	ABE	BREVIATIONS	
AFF ABOVE FINISHED FLOOR	(D) DEMOLISH/DELETE	GND GROUND	OFOI OWNER FURNISHED OWNER INSTALLED
AFP ARC FAULT PROTECTOR	E EMERGENCY	GRC GALVANIZED RIGID CONDUIT	PNL PANEL
AIC AMP INTERRUPTING CURRENT (SYMMETRICAL)	(EX) EXISTING	IG ISOLATED GROUND	(R) RELOCATE
AL ALUMINUM	EPO EMERGENCY POWER OFF	MCB MAIN CIRCUIT BREAKER	(RM) REMOVE AND RETURN TO OWNER
BG BELOW GRADE	EWC ELECTRIC WATER COOLER	MCC MOTOR CONTROL CENTER	TR TAMPER RESISTANT
C CONDUIT	EWH ELECTRIC WATER HEATER	MH MANHOLE	TVSS TRANSIENT VOLTAGE SURGE SUPPRESSOR
CFCI CONTRACTOR FURNISHED CONTRACTOR INSTALLED	(F) FUTURE	MLO MAIN LUGS ONLY	TYP TYPICAL
CKT CIRCUIT	FA FIRE ALARM	(N) NEW	UNO UNLESS NOTED OTHERWISE
CO CONDUIT ONLY	FLA FULL LOAD AMPS	NIC NOT IN CONTRACT	WP WEATHER PROOF
CU COPPER	GFI GROUND FAULT INTERRUPTER	NL NIGHT LIGHT	XMR TRANSFORMER
C/W COMPLETE WITH	GFP GROUND FAULT PROTECTOR	OFCI OWNER FURNISHED CONTRACTOR INSTALLED	
* THIS IS A TYPICAL ABBREVIATION LIST. NOT ALL ABBREVIATIONS ARE	USED ON THIS PROJECT.		

### **GENERAL NOTES**

- MECHANICAL, PLUMBING AND OTHER DRAWINGS PRIOR TO BID.
- NUMBERS INDICATED. SUBMITTALS SHALL INCLUDE BUT NOT LIMITED TO: LIGHTING FIXTURES, LAMPS, WIRING DEVICES, VOLTS AND ALL SPECIAL SYSTEMS SUCH AS FIRE ALARM, LIGHTING CONTROLS, SECURITY SYSTEMS, SOUND SYSTEMS ETC.
- IT IS THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS TO ESTABLISH A STANDARD OF QUALITY. MANUFACTURES CATALOG NUMBERS ARE LISTED AS A BASIS OF DESIGN. ELECTRICAL CONTRACTOR SHALL
- CONTRACTOR SHALL SECURE AND PAY FOR ALL NECESSARY BUILDING PERMITS AND INSPECTION FEES.

SUBMIT PRODUCT INFORMATION THAT DEVIATES FROM ORIGINAL DESIGN AND SPECIFICATION.

- ALL IMPACT FEES ASSOCIATED WITH CITY, UTILITY OR SERVICE COMPANIES FOR BUT NOT LIMITED TO POWER,
- THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE WITH THE GENERAL CONTRACTOR TO PROVIDE AND INSTALL TEMPORARY POWER FOR PROJECT CONSTRUCTION AS REQUIRED. ALL ENERGY
- DO NOT SCALE DRAWINGS VERIFY DIMENSIONS IN FIELD PRIOR TO MAKING ANY ROUGH-INS.
- ELECTRICAL CONTRACTOR SHALL REVIEW ALL ARCHITECTS ELEVATIONS, SECTIONS AND FLOOR PLANS PRIOR
- CONSULT ARCHITECTS REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF LIGHTING FIXTURES, SPEAKERS,
- ELECTRICAL CONTRACTOR SHALL MEET WITH THE CEILING AND MECHANICAL CONTRACTORS TO COORDINATE LOCATIONS, CLEARANCES, CEILING TYPES AND ROUGH-IN REQUIREMENTS OF ALL LIGHTING FIXTURES PRIOR TO
- ROUGH-INS. CONSULT CONTRACT DOCUMENT DRAWINGS AND SHOP DRAWINGS TO VERIFY AND MAINTAIN
- ELECTRICAL ROOM DRAWINGS ARE FOR REFERENCE ONLY OF EQUIPMENT QUANTITIES. ELECTRICAL CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF ELECTRICAL ROOM SHOWING DIMENSIONS AND
- CONTRACTOR SHALL VERIFY ACTUAL ELECTRICAL LOADS FROM NAMEPLATE RATINGS OF EACH PIECE OF EQUIPMENT REQUIRING POWER. BRING ANY DISCREPANCIES TO THE ATTENTION OF THE PROJECT ENGINEER.
- WORK SHALL BE PERFORMED IN A WORKMANLIKE MANNER, PER INDUSTRY STANDARD AND TO THE
- NATIONAL CODES, STANDARDS AND ORDINANCES.
- FINAL CONNECTIONS TO EQUIPMENT SHALL BE MADE AS PER MANUFACTURERS WRITTEN INSTRUCTIONS AND APPROVED WIRING DIAGRAMS AND DETAILS. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO PROVIDE ALL MATERIALS AND EQUIPMENT COMPATIBLE WITH EQUIPMENT ACTUALLY SUPPLIED.
- ALL PENETRATIONS OF FIRE RATED FLOORS, CEILING AND WALLS SHALL BE SEALED WITH UL LISTED AND RATED FIRE STOP MATERIAL TO MAINTAIN FIRE RATING OF ASSEMBLY
- ELECTRICAL BOXES SHALL NOT BE LOCATED IN MASONRY OR CONCRETE COLUMNS, BOND BEAMS OR
- WIRE FOR GENERAL USE SHALL BE COPPER 75° C RATED. WIRING FOR HID FIXTURES WITHIN 3" OF INSTALLATION IN A MAXIMUM 30° C AMBIENT TEMPERATURE ENVIRONMENT. CONDUCTOR AMPACITY SHALL BE DERATED FOR HIGHER AMBIENT INSTALLATIONS
- CONDUCTORS HAVE BEEN SIZED FOR VOLTAGE DROP AS PER PLANS AND DIRECT ROUTING. ANY DEVIATION IN CONDUIT ROUTING MAY INCREASE THE WIRE AND CONDUIT SIZE, ELECTRICAL CONTRACTOR IS RESPONSIBLE TO INSURE PROPER OPERATING VOLTAGE ON ALL CIRCUITS BOTH INTERIOR AND EXTERIOR. THE VOLTAGE DROP SHALL NOT EXCEED 3% FOR BRANCH CIRCUITS AND 2% FOR FEEDERS FOR A TOTAL OF 5% COMBINED TOGETHER OF BRANCH AND FEEDER CIRCUITS TO THE FARTHEST OUTLET.
- STANDARDS OF THE LOCAL OR PROJECT SPECIFIC POWER COMPANY.
- SYSTEMS PRIOR TO TRENCHING. A UTILITY LOCATING COMPANY SUCH AS "BLUE STAKE" OR EQUAL SHALL BE USED TO VERIFY AND MARK UTILITIES BEFORE TRENCHING. PROVIDE NECESSARY TRENCHING, BACKFILL CUTTING AND PATCHING, CONCRETE PAVING ETC, REQUIRED. BACKFILL TRENCHES TO 90% COMPACTION. PATCHING SHALL MATCH EXISTING SURROUNDING SURFACES. CONTRACTOR SHALL OBTAIN AND VERIFY ALSO COORDINATE ELECTRICAL RELATED UTILITIES WITH THE CIVIL, MECHANICAL, AND SITE EXCAVATION CONTRACTORS.
- PULLBOXES, CABINETS, ETC. MOUNTED ON THE EXTERIOR OF THE BUILDING SHALL BE WEATHERPROOF TYPE WITH HINGED GASKETED LOCKABLE COVERS SECURED WITH TAMPERPROOF SCREWS.
- KIT OR APPROVED EQUAL, SEAL ENDS OF CONDUITS AND DUCTS ENTERING BOXES WITH "DUCTSEAL" OR
- ELECTRICAL CONTRACTOR SHALL TEST AND VERIFY ALL SYSTEMS WITH PROJECT ENGINEER DURING FINAL INSPECTION TO INSURE PROPER OPERATION. IF TESTS RESULT IN DEFECT THE CONTRACTOR SHALL MAKE ANY CORRECTIONS NECESSARY AT NO ADDITIONAL COSTS TO THE OWNER.
- PROVIDE RECORD DRAWINGS IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
- 29. THE CONTRACTOR SHALL GUARANTEE THE INSTALLATION AGAINST DEFECTS IN MATERIALS AND COMPLETION. DEFECTS SHALL BE PROMPTLY CORRECTED.

### DRAWING INDEX

- MEZZANINE POWER PLAN
- MAIN LEVEL LIGHTING PLAN MEZZANINE LIGHTING PLAN

- THE ELECTRICAL CONTRACTOR SHALL REVIEW AND COORDINATE WITH ARCHITECTURAL, CIVIL, STRUCTURAL,
- SUBMIT SHOP DRAWINGS IN ACCORDANCE WITH THE SPECIFICATIONS IN A NEAT AND ORDERLY MANNER WITH TYPE AND MODEL OCCUPANCY SENSORS, CONTACTORS, TIME CLOCKS, PHOTOCELLS, RELAYS, SWITCHBOARDS, PANELBOARDS, MOTOR CONTROL CENTERS, SAFETY SWITCHES, MOTOR STARTERS, OVERCURRENT PROTECTION DEVICES, TRANSFORMERS, CONDUCTORS OVER 6

- TELEPHONE, FIBER OPTIC & INTERNET SHALL BE THE RESPONSIBILITY OF THE OWNER.
- COSTS ARE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.

- TO ROUGH IN OF ELECTRICAL DEVICE JUNCTION BOXES.
- DUCT, PIPING AND CEILING INSTALLATIONS.
- VERIFY EXACT LOCATION OF EQUIPMENT TO BE FURNISHED BY OTHERS PRIOR TO ROUGH-IN.
- ELECTRICAL CONTRACTOR SHALL VERIFY ALL EQUIPMENT DIMENSIONS AND LOCATIONS BEFORE BEGINNING
- CLEARANCES OF ALL EQUIPMENT AND ELECTRICAL GEAR PROVIDED. COORDINATE LAYOUT WITH ONE-LINE

- SATISFACTION OF THE ARCHITECT AND ENGINEER.
- WORK, MATERIALS AND EQUIPMENT SHALL CONFORM TO THE LATEST EDITIONS OF LOCAL, STATE AND
- ALL EMPTY RACEWAY SYSTEMS SHALL HAVE A 200LB RATED PULL CORD INSTALLED AND SHALL BE IDENTIFIED AT EACH JUNCTION, PULL AND TERMINATION POINT, USING PERMANENT MARKER IN THE BOX. ID SHALL INDICATE INTENDED USE OF CONDUIT, ORIGINATION AND TERMINATION POINTS OF EACH INDIVIDUAL
- GROUTED CELLS OF MASONRY WALLS ADJACENT TO OPENINGS WITHOUT COORDINATION WITH THE MASONRY
- FLUORESCENT BALLAST SHALL BE COPPER, MINIMUM 90° C RATED. CONDUCTOR SIZES INDICATED ARE FOR
- ELECTRICAL CONTRACTOR SHALL PROVIDE ALL UTILITY METERING EQUIPMENT TO COMPLY WITH THE
- 24. VERIFY EXACT LOCATIONS OF ALL NEW AND EXISTING UNDERGROUND SITE UTILITIES, PIPING AND RACEWAY EXCAVATION, SUPPORTS, SERVICE FEEDERS, (CONDUIT AND/OR WIRE), PULL BOXES, TRANSFORMER PADS, SAW UTILITY COMPANY DRAWINGS AND REQUIREMENTS FOR ALL SITE UTILITIES. ELECTRICAL CONTRACTOR SHALL
- SPLICES IN EXTERIOR PULLBOXES AND MANHOLES SHALL BE MADE WATERPROOF USING "SCOTCAST" SPLICE

- WORKMANSHIP, WHICH MAY OCCUR UNDER NORMAL USAGE FOR A PERIOD OF ONE YEAR AFTER SUBSTANTIAL

- ELECTRICAL NOTES & SYMBOLS MAIN LEVEL POWER PLAN
- ELECTRICAL SCHEDULES ELECTRICAL DETAILS

### **ELECTRICAL SPECIFICATIONS**

### SECTION 16000 - GENERAL PROVISIONS

WORK CONSISTS OF FURNISHING LABOR, MATERIALS, EQUIPMENT AND SERVICES REQUIRED FOR THE COMPLETE INSTALLATION OF ELECTRICAL

WORK SHOWN IN THE CONTRACT DOCUMENTS AND SPECIFIED IN DIVISION 16.

- INCLUDE ALL PARTS AND LABOR, WHICH ARE INCIDENTAL AND NECESSARY FOR A COMPLETE AND OPERABLE INSTALLATION EVEN THOUGH NOT SPECIFICALLY MENTIONED IN THE CONTRACT DOCUMENTS, SUCH ITEMS INCLUDE NUTS, BOLTS, ANCHORS, BRACKETS, SLEEVES, OFFSETS IN CONDUIT, FITTINGS, RELAYS, ETC.
- REQUEST INSPECTIONS AS REQUIRED BY REGULATING AGENCIES AND/OR REGULATIONS. PAY ALL CHARGES FOR INSPECTIONS BY REGULATING AGENCIES OF INSTALLATIONS OF PLANS AND SPECIFICATIONS.
- INCLUDE STATE AND LOCAL SALES TAXES IN THE BID. KEEP ACCURATE RECORDS OF THESE TAXES AND FURNISH SUCH RECORDS TO THE OWNER
- MEET OR EXCEED ALL CURRENT APPLICABLE CODES, ORDINANCES AND REGULATIONS FOR ALL INSTALLATIONS. PROMPTLY NOTIFY THE ENGINEER IN WRITING, IF THE CONTRACT DOCUMENTS APPEAR TO CONFLICT WITH GOVERNING CODES AND REGULATIONS, CONTRACTOR ASSUMES ALL RESPONSIBILITY AND COSTS FOR CORRECTING NON-COMPLYING WORK NSTALLED WITHOUT NOTIFYING THE ENGINEER
- HIGHER QUALITY OF WORKMANSHIP AND MATERIALS INDICATED IN THE CONTRACT DOCUMENTS TAKES PRECEDENCE OVER THAT ALLOWED IN REFERENCED CODES AND STANDARDS.
- THE TERMS DEFINED BELOW APPLY TO ALL WORK INCLUDED IN DIVISION 16. a. THE WORK - AS DEFINED IN THE 1997 AIA DOCUMENT A201: "THF TFRM "WORK" MEANS THE CONSTRUCTION AND SERVICES REQUIRED BY THE CONTRACT DOCUMENTS WHETHER COMPLETED OR PARTIALLY COMPLETED, AND INCLUDES ALL OTHER LABOR, MATERIALS, EQUIPMENT AND SERVICES PROVIDED OR TO BE PROVIDED BY THE CONTRACTOR TO FULFILL THE CONTRACTORS OBLIGATIONS. THE WORK
- MAY CONSTITUTE THE WHOLE OR A PART OF THE PROJECT". b. FURNISH - TO OBTAIN IN NEW CONDITION READY FOR INSTALLATION
- c. INSTALL TO STORE, SET IN PLACE, CONNECT AND PLACE INTO
- OPERATION INTO THE WORK. d. PROVIDE - TO FURNISH AND INSTALL.

INTO THE WORK.

SPACES OR BURIED.

- e. CONNECT TO BRING SERVICE TO THE EQUIPMENT AND MAKE FINAL ATTACHMENT INCLUDING NECESSARY SWITCHES, OUTLETS, BOXES,
- CONDUIT INCLUDES IN ADDITION TO CONDUIT, ALL FITTINGS, PULL
- BOXES, HANGERS AND OTHER SUPPORTS AND ACCESSORIES RELATED g. CONCEALED - HIDDEN FROM SIGHT IN CHASES, FURRED SPACES,

SHAFTS, HUNG CEILINGS, EMBEDDED IN CONSTRUCTION, IN CRAWL

- h. EXPOSED NOT INSTALLED UNDERGROUND NOR CONCEALED AS DEFINED ABOVE.
- THE DRAWINGS AND SPECIFICATIONS CONSTITUTE THE CONTRACT DOCUMENTS, ANY ITEM NOTED IN THE SPECIFICATION OR SHOWN ON THE DRAWINGS IS INCLUDED IN THE CONTRACT DOCUMENTS.
- ALL ELECTRICAL DETAILS AND DRAWINGS ARE DIAGRAMMATIC, UNLESS SPECIFICALLY NOTED. FIELD VERIFY ALL DIMENSIONS AND NOTIFY THE ENGINEER OF ANY CONFLICTS OR DISCREPANCIES, IN WRITING, PRIOR TO
- INITIATE, MAINTAIN AND SUPERVISE ALL SAFETY PRECAUTIONS REQUIRED WITH THIS WORK IN ACCORDANCE WITH THE REGULATIONS OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND OTHER GOVERNING AGENCIES.
- DO NOT REMOVE OR DISTURB ANY ASBESTOS CONTAINING MATERIALS FROM THE PROJECT. IMMEDIATELY STOP WORK AND NOTIFY THE TENANT IF ASBESTOS CONTAINING MATERIALS ARE SUSPECTED.
- BEFORE SUBMITTING A PROPOSAL ON THE WORK CONTEMPLATED, EXAMINE THE SITE OF THE PROPOSED WORK AND BECOME THOROUGHLY FAMILIAR WITH EXISTING CONDITIONS AND LIMITATIONS. NO EXTRA COMPENSATION WILL BE ALLOWED BECAUSE OF MISUNDERSTANDING AS TO THE AMOUNT OF WORK INVOLVED NOR BIDDERS LACK OF KNOWLEDGE OF EXISTING CONDITIONS WHICH COULD HAVE BEEN DISCOVERED OR REASONABLY ANTICIPATED PRIOR TO BIDDING.
- CONDUITS, PIPES, DUCTS, LIGHTS, DEVICES, SPEAKERS, ETC., SHOWN ON THE DRAWINGS AS EXISTING HAVE BEEN BASED ON THE EXISTING PLANS AND MAY NOT BE INSTALLED AS ORIGINALLY SHOWN. IT IS THE CONTRACTORS RESPONSIBILITY TO VISIT THE SITE AND MAKE EXACT DETERMINATION OF THE EXISTENCE, LOCATION AND CONDITION OF SUCH FACILITIES PRIOR TO
- CONSULT THE DRAWINGS AND SPECIFICATIONS OF MECHANICAL AND OTHER TRADES FOR CORRELATING INFORMATION AND LAY OUT WORK SO THAT IT WILL COORDINATE WITH OTHER TRADES. VERIFY DIMENSIONS AND CONDITIONS (I.E., FINISHED CEILING HEIGHTS, FOOTING AND FOUNDATION ELEVATIONS, BEAM DEPTHS, ETC). WITH THE ARCHITECTURAL AND STRUCTURAL DRAWINGS. NOTIFY THE ARCHITECT/ENGINEER OF ANY CONFLICTS THAT CANNOT BE RESOLVED, IN THE FIELD, BY AFFECTED FRADES. REPLACEMENT OF WORK DUE TO LACK OF COORDINATION AND FAILURE TO VERIFY EXISTING CONDITIONS WILL BE COMPLETED AT NO
- INSTALL ALL CONDUIT, CABLE TRAY, BUSDUCT, EQUIPMENT, ETC. ALLOWING PROPER CODE AND MAINTENANCE CLEARANCES AND TO AVOID BLOCKING PASSAGEWAYS AND ACCESS PANELS.

COST TO THE OWNER.

DRAWINGS AND SPECIFICATIONS.

- WHERE WORK MUST BE REPLACED DUE TO FAILURE OF THE CONTRACTOR TO VERIFY THE CONDITIONS EXISTING ON THE JOB. SUCH REPLACEMENT MUST BE ACCOMPLISHED AT NO COST TO THE OWNER. THIS APPLIES TO
- SHOP FABRICATED WORK AS WELL AS TO WORK FABRICATED IN PLACE. THROUGHOUT THE COURSE OF THE WORK, MINOR CHANGES AND ADJUSTMENTS TO THE INSTALLATION MAY BE REQUESTED BY THE ENGINEER. THE CONTRACTOR SHALL MAKE ADJUSTMENTS WITHOUT ADDITIONAL COST O THE OWNER. WHERE SUCH ADJUSTMENTS ARE NECESSARY TO THE PROPER INSTALLATION AND OPERATION WITHIN THE INTENT OF THE CONTRACT DOCUMENTS. THIS DOES NOT INCLUDE WORK ALREADY
- OBTAIN EXACT LOCATION OF CONNECTION TO EQUIPMENT, FURNISHED BY OTHERS, FROM THE PERSON FURNISHING THE EQUIPMENT, DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY AND WHAT IS CALLED FOR IN
- EITHER ONE IS AS BINDING AS IF CALLED FOR IN BOTH. INCLUDE THE BETTER QUALITY, GREATER QUANTITY OR HIGHER COST FOR AN ITEM OR ARRANGEMENT WHERE A DISAGREEMENT EXISTS IN THE
- GUARANTEE AND MAINTAIN THE STABILITY OF WORK AND MATERIALS AND KEEP SAME IN PERFECT REPAIR AND CONDITION FOR THE PERIOD OF ONE (1) YEAR AFTER THE FINAL COMPLETION OF THE WORK AS EVIDENCED BY ISSUANCE OF THE FINAL CERTIFICATE BY THE OWNER.
- DEFECTS OF ANY KIND DUE TO FAULTY WORK OR MATERIALS APPEARING DURING THE ABOVE MENTIONED PERIOD MUST BE IMMEDIATELY MADE GOOD BY THE CONTRACTOR AT HIS OWN EXPENSE TO THE ENTIRE SATISFACTION OF THE OWNER. INCLUDE DAMAGE TO THE FINISH OR THE
- BUILDING RESULTING FROM THE ORIGINAL DEFECT OR REPAIRS. REPLACE ALL RECEPTACLES, SWITCHES, COVERPLATES, ETC. DAMAGED BY ANY CONTRACTOR DURING THE COURSE OF CONSTRUCTION.
- MATERIALS FURNISHED FOR THE TEMPORARY LIGHT AND POWER SYSTEM REMAIN CONTRACTORS PROPERTY. REMOVE WHEN THERE IS NO LONGER ANY NEED FOR TEMPORARY LIGHT AND POWER
- COORDINATE/SCHEDULE ALL WORK WITH THE OWNER TO MINIMIZE ANY DISRUPTIONS. CONFINE ALL INTERRUPTIONS TO THE SMALLEST POSSIBLE AREA. PROVIDE TEMPORARY CONNECTIONS IF REQUIRED TO PROVIDE CONTINUITY OF SERVICE.

INSPECT ALL AREAS AFFECTED BY THE INTERRUPTIONS AND RETURN ALL AUTOMATICALLY CONTROLLED EQUIPMENT, ELECTRICALLY OPERATED

> DO NOT DISTURB NORMAL USE OF THE FACILITY, EXCEPT WITHIN THE IMMEDIATE CONSTRUCTION AREA, KEEP WALKS, DRIVEWAYS, ENTRANCES,

MINIMIZES CONGESTION AND IS APPROVED BY THE OWNER.

ETC. FREE AND CLEAR OF EQUIPMENT, MATERIAL AND DEBRIS. STORE ALL EQUIPMENT AND MATERIAL IN A PLACE AND MANNER THAT

EQUIPMENT TO THE SAME OPERATING CONDITION PRIOR TO THE

PROVIDE NEW MATERIAL AND EQUIPMENT, UNLESS NOTED OTHERWISE. PROTECT EQUIPMENT AND MATERIAL FROM DAMAGE, DIRT AND THE

PROVIDE THE HIGHEST QUALITY WORKMANSHIP AND PERFORM ALL WORK ONLY BY SKILLED MECHANICS. INSTALL MATERIAL AND EQUIPMENT IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS, INSTRUCTIONS AND CURRENT NECA STANDARDS.

THE OWNER RESERVES THE RIGHT TO REJECT MATERIAL OR WORKMANSHIP NOT IN ACCORDANCE WITH THE SPECIFICATIONS, BEFORE OR AFTER

PERFORM ALL CUTTING AND PATCHING NECESSARY TO WORK, UNLESS SPECIFICALLY DELEGATED TO THE GENERAL CONTRACTOR. OBTAIN SPECIAL PERMISSION FROM THE LANDLORD BEFORE CUTTING STRUCTURAL MEMBERS OR FINISHED MATERIAL, PERFORM ALL PATCHING IN SUCH A MANNER AS TO LEAVE NO VISIBLE TRACE AND RETURN THE AREA AFFECTED TO THE CONDITION OF UNDISTURBED WORK, PERFORM ALI PATCHING BY WORKERS EXPERIENCED, SKILLED, AND LICENSED FOR THE PARTICULAR TYPE OF WORK INVOLVED. INFERIOR WORK WILL NOT BE

PATCH ALL HOLES LEFT AS A RESULT OF DEMOLITION OF ELECTRICAL EQUIPMENT AND DEVICES.

PREVENT THE SPREAD OF DUST, DEBRIS, AND OTHER MATERIAL INTO ADJACENT AREAS.

REFINISH ALL ELECTRICAL EQUIPMENT DAMAGED DURING SHIPPING AND/OR INSTALLATION TO ITS ORIGINAL CONDITION, REMOVE ALL RUST; PRIME, AND PAINT PER MANUFACTURERS RECOMMENDATIONS FOR FINISH EQUAL TO

AFTER TESTS HAVE BEEN MADE AND ACCEPTED, CLEAN LIGHT FIXTURES, PANELS AND OTHER EQUIPMENT INSTALLED BY THE CONTRACTOR, LEAVING THE ENTIRE WORK AREA IN A CLEAN AND COMPLETE WORKING ORDER.

OPERATE EQUIPMENT AND SYSTEMS IN ALL THEIR OPERATING MODES. TO VERIFY PROPER OPERATION, PRIOR TO FINAL INSPECTION AND OWNER INSTRUCTIONS, NOTIFY THE ENGINEER, IN WRITING, THAT ALL SYSTEMS HAVE BEEN TESTED AND ARE FUNCTIONING AND OPERATING PROPERLY.

CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO ELECTRICAL EQUIPMENT OR MATERIALS UNTIL FINAL ACCEPTANCE OF THE ENTIRE PROJECT BY THE OWNER.

PROVIDE TEMPORARY WIRING AND CONNECTIONS TO MAINTAIN EXISTING SYSTEMS, INCLUDING TELEPHONE AND DATA SYSTEMS, IN SERVICE DURING CONSTRUCTION. WHEN WORK MUST BE PERFORMED ON ENERGIZED EQUIPMENT OR CIRCUITS, USE PERSONNEL EXPERIENCED IN SUCH

EXISTING ELECTRICAL SERVICE: MAINTAIN EXISTING SYSTEM IN SERVICE DISABLE SYSTEM ONLY TO MAKE SWITCHOVERS AND CONNECTIONS. NOTIFY AND OBTAIN PERMISSION FROM OWNER/ENGINEER AT LEAST 24 HOURS BEFORE PARTIALLY OR DISABLING SYSTEM. MINIMIZE OUTAGE DURATION. MAKE TEMPORARY CONNECTIONS TO MAINTAIN SERVICE IN AREAS ADJACENT TO WORK AREA.

EXISTING TELEPHONE, DATA, CCTV & SECURITY SYSTEM MAINTAIN EXISTING

DEMOLISH AND EXTEND EXISTING ELECTRICAL WORK UNDER AND THIS SECTION, AND AS INDICATED ON THE DRAWINGS. REMOVE, RELOCATE, AND EXTEND EXISTING INSTALLATIONS TO ACCOMMODATE NEW CONSTRUCTION. PROVIDE SUPPORTS FOR ALL EXISTING ELECTRICAL EQUIPMENT THAT WAS SUPPORTED PREVIOUSLY BY DEMOLISHED WALLS, FLOORS, CEILING OR

OTHER STRUCTURES. PROVIDE NEW SUPPORTS FROM STRUCTURAL MEMBERS NOT SLATED FOR DEMOLITION, PRIOR TO ANY DEMOLITION OWNER RESERVES THE RIGHT OF FIRST REFUSAL TO OBTAIN MATERIAL SHOWN TO BE REMOVED UNDER THIS CONTRACT. ITEMS NOT RETAINED BY THE OWNER BECOME THE PROPERTY OF THE CONTRACTOR AND MUST BE

EXTEND EXISTING INSTALLATIONS USING MATERIALS AND METHODS COMPATIBLE WITH EXISTING ELECTRICAL INSTALLATIONS, OR AS SPECIFIED. RELOCATE AND REROUTE CONDUIT AND WIRING AS REQUIRED FOR CONDUIT CONCEALED IN WALLS OR STRUCTURE BEING ALTERED AS PART OF THE

REMODELING. MAINTAIN CONTINUITY TO ALL DEVICES IN AND DOWNSTREAM OF REMODELED WORK. REROUTE EXISTING RACEWAY AND WIRING, WHICH IS EXPOSED DUE TO REMOVAL OF EXISTING CONSTRUCTION. CONCEAL NEW RACEWAY AND

REMOVED FROM THE PREMISES.

WIRING AND MAINTAIN OPERATION.

SECTION 16050 - BASIC MATERIALS AND METHODS

ENCASE ALL CONDUCTORS IN A CONTINUOUS RACEWAY SYSTEM. PROVIDE PULL AND JUNCTION BOXES AS REQUIRED BY THE NEC. SIZE ALL RACEWAY PER THE NEC WITH OVERSIZED CONDUITS AS INDICATED.

PROVIDE JUNCTION BOXES OR GUTTER AT BRANCH PANEL AND ROUTE EMT CONDUIT INTO PANELBOARD. PROVIDE EXPANSION FITTINGS WHERE RACEWAY CROSSES BUILDING

RUN ALL EXPOSED CONDUIT IN A NEAT, WORKMANLIKE MANNER PARALLEL TO THE BUILDING LINES, TIGHT TO THE WALL AND CEILING SURFACES, AND FIRMLY SUPPORT WITH CONDUIT CLAMPS OR HANGERS. PROVIDE TWO (2) HOLE MOUNTING STRAPS, MINIMUM THREE (3) FEET ON CENTER, FOR ALL SURFACE CONDUIT MOUNTED ON WALLS LESS THAN SIX (6) FEET ABOVE FINISHED FLOOR, PLACE CONDUITS AT LEAST 8" AWAY FROM ALL HOT

PROVIDE GALVANIZED CODE GAUGE STEEL JUNCTION AND PULL BOXES WITH SCREW ON COVERS OF TYPE, SHAPE AND SIZE REQUIRED TO SUIT EACH INSTALLATION. PROVIDE GASKETING IN DAMP AND DUSTY

PIPING AND SURFACES INCLUDING DOMESTIC HOT WATER LINES.

PROVIDE 4" BOXES THROUGHOUT. PROVIDE 3-1/2" DEEP BOXES WHERE INSTALLED IN MASONRY, 2-1/2" MINIMUM ELSEWHERE. VAPOR TIGHT GANG MUD OR TILE RING FOR SINGLE DEVICES.

BEFORE INSTALLATION. PROVIDE WIRE AND CABLE WITH INSULATION VOLTAGE RATING EQUAL TO OR GREATER THAN THE APPLIED SYSTEM VOLTAGE, PROVIDE SOLID OR STRANDED COPPER CONDUCTORS WITH TYPE THWN. THHN. OR XHHW INSULATION FOR NO. 12 AWG AND NO. 10 AWG CONDUCTORS, PROVIDE MINIMUM NO. 12 AWG CONDUCTOR SIZE, UNLESS NOTED OTHERWISE, USE THE

COORDINATE THE LOCATION OF ALL OUTLETS WITH MECHANICAL DRAWINGS

MINIMUM CONDUCTOR SIZE WHEN NO SIZE IS INDICATED. ALL CONDUCTORS TO BE COLOR-CODED. SECTION 16501 - BUILDING LIGHTING

PROVIDE LIGHTING FIXTURES AS SCHEDULED C/W HOUSING LAMPS, LAMP HOLDERS, REFLECTORS, BALLASTS & WIRING. FLUORESCENT LAMP BALLAST FOR T8 & T5 LAMPS SHALL BE ELECTRONIC CBM CERTIFIED W/ THD LESS THAN 20% RAPID START.

SUPPORT ALL RECESSED LIGHTING FIXTURES W/ 4 # 12GA, WIRES INDEPENDENT FROM CEILING SUPPORT SYSTEM.







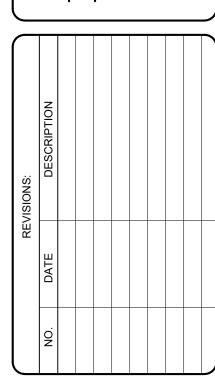


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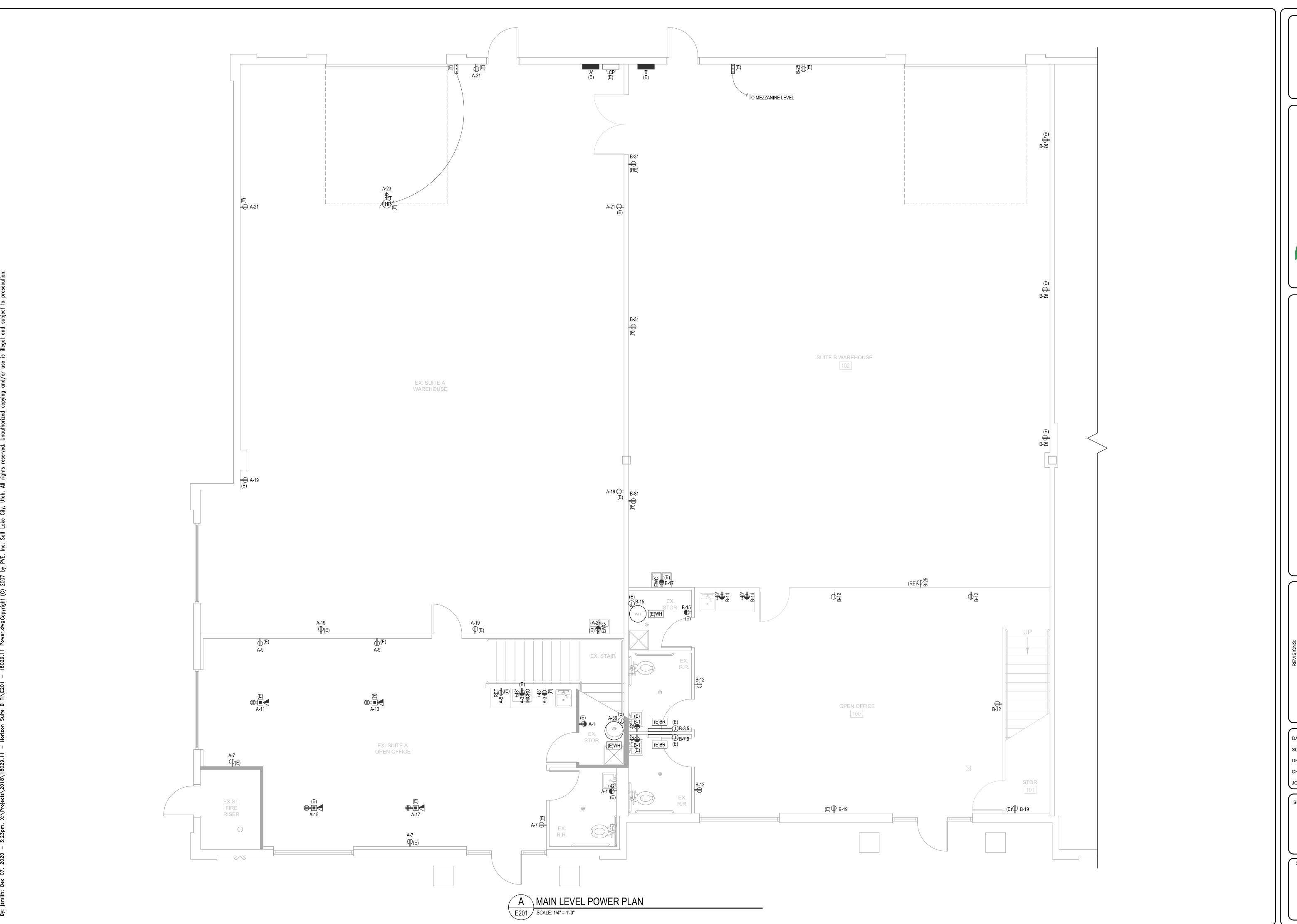
11/30/20 SEE DWG. SCALE..

DRAWN..... CHECKED.... JOB NO......18029.11

SHEET TITLE **ELECTRICAL** NOTES &

**SYMBOLS** 

SHEET NO.









HORIZON MASONRY —SUITE 850 WEST 350 NORTH KAYSVILLE, UT 84037

NO. DATE DESCRIPTION

SHEET TITLE

MAIN LEVEL POWER PLAN

SHEET NO.

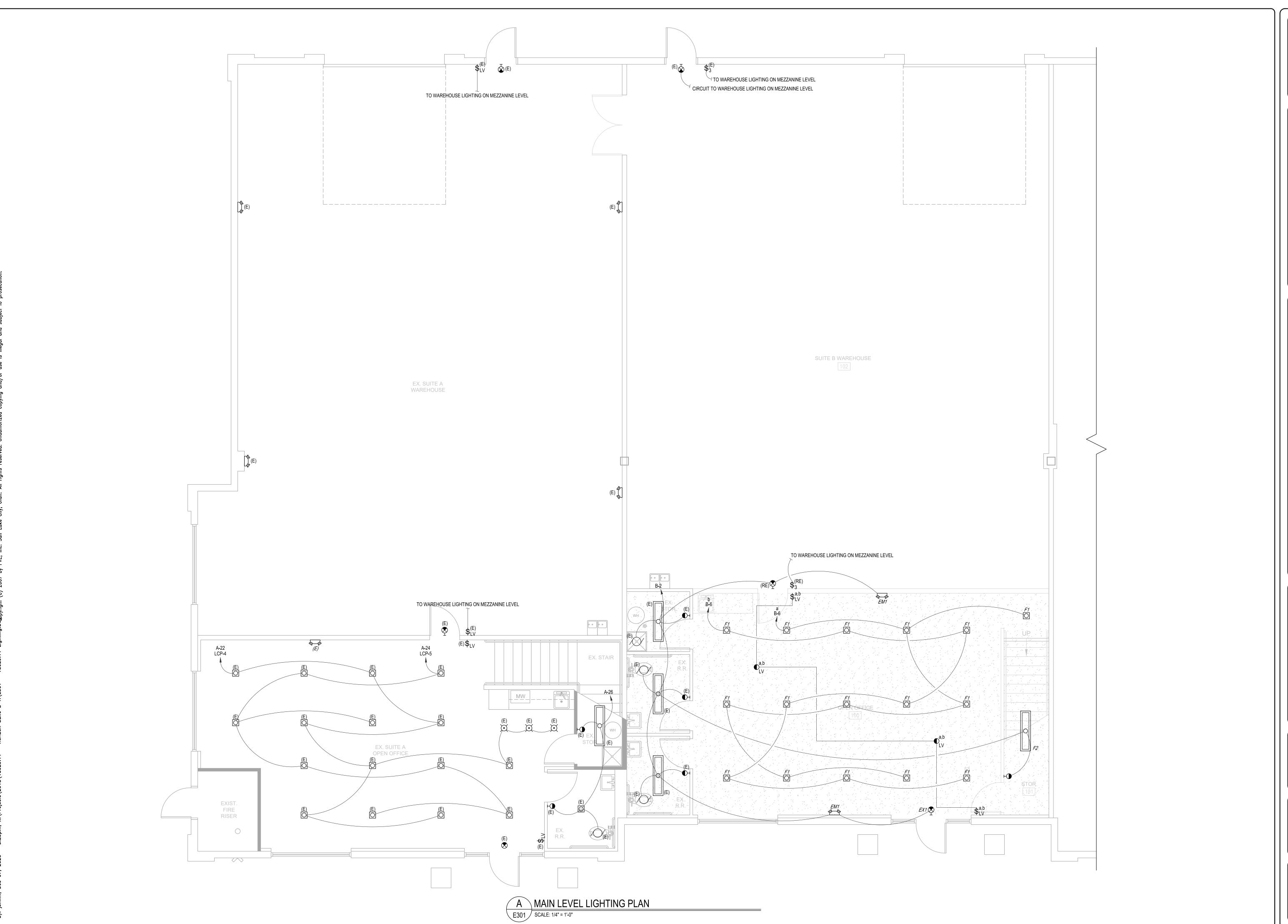








MEZZANINE POWER PLAN









Y -SUITE B
NORTH
84037

HORIZON MASONRY – 850 WEST 350 NOR KAYSVILLE, UT 840

NO. DATE DESCRIPTION

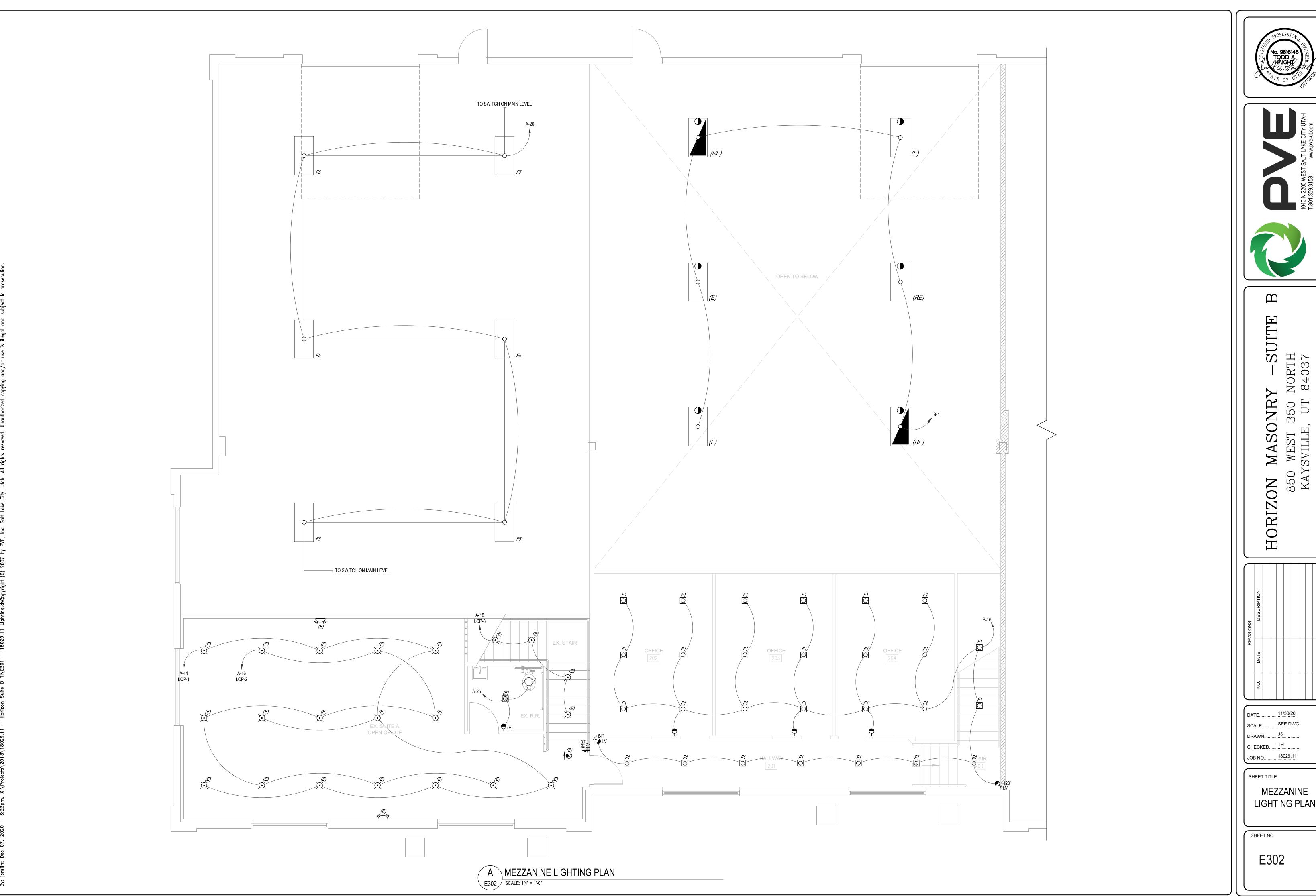
NO. DATE DESCRIPTION

11/30/20 CALE SEE DWG.

SHEET TITLE

MAIN LEVEL LIGHTING PLAN

SHEET NO.









MEZZANINE

LIGHTING PLAN

0 UNITS @ 100% (PER NEC TABLE 220.56)

TOTAL LOAD (VA) TOTAL LOAD (AMPS):

								S	SCHEDU	JLE: P/	YNEL 'A	۲'								
OLTAG MOUNTI ENCLOS OCATION	TING: SURE: ION:	208 / SURFACE NEMA 1 WAREHOU		PHASE: 3 WIRE: 4 POLE SPACES: 42		MAIN OVI	/ERCURF	RRENT DEVICI RRENT AMPS: PMENT RATIN	<b>3</b> :		225 LUGS N/A 10,000	AMPS				USE: E = Equipment Load				
_1V1/ 31 31		REAKER		T	T FEF	EDER	Cr	KT. LOAD	T L	OAD/PHASE (\	√A)	CKT. LC	OAD	FEF	EDER	<u> </u>		BREA		_
No.	AMPS		TYPE	CIRCUIT NAME	WIRE	GRD	USE		ØA	ØB	øc	WATTS	USE	GRD	WIRE	CIRCUIT NAME	TYPE	POLE		No
1	20	1		RR A101, A201, STOR A103 RECPT	#12	#12	R	540	1,080			540	R	#12	#12	OPEN OFFICE A200 RECPT		1	20	
3	20	1	1	BREAK COUNTER RECPT	#12	#12	E	1,380		1,740		360	R	#12	#12	OPEN OFFICE A200 RECPT		1	20	$\top$
5	20	1	GFCI	BREAK COUNTER FRIDGE	#12	#12	R	1,400			2,400	1,000	R	#12	#12	OPEN OFFICE A200 FLOOR BOX		1	20	$\top$
7	20	1	1	OPEN OFFICE A100 RECPT	#12	#12	R	540	1,540			1,000	R	#12	#12	OPEN OFFICE A200 FLOOR BOX		1	20	
9	20	1	1	OPEN OFFICE A100 RECPT	#12	#12	R	360		1,360		1,000	R	#12	#12	OPEN OFFICE A200 FLOOR BOX		1	20	$\top$
11	20	1	1	OPEN OFFICE A100 POKE THRU	#12	#12	R	1,000			2,000	1,000	R	#12	#12	OPEN OFFICE A200 FLOOR BOX		1	20	
3	20	1	1	OPEN OFFICE A100 POKE THRU	#12	#12	R	1,000	1,600			600		#12	#12	OPEN OFFICE A200 LIGHTING		1_1_	20	
5	20	1	1	OPEN OFFICE A100 POKE THRU	#12	#12	R	1,000		1,480		480		#12	#12	OPEN OFFICE A200 LIGHTING		1	20	T
7	20	1	1	OPEN OFFICE A100 POKE THRU	#12	#12	R	1,000			1,240	240	L	#12	#12	STAIR A102 LIGHTING		1	20	
9	20	1	1	WAREHOUSE A104 RECPT	#12	#12	R	720	1,320			600	L	#12	#12	WAREHOUSE A104 LIGHTING		1	20	
21	20	1	1	WAREHOUSE A104 RECPT	#12	#12	R	540		856		316	L	#12	#12	OPEN OFFICE A100 LIGHTING		1	20	
23	30	1	1	WAREHOUSE A104 DOOR	#10	#10	М	1,920			2,056	136		#12	#12	OPEN OFFICE A100 LIGHTING		11	20	
25	20	1	1	LIGHTING CONTROL PANEL 'LCP'	#12	#12	Е	200	602			402		#12	#12	RR A101, A201, STOR A103 LIGHTING		11	20	
27	20	1	1	WAREHOUSE A104 WATER COOLER	#12	#12	Е	600		600						SPARE		11	20	
29	20	1		SPARE							A					SPARE		1	20	
31	20	1		SPARE												SPARE		1	20	$\prod$
33	20	1		SPARE						180		180	R	#12	#12	RTU MAINTENANCE RECPT		1	20	$\prod$
35	20	1	1	SPARE							180	180	E	#12	#12	WH-1		1	20	$\perp$
37	20	1 1		SPARE					4,212			4,212	E	#10	#6	RTU-1	'	3	45	┙
39	20	1 1		SPARE						4,212		4,212	E		#6		'			$\perp$
41	20	1	1	SPARE							4,212	4,212	E		#6		<u> </u>			$\perp$
	NG LOAD (\ NG CONTIN	` '	ND PER NEC 2	. 210 20 (VA)					ØA 1,602	ØB 796	ØC 376	DEMAND 2,774 694	1. AL IN 2. PA	NSULATION ( PANEL COVE	TION ON CONDI I ON ALL UNDEF ER SHALL BE FI	DUCTORS TO BE THHN UNLESS NOTED OTHERWISE. ERGROUND CONDUCTORS SHALL BE THHW. FIELD MARKED FOR FLASH PROTECTION WITH A				
			EC 220.14 (V <i>)</i>	, ,					4,340	3,440	5,400	11,590				EQUIRED BY THE NATIONAL ELECTRICAL CODE ARTICLE : OLLOWS: "DANGER: POTENTIAL ARC FLASH HAZARD"	110.			
			J 220.14 (V/	^)									4							
	MENT LOAD	` '							4,412	6,192	6,312	16,916	4							
5% LA <sup>r</sup>	RGEST MC	IOTOR (VA)										480								
TCHE	N EQUIPM	MENT LOAD	ر(VA) ر						0	0	0	0								

VOLTAGE: 208 / 120 PHASE: 3  MOUNTING: SURFACE WIRE: 4  ENCLOSURE: NEMA 1 POLE SPACES: 42  LOCATION: SUITE B WAREHOUSE 102  REMARKS:  BREAKER						MAIN OV MINIMUN	ERCUR ERCUR EQUIP	RENT DEVIC RENT AMPS: MENT RATIN CIRCUIT CUR	G (AIC):	225 LUGS N/A 10,000 AMPS AMPS (SYS-RMS)						USE: E = Equipment Load				
	BR	EAKER			FEE	DER	Cł	KT. LOAD	LO	DAD/PHASE (	VA)	CKT. LO	AD	FEE	DER			BREA	KER	
No.	AMPS	POLE	TYPE	CIRCUIT NAME	WIRE	GRD	USE	WATTS	ØA	ØB	ØС	WATTS	USE	GRD	WIRE	CIRCUIT NAME	TYPE	POLE	AMPS	N
1	20	1		RR B101, B102 RECPT	#12	#12	R	360	789			429	L	#12	#12	STE B STOR., R.R. LIGHTING		1	20	
3	20	2		BR-2	#12	#12	E	250		1,260		1,010	L	#12	#12	WAREHOUSE B102 LIGHTING		1	20	,
5					#12		E	250			539	289	L	#12	#12	OPEN OFFICE B100 LIGHTING		1	20	
7	20	2		BR-3	#12	#12	E	250	1,690			1,440	R	#12	#12	OFFICES B202, B203		1	20	
9					#12		E	250		1,330		1,080	R	#12	#12	OFFICE B204, HALLWAY B201		1	20	1
11	20	1		SPARE							900	900	R	#12	#12	OPEN OFFICE B100 RECPT		1	20	1
13	20	1		SPARE					360			360	R	#12	#12	OPEN OFFICE B100 COUNTER		1	20	1
15	20	1		STOR B103 RECPT, WH-1	#12	#12	R	360		887		527	L	#12	#12	SUITE B MEZZANINE LIGHTING		1	20	•
17	20	1		SUITE B WATER COOLER	#12	#12	E	600			1,260	660	М	#12	#12	UH-4		1	15	1
19	20	1		OPEN GYM SPACE B104 RECPT	#12	#12	R	360	360							SPARE		1	20	2
21	20	1		SPARE												SPARE		1	20	2
23	20	1		SPARE												SPARE		1	20	
25	20	1		OPEN GYM SPACE B104 RECPT	#12	#12	R	720	720			*				SPARE		1	20	2
27	20	1		SPARE								**************************************				SPARE		1	20	2
29	20	1		SPARE												SPARE		1	20	3
31	20	1		OPEN GYM SPACE B104 RECPT	#12	#12	R	540	540							SPARE		1	20	3
33	20	1		SPARE												SPARE		1	20	3
35	20	1		SPARE							180	180	R	#12	#12	ROOFTOP CONV RECPT		1	20	3
37	20	1		SUITE B OVERHEAD DOOR	#12	#12	M	1,176	4,548			3,372	E	#10	#6	RTU-1		3	45	3
39	20	1		SPARE						3,372		3,372	E		#6					
41	20	1		SPARE							3,372	3,372	E		#6					4
									αΛ	МВ	T ac	DEMAND	T GENE	ERAL NOTES:						
IOLITIA	10 1 0 4 D //	/A)							ØA		ØC		1. A	LL INSULATION	ON ON COND	DUCTORS TO BE THHN UNLESS NOTED OTHERWISE.				
	NG LOAD (\	•							429	1,537	289	2,255				ERGROUND CONDUCTORS SHALL BE THHW. FIELD MARKED FOR FLASH PROTECTION WITH A				
			D PER NEC 2	,							T	564	Р	ERMANENT I	LABEL AS RE	EQUIRED BY THE NATIONAL ELECTRICAL CODE ARTICLE 1	110.			
RECEP	TACLE LOA	AD PER NE	C 220.14 (VA	<b>(</b> )					3,780	1,440	1,080	6,300	_ L	ABEL SHALL	READ AS F	OLLOWS: "DANGER: POTENTIAL ARC FLASH HAZARD"				
EQUIPN	MENT LOAD	O(VA)							4,798	3,872	4,882	13,552								
25% LA	RGEST MC	OTOR (VA)										294	1							
KITCHE	N EQUIPM	ENT LOAD	(VA)						0	0	0	0	1							
0	UNITS @	100% (PE	R NEC TABLE	≣ 220.56)									_							
TOTAL	LOAD (VA)								9,007	6,849	6,251	22,965	]							
TOTAL	LOAD (AMI	PS):							75	57	52	64	1							

SCHEDULE: PANEL 'B'

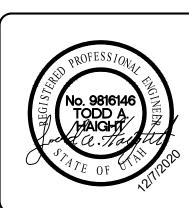
1 PANEL 'H' 19.8 2 SUITE 'A' 32.5 3 SUITE 'C' 49.0 4 SUITE 'G' 54.2 5 SUITE 'B' 23.0 6 SUITE 'F' 61.4	2     SUITE 'A'     32.5     90.1       3     SUITE 'C'     49.0     136.0       4     SUITE 'G'     54.2     150.4       5     SUITE 'B'     23.0     63.7       6     SUITE 'F'     61.4     170.8       7     SPACE	CKT NO	DESCRIPTION	DESIGN KVA	DESIG FLA
3 SUITE 'C' 49.0 4 SUITE 'G' 54.2 5 SUITE 'B' 23.0	SUITE 'C' 49.0 136.0 4 SUITE 'G' 54.2 150.4 5 SUITE 'B' 23.0 63.7 6 SUITE 'F' 61.4 170.0 7 SPACE	1	PANEL 'H'	19.8	95.0
4 SUITE 'G' 54.2 5 SUITE 'B' 23.0	SUITE 'G' 54.2 150.4  SUITE 'B' 23.0 63.7  SUITE 'F' 61.4 170.8  SPACE	2	SUITE 'A'	32.5	90.1
5 SUITE 'B' 23.0	5 SUITE 'B' 23.0 63.7 6 SUITE 'F' 61.4 170.8 7 SPACE	3	SUITE 'C'	49.0	136.0
2 23.7	6 SUITE 'F' 61.4 170.8 7 SPACE	4	SUITE 'G'	54.2	150.4
6 SUITE 'E' 61.4	7 SPACE	5	SUITE 'B'	23.0	63.7
0114		6	SUITE 'F'	61.4	170.5
7 SPACE	8 SPACE	7	SPACE		
8 SPACE		8	SPACE		
DESIGN KVA: 239.8		DESIGN	FLA: 665.6		

 10,354
 10,428
 12,088
 32,454

 86
 87
 101
 90

			LUMINAIF	RE SCHEDU	LE				
LUMINAIRE	LUMINAIRE	LUMINAIRE	DECODIDATION	LAMPS			LUMI	NAIRE	DEMARKS
NUMBER	MANUFACTURER	CATALOG #	DESCRIPTION	TYPE	ССТ	VOLTS	WATTS	MOUNTING	REMARKS
F1	GOTHAM LIGHTING	EVO-40/15-4AR-WD-LSS- MVOLT-EZ10	4" RECESSED DOWNLIGHT	1500 LUMEN LED 4000K	N/A	UNIV.	17	RECESSED HARD LID	
F2	LITHONIA LIGHTING	STL4 30L EZ1 LP840	1x4 SURFACE WRAP	3000 LUMEN LED	4000K	120	27	SURFACE	
EM1	LITHONIA LIGHTING	ELM2-LED	BUG-EYE EMERGENCY LIGHT WITH INTEGRAL BATTERY PACK	LED	N/A	UNIV.	1.5	WALL	
EX1	LITHONIA LIGHTING	LHQM-LED-G	THERMOPLASTIC SINGLE-FACE WHITE EXIT SIGN WITH BUG-EYE AND EMERGENCY BATTERY PACK	GREEN LED	N/A	UNIV.	2.5	UNIVERSAL	

			EQ	UIPM	ENT	SCH	EDUL	E					
			EL	ECTRICAL	L			REFERENC	CE NOTES		00	CPD	
UNIT#	EQUIPMENT DESCRIPTION	LOAD	LOAD UNITS	VOLTS	PHASE	FULL LOAD AMPS (FLA)	DISCONNECTING MEANS	DISCONNECT RATING (AMPS)	STARTER SIZE	ENCLOSURE TYPE	FUSE SIZE (AMPS)	BREAKER SIZE (AMPS)	REMARKS
RTU-1	ROOFTOP UNIT (5.0 TON)	35.1	MCA	208	3	28.1	1A	60	-	18	-	45	PROVIDED WITH RETURN AIR SMOKE DETECTO
4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17.	FUSED DISCONNECT SWITCH WITH SHUNT TRIP MANUAL STARTER WITH THERMAL OVERLOAD MANUAL STARTER MAGNETIC STARTER/NON-FUSED DISCONNECT COMBINAT MAGNETIC STARTER/FUSED DISCONNECT COMBINATION MAGNETIC STARTER/MOTOR CIRCUIT PROTECTOR COMBI VARIABLE SPEED DRIVE REDUCED VOLTAGE STARTER DIRECT CONNECTION RECEPTACLE/SPECIAL PURPOSE OUTLET ETC. TWO-SPEED STARTER, COORDINATE WITH MOTOR TYPE MAXIMUM CIRCUIT AMPS (MCA) FULL LOAD CURRENT PROVIDE WITH NEMA 1 ENCLOSURE PROVIDE WITH NEMA 3R ENCLOSURE					C.	FURNISH FINAL CO FURNISH	DINIECTION HED UNDER I DINIECTION HED, INSTALI R DIVISION.	ANOTHER BY THE EI LED AND F	DIVISION -ECTRICA	, INSTALLE L CONTRA	ED AND ACTOR.	
<ol> <li>2.</li> <li>3.</li> </ol>	GENERAL NOTES:  VERIFY ALL EQUIPMENT LOCATIONS AND CONNECTION RIDRAWINGS/SUBMITTALS PRIOR TO STARTING ROUGH IN.  ALL FUSES SHALL BE DUAL ELEMENT, TIME DELAY. FINAL MANUFACTURER'S RECOMMENDATION FOR ACTUAL EQUIPMENT ALL INSULATION ON CONDUCTORS TO BE THHN UNLESS NOT CONDUCTORS SHALL BE THHW.	. BREAKER/F PMENT INST	USE & DIS(	CONNECT	SIZE SH	HALL BE DE	TERMINED	) BY					



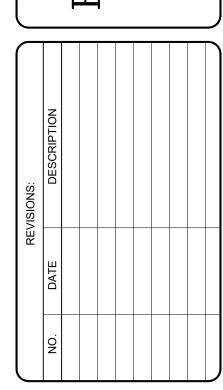




IE B

MASONRY -SUITE WEST 350 NORTH ZSVILLE, UT 84037

HORIZON MASON 850 WEST 35 KAYSVILLE, U



DRAWN.....JS

CHECKED....TH

JOB NO......18029.

SHEET TITLE

ELECTRICAL SCHEDULES

SHEET NO.







ITE B

RIZON MASONRY —SI 850 WEST 350 NORTH KAYSVILLE, UT 84037

NO. DATE DESCRIPTION

0

DRAWN....JS CHECKED...TH

CHECKED.....TH

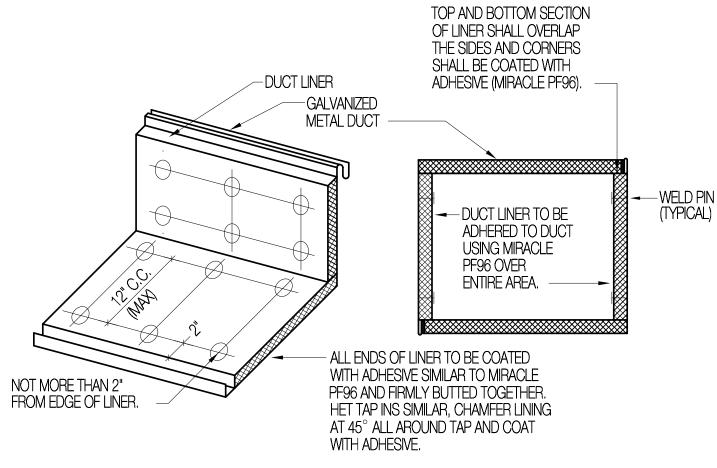
JOB NO......18029.11

SHEET TITLE

ELECTRICAL DETAILS

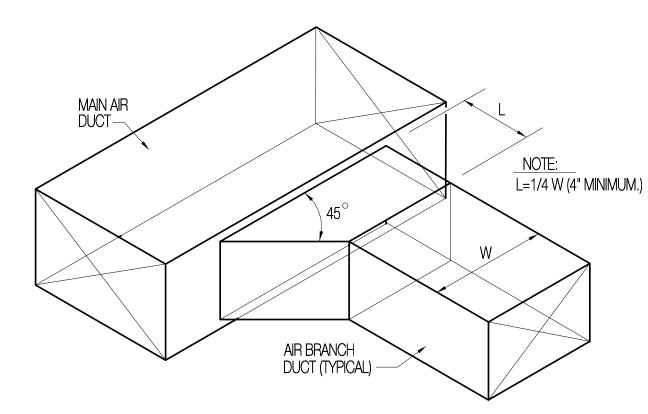
SHEET NO.

## RECTANGULAR DUCT FITTINGS M000 SCALE: NONE



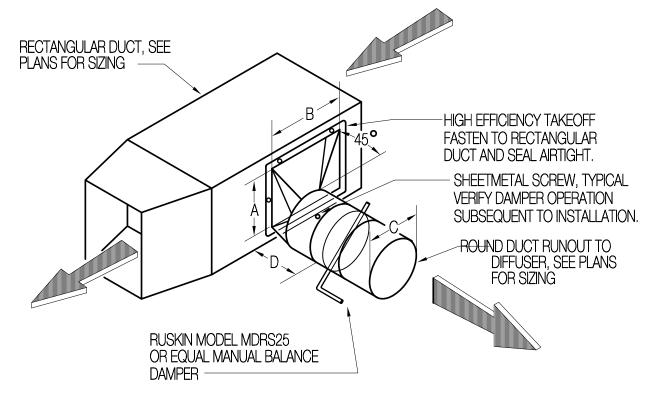
<u>LINING FASTENERS:</u> DURA DYNE MODEL CP WELD TYPE FASTENERS OR EQUIVALENT. ADHESIVE TYPE STICK CLIPS OR GRIP NAILS NOT ALLOWED.

# 9 ACOUSTICAL LINER DETAIL SCALE: NONE



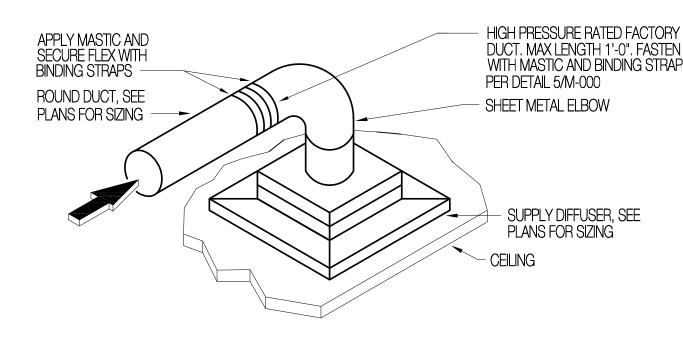
RECT. DUCT RUNOUT DETAIL

MOOD SCALE: NONE

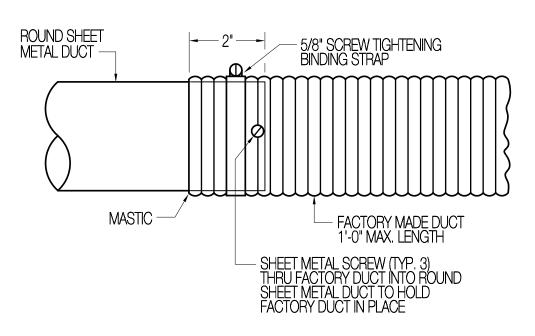


HE	TI	)IM	ENSIONS
BRANCH	THROA	T DIM.	MIN. AREA AXB
SIZE (C)	A	В	1411 4: 7 4 (3 17 4/2
6"	8-1/4"	12"	3.5 X AREA OF C
8"	10-1/4"	14"	2.8 X AREA OF C
10"	12"	15"	2.3 X AREA OF C
12"	14"	17"	2.1 X AREA OF C
LENGTH D S	SHALL BE	A MINIMU	 JM OF 11"

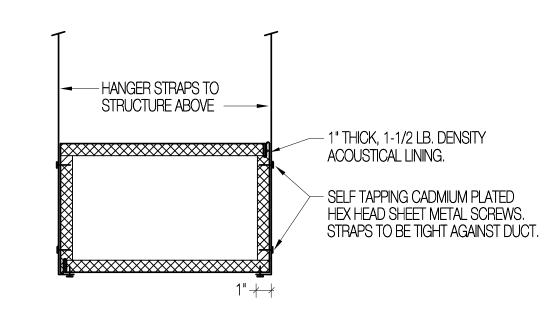
## ROUND DUCT RUNOUT DETAIL



# DIFFUSER CONNECTION DETAIL SCALE: NONE



## **FACTORY DUCT DETAIL**



HANGER STRAP GAUGE, WIDTH AND SPACING FOR RECTANGULAR DUCTS PER SMACNA HVAC DUCT CONSTRUCTION STANDARDS.

® RECT. DUCT HANGER DETAIL

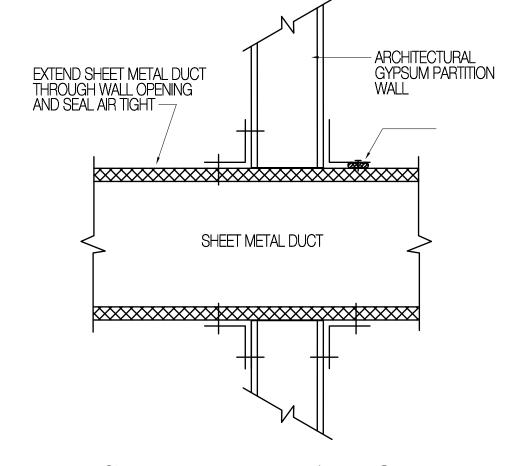
		SY	MBOL LEGEND		
	SIDEWALL GRILLE	— — H.D.	HAND DAMPER, SEE DETAIL 3/M-000	A.L.	ACOUSTICAL LINING
	SUPPLY AIR DIFFUSER	R.D.	H.D. WITH REMOTE OPERATOR, SEE DETAIL 1/M-700	O.A.	OUTSIDE AIR
	RETURN OR EXHAUST GRILLE	< D D >	RISE OR DROP IN DUCT	S.A.	SUPPLY AIR
24" x 12"	ACOUSTICALLY LINED DUCTWORK (INSIDE CLEAR DIMENSION)	$\bigcirc$	THERMOSTAT	R.A.	RETURN AIR
SLOPE >	SLOPE IN DUCT, SEE SECTIONS FOR SLOPE DIRECTION	-	SUPPLY AIR DIRECTION	NK.	NECK
×	RECTANGULAR SUPPLY AIR DUCT CROSS SECTION	$\rightarrow \bigvee$	RETURN AIR DIRECTION		POINT OF NEW CONNECTION
9	ROUND SUPPLY AIR DUCT CROSS SECTION	A.F.F.	ABOVE FINISHED FLOOR	(E)	EXISTING
<u> </u>					

	HEATING		COOLING	SECTION		AN SECTION	l	COND.	COND.	AMB.		UNIT	ELEC.	REQU	IREMEN	TS	VODV	
SYMBOL	HEATING INPUT (BTUH)	HEATING OUTPUT (BTUH)	TOTAL CAP. (BTUH)	SENS. CAP. (BTUH)	CFM	E.S.P. (IN. WC.)	MOTOR HP	COIL AREA (SQ. FT.)	COIL CFM	AIR TEMP.	MIN. EER	VOLTS	PH.	HZ.	MCA	MOCP	YORK MODEL	REMARKS
RTU-1	125,000	100,000	54,900	54,900	1,850	1.0	2.0	16.3	4,200	95 <b>°</b> F	10.8	208	3	60	35.1	45	ZF060	12345678
1 CAPACITY REQUIRED AT SITE ELEVATION AND CONDITIONS. 2 PROVIDE UNIT WITH 120 V CONVENIENCE OUTLET. 5 PROVIDE UNIT WITH RETURN BARO. RELIEF. 6 BALANCE OUTSIDE AIR TO										DETECTO	PR.		_				HES (ZONE CON' NE CONTROL)	TROL)

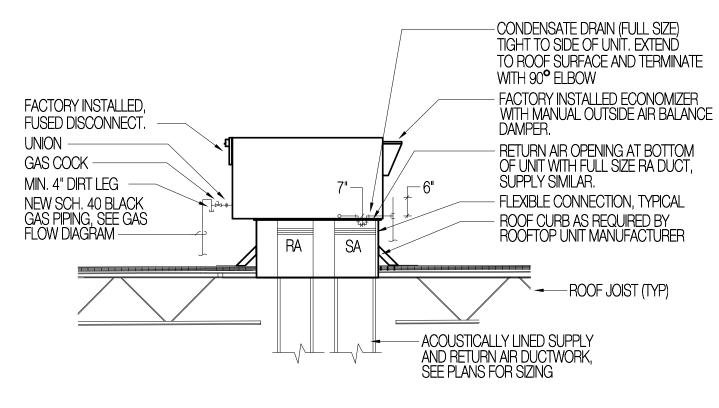
	GRILLES AND DIFFUSERS							
SYMBOL	CFM	NECK SIZE	FACE SIZE	KRUEGER MODEL	REMARKS			
S-1	AS NOTED	AS NOTED	AS NOTED	RA2	-			
S-2	AS NOTED	AS NOTED	AS NOTED	SH	-			
R-1	AS NOTED	AS NOTED	AS NOTED	S85H	-			

### **GENERAL NOTES**

- 1. ALL DRAWINGS SHALL BE CONSIDERED PART OF THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS AND BE RESPONSIBLE FOR THE REVIEW AND COORDINATION OF ALL ASPECTS OF THE CONTRACT DOCUMENTS PRIOR TO SUBMITTING PRICING. ANY AND ALL DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO TO ANY INSTALLATION SUCH THAT CLARIFICATIONS CAN BE ISSUED
- 2. ANY WORK PERFORMED OR MATERIAL USED WHICH IS SHOWN TO BE IN CONFLICT WITH THE CONTRACT DRAWINGS, SPECIFICATIONS OR ANY APPLICABLE CODE OR GOVERNING REGULATION SHALL BE
- 3. ALL SYMBOLS AND ABBREVIATIONS USED ON THE CONTRACT DRAWINGS ARE CONSIDERED CONSTRUCTION STANDARDS. IF CLARIFICATION IS REQUIRED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO PROCEEDING WITH ANY WORK.
- DO NOT SCALE THE DRAWINGS: ALL EXISTING CONDITIONS AND DIMENSIONS SHALL BE VERIFIED BY THE CONTRACTOR AT THE JOB SITE PRIOR TO FABRICATION OF MATERIALS OR ERECTION OF ASSEMBLIES, IF DISCREPANCIES ARE ENCOUNTERED, THE ENGINEER SHALL BE NOTIFIED FOR CLARIFICATION.
- 5. THE CONTRACTOR SHALL FURNISH ALL MATERIALS, LABOR AND EQUIPMENT, TRANSPORTATION AND SERVICES REQUIRED FOR COMPLETION OF THE WORK. ALL WORK PERFORMED AND MATERIALS INSTALLED SHALL BE DONE IN STRICT COMPLIANCE WITH ALL LOCAL CODES AND GOVERNING REGULATIONS.
- 6. ALL PERMITS AND FEES WHICH ARE REQUIRED FOR THIS WORK SHALL BE SECURED AND PAID FOR BY THE MECHANICAL CONTRACTOR.
- 7. ALL PLUMBING AND MECHANICAL INSTALLATIONS SHALL ADHERE TO THE 2018 IECC INCLUDING: MINIMUM R-6 INSULATION ON ALL NON-ACOUSTICALLY LINED DUCTWORK: ACOUSTICAL LINER SHALL PROVIDE A MINIMUM OF R-6 INSULATING VALUE. ALL DOMESTIC WATER PIPING SHALL BE INSULATED WITH A MINIMUM 1" FIBERGLASS INSULATION.







RTU INSTALLATION DETAIL

ASONRY (SI WEST 350 I UT HORIZON MAS APPROX. 850 V KAYSVILLE, I

Cunning & Associates

4685 W. 11600 N. Tremonton, UT 84337

Email: norm@cunning-eng.com Ph: (801) 726-5047

MO

RE

2020

SUITE A/B
NORTH

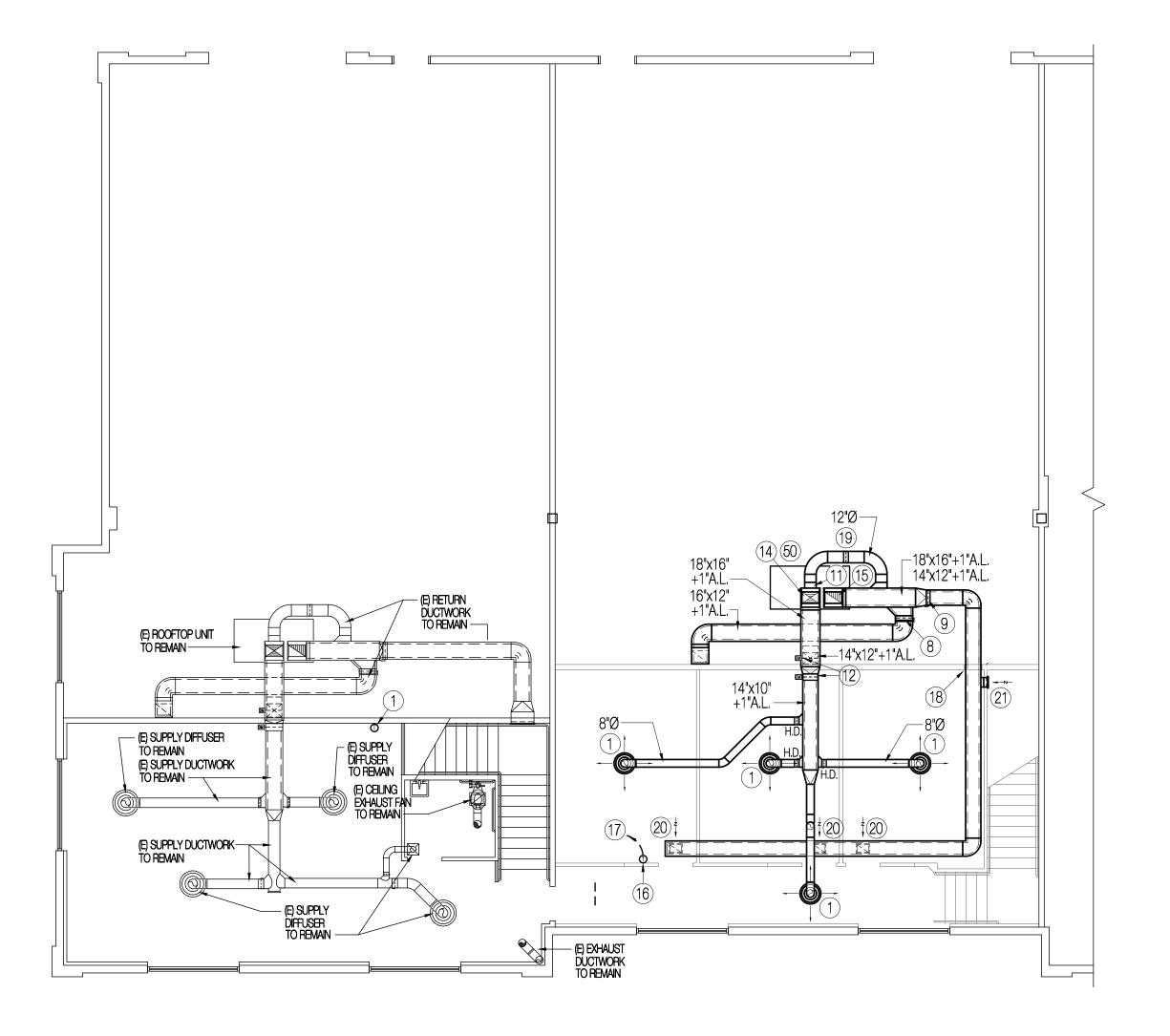
Project Number 4120

Drawing Title HVAC SCHED, SYMB. LEGENDS AND DETAILS Sheet Number

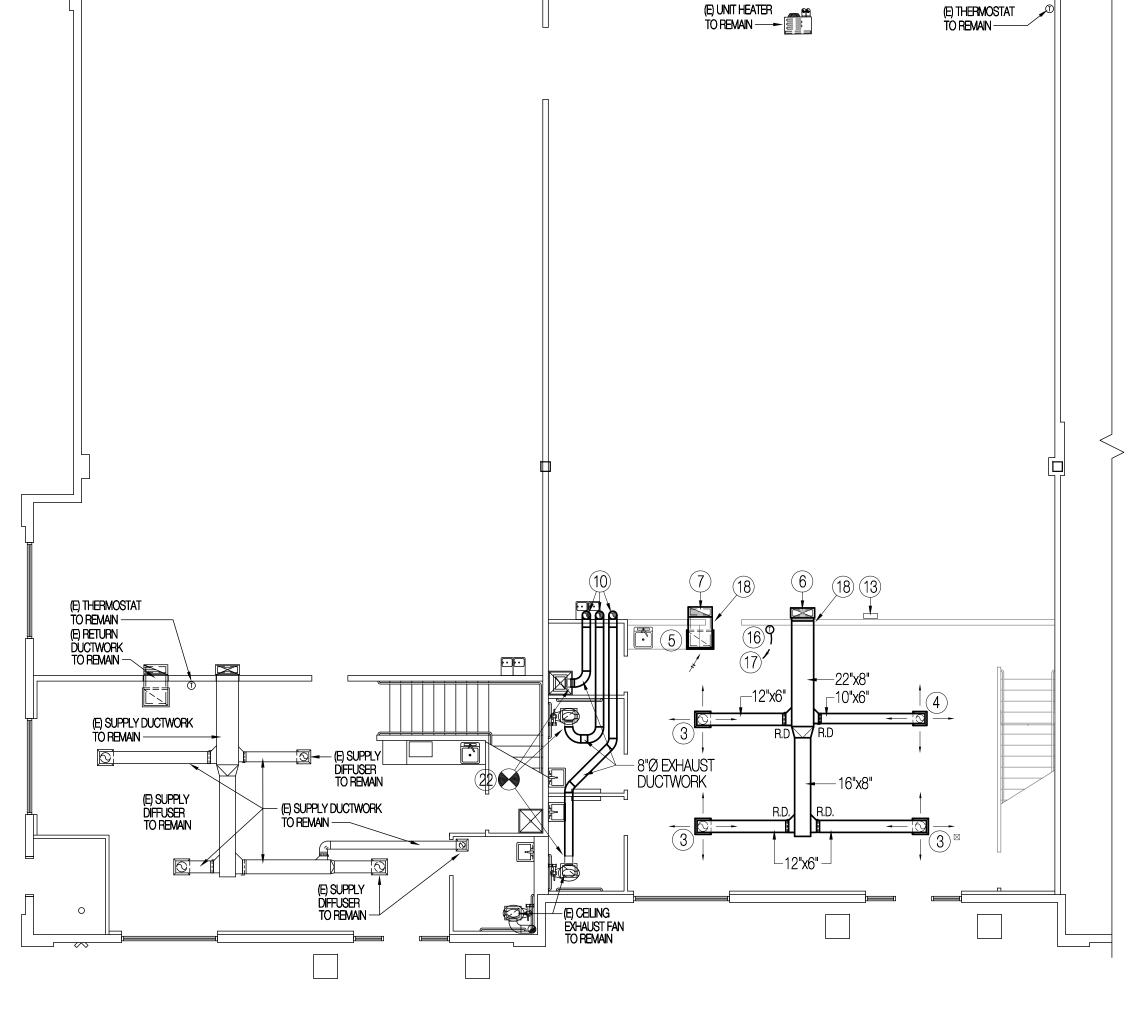
Issue Date

12/02/20

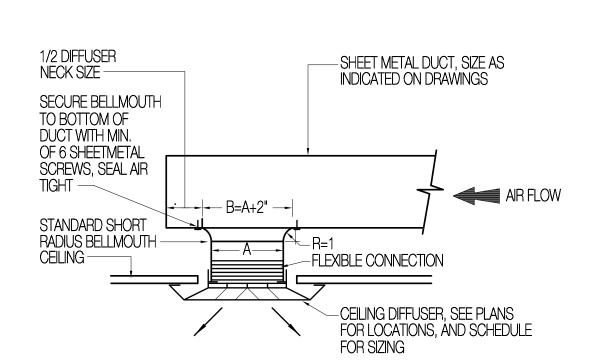
M-000



SECOND FLOOR HVAC PLAN (UNIT A)



# MAIN FLOOR HVAC PLAN (UNIT A)



RECT. RUNOUT / DIFFUSER DETAIL

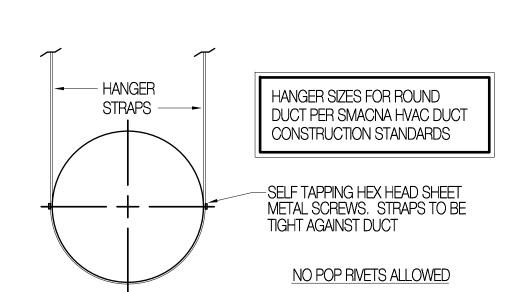
SCALE: NONE

## DRAWING NOTES

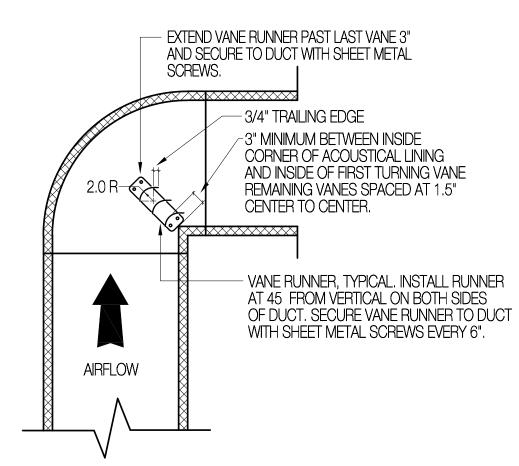
- 1) S-1 190 CFM, 8"Ø NK. S.A. DIFFUSER.
- 2) S-1 150 CFM, 8"Ø NK. S.A. DIFFUSER.
- 3) S-2 225 CFM, 10"Ø NK. S.A. DIFFUSER.
- (4) S-2 150 CFM, 8"Ø NK. S.A. DIFFUSER.
- 5) R-1 24"x16" NK. R.A. GRILLE.
- 6 22"x8"+1" A.L. SUPPLY DUCTWORK RISE TO SECOND FLOOR, TRANSITION DUCTWORK TO 14"x14"+1"A.L. IN VERTICAL RISE AND ATTACH TO MAIN. SEE SECOND FLOOR HVAC PLAN THIS SHEET FOR CONTINUATION. SUPPORT DUCT IN VERTICAL RISE WITH 16 GA. ANGLE BRACKETS ATTACHED TO WALL AND DUCT AT 5'-0" ON CENTER.
- 7 22"x8"+1" A.L. RETURN DUCTWORK RISE TO SECOND FLOOR, TRANSITION DUCTWORK TO 16"x12"+1"A.L. IN VERTICAL RISE AND ATTACH TO MAIN. SEE SECOND FLOOR HVAC PLAN THIS SHEET FOR CONTINUATION. SUPPORT DUCT IN VERTICAL RISE WITH 16 GA. ANGLE BRACKETS ATTACHED TO WALL AND DUCT AT 5'-0" ON CENTER.
- (8) BALANCE HAND DAMPER TO 890 CFM.
- 9) BALANCE HAND DAMPER TO 725 CFM.
- 10) 8"Ø EXHAUST DUCT RISE TO SECOND FLOOR, RECONNECT NEW EXHAUST DUCTWORK TO EXISTING VENT CAPS ON ROOF AND SEAL AIR TIGHT.
- (11) HIGH EFFICIENCY TAKEOFF, TYPICAL.
- 2 ZONE CONTROL DAMPER, SEE CONTROL DRAWINGS SHEET M-700 FOR ADDITIONAL INFORMATION.
- (13) ROOFTOP UNIT ZONE CONTROLLER, SEE CONTROL DRAWINGS SHEET M-700 FOR ADDITIONAL INFORMATION.
- 18"x16"+1"A.L. SUPPLY AIR DUCTWORK ON BOTTOM OF ROOFTOP UNIT. TRANSITION PLENUM TO OUTLET COLLAR SIZE AND CONNECT WITH FLEXIBLE CONNECTION PER DETAIL 1/M-000.
- 15) 18"x16"+1"A.L. RETURN AIR DUCTWORK ON BOTTOM OF ROOFTOP UNIT. TRANSITION DUCTWORK TO INLET COLLAR SIZE AND CONNECT WITH FLEXIBLE CONNECTION PER DETAIL 1/M-000.
- (16) PROVIDE AND INSTALL NEW THERMOSTAT, MOUNT THERMOSTAT AT 48" A.F.F. SEE CONTROL DIAGRAMS SHEET M-700 FOR ADDITIONAL INFORMATION.
- (17) CONTROL WIRING FROM THERMOSTATS TO ZONE CONTROLLER. SEE CONTROL DRAWINGS SHEET M-700 FOR ADDITIONAL INFORMATION.
- (18) EXTEND DUCTWORK THROUGH SHEETROCK PARTITION AND SEAL AIR TIGHT PER DETAIL 2/M-000.
- (19) BYPASS DUCTWORK WITH DAMPER.
- 20 R-1 12"x8" NK. R.A. GRILLE WITH O.B.D., BALANCE GRILLE TO MATCH SUPPLY CFM.
- (21) R-1 8"x8" NK. R.A. GRILLE WITH O.B.D., BALANCE GRILLE TO 200 CFM.
- (22) CONNECT NEW EXHAUST DUCTWORK TO EXISTING CEILING EXHAUST FANS AND EXTEND AS INDICATED.

## **EQUIPMENT NOTES**

 $\begin{array}{c|c}
\hline
50 & \overline{RTU} & \underline{ROOFTO} \\
1 & \underline{UNIT}
\end{array}$ 



# RND. DUCT HANGER DETAIL



TURNING VANE DETAIL

M100 SCALE: NONE

Soal PROFESSIONAL CLA



Mechanical Consulting Engineers

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HORIZON MASONRY (SUITE A/B 2020 REMODEL) APPROX. 850 WEST 350 NORTH KAYSVILLE, UT

Project Number

Issue Date
20 12/02/20

Drawing Title

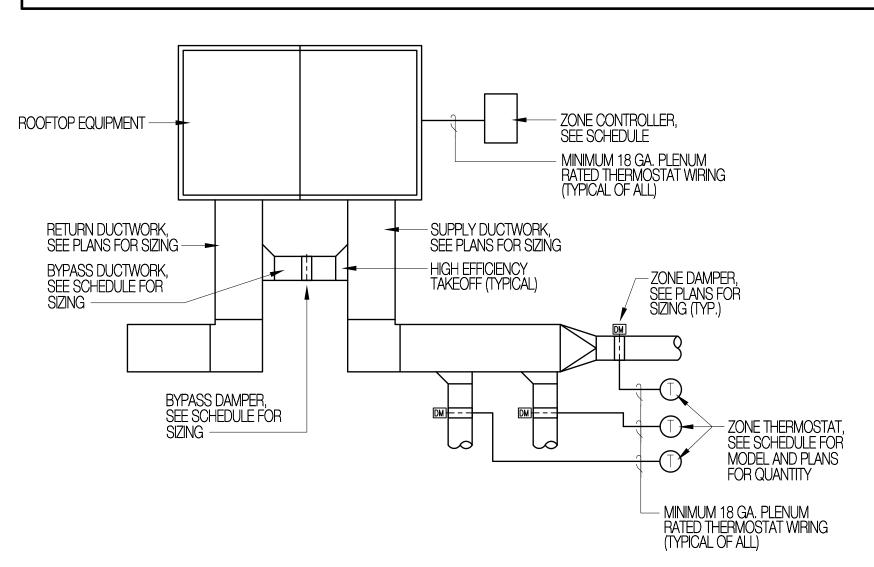
MAIN / SECOND

FLOOR HVAC

PLANS / DETAILS

M-100

_				Z	ONE CO	ONTE	ROLLER SO	HEDULE		
ZONE	EQUIP. SERVED	NO. OF ZONES	BYPASS DAMPER SIZE	BYPASS DAMPER MFG. / MOD.	BYPASS DAMPER PRESS. SETTING	BYPASS CFM	ZONE DAMPER MANUF. / MODEL	ZONE THERMOSTAT MANUF. / MODEL	ZONEFIRST CONTROLLER MODEL	REMARKS
Z-1	RTU-1	2	12 <b>"</b> Ø	ZONEFIRST / RDM	0.20" - 0.30"	1,000	ZONEFIRST ZDS	VENSTAR / T2900	MZP4	WITH SPC CONTROLLER

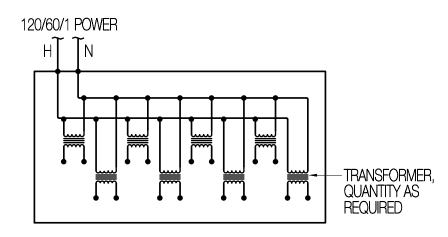


ZONE CONTROLLER SCHEMATIC

TYPICAL OF RTU- 1

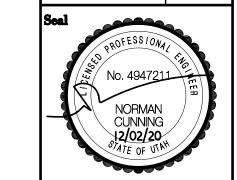
## **GENERAL NOTES**

I. 120 VAC ELECTRICAL POWER TO ZONE CONTROLLERS AND LOW VOLTAGE TRANSFORMER PANELS BY DIVISION 16000, DIVISION 15000 TO COORDINATE LOCATION AND QUANTITY. 2. THE CONTROLS CONTRACTOR SHALL PROVIDE SHOP DRAWINGS FOR CONTROL SYSTEM CIRCUITS. 3. ANY QUESTION OF RESPONSIBILITY SHALL BE CLARIFIED BY THE GENERAL CONTRACTOR 4. ALL WIRING SHALL BE 18 GA. MULTI CONDUCTOR WITH PLENUM RATED JACKET AND SHALL TERMINATE AT LABELED TERMINAL STRIPS.



## **LOW VOLTAGE** TRANSFORMER PANEL LVTP QUANTITY AS REQUIRED, LOCATION AS DIRECTED

Date



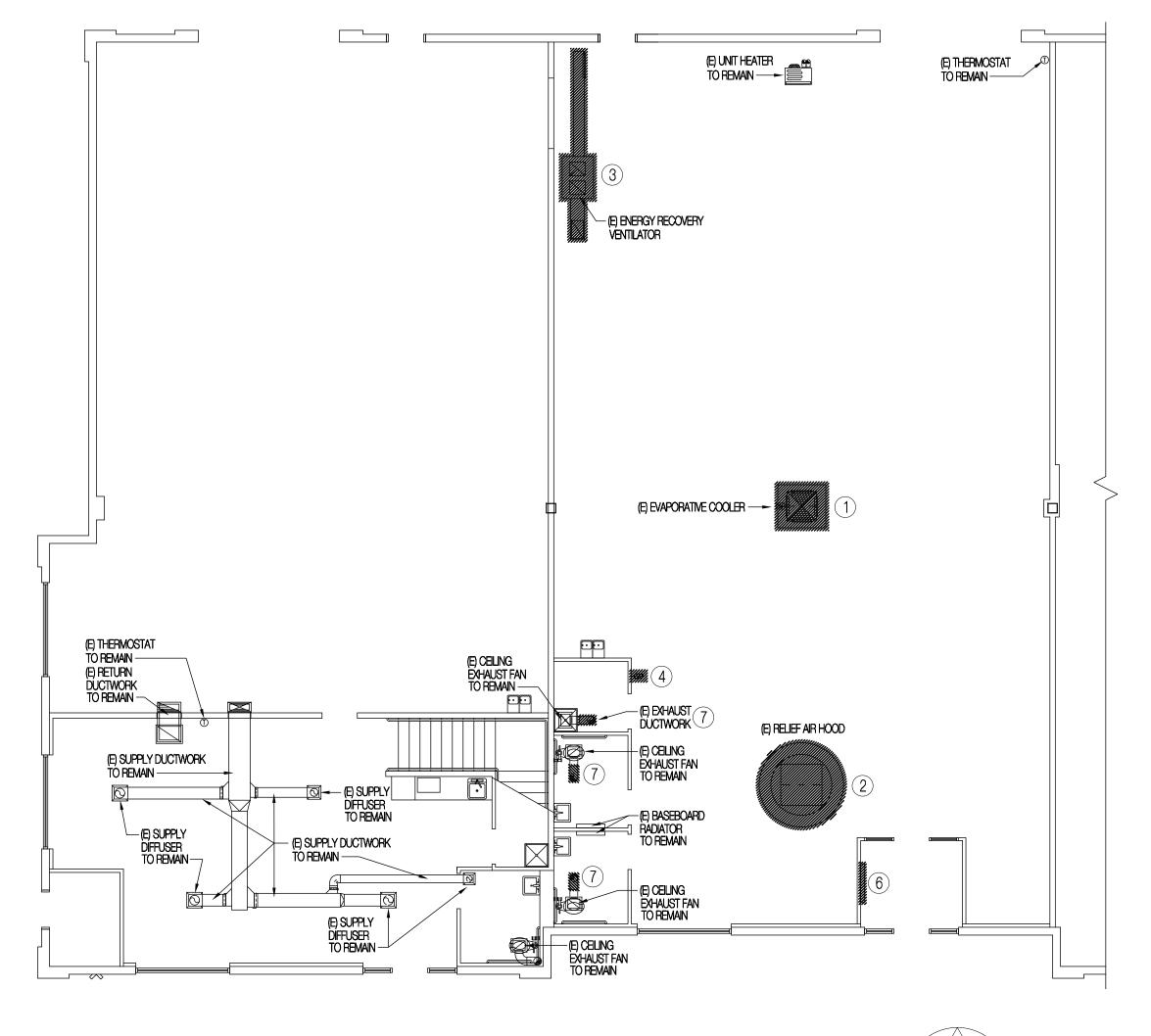


REMODEL) 2020 HORIZON MASONRY (SUITE A/B APPROX. 850 WEST 350 NORTH KAYSVILLE, UT

Project Number

12/02/20 Drawing Title
HVAC CONTROLS,
DETAILS, AND
SECTIONS

Issue Date



## GENERAL DEMO. NOTES

- 1. REMOVE ALL PORTIONS OF EXISTING HVAC INSTALLATION NOT REQUIRED TO REMAIN IN SERVICE. FIELD COORDINATE REMOVAL WITH REMODEL PLAN, SHEET M-100 AND REMOVE EXISTING DUCTWORK SYSTEMS COMPLETE INCLUDING; DUCTWORK, DIFFUSERS, ETC PREPARATORY TO NEW WORK.
- 2. REMOVE ALL PORTIONS OF EXISTING HVAC CONTROL SYSTEMS NOT REQUIRED TO REMAIN IN SERVICE. FIELD COORDINATE REMOVAL WITH REMODEL PLAN, SHEET M-100 AND REMOVE EXISTING CONTROL SYSTEMS COMPLETE INCLUDING; CONTROLS, AND CONTROL WIRING PREPARATORY TO NEW WORK.

### **DRAWING NOTES**

UNIT, ALL ASSOCIATED HANGERS, CONTROLS, AND VENT PIPING PREPARATORY TO NEW WORK.

( 1 ) REMOVE EXISTING EVAPORATIVE COOLER COMPLETE, REMOVAL SHALL INCLUDE

- ASSOCIATED HANGERS, CONTROLS, AND DUCTWORK PREPARATORY TO NEW WORK.
- INCLUDE UNIT, ALL ASSOCIATED HANGERS, CONTROLS, AND DUCTWORK PREPARATORY TO NEW WORK.
- (5) REMOVE EXISTING THERMOSTAT PREPARATORY TO NEW WORK. RETAIN EXISTING THERMOSTAT FOR REINSTALLATION, SEE HVAC REMODEL PLAN SHEET M-100 FOR REINSTALLATION LOCATION.
- (6) REMOVE EXISTING BASEBOARD RADIATOR COMPLETE PREPARATORY TO NEW WORK.
- PENETRATION.

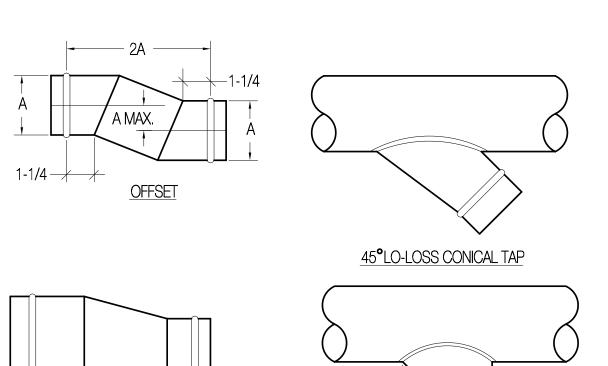
(2) REMOVE EXISTING RELIEF AIR HOOD COMPLETE. REMOVAL SHALL INCLUDE UNIT, ALL

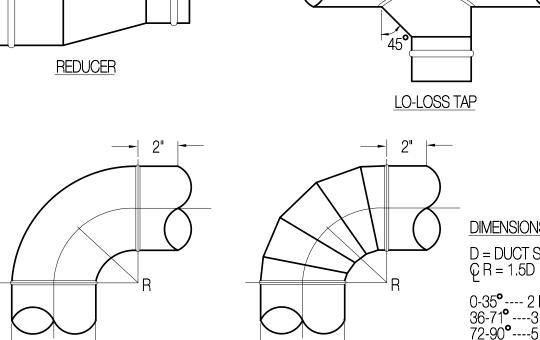
(3) REMOVE EXISTING ENERGY RECOVERY VENTILATOR COMPLETE, REMOVAL SHALL

(4) REMOVE EXISTING EVAPORATIVE COOLER SWITCH COMPLETE.

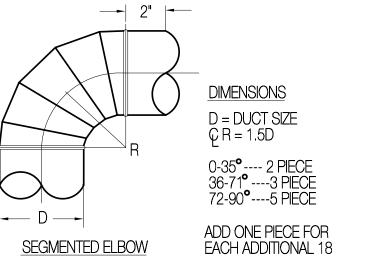
- (7) REMOVE EXISTING EXHAUST DUCTWORK BETWEEN CEILING EXHAUST FAN AND ROOF

# FIRST FLOOR HVAC DEMOLITION PLAN

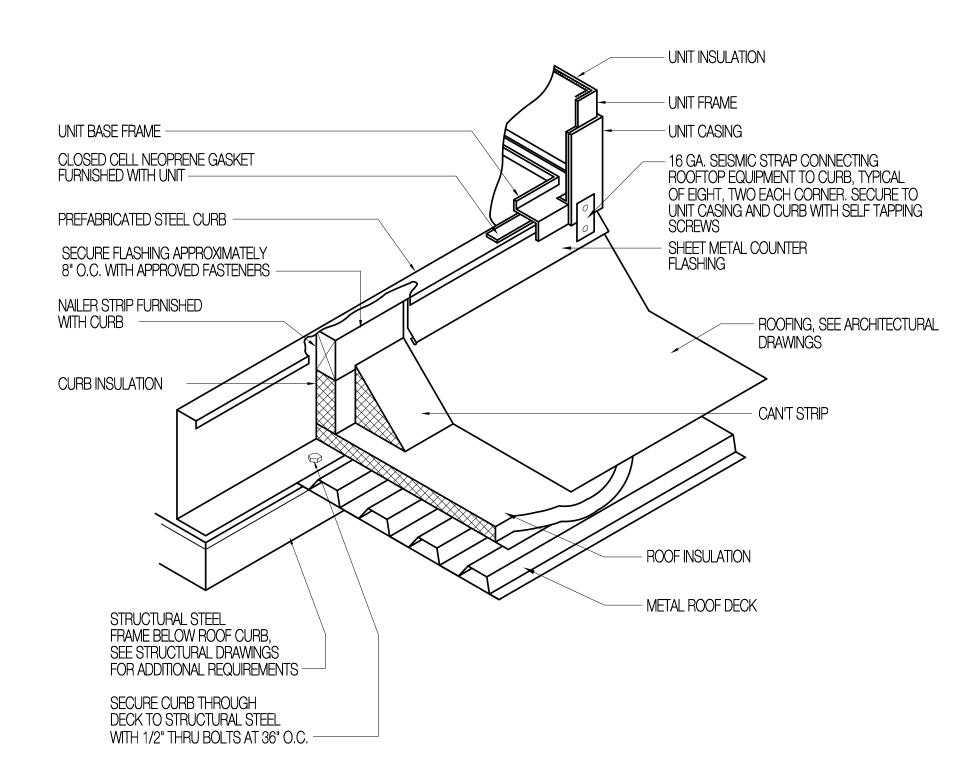




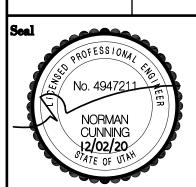
STAMPED ELBOW

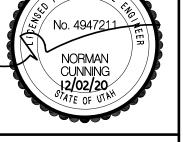






ROOFTOP EQUIPMENT FLASHING DETAIL





Mechanical Consulting Engineers Cunning & Associates 4685 W. 11600 N. Tremonton, UT 84337

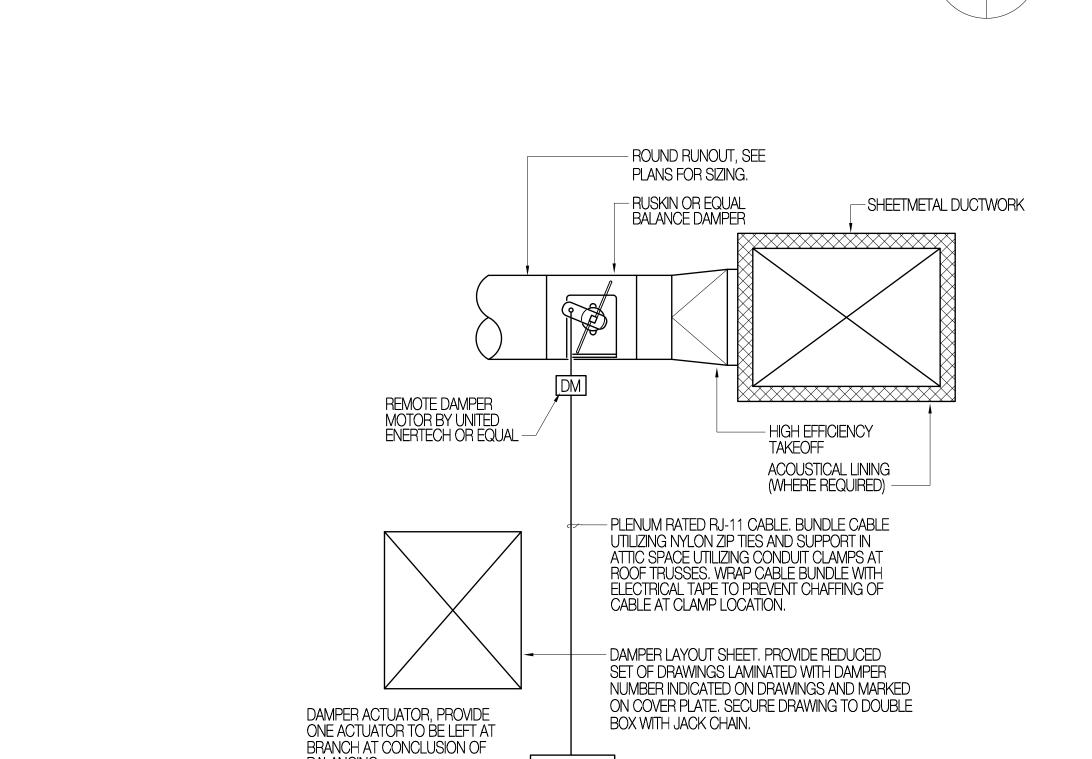
Email: norm@cunning-eng.com Ph: (801) 726-5047

REMODEL) 2020 SUITE A/B SONRY (SI WEST 350 ] UT HORIZON MAS APPROX. 850 V KAYSVILLE, U

Project Number Issue Date 12/02/20 4120

Drawing Title HVAC DEMO PLANS AND DETAILS

Sheet Number MD 100



BALANCING —

SECOND FLOOR HVAC DEMOLITION PLAN

REMOTE DAMPER CONTROLLER DETAIL

SCALE: NONE

- DOUBLE GANG BOX MOUNTED AS DIRECTED BY ENGINEER IN FIELD.

- COVER PLATE WITH RJ11 PLUGS (QUANTITY AS REQUIRED.)

#### MECHANICAL SPECIFICATIONS

#### **GENERAL CONDITIONS**

DESCRIPTION OF PROJECT: The mechanical work described in these mechanical specifications is for a project located in Kaysville, Utah. Design weather conditions are: 95° db, 62° wb, and winter 8°F. Altitude readings, unless otherwise noted, are for an elevation of 4,300 feet above sea level. Make adjustment to manufacturer's performance data as needed.

#### CODES AND PERMITS, AUTHORITIES HAVING JURISDICTION:

2018 International Mechanical Code - (with Utah amendments) 2018 International Building Code – (with Utah amendments)

2018 International Plumbing Code – (with Utah amendments)

2018 International Energy Code – (with Utah amendments)

SMACNA Duct Design Standards

Locally enforced NFPA Codes

Local Fuel Utility Regulations Local Power Utility Regulations

American Gas Association ASTM B31.1 Piping

<u>DEFINITION OF PLANS AND SPECIFICATIONS</u>: The mechanical drawings at reduced scale show the general arrangement of piping, ductwork, equipment, etc., and shall be followed as closely as the actual building construction and the work of other trades will permit. The architectural and structural drawings shall be considered as part of the work insofar as these drawings furnish the Contractor with information relating to design and construction of the building. Architectural drawings shall take precedence over mechanical drawings. Request

clarification and participate in resolution in the event of conflict. A. Because of the small scale of the mechanical drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. Investigate the structural and finish conditions affecting the work and arrange the work accordingly, providing such extensions, fittings, valves and accessories to meet the conditions as may be required. Some small scale work is not shown such as control conduit and piping,

Examine the actual construction site prior to bidding and obtain an understanding of the conditions under which the work will be performed. No allowances will be made for failure to make such examination.

incidental piping, specialties. Provide as directed by note or specification.

During construction, verify the dimensions governing the mechanical work at the building. No extra compensation shall be claimed or allowed because of differences between actual dimensions and those indicated on the drawings. Examine adjoining work on which mechanical work is dependent for perfect efficiency, and report any work of other trades which must be corrected. No waiver of responsibility for defective work shall be claimed nor allowed due to failure to report unfavorable conditions affecting the mechanical work.

ALTERNATIVE CONSTRUCTION/SUBSTITUTION: The contract documents outline a way in which the Owner may be delivered a functional and reliable facility. Drawings and specifications describe reasonable engineering practice for the Contractor to follow.

A. Coordination between trades may result in periodic needs to adjust the installation from that indicated, but

in no case shall the intended function be compromised. The Contractor may perceive some work methods which differ from those specified which could save time and effort. These may be presented to the Architect with a breakdown of possible cost savings for review.

Implement only with authorization.

C. Materials substitutions will generally be covered in a review process prior to bidding. After bidding, substitutions shall be proposed only on the basis of definitive cost accounting and implemented only with

#### **QUALITY OF MATERIALS AND EQUIPMENT:**

Manville, Certainteed.

size as indicated on drawings.

All equipment and materials shall be new, and shall be the standard products of manufacturers regularly engaged in the production of plumbing, heating, ventilating and air conditioning equipment, and shall be the manufacturer's latest design. Specific equipment shown in schedules on drawings and specified herein is to be the basis for the Contractor's bid. Provisions for substitute equipment are outlined in the General Conditions. All materials shall be produced by manufacturing plants located in the United States of

Furnish and install all major items of equipment specified in the equipment schedules on the drawings

Duct Sealing Compound: Duct sealing compound shall be 3M brand number EC-750 or Duro-Dyne S-2.

Acoustical Lining: Acoustical lining in ducts shall be 1" thick, 1-1/2 pound density, coated, flexible glass

fiber type, set in adhesive and impaled on weld studs spaced not more than 12" on centers and secured with

lock washers. Airstream surface faced with black coated matte. Acoustical lining shall completely line the

1. All joints, edges and/or surface breaks in the coating of the acoustical lining shall be pointed up to

ducts. Lining shall have a fire and smoke hazard rating not exceeding 20-50-50. Owens-Corning, Johns-

This material shall be used in making up duct joints or in water proofing, caulking plenums, etc.

Duct Liner Adhesive: Comply with ASTM C 916 "Specifications for Adhesives and Duct Thermal

Duct Liner Fasteners: Comply with SMACNA HVAC Duct Construction Standards, Article S2.11.

A. Ceiling Supply Diffuser (S-1): Krueger series RA2, 4 cone round diffuser, steel construction, fully

Ceiling Supply Diffuser (S-2): Krueger series SH, square face, one, two three or four way blow as required. Surface mount, round neck with beveled drop face, anti-smudge border, all steel, white baked on enamel,

Return and Transfer Grille (R-1): Krueger series S85H. Heavy duty steel construction, horizontal blades at 35° deflection with 1/2" spacing, mounting frame with concealed fasteners, sponge rubber gasket, white

Thermostat Cable - 12 conductor or 8 conductor, 18AWG solid copper wire, insulated with

adjustable, black baked enamel finish, sponge rubber gasket, size as indicated on drawings.

Ductwork Support Materials: Except as otherwise indicated, provide hot-dipped galvanized steel

fasteners, anchors, rods, straps, trim and angles for support of ductwork.

Provide with insulation guard where insulated duct is involved.

a smooth surface with adhesive.

baked enamel finish, size as indicated on drawings.

complete with all accessories normally supplied with catalog items listed, and all other accessories necessary for a complete and satisfactory installation.

MANUFACTURER'S DIRECTIONS: Install all equipment in strict accordance with directions and recommendations furnished by the manufacturer. Where such directions are in conflict with the plans and specifications, report such conflicts to the Architect who shall direct adjustments as deemed necessary and desirable.

#### DOMESTIC COLD WATER, DOMESTIC HOT WATER:

Ball Valves: Copper piping, 2-1/2" and Smaller: 475 psig WOG @ 250°F, bronze construction, soldered ends for 3/4" and smaller, threaded ends for 1" and larger, glass Reinforced PolyTetraFlouroEthylene (RPTFE) seat providing bubble tight leakage performance at 100 psig air pressure under water, full port stainless steel ball. Operate with flow in either direction. Suitable for throttling and tight shut-off. Lever or tee handle as required.

1. Manufacturers & Models: Provide ball valves from one of the manufacturers and model numbers listed below.

(1) Apollo 77-140

(2) Watts FBV-SS (up to 2")

(3) Nibco T-580-70-66 (up to 1") (4) Crane/Stockham 285-BR-R-66

#### **INSULATION**:

WATER PIPING (domestic cold & hot water, 1-1/2" thickness required.)

Preformed Fiberglass Piping Insulation: ASTM C 547. (Class 1 for use to 450°F (230°C); Class 2 for use to 650°F (345°C); Class 3 for use to 1200°F (650°C).

<u>DUCTWORK</u> (1-1/2" thickness for all non-acoustically lined ductwork, concealed areas only): Flexible Fiberglass Ductwork Insulation: ASTM C 553, Type 1 - resilient, flexible; Class B-1 - 0.65 lbs/ft<sup>3</sup>: Class B-2 - 0.75 lbs/ft<sup>3</sup>: Class B-3 - 1.0 lbs/ft<sup>3</sup>: Class B-4 - 1.5 lbs/ft<sup>3</sup>: Class B-5 - 2.0 lbs/ft<sup>3</sup>: Class B-6 - 3.0 lbs/ft<sup>3</sup>; Type II - flexible; Class F-1 - 4.5 lbs/ft<sup>3</sup>; Type III - semirigid; Class F-2 - 4.5 lbs/ft<sup>3</sup>.

#### **NATURAL GAS PIPING:**

A. Building Distribution Piping:

1. Pipe Size 2" and Smaller: Black steel pipe; Schedule 40; malleable-iron threaded fittings (exposed).

B. Gas Cocks:

Gas Cocks 2" and Smaller: 150 psi non-shock WOG, bronze straightway cock, flat or square

head, threaded ends. Manufacturer: Subject to compliance with requirements, provide gas cocks of one of the

following: DeZurik Corp.

Jenkins Bros. Lukenheimer Co.

NIBCO, Inc.

Powell (The Wm.) Co.

Rockwell International; Flow Control Div. Stockham Valves and Fittings.

Walworth Co.

#### DOMESTIC WATER:

#### A. Domestic Water Pipe:

Pipe Sizes 2" and Smaller: Copper tubing. Conform to ASTM B88, Type L, hard temper, copper tube: ASME B16.22 streamlined pattern wrought-copper fittings, with soldered joints using 95-5 tin antimony solder or non-lead bearing solders such as "Silvabrite."

#### WASTE, DRAIN AND VENT PIPING:

Sanitary Soil Drain, Waste and Vent Piping:

Piping and Fittings: Schedule 40 PVC pipe and fittings conforming to the requirements of ASTM D 2665. Pipe and fittings shall be produced domestically as supplied by Spears, or Charlotte Pipe and Fittings.

### **AUXILIARY RELAYS:**

Light Duty - as required. Heavy Duty - Square D, Class 8501, Type X.

### AIR SYSTEMS BALANCE:

A. Before any adjustments are made, check the systems for such items as dirty filters, duct leakage, filter leakage, damper leakage, equipment vibrations, correct damper operations, etc. Adjust all fan systems, major duct sections, registers, diffusers, etc., to deliver design air quantities within +5%. Individual air outlets, when one of three or more serve a space may have a tolerance of 10 percent from the average. Design static pressure is based on filters approximately 50% loaded with dirt. Pressure drop across filters during balancing shall be simulated to that condition. After balancing is completed check motor amperage with the filters clean.

Adjust supply, and recirculation air systems towards air quantities shown on drawings. Establish a proper relationship between supply and exhaust. Follow proportional balance procedures outlined by AABC and/or SMACNA for such work.

Distribution system shall be further adjusted to obtain uniform space temperatures free from objectionable drafts and noise within the capabilities of the system.

The contractors shall select equipment based on the drawing schedules and requirements of these specifications. Any and all substitutions shall be presented during submittals for approval.

FIXTURES AND TRIM: The model numbers listed below have been carefully selected to help bidders in the submittal process of selecting fixtures and trim. The completeness and accuracy of these numbers must be verified during the bidding process. Any discrepancies between the model numbers and the fixture, or trim descriptions noted by a manufacturer during the bidding process will be reported to the Architect / Engineer for clarification. Clarifications will be made a part of the contract through an addendum only. The contractor is responsible for reporting any clarifications before the bid date as required in this specification.

(P-1) Break Room Single Bowl Single compartment, counter mounted, 21" x 15-3/4" x 5-1/2" deep inside dimensions of bowl, 18 gauge type 304 stainless steel, 3 faucet holes on 4" centers, self rimming, sound deadened. With 1/2 HP In-Sink-Erator "Badger 5" garbage disposal.

Approved Manufacturers: Just No. DL-1933-A-GR

Elkay No. LRAD-252155

2. (P-1) Faucet: Underdeck mounted, 8" high rigid gooseneck spout, 2.5 gpm vandal proof aerator, 4"

wing handles, supplies on 8" centers. Approved Manufacturers:

Chicago Faucet No. 786-HZFCCP (2) T & S Brass

3. (P-1) Supplies and Stops:

Chrome plated quarter turn cast brass angle stop, brass stem, gasketed seat, flexible chrome plated copper riser, chrome plated escutcheon, compression type connections. b. Approved manufacturers:

Brass Craft Eastman

McGuire 4. (P-1) Outlet Fitting and Tailpiece:

a. Chrome plated 17 gauge cast brass. b. Approved Manufacturers:

(1) Elkay No. LK-53

5. (P-1) Strainer: Basket strainer, stainless steel, stainless steel basket, neoprene stopper, locking shell, tailpiece. Provide offset type where required to maintain ADA clearances.

b. Approved Manufacturers: Jameco

Sanitary Dash No. SS3000W (2) (3) McGuire

(4) Elkay

(5) Just

Cleanouts: Finished Walls:

Approved Manufacturers:

Zurn No. Z-1445-1

J.R. Smith No. 4530 Wade No. W-8460-R

Josam No. 58790

### **DUCTWORK - GENERAL:**

Standards: All duct fabrications shall comply with standards and techniques detailed by SMACNA "Duct Construction Manuals" for the appropriate pressure class, with the ASHRAE Handbook, 1988 edition, Chapter 1, Duct Construction, and with the contract drawing details.

Sheet Metal: Except as otherwise indicated, fabricate ductwork from galvanized sheet steel complying with ASTM A 527, lockforming quality, with G 90 zinc coating in accordance with ASTM A 525; mill phosphatized for exposed locations.

#### **FITTINGS AND FABRICATION:**

A. Fittings: Fabricate duct fittings to match adjoining ducts, and to comply with duct requirements as applicable to fittings. Fabricate elbows utilizing inside and outside radiuses with a center-line radius equal to associated duct width; or where fully radiused elbows are not possible, fabricate elbows with an inside square and outside radius and include turning vanes in the first 1/3 of elbow. Maintain duct width throughout turn on inside square and outside radiused elbows. Limit angular tapers to 30° for contracting tapers and 20° for expanding tapers.

Fabricate ductwork with accessories installed during fabrication to the greatest extent possible. Refer to Division-15 section "Duct Accessories' for accessory requirements.

Fabricate ductwork with duct liner in each section of duct where indicated. Laminate liner to internal surfaces of duct in accordance with instructions by manufacturers of lining and adhesive, and fasten with

Offset, transition, adapt ductwork to structural obstacles and work of other trades in a coordinated effort. Layout work to avoid conflict with piping, etc. With review of conditions, teardrop around conflicting piping, lights, etc., all at no added cost to the owner.

#### LOW PRESSURE ROUND DUCTWORK:

A. Round type ductwork for use on low velocity supply systems (1200 fpm maximum), low pressure (0.75" maximum duct pressure), shall be fabricated on 26 gauge galvanized steel sheets with snap-lock longitudinal seams and crimped and beaded joints.

All end joints shall have at least three screw fasteners and joints shall be sealed airtight with Hardcast TA tape or water based duct sealer. Snap lock longitudinal seams shall be seal with water based duct sealer NO EXCEPTIONS. Elbows and fittings shall provide smooth air flow patterns and have a neat appearance.

#### MEDIUM PRESSURE DUCTWORK: (3" SMACNA Pressure Class)

A. General: At Installer's option, provide factory-fabricated duct and fittings, in lieu of shop-fabricated duct and fittings.

Round Ductwork: Construct of galvanized sheet steel complying with ASTM A 527 by the following methods and in minimum gauges listed.

<u>Diameter</u>	M <u>inimum Gauge</u>	Method of Manufacture
3" to 14"	26	Spiral Lockseam
15" to 26"	24	Spiral Lockseam

Provide locked seams for spiral duct; fusion-welded butt seam for longitudinal seam duct.

Round Duct Fittings and Couplings: Construct of minimum gauges listed. Provide continuous welds along seams. Mitered elbows shall be of at least 5 piece construction with R/D ratio of 1.5.

Minimum Gauge 3" to 36"

#### LOW PRESSURE RECTANGULAR DUCTWORK:

A. Rectangular ductwork for use on supply systems up to 2" maximum duct static pressure and 2000 fpm maximum duct velocity shall be constructed of galvanized steel using construction for nominal 3" SMACNA rated systems. Seal all transverse and longitudinal joints with water based duct sealer NO

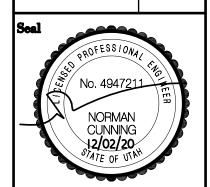
Use radiused elbows, or square inside radiused outside elbows with single thickness turning vanes in the first 1/3 where space restrictions prohibit fully radiused elbows. Use 45° high efficiency tapping takeoffs with separate downstream balance dampers.

Duct dimensions are inside clear. Increase for acoustical lining.

#### MISCELLANEOUS DUCTWORK MATERIALS:

A. General: Provide miscellaneous materials and products of types and sizes indicated and, where not otherwise indicated, provide type and size required to comply with ductwork system requirements including proper connection of ductwork and equipment.

Runout Fittings: Runout fittings shall be used to make round to rectangular duct connections. Use 45° time and a half square to round fittings. Provide with locking quadrant dampers where balance is involved.





Consulting Engineers Cunning & Associates 4685 W. 11600 N. Tremonton, UT 84337 Email: norm@cunning-eng.com Ph: (801) 726-5047

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12/02/20 4120 Drawing Title

**MECHANICAL** SPECIFICATIONS Sheet Number

**GRILLES AND DIFFUSERS:** 

MECHANICAL CONTROLS:

cooling stages, seven day program with two starts and stops per day, and provisions for damper operators. Thermostat and subbase compatible with heat pump operation. Battery - Mallory AA 1.5 volt alkaline type or equal as approved by Engineer.

Approved Manufacturer & Model -

ZONE CONTROLLER Microprocessor controller with LED indicator display, 4 stage heat / 3 stage cooling capacity, smoke detector input terminals, LCD display, 365 day per year clock.

Zonefirst MDP3 with expansion cards as required.

mounting hardware. Approved Manufacturer -

> length, appropriate mounting hardware. Approved Manufacturer –

120/24 volt, 38VA Honeywell AT72D1188, cover mount

120/24 volt, 50VA Honeywell AT87A1106, foot mount

high density polyethylene. Conductors parallel enclosed in brown PVC jacket (No 22 AWG THERMOSTAT: (Typical RTU-1) Programmable low voltage type provided with automatic change over feature for both heating and

Color coded and No. 16 and No. 12 AWG Type TWN, TFN, or THHN, stranded.

Venstar T2900

Honeywell C7041B2013.

Approved Manufacturer -

Outside Air Sensor, PT3000 averaging type, compatible with T7350 thermostat, appropriate

a. Honeywell C7170A1015. Discharge Air Sensor, 20kOhm averaging type, compatible with T7350 thermostat, 12" probe

TRANSFORMER:

PLUMBING SYMBOL LEGEND \ ABBREVIATIONS							
——II WCO	WALL CLEAN OUT	<del></del>	DROP IN PIPE	— <del>\$</del> —	GAS PRESSURE REGULATOR		
	DOMESTIC COLD WATER (DCW)	+0	RISE IN PIPE	<b>-</b>  5	BALL VALVE		
	DOMESTIC HOT WATER (DHW)	7	ELBOW IN PIPE	HDC+	VALVE IN DROP		
	WASTE (W)	+++	TEE IN PIPE		UNION		
	VENT (V)	——————————————————————————————————————	GAS SHUTOFF VALVE	MV	MIXING VALVE		

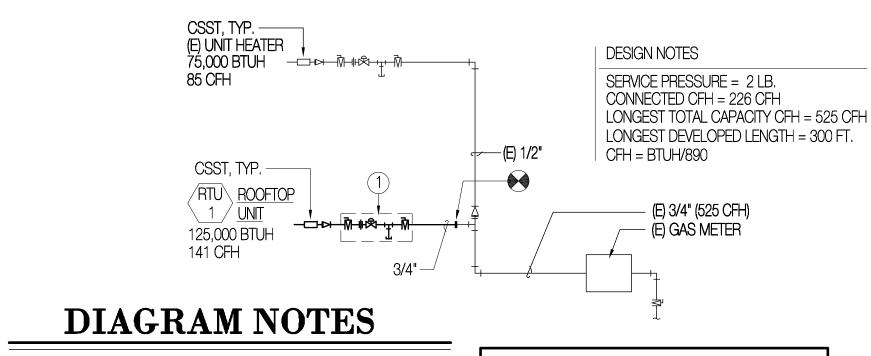
PLUMBING FIXTURE SCHEDULE							
SYMBOL	DESCRIPTION	COLD	HOT	TRAP	WASTE	VENT	REMARKS
P-1	BREAKROOM SINK, SINGLE BOWL, STAINLESS STEEL	1/2"	1/2"	1-1/2"	2"	1-1/2"	-
WCO	WALL CLEAN OUT	-	-	-	-	-	-

### GENERAL FIXTURE NOTES:

- 1. THE PLUMBING CONTRACTOR SHALL VERIFY THE REQUIREMENTS OF ALL PLUMBING EQUIPMENT AND THE RELATED ROUGH IN LOCATIONS WITH THE MECHANICAL AND
  ARCHITECTURAL PLANS AND SPECIFICATIONS. PROVIDE ALL ACCESSORIES AND OPTIONS REQUIRED TO PROVIDE THE OWNER A COMPLETELY FUNCTIONAL PLUMBING SYSTEM.
  2. EACH INDIVIDUAL FIXTURE SUPPLY SHALL BE PROVIDED WITH A CHROME-PLATED QUARTER TURN STOP VALVE BRASSCRAFT MODEL KTCR\_ OR ENGINEER APPROVED EQUAL.
  3. FIXTURES AND ACCESSORIES SHALL BE AS SCHEDULED. EACH ITEM SHALL BE COMPLETE WITH CHROME-PLATED BRASS TRIM.
- 4. ALL PLUMBING SHALL BE INSTALLED TO CONFORM TO THE LATEST ADOPTED EDITION OF THE INTERNATIONAL PLUMBING CODE INCLUDING LOCAL AMENDMENTS. CONSULT AUTHORITIES HAVING JURISDICTION.
- 5. ALL SINKS AND LAVATORIES WHERE HAND WASHING IS ANTICIPATED (FIXTURES P-2) SHALL BE PROTECTED WITH ASSE 1070 APPROVED TEMPERING VALVES PER DETAIL 7/P-000.

PIPING MATERIALS SCHEDULE					
SERVICE	MATERIAL	REMARKS			
DCW / DHW	TYPE "L" COPPER TUBING W/ WROUGHT COPPER FITTINGS	-			
NAT. GAS	SCHEDULE 40 BLACK IRON	-			
WASTE / VENT	SOLID CORE ABS OR PVC WITH DWV FITTINGS ABOVE AND BELOW GRADE	1			

(1) ALL ABS OR PVC PIPING INSTALLED IN RETURN AIR PLENUMS SHALL BE EITHER ENCLOSED IN SHEETROCK CHASES OR WRAPPED WITH 3M 5A BARRIER WRAP OR EQUIVALENT.

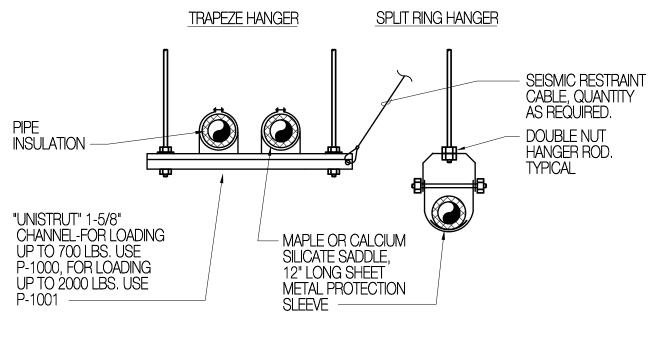


1) PRESSURE REGULATING STATION WITH TEST PORTS AND DIRT LEG, SEE DETAIL 2/P-000.

CONNECT EACH APPLIANCE WITH 6" DIRT LEG, PRESSURE REGULATOR, AND CORRUGATED STAINLESS STEEL TUBE (CSST) FLEXIBLE CONNECTION

## **GAS FLOW DIAGRAM**

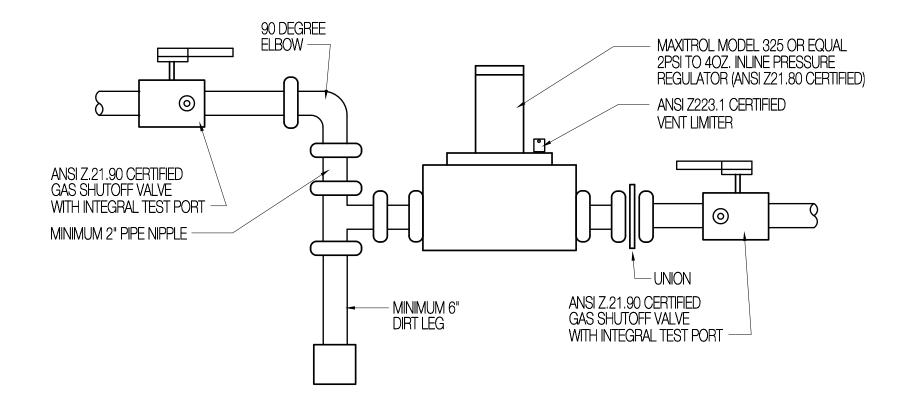
CALE: NONE ----



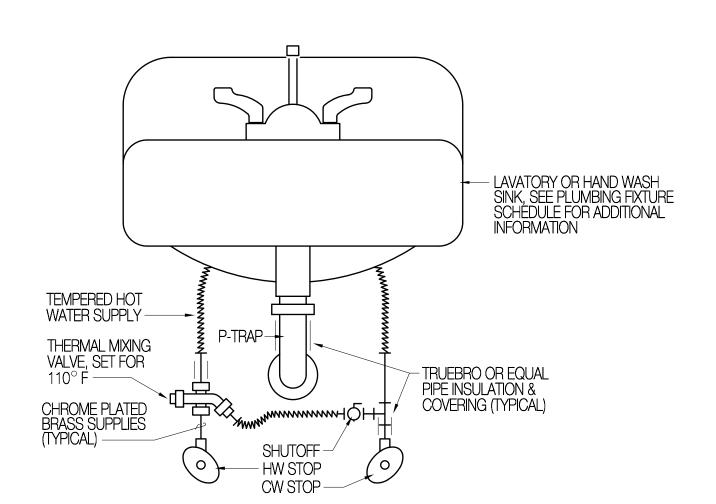
PIPE SIZE	MAX. SPACING	PIPE LOAD WEIGHT/FT. TOTAL	ROD SIZE
1" AND SMALLER	8	2.5/20	3/8"
1-1/4" - 2"	10	6/60	3/8"

HANGERS SIZES AND SPACING ARE FOR SINGLE PIPES. HANGER ROD LOADING FOR TRAPEZE HANGERS SHALL NOT EXCEED THE TOTAL LOADING INDICATED. IF SMALLER ROD SIZE IS USED, DECREASE MAXIMUM SPACING SO THAT TOTAL LOADING IS NOT EXCEEDED.

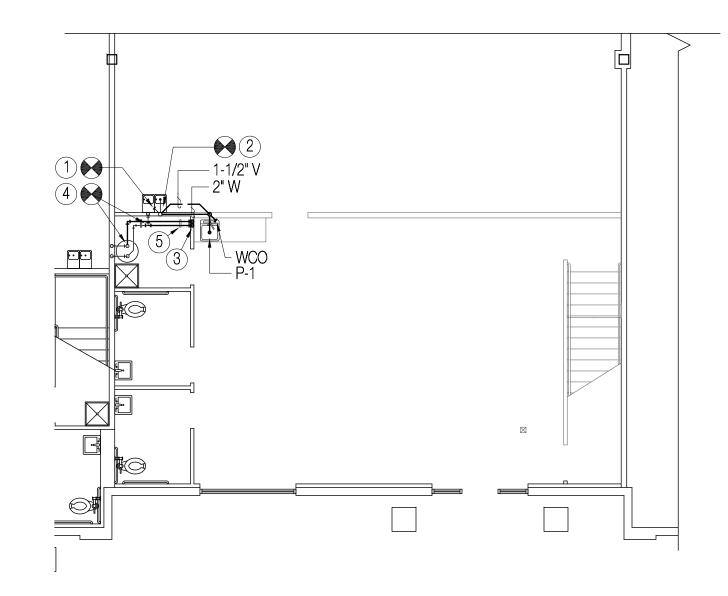
# POOD SCALE: NONE



# GAS PRESSURE REGULATOR DETAIL POOD SCALE: NONE



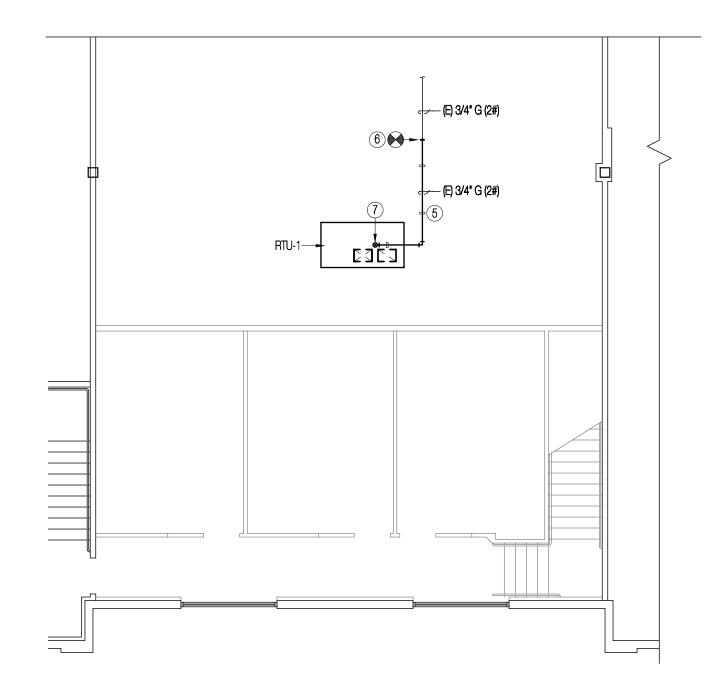
## TEMPERING VALVE DETAIL SCALE: NONE



## MAIN FLOOR PLUMBING PLAN

SCALE 1/8" =1'-0"

R PLUMBING PLAN



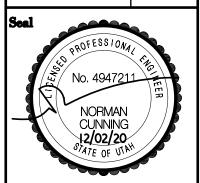
# SECOND FLOOR PLUMBING PLAN SCALE 1/8" = 1'-0"

NORIH

## **DRAWING NOTES**

- 1) FIELD VERIFY EXACT LOCATION, SIZE AND FLOW DIRECTION OF EXISTING UNDER-GROUND WASTE PIPING AND CONNECT NEW TO EXISTING UTILIZING LIKE MATERIALS. EXTEND NEW WASTE PIPING AS INDICATED.
- 2 FIELD VERIFY EXACT LOCATION AND SIZE OF EXISTING VENT UTILITIES AND CONNECT NEW TO EXISTING UTILIZING LIKE MATERIALS. EXTEND NEW VENT PIPING AS INDICATED.
- 3 1/2" DOMESTIC HOT WATER AND 1/2" DOMESTIC COLD WATER PIPING DROPS TO FIXTURE. TERMINATE PIPING AT REQUIRED FIXTURE ROUGH-IN HEIGHT WITH QUARTER TURN STOP AND ESCUTCHEON AS REQUIRED BY SPECIFICATION.
- FIELD VERIFY EXACT LOCATION AND SIZE OF EXISTING DOMESTIC WATER UTILITIES AND CONNECT NEW TO EXISTING UTILIZING LIKE MATERIALS. EXTEND DOMESTIC WATER PIPING AS INDICATED.
- (5) PIPE SUPPORT, SEE DETAIL 1/P-000.
- 6 FIELD VERIFY EXACT SIZE AND LOCATION OF EXISTING GAS PIPING AND CONNECT NEW TO EXISTING.
- 7 3/4" (2#) GAS PIPING RISE TO ROOFTOP MECHANICAL EQUIPMENT. TERMINATE GAS PIPING WITH PRESSURE REGULATOR, DIRT LEG AND FLEXIBLE CONNECTION PER GAS FLOW DIAGRAM THIS SHEET.

Revisions





HORIZON MASONRY (SUITE A/B 2020 REMODEL) APPROX. 850 WEST 350 NORTH KAYSVILLE, UT

Project Issue Date
4120 12/02/20

Drawing Title
PLUMB. SCHED.
/ DETAILS AND
PLANS

Sheet Number

P-000