ALL	BASE AND EACH FLOOR. PROVIDE MID–STORY GUIDES*
CPVC	1 AND SMALLER	3	ALL	BASE AND EACH FLOOR.
	1¼ AND LARGER	4		

* PROVIDE FOR EXPANSION EVERY 30 FEET
** PROVIDE SUPPORT AT EVERY CHANGE IN DIRECTION

NOTE: FOR TRAPEZE HANGER TAKE SPACING OF SMALLEST SIZE ON TRAPEZE.

3 PIPE HANGAR AND SUPPORT DETAIL
SCALE: N.T.S.

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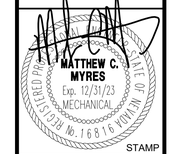

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PLUMBING DETAILS

P6.1

ELECTRICAL SYMBOLS

CONDUIT AND RACEWAY		MOUNTING (UON)
	CONDUIT RUN IN OR ON CEILING OR WALL.	NA
	CONDUIT RUN IN FLOOR, UNDER FLOOR, OR UNDERGROUND.	NA
	MARKS INDICATE QTY OF CONDUCTORS IN CONDUIT EXCLUDING GROUND. NO MARKS INDICATE (2) CONDUCTORS. ADD GROUND PER NEC FOR EMT & NON-METALLIC CONDUIT.	NA
	LONG MARK INDICATES GROUND FOR ISOLATED GROUNDING SYSTEM. SIZE PER NEC.	NA
	BRANCH CIRCUIT (DIAGRAMMATIC)	NA
LA-1	HOMERUN INDICATING PANEL AND CIRCUIT NUMBER.	NA
LA-[1,3,5]	HOMERUN WITH CIRCUIT NUMBER IN BRACKETS INDICATING MULTI-PHASE LOAD.	NA
ON HA-1	"ON" INDICATES CIRCUITING SPLIT AT DIFFERENT LOCATIONS	NA
	CONDUIT UP.	NA
	CONDUIT DOWN.	NA
	CONDUIT STUB AND CAP.	NA
POWER DEVICES		MOUNTING (UON)
	SIMPLEX CONVENIENCE OUTLET, +18" AFF (TYPICAL).	W
	DUPLEX CONVENIENCE OUTLET, +18" AFF (TYPICAL).	W
	DUPLEX CONVENIENCE OUTLET, COUNTER HEIGHT +48" AFF (TYPICAL).	W, FVMH
	CONVENIENCE OUTLET W/ GFCI PROTECTION.	W
WP	CONVENIENCE OUTLET W/ GFCI PROTECTION & WEATHER PROOF-IN-USE COVER.	W, FVMH
	DUPLEX CONVENIENCE OUTLET W/ DEDICATED CIRCUIT & ISOLATED GROUND.	W
	DOUBLE DUPLEX CONVENIENCE OUTLET.	W
	DUPLEX CONVENIENCE OUTLET, CEILING MOUNTED, FVMH.	C, FVMH
	FLOOR BOX.	FL
	SPECIAL PURPOSE OUTLET, NEMA CONFIGURATION AND VOLTAGE AS NOTED.	W, FVMH
J USE	JUNCTION BOX, SPECIFIC USE AS NOTED.	W, FVMH
EQUIPMENT		MOUNTING (UON)
AC1 AC 1	EQUIPMENT CALLOUT.	
$M	FRACTIONAL HORSEPOWER MOTOR RATED MANUAL STARTER.	W
	DISCONNECT, HEAVY DUTY, NON-FUSIBLE.	W
	DISCONNECT, HEAVY DUTY, FUSIBLE.	W, FVMH
	MAGNETIC MOTOR STARTER.	W
	COMBINATION MOTOR STARTER & DISCONNECT.	W, FVMH
	VARIABLE FREQUENCY DRIVE.	W
WALL	ELECTRICAL PANEL, SURFACE MOUNTED.	W
WALL	ELECTRICAL PANEL, FLUSH MOUNTED.	C, FVMH
	TRANSFORMER.	FL
	DISTRIBUTION PANELBOARD.	W, FVMH
WALL	INVERTER.	W, FVMH
WALL	AUXILIARY SYSTEM CABINET.	W, FVMH
WALL	TELECOMMUNICATIONS TERMINATION BOARD.	W, FVMH
	EMERGENCY SHUT OFF SWITCH.	W, FVMH
	PULLBOX	C
	RECESSED TROFFER, 2'X2' (L1), 2'X4' (L2)	NA
	PENDANT MOUNTED LINEAR FLOURESCENT, 1'X4' (L3)	FVM
	RECESSED SPOTLIGHT, 6" (R1)	NA
	EXIT SIGN, SINGLE FACE. ARROWS INDICATE PATH OF EGRESS. REFER TO PLANS FOR MOUNTING. ON UNSWITCHED LEG.	FVM
S	SMOKE DETECTOR	NA

ABBREVIATIONS

1P	ONE POLE
1PH	SINGLE PHASE
2/C	TWO-CONDUCTOR
2P	TWO POLE
3/C	THREE-CONDUCTOR
3P	THREE POLE
3PH	THREE PHASE
3W	THREE WIRE
4PDT	FOUR POLE DOUBLE THROW
4PST	FOUR POLE SINGLE THROW
4W	FOUR WIRE
A	AMPERE
A/C	AIR CONDITIONIG
AC	ALTERNATING CURRENT
ADA	AMERICANS WITH DISABILITIES ACT
ADJ	ADJACENT
AFC	AVAILABLE FAULT CURRENT
AFF	ABOVE FINISHED FLOOR / GRADE
AIC	AMPERE INTERRUPTING CAPACITY
AL	ALUMINUM
ALCP	AREA LIGHT CONTACTOR PANEL
ALT	ALTERNATE
AMP	AMPERE
APPROX.	APPROXIMATE / APPROXIMATELY
AR	AS REQUIRED
ARCH	ARCHITECTURAL / ARCHITECT
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BB	BUCK BOOST
BFB	BACK FEED BREAKER
BLDG	BUILDING
BRKR	BREAKER
BTU	BRITISH THERMAL UNIT
C	CEILING
CATV	COMMUNITY ANTENNA TELEVISION
CB	CIRCUIT BREAKER
CFBA	CUSTOM COLOR / FINISH SELECTED BY ARCHITECT
CFCI	CONTRACTOR FURNISHED CONTRACTOR INSTALLED
CFOI	CONTRACTOR FURNISHED OWNER INSTALLED
CKT	CIRCUIT
CL	CENTERLINE
CLG	CEILING
CO	CONVENIENCE OUTLET, RECEPTACLE
CU	COPPER
DA	DAMPER ACTUATOR
dB	DECIBLE, UNIT OF SOUND LEVEL
(X)	DEMOLITION
DEPT	DEPARTMENT
DF	DRINKING FOUNTAIN
DIA	DIAMETER
DIM	DIMENSION
DISC	DISCONNECT
DN	DOWN
DPDT	DOUBLE POLE DOUBLE THROW
DWG	DRAWINGS
E	EAST
EA	EACH
EC	EMPTY CONDUIT WITH PULL WIRE
EJ	EXPANSION JOINT
ELEC	ELECTRICAL
ELEV	ELEVATOR
EM	EMERGENCY
EMT	ELECTRICAL METALLIC CONDUIT

ABBREVIATIONS

ENT	ELECTRICAL NONMETALLIC CONDUIT
EPO	EMERGENCY POWER OFF
EQUIP	EQUIPMENT
(E)	EXISTING TO REMAIN
FA	FIRE ALARM
FAA	FIRE ALARM ANNUCIATOR
FACP	FIRE ALARM CONTROL PANEL
FBO	FURNISHED BY OTHERS
FLA	FULL LOAD AMPERES
FMC	FLEXIBLE METAL CONDUIT
FPEN	FUSE PER EQUIPMENT NAMEPLATE
FSD	FIRE SMOKE DAMPER
FVM	FIELD VERIFY MOUNTING
FVMH	FIELD VERIFY MOUNTING HEIGHT
FVNR	FULL VOLTAGE NON-REVERSING
FVR	FULL VOLTAGE REVERSING
G	GROUND
GALV	GALVANIZED
GEN	GENERATOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFP	GROUND FAULT PROTECTION
GND	GROUND
HD	HEAVY DUTY
HID	HIGH INTENSITY DISCHARGE
HOA	HAND-OFF-AUTOMATIC
HP	HORSEPOWER
HPS	HIGH-PRESSURE SODIUM
HV	HIGH VOLTAGE
HVAC	HEATING, VENTILATION & AIR CONDITIONING
Hz	HERTZ, UNIT OF FREQUENCY
I/O	INPUT / OUTPUT
IG	ISOLATED GROUND
IMC	INTERMEDIATE METAL CONDUIT
IN/IS	INSULATED / ISOLATED
IR	INFRARED
KV	KILOVOLT
KVA	KILOVOLT AMPERE
KVAR	KILOVOLT AMPERE REACTIVE
KW	KILOWATT
KWH	KILOWATT HOUR
LED	LIGHT EMITTING DIODE
LFNC	LIQUID TIGHT FLEXIBLE NONMETALLIC CONDUIT
LPS	LOW-PRESSURE SODIUM
LRA	LOCKED ROTOR AMPERES
LTG	LIGHTING
LV	LOW VOLTAGE
MAX	MAXIMUM
MC	METAL CLAD
MCA	MINIMUM CIRCUIT AMPERES
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MECH	MECHANICAL
MFR	MANUFACTURER
MH	MAN HOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MLO	MAIN LUGS ONLY
MOCP	MAXIMUM OVER-CURRENT PROTECTION
N	NORTH
NA	NOT APPLICABLE
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRIC CODE
NEMA	NATIONAL ELECTRIC MANUFACTURERS ASSOCIATION
NFC	NATIONAL FIRE CODE

ABBREVIATIONS

NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
(N)	NEW
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NO	NORMALLY OPEN
NO.	NUMBER
NTS	NOT TO SCALE
OC	ON CENTER
OCP	OVER-CURRENT PROTECTION
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED OWNER INSTALLED
OHD	OVERHEAD DOOR
OL	OVERLOAD
PF	POWER FACTOR
PH	PHASE
PNL	PANEL
PVC	POLYVINYL CHLORIDE
QTY	QUANTITY
R	REMOVE / DEMOLISH
RCP	REFLECTED CEILING PLAN
REF	REFRIGERATOR
REV	REVISIONS / REVISED
RGS	RIGID GALVANIZED STEEL CONDUIT
RMC	RIGID METAL CONDUIT
RNC	RIGID NONMETALLIC CONDUIT
RPM	REVOLUTIONS PER MINUTE
RR	REMOVE & RELOCATE
S	SOUTH
S/N	SWITCH NEUTRAL
S/S	START / STOP
SCA	SHORT CIRCUIT AMPERES
SF	SQUARE FOOT / FEET
SFBA	STANDARD FINISH / COLOR BY ARCHITECT
SPD	SURGE PROTECTION DEVICE
SPDT	SINGLE POLE DOUBLE THROW
SPEC	SPECIFICATION
SPST	SINGLE POLE SINGLE THROW
SQ	SQUARE
ST	SINGLE THROW
STRUCT	STRUCTURAL
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TEMP	TEMPORARY
TL	TWISTLOCK
TP	TWISTED PAIR
TSP	TWISTED SHIELDED PAIR
TTB	TELEPHONE TERMINAL BOARD
TV	TELEVISION (CABLE)
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TYP	TYPICAL
UF	UNDERFLOOR / UNDERSLAB
UGND	UNDERGROUND
UNO	UNLESS NOTED OTHERWISE
UNSW	UNSWITCHED
UPS	UNINTERRUPTIBLE POWER SOURCE
V	VOLTS / VOLTAGE
VA	VOLT AMPERE
VFD	VARIABLE FREQUENCY DRIVE
W	WEST
W/	WITH
W/O	WITHOUT
WH	WATER HEATER
WP	WEATHER PROOF (NEMA 3R)
XFMR	TRANSFORMER
XP	EXPLOSION PROOF
Y	WYE

SHEET LIST TABLE

SHEET NUMBER	SHEET TITLE
E0.1	ELECTRICAL SYMBOL LIST, ABBREVIATIONS
E0.2	ELECTRICAL SPECIFICATIONS
E0.3	ELECTRICAL SCHEDULES
E1.1	ELECTRICAL DEMO PLAN
E2.1	ELECTRICAL FLOOR PLAN

NO.	REVISIONS	DATE

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02/14/22

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DRAWN BY: JPN
REVIEWED BY: DJC
DATE: 02/14/22

ALF SORENSEN PRESCHOOL
HVAC MODIFICATIONS
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SPARKS, NV 89434

ELECTRICAL SYMBOL LIST, ABBREVIATIONS

E.01

ELECTRICAL SPECIFICATIONS

PART ONE - GENERAL

1.1. THE WORK: ALL WORK SHALL BE NEW UNLESS OTHERWISE NOTED. THE CONTRACTOR SHALL PROVIDE THE WORK SHOWN ON THE DRAWINGS AND SPECIFIED FOR ITS INDIVIDUAL SECTIONS OF WORK. THE WORD "WORK" IS DEFINED AS ALL LABOR, TRANSPORTATION, MATERIAL, EQUIPMENT, TOOLS, INSTALLATION, SUPERVISION AND ANY OTHER INCIDENTAL ITEMS OR SERVICES NECESSARY FOR THE PROPER INSTALLATION AND OPERATION OF THE COMPLETE SYSTEMS, WHICH SHALL BE PROVIDED BY THIS CONTRACTOR WHETHER OR NOT SPECIFICALLY INDICATED OR NOTED.

1.2. RESPONSIBILITY: THIS CONTRACTOR IS SOLELY RESPONSIBLE FOR THE ACTIONS OF ITS PERSONNEL, SUPPLIERS, AND SUB-CONTRACTORS. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR THE PERFORMANCE OF ALL WORK AS MAY BE REQUIRED TO ACCOMMODATE OR SUPPORT THE ELECTRICAL WORK. EXAMPLES: PAINTING, STRUCTURAL SUPPORTS, CUTTING AND PATCHING, EXCAVATION AND BACKFILL, CONCRETE PADS, ROOF JACKS, ETC. REQUIRING THIS CONTRACTOR'S ENGAGEMENT OF APPROPRIATE TRADES TO PERFORM SUCH WORK FOR THE PROPER INSTALLATION AND OPERATION OF COMPLETE ELECTRICAL SYSTEMS.

1.3. MINIMUM REQUIREMENTS: THESE SPECIFICATIONS ESTABLISH THE MINIMUM REQUIREMENTS FOR THE WORK AND MATERIALS, EQUIPMENT AND METHODS TO BE PROVIDED. THE DRAWINGS MAY INDICATE REQUIREMENTS WHICH EXCEED THESE MINIMUMS.

1.4. GENERAL CONDITIONS: ALL GENERAL CONDITIONS, SPECIAL REQUIREMENTS OR GENERAL REQUIREMENTS OF THE CONSTRUCTION SPECIFICATIONS ARE MADE PART OF THIS SPECIFICATION AND HAVE THE SAME FORCE AND EFFECT AS IF COMPLETELY REPRODUCED.

1.5. DEFINITIONS:
- AHJ: AUTHORITY HAVING JURISDICTION.
- ASSEMBLY: AN INSTALLATION OR SYSTEM OF MULTIPLE COMPONENTS REQUIRING MULTIPLE CONNECTIONS. (EXAMPLES: TRASH COMPACTOR, MOTORIZED DOOR, HVAC SPLIT SYSTEM, ETC.).
- EQUAL: ACCEPTED BY THE ENGINEER AS EQUAL.
- FF&E: FURNISHINGS, FIXTURES AND EQUIPMENT - PROVIDED BY OTHERS AT JOBSITE. RECEIVE, PROTECT, STORE, ASSEMBLE, INSTALL AND CONNECT. PROVIDE MINIMUM 5x STRUCTURAL BACKING. (EXAMPLES: CHANDELIERS, PROJECTORS, ETC.).
- PROVIDE: FURNISH, INSTALL, ACTIVATE AND COMMISSION.

1.6. CODES: ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE LATEST ADOPTED EDITIONS OF THE NATIONAL ELECTRICAL CODE (NEC) AND ALL OTHER APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS.

1.7. PERMITS: PAY ALL FEES AND OBTAIN ALL PERMITS AND INSPECTIONS REQUIRED FOR THE WORK.

1.8. DRAWINGS: DRAWINGS ARE DIAGRAMMATIC AND SCHEMATIC IN NATURE, AND INDICATE THE TYPE, SIZE, ARRANGEMENT AND LOCATIONS OF MATERIALS AND EQUIPMENT. WORK INCLUDES CERTAIN COMPONENTS, APPURTENANCES, AND RELATED SPECIALTIES THAT MAY NOT BE SHOWN. PROVIDE ALL NECESSARY ITEMS TO COMPLETE THE WORK ACCORDING TO INDUSTRY STANDARDS. IT IS THE INTENT OF THE DRAWINGS AND SPECIFICATIONS TO REQUIRE FINISHED WORK, TESTED AND READY FOR OPERATION, DO NOT SCALE DRAWINGS. ARRANGEMENT OF EQUIPMENT AND ROUTING OF FEEDERS AND BRANCH CIRCUITRY SHALL BE PLUMB AND AT RIGHT ANGLES TO BUILDING CONSTRUCTION AND MAY REQUIRE MODIFICATION DUE TO UNFORESEEN CONDITIONS REQUIRING ONSITE REVISIONS DURING CONSTRUCTION, (SEE ALSO "BIDDING").

1.9. COORDINATION: THIS PROJECT REQUIRES A HIGH LEVEL OF COORDINATION AND COOPERATION WITH OWNER, ARCHITECT, OTHER TRADES, VENDORS, AND SPECIALTY CONTRACTORS. CAREFULLY EXAMINE ALL CONTRACT DOCUMENTS INCLUDING, BUT NOT LIMITED TO, SHOP DRAWINGS, ETC. FOR ALL GENERAL CONSTRUCTION, STRUCTURAL, MECHANICAL, PLUMBING, ELECTRICAL AND SPECIALTY CONTRACTOR WORK. PRIOR TO ROUGH-IN, COORDINATE THE WORK WITH ALL OTHER TRADES, TAKING RESPONSIBILITY FOR THE PROPER FITTING OF MATERIAL INTO THE BUILDING AS PLANNED WITHOUT INTERFERENCE WITH OTHER WORK. ESTABLISH AND VERIFY LOCATIONS, HEIGHTS, CONNECTION METHODS, ETC, WITH EQUIPMENT INSTALLER (AND OWNER, ARCHITECT, AND/OR INTERIOR DESIGNER FOR FF&E ITEMS), AND MAKE REASONABLE MODIFICATIONS IN THE LAYOUTS NEEDED TO PREVENT CONFLICTS WITH OTHER TRADES IN ORDER TO PROVIDE ACCESS FOR THE PROPER EXECUTION OF THE WORK.

1.10. IDENTICAL: ALL WORK REQUIRED FOR IDENTICAL ITEMS AND ASSEMBLIES OF THE PROJECT SHALL BE PROVIDED, ALTHOUGH EACH SPECIFIC IDENTICAL ITEM MAY NOT BE SHOWN IN DETAIL.

1.11. VERIFICATION: CHECK AND VERIFY ALL SIZES, DIMENSIONS, AND CONDITIONS BEFORE STARTING ANY WORK. ANY DEVIATION(S) OR PROBLEM(S) SHALL BE TRANSMITTED TO THE ENGINEER FOR REVIEW.

1.12. CONNECTIONS: CONNECT ALL EQUIPMENT, SYSTEMS, AND ASSEMBLIES PROVIDED BY OTHERS INCLUDING CONTROLS, SAFETY DEVICES AND INTERCONNECTIONS. EXCEPTION: DO NOT INTERCONNECT THE CONTROL SYSTEMS OF THOSE MECHANICAL AND PLUMBING SYSTEMS WHICH ARE SPECIFICALLY NOTED TO BE THE RESPONSIBILITY OF THOSE TRADES. PROVIDE FUSIBLE DISCONNECT SWITCHES AND MOTOR STARTERS FOR ALL EQUIPMENT EXCEPT THOSE ITEMS WHICH ARE SPECIFICALLY LISTED WITH INTEGRAL STARTERS/DISCONNECT SWITCHES. WHERE STARTERS AND/OR DISCONNECT SWITCHES ARE FURNISHED TOGETHER WITH EQUIPMENT, RECEIVE, INSTALL, AND CONNECT THOSE ITEMS.

1.13. SUBMITTAL: SUBMIT TO THE ENGINEER COMPLETE ELECTRONIC SETS OF SHOP DRAWINGS AND TECHNICAL DATA SHEETS FOR ALL EQUIPMENT AND MATERIALS SPECIFIED HEREIN. THE ENGINEER SHALL REVIEW SHOP DRAWINGS AND TECHNICAL DATA SHEETS FOR CONFORMANCE WITH THE CONTRACT DOCUMENTS AND ISSUE A WRITTEN ASSESSMENT TO THE OWNER PRIOR TO COMMENCEMENT OF WORK. THE ENGINEER'S FAILURE TO CORRECT ERRORS IN THE SUBMITTAL SHALL NOT RELIEVE THE CONTRACTOR OF THE OBLIGATION TO PERFORM THE WORK AS SHOWN AND/OR SPECIFIED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ENGINEERING FEES NECESSARY TO CHANGE PROJECT DOCUMENTS BASED ON ALTERNATE SUBMITTAL PACKAGES/EQUIPMENT SUBSTITUTIONS.

1.14. OR-EQUAL SUBSTITUTIONS: ALL PROPOSED "OR EQUAL" SUBSTITUTIONS SHALL BE SUBMITTED TO THE ENGINEER FOR CONSIDERATION PRIOR TO BIDDING AND AFTER ALL REQUIREMENTS ASSOCIATED WITH SUBSTITUTED EQUIPMENT AND/OR MATERIALS HAVE BEEN COORDINATED WITH OTHER BUILDING TRADES, INCLUDING ALL MECHANICAL, STRUCTURAL, AND/OR ARCHITECTURAL ELEMENTS. THE OWNER'S REPRESENTATIVE SHALL PRE-APPROVE ANY PROPOSED SUBSTITUTION IN WRITING. IDENTIFY AND ANNOTATE ALL REVISED REQUIREMENTS PER BUILDING TRADE ON THE SHOP DRAWINGS. ALSO IDENTIFY ALL COST DEBITS OR CREDITS IN WRITING FOR THE PROPOSED CHANGES PER BUILDING TRADE AND SUMMARIZE THESE AS A TOTAL NET-TO-OWNER CHARGE OR CREDIT FOR CONSIDERATION.

1.15. AS-BUILT: UPON COMPLETION OF CONSTRUCTION, SUPPLY THE ENGINEER WITH AS-BUILT DOCUMENTS ACCURATELY SHOWING THE MATERIALS AND EQUIPMENT AS INSTALLED. PROVIDE OPERATION AND MAINTENANCE MANUAL(S) CONTAINING APPROVED SHOP DRAWINGS, OPERATING AND MAINTENANCE INSTRUCTION FOR SWITCHGEAR, LIGHTING FIXTURES, CONTROLS, AND SPECIALTY EQUIPMENT.

1.16. GUARANTEE: ALL MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED FOR A MINIMUM OF ONE (1) YEAR FROM DATE OF ACCEPTANCE BY OWNER (LONGER IF REQUIRED BY GENERAL AND/OR SPECIAL CONDITIONS). IN ADDITION, THE INSTALLATION SHALL BE GUARANTEED TO PERFORM AS SPECIFIED AND FULFILL EACH AND EVERY REQUIREMENT OF THE DRAWINGS AND SPECIFICATIONS WHEN OPERATED IN ACCORDANCE WITH THE CONTRACTOR'S INSTRUCTIONS, SHOULD THE INSTALLATION IN ANY WAY FAIL TO DO SO, THE CONTRACTOR WILL, WITHOUT DELAY AND WITHOUT COST TO THE OWNER, PROVIDE WHATEVER ADDITIONAL EQUIPMENT, MATERIAL AND LABOR REQUIRED TO CORRECT THE DEFICIENCY AND COMPLY WITH THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. WHERE SPECIFIED EQUIPMENT HAS A LONGER GUARANTEE PERIOD, THE TERMS OF THAT GUARANTEE SHALL GOVERN (EXAMPLE: LED SYSTEM WITH 5 YEAR GUARANTEE). INCANDESCENT LAMPS ARE EXEMPT BUT SHALL BE NEW AND UNUSED AT THE TIME OF FINAL ACCEPTANCE.

IECC COMPLIANCE: COMPLY WITH ALL REQUIREMENTS SET FORTH IN THE IECC COMPLIANCE CERTIFICATE INCLUDED IN THESE DOCUMENTS. HIRE A COMMISSIONING AGENT TO COMPLY WITH AND PERFORM ALL ASPECTS OF SECTION C408 OF THE 2018 IECC.

BIDDING

1.17. SITE VISIT: CONTRACT DOCUMENTS INDICATE NEW WORK TO BE PERFORMED AND DO NOT PURPORT TO SHOW ALL EXISTING CONDITIONS. VISIT THE SITE PRIOR TO SUBMITTING A BID TO BECOME FAMILIAR WITH EXISTING CONDITIONS. COMPARE THE WORK SPECIFIED IN THE CONTRACT DOCUMENTS AGAINST EXISTING CONDITIONS, AND IDENTIFY AND ANNOTATE ALL WORK OR CONDITIONS THAT ARE DIFFERENT FROM THE CONTRACT DOCUMENTS OR THEIR INTENT. UPON DISCOVERY, IMMEDIATELY NOTIFY AND REPORT IN WRITING ANY DISCREPANCIES TO THE ENGINEER. NO EXTRAS OR CHANGE ORDERS WILL BE ALLOWED FOR FAILURE TO PERFORM THE PRE-BID SITE VISIT.

1.18. BASIS OF PROPOSAL: PROPOSAL SHALL BE BASED ON MANUFACTURERS AND MODELS AS LISTED UNLESS "OR EQUAL" IS INDICATED. PROVIDE SUBSTITUTION REQUESTS A MINIMUM OF FIVE (5) BUSINESS DAYS PRIOR TO BID DATE CLOSING TO ALLOW TIME FOR DUE CONSIDERATION OF PROPOSED ALTERNATE AND SUBSEQUENT NOTIFICATION TO ALL OTHER BIDDERS IN THE EVENT SUBSTITUTION IS DEEMED ACCEPTABLE. DETERMINATION OF SUBSTITUTION EQUALITY RESTS SOLELY WITH THE ENGINEER.

1.19. BIDDING: THE CIVIL, ARCHITECTURAL, MECHANICAL, KITCHEN, AND/OR INTERIOR DRAWINGS CONTAIN DETAILED DESCRIPTIONS, CIRCUITING, AND CONNECTION REQUIREMENTS WHICH ARE PART OF THIS CONTRACTOR'S RESPONSIBILITIES. DO NOT SUBMIT BIDS ON THIS PROJECT PRIOR TO REVIEWING ALL PROJECT DRAWINGS, SPECIFICATIONS, AND ADDENDA.

PART TWO - PRODUCTS

2.1. MATCH EXISTING: EXISTING EQUIPMENT AND SYSTEMS SHALL BE CONSIDERED A MINIMUM STANDARD TO BE MET, IF NOT OTHERWISE EXCEEDED BY THESE PLANS AND SPECIFICATIONS. NEW MATERIALS AND EQUIPMENT SHALL MATCH EXISTING IN APPEARANCE AND FUNCTION.

2.2. EXISTING SWITCHGEAR: CHANGES TO EXISTING PANELBOARDS AND DISTRIBUTION EQUIPMENT SHALL BE MADE WITH MATCHING COMPONENTS. NEW CIRCUIT PROTECTIVE DEVICES SHALL BE MANUFACTURER-CERTIFIED AS COMPATIBLE WITH EXISTING EQUIPMENT, AND SHALL EQUAL OR EXCEED EQUIPMENT FAULT CURRENT (AIC) RATINGS.

2.3. EQUIPMENT STANDARDS: ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND OF THE HIGHEST QUALITY AVAILABLE ("SPECIFICATION GRADE"). EQUIPMENT SHALL BE CONSTRUCTED TO NEMA STANDARDS AND SHALL BE LABELED FOR THEIR INTENDED PURPOSE BY A RECOGNIZED TESTING AGENCY ACCEPTABLE TO THE AHJ (U.L., CSA, ETL, ETC.).

2.4. ACCEPTABLE MANUFACTURERS AND SUPPLIERS: WHERE EQUIPMENT AND MATERIALS ARE NOT SPECIFIED BY NAME THEY ARE DEEMED TO GENERIC, SUBJECT TO THE REQUIREMENTS LISTED HEREIN. THESE MANUFACTURERS ARE CONSIDERED CAPABLE OF OFFERING EQUIVALENT PRODUCTS. MINIMUM STANDARD IN ALL INSTANCES IS COMMERCIAL GRADE

SWITCHGEAR:	EATON, GENERAL ELECTRIC, SIEMENS, SQUARE D
LIGHT FIXTURES:	ACUITY, COOPER, HUBBELL, THOMAS
WIRING DEVICES:	HUBBELL, LEVITON, LEGRAND, WIREMOLD

2.5. CIRCUITING: ALL WIRING SHALL BE IN CONDUIT, CONCEALED EXCEPT WHERE NOTED. EMT WITH STEEL INSULATED THROAT SET SCREW FITTINGS MAY BE USED IN DRY, PROTECTED INTERIOR LOCATIONS. PVC SCHEDULE 40 SHALL BE USED BELOW GRADE AT MINIMUM -24". WRAPPED RIGID ELBOWS AND RISERS SHALL BE USED FOR ALL THROUGH-GRADE TRANSITIONS AND STUB-UPS. RGS OR IMC CONDUIT WITH THREADED FITTINGS SHALL BE USED IN ALL LOCATIONS WHERE EXPOSED TO THE ELEMENTS OR SUBJECT TO PHYSICAL DAMAGE. IMC OR RIGID CONDUIT BELOW GRADE SHALL BE HALF-LAP WRAPPED WITH 20 MIL PVC TAPE. TYPE ENT RACEWAY IS NOT ALLOWED. CONNECT RECESSED AND SUSPENDED LIGHTING FIXTURES, MOTORIZED AND/OR VIBRATING EQUIPMENT WITH STEEL FLEX OR SEALTITE CONDUIT. ALL CONDUIT SHALL HAVE PULL CORD IF OTHERWISE EMPTY.

2.6. MC CABLE: MC CABLE MAY BE USED IN LOCAL 1- AND 2-CIRCUIT APPLICATIONS ACCEPTABLE TO THE AHJ. HOMERUNS AND FEEDERS SHALL BE CONDUIT AND WIRE.

2.7. WIRING: ALL WIRE SHALL BE COPPER, STRANDED IN SIZES #8 AWG AND LARGER. INSULATION SHALL BE TYPE THWN OR THHN. SINGLE PHASE BRANCH CIRCUITS SHALL INCLUDE A SEPARATE NEUTRAL WIRE WITH EACH PHASE WIRE. NEUTRAL SHALL BE WHITE WITH COLOR STRIPE MATCHING COLOR OF PHASE WIRE.

2.7. FUSES AND CIRCUIT BREAKERS: FUSES AND CIRCUIT BREAKERS SHALL BE SIZED PER ACTUAL RESPECTIVE APPLICATION (i.e., MOTOR CIRCUIT PROTECTOR, GROUND FAULT CIRCUIT INTERRUPTER, ARC FAULT CIRCUIT INTERRUPTER, ETC.). FUSES SHALL BE DUAL ELEMENT, CURRENT-LIMITING, AND SHALL BE INTERCHANGEABLE BETWEEN FRAME SIZES WITH STANDARD FACTORY FUSE REDUCERS. PROVIDE LOCKABLE SPARE FUSE CABINET WITH (3) SPARE FUSES OF EACH SIZE USED.

2.8. DISTRIBUTION SWITCHGEAR: SWITCHGEAR SHALL HAVE COPPER BUS AND HEAVY GAUGE HOUSINGS. SWITCHGEAR IN LOCATIONS OTHER THAN LOCKED ELECTRIC ROOMS SHALL HAVE LOCKABLE COVERS. SWITCHGEAR SHALL HAVE NO LESS THAN 20% SPARE BUSSED AND USABLE SPACE, MEASURED AS A PERCENTAGE OF THE SPACE OCCUPIED BY SPECIFIED CIRCUIT BREAKERS, SWITCHES, ETC.

2.9. SERVICE SWITCHGEAR: IN ADDITION TO THE ABOVE, SERVICE SWITCHGEAR SHALL MEET THE REQUIREMENTS OF THE SERVING UTILITY.

2.10. PANELBOARDS: PANELS SHALL HAVE COPPER BUS AND HARDWARE, BOLT-ON CIRCUIT BREAKERS, FLUSH MOND-FLAT TRIM, PIANO HINGED DOORS AND COVER (DOOR-IN-DOOR) WITH LOCKABLE MASTER-KEYED FLUSH LATCHES. FLUSH-MOUNTED PANELS SHALL HAVE EMPTY CONDUITS STUBBED TO ACCESSIBLE ATTIC SPACE: (1) 3/4" CONDUIT FOR EACH THREE (3) SPARE/SPACE CIRCUITS.

2.11. SAFETY SWITCHES: SWITCHES SHALL BE GENERAL DUTY UP TO 250 VOLTS, HEAVY DUTY ABOVE 250 VOLTS. FUSIBLE SWITCHES SHALL BE FUSED PER THE NAMEPLATE REQUIREMENTS OF THE EQUIPMENT BEING CONNECTED.

2.12. MOTOR STARTERS: STARTERS SHALL BE MINIMUM NEMA SIZE 1 WITH INTEGRAL CONTROL TRANSFORMER, RED NEON "RUN" PILOT LIGHT AND "ON-OFF-AUTO" SELECTOR SWITCH ON COVER. OVERLOAD DEVICES SHALL BE SIZED PER THE NAMEPLATE AMPERAGE OF THE EQUIPMENT BEING CONNECTED.

2.13. CONTACTORS: CONTACTORS SHALL BE ELECTRICALLY HELD WITH "ON-OFF-AUTO" SELECTOR SWITCH ON COVER.

2.14. RATINGS: ALL ELECTRICAL EQUIPMENT SHALL BE FULLY RATED FOR BRACING IN EXCESS OF THE MAXIMUM AVAILABLE FAULT CURRENT CALCULATED AND SHOWN AT THE EQUIPMENT CONNECTION POINT WITHIN THE DISTRIBUTION SYSTEM. MINIMUM RATING SHALL BE 10K AIC.

2.15. WIRING DEVICES: WIRING DEVICES (SWITCHES, RECEPTACLES, ETC.) SHALL BE SPECIFICATION GRADE "DECORA" STYLE, MINIMUM 20-AMP RATED. COVER PLATES SHALL BE NYLON. DEVICE AND PLATE COLOR(S) SHALL BE AS SPECIFIED BY ARCHITECT OR INTERIOR DESIGNER - VERIFY PRIOR TO COMMENCEMENT OF WORK. WIRING DEVICES EXPOSED TO THE ELEMENTS SHALL HAVE WEATHERPROOF-IN-USE LOCKABLE COVERS. RAISED STEEL BOX COVERS MAY BE USED IN UTILITY AREAS.

2.16. TRANSFORMERS: TRANSFORMERS SHALL BE TYPE TP-1 MINIMUM, WITH ALUMINUM WINDINGS, RATED FOR 150°C RISE (UNLESS OTHERWISE NOTED), MOUNTED ON RUBBER-IN-SHEAR VIBRATION ISOLATORS, CONNECTED WITH FLEXIBLE CONDUIT, PUBLISHED AND MEASURED NOISE RATING SHALL NOT EXCEED NEMA TP-20 MAXIMUM.

2.17. LIGHTING FIXTURES: UNLESS OTHERWISE NOTED, LIGHT FIXTURES SHALL BE PROVIDED WITH ALL ASSOCIATED HARDWARE (HANGER BARS, PENDANTS, STEMS, RESTRAINTS, CHAINS, CORDS, LAMPS, ETC.). LENSES SHALL BE ACRYLIC. REFLECTORS SHALL BE ANODIZED. FLUORESCENT BALLASTS SHALL BE ELECTRONIC, PROGRAM RAPID START, THD LESS THAN 10%. FLUORESCENT LAMPS SHALL HAVE MINIMUM CRI OF 80%. INCANDESCENT LAMPS SHALL BE 130 VOLT, INSIDE FROST, MINIMUM 2000 HOUR LIFE. LOW VOLTAGE INCANDESCENT LAMPS SHALL BE HIR HALOGEN, MINIMUM 3000 HOUR LIFE. EXTERIOR LIGHTING FIXTURES SHALL BE INSTALLED TO PREVENT WATER, DUST AND INSECT INTRUSION, WITH GASKETING FOR DOOR/BACKPLATE AND SEALANT AT THE WIRING ENTRY POINT. REFER TO LIGHTING FIXTURE SCHEDULE WITHIN PLAN SET FOR ADDITIONAL REQUIREMENTS (LED CRITERIA, ETC.).

2.18. TAMPERPROOF: ALL EQUIPMENT AND CIRCUITING ACCESSIBLE BY THE PUBLIC SHALL BE DEMONSTRATED TO BE TAMPERPROOF AND VANDAL RESISTANT. OPENABLE DEVICES AND EQUIPMENT SHALL BE PAD LOCKABLE.

PART THREE - EXECUTION

3.1. GROUNDING: GROUND ALL EQUIPMENT AND SYSTEM NEUTRAL IN ACCORDANCE WITH THE REQUIREMENTS OF NEC ARTICLE 250. PROVIDE CODE-SIZED EQUIPMENT GROUNDING CONDUCTOR IN ALL FEEDERS AND BRANCH CIRCUIT RACEWAYS. WHERE ISOLATED GROUNDS ARE INDICATED, PROVIDE INSULATED CONDUCTOR (GREEN WITH YELLOW STRIPE).

3.2. DEMOLITION: PROVIDE COMPLETE ELECTRICAL DEMOLITION - REMOVE EXISTING OUTLETS AND EQUIPMENT IN CONFLICT WITH NEW CONDITIONS. EXISTING CONDUITS REMOVED FROM SERVICE MAY BE ABANDONED IN PLACE IF IN A CONCEALED LOCATION. REMOVE ALL WIRE FROM ABANDONED RACEWAYS. CONTRACTOR SHALL ENSURE CONTINUITY OF EXISTING CIRCUITING PASSING THROUGH DEMOLITION AREAS - EXTEND AND/OR RELOCATE AS NECESSARY. SHIFT OR RELOCATE EXISTING EQUIPMENT AND CIRCUITING AS REQUIRED TO ACCOMMODATE NEW WORK.

3.3. SALVAGE: ALL EXISTING EQUIPMENT REMOVED DURING THE COURSE OF THIS PROJECT SHALL BE OFFERED TO OWNER FOR SALVAGE. ANY EQUIPMENT SELECTED BY OWNER SHALL BE DELIVERED TO OWNER ON SITE. ALL REMAINING EQUIPMENT BECOMES THE PROPERTY OF THIS CONTRACTOR AND SHALL BE REMOVED FROM THE SITE.

3.4. EXISTING SWITCHGEAR: REUSE EXISTING SWITCHGEAR AND PANELBOARDS IN PLACE WHERE SO INDICATED - MODIFY AS REQUIRED TO ACCOMMODATE NEW REQUIREMENTS. PROVIDE NEW CIRCUIT BREAKERS AND/OR FUSES AS REQUIRED WITH AIC RATING TO MEET OR EXCEED THAT OF EXISTING DEVICES. REARRANGE EXISTING CIRCUITS WITHIN PANELS TO AGREE WITH NEW PANEL SCHEDULES. TRACE AND IDENTIFY ALL EXISTING CIRCUITS ON NEW TYPED AS-BUILT PANEL SCHEDULES.

3.5. EXISTING OUTLETS: EXISTING OUTLETS AND CIRCUITING NOT IN CONFLICT WITH NEW CONDITIONS SHALL REMAIN. EXTEND OUTLETS TO NEW SURFACES, CAULK AND PROVIDE JUMBO PLATES AS REQUIRED TO PRESENT A SERVICEABLE AND FINISHED APPEARANCE.

3.6. TEMPORARY CONSTRUCTION POWER: PROVIDE TEMPORARY ELECTRICAL POWER DISTRIBUTION AND LIGHTING AS REQUIRED FOR ALL TRADES THAT REQUIRE SERVICE DURING THE COURSE OF THIS PROJECT IN COMPLIANCE WITH ALL NEC AND OSHA REQUIREMENTS. OWNER SHALL NOT BE RESPONSIBLE FOR TEMPORARY POWER CHARGES.

3.7. LOCATIONS: INDICATED LOCATIONS OF ALL OUTLETS AND EQUIPMENT ARE SUBJECT TO CHANGE. SHIFT/RELOCATE/RECONFIGURE ANY OUTLET, EQUIPMENT OR CONNECTION POINT UP TO 10' AS DIRECTED BY ENGINEER AT NO ADDED COST.

3.8. WORKMANSHIP: THE WORK SHALL BE INSTALLED PARALLEL AND AT RIGHT ANGLES TO THE BUILDING LINES, LEVEL AND PLUMB. THE WORK SHALL BE WELL SUPPORTED AND SOLIDLY MOUNTED. DRESS AND TIE WIRING IN PANELBOARDS AND SWITCHGEAR. THE WORK SHALL BE LEFT CLEAN WITH NO DIRT, DENTS, ABRASIONS, PAINT SPLATTERS, OR OTHER IRREGULARITIES.

3.9. FIRE STOPPING: ALL PENETRATED FIRE RATED SURFACES SHALL BE FIRE SEALED WITH APPROVED U.L. LISTED SEALANTS AS LISTED WITHIN ARCHITECTURAL SPECIFICATIONS. DO NOT EXCEED MAXIMUM ALLOWABLE SURFACE PENETRATIONS DEPENDENT ON RATING OF SURFACES. REFER TO ARCHITECTURAL DRAWINGS FOR DETERMINATION OF PENETRATION LOCATIONS THROUGH FIRE RATED ASSEMBLIES.

3.10. SUPPORTS AND HANGERS: PROVIDE 3" HIGH HOUSEKEEPING CONCRETE PAD BENEATH FLOOR MOUNTED EQUIPMENT, EXTENDING 3" BEYOND EQUIPMENT FOOTPRINT. SUPPORT AND ALIGN ALL RACEWAYS, CABINETS, BOXES, BACK BOXES, FIXTURES, AND EQUIPMENT FROM STRUCTURE. SECURE ALL SUPPORTING METHODS BY MEANS OF TOGGLE BOLTS IN HOLLOW MASONRY, EXPANSION BOLTS IN SOLID MASONRY, CONCRETE PRESET INSERTS OR EXPANSION BOLTS IN CONCRETE. MACHINE SCREWS OR BOLTS IN METAL AND WOOD SCREWS IN WOOD CONSTRUCTION. ALL SUPPORTING SYSTEMS AND COMPONENTS SHALL BE RATED FOR A MINIMUM OF FIVE (5) TIMES THE ACTUAL LOAD.

3.11. SLEEVES AND PENETRATIONS: PENETRATIONS OF ALL SURFACES SHALL BE PROVIDED WITH SLEEVES THAT SHALL BE SEALED WITH LIKE MATERIALS AND SHALL BE FINISHED WITH ESCUTCHEON PLATES. PENETRATIONS BELOW GRADE LEVEL SHALL BE WATERTIGHT. PENETRATIONS AT EXTERIOR WALLS SHALL BE WEATHERPROOF. ROOF PENETRATIONS SHALL BE FLASHED AND COUNTER FLASHED.

3.12. EXPANSION AND CONTRACTION: RACEWAYS PASSING THROUGH BUILDING EXPANSION JOINTS, ON ROOF, AND IN AREAS OF TEMPERATURE VARIATIONS GREATER THAN 30°F SHALL BE INSTALLED WITH EXPANSION FITTINGS.

3.13. IDENTIFICATION: IDENTIFY ALL EQUIPMENT, SWITCHBOARD CIRCUITS AND ELECTRICALLY- CONNECTED EQUIPMENT WITH ENGRAVED NAMEPLATES. BOXES SHALL BE MARKED WITH PANEL AND CIRCUIT NUMBERS (PERMANENT PEN ACCEPTABLE ABOVE CEILING). NAMEPLATES SHALL BE FASTENED WITH A MINIMUM OF TWO (2) SCREWS. PANEL DIRECTORIES SHALL BE TYPED. CONDUCTORS SHALL BE TAGGED WITH CIRCUIT NUMBERS AT SOURCE, JUNCTION BOXES, AND ALL OUTLET BOXES WITH PERMANENT ADHESIVE MARKER STRIP. IDENTIFY WIRING DEVICES WITH SELF ADHESIVE CLEAR SATIN FINISH LABELS WITH SOURCE AND CIRCUIT NUMBER.

3.14. ELECTRIC ROOM CODE COMPLIANCE: DUE TO THE DIAGRAMMATIC NATURE OF THE DESIGN DOCUMENTS (ELECTRICAL, MECHANICAL, PLUMBING, FIRE SPRINKLER, ETC.), COORDINATE WITH ALL OTHER SUBCONTRACTORS AT THE START OF THIS PROJECT TO INFORM AND VERIFY THAT NO FOREIGN SYSTEMS OR EQUIPMENT ARE MOUNTED ABOVE ELECTRICAL EQUIPMENT OR PASS THROUGH THE DESIGNATED ELECTRIC ROOMS. AND THAT A MINIMUM OF 7'-0" IS PROVIDED AS CLEAR HEADROOM ALONG ACCESS PATHS TO ELECTRIC ROOMS. ANY REROUTING OR RELOCATION OF SYSTEMS THAT A SUBCONTRACTOR FEELS WILL COMPROMISE THE DESIGN INTENT SHALL BE DESCRIBED IN WRITING AND FORWARDED TO THE DESIGN ENGINEER FOR FURTHER REVIEW. ALL PIPING TO HVAC UNITS THAT COOL ELECTRIC ROOMS SHALL BE LOCATED ABOVE ENTRY DOOR. THE SPRINKLER PIPING TO PROVIDE PROTECTION FOR THE ELECTRIC ROOM IS PREFERRED TO ENTER THE ROOM ABOVE THE ENTRY DOOR AND RUN DOWN THE AISLE SPACES OF THE ROOM. ALL INSTALLATIONS SHALL BE FULLY COORDINATED AMONGST ALL TRADES.

3.15. ELECTRICALLY-OPERATED EQUIPMENT: VERIFICATION AND SUBSTITUTION: FEEDERS AND OVER-CURRENT DEVICES (INCLUDING STARTERS, DISCONNECTS, ETC.) HAVE BEEN DESIGNED BASED ON INFORMATION PROVIDED BY THE RESPONSIBLE CONSULTANT AND/OR DESIGNATED SUPPLIER. PRIOR TO ROUGH-IN, COORDINATE WITH THE APPROPRIATE TRADE AND/OR INSTALLER TO DETERMINE THAT THE ACTUAL NAMEPLATE ELECTRICAL REQUIREMENTS MATCH THIS DESIGN. ALL ADDITIONAL ELECTRICAL COSTS RELATED TO THE CONNECTION OF EQUIPMENT WHICH VARIES FROM THE ORIGINAL SPECIFICATIONS SHALL BE RESOLVED WITHIN THE CONSTRUCTION TEAM AT NO ADDITIONAL COST TO THE OWNER.

3.16. HOURS OF OPERATION: CONDUCT WORK TO MINIMIZE DISRUPTION OF OWNER'S ONGOING BUSINESS OPERATIONS. PROVIDE BARRICADES, NOISE ABATEMENT, AND DUST CONTAINMENT MEASURES TO ENSURE THE SAFETY AND COMFORT OF PATRONS, STAFF, AND WORKERS. INTERRUPTIONS OF EXISTING POWER, COMMUNICATIONS, AND/OR FIRE ALARM SYSTEMS SHALL BE PERMITTED ONLY AT SUCH TIMES AS DIRECTED BY OWNER OR RESIDENT ENGINEER. OUTAGES SHALL BE MOMENTARY IN NATURE. EACH SUCH OUTAGE (OR OPERATION WHICH MAY POSE RISK OF AN ACCIDENTAL OUTAGE) SHALL BE SCHEDULED A MINIMUM OF FORTY-EIGHT (48) HOURS IN ADVANCE.

3.17. COMMUNICATIONS SYSTEMS: NOT IN SCOPE.

PART FOUR - SPECIAL SYSTEMS

4.1. THIRD PARTY TESTING: PROVIDE ALL ASSOCIATED COSTS FOR THIRD PARTY TESTING OF ALL EQUIPMENT, CONDUCTORS, GROUND FAULT, GROUND FAULT COORDINATION STUDY WITH REPORT PREPARATION, ETC. AS REQUIRED BY THE NEC, AHJ AND ALL OTHER GOVERNING AUTHORITIES.

NO.	REVISIONS	DATE

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02/14/22

KH PROJECT NO.:	192079002
DRAWN BY:	JPH
REVIEWED BY:	DJC
DATE:	02/14/22

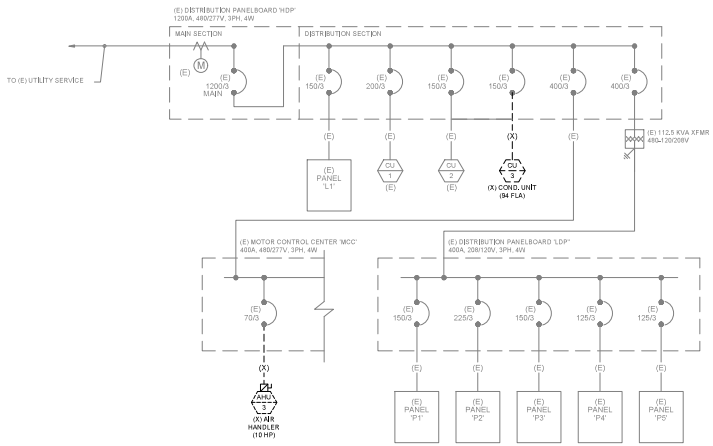
ALF SORENSEN PRESCHOOL
HVAC MODIFICATIONS
1400 BARING BLVD
SPARKS, NV 89434

ELECTRICAL SPECIFICATIONS

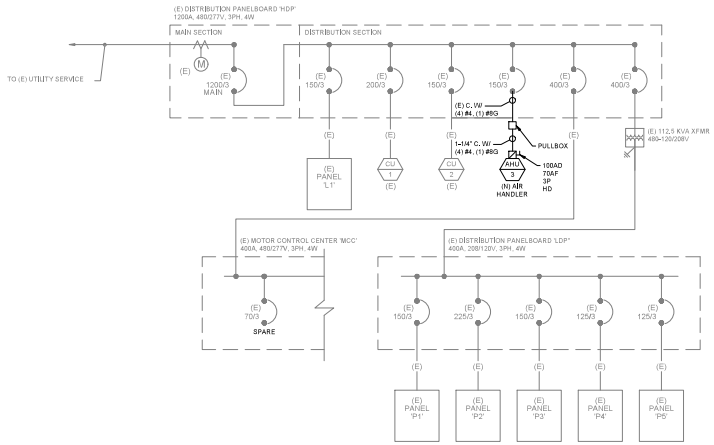
E0.2

GENERAL NOTES

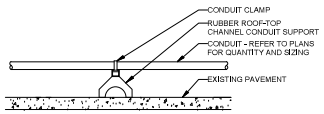
1. IN LINE DIAGRAMS, HALF TONE AND/OR (E) INDICATES EXISTING EQUIPMENT TO REMAIN, FULL TONE AND/OR (N) INDICATES NEW WORK. FULL TONE DASHED AND/OR (X) INDICATES EXISTING TO BE DEMOLISHED.
2. IN PANELBOARD DIRECTORIES, NORMAL FONT AND/OR (E) INDICATES EXISTING CIRCUITING TO REMAIN, BOLDED FONT AND/OR (N) INDICATES NEW WORK.



1 E0.3 **PARTIAL SINGLE LINE DIAGRAM - DEMOLITION**
SCALE: NTS



2 E0.3 **PARTIAL SINGLE LINE DIAGRAM - PROPOSED**
SCALE: NTS



3 E0.3 **GROUND MOUNTED CONDUIT DETAIL**
SCALE: NTS

ALF SORENSON RECREATION CENTER - LIGHTING CONTROL SEQUENCE OF OPERATIONS

1. GENERAL
   1.1. CONTRACTOR SHALL PROVIDE LIGHTING CONTROLS SHOP DRAWINGS FOR REVIEW BY THE ENGINEER PRIOR TO WORK.
   1.2. ALL LIGHTING CONTROLS SHALL COMPLY WITH THE 2018 IECC.
   1.3. ALL LIGHTING SHALL BE HIGH EFFICIENCY LED WITH DIMMING CONTROLS. OWNER SHALL HAVE THE ABILITY TO REDUCE TOTAL LUMEN OUTPUT TO NOT LESS THAN 80 PERCENT AS DESIRED.
   1.4. ALL LIGHTING CONTROLS SHALL BE LOW VOLTAGE AND COMPATIBLE WITH THE LIGHTING FIXTURES.
2. OCCUPANCY
   2.1. LIGHTING IN LITTLE WONDERS ROOM SHALL BE CONTROLLED BY OCCUPANCY SENSORS TO AUTOMATIC OFF/MANUAL ON. CONTRACTOR SHALL SET DELAY TIMES FOR OCCUPANCY SENSORS TO A MAXIMUM OF 30 MINUTES..
3. DAYLIGHTING
   3.1. FIXTURES WITHIN DAYLIGHTING ZONES SHALL BE CONTROLLED BY PHOTOCELL TO AUTOMATICALLY DIM.

3 E0.3 **LIGHTING CONTROL SEQUENCE OF OPERATIONS**
SCALE: NTS

LIGHTING FIXTURE SCHEDULE

FIXTURE ID	DESCRIPTION	SOURCE	VOLTAGE	LOADS	MOUNTING	MANUFACTURE & MODEL NUMBER	NOTES
X1	SINGLE HEAD	LED	120V	2VA	WALL, SURFACE	ELITE ELK-611-G-AL-1-MIRROR OR APPROVED EQUAL	
X3	TWIN HEAD	LED	120V	2VA	CEILING, RECESSED	ELITE ELK-LED-735-G-W OR APPROVED EQUAL	
L1	2X2 RECESSED	LED	120V	15VA	LAY-IN TROFFER, RECESSED	ELITE 22-FPL-BL-LED-2000/3000/4000L-DIM10-MVOLT-35K/40K/50K-85 OR APPROVED EQUAL	
L1S	2X2 RECESSED	LED	120V	15VA	GYPBOARD CEILING, RECESSED	ELITE 22-FPL-BL-LED-2000/3000/4000L-DIM10-MVOLT-35K/40K/50K-85-24FR OR APPROVED EQUAL	
L2	2X4 RECESSED	LED	120V	30VA	LAY-IN TROFFER, RECESSED	ELITE 24-FPL-BL-LED-3000/4000/5000L-DIM10-MVOLT-35K/40K/50K-85 OR APPROVED EQUAL	
L3	4' LINEAR	LED	120V	27VA	SUSPENDED +8' AFF	ELITE 4-QW1IP-LED-4000L-DIM10-MVOLT-40K-85-Q-EMG-LED-10W OR APPROVED EQUAL	

PANEL: (EXISTING) P2

VOLTAGE: 120/208 PHASE, WIRES: 3φ, 4W SCCR (AMPS): 10K SOURCE: LDP
PANEL BUS: 225 AMPS MAIN: N/A BREAKER

DESCRIPTION	VA	CB	CKT	A	B	C	CKT	CB	VA	DESCRIPTION
(E) 102	750	20/1	1	13			2	20/2	750	(E) 1C2
(E) 102	750	20/1	3		13		4		750	
(E) 102	750	20/1	5			13	6	20/2	750	(E) 1C2
(E) 101, 103	750	20/1	7	13			8		750	
(E) 113, 105, 103, 100	1080	20/1	9		17		10	20/1	1000	(E) 100 VEND.
(E) 100	1080	20/1	11			17	12	20/1	1000	(E) 100 VEND.
(E) 100 VEND	4500	20/1	13	46			14	20/1	1000	(E) 100 VEND.
(E) 113, 115	1080	20/1	15		13		16	20/1	500	(E) 111
(E) D. KIT, 113	4500	60/2	17			45	18	20/1	900	(E) 107, 109, 115, 117
	4500		19	75			20	60/2	4500	(E) D. KIT, 115
(E) DRINK FTN. 115	4500	60/2	21		75		22		4500	
	4500		23			75	24		4500	(E) DRINK FTN. 113
(E) BACKBD WINCH	800	20/1	25	44			26		4500	
(E) EF-4	300	20/1	27		11		28	20/1	1000	(E) SOUND SYSTEM
(E) HVAC CONTROL	500	20/1	29			6	30	**20/1**	**180**	**CO EXT AHU-3**
EQ VAV-', 2 LV XFMR	**1000**	20/1	31	8			32			(E) SPACE
(E) LOAD	1920	20/1	33		16		34			(E) SPACE
(E) SPACE			35			0	36			(E) SPACE
(E) SPACE			37	0			38			(E) SPACE
(E) SPACE			39		3		40	20/1	300	(E) 103, 105
(E) SPACE			41			0	42			(E) SPACE
			TOTALS	198.3	147.3	155.5	AMPS			

ALL EXISTING LOADS ARE ESTIMATES

LOAD CALCULATIONS: SUBTOTAL (VA): 60140
+25% PER NEC (VA): 15035
TOTAL (VA): 75175 @ 208V, 3φ = 286.9 AMPS

PANEL: (EXISTING) P4

VOLTAGE: 120/208 PHASE, WIRES: 3φ, 4W SCCR (AMPS): 10K SOURCE: LDP
PANEL BUS: 125 AMPS MAIN: N/A BREAKER

DESCRIPTION	VA	CB	CKT	A	B	C	CKT	CB	VA	DESCRIPTION
EQ WH-1	**600**	20/1	1	18			2	20/2	1500	(E) HEATER CHLORINE RM.
(E) CONTROLLER	300	20/1	3		5		4	20/2	300	(E) VENTILATION CHLORINE RM.
(E) D.T. CONTROLLER	300	20/1	5			5	6	20/2	300	(E) GAS VALVE CHLORINE RM.
(E) ASH PUMP	200	20/1	7	6			8	20/2	500	(E) FILTER
(E) ASH AGITATOR	900	20/1	9		10		10	20/1	300	(E) WATER LEVEL CONTRO.
(E) SUMP PUMP	1200	20/1	11			14	12	20/1	500	(E) HEAT EXCHANGER
(E) FILT SW EM LTG, RECEPT*	**1207**	20/1	13	70			14		7200	
(E) SPARE		50/2	15		60		16	60/3	7200	(E) POOL PANEL
			17			60	18		7200	
(E) BCS HW MONITOR	500	20/1	19	16			20	15/2	1440	(E) BLR #1
EQ WH-2	**600**	20/1	21		17		22	15/2	1440	(E) BLR #2
(E) HEAT TRACE	1920	20/1	23			16	24			(E) SPACE
EQ WH-3	**600**	20/1	25	5			26			(E) SPACE
(E) SPACE			27		0		28			(E) SPACE
EQ CP-1	**600**	20/1	29			5	30			(E) SPACE
			TOTALS	114.6	92.0	100.2	AMPS			

ALL EXISTING LOADS ARE ESTIMATES

LOAD CALCULATIONS: SUBTOTAL (VA): 36807
*ASSUME EX. 1000W + **PROPOSED 207W**
TOTAL (VA): 36807 @ 208V, 3φ = 102.3 AMPS

ELECTRICAL LOAD SUMMARY

PANEL 'P2'	
EXISTING CONNECTED LOAD	58,960.00 VA
REMOVED LOAD	- VA
NEW LOAD	1,180.00 VA
TOTAL	60,140.00 VA
@ 208V, 3PH	167.06 A
LOAD DELTA	3.28 A
PANEL 'P4'	
EXISTING CONNECTED LOAD	34,200.00 VA
REMOVED LOAD	(1,200.00) VA
NEW LOAD	2,607.00 VA
TOTAL	35,607.00 VA
@ 208V, 3PH	98.91 A
LOAD DELTA	3.91 A
DISTRIBUTION PANELBOARD 'HDP'	
EXISTING LOAD UNKNOWN	- VA
REMOVED LOAD	(78,114.00) VA
NEW LOAD	51,854.00 VA
TOTAL	(26,260.00) VA
@ 480V, 3PH	(31.60) A
LOAD DELTA	(31.60) A
MOTOR CONTRO. CENTER 'MCC'	
EXISTING LOAD UNKNOWN	- VA
REMOVED LOAD	(-1,634.00) VA
NEW LOAD	- VA
TOTAL	(-1,634.00) VA
@ 480V, 3PH	(-4.00) A
LOAD DELTA	(-4.00) A

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NO.	REVISIONS	DATE

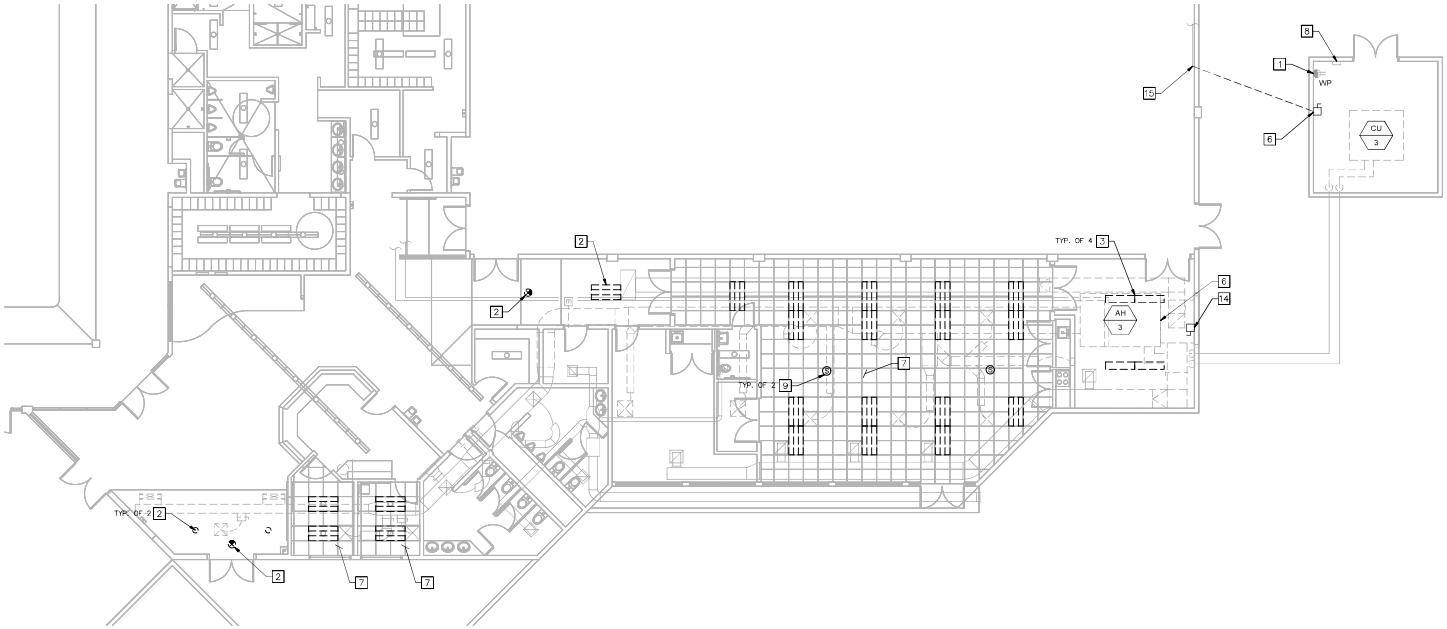
02/14/22

KH PROJECT NO.: 192079002
DRAWN BY: JPN
REVIEWED BY: DJC
DATE: 02/14/22

ALF SORENSEN PRESCHOOL
HVAC MODIFICATIONS
1400 BARING BLVD
SPARKS, NV 89434

ELECTRICAL SCHEDULES

E0.3

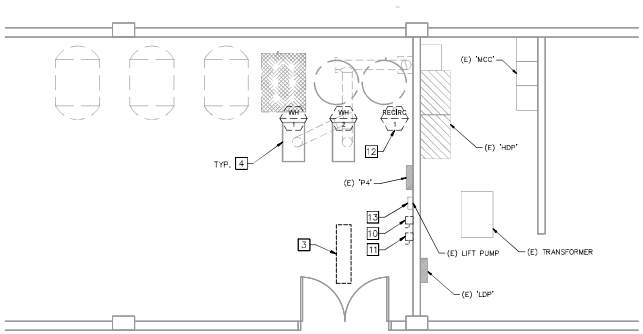


1 E1.1 **ELECTRICAL DEMOLITION PLAN 1**
SCALE: 1/8" = 1'-0"

NORTH

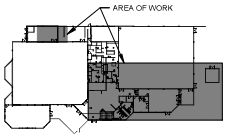
SHEET NOTES

1. EXISTING WIRING DEVICE TO REMAIN. PROTECT IN PLACE.
2. EXISTING LIGHTING FIXTURE TO BE DEMOLISHED. REMOVE ASSOCIATED CONDUCTORS BACK TO SOURCE OF NEAREST JUNTION. ASSOCIATED CONDUIT AND CONTROLS TO BE REUSED. MAINTAIN THE EXISTING CIRCUITS. FIELD VERIFY.
3. EXISTING LIGHTING FIXTURE TO BE REMOVED AND PROTECTED FOR REUSE. COORDINATE REQUIREMENTS WITH MECHANICAL CONTRACTOR. MAINTAIN THE EXISTING CIRCUITS. FIELD VERIFY.
4. EXISTING WATER HEATERS TO BE DEMOLISHED. ASSOCIATED PUMPS, CONDUIT, AND CONDUCTORS TO BE REMOVED BACK TO SOURCE. FIELD VERIFY REQUIREMENTS.
6. EXISTING MECHANICAL EQUIPMENT TO BE DEMOLISHED. ASSOCIATED DISCONNECT AND CONDUIT TO BE REMOVED BACK TO LOCATION SHOWN. THE REMAINING CONDUIT TO BE REUSED. PROTECT IN PLACE. CONDUCTORS TO BE REMOVED BACK TO SOURCE. UNDERGROUND CONDUIT TO BE ABANDONED IN PLACE.
7. EXISTING LIGHT FIXTURES IN THE AREA ARE TO BE PROTECTED WHILE CEILING IS REMOVED FOR MECHANICAL WORK. SEE SHEET G1.1 FOR AREA OF CEILING DEMOLITION AND RE-INSTALLATION. CONTRACTOR TO MAINTAIN FIXTURE CONDITION AND OPERATION AND REPLACE FIXTURE DAMAGED DURING CONSTRUCTION.
8. EXISTING IRRIGATION CONTROLLER TO REMAIN. PROTECT IN PLACE.
9. EXISTING FIRE ALARM DEVICES TO BE REMOVED AND PROTECTED FOR REUSE. COORDINATE REQUIREMENTS WITH MECHANICAL CONTRACTOR. MAINTAIN THE EXISTING CIRCUITS. FIELD VERIFY.
10. EXISTING DISCONNECT SERVING THE DEFUNCT SOLAR WATER PUMP TO BE REMOVED. ASSOCIATED CONDUIT AND CONDUCTORS TO BE REMOVED BACK TO SOURCE. FIELD VERIFY REQUIREMENTS.
11. EXISTING DISCONNECT SERVING THE EXISTING WATER HEATERS TO BE REMOVED. ASSOCIATED CONDUIT AND CONDUCTORS TO BE REMOVED BACK TO SOURCE. FIELD VERIFY REQUIREMENTS.
12. EXISTING RECIRCULATION PUMP TO BE DEMOLISHED. ASSOCIATED CONDUIT AND CONDUCTORS TO BE REMOVED BACK TO SOURCE. FIELD VERIFY REQUIREMENTS.
13. EXISTING LIFT CONTROLS PANEL TO REMAIN. PROTECT IN PLACE.
14. EXISTING DISCONNECT SERVING THE AIR HANDLER TO BE REMOVED. ASSOCIATED CONDUIT AND CONDUCTORS TO BE REMOVED BACK TO SOURCE. FIELD VERIFY REQUIREMENTS.
15. EXISTING CONDUIT TO BE DEMOLISHED BACK TO THIS LOCATION. FIELD LOCATE.



2 E1.1 **ELECTRICAL DEMOLITION PLAN 2**
SCALE: 1/4" = 1'-0"

NORTH



KEY PLAN

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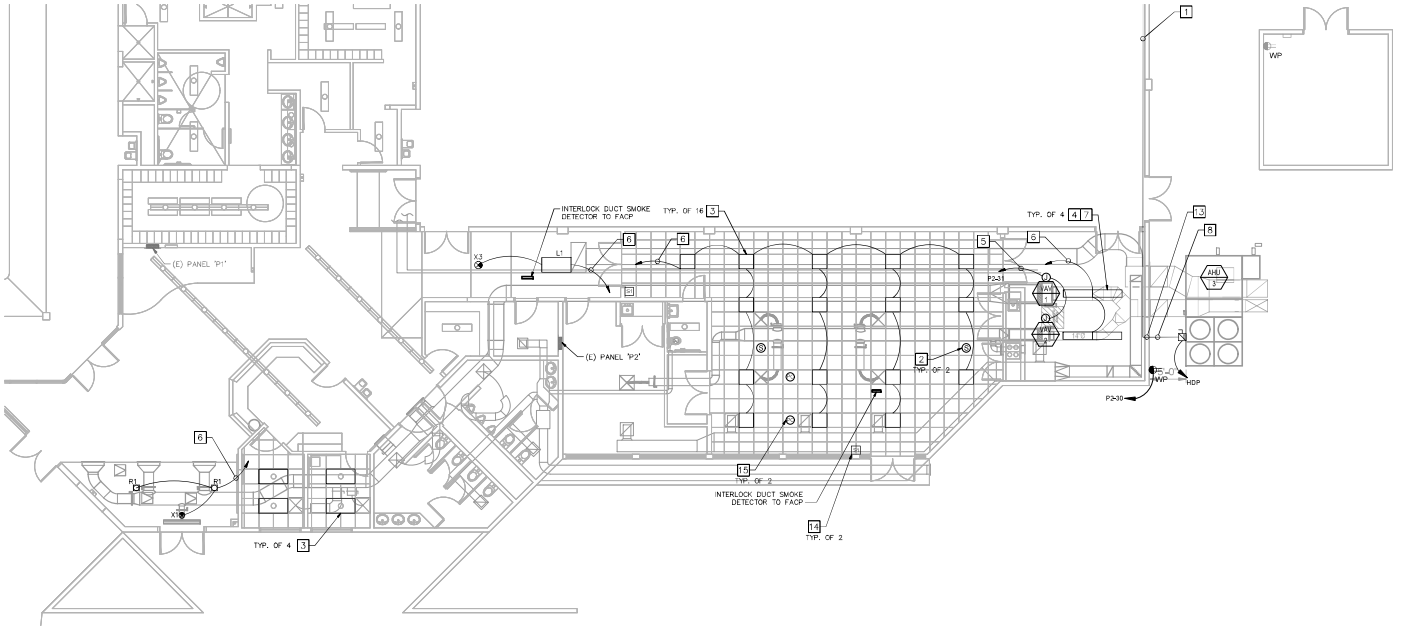
ELECTRICAL DEMO PLAN

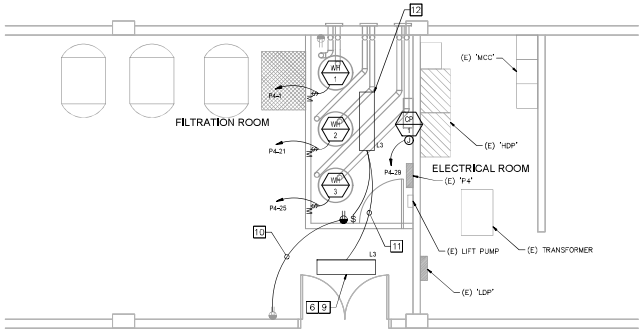
E1.1



2 E2.1 ELECTRICAL FLOOR PLAN 1

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

NORTH



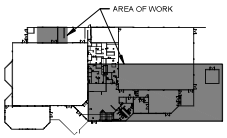
1 E2.1 ELECTRICAL FLOOR PLAN 2

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

NORTH

SHEET NOTES

1. INTERCEPT EXISTING CONDUIT AND EXTEND TO DISCONNECT. FIELD COORDINATE EXACT ROUTING WITH OWNER. PAINT CONDUITS TO MATCH EXISTING WALL WHERE EXPOSED. CONTRACTOR SHALL MANDREL EXISTING CONDUITS AND REPLACE DAMAGED SECTIONS AS REQUIRED PRIOR TO REUSE. CONTRACTOR SHALL PROVIDE RGS CONDUIT IN EXPOSED CORROSIVE ENVIRONMENTS. FIELD VERIFY REQUIREMENTS.
2. EXISTING FIRE ALARM DEVICE TO REMAIN. PROTECT IN PLACE.
3. PROVIDE NEW TYPE L2 FIXTURES AT THIS LOCATION.
4. PROVIDE NEW TYPE L3 FIXTURES AT THIS LOCATION.
5. PROVIDE CIRCUIT FOR LOW VOLTAGE TRANSFORM FOR POWER TO VAVs AT THIS LOCATION. COORDINATE EXACT REQUIREMENTS WITH EQUIPMENT MANUFACTURER AND MECHANICAL INSTALLER. FIELD VERIFY.
6. RECONNECT NEW FIXTURES TO EXISTING CIRCUIT MADE AVAILABLE FROM DEMOLITION FOR A COMPLETE AND FUNCTIONING SYSTEM. FIELD VERIFY REQUIREMENTS.
7. PROVIDE UNISTRUT AND ALL THREAD FOR LIGHTING FIXTURE MOUNTING TO HVAC DUCT SUPPORTS. FIXTURE MOUNTING HEIGHT SHALL MATCH ORIGINAL INSTALLATION. FIELD VERIFY REQUIREMENTS.
8. GROUND MOUNT CONDUIT IN THIS AREA. REFER TO 3/E0.3.
9. EXISTING LIGHTING FIXTURE TO BE REHUNG AND ROTATED 90 DEGREES FROM THE EXISTING MOUNTING. FIELD COORDINATE REQUIREMENTS. RECONNECT TO ORIGINAL POWER SOURCE.
10. PROPOSED WIRING DEVICE TO BE CIRCUITED TO EXISTING RECEPTACLE CIRCUIT. PROVIDE CONDUIT AND CONDUCTORS AS REQUIRED. PAINT CONDUITS TO MATCH EXISTING WALL WHERE EXPOSED. FIELD VERIFY REQUIREMENTS.
11. PROPOSED LIGHTING TO BE CIRCUITED TO EXISTING LIGHTING CIRCUIT. PROVIDE CONDUIT AND CONDUCTORS AS REQUIRED. PAINT CONDUITS TO MATCH EXISTING WALL WHERE EXPOSED. FIELD VERIFY REQUIREMENTS.
12. LIGHTING FIXTURE TO BE SURFACE MOUNTED TO NEW ARCHITECTURAL CEILING ABOVE. FIELD COORDINATE MOUNTING HEIGHT.
13. CONDUIT PENETRATION THROUGH EXISTING WALL. REFER TO 2/P6.1.



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ELECTRICAL FLOOR PLAN

E2.1

1. GENERAL

1.1 THE FOLLOWING STRUCTURAL NOTES SHALL APPLY TO ALL STRUCTURAL DRAWINGS UNLESS SPECIFICALLY SHOWN OR NOTED OTHERWISE.
1.2 PROMPTLY REPORT ANY DISCREPANCY FOUND AMONG THESE NOTES, DRAWINGS, SPECIFICATIONS, AND EXISTING CONDITIONS TO THE ENGINEER, WHO WILL CORRECT SUCH DISCREPANCIES IN WRITING. ANY WORK DONE BY THE CONTRACTOR AFTER THE DISCOVERY OF SUCH DISCREPANCY IS AT THE CONTRACTORS OWN RISK. VERIFY AND COORDINATE THE DIMENSIONS AMONG ALL DRAWINGS PRIOR TO PROCEEDING WITH ANY WORK OR FABRICATION. IT IS THE CONTRACTORS RESPONSIBILITY FOR THE REVIEW AND COORDINATION OF ALL DRAWINGS AND SPECIFICATIONS PRIOR TO THE START OF CONSTRUCTION.
1.3 DO NOT SCALE WORKING DIMENSIONS FROM THESE PLANS, SECTIONS, OR DETAILS. DIMENSIONS REFER TO ROUGH CONCRETE SURFACES, FACE OF STUDS, FACE OF CONCRETE BLOCK, TOP OF SHEATHING OR TOP OF SLAB UNLESS OTHERWISE INDICATED.
1.4 DETAILS OF THE CONSTRUCTION NOT FULLY SHOWN OR NOTED ON THE DRAWINGS NOR CALLED FOR IN THE SPECIFICATIONS SHALL BE OF THE SAME SIZE AND CHARACTER AS FOR SIMILAR CONDITIONS WHICH ARE SHOWN AND NOTED.
1.5 THE WORD "TYPICAL" SHALL MEAN THAT INFORMATION SHOWN SHALL BE APPLIED TO ALL SIMILAR CONDITIONS WHETHER OR NOT THE INFORMATION IS SPECIFICALLY REFERENCED, UNLESS OTHERWISE NOTED ON THE DRAWINGS.
1.6 MODIFICATIONS OR SUBSTITUTIONS TO THE DESIGN, MATERIALS, OR PRODUCTS SPECIFIED ON THE PLANS ARE PROHIBITED WITH OUT PRIOR WRITTEN APPROVAL BY THE ENGINEER.
1.7 THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR PROVIDING AND MAINTAINING A SAFE WORK ENVIRONMENT IN ACCORDANCE WITH ALL LOCAL, STATE, FEDERAL SAFETY AND HEALTH STANDARDS LAWS AND REGULATIONS. THE CONTRACTOR SHALL EXECUTE WORK TO ENSURE SAFETY OF PERSONS AND PROPERTY AGAINST DAMAGE AND SHALL PROVIDE ADEQUATE SHORING AND BRACING AS REQUIRED FOR STABILITY DURING ALL PHASES OF CONSTRUCTION.
1.8 THE CONTRACT DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE AND DO NOT INDICATE MEANS AND METHODS OF CONSTRUCTION. STRUCTURAL CALCULATIONS AS PROVIDED AS PART OF THE CONSTRUCTION DOCUMENTS ARE BASED ON A COMPLETED STRUCTURE. THE STRUCTURAL ADEQUACY OF THE PARTIALLY COMPLETED STRUCTURE TO RESIST APPLIED LOADS IS BEYOND THE SCOPE OF THESE STRUCTURAL DRAWINGS.
1.9 REFER TO THE MECHANICAL, PLUMBING, AND ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION NOTE SHOWN.

2. DESIGN CRITERIA

2.1 DESIGN, MATERIALS, AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE "STANDARDS SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (SSPWC), AND THE 2018 INTERNATIONAL BUILDING CODE (ASCE 7-16) AS AMENDED AND ADOPTED BY THE CITY OF SPARKS, NEVADA (2018 NORTHERN NEVADA AMENDMENTS).
2.2 ALL OTHER CODES AND STANDARDS SHALL BE THE MOST CURRENT ADOPTED EDITION AS OF THE DATE OF THESE DRAWINGS.

2.3 SNOW LOADS:

GROUND SNOW LOAD, Pg:	30 PSF	(ELEV: 4435')

2.4 WIND DESIGN:

BASIC WIND SPEED, Vult:	120 MPH
NOMINAL WIND SPEED, Vasd:	93 MPH
RISK CATEGORY:	II
WIND EXPOSURE:	C

2.5 SEISMIC DESIGN:

RISK CATEGORY:	II
SEISMIC IMPORTANCE FACTOR, Is:	1.0
MAPPED SPECTRAL ACCELERATION, Ss:	1.42 g
S1:	0.50 g
SITE CLASS:	D
SPECTRAL RESPONSE COEFFICIENT, Sds:	0.95 g
Sd1:	0.52 g
SEISMIC DESIGN CATEGORY:	D
BASIC SEISMIC FORCE-RESISTING SYSTEM:	NON-STRUCTURAL COMPONENTS
SEISMIC DESIGN FORCE (Fp)	0.25
COMPONENT AMPLIFICATION FACTOR, ap	1.0
RESPONSE MODIFICATION FACTOR, R	2.5

3. FOUNDATIONS

3.1 ALLOWABLE LOAD-BEARING VALUES OF SOILS (IBC TABLE 1804.2):

ALLOWABLE FOUNDATION PRESSURE:	2000 PSF
LATERAL BEARING (PASSIVE):	150 PSF
LATERAL BEARING (ACTIVE):	35 PSF
LATERAL SLIDING:	0.35

3.2 BEFORE COMMENCING EARTHWORK, THE CONTRACTOR SHALL INSPECT THE SITE FOR ANY EXISTING ITEMS THAT MAY INTERFERE WITH THE PROPOSED IMPROVEMENTS. IT SHALL BE THE DUTY OF THE CONTRACTOR TO VERIFY LOCATION OF ALL UTILITIES AND STRUCTURES. NOTIFY ENGINEER WHERE CONFLICTS EXIST. RELOCATE OR AVOID AS NECESSARY AS TO NOT DAMAGE OR INTERFERE WITH EXISTING TO REMAIN.
3.3 GENERAL SITE CLEARING SHALL INCLUDE THE REMOVAL OF ALL SURFACE DEBRIS, EXISTING CONCRETE, RUBBLE, AND VEGETATION AND ORGANICS AND AS DIRECTED BY THE ENGINEER OR CITY OF SPARKS.
3.4 SCARIFY THE SOILS EXPOSED TO EXCAVATION TO A DEPTH OF 6" AND RE-COMPACT TO 90% MAXIMUM DRY DENSITY (ASTM D-1557, METHOD C). WATER OR DRY MATERIALS AS NECESSARY TO OBTAIN PROPER MOISTURE CONTENT. FILL HOLES DUE TO THE REMOVAL OF LARGE ROCKS OR OVER-EXCAVATION WITH CONCRETE.
3.5 PLACE ALL SLABS AND EQUIPMENT BASES ON 6" MINIMUM OF TYPE II CLASS B AGGREGATE BASE COMPACTED TO 95% MIN OF MAXIMUM DRY DENSITY (ASTM D-1557).
3.6 FOOTING EXCAVATIONS SHALL BE NEAT AND TRUE, WITH ALL LOOSE MATERIAL AND STANDING WATER REMOVED BEFORE FOOTING CONCRETE IS PLACED.
3.7 ALL EXCAVATIONS, FORMS AND REINFORCING SHALL BE INSPECTED BY THE BUILDING OFFICIAL AND ENGINEER PRIOR TO PLACING CONCRETE.

4. CAST-IN-PLACE CONCRETE

4.1 CONCRETE MATERIALS AND CONSTRUCTION SHALL COMPLY WITH IBC CHAPTER 19, ACI 318, AND ACI 301.
4.2 CONTRACTOR SHALL SUBMIT ALL MIX DESIGNS FOR REVIEW AND APPROVAL.
4.3 CONCRETE PROPERTIES AND COMPOSITION (ASTM C94):

PROPERTY	CLASS A
28-DAY f'c (1)	4500 PSI
W/C	0.45
UNIT WT (2)	145 PCF
AIR (+/-) (3)	6%
SLUMP (MAX) (4)	4"
SHRINKAGE (5)	NR
CEMENT (6)	TYPE II
MIN CEMENT	520
FIBER REINF (7)	1.5 LB PCY

NOTES:
(1) SPECIAL INSPECTION IS NOT REQUIRED FOR NONSTRUCTURAL CONCRETE SLABS SUPPORTED ON GRADE (IBC 1705.3).
(2) NORMAL WEIGHT AGGREGATE PER ASTM C33
(3) AIR CONTENT PER ASTM C138, C173, OR C231 - NON-AIR-ENTRAINED (NAE) NOT TO EXCEED 3%
(4) SLUMPS ARE FOR UNPLASTICIZED CONCRETE. LARGER SLUMPS MAY BE ATTAINED THROUGH THE USE OF SUPERPLASTICIZER.
(5) SHRINKAGE AT 28 DAYS (IN/IN) PER ASTM C157. (NR = NO REQUIREMENT)
(6) CEMENT PER ASTM C150, C595, C1157 AS APPROPRIATE. FLY ASH AND POZZOLAN CONFORM WITH ASTM C618.
(7) SYNTHETIC MICRO FIBERS (ASTM C1116) 1/2 - 3/4" LONG, MINIMUM RATE INDICATED, RATE PER MANUFACTURERS WRITTEN INSTRUCTIONS.

CLASS A: EXTERIOR SLABS ON GRADE, EQUIPMENT PADS, FOOTINGS, UNO

4.4 ADMIXTURES SHALL COMPLY WITH: AIR ENTRAINMENT WITH ASTM C260, WATER REDUCING WITH ASTM C494, CORROSION INHIBITING WITH ASTM C1582.
4.5 MIXING WATER SHALL BE PER ASTM C1602.
4.6 HOT WEATHER CONCRETE OPERATIONS SHALL BE IN ACCORDANCE WITH ACI 306R.
4.7 APPROVAL MUST BE OBTAINED PRIOR TO PLACING CONCRETE FOR ANY OPENINGS, SLEEVES, OR OTHER ATTACHMENTS NOT SHOWN ON DRAWINGS.
4.8 PROVIDE CHAMFER OR RADIUS EDGE ON ALL EXPOSED CORNERS OF CONCRETE ABOVE GRADE.
4.9 ROUGHEN THE EXISTING CONCRETE SURFACE AT THE INTERFACE OF CONSTRUCTION JOINTS TO AN AMPLITUDE OF (+/-) 1/4" PRIOR TO PLACING NEW CONCRETE. THOROUGHLY WET THE INTERFACE SURFACE AND REMOVE AND STANDING WATER.
4.10 FORMS SHALL CONFORM TO ACI 347 AND SHALL BE PROPERLY CONSTRUCTED TO CONCRETE SURFACES AS SHOWN ON THE DRAWINGS, SUFFICIENT TIGHT TO PREVENT LEAKAGE, SUFFICIENTLY STRONG, AND BRACED TO MAINTAIN SHAPE AND ALIGNMENT.
4.11 FORMS AND SHORING SHALL NOT BE REMOVED UNTIL THE CONCRETE HAS ATTAINED SUFFICIENT STRENGTH TO WITHSTAND ALL LOADS TO BE IMPOSED WITHOUT EXCESS STRESS, CREEP OR DEFLECTION.
4.11 SLEEVES IN CONCRETE SHALL BE SPACED WITH ONE SLEEVE DIAMETER (2" MIN) CLEAR DISTANCE BETWEEN ADJACENT SLEEVES. SLEEVES SHALL NOT TOUCH REBAR. SLEEVES GREATER THAN 12" IN DIAMETER SHALL BE REVIEWED BY THE ENGINEER FOR APPROVAL AND MAY REQUIRE ADDITIONAL TRIM REINFORCEMENT.
4.12 PROTECT FRESHLY DEPOSITED CONCRETE FROM PREMATURE DRYING AND EXCESSIVE HOT OR COLD TEMPERATURES FOR A MINIMUM (7) DAYS.
4.13 PROVIDE LIQUID MEMBRANE-FORMING CURING COMPOUNDS COMPLYING WITH ASTM C309 TYPE 1 & 2. ON CONCRETE SURFACES EXPOSED TO SUN, HEAT REFLECTING WHITE PIGMENTED COMPOUNDS SHOULD BE USED. CONTRACTOR TO VERIFY THAT CURING COMPOUND IS COMPATIBLE WITH FLOOR FINISHES.

5. CONCRETE REINFORCEMENT

5.1 REINFORCEMENT SHALL CONFORM TO ACI 318, SECTION 3.5 AND ASTM A615, GRADE 60 (#4 AND LARGER) AND GRADE 40 (#3 BARS ONLY).
5.2 CONCRETE REINFORCEMENT DETAILS INCLUDING BAR SUPPORTS AND PLACING SHALL CONFORM TO ACI 315 AND THE CONCRETE REINFORCING STEEL INSTITUTE "MANUAL OF STANDARD PRACTICE." HOOKS SHALL BE PER ACI 318, SECTION 7.1 UNLESS DETAILED OTHERWISE.
5.3 PROVIDE THE FOLLOWING COVER ON REINFORCEMENT UNLESS NOTED OTHERWISE IN DRAWINGS. COVER SHALL BE TO FACE OF BAR, MECHANICAL COUPLER, OR WELDED HEADED BAR.

CAST-IN-PLACE CONCRETE	MINIMUM CONCRETE COVER
CAST AGAINST AND EXPOSED TO EARTH	3"
EXPOSED TO EARTH OR WEATHER	
#5 AND SMALLER	1 1/2"
CLEAR TO TOP FOR REINFORCEMENT IN SLAB-ON-GRADE	1 1/2"

5.4 LAP SPLICE ALL BARS A MINIMUM OF 40 BAR DIAMETERS UNLESS OTHERWISE NOTED. STAGGER LAP SPLICES A MINIMUM OF 24 INCHES.
5.5 SECURELY TIE ALL REINFORCEMENT PRIOR TO PLACING CONCRETE INCLUDING LAP SPLICES. TIES SHALL BE SUFFICIENT TO MAINTAIN THEIR EXACT POSITION THROUGHOUT THE PLACEMENT OF CONCRETE.
5.6 SUBMIT SHOP DRAWINGS OF REINFORCEMENT LAYOUTS AND DETAILS FOR REVIEW PRIOR TO FABRICATION. SHOW ALL PROPOSED SPLICE LOCATIONS, FABRICATE FROM APPROVED DRAWINGS ONLY.
5.7 BEND REINFORCING STEEL IN ACCORDANCE WITH ACI 301, SECTION 3.3.2.8. #3, #4, & #5 BARS MAY BE BENT COLD THE FIRST TIME PROVIDED TEMPERATURE OF BAR IS ABOVE 32F. FOR OTHER BAR SIZES PREHEAT REINFORCING BARS PRIOR TO BENDING.

6. SLABS-ON-GRADE

6.1 USE CONCRETE OF THE TYPE AND PROPORTION INDICATED IN SECTION 4 OF THESE NOTES.
6.2 LOCATE CONTROL JOINTS AS SHOWN ON PLANS (BUT NOT TO EXCEED 10' FOR PADS OR 5' FOR WALKWAYS). MAKE JOINTS AS SOON AS THE SLAB IS STRONG ENOUGH TO ACCEPT THE JOINT. PROVIDE JOINTS SO THAT PANEL LENGTH TO WIDTH DOES NOT EXCEED 1.5 TO 1 FOR ANY PANEL. THE CONTRACTOR SHALL SUBMIT A CONTROL JOINT LAYOUT TO THE ENGINEER FOR APPROVAL PRIOR TO BEGINNING CONSTRUCTION.
6.3 PROTECT FRESHLY DEPOSITED CONCRETE FROM PREMATURE DRYING AND EXCESSIVE HOT OR COLD TEMPERATURES FOR A MINIMUM (7) DAYS.
6.4 CONCRETE SLABS SHALL BE CONTINUOUSLY CURED FOR A MINIMUM OF (7) DAYS AFTER PLACING BY APPROPRIATE MEANS INCLUDING BUT NOT LIMITED TO, CURING COMPOUND OR PAPER.
6.5 DAMPEN BASE PRIOR TO PLACING CONCRETE.
6.6 CONSTRUCT EXTERIOR SLABS-ON-GRADE AS FOLLOWS:

BROOM FINISH FOR ALL EXTERIOR CONCRETE WORK
CONCRETE SLAB - MINIMUM THICKNESS AND REINFORCING PER PLAN
6" MINIMUM LAYER OF TYPE 2 CLASS B AGGREGATE BASE AND COMPACT TO 95%
6.7 FINISHED SLABS SHALL NOT BE USED TO STORE ANY CONSTRUCTION MATERIALS.

7. ANCHORS TO CONCRETE

7.1 CONCRETE EXPANSION ANCHORS SHALL BE HILTI KWIK-BOLT TZ2 (ICC ESR-4266) INSTALLED PER THE MANUFACTURERS WRITTEN INSTRUCTION. ANCHORS INSTALLED OUTSIDE SHALL BE 304 STAINLESS STEEL. INSTALLATION TORQUE FOR EXPANSION ANCHORS SHALL BE 60 FT-LBF TORQUE FOR 5/8" DIAMETER AND 40 FT-LBF FOR 1/2" DIAMETER.
7.2 EXPANSION ANCHORS AND SCREW ANCHORS SHALL NOT BE INSTALLED IN CONCRETE UNTIL IT ATTAINS THE SPECIFIED 28-DAY COMPRESSIVE STRENGTH BUT NOT LESS THAN 7 DAYS.
7.3 SCREW ANCHORS TO BE 304 SS TITEN HD (IAPMO UES ER-493) INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS WRITTEN INSTRUCTIONS.
7.4 MINIMUM EMBEDMENT FOR POST-INSTALLED ANCHORS SHALL BE AS INDICATED ON THE PLANS BUT IN NO CASE LESS THEN SPECIFIED BY THE MANUFACTURER FOR THE DIAMETER.
7.5 CLEAN ALL NUTS, WASHERS, AND BOLTS FROM CONTAMINANTS PRIOR TO INSTALLATION.

8. STEEL CONSTRUCTION

8.1 STRUCTURAL STEEL DETAILING, FABRICATION AND ERECTION SHALL CONFORM TO IBC CHAPTER 22 AND AISC 360, AISC 341, AND AISC 303.
8.2 PROVIDE SHOP DRAWINGS INCLUDING DETAILS FOR CUTS, HOLES AND WELDS FOR ALL FABRICATED PARTS FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
8.3 HSS STEEL TUBING SHALL BE ASTM A500, GR C (FY = 50 ksi).
8.4 STEEL PIPE SHALL BE ASTM A53, GRADE A.
8.5 PLATES, CHANNELS AND ANGLES SHALL BE ASTM A36, UNO.
8.6 THRU-BOLTS SHALL BE ASTM A307 GRADE A. PROVIDE HARDENED WASHERS (ASTM F436) UNDER THE HEAD OF ALL BOLTS AND HEX NUTS (ASTM A563-A).
8.7 ALL BOLTS, NUTS, AND WASHERS SHALL BE APPROPRIATELY GRADE MARKED AND GALVANIZED ASTM F2329.
8.8 BOLT HOLES SHALL COMPLY WITH RCSC SECTION 3.3. USE STANDARD HOLES UNLESS DETAILED OTHERWISE. HOLES MAY BE DRILLED, PUNCHED, OR THERMALLY CUT. MANUAL THERMAL CUTTING OF HOLES ARE NOT PERMITTED.
8.9 WELDING SHALL CONFORM TO AWS D1.1. CERTIFIED WELDERS SHALL PERFORM ALL WELDING.
8.10 USE LOW-HYDROGEN E7018 ELECTRODES WITH A MINIMUM CHARPY V-NOTCH TOUGHNESS OF 20 FT-LB AT 0°F.
8.11 ALL WELDS SHALL BE PRE-QUALIFIED AND SHALL BE PERFORMED IN STRICT CONFORMANCE WITH AN APPROVED WRITTEN WELD PROCEDURE SPECIFICATION (WPS) PER AWS D1.1. CONTRACTOR TO PROVIDE ENGINEER OF RECORD WELDING PROCEDURES TO BE REVIEWED AND APPROVED PRIOR TO BEGINNING ANY WELDING.
8.12 STRUCTURAL STEEL SHALL BE SHOP PRIMED (SHERWIN WILLIAMS PRO INDUSTRIAL PRO-CRYL) AND PAINTED (SHERWIN WILLIAMS PRO INDUSTRIAL SEMI-GLOSS ACRYLIC) TO THE GREATEST EXTENT POSSIBLE. AFTER INSTALLATION, CONTRACTOR SHALL FIELD PAINT ALL WELDED CONNECTIONS AND TOUCH-UP ANY DAMAGED COATING. CONTRACTOR TO PROVIDE PAINT SUBMITTAL FOR REVIEW AND APPROVAL.

9. COLD-FORMED STEEL

9.1 COLD-FORMED STEEL LIGHT-FRAMED CONSTRUCTION SHALL COMPLY WITH IBC CHAPTER 22, AISI S100.
9.2 STRUT FRAMING SYSTEMS CONSISTING OF CONTINUOUS SLOT, BOLTED FRAMING CHANNELS, AND ASSOCIATED FITTINGS AND HARDWARE SHALL CONFORM WITH THE LATEST VERSION OF MFMA STANDARD PUBLICATION NUMBER MFMA-4.
9.3 EXTERIOR INSTALLATION SHALL USE HOT-DIP GALVANIZED STEEL OR STAINLESS STEEL. WHERE HOT-DIPPED GALVANIZED STEEL IS USED, ALL CUT SURFACES SHALL BE FIELD PAINTED PER ASTM A780.
9.4 CUT FRAMING COMPONENTS SQUARELY OR AT AN ANGLE TO FIT TIGHT AGAINST ABUTTING MEMBERS. HOLD FIRMLY IN POSITION UNTIL PROPERLY FASTENED.

10. SPECIAL INSPECTIONS AND TESTING

10.1 PROVIDE SPECIAL INSPECTIONS IN COMPLIANCE WITH IBC 1704 BY AN APPROVED INSPECTOR.

THE FOLLOWING ITEMS SHALL BE INSPECTED IN ACCORDANCE WITH THE APPROPRIATE SECTION IN THE IBC. THE INSPECTION AGENCY SHALL PROVIDE COPIES OF ALL INSPECTION REPORTS DIRECTLY TO THE ENGINEER. ANY CONSTRUCTION THAT FAILS TO COMPLY WITH THE APPROVED CONSTRUCTION DOCUMENTS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER.

10.2 CONCRETE CONSTRUCTION, IBC 1705.3:

PERIODIC SPECIAL INSPECTION IS REQUIRED FOR POST-INSTALLED ANCHORS AS INDICATED IN THE CORRESPONDING RESEARCH REPORT ISSUED BY THE APPROVAL AGENCY.

SHEET SIZE: 36" x 24" (ARCH D)

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REV	DATE	DESCRIPTION	APP'D

100% CONSTRUCTION DOCUMENTS

CITY OF SPARKS
ALF SORENSEN PRESCHOOL - HVAC MODIFICATIONS
SPARKS NEVADA

STRUCTURAL NOTES

DRAWN: TJL
CHECKED: TJL
DATE: 04/10/23
SCALE: AS SHOWN
PROJECT NO: 1482001

SHEET NO:
S0.1

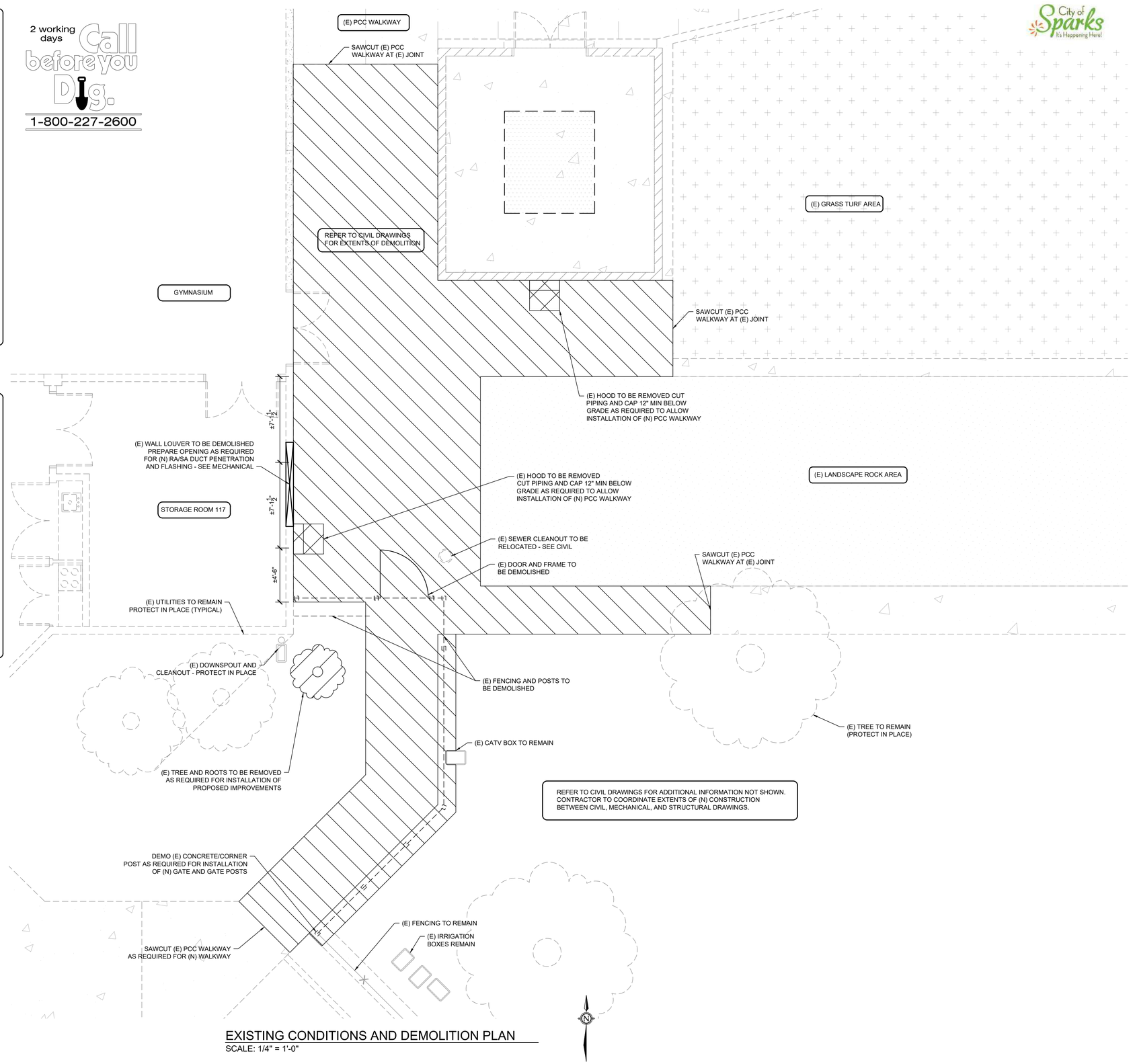
EROSION CONTROL NOTES:

1. THE CONTRACTOR SHALL USE TEMPORARY EROSION CONTROL FACILITIES DURING CONSTRUCTION TO PREVENT DISCHARGE OF EARTHEN MATERIALS FROM THE SITE DURING PERIODS OF PRECIPITATION.
2. EACH WEEK THE CONTRACTOR AND OR THEIR AUTHORIZED AGENTS SHALL REMOVE ALL SEDIMENT, MUD, CONSTRUCTION DEBRIS, OR OTHER POTENTIAL POLLUTANTS THAT HAVE BEEN DISCHARGED AS A RESULT OF CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS PROJECT. SUCH MATERIALS SHALL BE PREVENTED FROM ENTERING THE STORM DRAIN SYSTEM.
3. ACCUMULATED SEDIMENT IN BMPS SHALL BE REMOVED PRIOR ANY ANTICIPATED STORM EVENT. SEDIMENT MUST BE REMOVED WHEN THE BMP DESIGN CAPACITY IS REDUCED BY MORE THAN 50%.
4. THE CONTRACTOR SHALL INSPECT ALL DISTURBED AREAS, AREAS USED FOR STORAGE, VEHICLE PATH, AND BMPS WEEKLY, PRIOR TO A FORECASTED RAIN EVENT AND WITHIN 24 HOURS OF AN ACTUAL RAIN EVENT. THE CONTRACTOR SHALL UPDATE OR MODIFY THE STORMWATER POLLUTION PREVENTION PLAN AS NECESSARY.
5. CONTRACTOR SHALL CONSTRUCT AND OR INSTALL TEMPORARY SEDIMENT AND EROSION CONTROL DEVICES PRIOR TO ANY GRADING ACTIVITY.
6. CONTRACTOR SHALL STOCKPILE EXISTING GRAVEL TO BE REAPPLIED AFTER COMPLETION OF GRADING.
7. ALL LOOSE PILES OF SOIL, SILT, CLAY, SAND, DEBRIS, OR EARTHEN MATERIALS SHALL BE PROTECTED IN A REASONABLE WAY TO PREVENT DISCHARGE.
8. AFTER COMPLETION OF EACH PHASE, ALL SURPLUS OR WASTE MATERIAL SHALL BE REMOVED FROM THE SITE AND DEPOSITED AT A LEGAL POINT OF DISPOSAL.
9. THE CONTRACTOR SHALL DEVELOP, PROPOSE AND IMPLEMENT AN APPROPRIATE DUST CONTROL PROGRAM TO BE USED THROUGHOUT CONSTRUCTION. THE DUST CONTROL PLAN SHALL BE SUBMITTED TO THE CITY OF SPARKS BUILDING DEPARTMENT AND SHALL SATISFY ALL APPLICABLE STATE AND FEDERAL REQUIREMENTS. CONTRACTOR SHALL BE REQUIRED TO PAY ANY ASSOCIATED FEES TO SATISFY DUST CONTROL REQUIREMENTS. CONTRACTOR SHALL TAKE ALL NECESSARY STEPS TO CONTROL DUST IN CONSTRUCTION AND STAGING AREAS. SUFFICIENT WATER TRUCKS SHALL BE MADE AVAILABLE FOR DUST CONTROL PURPOSES. THE CONTRACTOR IS REQUIRED TO SUPRESS DUST AT ALL TIMES, 24 HOURS A DAY, 7 DAYS A WEEK.

EXISTING CONDITIONS / DEMOLITION NOTES:

1. CONTRACTOR SHALL INSPECT THE SITE FOR ANY EXISTING ITEMS THAT MAY INTERFERE WITH THE PROPOSED IMPROVEMENTS AND PROMPTLY REPORT ANY DISCREPANCIES FOUND AMONG THESE DRAWINGS AND SPECIFICATIONS TO THE ENGINEER. ALL DISCREPANCIES SHALL BE CORRECTED IN WRITING. ANY WORK DONE BY THE CONTRACTOR AFTER THE DISCOVERY OF SUCH DISCREPANCIES PRIOR TO RECEIVING WRITTEN DIRECTION FROM THE ENGINEER IS AT THE CONTRACTORS OWN RISK.
2. VERIFY AND COORDINATE ALL DIMENSIONS AND EXISTING CONDITIONS PRIOR TO BEGINNING ANY CONSTRUCTION.
3. THE UNDERGROUND UTILITIES SHOWN IN THESE DRAWINGS ARE APPROXIMATE. UTILITY LOCATIONS ARE BASED ON SURFACE FIELD TIES AND IMPROVEMENT PLAN MAPS FROM AS-BUILT DRAWINGS. ACTUAL LOCATIONS MAY VARY. STRUCTURAL SYSTEM SOLUTIONS, INC. IS NOT RESPONSIBLE FOR THE EXACT LOCATIONS OF THE UTILITIES SHOWN HERE ON, NOR FOR ANY DAMAGES CAUSED BY ANY CONSTRUCTION OR EXCAVATION ON OR NEAR SAID UTILITIES. DAMAGE TO ANY EXISTING UTILITIES DURING CONSTRUCTION SHALL BE REPAIRED IMMEDIATELY IN ACCORDANCE WITH THE UTILITIES COMPANIES OR OWNERS REQUIREMENTS AND AT THE CONTRACTORS EXPENSE.
4. IT SHALL BE THE DUTY OF THE OF THE CONTRACTOR TO MAKE THE DETERMINATION AS TO THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING ANY WORK. CONTACT USA AT 1-800-227-2900. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL NOTIFY THE APPROPRIATE UTILITY COMPANY/OWNER AND INFORM THEM OF ANY PLANNED DISTURBANCE TO OR AROUND EXISTING UTILITIES.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES WITHIN THE PROJECT AREA FROM ACTIVITIES ASSOCIATED WITH THE CONSTRUCTION OF THIS PROJECT.
6. ALL SAWCUTTING OF CONCRETE SHALL BE NEAT AND STRAIGHT AS SHOWN.
7. ANY DAMAGE BY THE CONTRACTOR TO THE EXISTING IMPROVEMENTS TO REMAIN SHALL BE REMOVED AND REPLACED PER THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, LATEST EDITION, AT THE CONTRACTORS EXPENSE.

2 working days Call before you Dig. 1-800-227-2600



EXISTING CONDITIONS AND DEMOLITION PLAN
SCALE: 1/4" = 1'-0"

FOUNDATION DEMOLITION KEY

- (E) WALL TO REMAIN
- (E) LOUVER TO BE REMOVED
- (E) CONCRETE SLAB ON GRADE TO REMAIN
- (E) MECHANICAL EQUIPMENT TO BE DEMOLISHED
- E) CONCRETE SLAB ON GRADE TO BE DEMOLISHED
- (E) FENCING TO BE DEMOLISHED

SHEET SIZE: 36" x 24" (ARCH D)

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CITY OF SPARKS
ALF SORENSEN PRESCHOOL - HVAC MODIFICATIONS
NEVADA
SPARKS

STRUCTURAL DEMOLITION PLAN

DRAWN: TJL
CHECKED: TJL
DATE: 04/10/23
SCALE: AS SHOWN
PROJECT NO: 1482001

SHEET NO:
S1.1

SITE NOTES:

1. MECHANICAL EQUIPMENT AND DUCTING ALIGNMENT SHOWN FOR REFERENCE ONLY - SEE MECHANICAL PLANS FOR ADDITIONAL REQUIREMENTS.
2. DESIGN AND LAYOUT IS BASED ON THE AHU SPECIFIED ON SHEET M0.3 OF THE MECHANICAL DRAWINGS (JOHNSON J25ZJ***) ANY MODIFICATIONS OR SUBSTITUTIONS TO THE EQUIPMENT SPECIFIED THAT REQUIRES CHANGES TO THIS DESIGN OR LAYOUT SHALL BE AT THE CONTRACTOR EXPENSE.
3. (N) 8" THICK CONCRETE SLAB ON GRADE W/#5 @ 12" EACH WAY. PROVIDE THICKENED SLAB EDGES ALL SIDES PER DETAIL 100/S2.1. SET TOP OF REINFORCING STEEL 2" CLEAR FROM TOP OF SLAB. PROVIDE 1" DEEP CONTROL JOINTS (SEE DETAIL 103/S2.1) AS REQUIRED (10'-0" MAX SPACING) AND TO AVOID POST INSTALLED ANCHORS. TOP OF CONCRETE SHALL BE LEVEL WITH MAX VARIATION IN TOP OF CONCRETE ELEVATION < 3/16". SET TOP OF CONCRETE EQUIPMENT SLAB TO MATCH (E) BUILDING FF ELEVATION.
4. (N) 5" THICK CONCRETE SLAB ON GRADE WALKWAYS. MAXIMUM CROSS SLOPE 50:1. PROVIDE LANDINGS WHERE SHOWN ON PLAN WITH MAXIMUM CROSS SLOPE 50:1 ALL DIRECTIONS. MAXIMUM RUNNING SLOPE BETWEEN LANDINGS 12:1 - REFER TO CIVIL DRAWINGS FOR LAYOUT AND TOP OF CONCRETE ELEVATIONS. CONTRACTOR TO SUBMIT JOINTING LAYOUT FOR REVIEW AND APPROVAL.
5. TOP OF (N) CONCRETE WALKWAYS TO MATCH (E) - TYPICAL AT ALL SIDES. SLOPE (N) CONCRETE AWAY FROM (E) STRUCTURE AND TOWARDS (E) LANDSCAPE AREAS (TYP). CONTRACTOR SHALL COORDINATE ALL TOP OF CONCRETE ELEVATIONS WITH ENGINEER PRIOR TO FORMING CONCRETE.
6. CONDENSATE DRYWELL - FIELD LOCATE (14" DIAMETER X 24" DEEP MIN) W/TRAFFIC GRADE PERFORATED STEEL COVER - SEE PLUMBING. LOCATE 2' MIN FROM EDGE OF (N) EQUIPMENT PAD.
7. PROVIDE CONCRETE VALLEY GUTTER BETWEEN (E) STRUCTURE AND (N) EQUIPMENT PAD - SLOPE TO DRAIN.
8. PROVIDE 4' MINIMUM CLEARANCE BETWEEN AHU AND (E) STRUCTURE AND (N) FENCING - TYPICAL ALL SIDES.
9. PROVIDE 4" THICK CONCRETE INFILL PATCHING.
10. 8' TALL COMMERCIAL ORNAMENTAL SECURITY FENCE TO MATCH (E) WITH MATCHING SWING GATES:
    - PICKETS: 0.75" SQ x 14 GA
    - RAILS: 1.4375" x 1.5" x 14 GA
    - LINE POSTS: 3" SQ x 14 GA
    - GATE POSTS: 4" SQ x 14 GA
    - DOUBLE 6' WIDE SWING GATES (MECHANICAL EQUIPMENT AREA) WITH DROP BAR
    - SINGLE 4' WIDE SWING GATE (WALKWAY) WITH PANIC HARDWARE (SECURE SIDE)
    - FINISH: GALVANIZED STEEL FRAMEWORK WITH EPOXY PRIMER AND ACRYLIC TOPCOAT.
    - FOOTINGS: 18" DIA x 3' DEEP (LINE POSTS)
      24" DIA x 3' DEEP (GATE POSTS)
    - PROVIDE MATCHING EXPANDED METAL MESH INFILL TO PANELS ADJACENT TO GATES (TYP OF 2)
11. SUBMIT SHOP DRAWINGS SHOWING FABRICATED DUCT PLANS AND ELEVATIONS.
12. SUBMIT SHOP DRAWINGS FOR DUCT SUPPORT STEEL.
13. SUBMIT THE FOLLOWING FENCE SHOP DRAWINGS FOR REVIEW AND APPROVAL:
    - LOCATION OF CORNER POSTS, END POSTS, AND GATES
    - FENCE ASSEMBLY INCLUDING ACCESSORIES, FITTINGS AND HARDWARE
    - GATE ASSEMBLIES INCLUDING ACCESSORIES, LOCKS, AND COMPONENTS
14. RAISE TO FINISH GRADE/TOP OF CONCRETE ALL EXISTING VALVE BOXES, CLEAN OUTS, UTILITY STRUCTURES TO REMAIN. REPLACE TO MATCH (E) ANY DAMAGED STRUCTURES. REFER TO CIVIL DRAWINGS FOR RELOCATION OF (E) SEWER CLEANOUT.

FRAMING KEY

- (E) BUILDING STRUCTURE TO REMAIN (PROTECT IN PLACE)
- (E) CONCRETE SLAB ON GRADE
- (N) CONCRETE SLAB ON GRADE
- (N) MECHANICAL DUCTING (RA/SA) - SEE MECHANICAL PLANS FOR SIZE, ALIGNMENT, AND ADDITIONAL REQUIREMENTS NOT SHOWN
- (N) EXTERIOR DUCT SUPPORTS - SEE FRAMING S2.2
- (N) 8' TALL SECURITY FENCING - TO MATCH (E)
- FLOW LINE
- 2" MIN OF (N) GRANITE DUST (3/8" MINUS) TO MATCH (E) LANDSCAPE AREAS

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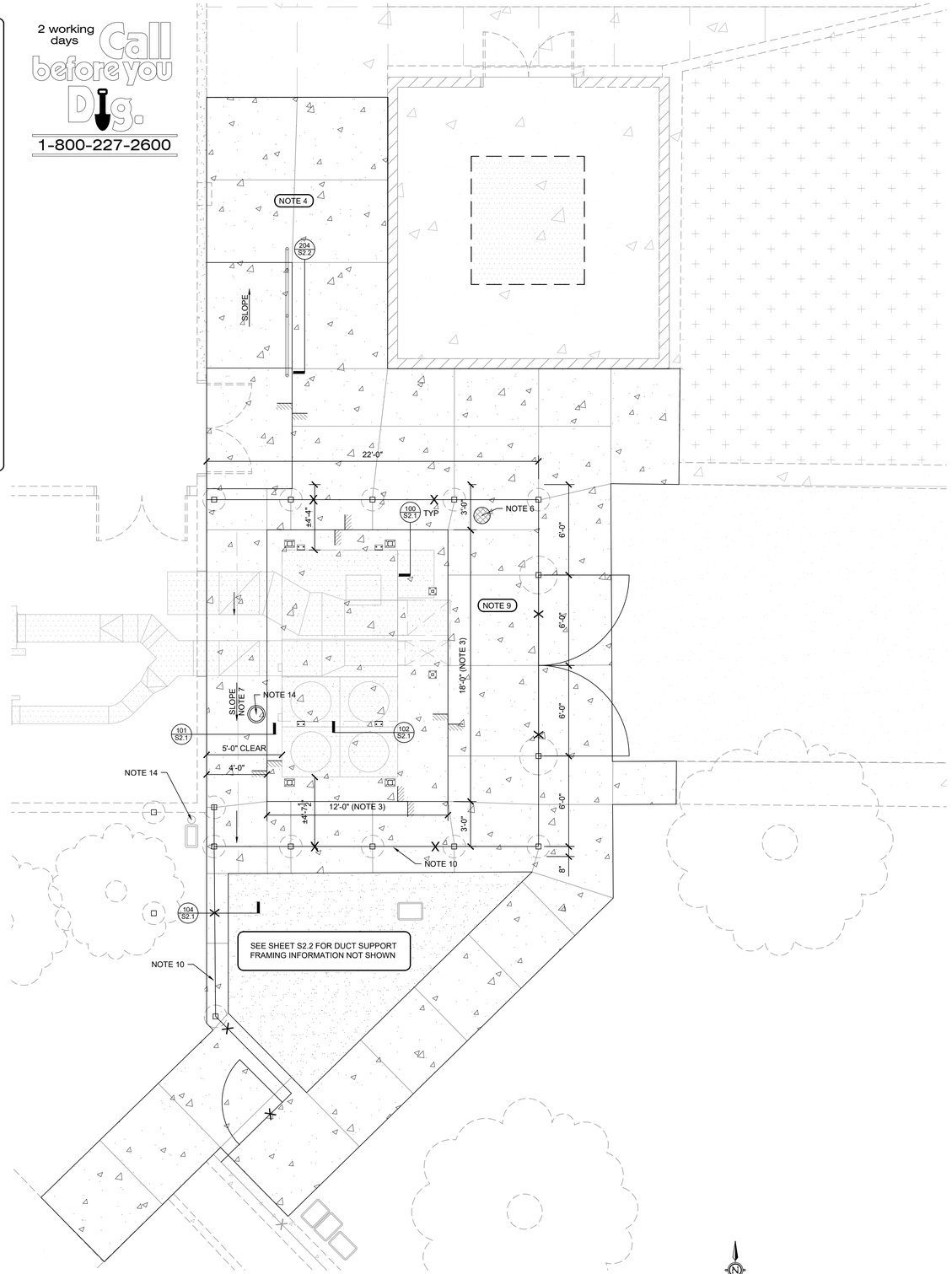
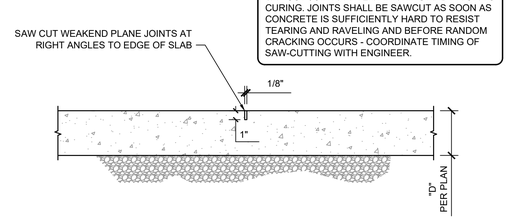


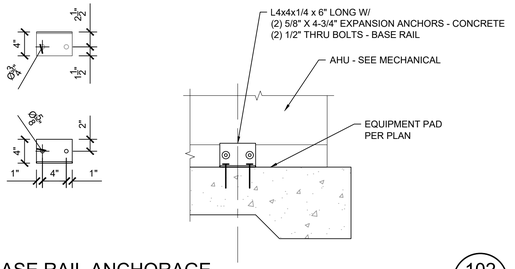
STRUCTURAL SITE PLAN
SCALE: 1/2" = 1'-0"

AFTER 7 DAYS, THOROUGHLY CLEAN ALL JOINTS IN EQUIPMENT SLAB AND FILL W/ WEATHER RESISTANT POLYURETHANE JOINT SEALENT (ASTM C-920, TYPE S)

SAWCUT JOINTS AFTER FINISHING AND PRIOR TO CURING. JOINTS SHALL BE SAWCUT AS SOON AS CONCRETE IS SUFFICIENTLY HARD TO RESIST TEARING AND RAVELING AND BEFORE RANDOM CRACKING OCCURS - COORDINATE TIMING OF SAW-CUTTING WITH ENGINEER.

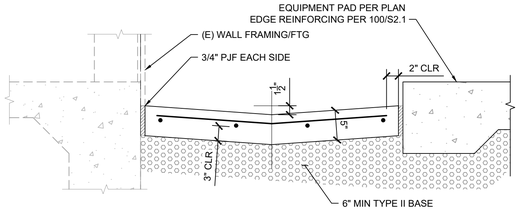


TYPICAL EQUIPMENT PAD JOINTS
NO SCALE
103 / S2.1



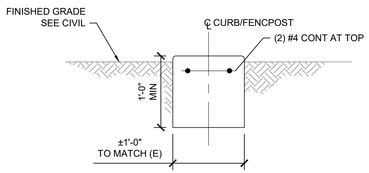
BASE RAIL ANCHORAGE
SCALE: 1" = 1'-0"
102 / S2.1

PROVIDE WEAKENED PLAN JOINTS EVERY 5' PERPENDICULAR TO SLOPE

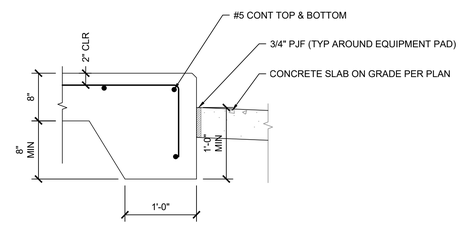


CONCRETE VALLEY GUTTER
SCALE: 1" = 1'-0"
101 / S2.1

PLACE CURB CONCRETE MONOLITHICALLY OVER TOP OF FENCE POST FOOTINGS (TYP)



CONTINUOUS FENCE CURB
SCALE: 1" = 1'-0"
104 / S2.1



EQUIPMENT PAD - EDGE REINFORCING
SCALE: 1" = 1'-0"
100 / S2.1

SHEET SIZE: 36" x 24" (ARCH D)

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100% CONSTRUCTION DOCUMENTS

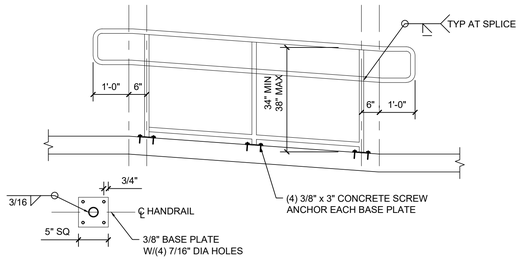
CITY OF SPARKS
ALF SORENSEN PRESCHOOL - HVAC MODIFICATIONS
STRUCTURAL SITE PLAN
SITE DETAILS
SPARKS NEVADA

DRAWN:	TJL
CHECKED:	TJL
DATE:	04/10/23
SCALE:	AS SHOWN
PROJECT NO:	1482001

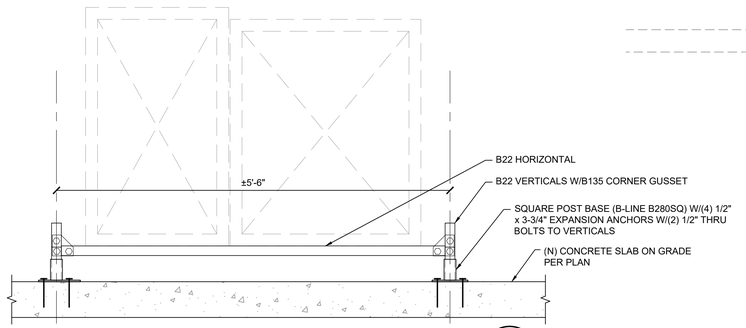
SHEET NO:
S2.1

RAILING NOTES:

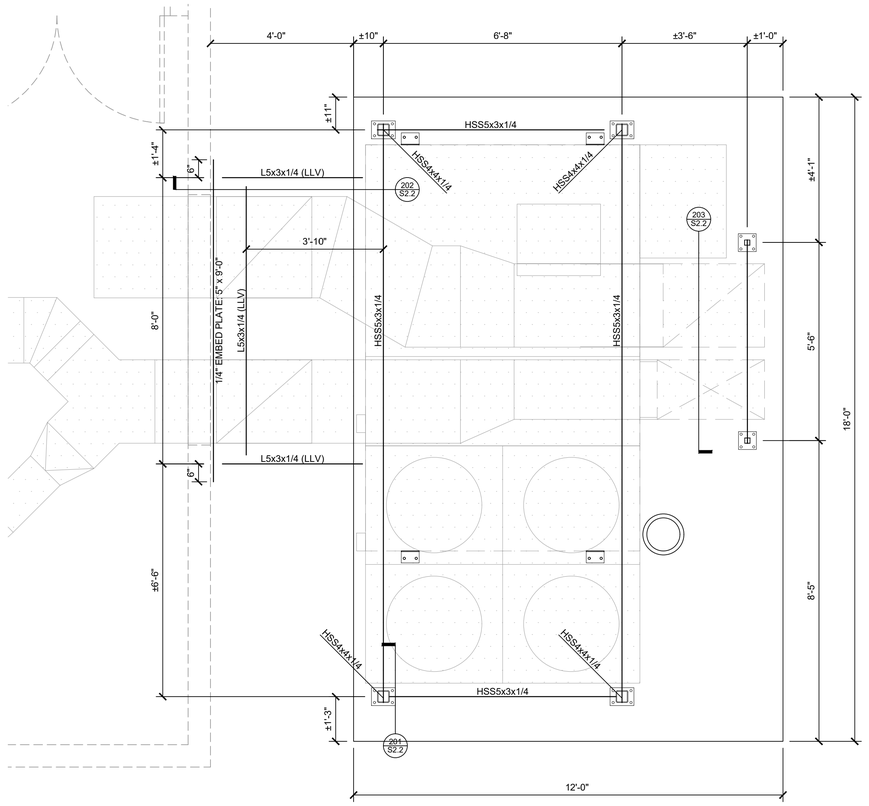
1. REFER CIVIL DRAWINGS FOR RAMP GEOMETRY AND TOP OF CONCRETE ELEVATIONS.
2. HANDRAIL REQUIRED ONE SIDE (RISE LESS THAN 6").
3. GRIND SMOOTH AND DEBUR ALL CUT EDGES AND WELDS.
4. GUARDRAILS AND HANDRAILS SHALL BE 1-1/4" DIAMETER, SCHEDULE 40
5. GUARDRAIL POSTS SHALL BE 1-1/4" DIAMETER, SCHEDULE 80



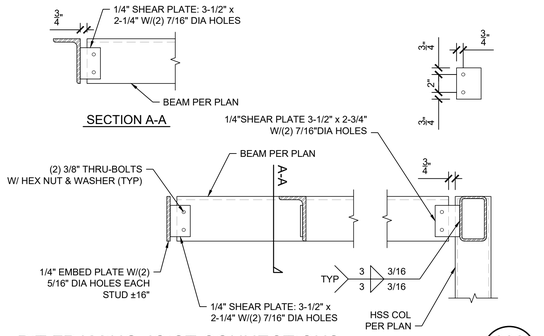
TYPICAL RAMP HANDRAIL
NO SCALE — 204 / S2.2



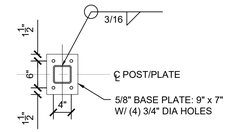
LOW DUCT SUPPORT
SCALE: 1" = 1'-0" — 203 / S2.2



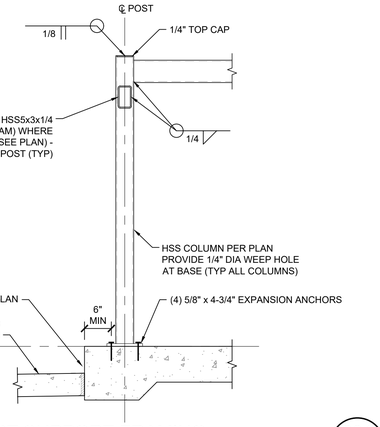
DUCT SUPPORT FRAMING PLAN
SCALE: 1/2" = 1'-0"



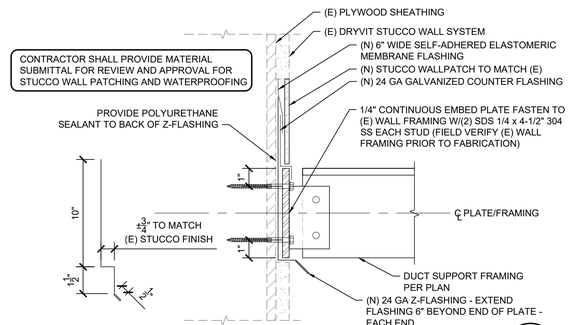
PIT FRAMING JOIST CONNECTIONS
SCALE: 1-1/2" = 1'-0" — 202 / S2.2



BASE: HSS4x4x1/4



EXTERIOR DUCT SUPPORT FRAMING
SCALE: 3/4" = 1'-0" — 201 / S2.2



EMBED PLATE AT (E)
SCALE: 3" = 1'-0" — 200 / S2.2

SHEET SIZE: 36" x 24" (ARCH D)

City of Sparks — It's Happening Here!

STRUCTURAL SYSTEM SOLUTIONS INC.
410 MILL ST, SUITE 206
RENO, NV 89502
775-232-4664
www.sss464.com

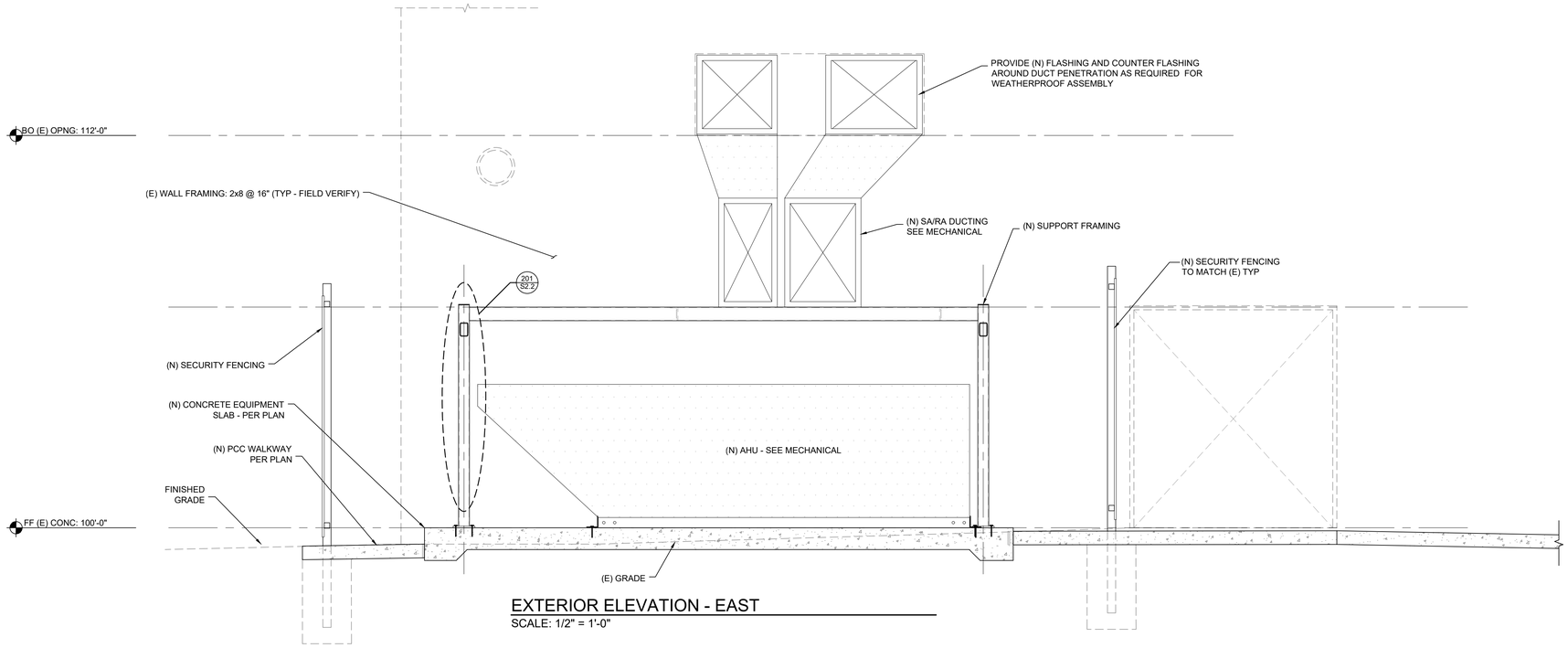
REV	DATE	DESCRIPTION	APP'D

100% CONSTRUCTION DOCUMENTS

CITY OF SPARKS
ALF SORENSEN PRESCHOOL - HVAC MODIFICATIONS
STRUCTURAL FRAMING PLAN
FRAMING DETAILS
SPARKS NEVADA

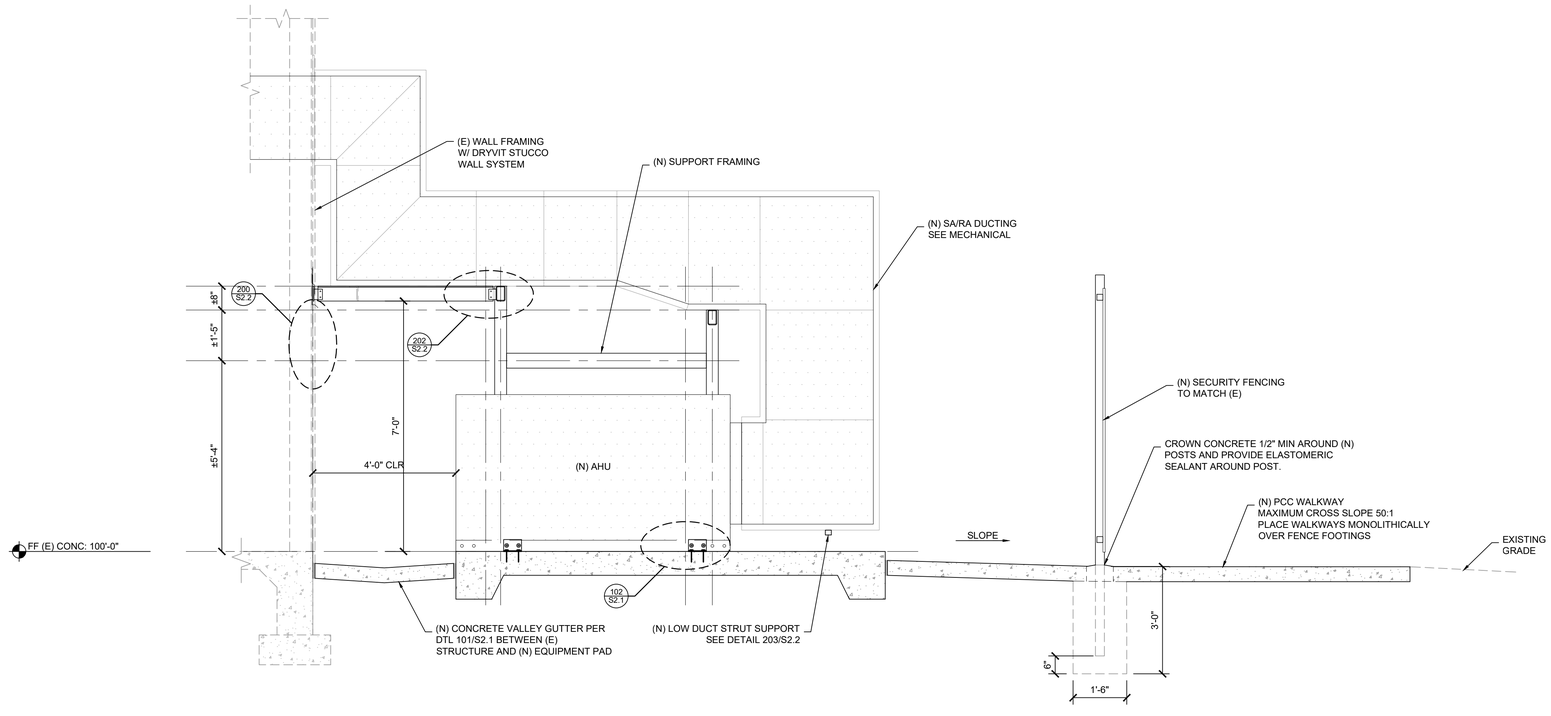
DRAWN:	TJL
CHECKED:	TJL
DATE:	04/10/23
SCALE:	AS SHOWN
PROJECT NO:	1482001

SHEET NO: S2.2



EXTERIOR ELEVATION - EAST

SCALE: 1/2" = 1'-0"



EXTERIOR ELEVATION - SOUTH

SCALE: 1/2" = 1'-0"

SHEET SIZE: 36" x 24" (ARCH D)

City of Sparks
It's Happening Here!

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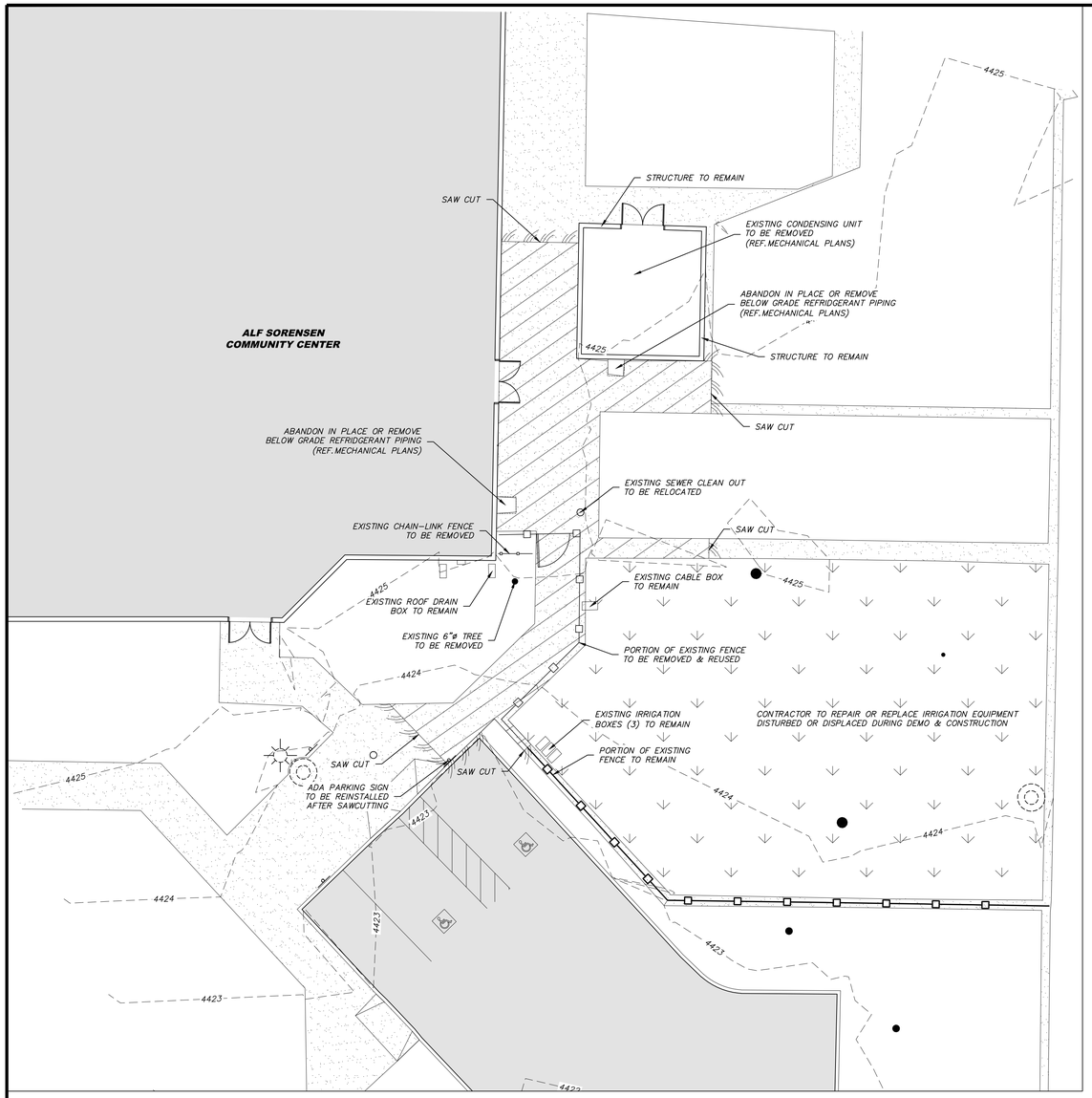
CITY OF SPARKS
ALF SORENSEN PRESCHOOL - HVAC MODIFICATIONS
SPARKS NEVADA

FRAMING ELEVATIONS

DRAWN:	TJL
CHECKED:	TJL
DATE:	04/10/23
SCALE:	AS SHOWN
PROJECT NO:	1482001

SHEET NO:

S3.0



LEGEND:

- EXISTING ASPHALT PAVING
- EXISTING PORTLAND CEMENT CONCRETE
- PORTLAND CEMENT CONCRETE AREA TO BE REMOVED
- MANHOLE (DASHED IF EXISTING)
- EXISTING SITE LIGHT
- EXISTING TREE
- SAWCUT LINE
- WROUGHT IRON FENCE

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

811 Know what's **below.** **Call** before you dig.

N

Odyssey

1"=10'

DEMOLITON NOTES:

1. SHOULD ANY CAIRN OR GRAVE OF A NATIVE AMERICAN BE DISCOVERED DURING SITE DEVELOPMENT, WORK SHALL TEMPORARILY BE HALTED AT THE SPECIFIC SITE AND THE SHERIFF'S OFFICE AS WELL AS THE STATE HISTORIC PRESERVATION OFFICE OF THE DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES SHALL BE IMMEDIATELY NOTIFIED PER NRS 383.170.
2. ALL CONSTRUCTION SHALL CONFORM TO THE STANDARD SPECIFICATIONS, AND THE LATEST STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION 2012 ADDITION (AND ANY APPURTENANT SUPPLEMENTS) SPONSORED AND DISTRIBUTED BY RENO, SPARKS, AND WASHOE COUNTY.
3. THE CONTRACTOR SHALL MAINTAIN A DUST CONTROL PROGRAM, INCLUDING WATERING OF OPEN AREAS. THE CONTRACTOR SHALL ALSO MAINTAIN CONFORMITY WITH SECTION 040.030 OF THE WASHOE COUNTY AIR POLLUTION REGULATIONS.
4. THE CONTRACTOR SHALL VERIFY IN FIELD, ALL ELEVATIONS, DIMENSIONS, FLOW LINES, EXISTING CONDITIONS, AND POINT OF CONNECTION WITH ADJOINING PROPERTY (PUBLIC OR PRIVATE). ANY DISCREPANCIES SHALL BE CALLED TO THE ATTENTION OF THE ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR ANY AND ALL DAMAGE TO EXISTING UTILITIES DURING CONSTRUCTION. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO CONTACT THE UTILITY COMPANIES FOR LOCATIONS OR POT-HOLING PRIOR TO CONSTRUCTION.
5. THE CONTRACTOR SHALL DISPOSE OF ALL DEMOLITION DEBRIS PER FEDERAL, STATE AND LOCAL REGULATIONS AND ORDINANCES.
6. NO MATERIAL OF ANY KIND SHALL BE STOCKPILED, OR CONSTRUCTION EQUIPMENT PARKED ON CONCRETE OR ASPHALT SURFACES MAINTAINED BY THE CITY OF SPARKS.
7. ALL UNDERGROUND UTILITIES SHOWN HEREON WERE TAKEN FROM SURFACE EVIDENCE AND AVAILABLE UTILITY COMPANY RECORDS. ALL UTILITIES SHOULD BE VERIFIED IN THE FIELD. ODYSSEY ENGINEERING INC. ASSUMES NO RESPONSIBILITY FOR ACCURACY OR COMPLETENESS OF SUCH RECORDS.
8. THE CONTRACTOR SHALL MAINTAIN AN ON-GOING PROCESS OF REMOVAL OF ALL SPILLAGE OF EXCAVATION MATERIAL ON ALL PAVED STREETS.
9. LAND GRADING SHALL BE DONE IN A METHOD TO PREVENT DUST FROM TRAVERSING THE PROPERTY LINE.
10. ALL REQUIRED UTILITY SHUT-DOWNS SHALL BE COORDINATED WITH APPROPRIATE UTILITY COMPANY AND OWNERS PERSONNEL.
11. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE, PERMIT AND IMPLEMENT A STORM WATER POLLUTION PREVENTION PLAN IN CONFORMANCE WITH FEDERAL, STATE AND LOCAL REQUIREMENTS. THE CONTRACTOR SHALL MAINTAIN EXISTING B.M.P. IMPROVEMENTS THAT ARE IN PLACE, AND SHALL PROVIDE AND MAINTAIN ADDITIONAL B.M.P.'S AS REQUIRED TO IMPLEMENT HIS S.W.P.P.P.
12. THE CONTRACTOR SHALL OBTAIN AND THE OWNER SHALL PAY FOR ALL NECESSARY PERMITS AND FEES REQUIRED FOR CONSTRUCTION.
13. THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER, THE SOILS ENGINEER, NEVADA ENERGY, CITY OF SPARKS, AND THE TRUCKEE MEADOWS WATER AUTHORITY 48 HOURS PRIOR TO COMMENCEMENT OF WORK.
14. ADD 4400 FEET TO ALL TRUNCATED ELEVATIONS.
15. THE NATURAL VEGETATION AND EXISTING LANDSCAPING SHALL BE PRESERVED AS MUCH AS PRACTICAL DURING ROADWAY AND DRAINAGE IMPROVEMENTS CONSTRUCTION.
16. ANY ACCESS OR UNSUITABLE MATERIAL SHALL BE DISPOSED OF IN ACCORDANCE WITH THE LATEST CITY OF SPARKS REGULATIONS OR IN APPROVED AREAS.

REV.	DATE	DESCRIPTION	BY	APP'D

DATE: OCT 2022
DRAWN BY: C3D 2022
DESIGNED BY: AKM
CHECKED BY: F.B.

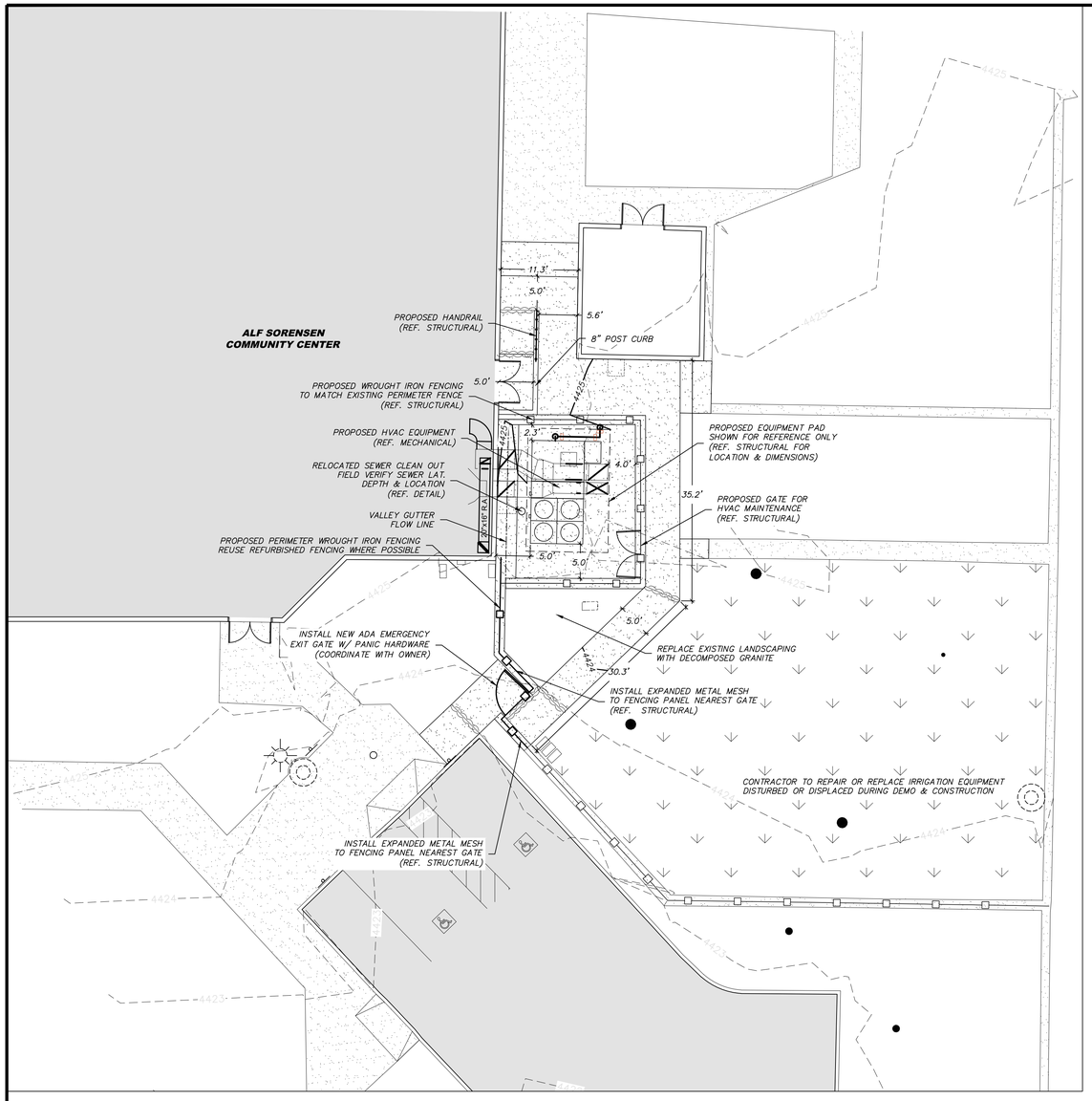
ALF SORENSEN HVAC
DEMO PLAN

SPARKS, WASHOE, NEVADA

895 ROBERTA LANE, SUITE 104, SPARKS, NV 89431
(775) 359-3311 FAX (775) 359-3329
EMAIL INFO@ODYSSEYRENO.COM
ODYSSEYRENO.COM
Odyssey ENGINEERING INCORPORATED

SCALE
HORIZ. 1"=10'
VERT. –
JOB NO. 4550

SHEET C1.0 OF 3



LEGEND:

- EXISTING ASPHALT PAVING
- EXISTING PORTLAND CEMENT CONCRETE
- PORTLAND CEMENT CONCRETE AREA
- MANHOLE (DASHED IF EXISTING)
- EXISTING SITE LIGHT
- EXISTING TREE
- GRADE BREAK
- WROUGHT IRON FENCE
- HAND RAILING

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

811 Know what's **below.** **Call** before you dig.

N

odyssey

1"=10'

SITE NOTES:

1. ALL CONSTRUCTION SHALL CONFORM TO THE STANDARD SPECIFICATIONS, AND THE LATEST STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION 2012 ADDITION (AND ANY APPURTENANT SUPPLEMENTS) SPONSORED AND DISTRIBUTED BY RENO, SPARKS, AND WASHOE COUNTY.
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3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL DAMAGE TO EXISTING UTILITIES ENCOUNTERED DURING CONSTRUCTION. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO CONTACT THE UTILITY COMPANIES FOR LOCATIONS OR POT-HOLING PRIOR TO CONSTRUCTION.
4. ALL REQUIRED UTILITY SHUT-DOWNS SHALL BE COORDINATED WITH APPROPRIATE UTILITY COMPANY.
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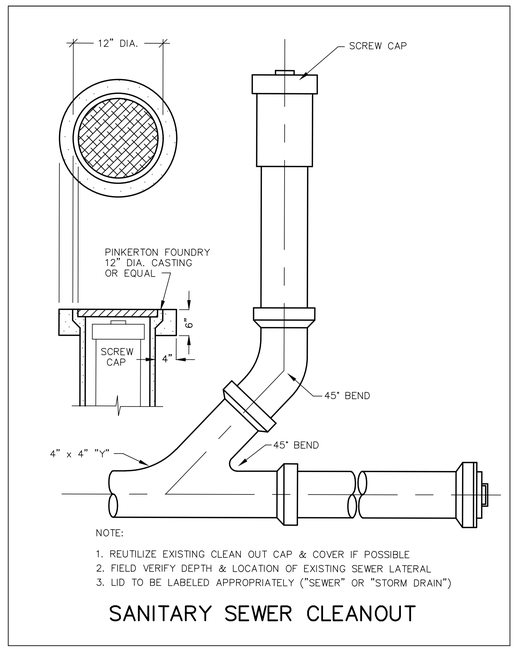
7. THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER, THE SOILS ENGINEER, NEVADA ENERGY, WASHOE COUNTY, AND THE TRUCKEE MEADOWS WATER AUTHORITY 48 HOURS PRIOR TO COMMENCEMENT OF WORK.
8. ALL DIMENSIONS ARE TO FRONT FACE OF CURB UNLESS NOTED OTHERWISE.
9. ALL STRIPING AND SIGNAGE SHALL CONFORM TO THE LATEST MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS PREPARED BY THE U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION.



NOTE:

1. REUTILIZE EXISTING CLEAN OUT CAP & COVER IF POSSIBLE
2. FIELD VERIFY DEPTH & LOCATION OF EXISTING SEWER LATERAL
3. LID TO BE LABELED APPROPRIATELY ("SEWER" OR "STORM DRAIN")

SANITARY SEWER CLEANOUT

REV.	DATE	DESCRIPTION	BY	APP'D

DATE: OCT 2022
DRAWN BY: C3D 2022
DESIGNED BY: AKM
CHECKED BY: F.B.

ALF SORENSEN HVAC
SITE PLAN

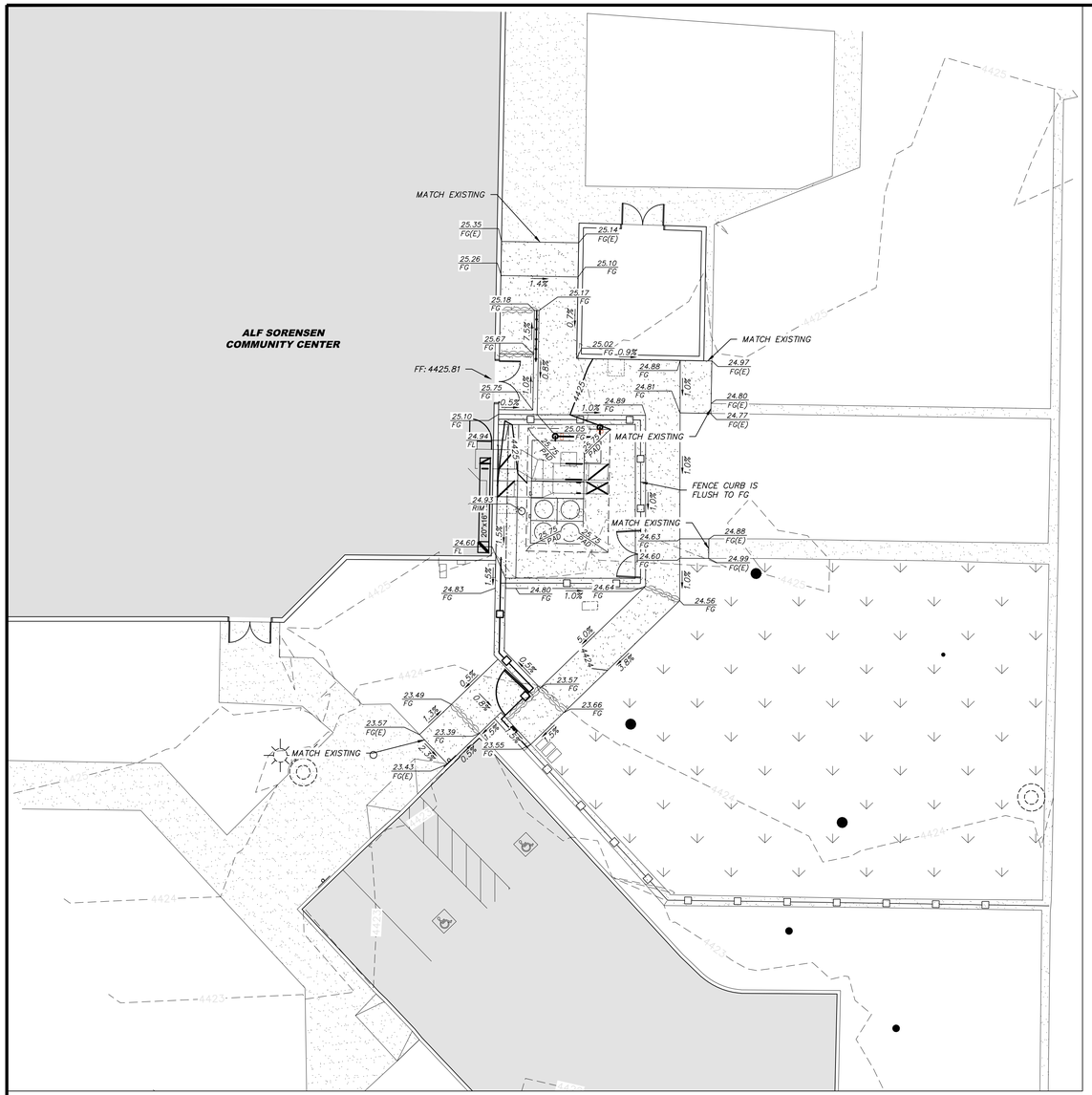
WASHOE, NEVADA

SPARKS,

895 ROBERTA LANE, SUITE 104, SPARKS, NV 89431
(775) 359-3313 FAX (775) 359-0259
EMAIL INFO@ODYSSEYRENO.COM
ODYSSEYRENO.COM
odyssey ENGINEERING INCORPORATED

SCALE
HORIZ. 1"=10'
VERT. –
JOB NO. 4550

SHEET
C1.1
OF
3



LEGEND:

- EXISTING ASPHALT PAVING
- EXISTING PORTLAND CEMENT CONCRETE
- PORTLAND CEMENT CONCRETE AREA
- MANHOLE (DASHED IF EXISTING)
- EXISTING SITE LIGHT
- EXISTING TREE
- GRADE BREAK
- WROUGHT IRON FENCE
- HAND RAILING
- 4396 EXISTING CONTOUR
- **4396** PROPOSED CONTOUR
- FF=96.50 ELEVATION @ FINISH FLOOR
- 2.0% SLOPE IN PERCENT
- 96.43 FG ELEVATION @ FINISH GRADE

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

811 Know what's **below.** **Call** before you dig.

N

Odyssey

1"=10'

GRADING NOTES:

1. SHOULD ANY CAIRN OR GRAVE OF A NATIVE AMERICAN BE DISCOVERED DURING SITE DEVELOPMENT, WORK SHALL TEMPORARILY BE HALTED AT THE SPECIFIC SITE AND THE SHERIFF'S OFFICE AS WELL AS THE STATE HISTORIC PRESERVATION OFFICE OF THE DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES SHALL BE IMMEDIATELY NOTIFIED PER NRS 383.170.
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4. THE CONTRACTOR SHALL VERIFY IN FIELD, ALL ELEVATIONS, DIMENSIONS, FLOW LINES, EXISTING CONDITIONS, AND POINT OF CONNECTION WITH ADJOINING PROPERTY (PUBLIC OR PRIVATE). ANY DISCREPANCIES SHALL BE CALLED TO THE ATTENTION OF THE ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR ANY AND ALL DAMAGE TO EXISTING UTILITIES DURING CONSTRUCTION. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO CONTACT THE UTILITY COMPANIES FOR LOCATIONS OR POT-HOLING PRIOR TO CONSTRUCTION.
5. THE CONTRACTOR SHALL DISPOSE OF ALL DEMOLITION DEBRIS PER FEDERAL, STATE AND LOCAL REGULATIONS AND ORDINANCES.
6. ALL UNDERGROUND UTILITIES SHOWN HEREON WERE TAKEN FROM SURFACE EVIDENCE AND AVAILABLE UTILITY COMPANY RECORDS. ALL UTILITIES SHOULD BE VERIFIED IN THE FIELD. ODYSSEY ENGINEERING INC. ASSUMES NO RESPONSIBILITY FOR ACCURACY OR COMPLETENESS OF SUCH RECORDS.
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8. LAND GRADING SHALL BE DONE IN A METHOD TO PREVENT DUST FROM TRAVERSING THE PROPERTY LINE.
9. ALL REQUIRED UTILITY SHUT-DOWNS SHALL BE COORDINATED WITH APPROPRIATE UTILITY COMPANY AND OWNERS PERSONNEL.
10. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE, PERMIT AND IMPLEMENT A STORM WATER POLLUTION PREVENTION PLAN IN CONFORMANCE WITH FEDERAL, STATE AND LOCAL REQUIREMENTS. THE CONTRACTOR SHALL MAINTAIN EXISTING B.M.P. IMPROVEMENTS THAT ARE IN PLACE, AND SHALL PROVIDE AND MAINTAIN ADDITIONAL B.M.P.'S AS REQUIRED TO IMPLEMENT HIS S.W.P.P.P.
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13. ADD 4400 FEET TO ALL TRUNCATED ELEVATIONS.
14. THE NATURAL VEGETATION AND EXISTING LANDSCAPING SHALL BE PRESERVED AS MUCH AS PRACTICAL DURING SITE IMPROVEMENTS CONSTRUCTION..
15. SLOPES STEEPER THAN 3:1 SHALL BE MECHANICALLY STABILIZED WITH ROCK-RIP.
16. ANY ACCESS OR UNSUITABLE MATERIAL SHALL BE DISPOSED OF IN ACCORDANCE WITH THE LATEST WASHOE COUNTY REGULATIONS OR IN APPROVED AREAS.

TRUCKEE MEADOWS REGIONAL STORMWATER QUALITY NOTES:

1. THE OWNER, SITE DEVELOPER, CONTRACTOR AND OR THEIR AUTHORIZED AGENTS SHALL EACH DAY REMOVE ALL SEDIMENT, MUD, CONSTRUCTION DEBRIS, OR OTHER POTENTIAL POLLUTANTS THAT MAY HAVE BEEN DISCHARGED TO, OR ACCUMULATE IN, THE PUBLIC RIGHTS OF WAYS OF WASHOE COUNTY AS A RESULT OF CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS SITE DEVELOPMENT OR CONSTRUCTION PROJECT. SUCH MATERIALS SHALL BE PREVENTED FROM ENTERING THE STORM SEWER SYSTEM.
2. ADDITIONAL CONSTRUCTION SITE DISCHARGE BEST MANAGEMENT PRACTICES MAY BE REQUIRED OF THE OWNER AND HIS OR HER AGENTS DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE SUBMITTED PLAN DOES NOT MEET THE PERFORMANCE STANDARDS SPECIFIED IN THE WASHOE COUNTY AND THE TRUCKEE MEADOWS CONSTRUCTION SITE BEST MANAGEMENT PRACTICES HANDBOOK.
3. TEMPORARY OR PERMANENT STABILIZATION PRACTICES WILL BE INSTALLED ON DISTURBED AREAS NO LATER THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. SOME EXCEPTIONS MAY APPLY; REFER TO STORMWATER GENERAL PERMIT NVR100000, SECTION 1.B.A.b. (2).
4. AT A MINIMUM, THE CONTRACTOR OR HIS AGENT SHALL INSPECT ALL DISTURBED AREAS, AREAS USED FOR STORAGE OF MATERIALS AND EQUIPMENT THAT ARE EXPOSED TO PRECIPITATION, VEHICLE ENTRANCE AND EXIST LOCATIONS AND ALL BMPs WEEKLY, PRIOR TO A FORECASTED RAIN EVENT AND WITHIN 24 HOURS AFTER ANY ACTUAL RAIN EVENT. THE CONTRACTOR OR HIS AGENT SHALL UPDATE OR MODIFY THE STORMWATER POLLUTION PREVENTION PLAN AS NECESSARY. SOME EXCEPTIONS TO WEEKLY INSPECTIONS MAY APPLY, SUCH AS FROZEN GROUND CONDITIONS OR SUSPENSION OF LAND DISTURBANCE ACTIVITIES. REFER TO STORMWATER GENERAL PERMIT NVR100000, SECTION 1.B.A.g.
5. ACCUMULATED SEDIMENT IN BMPS SHALL BE REMOVED WITHIN SEVEN DAYS AFTER A STORMWATER RUNOFF EVENT OR PRIOR TO THE NEXT ANTICIPATED STORM EVENT WHICHEVER IS EARLIER. SEDIMENT MUST BE REMOVED WHEN BMP DESIGN CAPACITY HAS BE REDUCED BY 30 PERCENT OR MORE.

REV.	DATE	DESCRIPTION	BY	APP'D

DATE: OCT 2022
DRAWN BY: C3D 2022
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CHECKED BY: F.B.

ALF SORENSEN HVAC
GRADING PLAN

WASHOE, NEVADA

SPARKS,

895 ROBERTA LANE, SUITE 104, SPARKS, NV 89431
(775) 358-3313 FAX (775) 358-3259
EMAIL INFO@ODYSSEYRENO.COM
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Odyssey ENGINEERING INCORPORATED

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SHEET C1.2
OF 3