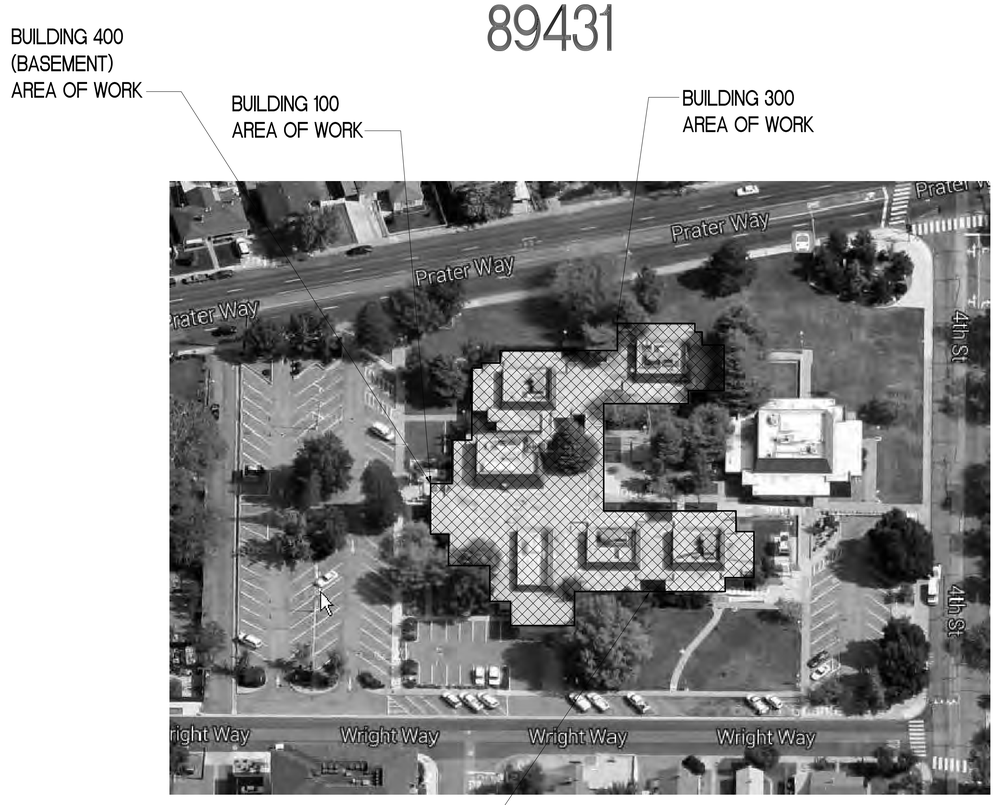
SPARKS CITY HALL CAMPUS
BUILDING 100, 200, 300, AND 400
HVAC UPGRADE

SPARKS CITY HALL
431 PRATER WAY
SPARKS, NEVADA
89431



SHEET INDEX

APPROVED BY: _____ DATE: _____
NEIL C. KRUTZ, P.E.
DEPUTY CITY MANAGER

DESIGN CONSULTANTS

MECHANICAL
Matthew C. Myres, PE
Mechanical Engineer
MMI Engineering Co.
275 Monumental Cir.
Reno, Nevada, 89436
(775)-750-0849

ELECTRICAL
Keller Hackbusch, PE
Electrical Engineer
Dinter Engineering Co.
385 Gentry Way
Reno, Nevada, 89502
Office: 775-826-4044
Direct: 775-682-4618

APPROVED BY: _____ DATE: _____
MATT C. MYRES, P.E.
MMI ENGINEERING

APPROVED BY: _____ DATE: _____
KELLER C. HACKBUSCH, P.E.
DINTER ENGINEERING

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL
9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE
TITLE SHEET

REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :
T1.0

MECHANICAL SCOPE OF WORK

BASE BID: AREA OF WORK INCLUDES BUILDING 100 AND BASEMENT BUILDING 400. WORK INCLUDES BUT IS NOT LIMITED TO:

THE HEATING SYSTEM: REMOVAL OF OLD BOILER INCLUDING PUMPS AND INSTALLATION OF TWO NEW BOILERS B-1 AND B-2 WITH ASSOCIATED PIPING INCLUDING PRIMARY AND SECONDARY LOOPS WITH PUMPS B-1,B-2,BP-1,BP-2, BP-3,BP-4.

THE COOLING SYSTEM: REMOVAL OF EXISTING CHILLER AND INSTALLATION OF NEW CHILLER CH-1 AND ASSOCIATIVE PIPING INCLUDING PRIMARY AND SECONDARY LOOPS AND PUMPS CHWP-1,CHWP-2,CHWP-3,CHWP-4,CWP-1,CWP-2. EXISTING COOLING TOWER TO BE CLEANED, HAVE NEW MEDIA INSTALLED, AND BE REUSED. ADDITIONALLY INSTALLATION OF NEW HEAT EXCHANGER HX-1 IN MECHANICAL ROOM.

CHILLER ROOM EXHAUST FANS: PROVIDE INSTALLATION OF NEW GENERAL AND EMERGENCY REFRIGERANT EXHAUST FANS TO BE INSTALLED INTO THE CHILLER ROOM. THESE FANS SHALL BE CONNECTED TO SENSORS AND ALARMS AS REQUIRED FOR CHILLER ROOM VENTILATION AS REQUIRED BY CODE.

AIR HANDLER: WORK INCLUDES MAIN AIR HANDLER COILS REMOVAL AND INSTALLATION OF NEW COILS HC-1,CC-1. THE REMOVAL OF EXISTING AIR HANDLER SUPPLY AND RETURN FAN MOTORS AND INSTALLATION OF NEW MOTORS. VAV BOX REMOVAL AND REPLACEMENT THROUGHOUT THIS AREA OF BUILDING INCLUDING ALL DUCT TRANSITIONS AND PIPING EXTENSIONS TO CONNECT EACH REHEAT COIL IN ALL VAV'S. BUILDING 100 REQUIRES NEW INSTALLATION OF VAV BOXES AND ASSOCIATED PIPING WITH DUCT TRANSITIONS. NOTE: THE EXISTING SUPPLY AIR GRILLS IN THE ADMIN AREA WILL BE CONNECTED INTO RETURN AIR GRILLS WITH SUPPLY FROM THE ATTIC AREA. A NEW CHASE WILL BE CUT IN THE ADMIN AREA TO MAKE ROOM FOR DUCT WORK.

CONTROLS: DIRECT DIGITAL CONTROL (DDC) TO BE INSTALLED ON ALL ASSOCIATED COMPONENTS LISTED ABOVE INCLUDING VARIABLE FREQUENCY DRIVES ON ALL PUMPS.

ALTERNATE #1: ALTERNATE #1 WORK INCLUDES BUT NOT LIMITED TO:

AIR HANDLER: REMOVAL AND REPLACEMENT OF ROOFTOP AIR HANDLER INCLUDING HEATING AND COOLING COILS ALONG WITH MODIFYING EXISTING ROOF CURB TO FIT NEW AIR HANDLER WITH ASSOCIATED COMPONENTS. INCLUDING REMOVAL AND REPLACEMENT OF VAV BOXES AND ASSOCIATED COMPONENTS INCLUDING DUCT TRANSITIONS, PIPING EXTENSIONS AND REHEAT COIL IN ALL VAV'S.

CONTROLS: DIRECT DIGITAL CONTROL (DDC) TO BE INSTALLED ON EVERY COMPONENT LISTED ABOVE.

ALTERNATE #2: ALTERNATE #2 WORK INCLUDES BUT IS NOT LIMITED TO:

AIR HANDLER: REMOVAL AND REPLACEMENT OF ROOFTOP AIR HANDLER INCLUDING HEATING AND COOLING COILS ALONG WITH MODIFYING EXISTING ROOF CURB TO FIT NEW AIR HANDLER WITH ASSOCIATED COMPONENTS. INCLUDING REMOVAL AND REPLACEMENT OF VAV BOXES AND ASSOCIATED COMPONENTS INCLUDING DUCT TRANSITIONS, PIPING EXTENSIONS AND REHEAT COIL IN ALL VAV'S.

CONTROLS: DIRECT DIGITAL CONTROL (DDC) TO BE INSTALLED ON EVERY COMPONENT LISTED ABOVE.

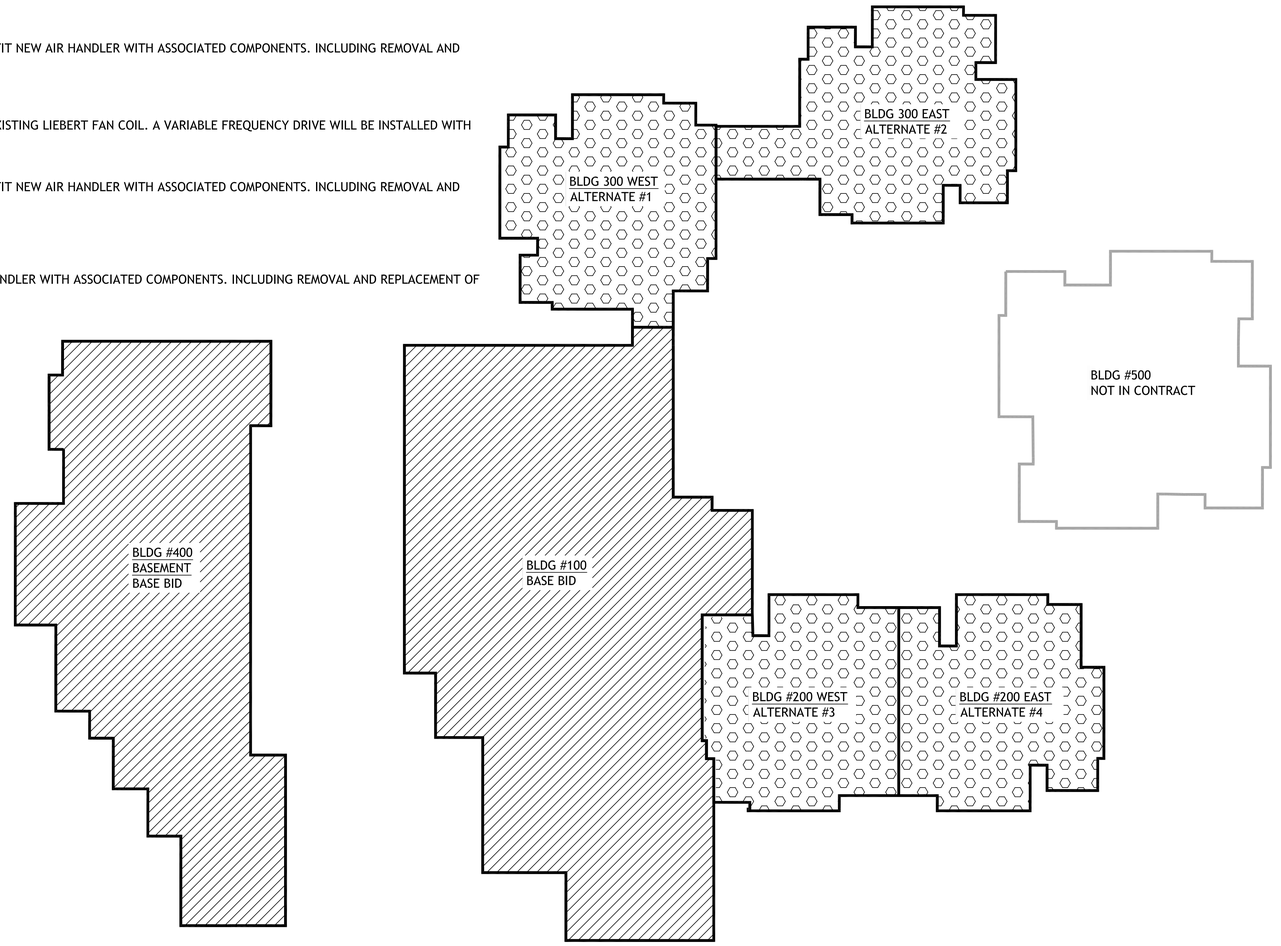
DATA ROOM SPLIT SYSTEM: ALT. #2 ALSO INCLUDES IT ROOM WORK WHICH INCLUDES NEW LIEBERT FAN COIL AC-2,CU-2 AND CONDENSER INSTALLATION TO ASSIST EXISTING LIEBERT FAN COIL. A VARIABLE FREQUENCY DRIVE WILL BE INSTALLED WITH NEW LIEBERT SYSTEM.

ALTERNATE #3: ALTERNATE #3 WORK INCLUDES BUT IS NOT LIMITED TO:
AIR HANDLER: REMOVAL AND REPLACEMENT OF ROOFTOP AIR HANDLER INCLUDING HEATING AND COOLING COILS ALONG WITH MODIFYING EXISTING ROOF CURB TO FIT NEW AIR HANDLER WITH ASSOCIATED COMPONENTS. INCLUDING REMOVAL AND REPLACEMENT OF VAV BOXES AND ASSOCIATED COMPONENTS INCLUDING DUCT TRANSITIONS, PIPING EXTENSIONS AND EACH REHEAT COIL IN ALL VAV'S.

CONTROLS: DIRECT DIGITAL CONTROL (DDC) TO BE INSTALLED ON EVERY COMPONENT LISTED ABOVE.

ALTERNATE #4: ALTERNATE #4 WORK INCLUDES BUT IS NOT LIMITED TO:
REMOVAL AND REPLACEMENT OF ROOFTOP AIR HANDLER INCLUDING HEATING AND COOLING COILS ALONG WITH MODIFYING EXISTING ROOF CURB TO FIT NEW AIR HANDLER WITH ASSOCIATED COMPONENTS. INCLUDING REMOVAL AND REPLACEMENT OF VAV BOXES AND ASSOCIATED COMPONENTS INCLUDING DUCT TRANSITIONS, PIPING EXTENSIONS AND EACH REHEAT COIL IN ALL VAV'S.

CONTROLS: DIRECT DIGITAL CONTROL (DDC) TO BE INSTALLED ON EVERY COMPONENT LISTED ABOVE.



MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

MMI ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL
9/26/2014

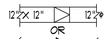
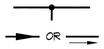
SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE
PHASING PLAN

REVISIONS

DATE :
SEPTEMBER 26, 2014
SHEET NUMBER :
T2.0

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

		DUCT W/ SIZE INDICATED (FIRST FIG. IS SIDE SHOWN)
	V.D.	MANUAL VOLUME / BALANCING DAMPER
		DUCT WITH ACOUSTIC LINING
	F.D.R.	FIRE DAMPER
	S.D.	SMOKE DAMPER
	F.S.D.	COMBINATION FIRE / SMOKE DAMPER
	EX.	EXTRACTOR
		SQUARE TO ROUND DUCT TRANSITION
	TR	DUCT SIZE TRANSITION
		FLEXIBLE DUCT CONNECTOR
	FLEX	FLEXIBLE DUCT
	SD	SPLITTER DAMPER
	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.D.	MOTORIZED DAMPER
	O.B.D.	OPPOSED BLADE DAMPER
	RD	REFRIGERANT DISCHARGE PIPING
	RL	REFRIGERANT LIQUID PIPING
	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
	U	UNION
	F	FLANGE
	FL	FLEXIBLE PIPING CONNECTOR
	CR	CONCENTRIC REDUCER
	ER	ECCENTRIC REDUCER
	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
	T.D.V.	TRIPLE DUTY VALVE
	P.U.	PIPING ELBOW UP
	P.D.	PIPING ELBOW DOWN
		BRANCH - TOP CONNECTION
		BRANCH - BOTTOM CONNECTION
		BRANCH - SIDE CONNECTION
		ARROW INDICATES DIRECTION OF FLOW
	A.P.	ACCESS PANEL
		MECHANICAL EQUIPMENT INDICATED (SEE SCHEDULE)
		DIFFUSER OR GRILLE INDICATED (SEE SCHEDULE)
	T.	THERMOSTAT
	S.E.N.	SENSOR
	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
	EWT	ENTERING WATER TEMPERATURE
	GA	GAUGE
	GAL	GALLON
	GPH	GALLONS PER HOUR
	GPM	GALLONS PER MINUTE
	HD	HEAD
	HP	HORSEPOWER
	HR	HOUR
	KW	KILOWATTS
	LAT	LEAVING AIR TEMPERATURE
	LPC	LOW PRESSURE CONDENSATE RETURN
	LPS	LOW PRESSURE STEAM
	LWT	LEAVING WATER TEMPERATURE
	MAX	MAXIMUM
	MBH	BRITISH THERMAL UNITS PER HOUR (THOUSANDS)
	MIN	MINIMUM
	MUA	MAKE-UP AIR
	(N)	NEW
	NOM	NOMINAL
	OA	OUTSIDE AIR
	PD	PRESSURE DROP
	RPM	REVOLUTION PER MINUTE
	SF	SQUARE FEET
	SP	STATIC PRESSURE
	STD	STANDARD
	T	TEMPERATURE
	TDV	TRIPLE DUTY VAVLE
	TYP	TYPICAL
	WB	WET BULB TEMPERATURE
	WC	WATER COLUMN
	W.P.D.	WATER PRESSURE DROP

GENERAL MECHANICAL NOTES

1. CONTRACTOR SHALL REFER TO THE ARCHITECTURAL FLOOR PLANS FOR EXACT DIMENSIONS ON THE SPACE LAYOUT

2. 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 REQUIRED, ROUTING, ELEVATION, AND PLACEMENT OF EQUIPMENT AND PROVIDE REQUIRED OFFSETS INSTALLED IN ACCORDANCE WITH SMACNA STANDARDS AND THE SPECIFICATIONS TO MEET THE INTENT OF THE DESIGN.

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

4. ALL DUCTWORK IN CONCEALED AREAS SHALL HAVE 1½" FIBERGLASS BLANKET INSULATION w/ ALL-SERVICE JACKET MANUFACTURED FROM KRAFT PAPER, REINFORCING SCRIM, ALUMINUM FOIL, AND VINYL FILM. INSULATION SHALL HAVE A MOLD, HUMIDITY, AND EROSION RESISTANT SURFACE THAT COMPLIES w/ THE CURRENT MECHANICAL CODE AND ASTM C553, TYPE II. INSULATION APPLIED TO THE EXTERIOR OF ANY DUCTS SHALL HAVE A FLAME SPREAD RATING THAT IS IN ACCORDANCE WITH NFPA 255, ASTM E84 OR UL 723, THE MATERIALS USED SHALL HAVE A FLAME-SPREAD RATING OF NOT MORE THAN 25 AND A SMOKE-DEVELOPED RATING OF NOT MORE THAN 50.

5. ALL FACTORY PRODUCED AIR DUCT SHALL BE RATED FOR THE LISTED PRESSURES AND 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 UNILEILD FITTINGS. MATERIALS SHALL BE GALVANIZED STEEL OF GAUGES SHOWN IN THE LOW PRESSURE MANUAL UNLESS SPECIFICALLY NOTED OTHERWISE ON PLANS.

6. 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.

7. THIS PROJECT HAS STRICT PHASING REQUIREMENTS AND THIS PROJECT MUST BE CONSTRUCTED IN ACCORDANCE WITH THE PHASING CIRTERIA AND WHILE THE FACILITY IS STILL OPERATIONAL. THE PHASING SCHEDULE SHALL BE SUBMITTED FOR APPROVAL TO THE CITY OF SPARKS CAPITAL PROJECTS ENGINEER.

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

MMI ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL

9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE

MECHANICAL LEGEND, NOTES, AND SCHEDULES

REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :

M0.1

WATER COOLED SCROLL CHILLER SCHEDULE

SYM	TYPE	MANUFACTURER AND MODEL	NOMINAL CAPACITY (TONS / MBH)	EVAPORATOR SIDE					CONDENSER SIDE		FULL LOAD EFF. / IPLV	ELECTRICAL		MAX OPERATING WT LBS	STANDARD ACCESORIES AND OPTIONS
				REFRIGERANT	MIN. FLOWRATE (GPM)	FLOWRATE / MAX. PD. (GPM / FT HD.)	TEMP IN / OUT °F	FOULING FACTOR	FLOWRATE / MAX. PD. (GPM / FT. HD.)	TEMP IN/OUT (°F)		VOLTAGE	MCA (AMPS)		
CH 1	WATER COOLED CHILLER	CARRIER AQUA FORCE MODEL # 30XC30-106	104.3 / 1,251.6	R-134A	125	250 / 15.4	45°/51°	.0001	313 / 13.3	85°/95°	15.6 / 0.520	480/3Φ/60	218	2,300	INTERFACE MODULE FOR ALERTON CONTROLS, FACTORY MOUNTED GAUGES (HIGH, LOW, OIL PRESSURE), WATER FLOW SWITCH, SPRING VIBRATION ISOLATION, SINGLE POINT PWR CONN., SYSTEM SHALL BE OPERATED WITH 30% PROPYLENE GLOCOL
HX 1	PLATE & FRAME HEAT EXCHANGER	SONDEX MODEL # A47-1G10-146-TMTL68	104.4 / 1,253	N/A	N/A	250 / 7.3	57°/45°	.0001	313 / 11.6	45°/52.98°	N/A	N/A	N/A	1,580 DRY	

BOILER SCHEDULE

SYM	MANUFACTURER	MODEL #	GAS INPUT CAPACITY (BTUH)	MAX. OUTPUT CAPACITY (BTUH)	MINIMUM THERMAL EFFICIENCY %	FLOW RATE (GPM)	ENTERING WATER TEMPERATURE	LEAVING WATER TEMPERATURE	TYPE OF FUEL	ELECTRICAL				REMARKS
										AMPS	VOLTAGE	PHASE	HERTZ	
B # 1 & 2	LOCHINVAR	POWER-FIN MODEL# PBN0752-MG	750,000	652,500	87%	43.5	150°	180°	NATURAL GAS	15.5	120	1Φ	60	SYSTEM SHALL BE OPERATED WITH 30% PROPYLENE GLOCOL

PUMP SCHEDULE

SYM	SERVICE	MANUFACTURER	MODEL #	MINIMUM CAPACITY GPM	TOTAL DYNAMIC HEAD (FT HD)	MOTOR TYPE	PUMP RPM	MINIMUM PUMP EFFICIENCY %	ELECTRICAL				DESCRIPTION / FEATURES / REMARKS
									MINIMUM HP	VOLTAGE	PHASE	HERTZ	
BP # 1 & 2	VERTICAL IN-LINE PRIMARY LOOP BOILER PUMP	TACO SYSTEMS	MODEL# 1635	75	20	CLOSED COUPLE	1750	69%	0.75	208	3	60	STAINLESS STEEL SHAFT, CAST BRONZE IMPELLER, CAST IRON CASE, HIGH TEMP 2 PIECE SEAL, FLANGED CONNECTION, PREMANENTLY LUBRICATED BEARINGS, 175 PSI WORKING PRESSURE
BP # 3 & 4	VERTICAL IN-LINE SECONDARY LOOP BOILER PUMP	TACO SYSTEMS	MODEL# KS 2006	120	120	CLOSED COUPLE	3500	67%	7.5	460	3	60	VFD CONTROLLED, STAINLESS STEEL SHAFT, CAST BRONZE IMPELLER, CAST IRON CASE, HIGH TEMP 2 PIECE SEAL, FLANGED CONNECTION, PREMANENTLY LUBRICATED BEARINGS, 175 PSI WORKING PRESSURE
CHP - 1 & 2	VERTICAL IN-LINE PRIMARY LOOP CHILLED WATER PUMP	TACO SYSTEMS	MODEL# KS 3001	250	35	CLOSED COUPLE	1750	75%	3.0	460	3	60	STAINLESS STEEL SHAFT, CAST BRONZE IMPELLER, CAST IRON CASE, HIGH TEMP 2 PIECE SEAL, FLANGED CONNECTION, PREMANENTLY LUBRICATED BEARINGS, 175 PSI WORKING PRESSURE
CHP - 3 & 4	VERTICAL IN-LINE SECONDARY LOOP CHILLED WATER PUMP	TACO SYSTEMS	MODEL# KS 2006	157	90	CLOSED COUPLE	3500	75%	3.0	460	3	60	VFD CONTROLLED, STAINLESS STEEL SHAFT, CAST BRONZE IMPELLER, CAST IRON CASE, HIGH TEMP 2 PIECE SEAL, FLANGED CONNECTION, PREMANENTLY LUBRICATED BEARINGS, 175 PSI WORKING PRESSURE
CWP - 1 & 2	VERTICAL IN-LINE CONDENSER WATER PUMP	TACO SYSTEMS	MODEL# KS 3007	313	45	CLOSED COUPLE	1750	76%	5.0	460	3	60	STAINLESS STEEL SHAFT, CAST BRONZE IMPELLER, CAST IRON CASE, HIGH TEMP 2 PIECE SEAL, FLANGED CONNECTION, PREMANENTLY LUBRICATED BEARINGS, 175 PSI WORKING PRESSURE

COIL SCHEDULE

SYM	MANUFACTURER AND MODEL#	CFM	CAPACITY TOTAL (BTU/H)	FLUID PRESSURE DROP (FT. H2O)	FLOW RATE - (GPM)	EWT °F	LWT °F	EAT °F	LAT °F	MIN FREE AREA (SQ. FT.)	COIL DIMENSIONS	ROWS / FINS PER INCH	MAX AIR PRESS DROP IN WC	REMARKS
						DRY BULB (°F)	DRY BULB (°F)	DRY BULB (°F)	DRY BULB (°F)					
HC 1	USA AIR HEATING COIL MODEL # HJ58AG1020585001OR	14,960	541,000	9.5	37.6	180	150	48.0	84.0	41.4	58.5" x 102"	1 - 7	0.10	0.020 TUBE WALL THICKNESS, ALUMINUM FINS, GAVALNIZED CASING
CC 1	USA AIR COOLING COIL MODEL # CJ58HP1020585003R	14,960	464,000	8	71	45	57	80	54	41.4	58.5" x 102"	8 - 14	.91	0.020 TUBE WALL THICKNESS, ALUMINUM FINS, GAVALNIZED CASING

SPLIT SYSTEM HEATER SCHEDULE

AC 2	INDOOR HIGH EFFICIENCY SINGLE ZONE FAN-COIL UNIT, NON-DUCTED, SPECIFICALLY FOR DATA CENTER ISLE INSTALLATION	LIEBERT MODEL NO. CR020RA1B7A626	COOLING: 60.4 MBH T.C. AT 80/62.8°F EAT, 15.3 EER, 2,454 CFM SUPPLY ON HIGH SPEED SETTING	FURNISH WITH WALL MOUNTING KIT, REFRIGERANT LINE SET, LOW AMBIENT KIT, AND WALL MOUNTED T'STAT	77 WATTS	460V/ 3Φ /60 HZ	51 LBS	UNIT SERVES IT SERVER ROOM
CU 2	HIGH EFFICIENCY SINGLE ZONE CONDENSING UNIT	LIEBERT MODEL NO. TCSV60K-A	COOLING: 60.4 MBH T.C. AT 95/75°F AMBIENT OSA	VARIABLE FREQUECY DRIVE KIT, R410A REFRIGERANT	1.8 AMPS	460/ 3Φ /60 HZ	204 LBS	UNIT SERVES AC-2

AIR HANDLER EQUIPMENT SCHEDULE

SYM	DESCRIPTION	MAKE & MODEL NO.	CAPACITY*	ACCESSORIES	HP	ELEC.	WT.	REMARKS
AHU - 2, 3, 4, 5	HORIZONTAL AIR HANDLER, HORIZONTAL DISCHARGE, INDOOR CONFIGURATION, STEAM COIL, CHILLED WATER COIL, ECONOMIZER	YORK MODEL NO. XTO-36X12	SUPPLY FAN: 5,500 CFM SUPPLY AT 1.5" W.C. E.S.P., FORWARD CURVED EXHAUST FAN: 5,500 CFM EXHAUST AT 0.8" W.C. E.S.P., FORWARD CURVED COOLING COIL: 4 ROWS, 12 FINS PER FOOT, 11.5 SQ. FT. FREE AREA, 478 FPS FACE VELOCITY, 137.4 MBH TOTAL CAPACITY AND 128.5 MBH SENSIBLE CAPACITY @ 72.8 GPM, EWT 45°, LWT 57°, EAT 80°, LAT 55, 8.2 ft. WPD. HEATING COIL: 1 ROWS, 10 FINS PER INCH, 11.5 SQ. FT. FREE AREA, 478 FPS FACE VELOCITY, 160.4 MBH TOTAL CAPACITY @ 11 GPM, EWT 180°, LWT 150°, EAT 55°, LAT 85°, 4.1 ft. WPD.	2" THICK PLEATED DISPOSABLE AIR FILTERS MIN. MERV 8 RATING, SMOKE DETECTOR IN SUPPLY AIR DUCTWORK FACTORY MOUNTED 120 VOLT CONVENIENCE OUTLET	SUPPLY FAN 7.5 HP RETURN FAN 5.0 HP	460V/1Φ 60 HZ	3,392 LBS	SET OUTSIDE AIR @ 300 CFM

CHILLER ROOM EXHAUST FAN SCHEDULE

SYM	DESCRIPTION	MAKE & MODEL NO.	CAPACITY*	ACCESSORIES	HP / KW	ELEC.	WT.	REMARKS
REF 1	REFRIGERATION EXHAUST FAN	COOK FAN MODEL No. DB-8	1,400 CFM AT 0.30" S.P. AT 4,500 FT. ELEVATION, 16.5 SONES	GRAVITY DAMPER	0.5 HP	115V 1Φ	84 LBS	SERVES CHILLER ROOM
REF 2	REFRIGERATION EXHAUST FAN	COOK FAN MODEL No. 120CI5D	1540 CFM AT 0.20" S.P. AT 4,500 FT. ELEVATION, 12.4 SONES	BD-14 DAMPER EXT BASE-18 GALV 4" STAINLESS BIRDSCREEN STAINLESS HARDWARE	.25 HP	115V 1Φ	90	EMERGENCY REFRIGERATION EXHAUST FAN SERVING CHILLER ROOM

DIFFUSER and REGISTER SCHEDULE

SYM	DESCRIPTION	MANUFACTURER and MODEL NUMBER	NECK SIZE	OBD	FINISH and MATERIAL	REMARKS
ES	EXISTING CEILING MOUNTED SUPPLY DIFFUSER	N/A	VARIES	N/A	VARIES	-
ER	EXISTING CEILING / WALL MOUNTED RETURN GRILLE	N/A	VARIES	N/A	VARIES	-
1	CEILING MOUNTED DIFFUSER, ROUND NECK, HIGH PERFORMANCE, 2 WAY THROW	KRUEGER SHV-02 SERIES	SEE PLANS	NO	WHITE ALUMINUM	24"x24" MODULE, COORDINATE FRAME TYPE WITH THE EXISTING CEILING CONDITIONS
2	CEILING MOUNTED DIFFUSER, ROUND NECK, HIGH PERFORMANCE, 3 WAY THROW	KRUEGER SHV-03 SERIES	SEE PLANS	NO	WHITE ALUMINUM	24"x24" MODULE, COORDINATE FRAME TYPE WITH THE EXISTING CEILING CONDITIONS
3	CEILING MOUNTED DIFFUSER, ROUND NECK, ADJUSTABLE, HIGH PERFORMANCE, 4 WAY THROW	KRUEGER 5145O SERIES	SEE PLANS	NO	WHITE ALUMINUM	24"x24" MODULE, COORDINATE FRAME TYPE WITH THE EXISTING CEILING CONDITIONS

WATER HEATER SCHEDULE

SYM	DESCRIPTION	MANUFACTURER & MODEL NO.	TRIM	CONNECTIONS			REMARKS
				H.P./AMPS	ELEC.	WGT.	
WH 1	76% EFICIENCY POWER DIRECT VENT, GLASS LINED WATER HEATER, GAS FIRED, TANK TYPE, 40 GALLON TANK, 40 MBH INPUT NATURAL GAS	LOCHINVAR MODEL NO. FRN040-40	4:1 GPH RECOVERY AT 90° TEMPERATURE RISE AT ALTITUDE, 125 PSIG ASME PTR VALVE, ACID NEUTRALIZER KIT	- 3A BKR	120V 1Φ	600 LBS. WET	SET WATER TEMP. TO 120°F WATER HEATER TO BE STRAPPED FOR SEISMIC AS REQUIRED BY CODE

EXPANSION TANK SCHEDULE

SYM	DESCRIPTION	MANUFACTURER & MODEL NO.	CAPACITY & TRIM	CONNECTION SIZE	LBS.	REMARKS
ET 1	DIAPHRAM TYPE EXPANSION TANK, ASME TANK	WATTS MODEL NO. PLT-5-M1	2.1 GALLON TANK VOLUME, SUITABLE FOR POTABLE WATER	3/4" MALE	5.5 LBS	FOR USE W/ WH-1 SEE DETAIL 9/M6.1
ET 2	BLADDER TYPE EXPANSION TANK, ASME TANK	TACO MODEL NO. CBX30-125	8 GALLON TOTAL TANK VOLUME, 5 GALLON ACCEPTANCE VOLUME FOR USE WITH CHILLED WATER, NOT FOR USE WITH POTABLE WATER, VERTICAL INSTALLATION ONLY	3/4" MALE	90 LBS	
ET 3	BLADDER TYPE EXPANSION TANK, ASME TANK	TACO MODEL NO. CBX170-125	45 GALLON TOTAL TANK VOLUME, 24 GALLON ACCEPTANCE VOLUME FOR USE WITH HOT WATER, NOT FOR USE WITH POTABLE WATER, VERTICAL INSTALLATION ONLY	3/4" MALE	240 LBS	

AIR SEPERATOR SCHEDULE

SYM	DESCRIPTION	MANUFACTURER & MODEL NO.	CAPACITY	CONNECTION SIZE	REMARKS
AS 1	ROLAIRTROL TYPE IN LINE AIR SEPARATOR, NO STRAINER REQUIRED	BELL AND GOSSETT R-5 FLANGED	DESIGN FLOW RATE 500 GPM, MAX PRESSURE DROP=1.8 FT. HD. Cv=215	5 INCH FLANGED	FOR USE W/ CHILLED WATER SYSTEM

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

MMI ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL

9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE
MECHANICAL SCHEDULES (1)

REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :
M0.2

BUILDING #100 VAV BOX SCHEDULE

UNIT DESIGNATION	MAKE AND MODEL NUMBER	STANDARD FEATURES AND OPTIONAL ACCESSORIES	UNIT SIZE	MIN AIR FLOW (CFM) @ 0.03" W.G.	MAX AIR FLOW (CFM) @ 1.0" W.G.	HEATING MODE								CONTROLS
						EAT (°F)	LAT (°F)	WPD. (ft. wg.)	COIL APD. (IN W.C.)	GPM	EWT (°F)	LWT (°F)	PIPING BRANCH SETTING (GPM)	
VAV 1-1	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	6	140	460	65	97.8	.03	.09	.43	180	161.4	.5	DIGITAL ELECTRONIC
VAV 1-2	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	6	115	380	65	95	.06	.07	.22	180	147.8	.5	DIGITAL ELECTRONIC
VAV 1-3	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	6	150	490	65	95	.10	.10	.28	180	151.86	.5	DIGITAL ELECTRONIC
VAV 1-4	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	4	100	175	65	100	.06	.02	.22	180	149.7	.5	DIGITAL ELECTRONIC
VAV 1-5	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	4	100	200	65	100	.06	.02	.22	180	149.7	.5	DIGITAL ELECTRONIC
VAV 1-6	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	4	100	200	65	100	.06	.02	.22	180	149.7	.5	DIGITAL ELECTRONIC
VAV 1-7	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	6	130	425	65	95	.08	.08	.24	180	149.4	.5	DIGITAL ELECTRONIC
VAV 1-8	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	6	150	500	65	95	.03	.10	.42	180	160.7	.5	DIGITAL ELECTRONIC
VAV 1-9	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	4	100	175	65	100	.06	.02	.22	180	149.7	.5	DIGITAL ELECTRONIC
VAV 1-10	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	10	475	1575	65	85	.12	.28	.75	180	155	.75	DIGITAL ELECTRONIC
VAV 1-11	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	5	100	320	65	95	.01	.05	.20	180	149.9	.5	DIGITAL ELECTRONIC
VAV 1-12	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	5	80	260	65	95	.01	.04	.15	180	145.5	.5	DIGITAL ELECTRONIC
VAV 1-13	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	6	130	425	65	90	.05	.08	.20	180	144.4	.5	DIGITAL ELECTRONIC
VAV 1-14	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	8	180	600	65	95	.15	.10	.34	180	151.9	.5	DIGITAL ELECTRONIC
VAV 1-15	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	6	140	450	65	95	.09	.09	.26	180	150.7	.5	DIGITAL ELECTRONIC
VAV 1-16	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	6	150	500	65	90	.02	.10	.30	180	154.7	.5	DIGITAL ELECTRONIC
VAV 1-17	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	6	115	380	65	95	.12	.07	.30	180	155.8	.5	DIGITAL ELECTRONIC

BUILDING #100 VAV BOX SCHEDULE

UNIT DESIGNATION	MAKE AND MODEL NUMBER	STANDARD FEATURES AND OPTIONAL ACCESSORIES	UNIT SIZE	MIN AIR FLOW (CFM) @ 0.03" W.G.	MAX AIR FLOW (CFM) @ 1.0" W.G.	HEATING MODE								CONTROLS
						EAT (°F)	LAT (°F)	WPD (ft. wg)	Coil APD. (ft. wg.)	GPM	EWT (°F)	LWT (°F)	PIPING BRANCH SETTING (GPM)	
VAV 1-18	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	8	170	550	65	91.7	.14	.09	.33	180	151.3	.5	DIGITAL ELECTRONIC
VAV 1-19	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	8	180	600	65	90	.02	.10	.30	180	151	.5	DIGITAL ELECTRONIC
VAV 1-20	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	5	75	250	65	100	.04	.03	.16	180	147	.5	DIGITAL ELECTRONIC
VAV 1-21	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	8	170	550	65	91.7	.14	.09	.33	180	151.3	.5	DIGITAL ELECTRONIC
VAV 1-22	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	5	105	350	65	95	.01	.06	.19	180	148.2	.5	DIGITAL ELECTRONIC
VAV 1-23	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	5	90	300	65	95	.01	.04	.20	180	150.1	.5	DIGITAL ELECTRONIC
VAV 1-24	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	8	230	755	65	91.7	.14	.15	.33	180	151.3	.5	DIGITAL ELECTRONIC
VAV 1-25	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	8	170	550	65	91.7	.14	.09	.33	180	151.3	.5	DIGITAL ELECTRONIC
VAV 1-26	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	6	120	400	65	95.3	.06	.07	.22	180	147.4	.5	DIGITAL ELECTRONIC
VAV 1-27	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	5	100	300	65	95.3	.06	.04	.22	180	147.4	.5	DIGITAL ELECTRONIC
VAV 1-28	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	8	225	750	65	85	.03	.15	.40	180	155.1	.75	DIGITAL ELECTRONIC
VAV 1-29	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	8	225	750	65	85	.03	.15	.40	180	155.1	.5	DIGITAL ELECTRONIC
VAV 1-30	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	8	225	750	65	85	.03	.15	.40	180	155	.5	DIGITAL ELECTRONIC
VAV 1-31	NOT USED	-	-	-	-	-	-	-	-	-	-	-	-	-
VAV 1-32	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	5	90	300	65	101.7	.07	.04	.23	180	152.1	.5	DIGITAL ELECTRONIC
VAV 1-33	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	10	325	1050	65	95	.53	.14	.61	180	147.8	.75	DIGITAL ELECTRONIC
VAV 1-34	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	8	165	550	65	95	.13	.09	.31	180	151	.5	DIGITAL ELECTRONIC
VAV 1-35	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	6	120	400	65	95	.07	.07	.23	180	148.4	.5	DIGITAL ELECTRONIC

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

MMI ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL
9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE
MECHANICAL SCHEDULES (2)

REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :
M0.3

BUILDING #200 VAV BOX SCHEDULE

UNIT DESIGNATION	MAKE AND MODEL NUMBER	STANDARD FEATURES AND OPTIONAL ACCESSORIES	UNIT SIZE	MIN AIR FLOW (CFM) @ 0.03" W.G.	MAX AIR FLOW (CFM) @ 1.0" W.G.	HEATING MODE								CONTROLS
						EAT (°F)	LAT (°F)	WPD (ft. wg)	Coil APD (ft. wg)	GPM	EWT (°F)	LWT (°F)	PIPING BRANCH SETTING (GPM)	
VAV 2-1	ENVIRO-TEC 9DR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	10	270	900	65	94.5	.10	.22	.74	180	148.3	.75	DIGITAL ELECTRONIC
VAV 2-2	ENVIRO-TEC 9DR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	10	410	1350	65	94.5	.10	.22	.74	180	148.3	.75	DIGITAL ELECTRONIC
VAV 2-3	ENVIRO-TEC 9DR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	6	140	450	65	93.2	.08	.09	.25	180	149.7	.5	DIGITAL ELECTRONIC
VAV 2-4	ENVIRO-TEC 9DR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	8	260	850	65	91.3	.26	.19	.47	180	151.8	.75	DIGITAL ELECTRONIC
VAV 2-5	ENVIRO-TEC 9DR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	6	130	425	65	90	.06	.08	.20	180	145.1	.5	DIGITAL ELECTRONIC
VAV 2-6	ENVIRO-TEC 9DR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	5	60	200	65	105	.03	.02	.15	180	146.8	.5	DIGITAL ELECTRONIC
VAV 2-7	ENVIRO-TEC 9DR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	10	410	1350	65	94.5	.10	.22	.74	180	148.3	.75	DIGITAL ELECTRONIC
VAV 2-8	ENVIRO-TEC 9DR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	8	225	750	65	91.5	.21	.15	.41	180	151.6	.5	DIGITAL ELECTRONIC
VAV 2-9	ENVIRO-TEC 9DR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	8	210	700	65	90	.14	.14	.33	180	150.2	.5	DIGITAL ELECTRONIC
VAV 2-10	ENVIRO-TEC 9DR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	8	300	1000	65	90.1	.33	.25	.54	180	152.2	.75	DIGITAL ELECTRONIC
VAV 2-11	ENVIRO-TEC 9DR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	10	375	1240	65	95	.62	.19	.68	180	147.8	.75	DIGITAL ELECTRONIC
VAV 2-12	ENVIRO-TEC 9DR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	6	135	450	65	95	.08	.09	.25	180	150.1	.5	DIGITAL ELECTRONIC
VAV 2-13	ENVIRO-TEC 9DR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	10	330	1100	65	95.6	.51	.15	.60	180	147.2	.75	DIGITAL ELECTRONIC
VAV 2-14	ENVIRO-TEC 9DR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	5	110	350	65	96.4	.05	.06	.20	180	146.3	.5	DIGITAL ELECTRONIC

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL
9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE
MECHANICAL SCHEDULES (3)

REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :
M0.4

BUILDING #300 VAV BOX SCHEDULE

UNIT DESIGNATION	MAKE AND MODEL NUMBER	STANDARD FEATURES AND OPTIONAL ACCESSORIES	UNIT SIZE	MIN AIR FLOW (CFM) @ 0.03" W.G.	MAX AIR FLOW (CFM) @ 1.0" W.G.	HEATING MODE								CONTROLS
						EAT (°F)	LAT (°F)	WPD (ft. wg)	Coil APD (ft. wg)	GPM	EWT (°F)	LWT (°F)	PIPING BRANCH SETTING (GPM)	
VAV 3-1	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	5	110	350	65	96.4	.05	.06	.20	180	146.3	.5	DIGITAL ELECTRONIC
VAV 3-2	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	10	360	1200	65	95.2	.58	.18	.65	180	147.6	.75	DIGITAL ELECTRONIC
VAV 3-3	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	10	315	1050	65	95.6	.47	.14	.57	180	146.9	.75	DIGITAL ELECTRONIC
VAV 3-4	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	10	390	1300	65	94.8	.65	.20	.71	180	148	.75	DIGITAL ELECTRONIC
VAV 3-5	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	5	110	350	65	96.4	.05	.06	.20	180	146.3	.5	DIGITAL ELECTRONIC
VAV 3-6	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	5	100	300	65	99.8	.07	.04	.24	180	151.8	.5	DIGITAL ELECTRONIC
VAV 3-7	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	5	100	300	65	99.8	.07	.04	.24	180	151.8	.5	DIGITAL ELECTRONIC
VAV 3-8	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	5	100	300	65	99.8	.07	.04	.24	180	151.8	.5	DIGITAL ELECTRONIC
VAV 3-9	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	5	100	300	65	99.8	.07	.04	.24	180	151.8	.5	DIGITAL ELECTRONIC
VAV 3-10	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	10	450	1490	65	94	.79	.26	.82	180	148.9	1	DIGITAL ELECTRONIC
VAV 3-11	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	6	150	485	65	95	.10	.10	.28	180	151.9	.5	DIGITAL ELECTRONIC
VAV 3-12	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	5	100	325	65	100	.06	.05	.22	180	149.7	.5	DIGITAL ELECTRONIC
VAV 3-13	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	08	225	750	65	91.5	.21	.15	.41	180	151.6	.5	DIGITAL ELECTRONIC
VAV 3-14	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	5	100	290	65	100	.06	.04	.22	180	149.7	.5	DIGITAL ELECTRONIC
VAV 3-15	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	5	100	300	65	99.8	.07	.04	.24	180	151.8	.5	DIGITAL ELECTRONIC
VAV 3-16	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	10	320	1060	65	95.1	.48	.14	.58	180	147	.75	DIGITAL ELECTRONIC
3		...NTROL VALVE	6	150	500			.10	.10				.5	
VAV 3-18	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	5	100	300	65	99.8	.07	.04	.24	180	151.8	.5	DIGITAL ELECTRONIC

BUILDING #400 VAV BOX SCHEDULE

UNIT DESIGNATION	MAKE AND MODEL NUMBER	STANDARD FEATURES AND OPTIONAL ACCESSORIES	UNIT SIZE	MIN AIR FLOW (CFM) @ 0.03" W.G.	MAX AIR FLOW (CFM) @ 1.0" W.G.	HEATING MODE								CONTROLS
						EAT (°F)	LAT (°F)	WPD (ft. wg)	Coil APD (ft. wg)	GPM	EWT (°F)	LWT (°F)	PIPING BRANCH SETTING (GPM)	
VAV 4-1	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	10	325	1070	65	100	.66	.15	.71	180	150.4	.75	DIGITAL ELECTRONIC
VAV 4-2	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	8	170	560	65	95	.40	.09	.61	180	153.1	.5	DIGITAL ELECTRONIC
VAV 4-3	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	6	180	600	65	91.7	.14	.10	.33	180	151.3	.5	DIGITAL ELECTRONIC
VAV 4-4	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	12	625	2080	65	100	1.91	.26	1.37	180	151.3	2	DIGITAL ELECTRONIC
VAV 4-5	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	8	170	550	65	92.5	.13	.09	.31	180	150.5	.5	DIGITAL ELECTRONIC
VAV 4-6	ENVIRO-TEC SDR	MULTI-POINT AVERAGING VELOCITY SENSOR, DUAL DENSITY INSULATION, 22 GAUGE UNIT CASING, NEMA 1 CONTROL BOX, UL TRANSFORMER, HOT WATER REHEAT COIL, 2-WAY CONTROL VALVE	5	100	310	65	100	.09	.05	.26	180	152.2	.5	DIGITAL ELECTRONIC

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

MMI ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL
9/26/2014

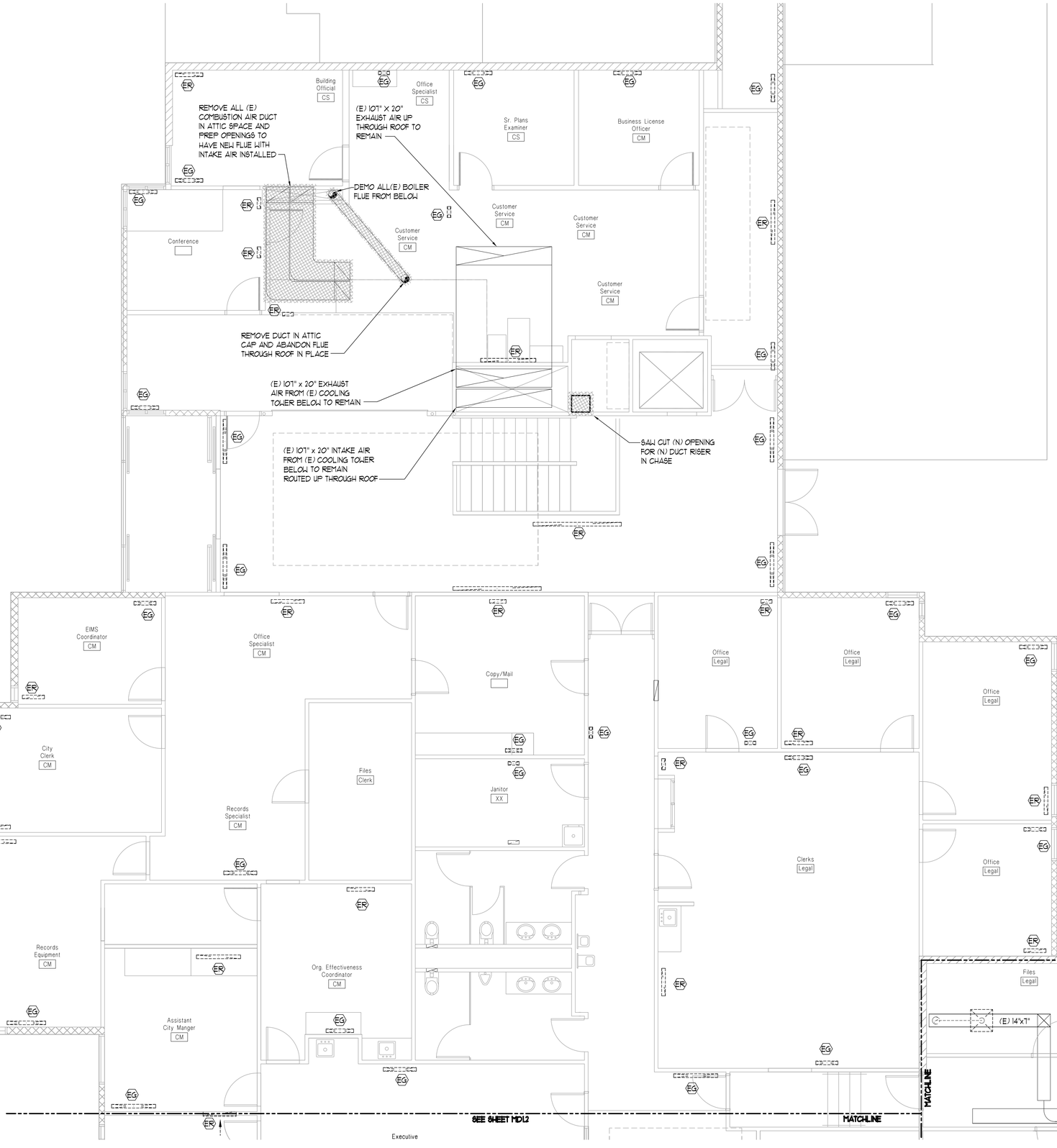
SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE
MECHANICAL SCHEDULES (4)

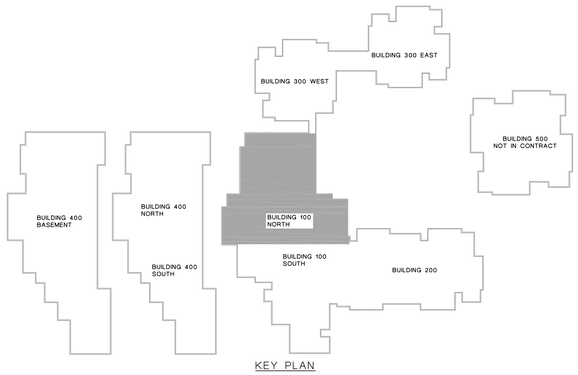
REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :
M0.5



A MD1.1 BUILDING #100 (NORTH HALF) MECHANICAL DEMOLITION FLOOR PLAN
SCALE: 1/4"=1'-0"
BASE BID



KEY PLAN

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

MMI ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL
9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE

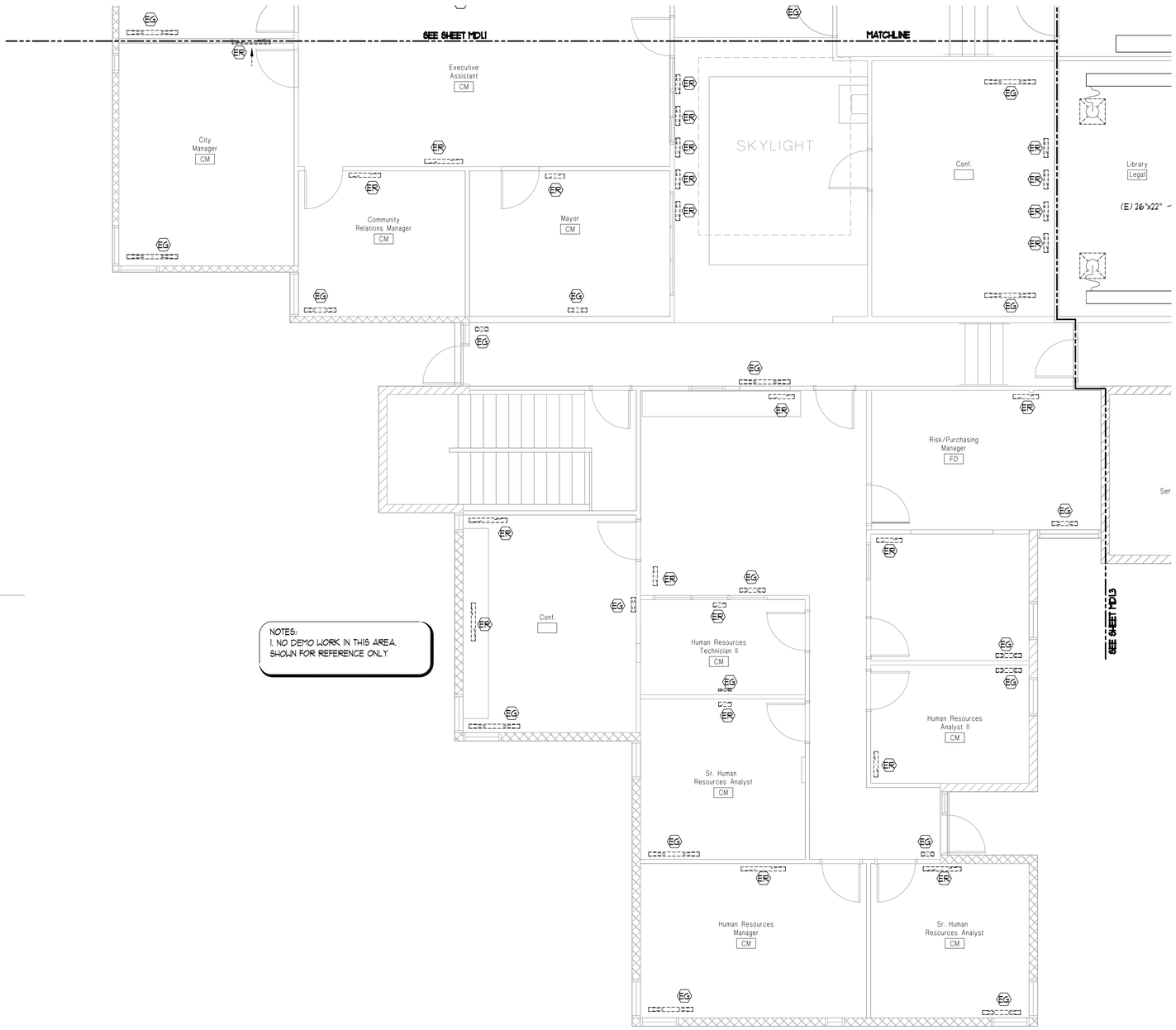
BUILDING #100
MECHANICAL DEMOLITION
FLOOR PLAN

REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :

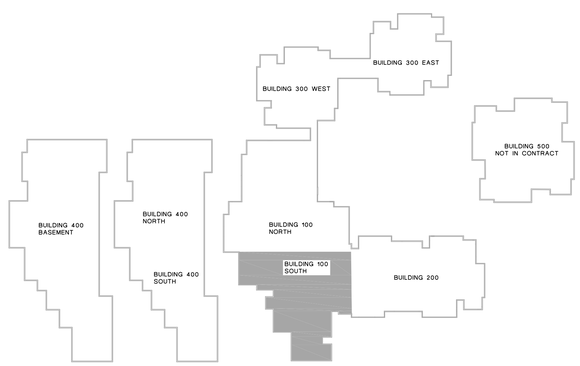
MD1.1



NOTES:
1. NO DEMO WORK IN THIS AREA. SHOWN FOR REFERENCE ONLY

A MD1.2

BUILDING #100 (SOUTH HALF)
MECHANICAL DEMOLITION FLOOR PLAN
SCALE: 1/4"=1'-0"
BASE BID



KEY PLAN

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL
9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE

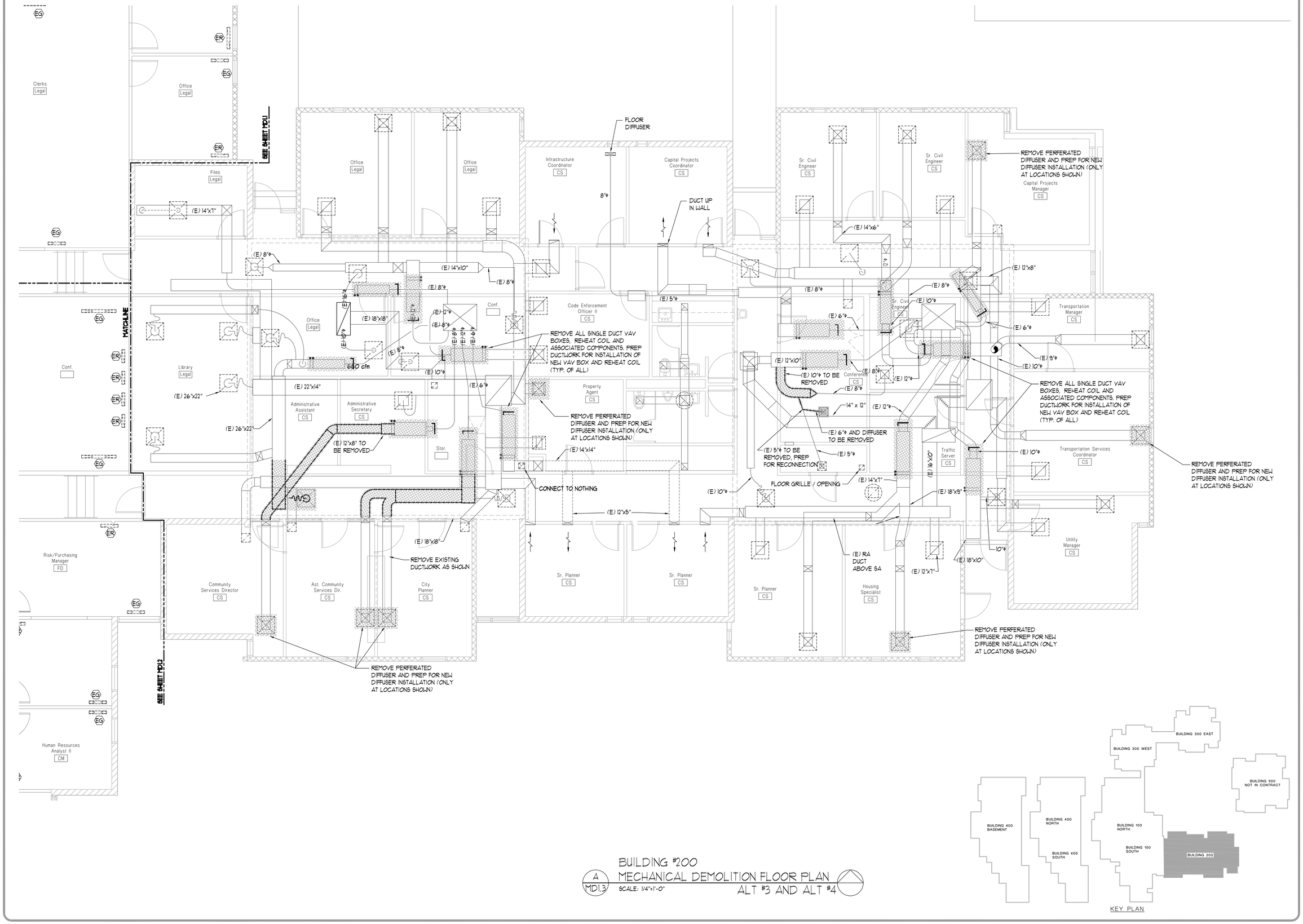
BUILDING #100
MECHANICAL DEMOLITION
FLOOR PLAN

REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :

MD1.2



BUILDING #200
MECHANICAL DEMOLITION FLOOR PLAN
ALT #3 AND ALT #4

A
MD1.3

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

KEY PLAN

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

ENGINEERING

REGISTERED PROFESSIONAL ENGINEER - STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL

9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE

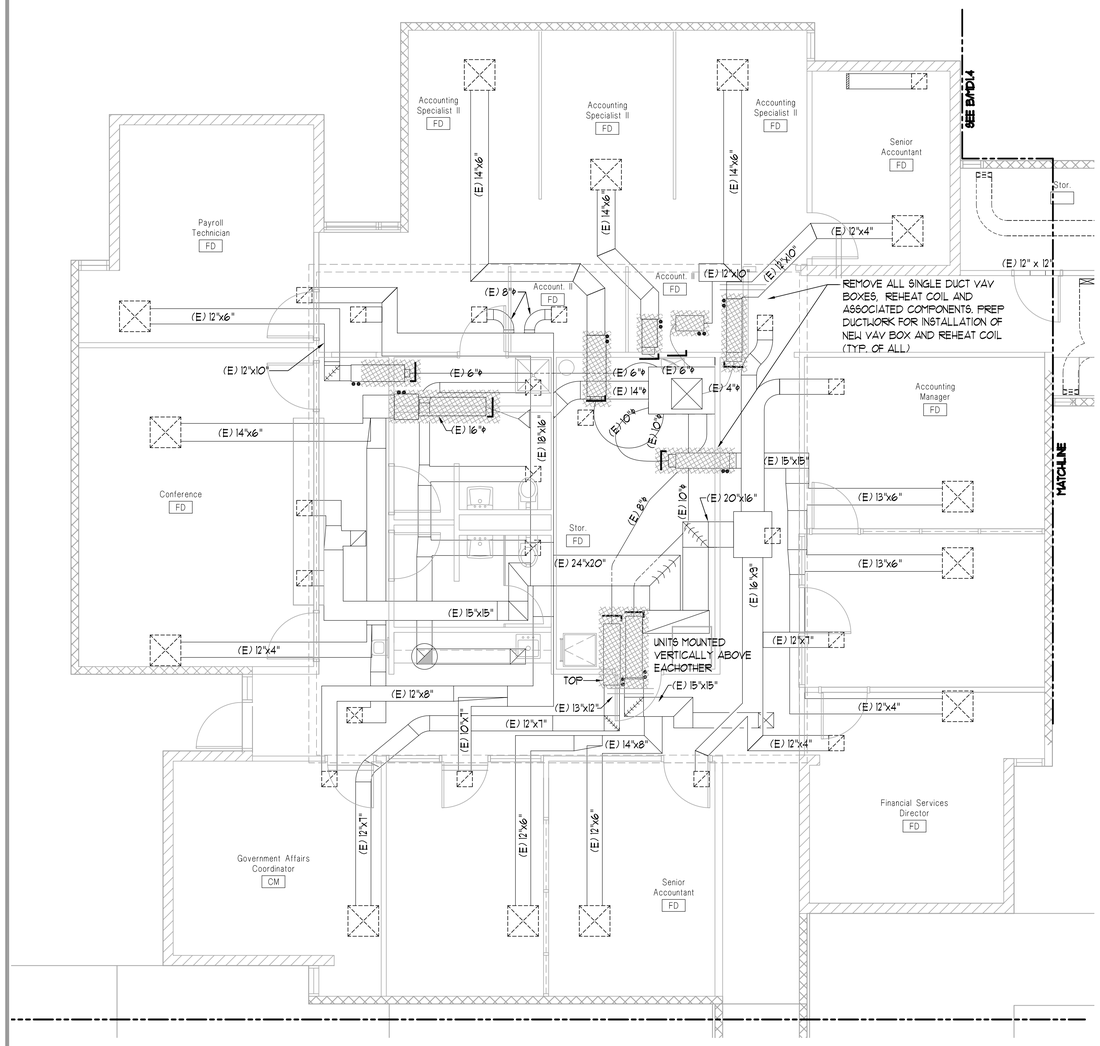
BUILDING #200
MECHANICAL DEMOLITION
FLOOR PLAN

REVISIONS

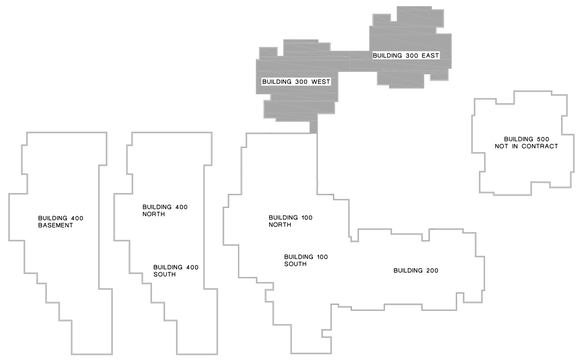
DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :

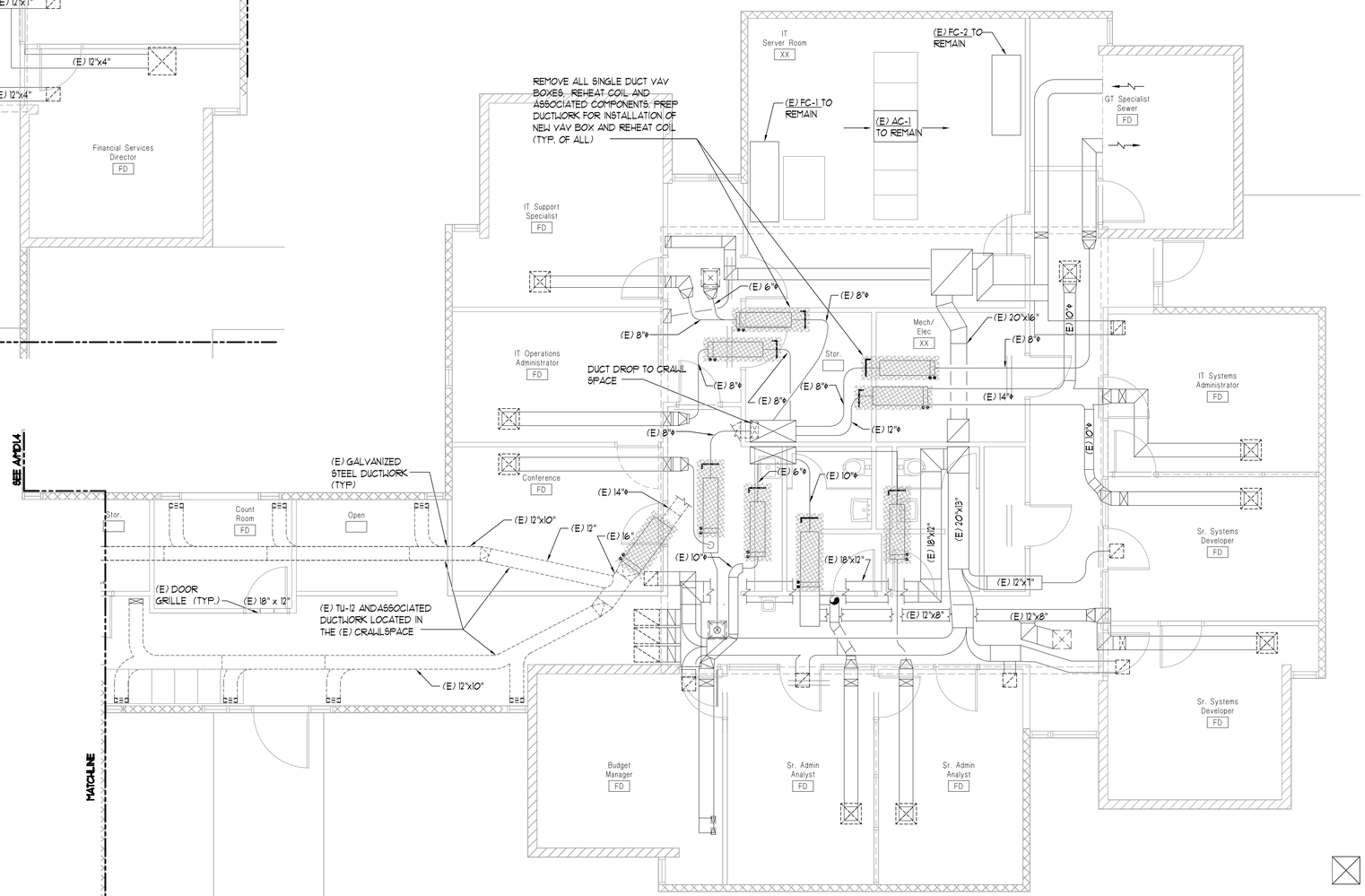
MD1.3



A MD1.4 BUILDING #300 FLOOR PLAN ALT #1
SCALE: 1/4"=1'-0"



KEY PLAN



B MD1.4 BUILDING #300 FLOOR PLAN ALT #2
SCALE: 1/4"=1'-0"

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL
9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE

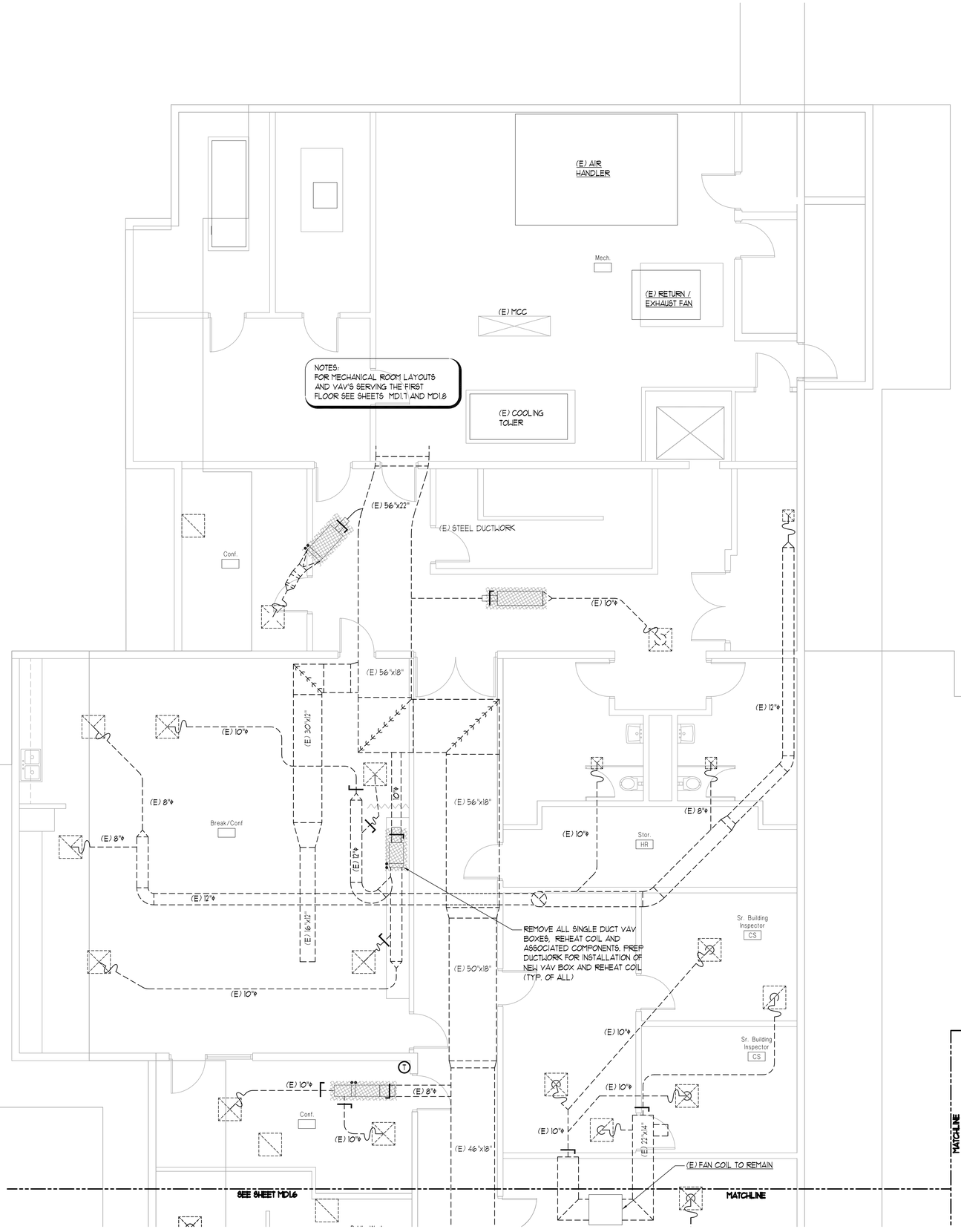
BUILDING #300
MECHANICAL DEMOLITION
FLOOR PLAN

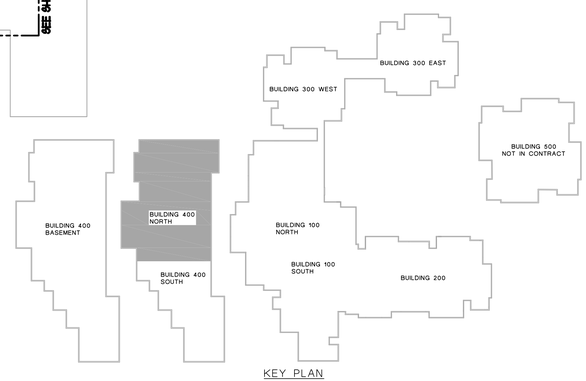
REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :

MD1.4





KEY PLAN

A / MD1.5

BUILDING #400 - (NORTH HALF)
MECHANICAL DEMOLITION PLAN - SYSTEM SERVING BASEMENT
SCALE: 1/4"=1'-0"
BASE BID

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

MMI ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL
No. 16815
9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

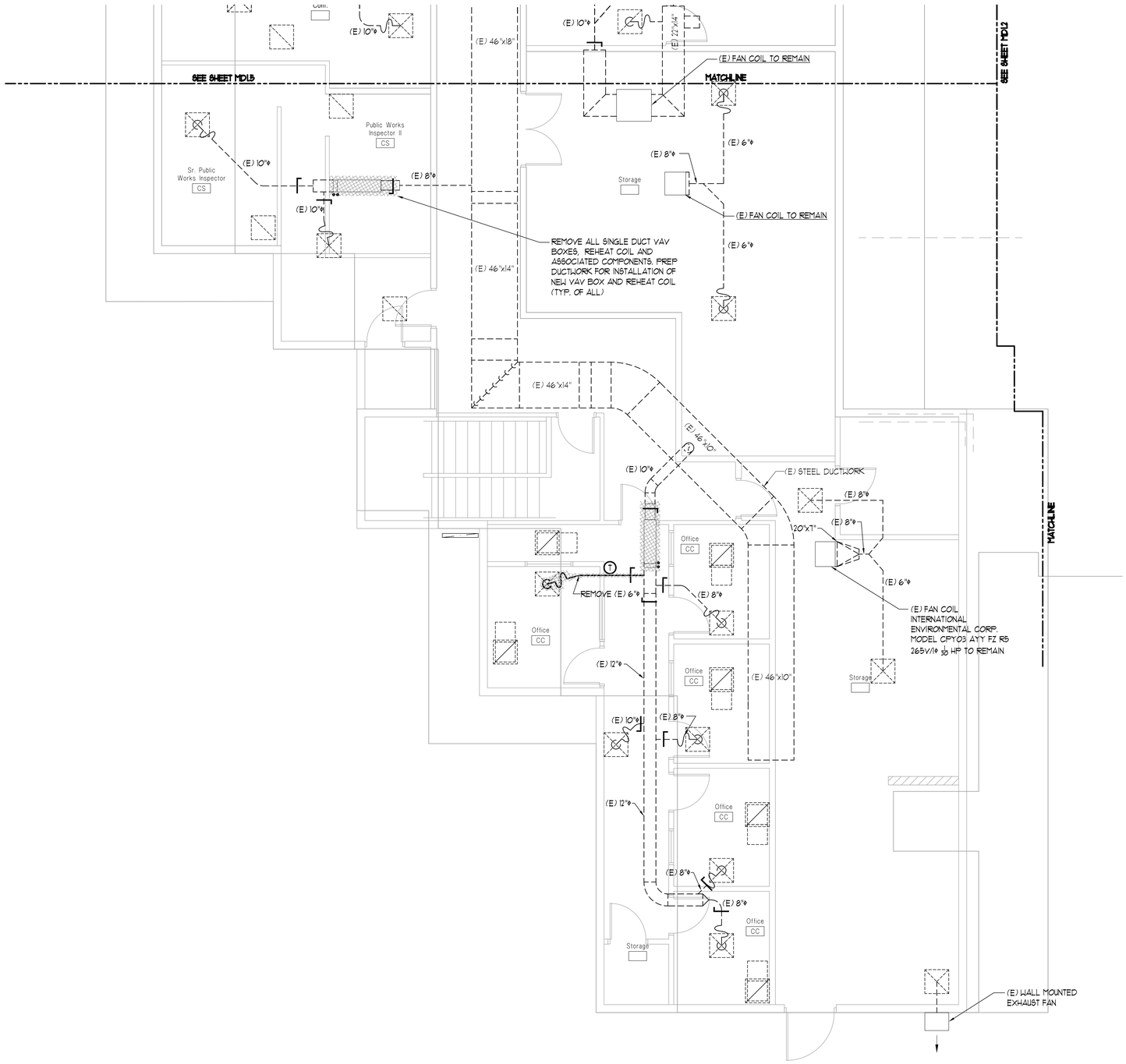
SHEET TITLE

BUILDING #400 (NORTH)
MECHANICAL DEMOLITION PLAN - SYSTEMS SERVING BASEMENT

REVISIONS

DATE :
SEPTEMBER 26, 2014

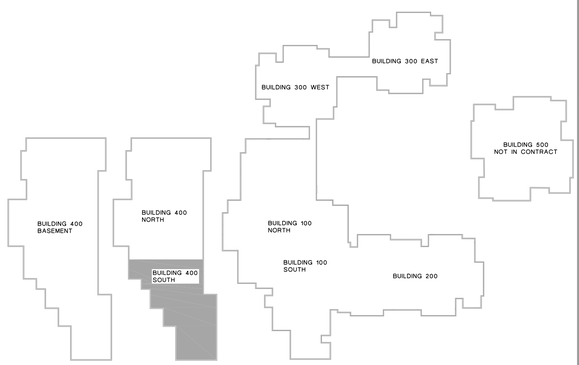
SHEET NUMBER :
MD1.5



BUILDING #400 - (SOUTH HALF)
MECHANICAL DEMOLITION PLAN - SYSTEM SERVING BASEMENT
BASE BID

A
MD1.6

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



KEY PLAN

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL

9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE

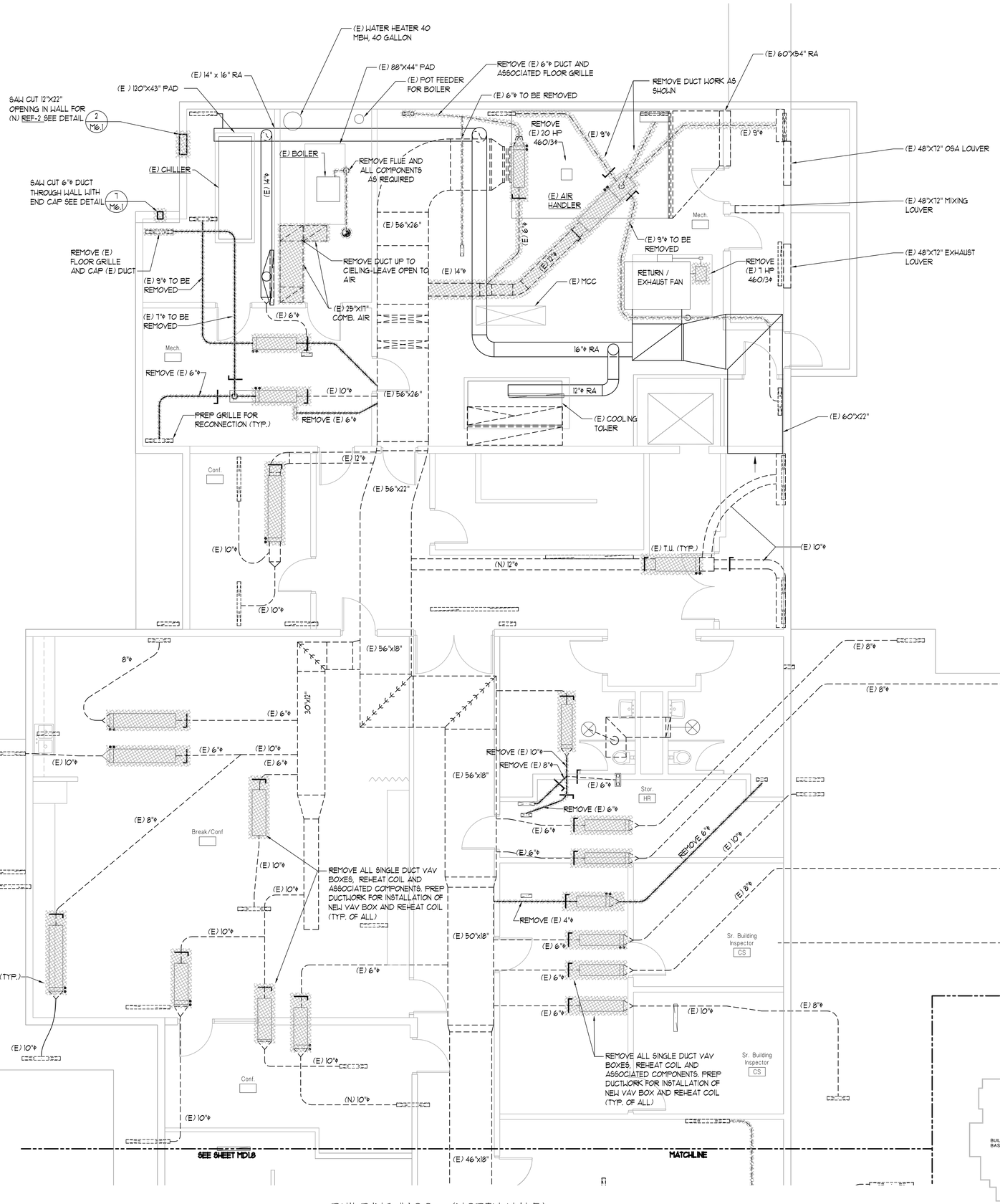
BUILDING #400 (SOUTH)
MECHANICAL DEMOLITION
PLAN - SYSTEM SERVING
BASEMENT

REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :

MD1.6



A MD1.7

BUILDING #400 - (NORTH HALF)
MECHANICAL DEMOLITION PLAN - SYSTEM SERVING 1ST FLOOR

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

BASE BID

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

MMI ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL
No. 16816
9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE

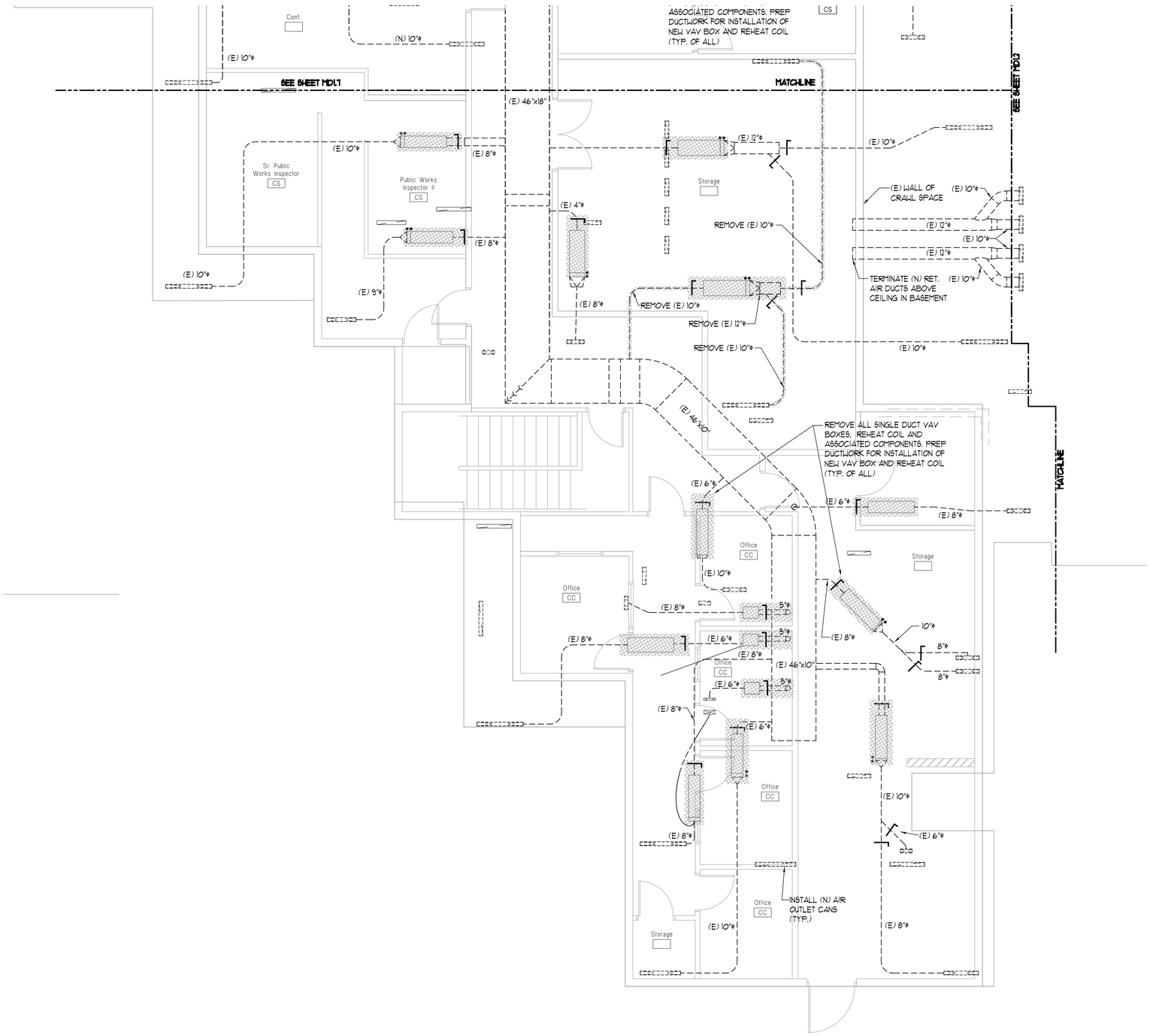
BUILDING #400 (NORTH) MECHANICAL DEMOLITION PLAN - SYSTEMS SERVING 1ST FLOOR

REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :

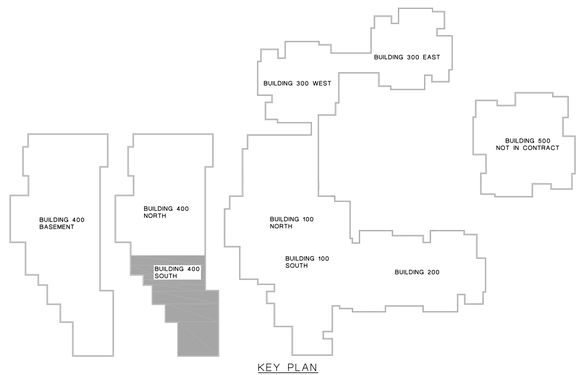
MD1.7



BUILDING #400 - (SOUTH HALF)
MECHANICAL DEMOLITION PLAN - SYSTEM SERVING 1ST FLOOR
BASE BID

A / MD1.8

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



KEY PLAN

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

MMI ENGINEERING

MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL
REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA

9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

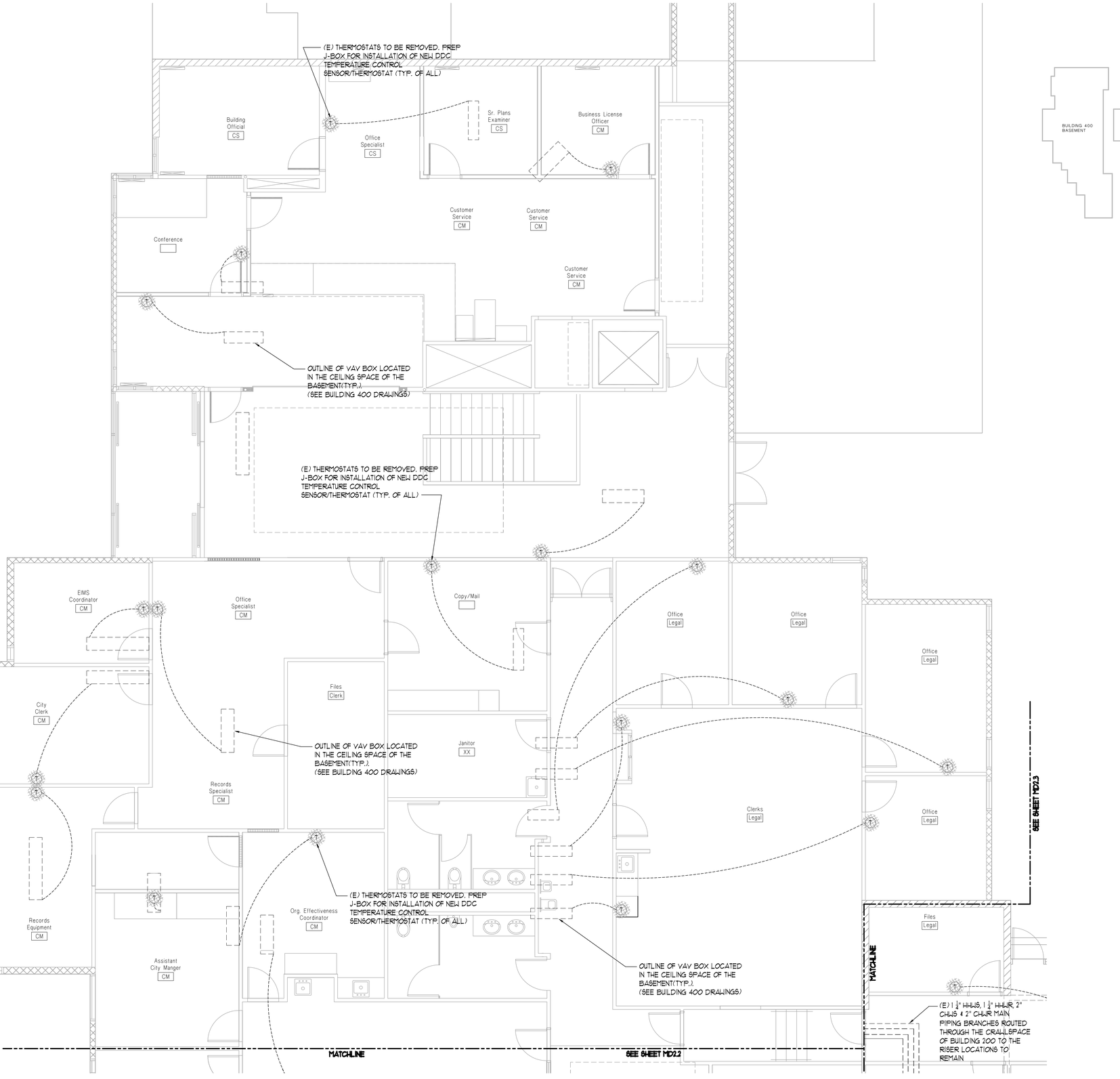
SHEET TITLE

BUILDING #400 (SOUTH)
MECHANICAL DEMOLITION PLAN - SYSTEM SERVING 1ST FLOOR

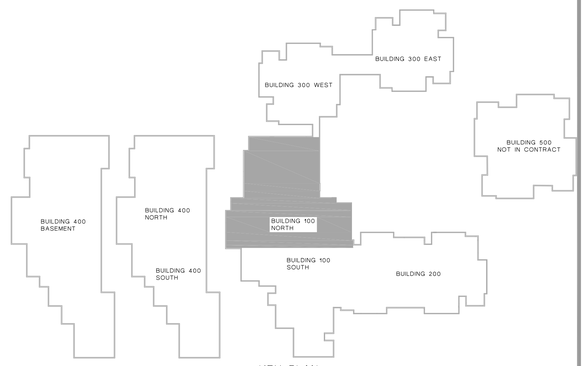
REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :
MD1.8



A MD2.1 BUILDING #100 (NORTH HALF) MECHANICAL DEMOLITION FLOOR PLAN
SCALE: 1/4"=1'-0"
BASE BID



KEY PLAN

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

ENGINEERING

MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL
REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE

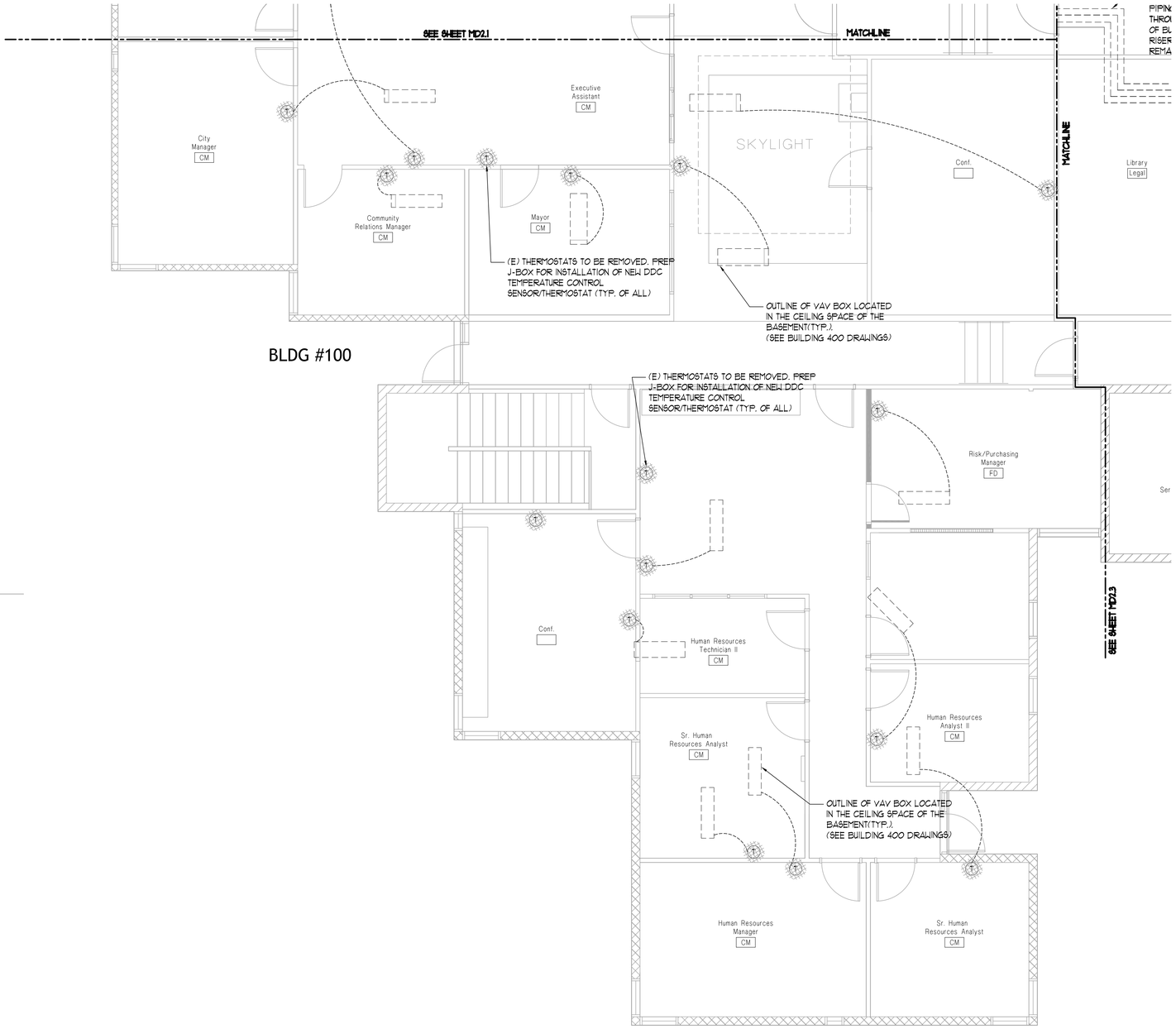
BUILDING #100
MECHANICAL DEMOLITION
FLOOR PLAN

REVISIONS

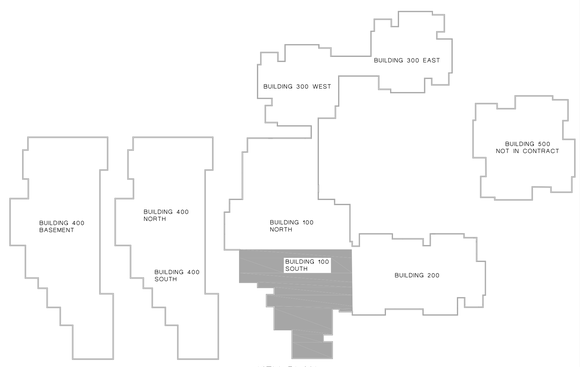
DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :

MD2.1



A MD2.2 BUILDING #100 (SOUTH HALF) MECHANICAL DEMOLITION FLOOR PLAN
SCALE: 1/4"=1'-0" BASE BID



KEY PLAN

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

MMI ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL
9/26/2014

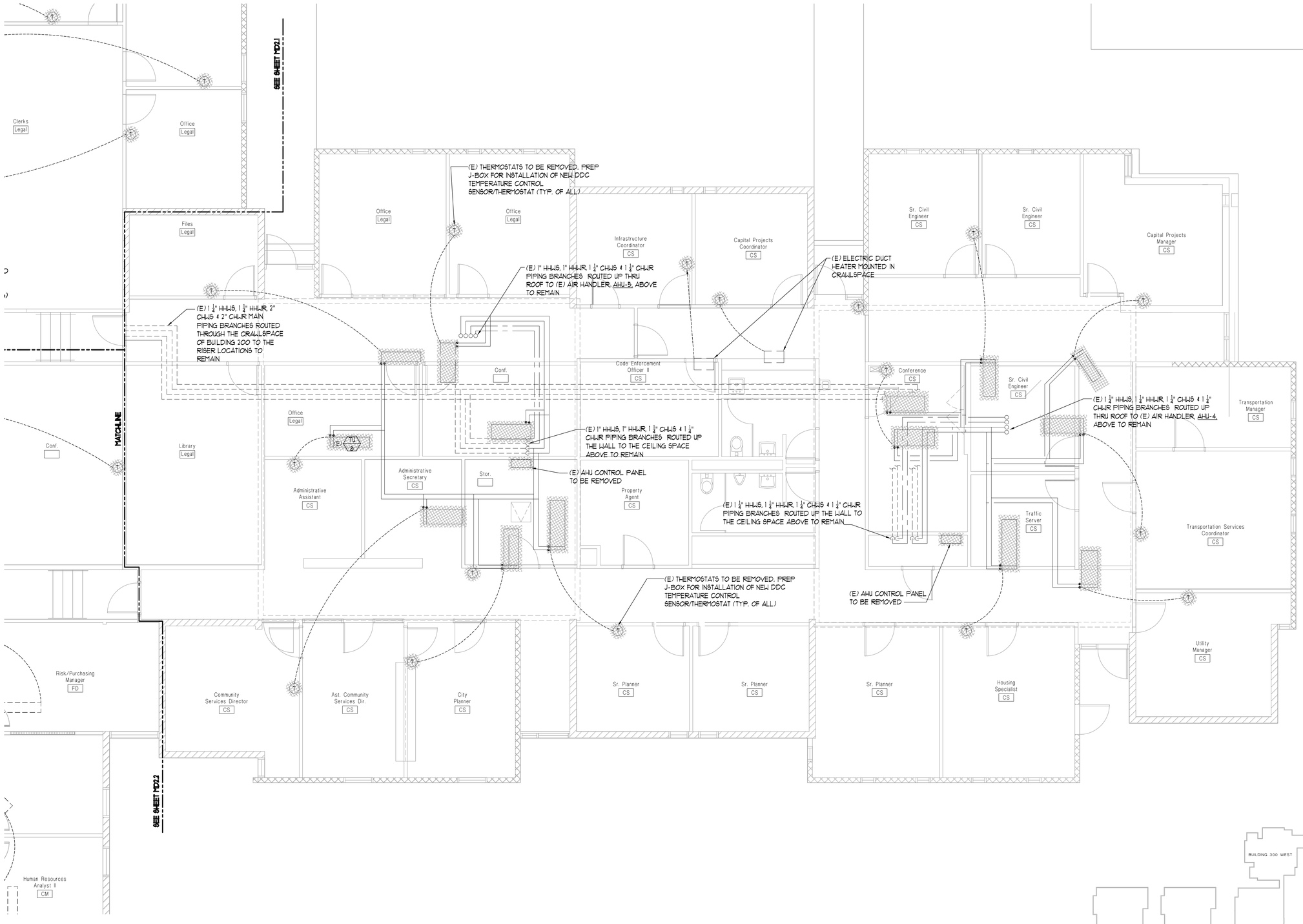
SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE
BUILDING #100
MECHANICAL DEMOLITION
FLOOR PLAN

REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :
MD2.2



A MD2.3 BUILDING #200 MECHANICAL DEMOLITION FLOOR PLAN ALT #3 AND ALT #4

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

KEY PLAN

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

MMI ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL

9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE

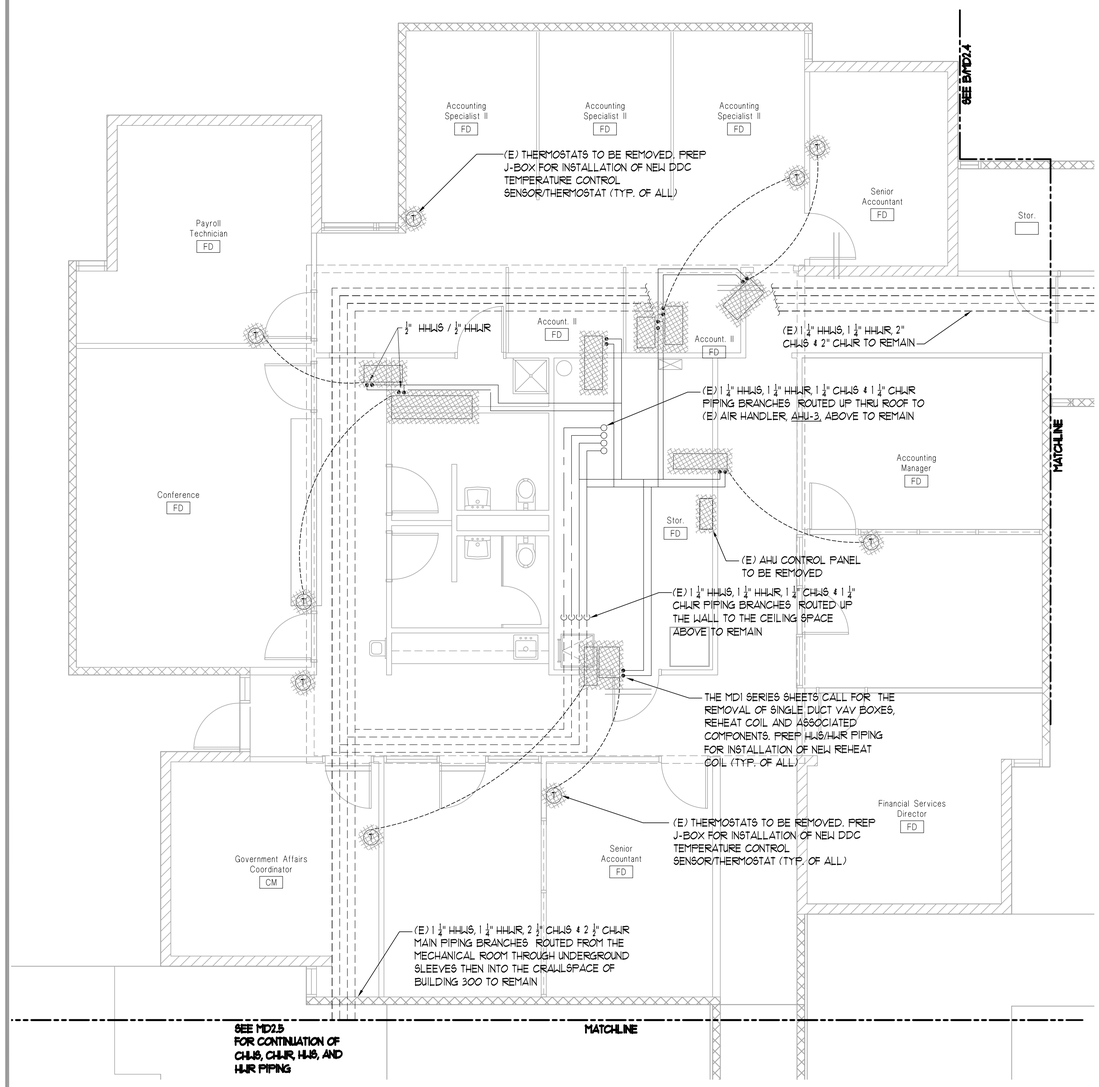
BUILDING #200
MECHANICAL DEMOLITION
FLOOR PLAN

REVISIONS

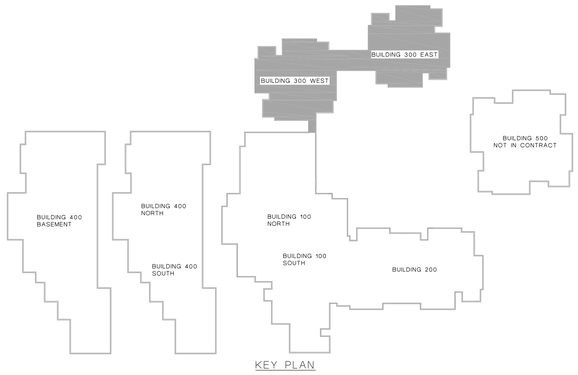
DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :

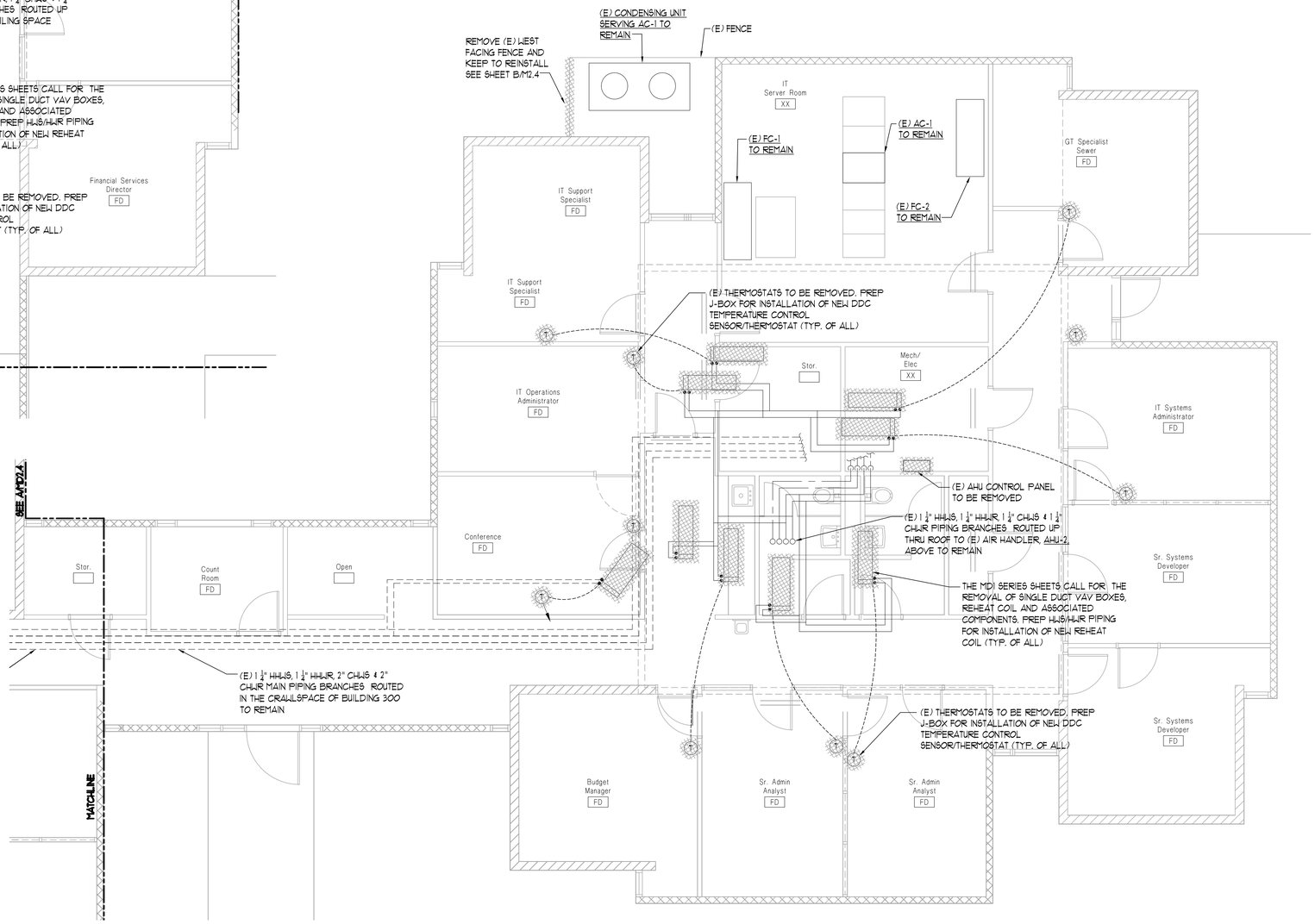
MD2.3



A MD2.4 BUILDING #300 FLOOR PLAN ALT #1
SCALE: 1/4"=1'-0"



KEY PLAN



B MD2.4 BUILDING #300 FLOOR PLAN ALT #2
SCALE: 1/4"=1'-0"

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL
No. 14818
9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE

BUILDING #300
MECHANICAL DEMOLITION
FLOOR PLAN

REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :

MD2.4

MATCHLINE

SEE SHEET A/MD2.4

(E) WATER HEATER 40 MBH, 40 GALLON TO BE REMOVED

(E) HHWS PUMP TO BE REMOVED

(E) POT FEEDER FOR BOILER TO BE REMOVED.

1 ¼" HHWS, 1 ¼" HHWR, 2 ½" CHWS & 2 ½" CHWR MAIN PIPING BRANCHES ROUTED THROUGH UNDERGROUND SLEEVES THEN INTO THE CRAWLSPACE OF BUILDING 300

(E) 120"X43" PAD

(E) CHW PUMP TO BE REMOVED

(E) 88"X44" PAD

(E) AIR HANDLER AHU-1

T-STAT WIRING 1ST LEVEL

T-STAT WIRING 1ST LEVEL

(E) 48"X12" DIAMETER EXPANSION TANK FOR CHILLER HANGING UP HIGH OFF WALL TO BE REMOVED

(E) BOILER TO BE REMOVED

(E) AIR COMPRESSOR TO BE REMOVED. IF ALL ALTERNATES ARE NOT ACCEPTED COMPRESSOR TO BE RELOCATED AND RECONNECTED AS REQUIRED. CONTRACTOR TO VERIFY EXACT LOCATION IN FIELD.

(N) MCC SEE ELECTRICAL SHEETS

T-STAT WIRING 1ST LEVEL

(E) AHU CONTROL PANEL TO BE REMOVED

(E) CUP PUMP TO BE REMOVED

(E) RETURN / EXHAUST FAN

(E) COOLING TOWER TO REMAIN

Mech.

Mech.

(E) MASTER CONTROL PANEL TO BE REMOVED

Conf.

T-STAT WIRING 1ST LEVEL

(E) THERMOSTATS TO BE REMOVED. PREP J-BOX FOR INSTALLATION OF NEW DDC TEMPERATURE CONTROL SENSOR/THERMOSTAT (TYP. OF ALL)

T-STAT WIRING 1ST LEVEL

(E) HHWS, HHWR, CHWS & CHWR MAIN PIPING BRANCHES ROUTED IN THE CEILING SPACE OF THE BASEMENT TO REMAIN

T-STAT WIRING 1ST LEVEL

T-STAT WIRING TO 1ST LEVEL

T-STAT WIRING 1ST LEVEL

Break/Conf

Stor. HR

T-STAT WIRING 1ST LEVEL

Sr. Building Inspector CS

T-STAT WIRING 1ST LEVEL

T-STAT WIRING 1ST LEVEL

(E) THERMOSTATS TO BE REMOVED. PREP J-BOX FOR INSTALLATION OF NEW DDC TEMPERATURE CONTROL SENSOR/THERMOSTAT (TYP. OF ALL)

T-STAT WIRING 1ST LEVEL

Conf.

Sr. Building Inspector CS

(E) HHWS, HHWR, CHWS & CHWR MAIN PIPING BRANCHES ROUTED IN THE CEILING SPACE OF THE BASEMENT TO REMAIN

(E) HHWS, HHWR, CHWS & CHWR MAIN PIPING BRANCHES ROUTED DOWN WALL THEN INTO THE CRAWLSPACE OF BUILDING 200 TO REMAIN

SEE SHEET MD2.3

MATCHLINE

MATCHLINE

SEE SHEET MD2.6

(E) THERMOSTATS TO BE REMOVED. PREP J-BOX FOR INSTALLATION OF NEW DDC

T-STAT WIRING 1ST LEVEL

BUILDING 300 EAST

BUILDING 300 WEST

BUILDING 500 NOT IN CONTRACT

BUILDING 400 BASEMENT

BUILDING 400 NORTH

BUILDING 100 NORTH

BUILDING 400 SOUTH

BUILDING 100 SOUTH

BUILDING 200

KEY PLAN

A MD2.5

BUILDING #400 - (NORTH HALF)
MECHANICAL DEMOLITION PLAN - SYSTEM SERVING 1ST FLOOR AND BASEMENT AREAS
SCALE: 1/4"=1'-0"
BASE BID

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

MMI ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL

9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

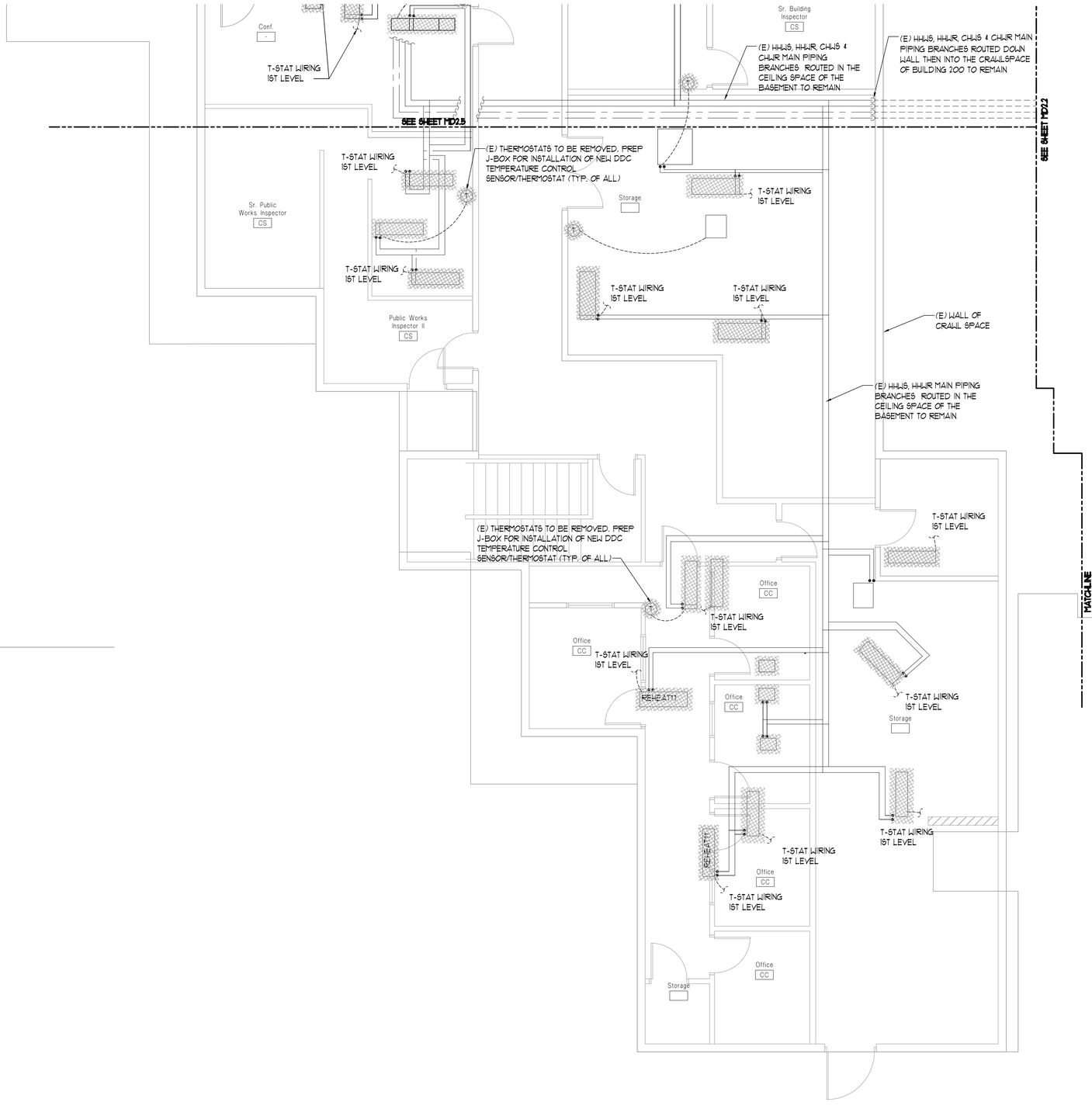
SHEET TITLE

BUILDING #400 (NORTH)
MECHANICAL DEMOLITION PLAN - SYSTEMS SERVING 1ST FLOOR

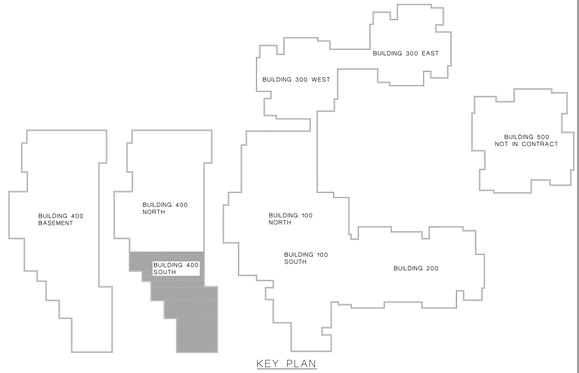
REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :
MD2.5



BUILDING #400 - (SOUTH HALF)
MECHANICAL DEMOLITION PLAN - SYSTEM SERVING 1ST FLOOR
A MD2.6
SCALE: 1/4"=1'-0"
BASE BID



KEY PLAN

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL

9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE

BUILDING #400 (SOUTH)
MECHANICAL DEMOLITION
PLAN - SYSTEM SERVING
1ST FLOOR

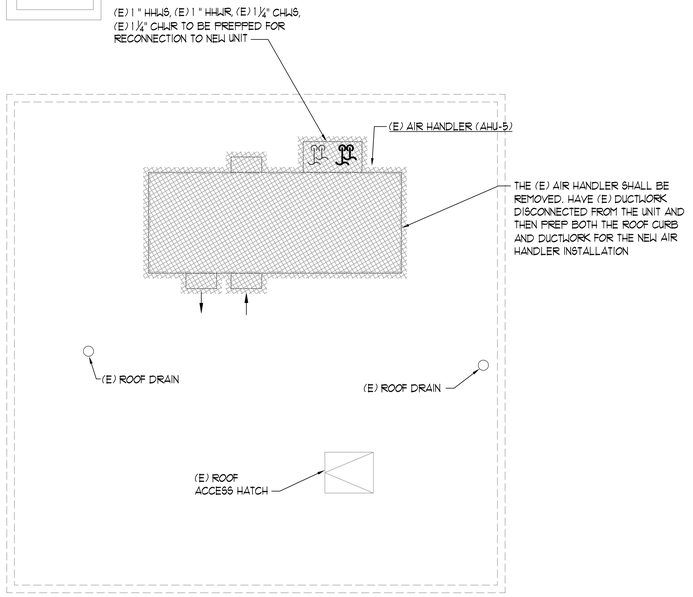
REVISIONS

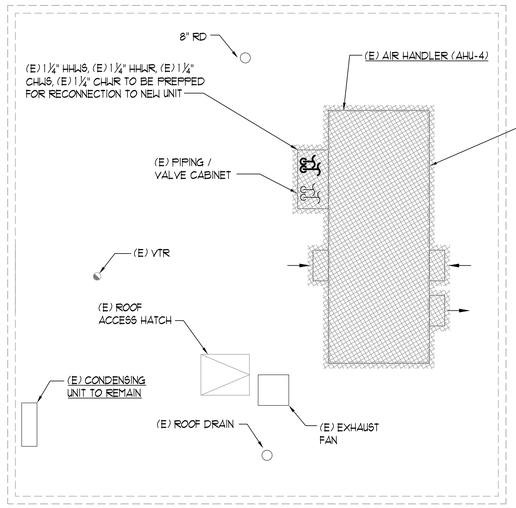
DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :
MD2.6

MATCHLINE

MATCHLINE

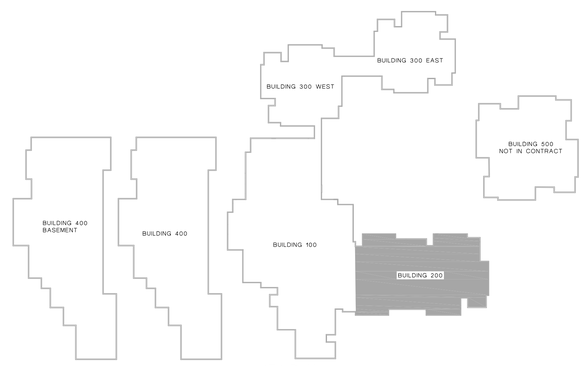




A MD3.1

BUILDING #200
MECHANICAL DEMOLITION ROOF PLAN
ALT #3 AND ALT #4

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



KEY PLAN

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL

9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE

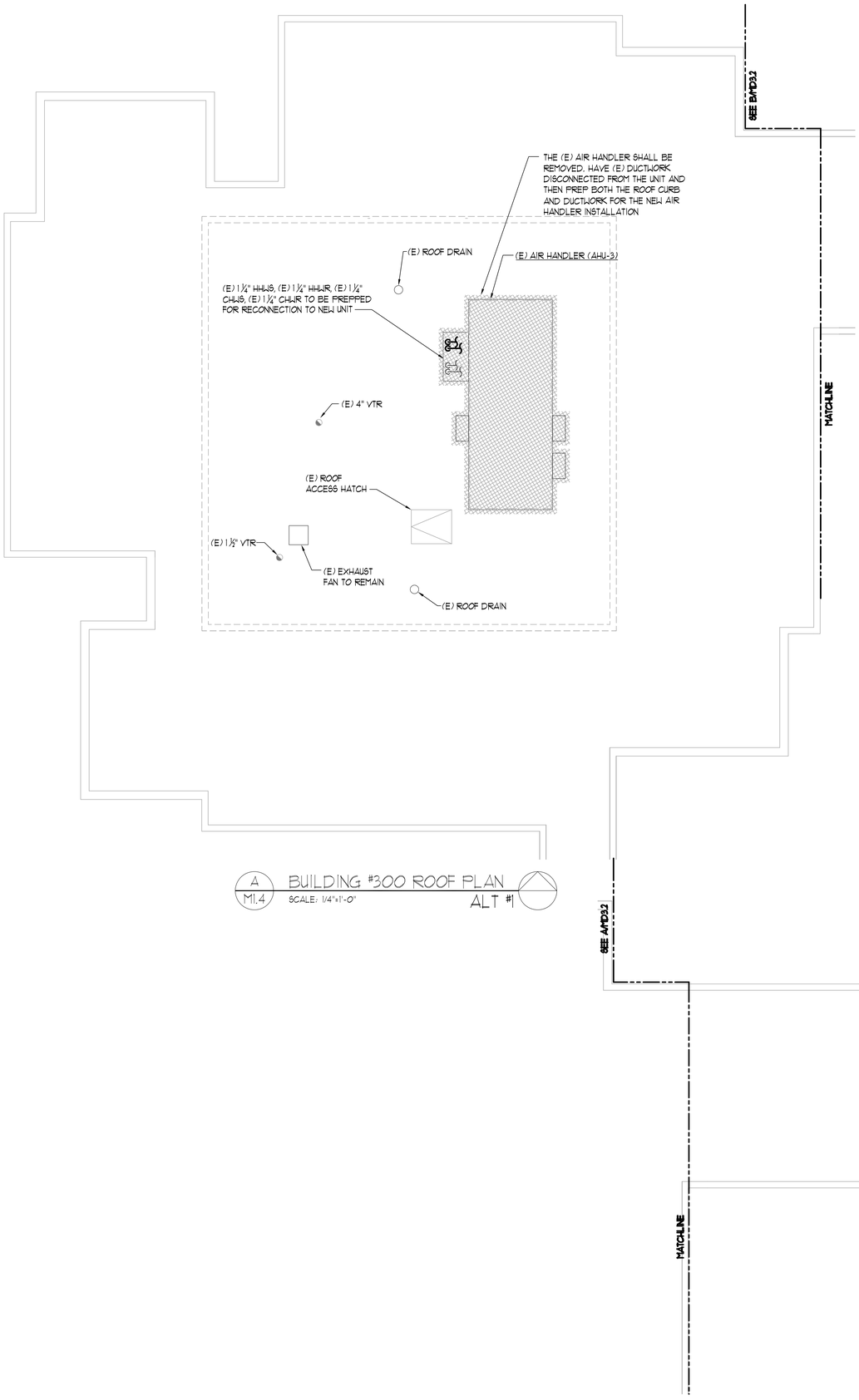
BUILDING #200
MECHANICAL DEMOLITION
ROOF PLAN

REVISIONS

DATE :
SEPTEMBER 26, 2014

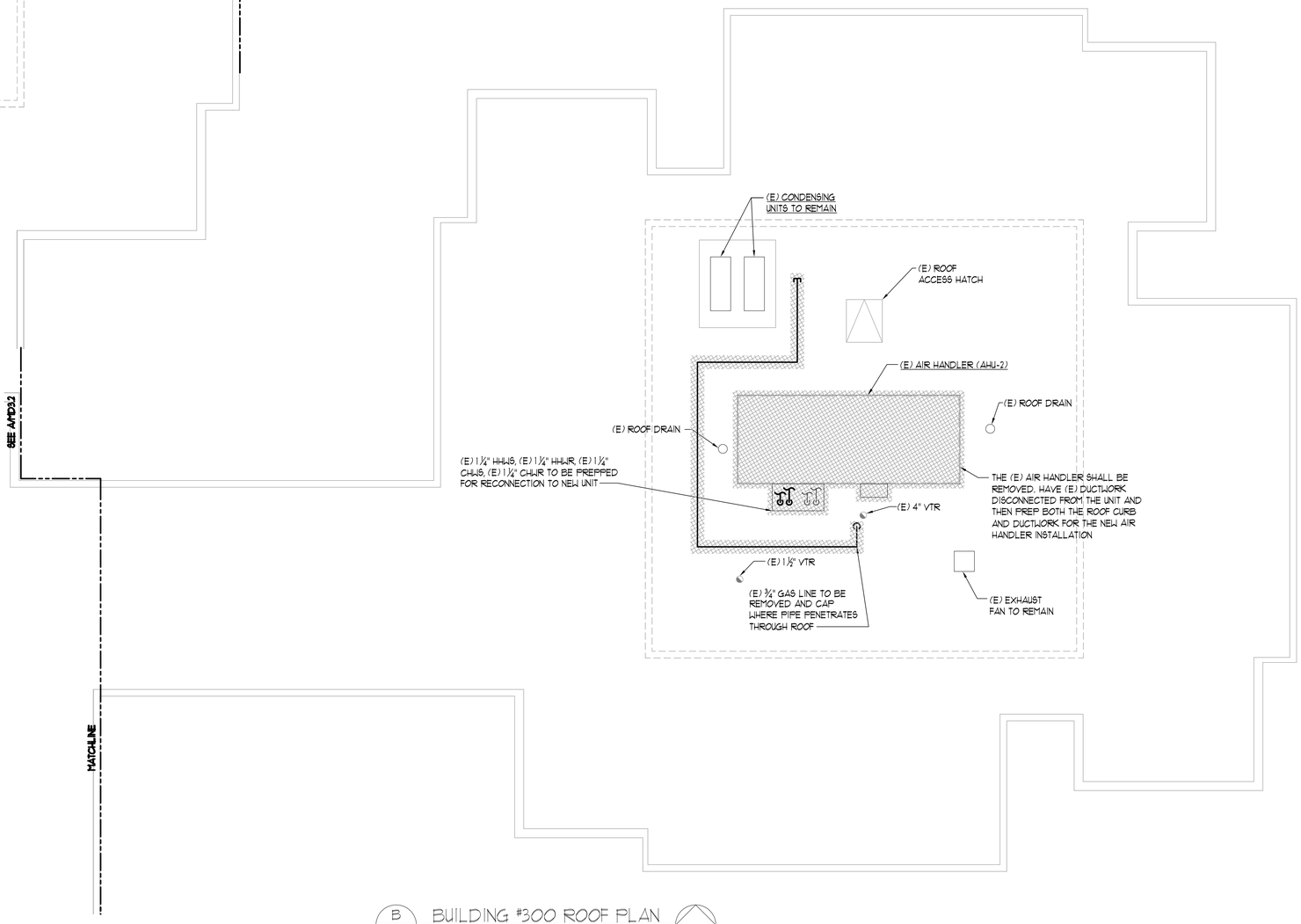
SHEET NUMBER :

MD3.1



A M1.4 BUILDING #300 ROOF PLAN
SCALE: 1/4"=1'-0" ALT #1

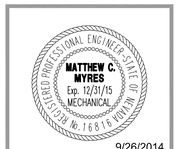
KEY PLAN



B MD3.2 BUILDING #300 ROOF PLAN
SCALE: 1/4"=1'-0" ALT #2

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

ENGINEERING



9/26/2014

SPARKS CITY HALL CAMPUS HVAC UPGRADE

SPARKS, NEVADA

SHEET TITLE

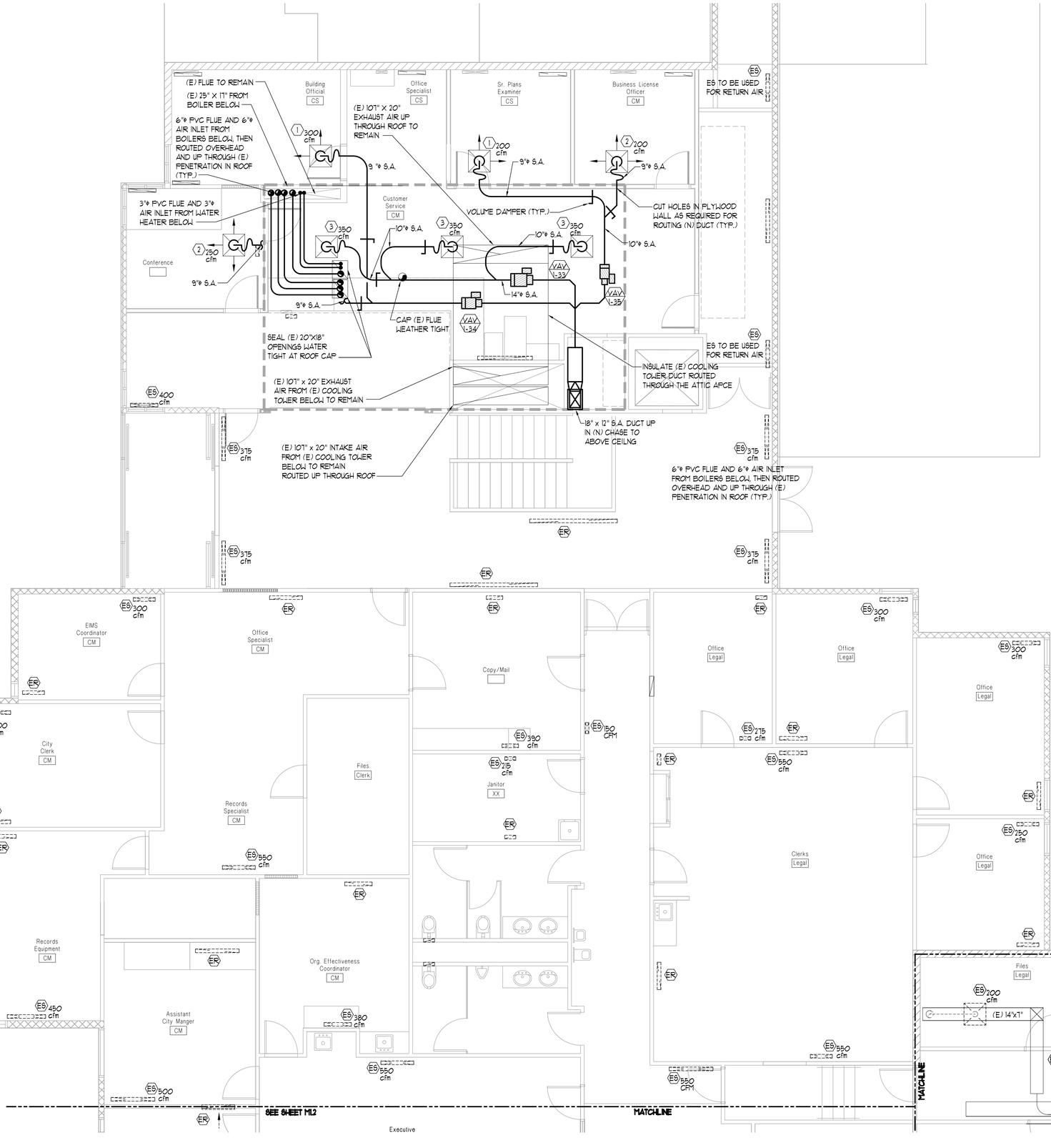
BUILDING #300
MECHANICAL DEMOLITION
ROOF PLAN

REVISIONS

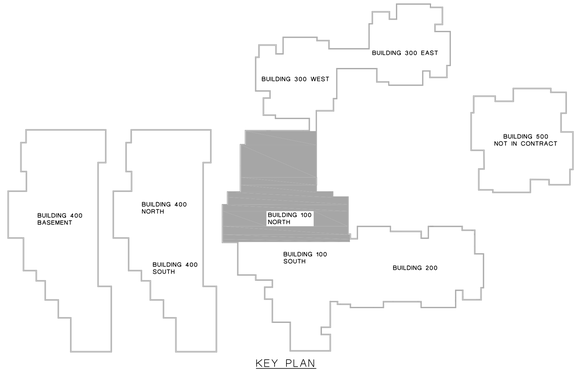
DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :

MD3.2



BUILDING #100 (NORTH HALF)
MECHANICAL FLOOR PLAN
A / M1.1
SCALE: 1/4"=1'-0"
BASE BID



KEY PLAN

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

MMI ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL
9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE

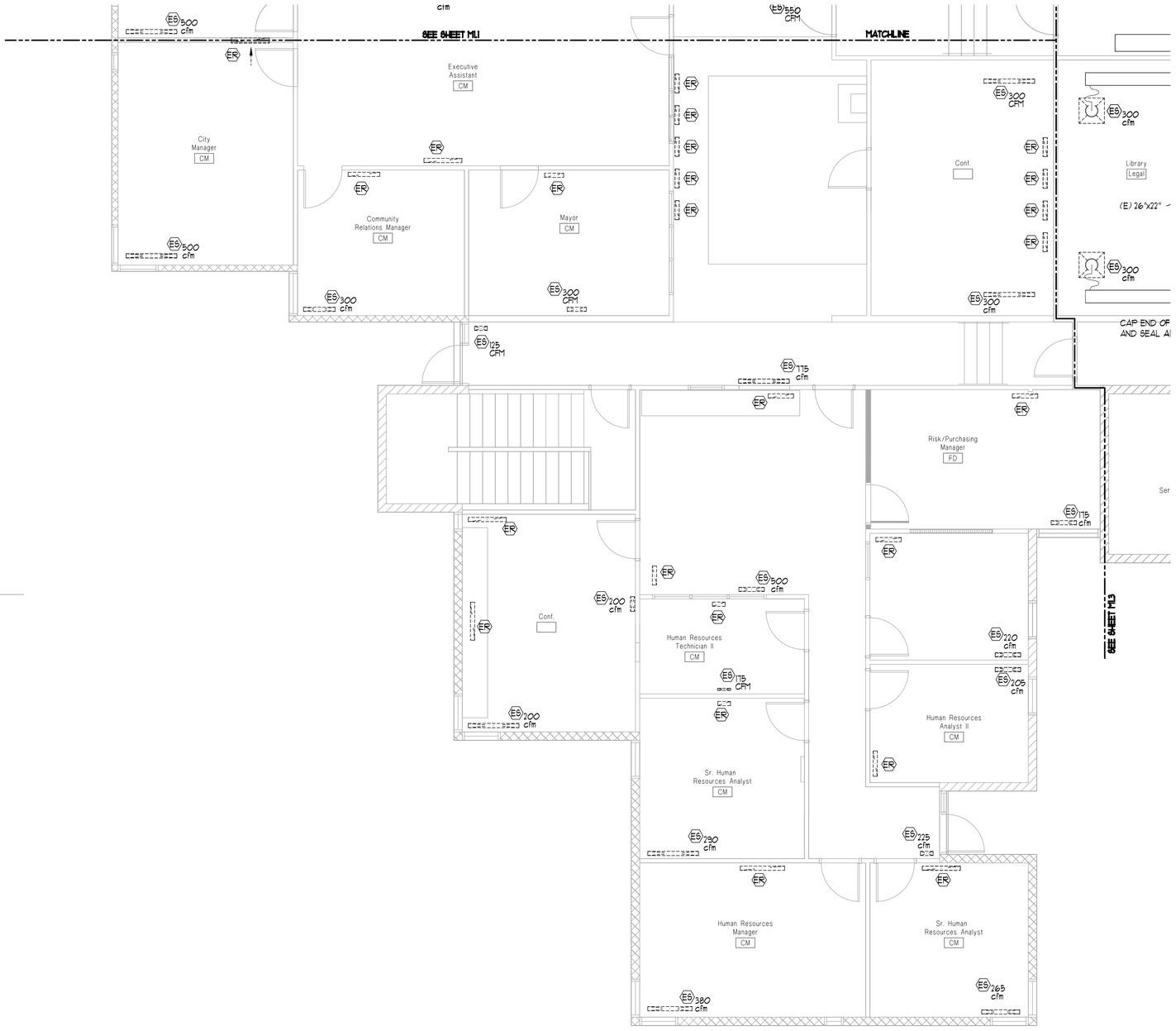
BUILDING #100
MECHANICAL
FLOOR PLAN

REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :

M1.1



BUILDING #100 (SOUTH HALF) MECHANICAL FLOOR PLAN

A / M1.2

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

BASE BID

KEY PLAN

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL
No. 16816
9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE

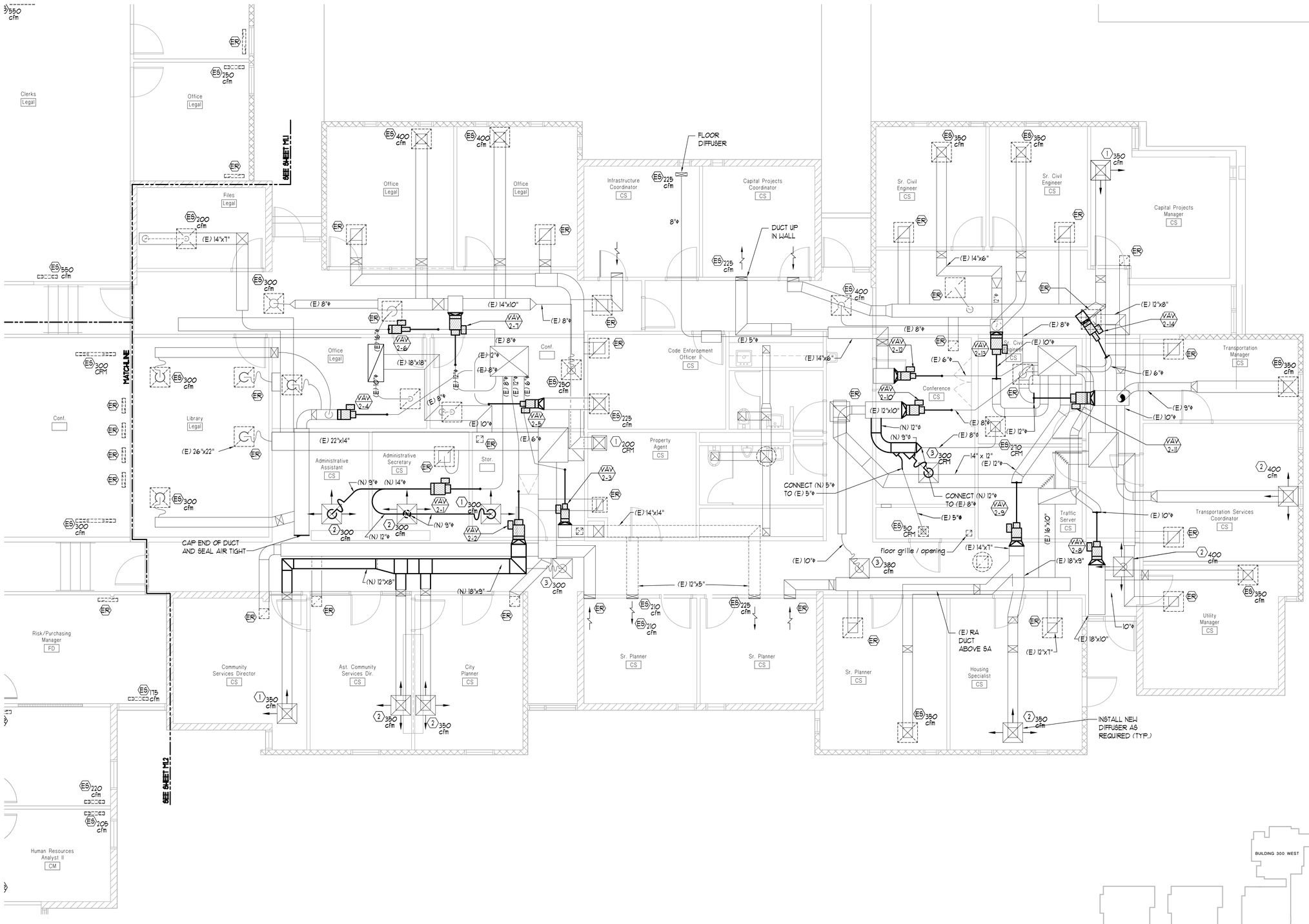
BUILDING #100
MECHANICAL
FLOOR PLAN

REVISIONS

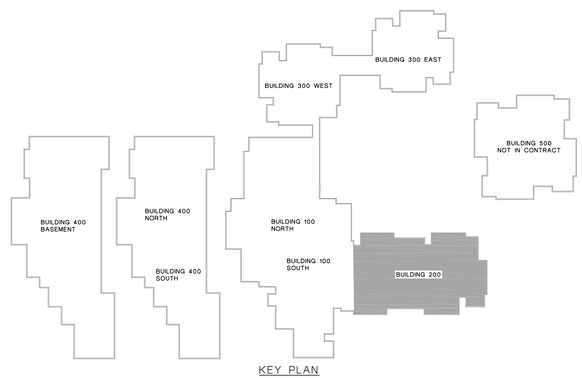
DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :

M1.2



A M1.3 BUILDING #200 MECHANICAL FLOOR PLAN
SCALE: 1/4"=1'-0" ALT #3 AND ALT #4



KEY PLAN

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

MMI ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL
9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

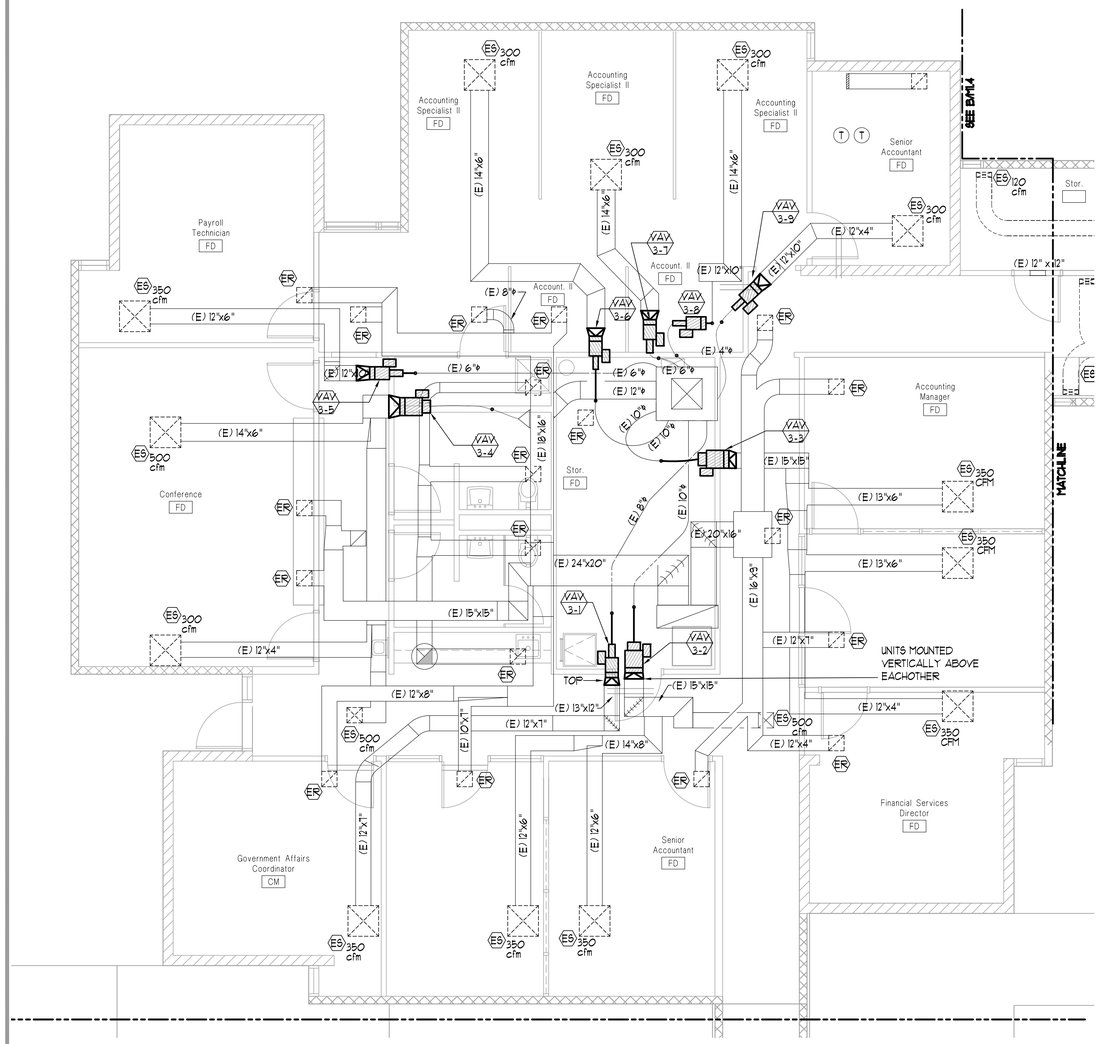
SHEET TITLE

BUILDING #200
MECHANICAL
FLOOR PLAN

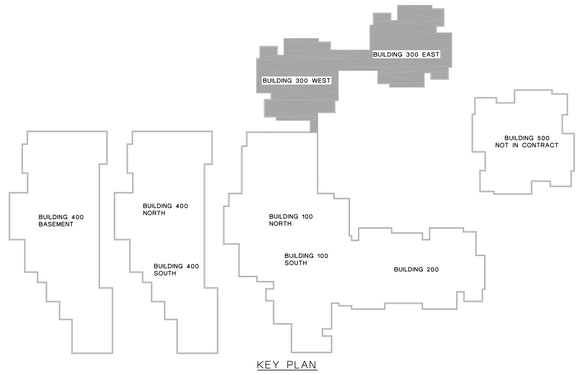
REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :
M1.3

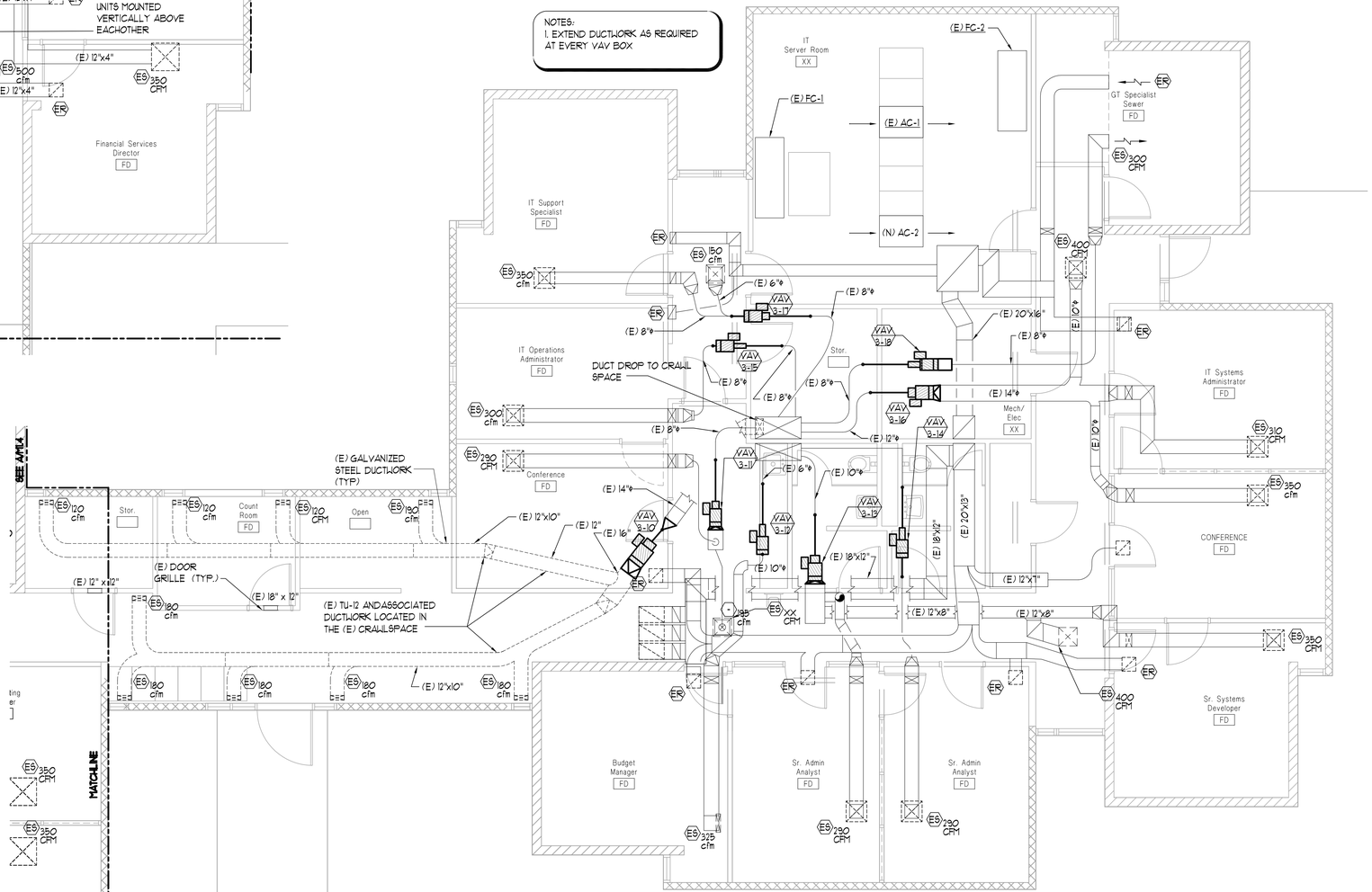


A M1.4 BUILDING #300 FLOOR PLAN ALT #1
SCALE: 1/4"=1'-0"



KEY PLAN

NOTES:
1. EXTEND DUCTWORK AS REQUIRED AT EVERY VAV BOX



B M1.4 BUILDING #300 FLOOR PLAN ALT #2
SCALE: 1/4"=1'-0"

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL
9/26/2014

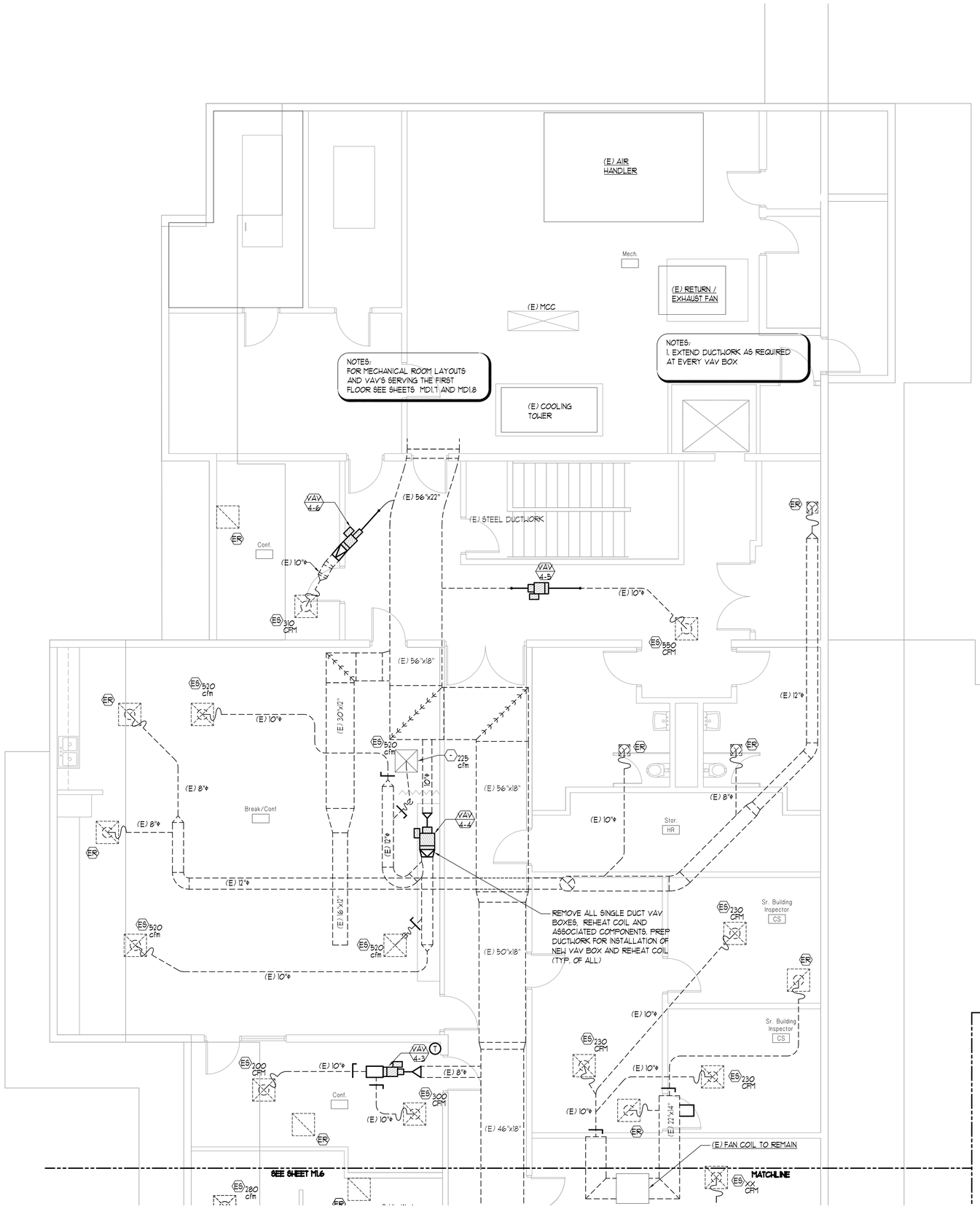
SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE
BUILDING #300
MECHANICAL
FLOOR PLAN

REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :
M1.4

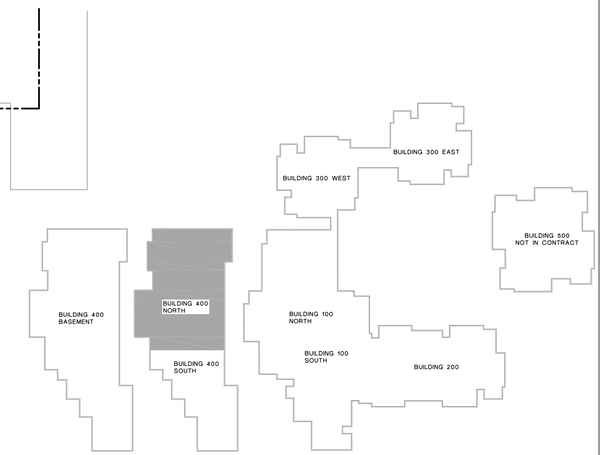


A M1.5

BUILDING #400 - (NORTH HALF)
MECHANICAL PLAN - SYSTEM SERVING BASEMENT

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

BASE BID



KEY PLAN

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

MMI ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL
No. 16815

9/26/2014

SPARKS CITY HALL CAMPUS HVAC UPGRADE

SPARKS, NEVADA

SHEET TITLE

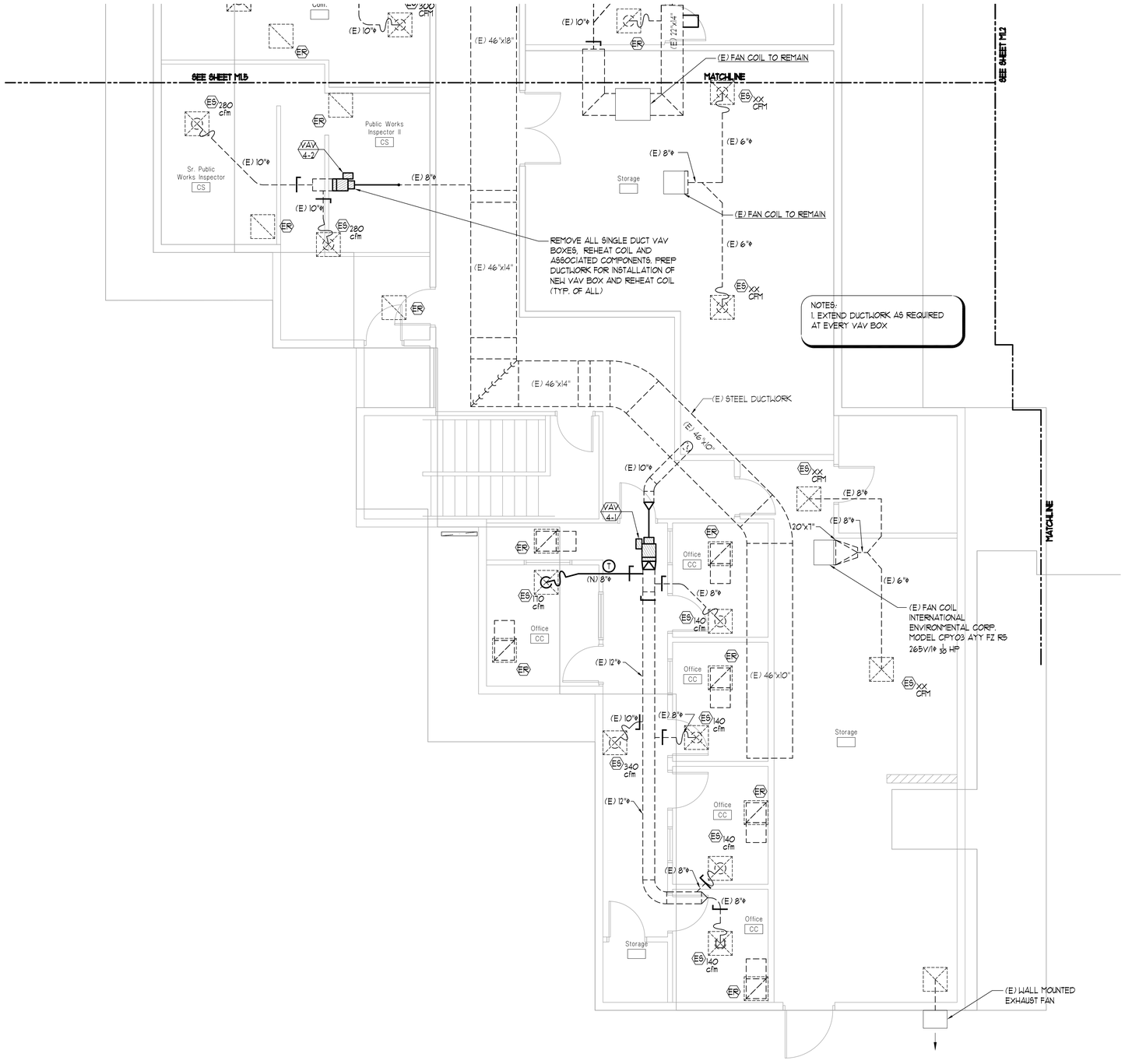
BUILDING #400 (NORTH)
MECHANICAL
PLAN - SYSTEMS SERVING BASEMENT

REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :

M1.5

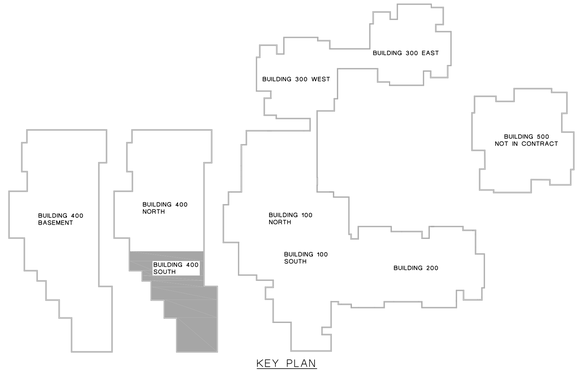


BUILDING #400 - (SOUTH HALF)
MECHANICAL PLAN - SYSTEM SERVING BASEMENT

A / M1.6

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

BASE BID



KEY PLAN

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

MMI ENGINEERING

MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL
STATE OF NEVADA
REGISTERED PROFESSIONAL ENGINEER

9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

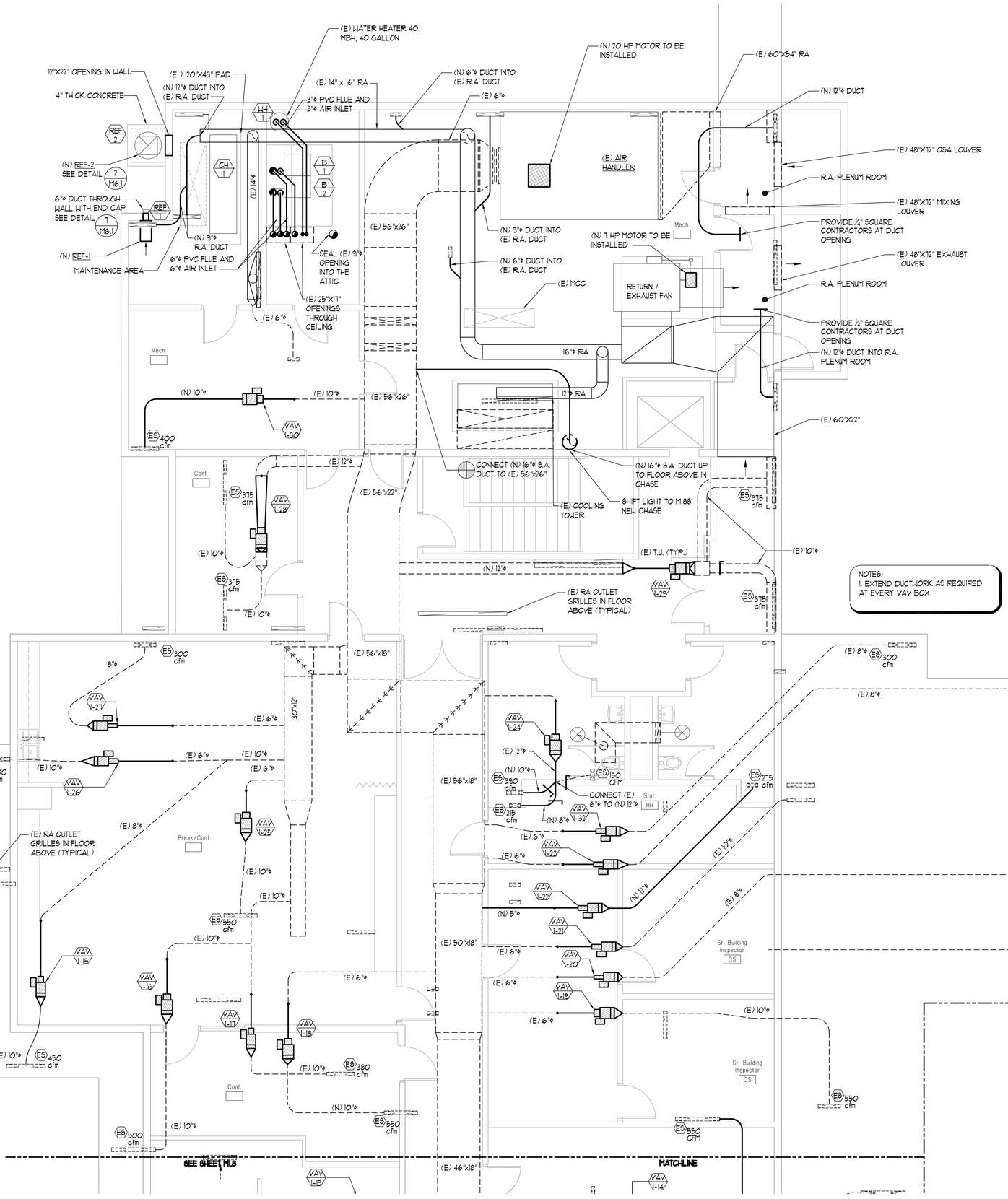
SHEET TITLE

BUILDING #400 (SOUTH)
MECHANICAL
PLAN - SYSTEM SERVING
BASEMENT

REVISIONS

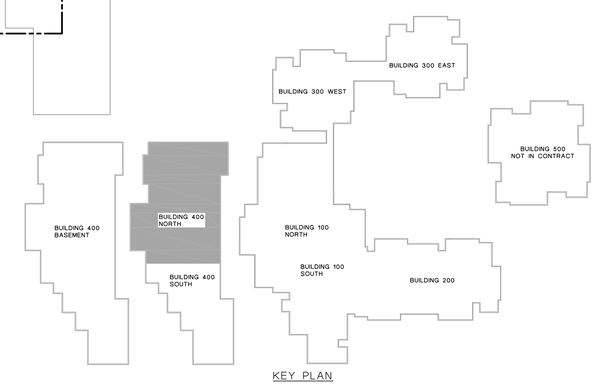
DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :
M1.6



BUILDING #400 - (NORTH HALF)
MECHANICAL PLAN - SYSTEM SERVING 1ST FLOOR
A / M1.7
SCALE: 1/4"=1'-0"

BASE BID



KEY PLAN

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL
No. 9818
9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

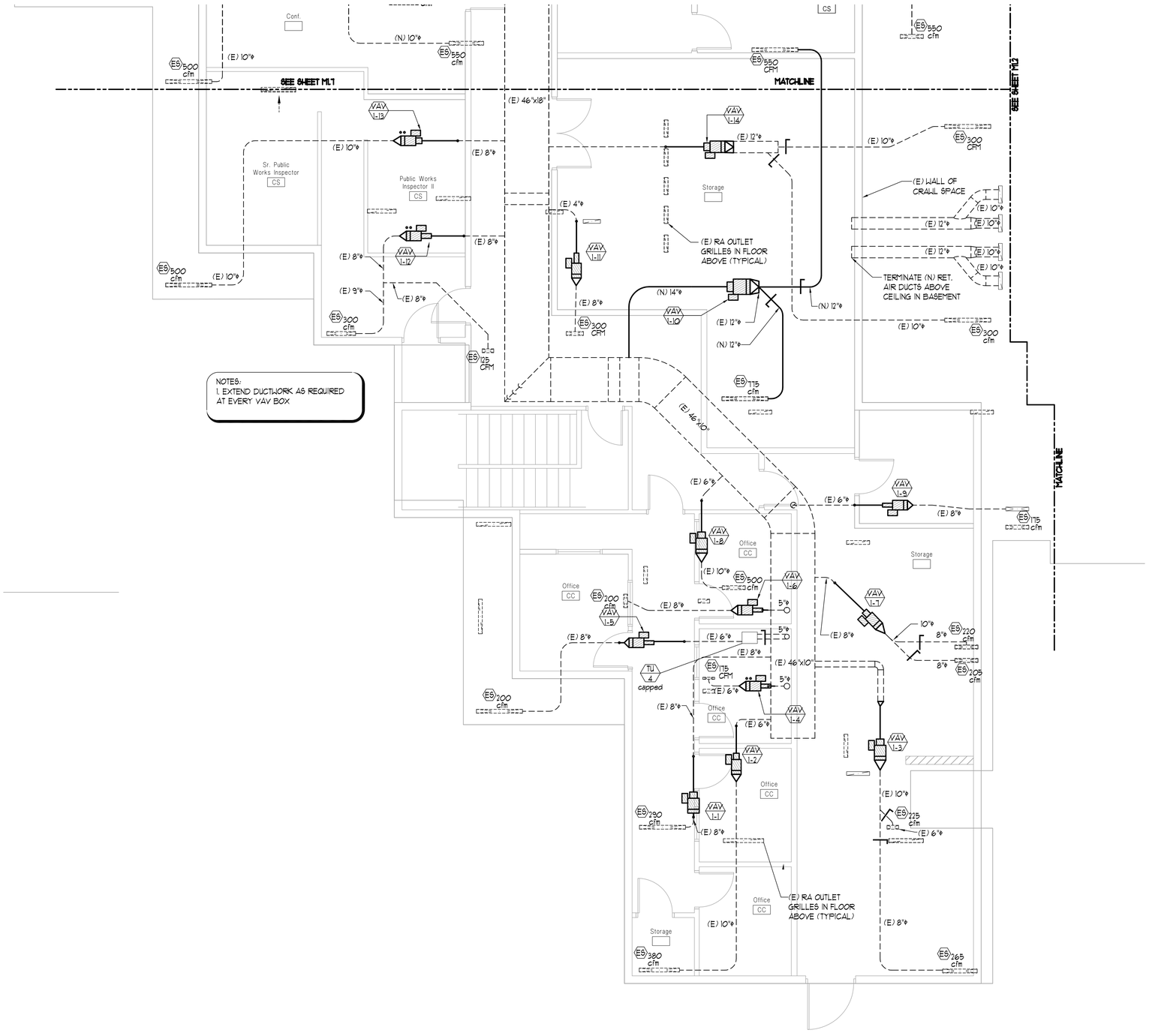
SHEET TITLE

BUILDING #400 (NORTH)
MECHANICAL
PLAN - SYSTEMS SERVING
1ST FLOOR

REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :
M1.7

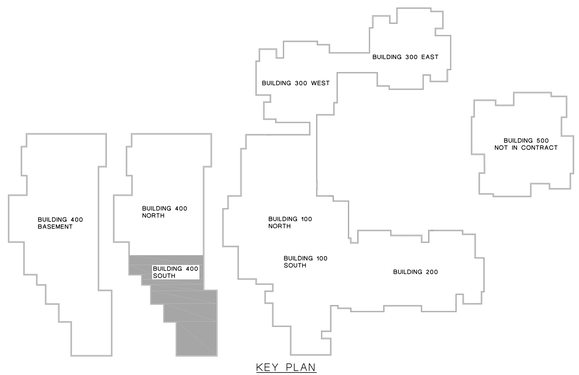


BUILDING #400 - (SOUTH HALF)
MECHANICAL PLAN - SYSTEM SERVING 1ST FLOOR

A / M1.8

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

BASE BID



KEY PLAN

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL

9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE

BUILDING #400 (SOUTH)
MECHANICAL
PLAN - SYSTEM SERVING
1ST FLOOR

REVISIONS

DATE :
SEPTEMBER 26, 2014

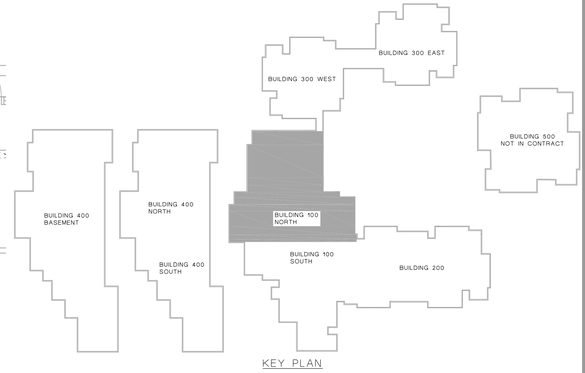
SHEET NUMBER :

M1.8

A M2.1 BUILDING #100 (NORTH HALF) MECHANICAL FLOOR PLAN

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

BASE BID



KEY PLAN

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL

9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE

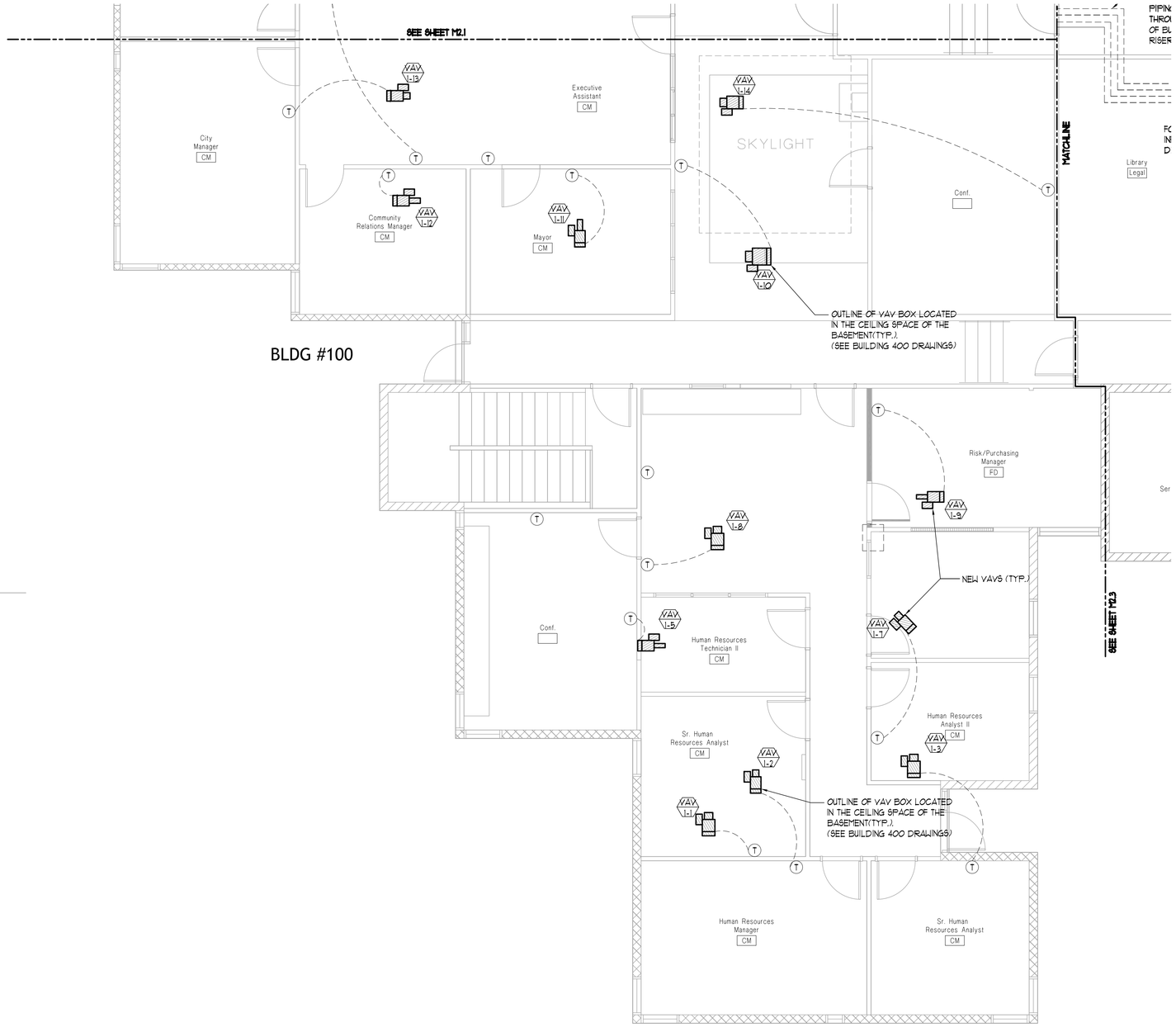
BUILDING #100
MECHANICAL
FLOOR PLAN

REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :

M2.1

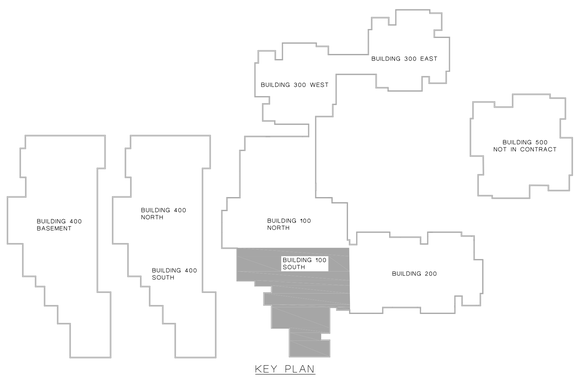


BUILDING #100 (SOUTH HALF)
MECHANICAL FLOOR PLAN

A
M2.2

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

BASE BID



KEY PLAN

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL

9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE

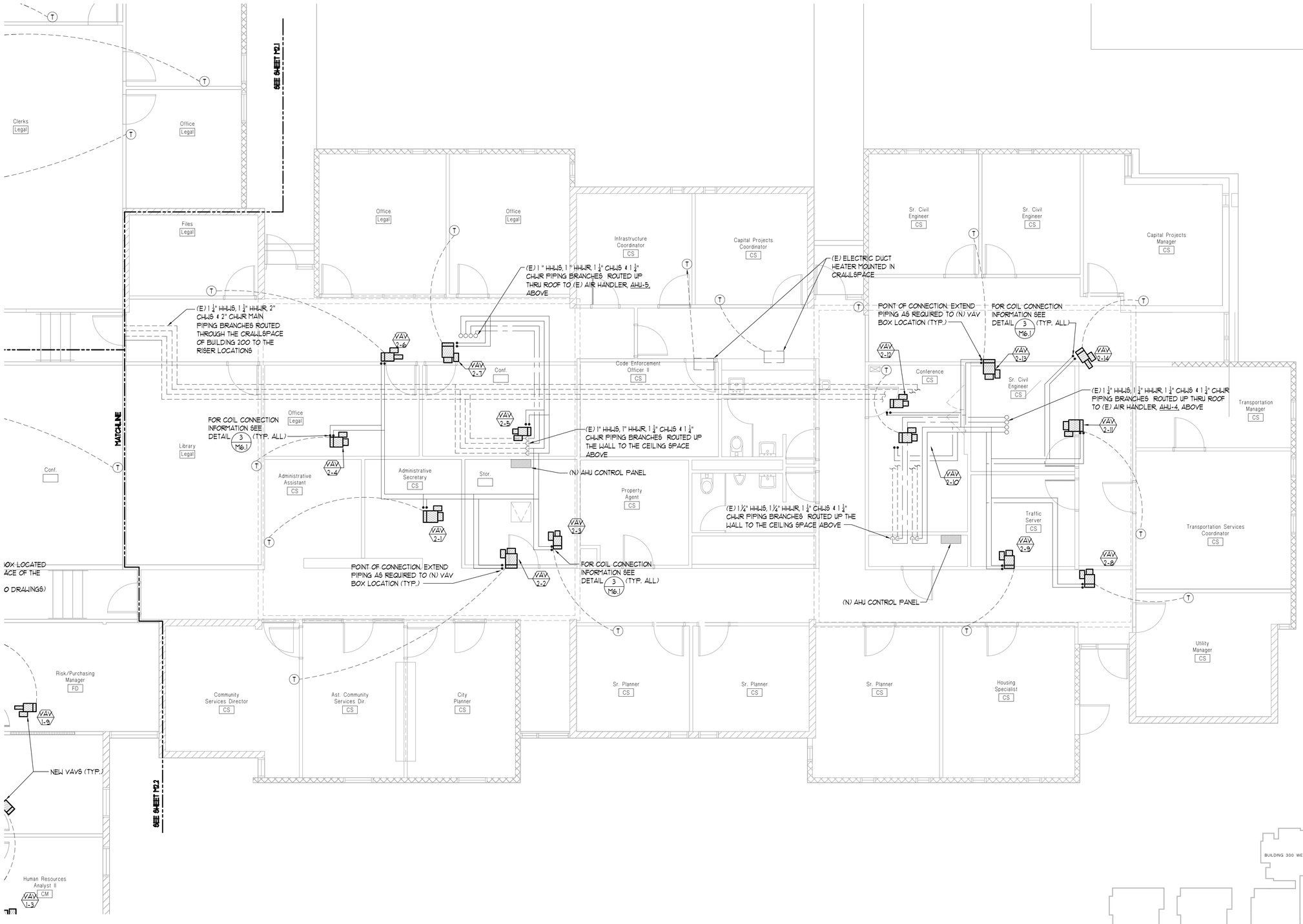
BUILDING #100
MECHANICAL
FLOOR PLAN

REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :

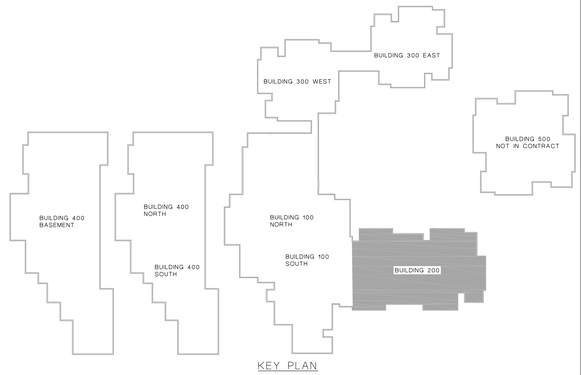
M2.2



A
M2.3

BUILDING #200
MECHANICAL FLOOR PLAN
SCALE: 1/4"=1'-0"

ALT #3 AND ALT #4



KEY PLAN

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL
9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE

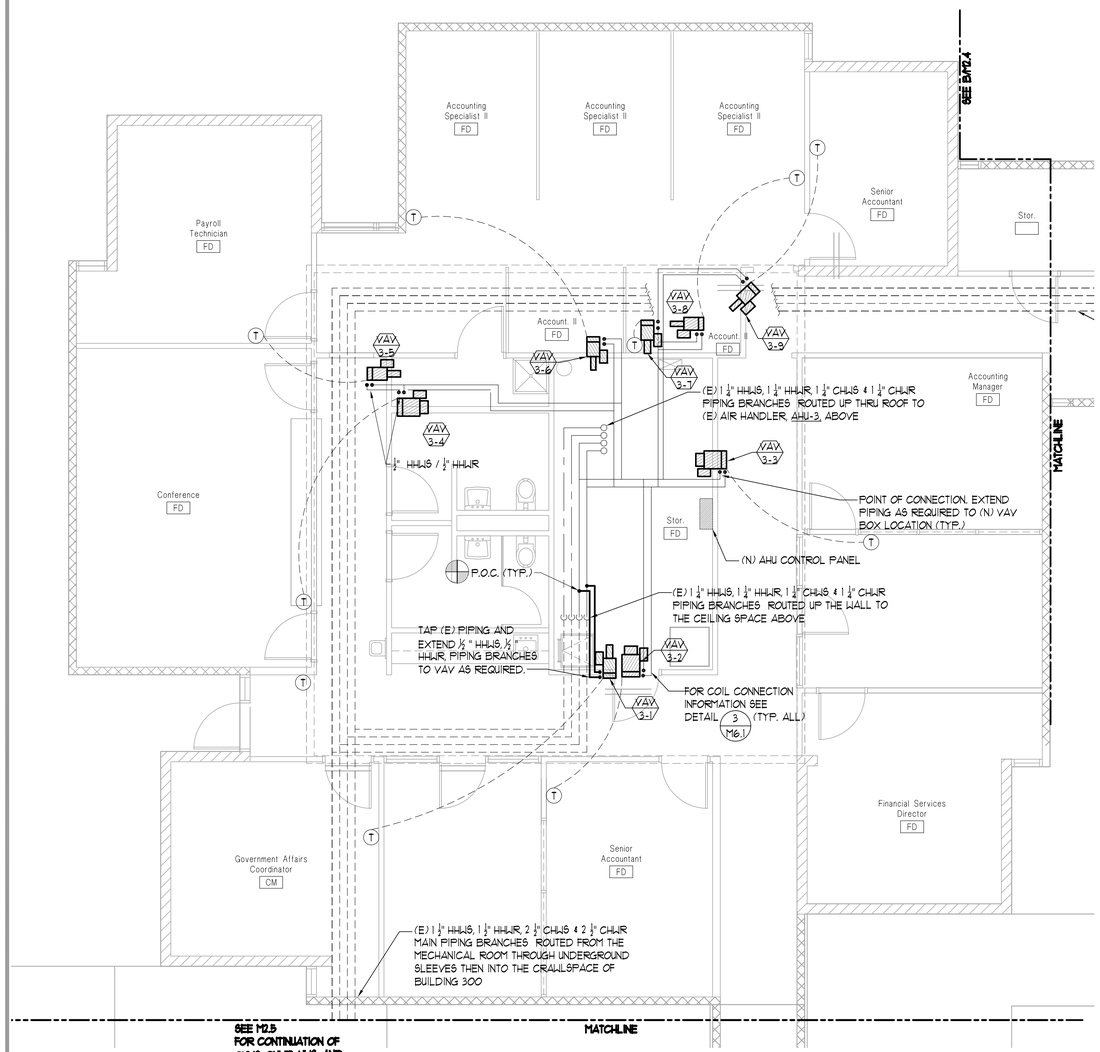
BUILDING #200
MECHANICAL
FLOOR PLAN

REVISIONS

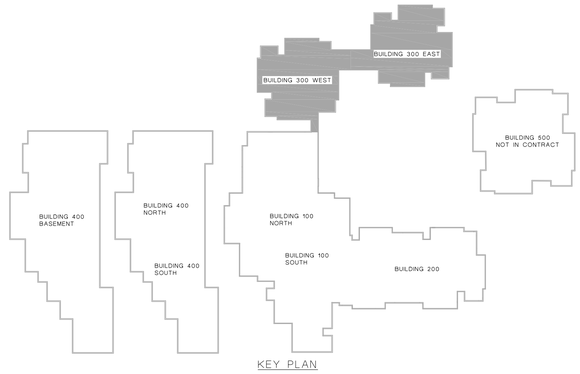
DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :

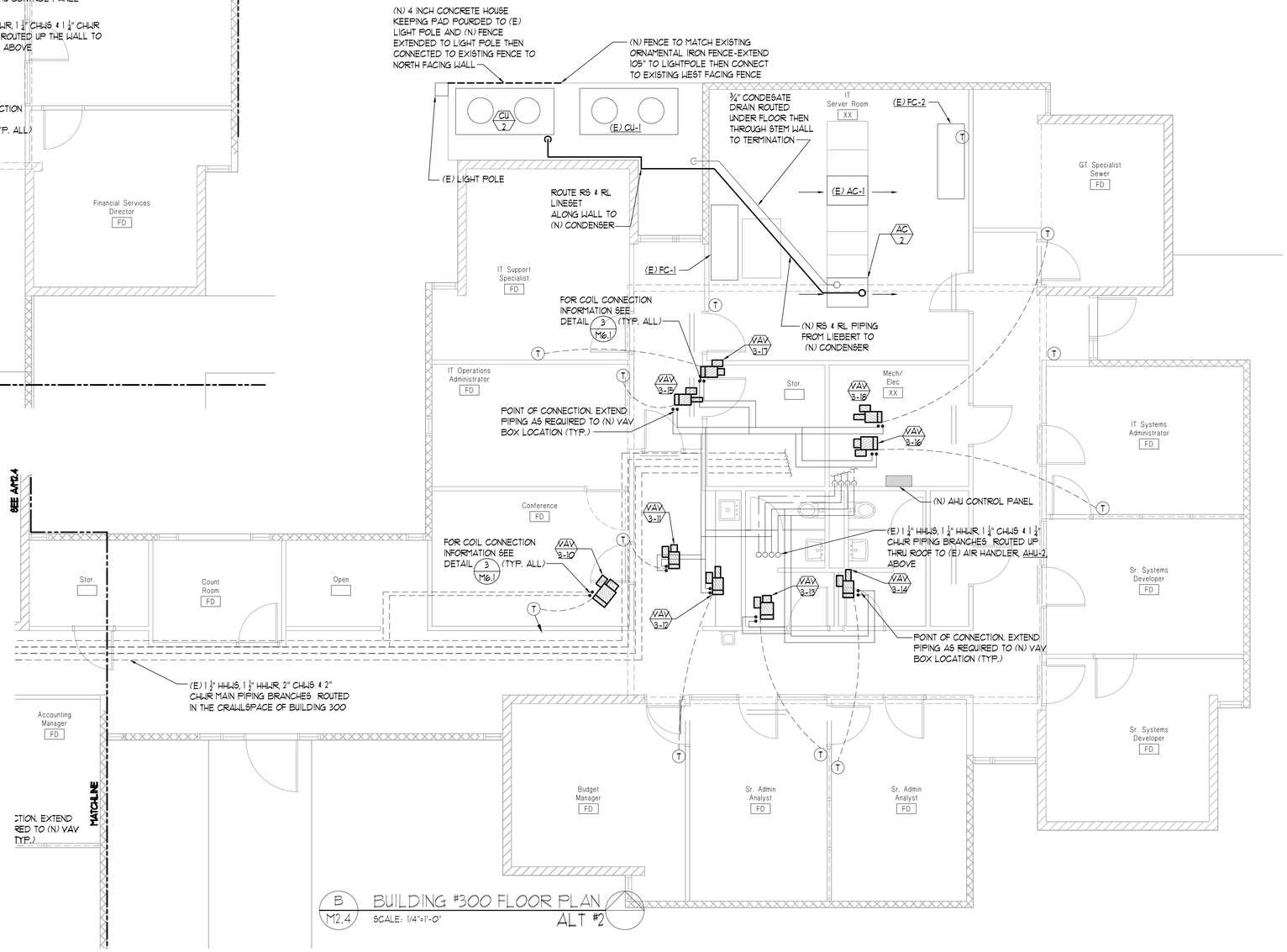
M2.3



A M2.4 BUILDING #300 FLOOR PLAN ALT #1
SCALE: 1/4"=1'-0"



KEY PLAN



B M2.4 BUILDING #300 FLOOR PLAN ALT #2
SCALE: 1/4"=1'-0"

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL
9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE

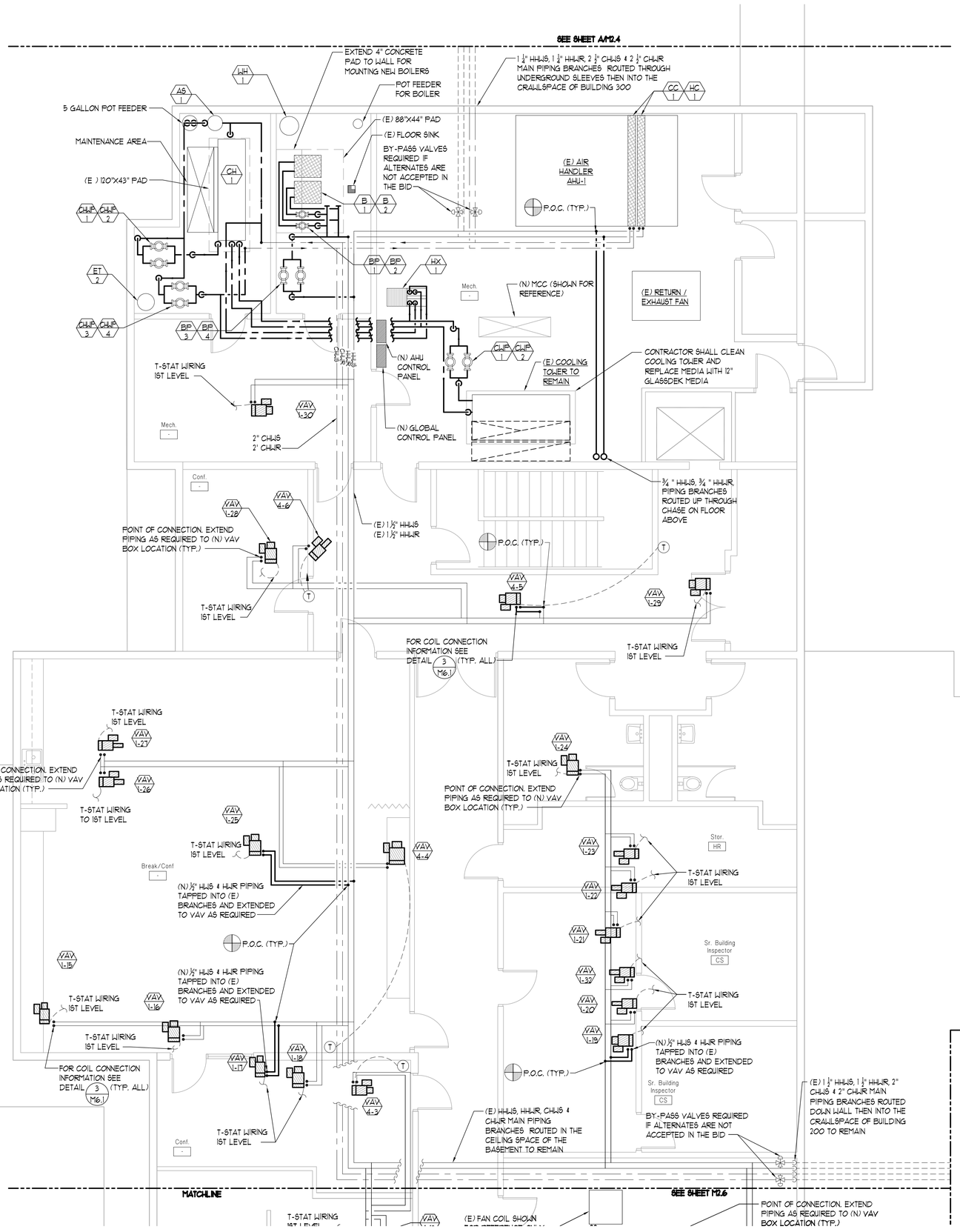
BUILDING #300
MECHANICAL
FLOOR PLAN

REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :

M2.4

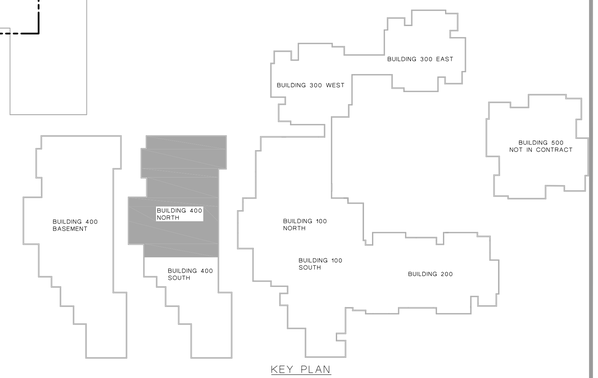


BUILDING #400 - (NORTH HALF)
MECHANICAL PLAN - SYSTEM SERVING 1ST FLOOR

A / M2.5

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

BASE BID



KEY PLAN

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

MMI ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL
No. 16816

9/26/2014

SPARKS CITY HALL CAMPUS HVAC UPGRADE

SPARKS, NEVADA

SHEET TITLE

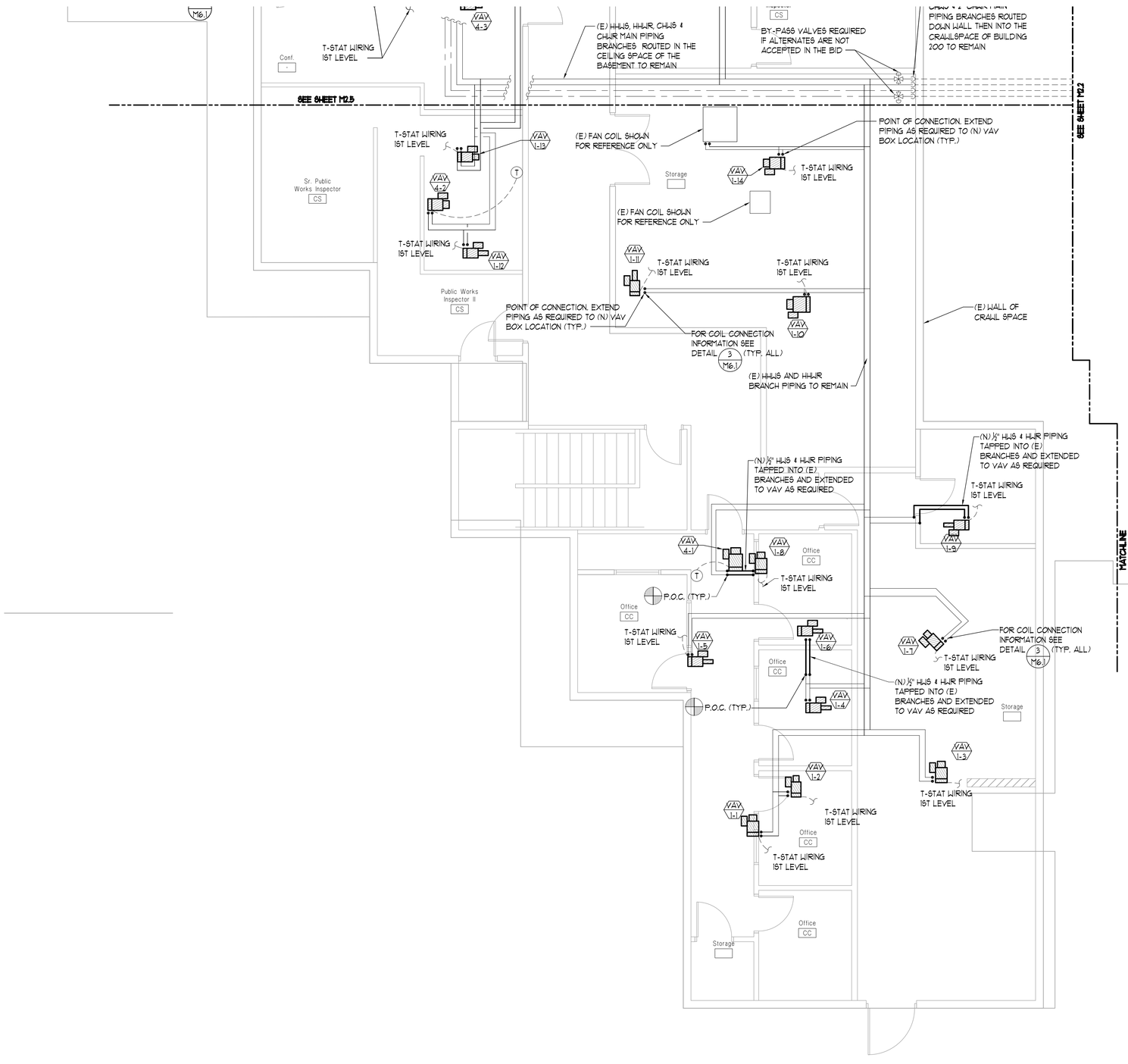
BUILDING #400 (NORTH)
MECHANICAL
PLAN - SYSTEMS SERVING
1ST FLOOR

REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :

M2.5

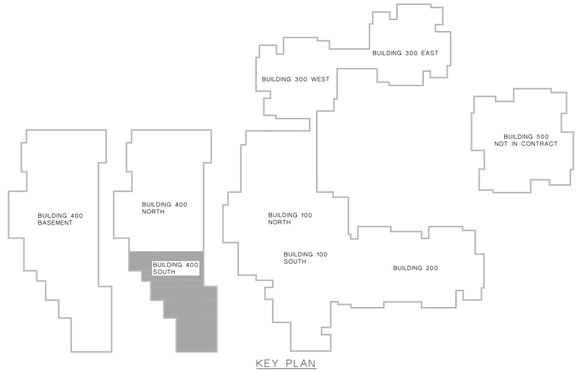


BUILDING #400 - (SOUTH HALF)
MECHANICAL PLAN - SYSTEM SERVING 1ST FLOOR

A / M2.6

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

BASE BID



KEY PLAN

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

MMI ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL
9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE

BUILDING #400 (SOUTH)
MECHANICAL
PLAN - SYSTEM SERVING
1ST FLOOR

REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :
M2.6

MATCHLINE

MATCHLINE

MATCHLINE

CONTRACTOR TO PROVIDE FIELD FABRICATED INSULATED 56"X 30" PIPING ENCLOSURE. CONTRACTOR SHALL VERIFY DIMENSIONS BEFORE STARTING WORK.

FOR COIL CONNECTIONS SEE DETAIL 4/M6.1

CONTRACTOR SHALL PROVIDE A MICRO-METAL CURB EXTENSION AS REQUIRED TO INSTALL NE W AIR HANDLER. CONNECT TO (E) DUCTWORK TO THE NEW AIR HANDLER. PROVIDE DUCT TRANSITIONS AS REQUIRED

AHU 5

(E) ROOF DRAIN

(E) ROOF DRAIN

(E) ROOF ACCESS HATCH

8" RD

CONTRACTOR TO PROVIDE FIELD FABRICATED INSULATED 56"X 30" PIPING ENCLOSURE. CONTRACTOR SHALL VERIFY DIMENSIONS BEFORE STARTING WORK.

CONTRACTOR SHALL PROVIDE A MICRO-METAL CURB EXTENSION AS REQUIRED TO INSTALL NE W AIR HANDLER. CONNECT TO (E) DUCTWORK TO THE NEW AIR HANDLER. PROVIDE DUCT TRANSITIONS AS REQUIRED

FOR COIL CONNECTIONS SEE DETAIL 4/M6.1

(E) VTR

AHU 4

(E) ROOF ACCESS HATCH

(E) CONDENSING UNIT TO REMAIN

(E) ROOF DRAIN

(E) EXHAUST FAN

A/M3.1 BUILDING #200 MECHANICAL ROOF PLAN

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

ALT #3 AND ALT #4

KEY PLAN

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL

9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE

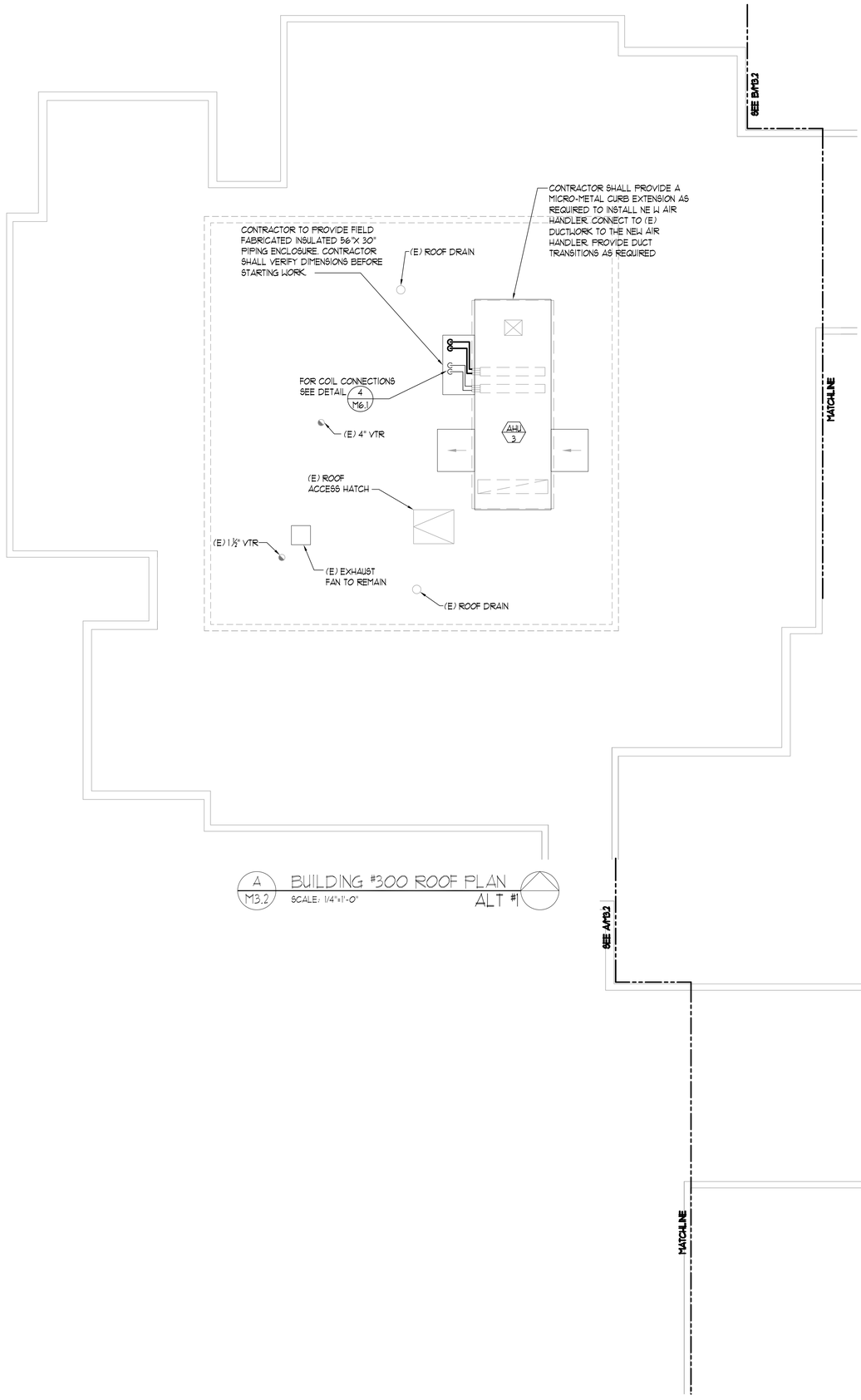
BUILDING #200
MECHANICAL
ROOF PLAN

REVISIONS

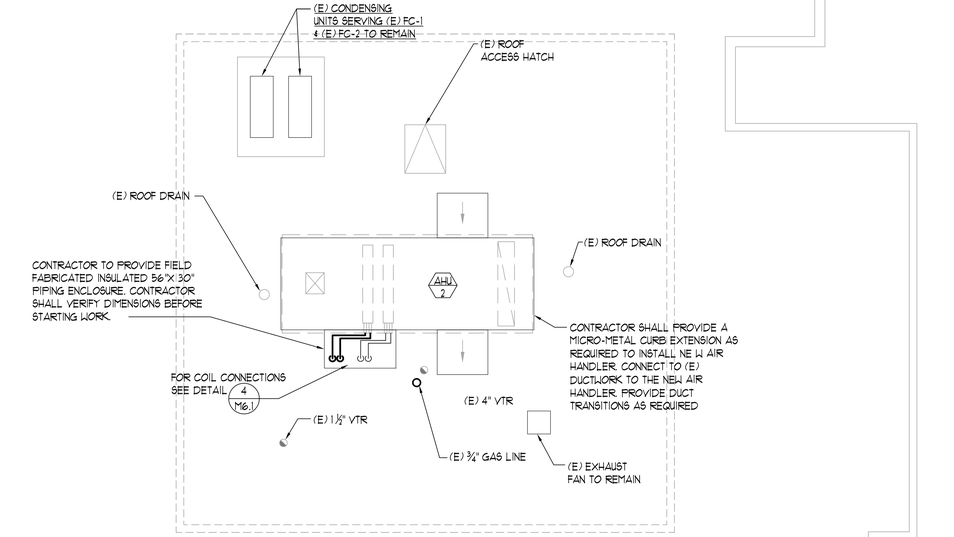
DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :

M3.1



A M3.2 BUILDING #300 ROOF PLAN ALT #1
SCALE: 1/4"=1'-0"



KEY PLAN

SEE A/M3.2

MATCHLINE

B M3.2 BUILDING #300 ROOF PLAN ALT #2
SCALE: 1/4"=1'-0"

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

MMI ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL

9/26/2014

SPARKS CITY HALL CAMPUS HVAC UPGRADE

SPARKS, NEVADA

SHEET TITLE

BUILDING #300
MECHANICAL
ROOF PLAN

REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :

M3.2

SYMBOL LEGEND

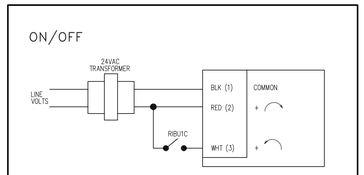
SYMBOL	DESCRIPTION
1	KEYNOTE INDICATOR.
1	REVISION INDICATOR.
DU-1	EQUIPMENT INDICATOR.
	BREAK, ROUND.
BUILDING MANAGEMENT CONTROL SYSTEM DEVICES	
	SENSOR.
	CONTROLLER.
	ELECTRIC ACTUATOR.
	ANALOG INPUT.
	ANALOG OUTPUT.
	BINARY INPUT.
	BINARY OUTPUT.
SENSOR AND CONTROLLER TYPES	
	HIGH LIMIT.
	LOW LIMIT.
	MANUAL RESET.
	TEMPERATURE.
	DIFFERENTIAL PRESSURE.
	ABSOLUTE PRESSURE.
F	FLOW.
	REMOTE SET POINT.
	HUMIDITY

SYMBOL LEGEND

SENSOR AND CONTROLLER PROBE TYPES	
	DUCT INSERTION PROBE.
	DUCT HUMIDITY PROBE.
	DUCT AVERAGING PROBE.
	OUTSIDE AIR PROBE WITH SUN SHIELD.
	DUCT STATIC PRESSURE PROBE.
	PITOT TUBE PROBE.
	PIPE WELL INSERTION PROBE.
	PIPE SURFACE MOUNTED PROBE.
	CENTRIFUGAL FAN.
	DAMPER, PARALLEL.

SYMBOL LEGEND

SYMBOL	DESCRIPTION
EQUIPMENT	
	HUMIDIFIER
	HEATING COIL.
	COOLING COIL.
	2-WAY CONTROL VALVE.
	3-WAY CONTROL VALVE.
	WATER PUMP.
	MAGNETIC STARTER.
VFD	VARIABLE FREQUENCY DRIVE
	EXAMPLE: TEMPERATURE SENSOR WITH DUCT PROBE
ESS	EMERGENCY SHUT DOWN SWITCH

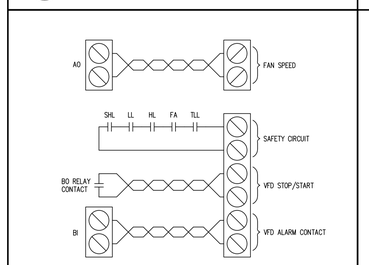


1 M5.1 ACTUATOR FAIL SAFE
NTS

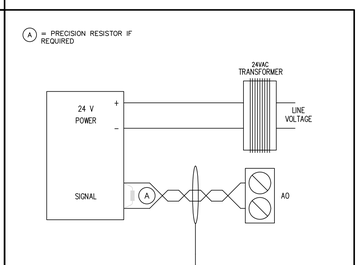
ABBREVIATIONS

NOTE: ALL ABBREVIATIONS MAY NOT BE USED.

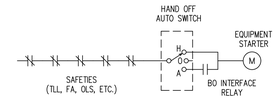
BMCS	BUILDING MANAGEMENT CONTROL SYSTEM	HWR	HOT WATER RETURN
CHW	CHILLED WATER	HWS	HOT WATER SUPPLY
CHWR	CHILLED WATER RETURN	LL	LOW LIMIT
CHWS	CHILLED WATER SUPPLY	LO	LOW
CO2	CARBON DIOXIDE	MA	MIXED AIR
CT	COOLING TOWER	NC	NORMALLY CLOSED
CT	CURRENT TRANSFORMER	NO	NORMALLY OPEN
CW	CONDENSER WATER	OA	OUTSIDE AIR
CWR	CONDENSER WATER RETURN	RA	RETURN AIR
CWS	CONDENSER WATER SUPPLY	SA	SUPPLY AIR
DA	DISCHARGE AIR	SHL	STATIC HIGH LIMIT
DC	DIRECT COUPLED	SLL	STATIC LOW LIMIT
DIFF	DIFFERENTIAL	STAT	THERMOSTAT
EA	EXHAUST AIR	TEMP	TEMPERATURE
FA	FIRE ALARM	TLL	TEMPERATURE LOW LIMIT
HI	HIGH	TW	TOWER WATER
HL	HIGH LIMIT	TWR	TOWER WATER RETURN
HW	HOT WATER	TWS	TOWER WATER SUPPLY
		VFD	VARIABLE FREQUENCY DRIVE



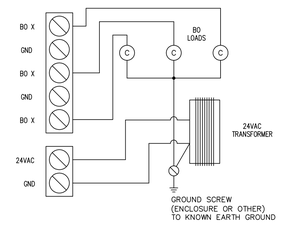
2 M5.1 VFD PANEL
NTS



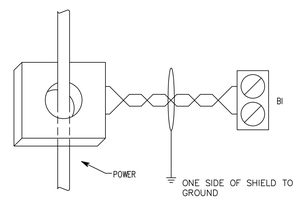
3 M5.1 4-WIRE ANALOG OUTPUT DEVICE
NTS



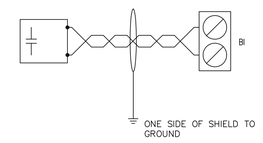
4 M5.1 EQUIPMENT START/STOP
NTS



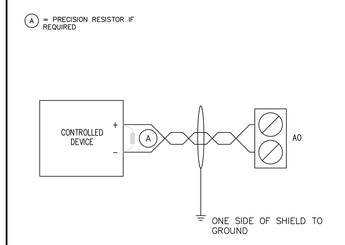
5 M5.1 BINARY OUTPUTS
NTS



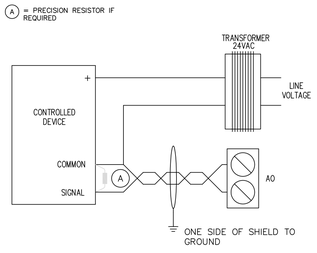
6 M5.1 MOTOR STATUS
NTS



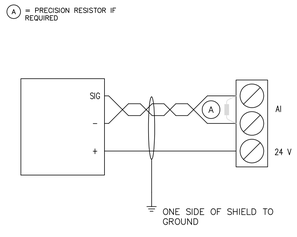
7 M5.1 BINARY INPUTS
NTS



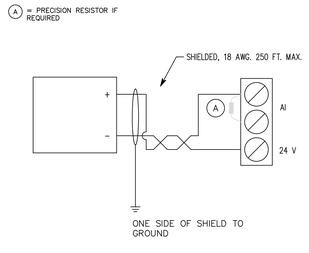
8 M5.1 2-WIRE ANALOG OUTPUT DEVICE
NTS



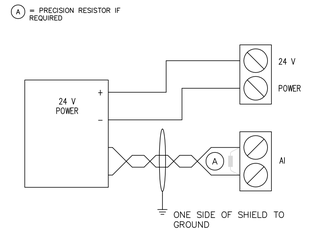
9 M5.1 3-WIRE ANALOG OUTPUT DEVICE
NTS



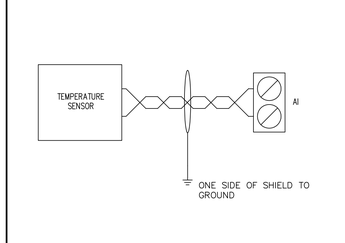
10 M5.1 3-WIRE ANALOG INPUT DEVICE
NTS



11 M5.1 2-WIRE ANALOG INPUT DEVICE
NTS



12 M5.1 4-WIRE ANALOG INPUT DEVICE
NTS



13 M5.1 ANALOG TEMPERATURE INPUT
NTS

A M5.1 CONTROL SYSTEM DETAILS & LEGEND
SCALE: NONE

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL
9/26/2014

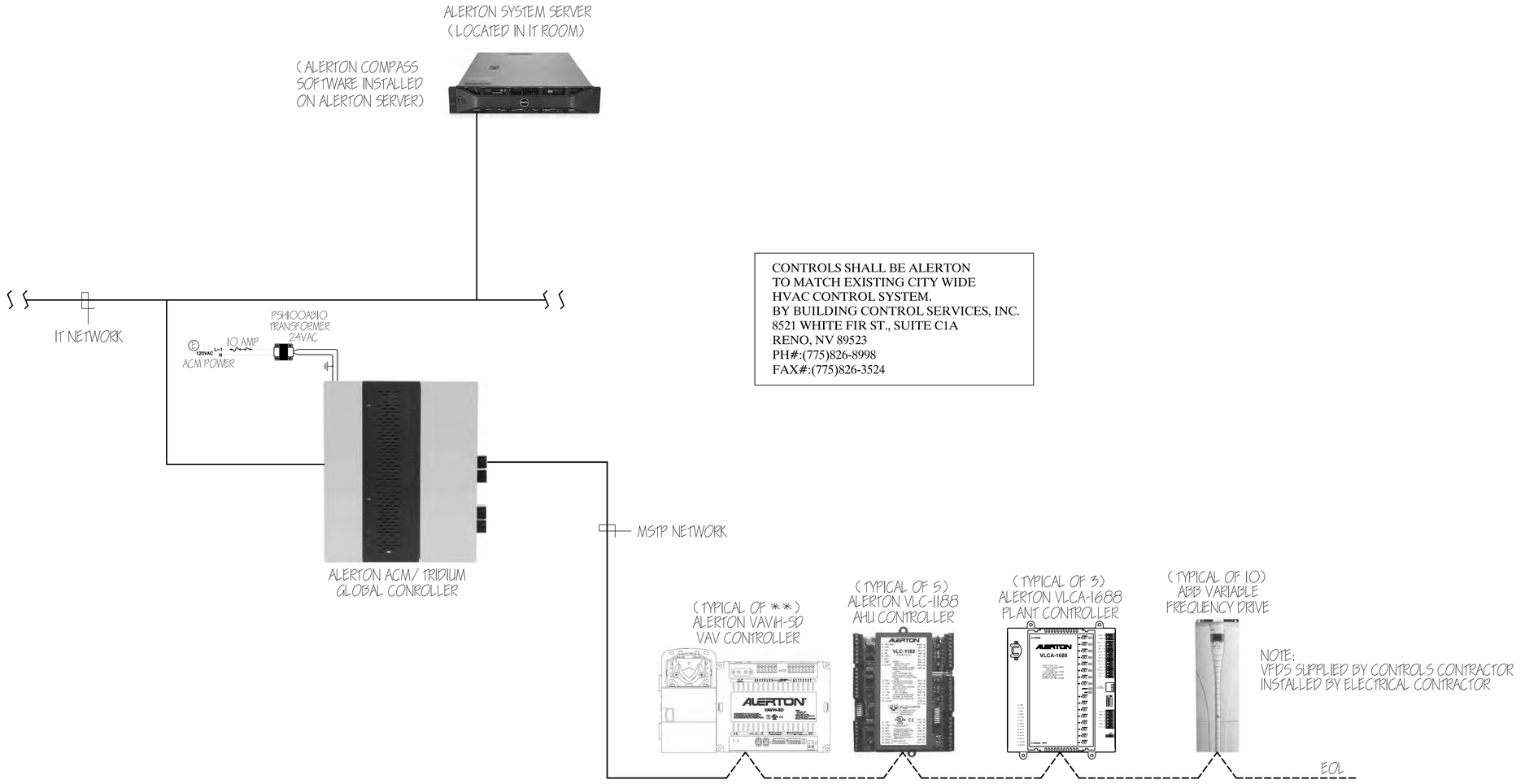
SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE
CONTROL SYSTEM DETAILS & LEGEND

REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :
M5.1



CONTROLS SHALL BE ALERTON
TO MATCH EXISTING CITY WIDE
HVAC CONTROL SYSTEM.
BY BUILDING CONTROL SERVICES, INC.
8521 WHITE FIR ST., SUITE C1A
RENO, NV 89523
PH#:(775)826-8998
FAX#:(775)826-3524

A M5.2 CONTROL SYSTEM ARCHITECTURE
SCALE: NONE

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

MMI ENGINEERING

MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL
REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA

9/26/2014

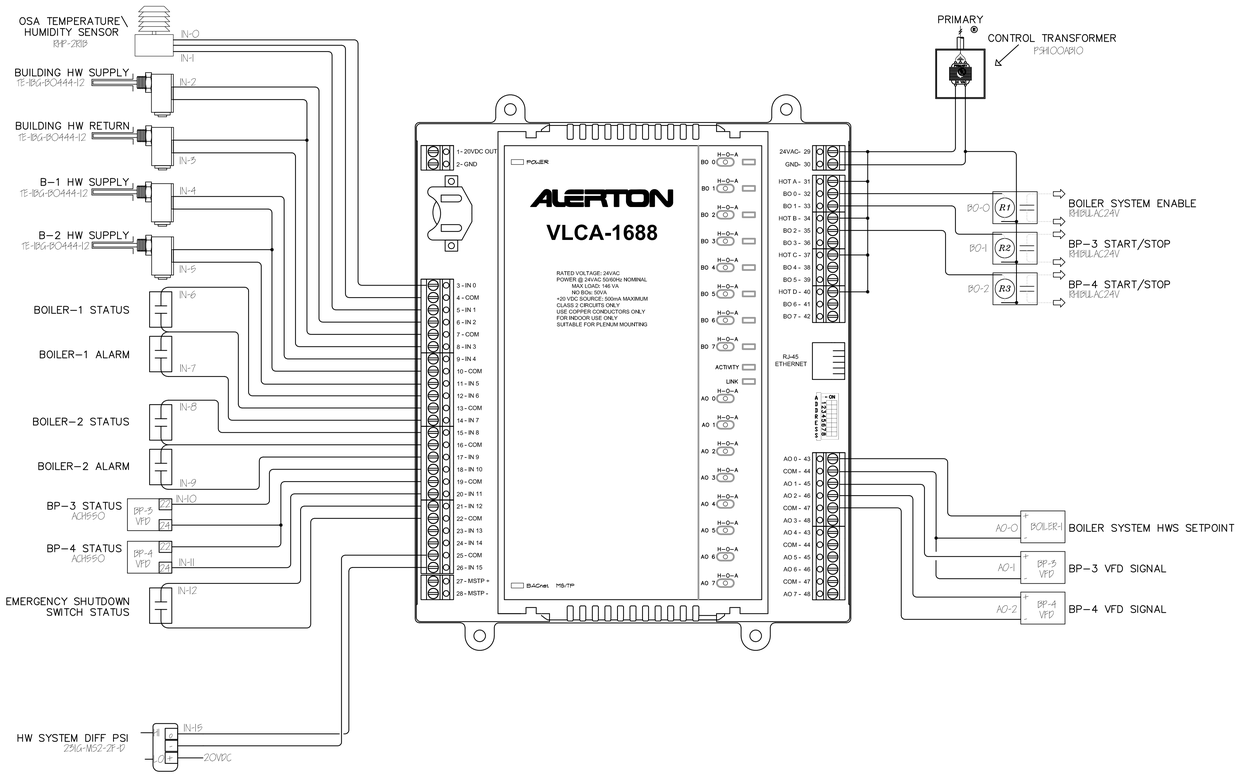
SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE
CONTROL SYSTEM ARCHITECTURE

REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :
M5.2

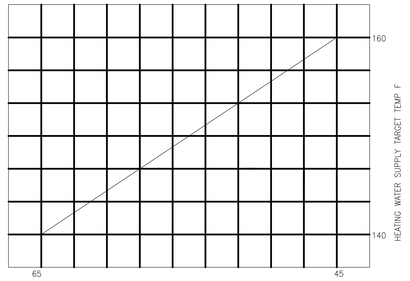


HEATING HOT WATER SYSTEM
SEQUENCE OF OPERATION

A. SETPOINTS

1. HEATING SYSTEM SHALL BE ENABLED AT 65°F AND DISABLED AT 70°F (5°F DEADBAND) OR AS DIRECTED BY THE OWNER. ALL SETTINGS SHALL BE ADJUSTABLE.
2. THE HEATING WATER SUPPLY TEMPERATURE SHALL BE RE-SET BY THE BUILDING MANAGEMENT SYSTEM IN ACCORDANCE WITH THE FOLLOWING CURVE (INITIALLY 1:1 RATIO):

HEATING WATER SUPPLY RESET CURVE



B. BUILDING HEATING PUMPS (BP-3 & BP-4)

1. WHEN HEATING SYSTEM IS ENABLED, THE BUILDING MANAGEMENT SYSTEM SHALL START LEAD BUILDING SUPPLY PUMP (BP-3 OR BP-4)
2. UPON FAILURE OF THE LEAD PUMP, THE BUILDING MANAGEMENT SYSTEM SHALL ENERGIZE THE LAG (STANDBY) PUMP.
3. THE BUILDING MANAGEMENT SYSTEM SHALL ALTERNATE LEAD/LAG OF PUMPS WEEKLY.

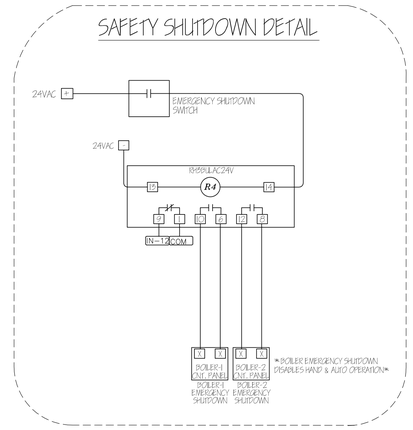
C. BOILERS (B-1 & 2) & PUMPS (BP-1 & BP-2)

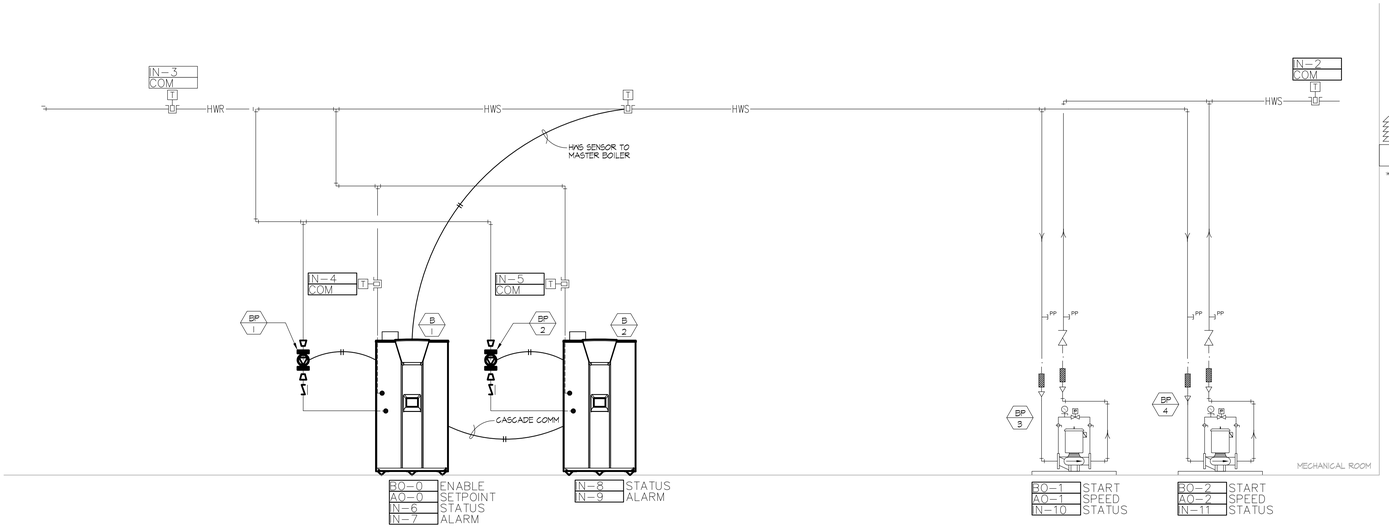
1. THE BUILDING MANAGEMENT SYSTEM SHALL SEND SIGNAL TO MASTER BOILER CONTROLLER, THE BOILER CONTROLLER SHALL ENERGIZE LEAD BOILER (B-1 / B-2) AND START ASSOCIATED PUMP (BP-1 / BP-2) UTILIZING THE BOILERS INTERNAL CASCADE CONTROL.
2. THE ASSOCIATED BOILER PUMP SHALL RUN CONTINUOUSLY WHEN BOILER IS IN OPERATION. THE BOILER CONTROLLER SHALL SHUT OFF THE PUMP 15 MINUTES AFTER BOILER SHUTDOWN TO PREVENT RESIDUAL HEAT FROM EXCEEDING BOILER HIGH LIMIT TEMPERATURE.
3. FLOW SWITCH AT BOILER DISCHARGE ALLOWS BOILERS TO ENERGIZE. BOILER INTEGRAL CONTROLS TO MODULATE BURNER TO MAINTAIN SYSTEM HEADER WATER TEMPERATURE SETPOINT.
4. THE BOILER CONTROLLER SHALL INDICATE ALARM CONDITION WHENEVER THE BOILER INDICATES FAILURE (THROUGH ALARM CONTACTS).
5. THE MANUAL RESET HIGH LIMIT CONTROL ON EACH BOILER SHALL BE SET INITIALLY AT APPROXIMATELY 210°F (ADJUSTABLE).
6. IF OSA TEMPERATURE FALLS BELOW 40°F OR IF ANY SPACE TEMPERATURE SENSOR FALLS BELOW 50°F, THEN THE HEATING SYSTEM SHALL BE PLACED IN THE ENABLED MODE.
7. SAFETIES:
   a. FLOW SWITCH SHALL DISABLE BOILER AND SET ALARM.
   b. EMERGENCY SHUTDOWN SWITCH AT EACH BOILER ROOM EXIT SHALL DISCONNECT THE POWER TO ALL FUEL BURNING EQUIPMENT IN BOILER ROOM.

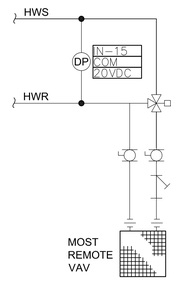
D. OPERATOR'S TERMINAL

1. SEE "TEMPERATURE CONTROL AND EMCS GENERAL NOTES".
2. HEATING WATER SUPPLY TEMPERATURE (°F).
3. HEATING WATER RETURN TEMPERATURE (°F).
4. BOILER SUPPLY TEMPERATURE (°F).
5. BOILER COMMAND (ENABLE/DISABLE).
6. BOILER STATUS (ON/OFF).
7. BOILER ALARM (ALARM/NORMAL).
8. HW PUMP COMMAND (START/STOP).
9. HW PUMP STATUS (ON/OFF).
10. HEATING WATER RESET TEMPERATURE (°F).

SAFETY SHUTDOWN DETAIL







NOTE: SEE SPECIFICATION SECTION 26 29 23 FOR VARIABLE FREQUENCY DRIVE REQUIREMENTS

A M5.3 HEATING WATER PLANT CONTROL

SCALE: NONE

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL

9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

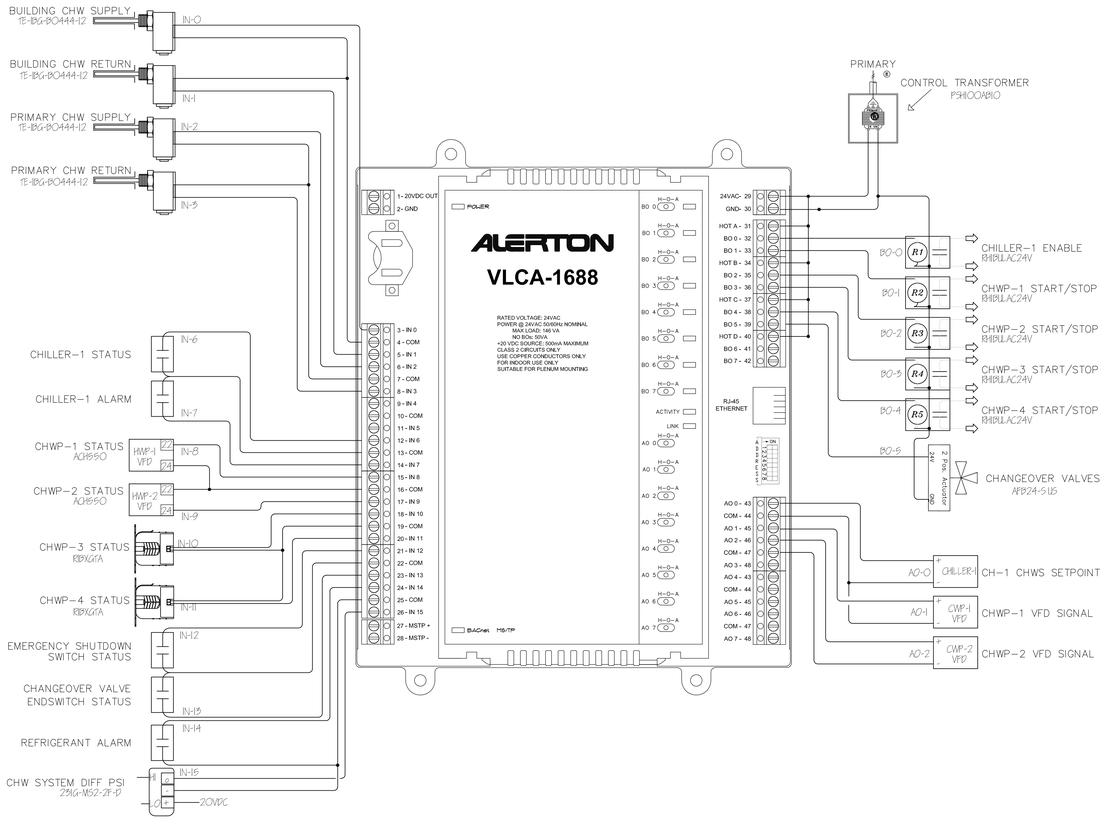
SHEET TITLE

HEATING WATER PLANT CONTROL

REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :
M5.3

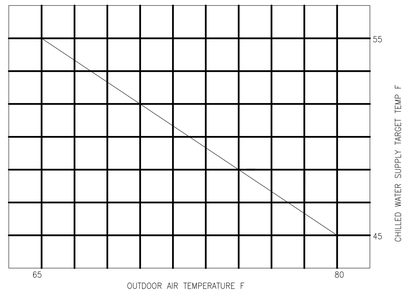


CHILLED WATER SYSTEM SEQUENCE OF OPERATION

A. SETPOINTS

1. THE CHILLED WATER SYSTEM SHALL BE ENABLED WHENEVER THERE IS A COOLING DEMAND FROM THE BUILDING AND OSA TEMPERATURE IS AT OR ABOVE 65°F. THE SYSTEM SHALL BE DISABLED AT 55°F (10°F DEADBAND) OR WHENEVER THESE IS NO LONGER A DEMAND FOR COOLING FROM THE BUILDING. ALL SETTINGS SHALL BE ADJUSTABLE.
2. THE CHILLED WATER SUPPLY TEMPERATURE SHALL BE RE-SET BY THE BUILDING MANAGEMENT SYSTEM IN ACCORDANCE WITH THE FOLLOWING CURVE (INITIALLY 1:1 RATIO):

CHILLED WATER SUPPLY RESET CURVE



B. BUILDING CHILLED WATER PUMPS (CHWP-3 & CHWP-4)

1. WHEN CHILLED WATER SYSTEM IS ENABLED, THE BUILDING MANAGEMENT SYSTEM SHALL START LEAD BUILDING SUPPLY PUMP (CHWP-3 OR CHWP-4)
2. THE VARIABLE FREQUENCY DRIVE SHALL MODULATE TO MAINTAIN THE CHILLED WATER DIFFERENTIAL PRESSURE SETPOINT (SET BY THE BALANCE CONTRACTOR).
3. UPON FAILURE OF THE LEAD PUMP, THE BUILDING MANAGEMENT SYSTEM SHALL ENERGIZE THE LAG (STANDBY) PUMP.
4. THE BUILDING MANAGEMENT SYSTEM SHALL ALTERNATE LEAD/LAG OF PUMPS WEEKLY.

C. PRIMARY CHILLED WATER PUMPS (CHWP-1 & CHWP-2)

1. WHEN CHILLED WATER SYSTEM IS ENABLED, THE BUILDING MANAGEMENT SYSTEM SHALL START LEAD PRIMARY PUMP (CHWP-1 OR CHWP-2)
2. UPON FAILURE OF THE LEAD PUMP, THE BUILDING MANAGEMENT SYSTEM SHALL ENERGIZE THE LAG (STANDBY) PUMP.
3. THE BUILDING MANAGEMENT SYSTEM SHALL ALTERNATE LEAD/LAG OF PUMPS WEEKLY.

D. CONDENSER WATER PUMPS (CWP-1 & CWP-2)

1. WHEN CHILLED WATER SYSTEM IS ENABLED, THE BUILDING MANAGEMENT SYSTEM SHALL START LEAD PRIMARY PUMP (CWP-1 OR CWP-2)
2. UPON FAILURE OF THE LEAD PUMP, THE BUILDING MANAGEMENT SYSTEM SHALL ENERGIZE THE LAG (STANDBY) PUMP.
3. THE BUILDING MANAGEMENT SYSTEM SHALL ALTERNATE LEAD/LAG OF PUMPS WEEKLY.

E. FREECOOL MODE (HX-1)

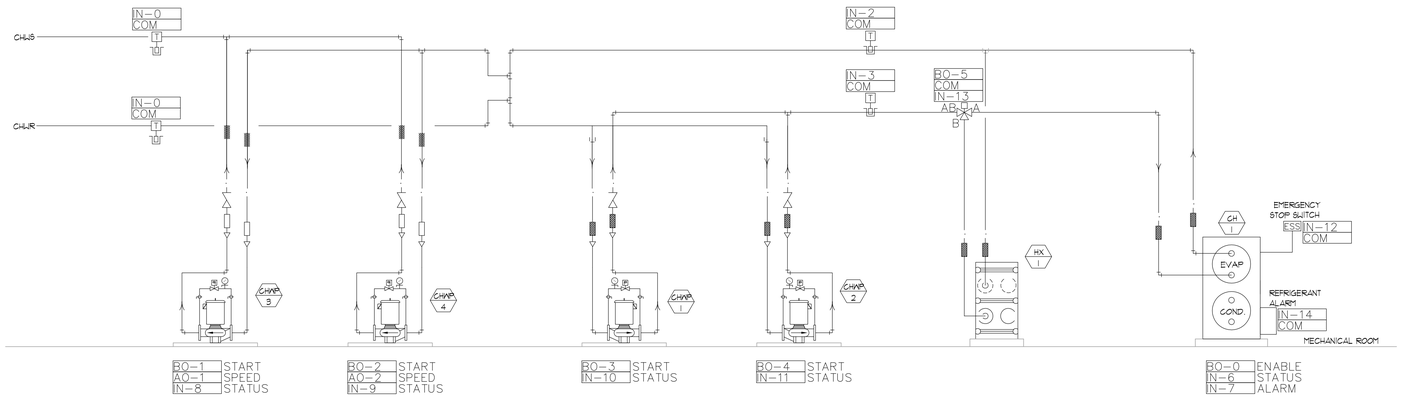
1. ONCE THE CHILLED WATER SYSTEM IS ENABLED AND THE OUTSIDE AIR WETBULB TEMPERATURE IS LESS THAN THE CURRENT BUILDING CHILLED WATER SUPPLY SETPOINT, FREECOOLING MODE SHALL BE ENABLED.
2. THE CHANGEOVER VALVES SHALL POSITION TO FLOW THROUGH HX-1.
3. THE COOLING TOWER FAN VFD SHALL MODULATE TO MAINTAIN THE CURRENT BUILDING CHILLED WATER SUPPLY SETPOINT.
4. IF THE COOLING TOWER FAN VFD IS AT 100% AND THE CHILLED WATER SUPPLY TO THE BUILDING IS MORE THAN 5°F ABOVE SETPOINT FOR MORE THAN 30 MINUTES, FREECOOLING MODE SHALL BE DISABLED AND THE CHILLER SHALL BE ENABLED.

F. CHILLER MODE (CH-1)

1. ONCE THE CHILLED WATER SYSTEM IS ENABLED AND THE OUTSIDE AIR WETBULB TEMPERATURE IS GREATER THAN THE CURRENT BUILDING CHILLED WATER SUPPLY SETPOINT, OR IF FREECOOLING MODE HAS BEEN DISABLED, CHILLER MODE SHALL BE ENABLED.
2. THE CHANGEOVER VALVES SHALL POSITION TO FLOW THROUGH CH-1.
3. THE COOLING TOWER FAN VFD SHALL MODULATE TO MAINTAIN THE CURRENT CONDENSER WATER SUPPLY SETPOINT (75°F ADJ.).
4. ONCE THE CHANGEOVER VALVES HAVE FULLY POSITIONED TO FLOW THROUGH THE CHILLER, THE CHILLER SHALL BE ENABLED AND SET TO MAINTAIN THE CURRENT BUILDING CHILLED WATER SUPPLY SETPOINT.
5. IF THE CHILLER FAILS FOR ANY REASON AND IS UNABLE TO PROVIDE CHILLED WATER, FREECOOLING MODE SHALL BE ENABLED BY DEFAULT.
6. SAFETIES:
   a. FLOW SWITCH SHALL DISABLE CHILLER AND SET ALARM.
   b. CHILLER INTERNAL SAFETIES SHALL DISABLE CHILLER AND SEND AN ALARM TO THE OPERATOR WORK STATION.

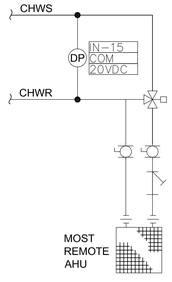
D. OPERATOR'S TERMINAL

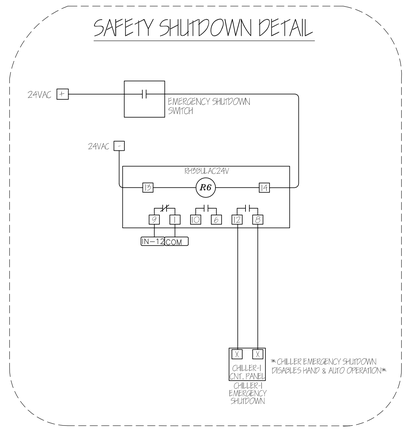
1. SEE "TEMPERATURE CONTROL AND EMCS GENERAL NOTES".
2. BUILDING CHILLED WATER SUPPLY TEMPERATURE (°F).
3. BUILDING CHILLED WATER RETURN TEMPERATURE (°F).
4. PRIMARY CHILLED WATER SUPPLY TEMPERATURE (°F).
5. PRIMARY CHILLED WATER RETURN TEMPERATURE (°F).
6. CONDENSER WATER SUPPLY TEMPERATURE (°F).
7. CONDENSER WATER RETURN TEMPERATURE (°F).
8. CHILLED WATER RESET TEMPERATURE (°F).
9. CHILLER COMMAND (ENABLE/DISABLE).
10. CHILLER STATUS (ON/OFF).
11. CHILLER ALARM (ALARM/NORMAL).
12. PUMP COMMAND (START/STOP).
13. PUMP STATUS (ON/OFF).
14. PUMP VFD SIGNAL (0-100%).
15. CT-1 COMMAND (START/STOP).
16. CT-1 STATUS (ON/OFF).
17. CT-1 VFD SIGNAL (0-100%).
18. CT-1 VIBRATION ALARM (ALARM/NORMAL).
19. CHANGEOVER VALVE COMMAND (OPEN/CLOSE).
20. CHANGEOVER VALVE STATUS (OPEN/CLOSED).



NOTE: SEE SPECIFICATION SECTION 26 29 23 FOR VARIABLE FREQUENCY DRIVE REQUIREMENTS

A M5.4 CHILLED WATER PLANT CONTROL
SCALE: NONE





MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

MMI ENGINEERING

MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL
REGISTERED PROFESSIONAL ENGINEER - STATE OF NEVADA

9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

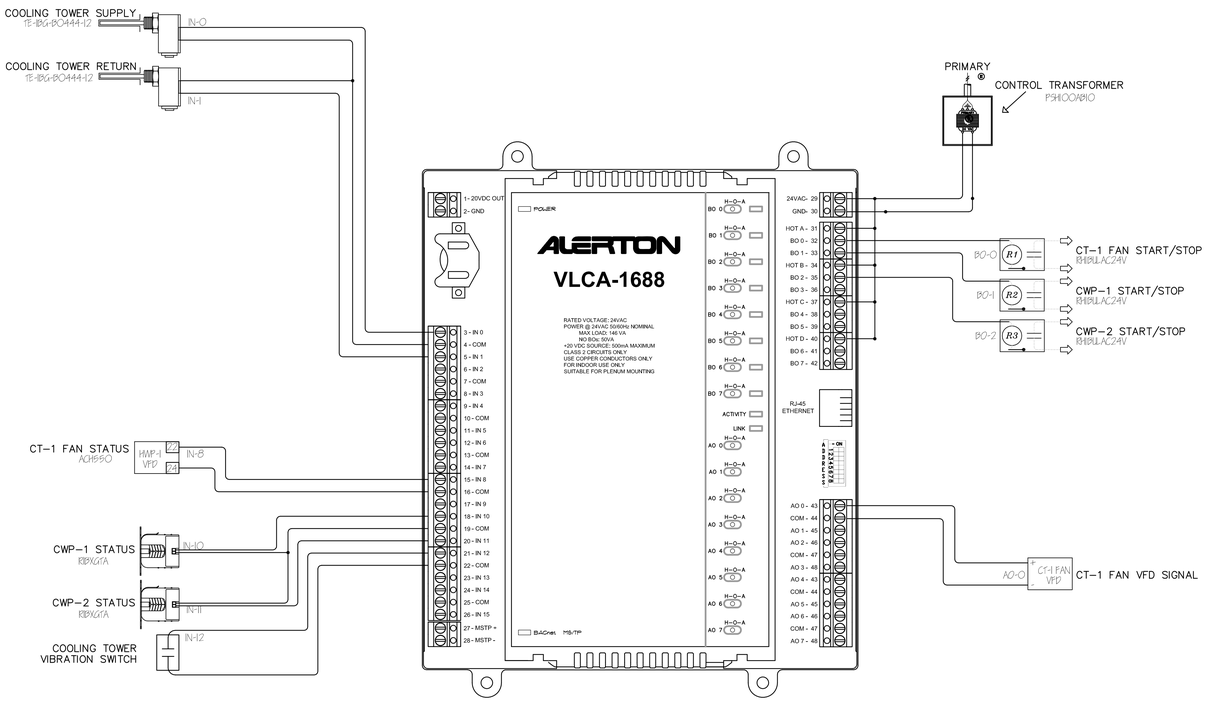
SHEET TITLE

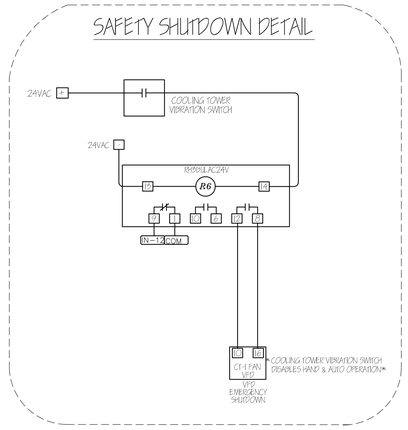
CHILLED WATER PLANT CONTROL

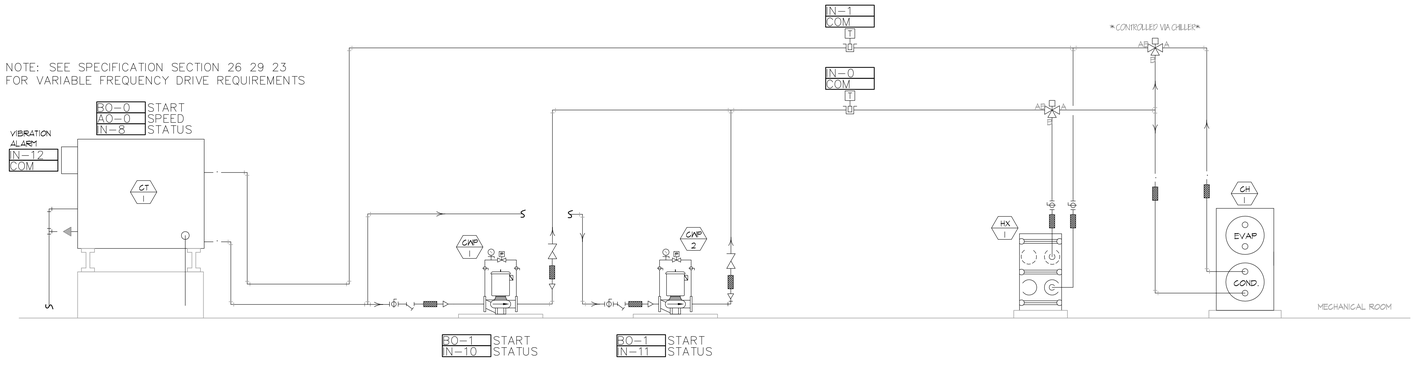
REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :
M5.4







A M5.5 CONDENSER WATER PLANT CONTROL
SCALE: NONE

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

MMI ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL
9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

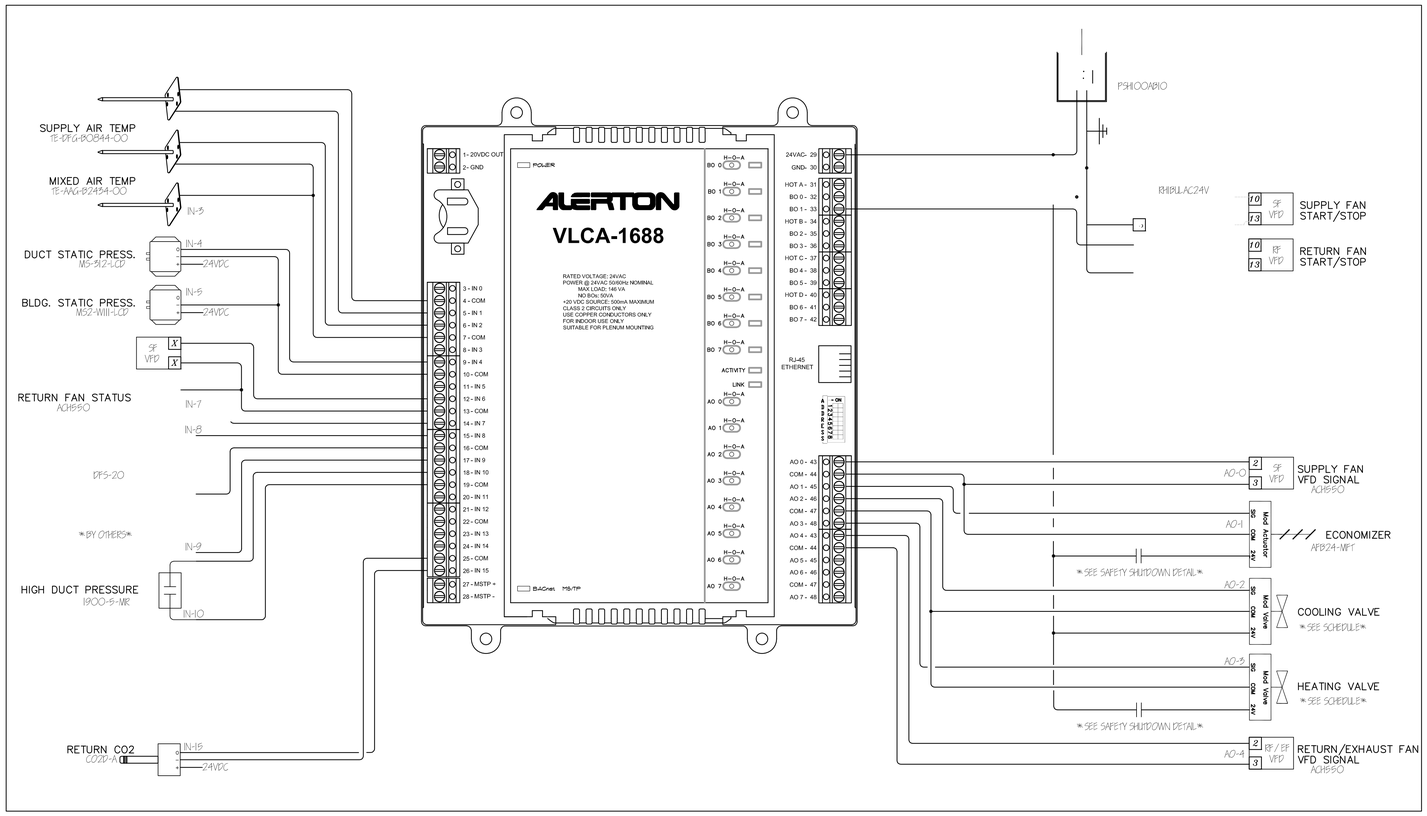
SHEET TITLE

CONDENSER WATER PLANT CONTROL

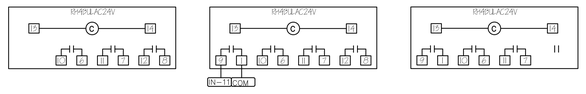
REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :
M5.5



SAFETY SHUTDOWN DETAIL



VAV AHU CONTROL

WARM UP CYCLE:

1. SUPPLY FAN SHALL START AND VFD SHALL MODULATE TO MAINTAIN MORNING WARM UP DUCT STATIC PRESSURE SETPOINT.
2. OSA DAMPERS SHALL REMAIN CLOSED.
3. HEATING WATER VALVE SHALL MODULATE OPEN TO MAINTAIN 80°F(ADJ.) SUPPLY AIR TEMPERATURE SETPOINT.

OCCUPIED CYCLE:

1. SUPPLY FAN SHALL START IF NOT ALREADY RUNNING THROUGH MORNING WARMUP SEQUENCE.
2. VFD SHALL MODULATE TO MAINTAIN DUCT STATIC PRESSURE SETPOINT, INITIALLY 1"(ADJ.).
3. OSA DAMPER SHALL OPEN TO MINIMUM POSITION WHICH WILL VARY BASED ON RETURN CO2 LEVELS. CO2 SETPOINT SHALL BE SET INITIALLY AT 1000PPM(ADJ.).
4. THE COOLING WATER VALVE AND HEATING WATER VALVE SHALL BE MODULATED TO MAINTAIN THE CURRENT SUPPLY AIR TEMPERATURE SETPOINT.
5. IF THE OUTSIDE AIR TEMPERATURE IS LESS THAN 68°F(ADJ.), THE ECONOMIZER DAMPERS SHALL BE USED AS THE PRIMARY MEANS OF COOLING. ONCE THE ECONOMIZER DAMPERS HAVE REACHED 100%, THE COOLING WATER VALVE SHALL MODULATE TO MAINTAIN THE CURRENT SUPPLY AIR TEMPERATURE SETPOINT.
6. THE EXHAUST FAN VFD SHALL START AND MODULATE TO MAINTAIN THE CURRENT BUILDING STATIC PRESSURE SETPOINT, INITIALLY .1"(ADJ.).

UNOCCUPIED CYCLE:

1. SUPPLY/EXHAUST FANS STOP AND OSA DAMPER CLOSES AT PROGRAMMED TIME.
2. CHILLED WATER VALVE AND HEATING WATER VALVE CLOSES.
3. VAV ZONES REVERT TO "SET-BACK/SET-UP" TEMPERATURE SET POINT.
4. MOMENTARY CONTACT PUSH-BUTTON IN ANY ROOM TEMPERATURE SENSORS OVERRIDES "UNOCCUPIED CYCLE" AND PLACES SYSTEM IN "OCCUPIED CYCLE" FOR A PROGRAMMED LENGTH OF TIME.

SETPOINTS:

1. SUPPLY TEMPERATURE RESET:
   AS HIGHEST VAV ZONE COOLING SIGNAL INCREASES FROM 0% TO 100%, THE SUPPLY AIR TEMPERATURE SETPOINT DECREASES FROM 65°F(ADJ.) TO 55°F(ADJ.).

SAFETY CONTROL:

1. IF COMMUNICATION FAILS BETWEEN AIR HANDLER CONTROLLER AND GLOBAL CONTROLLER, THE AIR HANDLER CONTROL SHALL AUTOMATICALLY MAINTAIN THE LATEST TEMPERATURE SETPOINTS IN OCCUPIED MODE.
2. FREEZE, SMOKE, OR HIGH DUCT PRESSURE ALARMS SHALL DE-ACTIVATE UNIT AND SEND AN ALARM TO THE OPERATORS WORKSTATION.
3. FILTER DIFFERENTIAL PRESSURE TRANSMITTER SHALL SEND AN ALARM TO THE OPERATOR WORKSTATION WHENEVER PRESSURE EXCEEDS THE FILTER ALARM PRESSURE SETPOINT. FILTER ALARM SETPOINT SHALL BE BASED UPON SETTING UP STATIC PROFILE WITH BALANCE CONTRACTOR TO TRIGGER THE ALARM BASED UPON THE FILTER PRESSURE DROP AND THE VFD SPEED OF THE SUPPLY FAN.

A M5.6 TYPICAL VAV AHU CONTROL
SCALE: NONE

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

MMI ENGINEERING

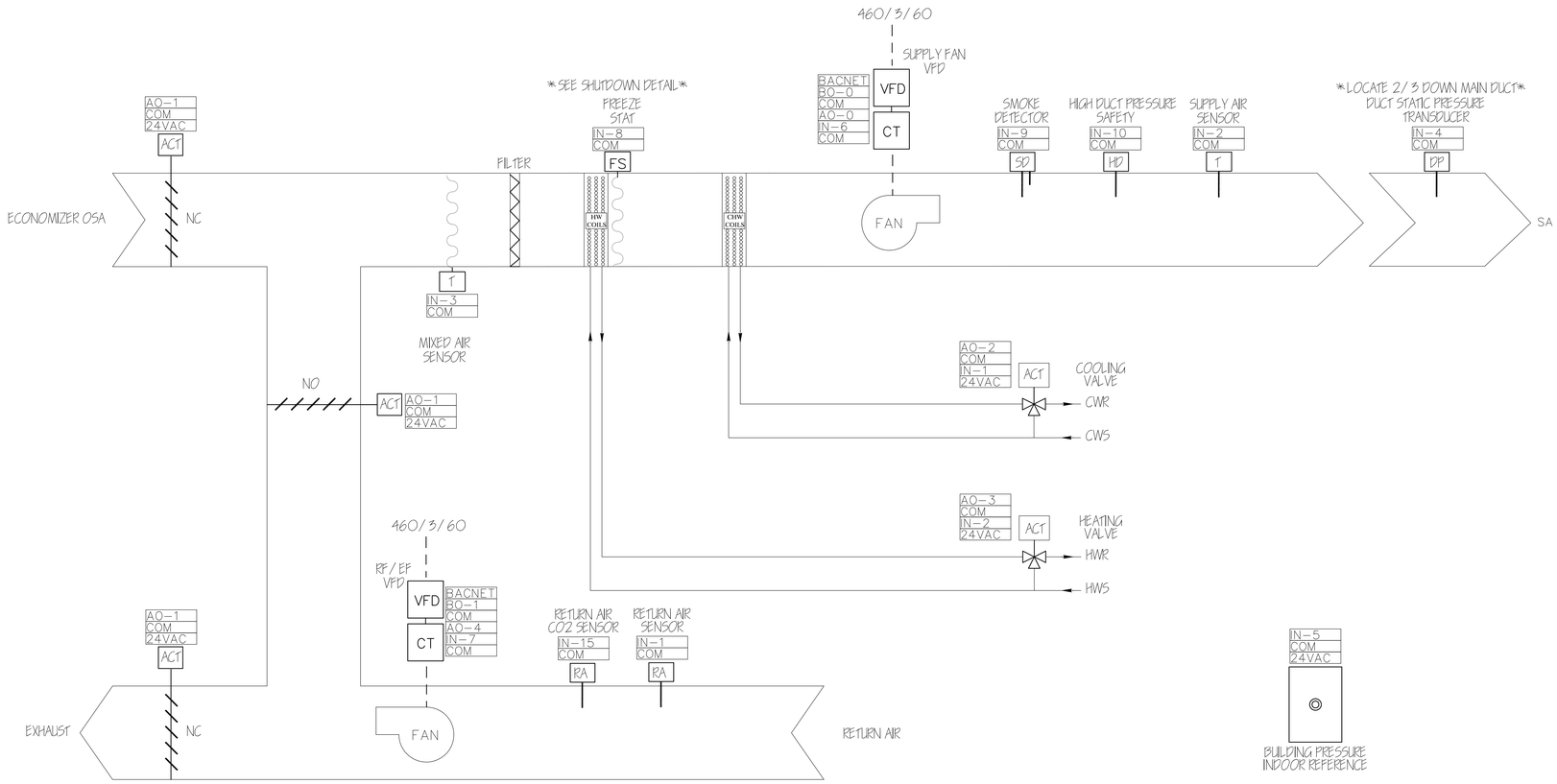
REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL
9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE
TYPICAL VAV AHU CONTROL

REVISIONS

DATE :
SEPTEMBER 26, 2014
SHEET NUMBER :
M5.6



NOTE: SEE SPECIFICATION SECTION 26 29 23
FOR VARIABLE FREQUENCY DRIVE REQUIREMENTS

AIR HANDLER SEQUENCE OF OPERATION

1. THE UNIT WILL BE ENABLED BY THE DDC CONTROL SYSTEM. ONCE STARTED THE AIR HANDLER SHALL PROVIDE SUPPLY AIR TEMPERATURE CONTROL AND DUCT STATIC PRESSURE CONTROL ALONG WITH BUILDING STATIC PRESSURE CONTROL. (ALL CONTROL COMPONENTS AND WIRING TO BE PROVIDED BY THE TEMPERATURE CONTROLS CONTRACTOR.)

2. MINIMUM POINTS TO BE PROVIDED BY THE DDC CONTROL SYSTEM INTERFACE (BACNET):
A. SUPPLY AIR SETPOINT (WITH ADJUSTMENT FROM THE DDC CONTROL SYSTEM BACNET OBJECT).
B. SUPPLY AIR TEMPERATURE.
C. DUCT STATIC PRESSURE.
D. DUCT STATIC PRESSURE SETPOINT (WITH ADJUSTMENT FROM THE DDC CONTROL SYSTEM BACNET OBJECT).
E. SUPPLY FAN VFD STATUS.
F. RETURN/EXHAUST FAN VFD STATUS.
G. P.O.C.D. ALARM STATUS.
H. HEATING WATER VALVE POSITION (COMMANDED)
I. CHILLED WATER VALVE POSITION (COMMANDED)
J. OSA TEMPERATURE. (GLOBAL)
K. OUTSIDE AIR DAMPER POSITION (COMMANDED).
L. ECONOMIZER MINIMUM POSITION SETPOINT (WITH ADJUSTMENT FROM THE DDC CONTROL SYSTEM BACNET OBJECT).
M. MIXED AIR TEMPERATURE.
N. RETURN AIR TEMPERATURE.
O. FREEZESTAT ALARM.

3. COOLING MODE, OCCUPIED: OUTSIDE AIR AND DUCT MOUNTED MIXED AIR TEMPERATURE CONTROLLERS MODULATE ECONOMIZER CONTROLS AND CHILLED WATER CONTROL VALVE TO MAINTAIN THE CURRENT SUPPLY AIR SETPOINT (ADJUSTABLE VIA RESET SCHEDULE). FREEZE STAT WITH MANUAL RESET SHALL SHUT DOWN THE AIR HANDLER'S SUPPLY AIR FAN AND THE RETURN AIR FAN, CLOSE THE OUTSIDE AIR DAMPER, AND OPEN THE HEATING WATER VALVE. IF THE SUPPLY AIR TEMPERATURE FALLS BELOW 40°F. INTERLOCK ALL DUCT MOUNTED SMOKE DETECTORS TO SHUT DOWN THE AIR HANDLER FAN AND RETURN AIR FAN AND CLOSE THE OUTSIDE AIR DAMPER UPON ACTIVATION OF ANY SMOKE DETECTOR.
4. HEATING MODE, OCCUPIED: WHEN THE OUTSIDE AIR TEMPERATURE FALLS BELOW 60°F, SYSTEM (SECONDARY) CHILLED WATER CIRCULATION PUMP CHWP-3 OR CHWP-4 (ALTERNATING) IS DEENERGIZED. ON A CALL FOR HEATING, THE AIR HANDLER UNIT'S HEATING WATER VALVE SHALL MODULATE TO MAINTAIN THE CURRENT SUPPLY AIR SETPOINT (ADJUSTABLE VIA RESET SCHEDULE).
5. NIGHT SETBACK MODE: NIGHT SETBACK IS INITIATED BY THE DDC CONTROL SYSTEM. THE AIR HANDLER SUPPLY FAN AND RETURN AIR FAN CONTROLS ARE OFF AND OUTSIDE AIR DAMPERS CLOSE. SPACE THERMOSTATS ARE RESET TO 64°F DURING THE WINTER MONTHS AND 84°F DURING THE SUMMER MONTHS. AIR HANDLER AND RETURN AIR FANS CYCLE TO MAINTAIN SETPOINTS. CHILLED WATER AND HEATING SYSTEM CONTROLS & CIRCULATION PUMP OPERATION ARE THE SAME AS IN THE OCCUPIED MODE.
6. OPTIMUM START/STOP: OPTIMUM START (OST) SCHEDULED START TIME, CONTROLLED BY THE DDC CONTROLLER, CAN BE ALTERED BY CONTROLLERS OPTIMUM START PROGRAM CALCULATION.
THE RESULT OF THE CALCULATION IS TO COMPUTE THE EQUIPMENT START TIME SO THAT THE SPACE TEMPERATURE CAN BE MOVED FROM ITS UNOCCUPIED MODE SETTING, TO THE OCCUPIED MODE SETTING FOR THE SPACE CONTROLLED, EARLY ENOUGH TO MEET THE SCHEDULED START TIME FOR THE SPACE.

PROGRAMS
1. SCHEDULE
2. START/STOP PROGRAM
3. OPTIMUM START/STOP PROGRAM
4. OUTSIDE/RETURN/RELIEF DAMPERS
5. DDC - HISTORICAL TEMPERATURE RATE OF CHANGE (FROM SELECTED SENSOR) CONTROL POINTS:
OUTSIDE AIR TEMP. X
OUTSIDE AIR HUMIDITY X
SPACE TEMP.
START/STOP, AHU FAN X
OPTIMUM STOP (OSP), AHU SCHEDULED STOP TIME, CONTROLLED BY THE DDC CONTROLLER, CAN BE ALTERED BY CONTROLLERS OPTIMUM START/STOP PROGRAM. THE RESULT OF THE CALCULATION IS TO COMPUTE THE EQUIPMENT STOP TIME. SO THAT THE SPACE TEMPERATURE IS ALLOWED TO DRIFT FROM ITS OCCUPIED MODE SETTING FOR THE SPACE CONTROLLED, TO THE UPPER OR LOWER TEMPERATURE LIMIT BY THE SCHEDULED STOP TIME.

PROGRAMS
1. SCHEDULE
2. START/STOP PROGRAM
3. OPTIMUM START/STOP PROGRAM
4. DDC - HISTORICAL TEMPERATURE RATE OF CHANGE

7. DISCHARGE TEMPERATURE CONTROL RESET SCHEDULE THE DISCHARGE AIR TEMPERATURE (DAT) SHALL BE MAINTAINED AT SETPOINT AS DESCRIBED BELOW.

THE CHW VALVE SHALL MODULATE TO MAINTAIN THE SETPOINT. THE COOLING VALVE SHALL BE ENABLED WHENEVER OUTSIDE AIR TEMPERATURE IS GREATER THAN EITHER THE DAT SETPOINT OR 53°F (ADJ.), THE ECONOMIZER IS DISABLED OR FULLY OPEN AND THE SUPPLY FAN STATUS IS ON. ALARMS SHALL BE PROVIDED AS FOLLOWS:

1. HIGH SUPPLY AIR TEMP: IF SUPPLY AIR TEMPERATURE IS 5°F (ADJ.) GREATER THAN FLOATING SETPOINT.
2. DAT SETPOINT - OPTIMIZED: THE CONTROLLER SHALL MONITOR THE SUPPLY AIR TEMPERATURE AND SHALL RESET THE SUPPLY AIR TEMPERATURE SETPOINT BASED ON OUTSIDE AIR CONDITIONS AND SATISFYING ALL ZONE COOLING REQUIREMENTS.
3. THE INITIAL DATSPT SHALL BE 57°F (ADJ).
4. THE DATSPT SHALL RESET BETWEEN A HIGH (70°F ADJUSTABLE) AND LOW (55°F ADJUSTABLE) OFFSET RANGE AS DESCRIBED BELOW AND SHALL BE THE OUTPUT OF A SLOW ACTING PID LOOP. AS ZONE COOLING DEMAND INCREASES, A MINIMUM OF 3 COOLING REQUESTS (ADJ.), THE SETPOINT SHALL INCREMENTALLY RESET DOWN TO A MINIMUM OF THE LOW OFFSET, WITH NO COOLING REQUESTS, THE SETPOINT SHALL INCREMENTALLY RESET UP TO A MAXIMUM HIGH OFFSET.
8. DEMAND LIMITING - SETPOINT ADJUST TO LOWER POWER CONSUMPTION, THE SUPPLY AIR TEMPERATURE SETPOINT SHALL AUTOMATICALLY ADJUST (RAISED FOR COOLING; LOWERED FOR HEATING) WHEN THE FACILITY POWER CONSUMPTION EXCEEDS DEFINABLE THRESHOLDS, THE AMOUNT OF ADJUSTMENT SHALL BE ACCOMPLISHED BY ONE OF THE FOLLOWING METHODS:

1. THE SUPPLY AIR TEMPERATURE SETPOINT SHALL ADJUST BY 1°F (ADJ.) FOR EACH DEMAND THRESHOLD EXCEEDED.
2. THE SETPOINTS IN THE ZONES SUPPLIED BY THIS UNIT SHALL BE ADJUSTED AS SPECIFIED IN THE SEQUENCE OF OPERATIONS FOR THE ZONES. THIS SHALL IN TURN ADJUST THE UNIT'S SUPPLY AIR TEMPERATURE SETPOINT BY A USER DEFINABLE AMOUNT.
3. ALL SETPOINTS SHALL AUTOMATICALLY RETURN TO THEIR PREVIOUS SETTINGS WHEN THE FACILITY POWER CONSUMPTION DROPS BELOW THE THRESHOLDS.

POINT ALARMS - THE FOLLOWING POINT ALARMS SHALL BE GENERATED AT THE OPERATOR WORK STATION:

1. HIGH ZONE CARBON DIOXIDE CONCENTRATION: IF THE HIGHEST ZONE CO2 CONCENTRATION IS GREATER THAN 1000 PPM (ADJ.).
2. THE OSA DAMPER CONTROL SHALL INCLUDE A HIGH SELECT BETWEEN THE MINIMUM OSA POSITION, ECONOMIZER POSITION, AND ZONE CO2 CONTROL POSITION.
3. THE MIXED AIR TEMPERATURE SHALL OVERRIDE CO2 CONTROL TO LIMIT THE OSA DAMPER POSITION TO MAINTAIN A PREDETERMINED MAT MINIMUM VALUE (ADJ.).
4. IN THE UNOCCUPIED MODE, THE OSA DAMPER (S) SHALL REMAIN CLOSED, EXCEPT FOR USE OF ECONOMIZER OPERATION (IF PRESENT).
5. THE EXHAUST AIR (EA) AND RETURN AIR (RA) DAMPERS SHALL MODULATE ACCORDINGLY (EA IN UNISON WITH OSA, RA IN OPPOSITION TO OSA).
6. PROVIDE A MANUAL OVERRIDE OSA/MIXING DAMPER CONTROL FROM GRAPHIC INTERFACE WITH INDICATOR WHEN IN MANUAL OVERRIDE MODE.

A M5.7 TYPICAL VAV AHU CONTROL LAYOUT
SCALE: NONE

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

MMI ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL

9/26/2014

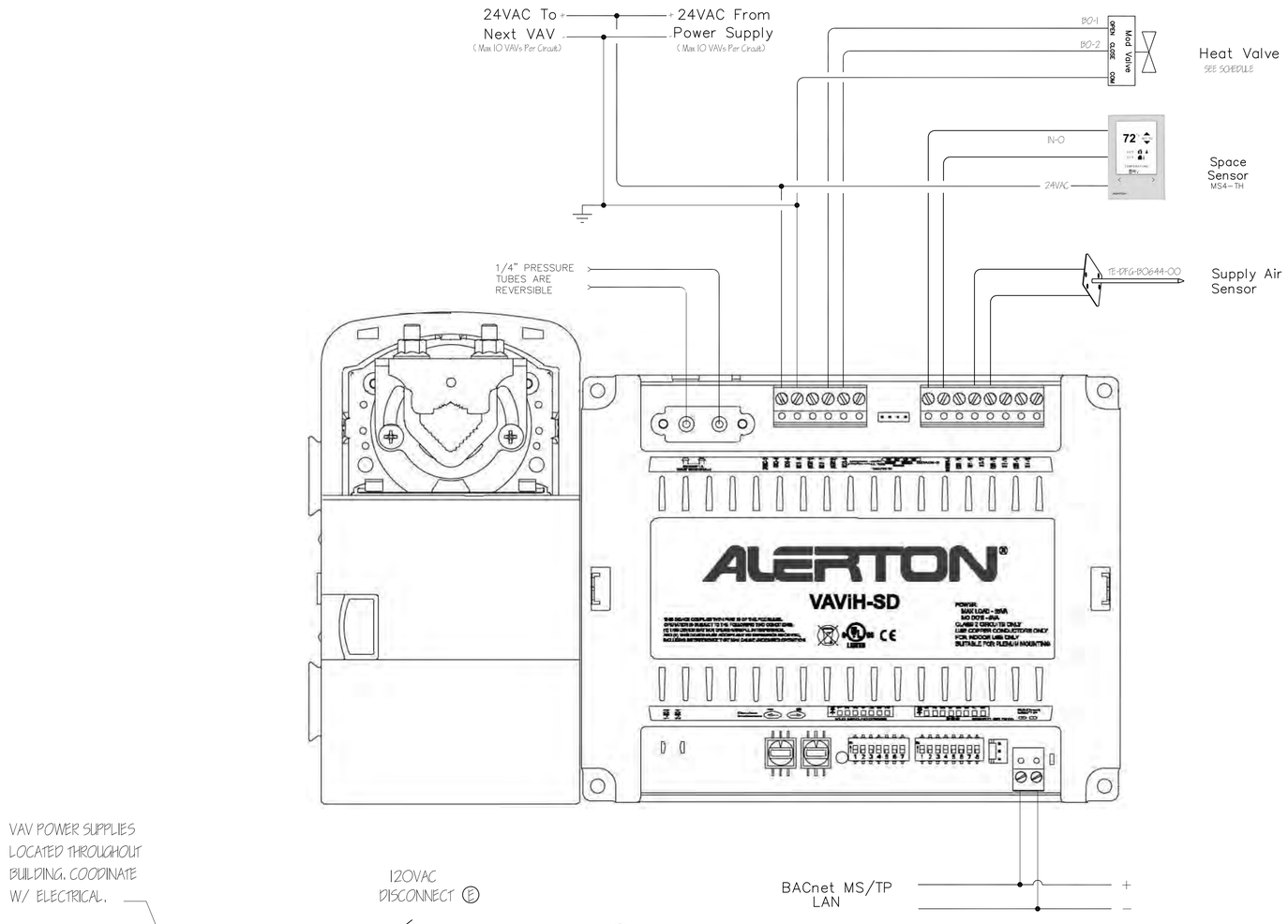
SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE
TYPICAL VAV AHU CONTROL LAYOUT

REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :
M5.7



TYPICAL TERMINAL UNIT CONTROL

OCCUPIED CYCLE:

1. AHU SUPPLY FAN STARTS AND MAINTAINS DUCT STATIC PRESSURE SETPOINT.
2. ROOM TEMPERATURE SENSOR MODULATES TERMINAL UNIT DAMPER AND HEATING WATER VALVE IN SEQUENCE TO MAINTAIN RESPECTIVE HEATING/COOLING SET POINTS. A DEADBAND BETWEEN HEATING AND COOLING IS FIELD PROGRAMMABLE WITH A 2 DEGREE F MINIMUM.
3. AHU VFD TO INCREASE FAN SPEED TO MEET REQUIREMENTS FOR AIR FLOW FOR EACH ZONE.

UNOCCUPIED CYCLE:

1. TERMINAL UNIT FAN STOPS AT PROGRAMMED TIME.
2. TERMINAL UNIT DAMPER CLOSES AND ZONE HEATING WATER VALVE CLOSES.
3. ROOM TEMPERATURE SENSOR REVERTS TO "SET-BACK/SET-UP" TEMPERATURE SET POINT.
4. MOMENTARY CONTACT PUSH-BUTTON IN ROOM TEMPERATURE SENSORS OVERRIDES "UNOCCUPIED CYCLE" AND PLACES SYSTEM IN "OCCUPIED CYCLE" FOR A PROGRAMMED LENGTH OF TIME.

SETPOINTS:

1. OCCUPIED MODE:
   COOLING: 74°F, HEATING: 70°F
2. UNOCCUPIED MODE:
   COOLING: 80°F, HEATING: 65°F

SAFETY CONTROL:

1. IF COMMUNICATION FAILS BETWEEN TERMINAL UNIT CONTROLLER AND GLOBAL CONTROLLER, THE TERMINAL UNIT CONTROL SHALL AUTOMATICALLY MAINTAIN THE LATEST SET OF OCCUPIED TEMPERATURES OR 74°F COOLING AND 70°F HEATING AS SELECTED BY THE OPERATOR.

A M5.8 TYPICAL VAV W/ REHEAT CONTROL

SCALE: NONE

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

MMI ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL

9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE

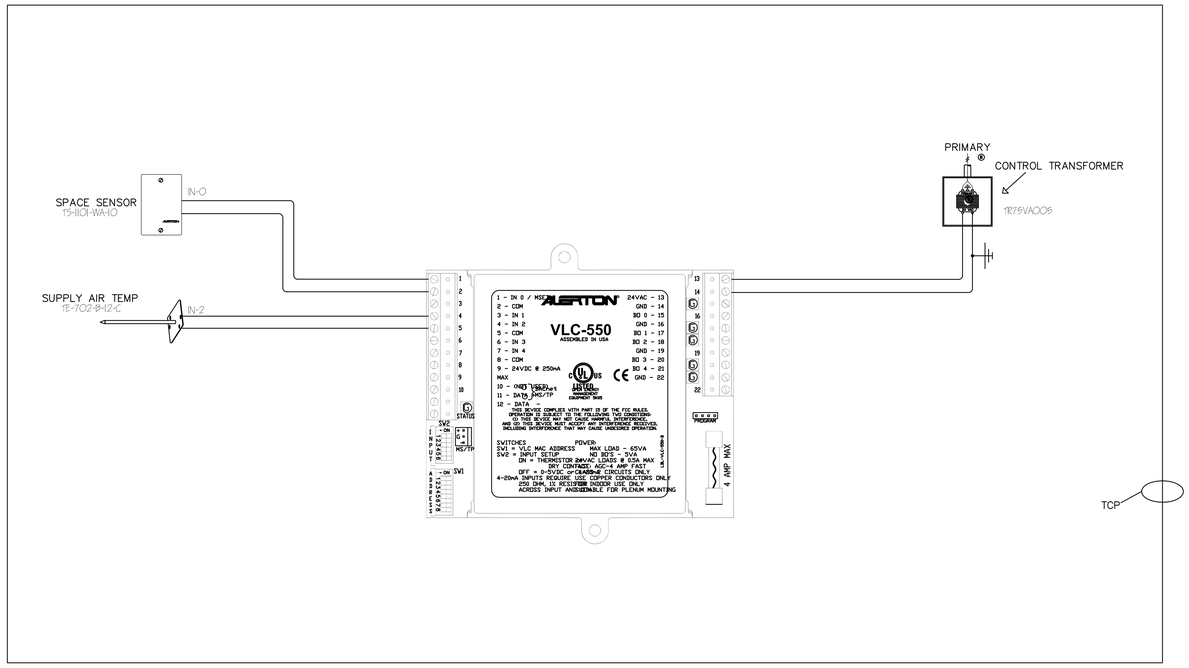
TYPICAL VAV W/
REHEAT CONTROL

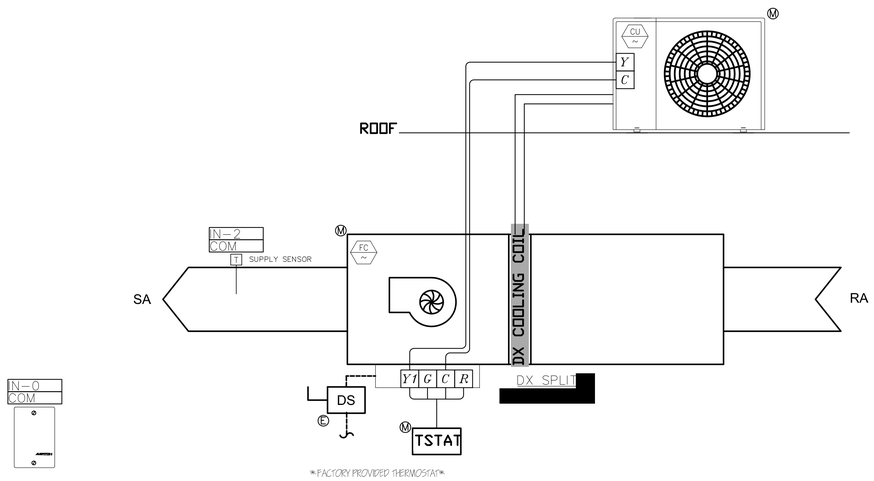
REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :

M5.8





SERVER ROOM CONTROL SEQUENCE

COOLING MODE:

1. SPLIT SYSTEM FAN-COIL UNIT (FC-1) AND GROUND MOUNTED HEAT pump (HP-1) ARE ENERGIZED THROUGH WALL MOUNTED THERMOSTAT AND UNIT CONTROLS POSITION THE REVERSING VALVE TO OPERATE IN THE COOLING MODE TO MAINTAIN A ROOM SETPOINT OF 75°F(ADJ.).
2. SPACE TEMPERATURE SHALL BE MONITORED BY THE BUILDING MANAGEMENT SYSTEM AND SHALL GENERATE AN ALARM IF THE SPACE TEMPERATURE EXCEEDS 80°F(ADJ.).

A M5.9 LIEBERT TEMPERATURE MONITORING
SCALE: NONE

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

MMI ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL

9/26/2014

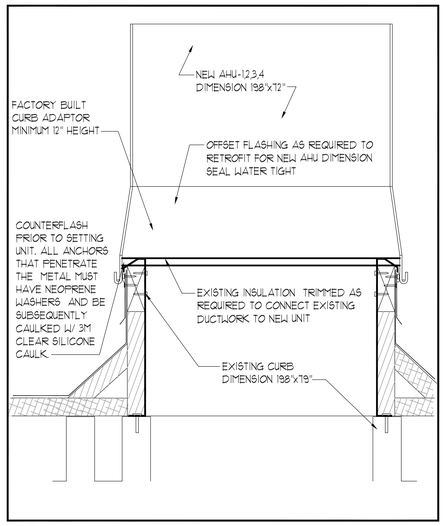
SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE
LIEBERT TEMPERATURE MONITORING

REVISIONS

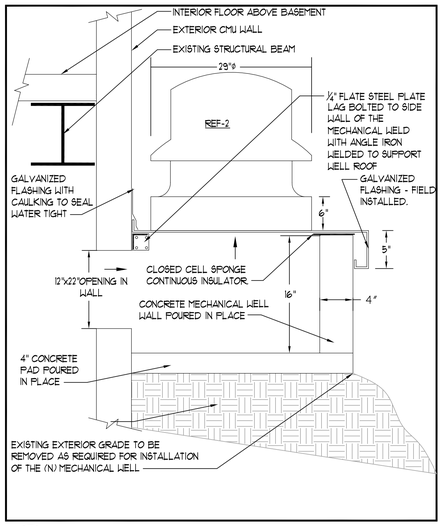
DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :
M5.9



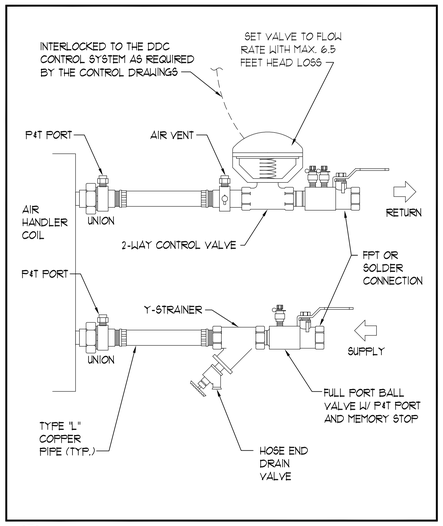
1 M6.1 AHU-1,2,3,4 UNIT CURB MOD. DETAIL

SCALE: NONE



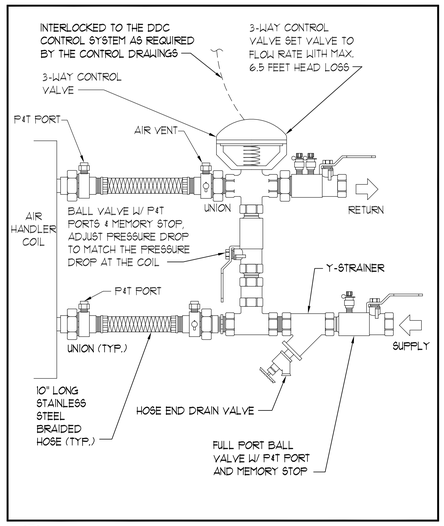
2 M6.1 CHILLER RM. EMERGENCY EX. FAN

SCALE: NONE



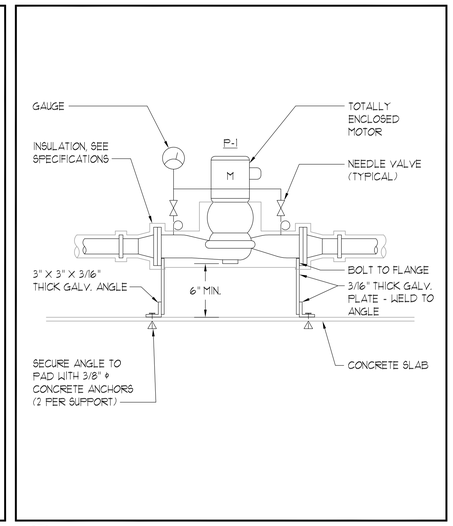
3 M6.1 RE-HEAT COIL PIPING DTL. 2-WAY VALVE

SCALE: NONE



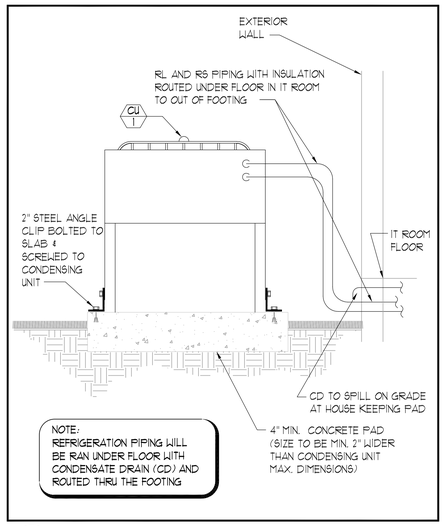
4 M6.1 AIR HANDLER COIL 3-WAY VALVE (TYP.)

SCALE: NONE



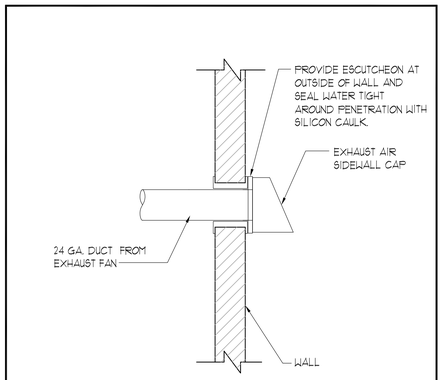
5 M6.1 PUMP DETAIL

SCALE: NONE



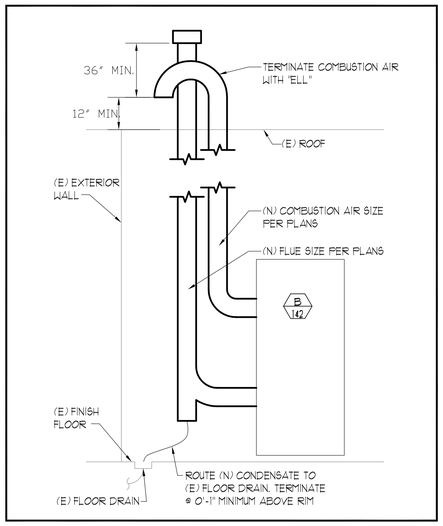
6 M6.1 IT RM. CU UNIT MTG DETAIL W/ CD

SCALE: NONE



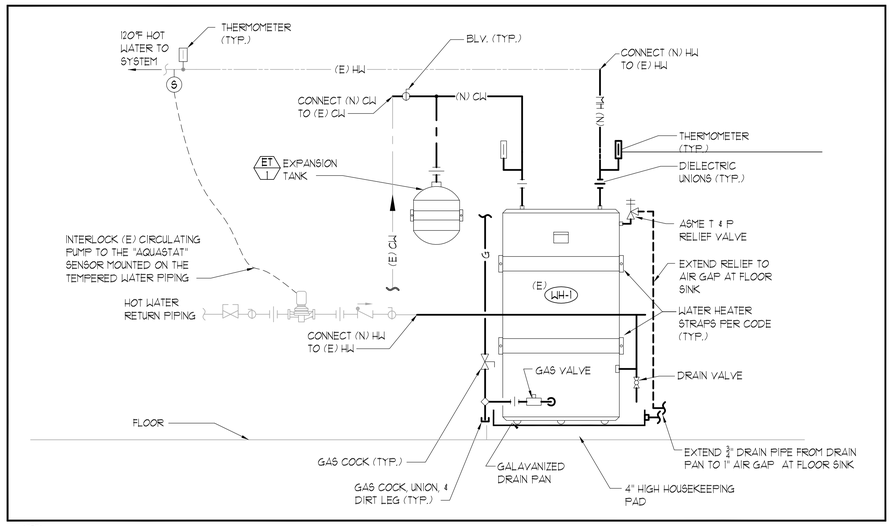
7 M6.1 EXHAUST DUCT SIDEWALL TERMINATION

SCALE: NONE



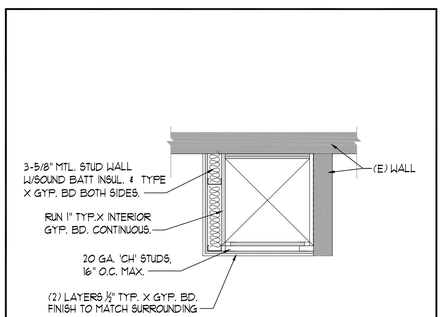
8 M6.1 COMBUSTION AIR AND FLUE DETAIL

SCALE: NONE



9 P6.1 WATER HEATER PIPING DIAGRAM

scale



10 M6.1 DUCT CHASE DETAIL

SCALE: NONE

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

MMI ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL
9/26/2014

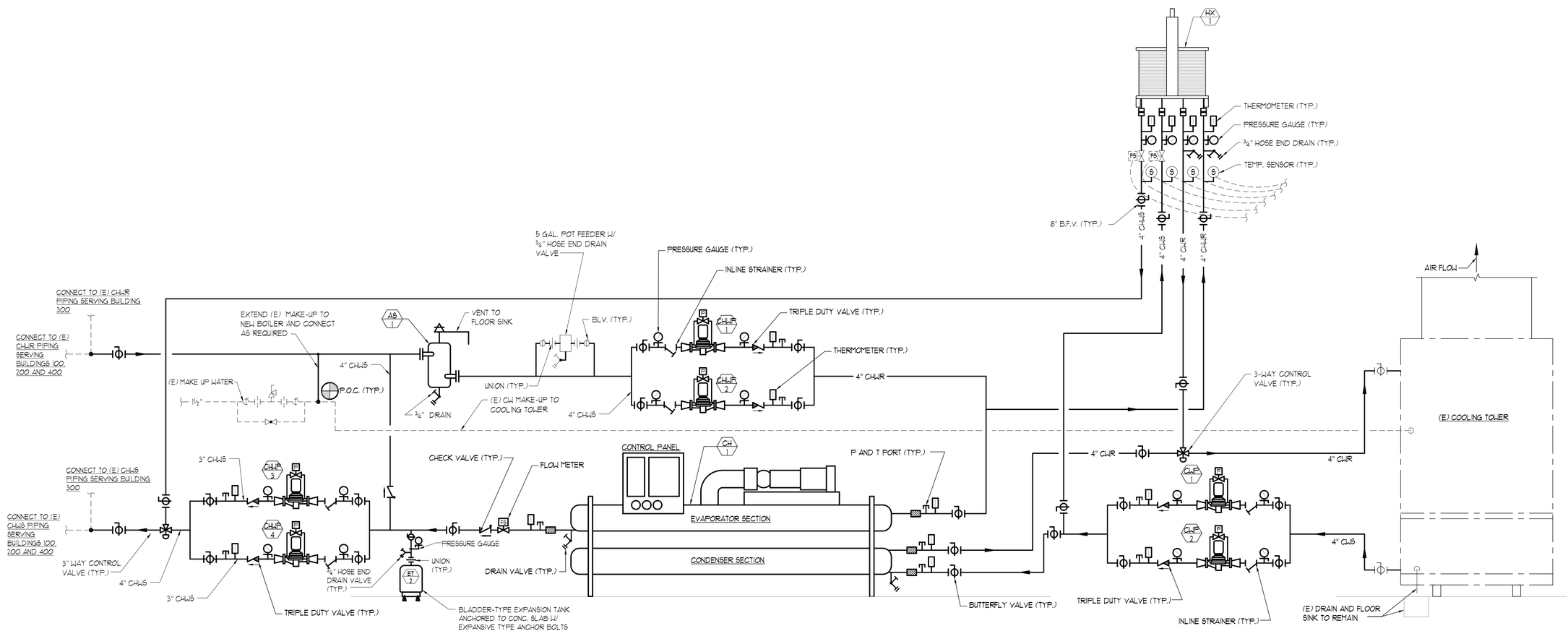
SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE
MECHANICAL DETAILS

REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :
M6.1



1 / M6.2 CHILLED & CONDENSER WATER PIPING DIAGRAM

SCALE: NONE

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA
MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL

9/26/2014

SPARKS CITY HALL CAMPUS HVAC UPGRADE

SPARKS, NEVADA

SHEET TITLE

CHILLED WATER PIPING DIAGRAM

REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :

M6.2

GENERAL NOTES

1. VERIFY ALL PIPING CONNECTIONS IN FIELD WITH EQUIPMENT FURNISHED AND MAKE MODIFICATIONS REQUIRED PER FURNISHED EQUIPMENT MANUFACTURER'S RECOMMENDATIONS.

2. PROVIDE A MINIMUM OF 10 PIPE DIAMETERS UPSTREAM OF AND A MINIMUM OF 5 PIPE DIAMETERS DOWNSTREAM OF STRAIGHT PIPE AT EACH FLOW SENSOR AND FLOW MEASURING DEVICE.

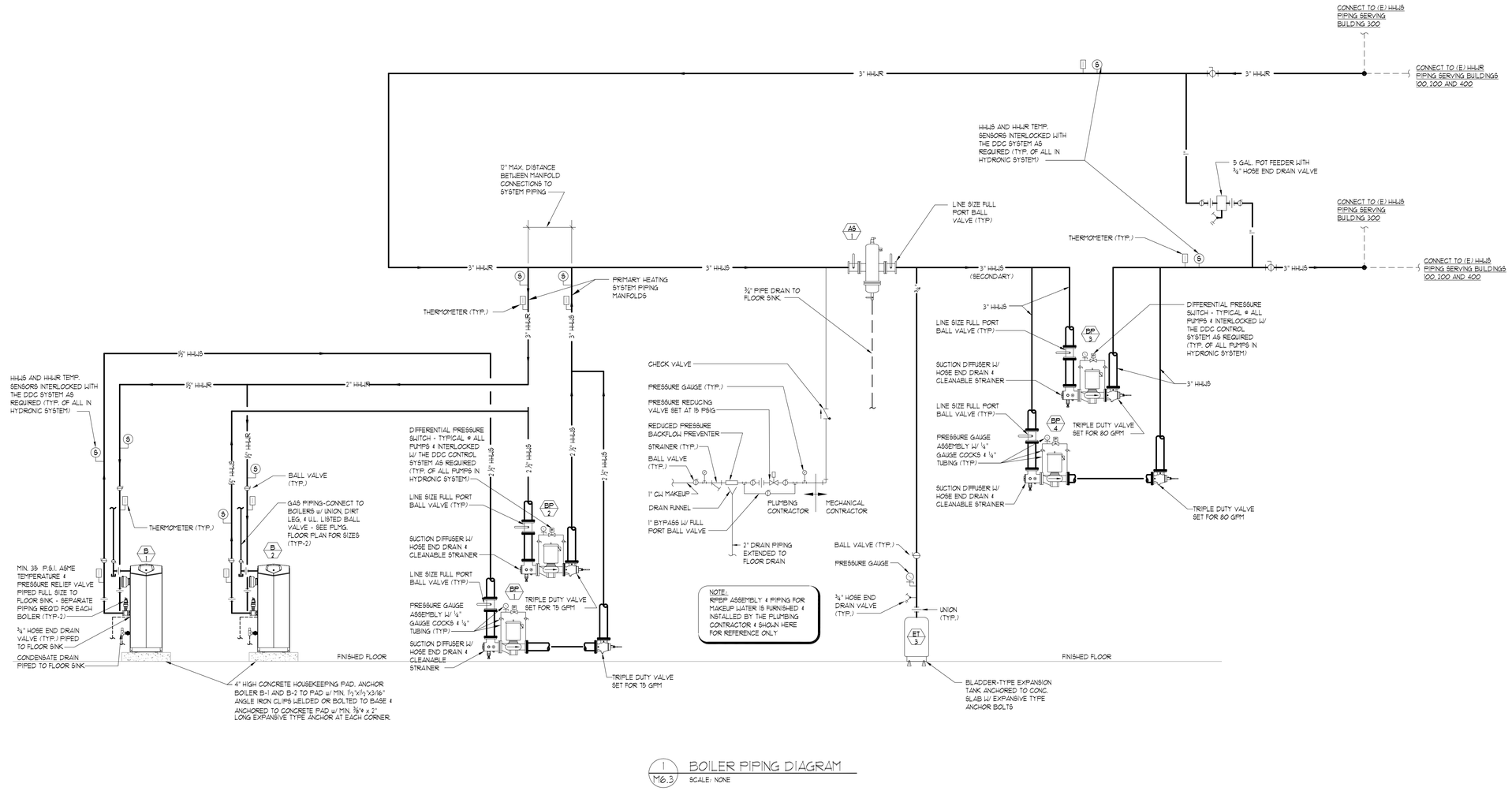
3. THE EXPANSION TANK SHALL HAVE ITS PRESSURE FIELD VERIFIED AND ADJUSTED. AFTER HEATING PIPING SYSTEM IS OPERATING, SHUT OFF BALL VALVE AT EXPANSION TANK - OPEN HOSE DRAIN VALVE AND DRAIN WATER FROM EXPANSION TANK - ADJUST AIR PRESSURE AT EXPANSION TANK TO 35.0 PSIG (MATCH SYSTEM PRV PRESSURE) - OPEN BALL VALVE AND REMOVE HANDLE OF BALL VALVE AND HANG ON BOILER ROOM WALL NEAR EXPANSION TANK.

4. PROVIDE HOSE END CAPS AT ALL BOILER PIPING NIPPLES THAT ARE UN-USED.

5. PERMIT AND INSPECTION REQUIRED FOR EACH BOILER AND STORAGE TANK IN ACCORDANCE WITH THE STATE BOILER CODE REQUIREMENTS. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.

6. PROVIDE EMERGENCY SHUTDOWN SWITCH FOR BOILERS LOCATED OUTSIDE OF THE MECHANICAL ROOM ADJACENT TO THE EXIT DOOR.

7. CONTRACTOR SHALL REMOVE, CLEAN AND REINSTALL STRAINER SCREENS AFTER STARTUP IS COMPLETE.



1 / M6.3 BOILER PIPING DIAGRAM
SCALE: NONE

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

MMI ENGINEERING

MATTHEW C. MYRES
Exp. 12/31/15
MECHANICAL
REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA

9/26/2014

SPARKS CITY HALL CAMPUS HVAC UPGRADE

SPARKS, NEVADA

SHEET TITLE

BOILER PIPING DIAGRAM

REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :

M6.3

BUILDING CODE SUMMARY

APPLICABLE DESIGN CODES (Latest edition as adopted by the City of Sparks)

INTERNATIONAL BUILDING CODE (2009)
NATIONAL ELECTRICAL CODE (2005)

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

- CONDUIT RUN IN OR ON CEILING OR WALL
- CONDUIT RUN IN OR UNDER FLOOR OR UNDERGROUND
- P — PRIMARY UTILITY LINE
- S — SECONDARY UTILITY LINE
- RACEWAY UP
- RACEWAY DOWN
- (X) MOTOR SYMBOL – HORSEPOWER AS INDICATED
- VFD VARIABLE FREQUENCY DRIVE CONNECTION
- 120V DUPLEX CONVENIENCE RECEPTACLE +18" AFF
- 120V DOUBLE DUPLEX CONVENIENCE RECEPTACLE +18" AFF
- D 120V DUPLEX RECEPTACLE WITH DEDICATED CIRCUIT & ISOLATED GROUND; "D" INDICATES "DATA OUTLET", ENGRAVE FACEPLATE "COMPUTER POWER ONLY" +18" AFF
- 120V DOUBLE DUPLEX RECEPTACLE W/ DEDICATED CIRCUIT & ISOLATED GROUND +18" AFF
- 120V DOUBLE DUPLEX RECEPTACLE FLUSH FLOOR MOUNTED
- 208V – 1~ SPECIAL PURPOSE OUTLET (AMPS AS NOTED) +18" AFF
- 208V – 3~ SPECIAL PURPOSE OUTLET (AMPS AS NOTED) +18" AFF
- 480V – 1~ SPECIAL PURPOSE OUTLET (AMPS AS NOTED) +18" AFF
- 480V – 3~ SPECIAL PURPOSE OUTLET (AMPS AS NOTED) +18" AFF

  } TO MATCH MALE PLUG CONNECTOR ON EQUIPMENT FURNISHED
- 120V DUPLEX CONVENIENCE OUTLET – FLOOR TYPE
- 120V DOUBLE DUPLEX CONVENIENCE OUTLET – FLOOR TYPE
- PM PLUG MOLD – SURFACE MOUNTED
- JUNCTION BOX AS REQUIRED BY NATIONAL ELECTRIC CODE
- JUNCTION BOX – FLUSH FLOOR TYPE – AS REQUIRED BY NATIONAL ELECTRIC CODE
- TELEPHONE OUTLET – WALL MOUNTED +18" AFF
- TELEPHONE OUTLET – FLUSH FLOOR TYPE
- COMPUTER OUTLET (DATA) +18" AFF
- I INTERCOM OUTLET – WALL MOUNTED +18" AFF
- P PUBLIC PAY TELEPHONE OUTLET +48" AFF
- W WALL PHONE OUTLET +48" AFF
- X TELEPHONE / DATA COMBINATION WALL MOUNTED
- INDUSTRIAL TYPE TELEPHONE BELL
- ELECTRICAL PANELBOARD – SURFACE MOUNTED
- ELECTRICAL PANELBOARD – FLUSH MOUNTED
- TRANSFORMER
- SEPARATELY DERIVED DISTRIBUTION EQUIPMENT
- AUXILIARY SYSTEM TERMINAL CABINET
- PRECAST CONCRETE PULLBOX (SIZE AS INDICATED)
- EXISTING WIRE AND/OR CONDUIT TO BE REMOVED OR ABANDONED
- EXISTING WIRE AND/OR CONDUIT TO REMAIN
- DEVICES, LIGHT FIXTURES, ETC. INDICATES EXISTING TO BE REMOVED
- "E" ADJACENT TO DEVICES, LIGHT FIXTURES, ETC. INDICATES EXISTING TO REMAIN
- (1) SHEET NOTE
- A / 90 LIGHT FIXTURE DESIGNATION & WATTAGE. SEE FIXTURE SCHEDULE
- AC / 1 / Z MECHANICAL EQUIPMENT DESIGNATION. SEE MECHANICAL & PLUMBING PLANS
  FEEDER – SIZE AS INDICATED ON SINGLE LINE DIAGRAM
- B / E3.1 DETAIL DESIGNATION – "B" INDICATES DETAIL # ON SHEET E3.1
- ✳ NOTE: ALL MOUNTING HEIGHTS AS INDICATED UNLESS NOTED OTHERWISE. ALL SYMBOLS MAY NOT BE USED ON PROJECTS.

ELECTRICAL GENERAL NOTES

1. FURNISH ALL LABOR, MATERIALS, TOOLS, ACCESSORIES, ETC. REQUIRED FOR A COMPLETE WORKING ELECTRICAL SYSTEM.
2. ALL ELECTRICAL WORK SHALL COMPLY WITH ALL APPLICABLE STATE, COUNTY AND LOCAL CODES AND ORDINANCES, AS WELL AS ALL CURRENT STANDARDS, CODES AND PRACTICES AS REQUIRED BY NEC(2005), NEMA, ANSI, NFPA(2009), IBC(2009), UL, IEEE, IECC(2009) AND CITY OF SPARKS STANDARDS.
3. ALL EQUIPMENT, MATERIALS AND WORK SHOWN ARE NEW UNLESS SPECIFICALLY NOTED AS EXISTING. OR NOTED OTHERWISE ON OTHER SHEETS.
4. UTILITIES SHOWN TO BE DEMOLISHED SHALL NOT BE REMOVED FROM SERVICE UNTIL THE NEW MAIN SWITCHBOARD IS FULLY OPERATIONAL AND ALL ELECTRICAL PANEL AND EQUIPMENT HAVE BEEN SWITCHED OVER TO NEW MAIN SWITCHBOARD.
5. VERIFY EXACT LOCATION OF ALL RECEPTACLES ABOVE OR ADJACENT TO COUNTERS FIXTURES MIRRORS OUTDOOR FIXTURES AND MOUNTING HEIGHTS & LOCATIONS OF ALL FIXTURES & BOXES PRIOR TO ROUGH–IN. NO EXTRA COSTS WILL BE ALLOWED FOR FAILURE TO COMPLY.
6. ANY POWER OUTAGE OF ANY CIRCUIT SHALL BE APPROVED BY THE OWNER IN WRITING A MINIMUM OF 5 DAYS PRIOR TO OUTAGE. ALL OUTAGES SHALL BE DONE EXACTLY WHEN DETERMINED BY THE OWNER AND DONE DURING WORKING HOURS. NO SINGLE OUTAGE SHALL REQUIRE MORE THAN 4 HOURS. PROVIDE TEMPORARY POWER, HEAT & COOLING IF REQUIRED DURING OUTAGE.
7. DUE TO THE REQUIREMENTS TO INTERFACE WITH EXISTING FACILITIES AND UTILITIES, IT IS MANDATORY THAT THE CONTRACTOR ATTEND SITE VISIT TO DETERMINE EXISTING CONDITIONS PRIOR TO BID.
8. PRIOR TO PURCHASE OF ANY PANEL, PROTECTIVE DEVICES, SWITCH, STARTER, CONDUIT, WIRE, ETC., TO FEED ANY PIECE OF MECHANICAL EQUIPMENT VERIFY THE VOLTAGE, PHASE, & LOAD OF THAT ITEM IN THE FIELD AND/OR WITH THE PARTICULAR ENTITY INVOLVED IN FURNISHING THE ITEM SUCH THAT THE PROPER SIZE & RATING OF THE MATERIALS ARE PURCHASED. NO EXTRAS WILL BE ALLOWED FOR FAILURE TO COMPLY. THIS APPLIES TO ALL EQUIPMENT UNDER OTHER SECTIONS & BY THE OWNER.
9. PROVIDE ALL TRENCHING, EXCAVATION, BACK FILLING, SHORING, PUMPING, COMP ACTION TESTS, ETC. THAT ARE REQUIRED FOR THE SCOPE OF ELECTRICAL WORK.
10. PULL ROPES: PROVIDE 12 GA PULL WIRE OR NYLON EQUIVALENT IN ALL INTERIOR EMPTY CONDUIT RUNS. PROVIDE 1/4" DIA NYLON PULL ROPE IN EACH EMPTY EXTERIOR CONDUIT OR DUCT.
11. APPEARANCE AND WORKMANSHIP SHALL BE OF THE HIGHEST QUALITY AND STANDARDS.
12. ELECTRICAL CONTRACTOR SHALL GUARANTEE THE ELECTRICAL WORK TO BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE.
13. VERIFY THE EXACT LOCATION AND ELEVATION OF ALL ELECTRICAL EQUIPMENT PRIOR TO ROUGH–IN. FINAL CONNECTIONS OF EQUIPMENT SHALL BE PER MANUFACTURERS APPROVED WIRING DIAGRAMS, DETAILS AND INSTRUCTIONS. THE ELECTRICAL CONTRACTOR SHALL PROVIDE MATERIALS AND EQUIPMENT COMPATIBLE WITH EQUIPMENT ACTUALLY SUPPLIED.
14. ORDER AND/ OR RELEASE ORDERED MATERIALS PROMPTLY AFTER SUBMITTAL APPROVAL. NO SUBSTITUTIONS OR ALTERNATE METHODS OF INSTALLATION WILL BE ACCEPTED FOR FAILURE TO ORDER MATERIALS IN A TIMELY FASHION.
15. OBTAIN WRITTEN APPROVAL FROM THE ENGINEER OF ALL SHOP DRAWINGS AND MANUFACTURERS DATA FOR PANEL BOARDS, TRANSFORMERS, WIRING DEVICES, ETC. BEFORE RELEASING ORDERED MATERIALS. SUBMITTAL DATA SHALL INDICATE THAT THE CONTRACTOR HAS REVIEWED THE INFORMATION THEREIN AND THAT THE PROPOSED EQUIPMENT WILL MEET THE PHYSICAL CONSTRAINTS AT THE JOB SITE. ANY SUBSTITUTIONS SHALL BE OF EQUIVALENT OR BETTER QUALITY THAN THE SPECIFIED COMPONENTS.
16. TYPE MC OR TYPE AC CABLE SHALL ONLY BE USED WITH THE SPECIFIC WRITTEN PERMISSION OF THE ENGINEER. ENT TYPE CONDUIT IS NOT ALLOWED.
17. CONDUIT/ CONDUCTOR RUNS SHOWN ARE DIAGRAMMATICAL ONLY. THE BEST FINAL CONDUIT ROUTING SHALL BE AS DETERMINED BY THE ELECTRICAL CONTRACTOR AT TIME OF CONSTRUCTION AND ACCURATELY LOCATED ON THE ON–SITE RECORD DRAWINGS.
18. ALL WIRE SHALL BE COPPER.
19. ALL UNDERGROUND CONDUIT SHALL BE WRAPPED RIGID STEEL WITH THREADED COUPLINGS AND CONNECTORS, AND/ OR PVC SCHEDULE 40. ALL ELBOWS AND EXPOSED RISERS SHALL BE RIGID STEEL CONDUIT.
20. PROVIDE ALL PANEL BOARDS WITH TYPED DIRECTORIES INSTALLED UNDER A CLEAR PLASTIC COVER. SUBMIT DIRECTORY INFORMATION TO THE OWNER FOR APPROVAL PRIOR TO FINALIZATION.
21. SERIES RATING OF UPSTREAM OR DOWNSTREAM CIRCUIT BREAKERS OR FUSES IS PROHIBITED. ONLY FULLY RATED SYSTEM COMPONENTS WILL BE ACCEPTED.

GENERAL DEMOLITION NOTES

1. ELECTRICAL DEVICES AND EQUIPMENT THAT ARE INDICATED BY DASHED 'X' LINES SHALL BE REMOVED ENTIRELY, INCLUDING JUNCTION BOXES AND CIRCUITING ASSOCIATED WITH SAID ITEM.
2. THESE PLANS DO NOT PURPORT TO SHOW ALL EXISTING CONDITIONS. ANY OUTLETS, CIRCUITING AND/OR DEVICES THAT CONFLICT WITH ALL WORK BEING PERFORMED DURING THE COURSE OF THIS PROJECT SHALL BE RELOCATED/REROUTED OR REMOVED ENTIRELY AS DICTATED BY ENGINEER.
3. ALL EXISTING EQUIPMENT REMOVED DURING THE COURSE OF THIS PROJECT SHALL BE OFFERED TO OWNER FOR SALVAGE. EQUIPMENT SELECTED SHALL BE TURNED OVER TO OWNER ON PROJECT SITE. ALL REMAINING EQUIPMENT BECOMES THE PROPERTY OF THIS CONTRACTOR AND SHALL BE REMOVED FROM PROJECT SITE.
4. IT IS MANDATORY THAT THE CONTRACTOR VISIT SITE AND VERIFY EXISTING CONDITIONS THAT MIGHT AFFECT HIS OR HER WORK. ALL DISCREPANCIES SHALL BE REPORTED TO ENGINEER PRIOR TO BID.
5. EXISTING MECHANICAL POWER CIRCUITRY SHALL BE REUSED AND RECONNECTED FOR EXISTING MECHANICAL EQUIPMENT.

ABBREVIATIONS

AC	ABOVE COUNTER. INSTALL 4" ABOVE SPLASH OR COUNTER OR AT HEIGHT AS INDICATED ON DRAWINGS
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AL	ALUMINUM
ATS	AUTOMATIC TRANSFER SWITCH
CATV	CABLE TV SYSTEM
CU	COPPER
E	EXISTING
EC	EMPTY CONDUIT WITH PULL WIRE
EDF	ELECTRIC DRINKING FOUNTAIN
ER	EXISTING, TO REMAIN
EX	EXISTING, TO BE REMOVED
FBO	FURNISHED BY OTHER SECTION
GFI	GROUND FAULT INTERRUPTING
MCB	MAIN CIRCUIT BREAKER
MLO	MAIN LUGS ONLY
MTS	MANUAL TRANSFER SWITCH
N	NEW
NEC	NATIONAL ELECTRICAL CODE
NIC	NOT IN CONTRACT
NVE	NEVADA ENERGY COMPANY
PNL	PANEL
RFI	REQUEST FOR INFORMATION
SPD	SURGE PROTECTION DEVICE
UNO	UNLESS NOTED OTHERWISE
W/	WITH
WP	WEATHERPROOF (NEMA 3R)
XFMR	TRANSFORMER

ELECTRICAL SHEET LIST

DINTER
Airfield Electrical Mechanical
385 Gentry Way
Reno, NV 89502
Ph: 775.826.4044
Fax: 775.826.4190
Web: dinter.com
J-4454

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

ENGINEERING

KELLER C. HACKBUSCH
Exp. 06/30/15
ELECTRICAL
STATE OF NEVADA
REGISTERED PROFESSIONAL ENGINEER

9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE

ELECTRICAL
SYMBOL LIST, DEMO NOTES,
ABBREVIATIONS,
AND GENERAL NOTES

REVISIONS

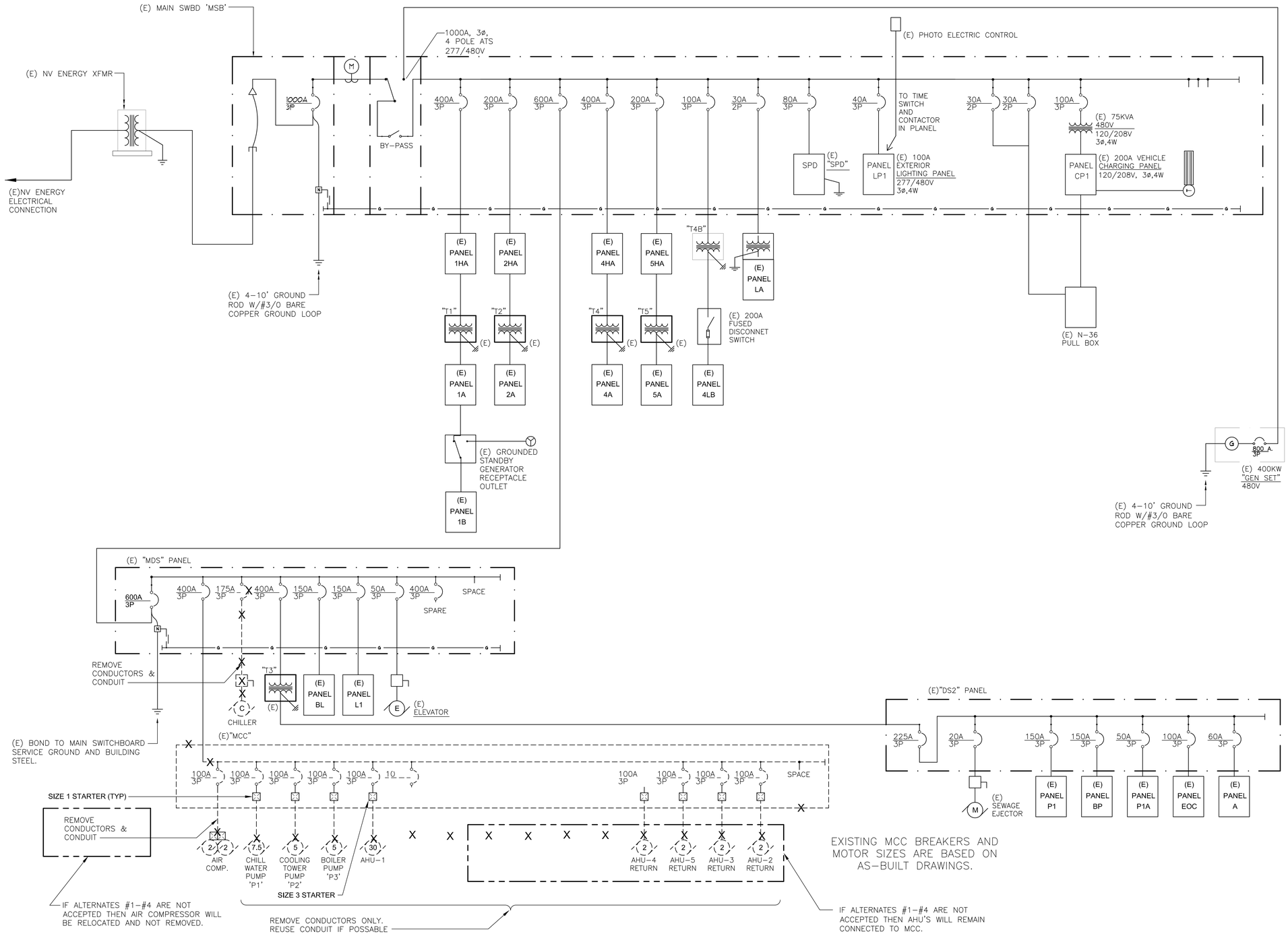
DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :

E0.1

DINTER
Airfield Electrical Mechanical
385 Gentry Way
Reno, NV 89502
Ph: 775.826.4044
Fax: 775.826.4190
Web: dinter.com
J-4454

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com



A E0.2 EXISTING SINGLE LINE DIAGRAM
SCALE: NTS

KELLER C. HACKBUSCH
Exp. 06/30/15
ELECTRICAL
STATE OF NEVADA
REGISTERED PROFESSIONAL ENGINEER

9/26/2014

SPARKS CITY HALL CAMPUS HVAC UPGRADE

SPARKS, NEVADA

SHEET TITLE

EXISTING SINGLE LINE DIAGRAM

REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :

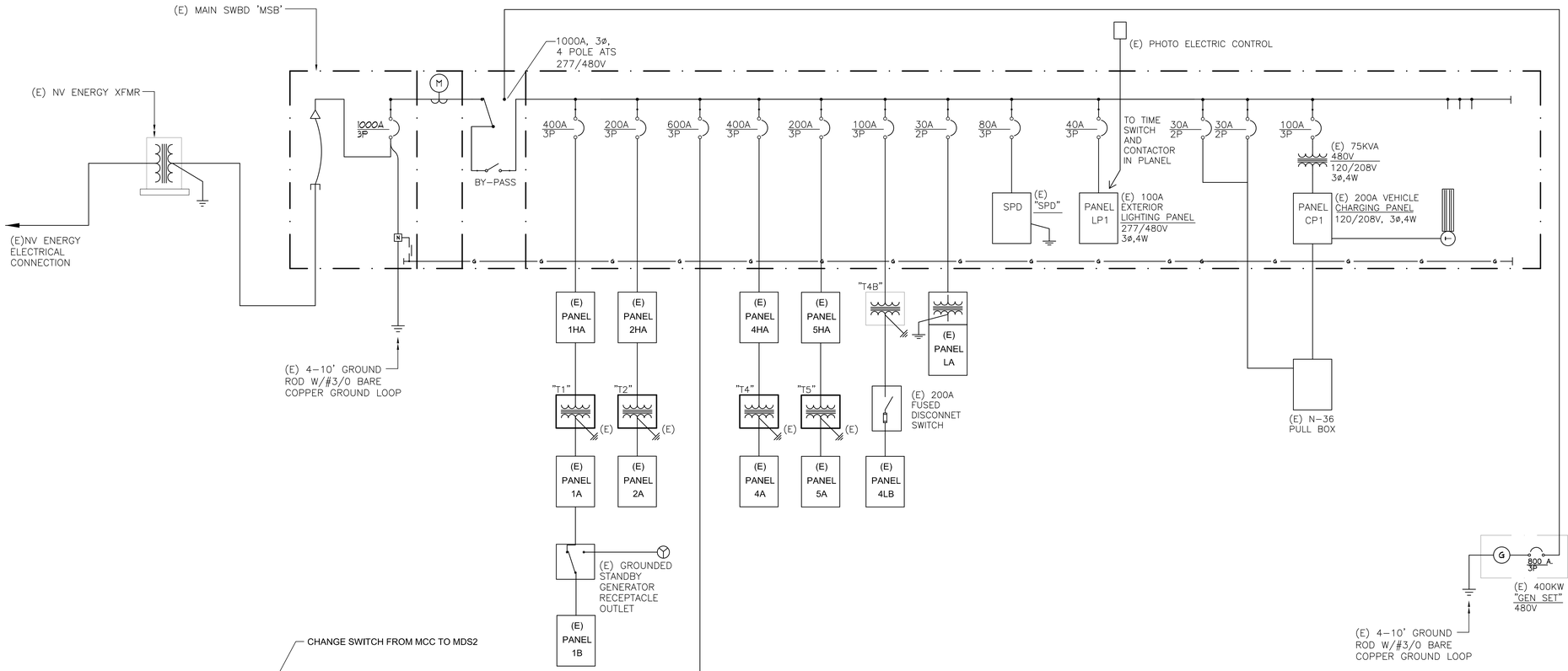
E0.2

DINTER
Airfield Electrical Mechanical
385 Gentry Way
Reno, NV 89502
Ph: 775.826.4044
Fax: 775.826.4190
Web: dinter.com
J-4454

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com
MMI ENGINEERING

KELLER C. HACKBUSCH
Exp. 06/30/15
ELECTRICAL
REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA

9/26/2014



A
E0.3
NEW SINGLE LINE DIAGRAM
SCALE: NTS

FEEDER SCHEDULE

NO.	FROM	TO	CONDUIT & WIRE THWN U.N.O.	CU	AL
1	PANEL 'MCC'	AHU-1	(4) #8CU W/ (1) #8CU GND	X	
2	PANEL 'MCC'	RT-1	(4) #12CU W/ (1) #8CU GND	X	
3	PANEL 'MCC'	COOLING TOWER FAN CT-1	(4) #12CU W/ (1) #8CU GND	X	
4	PANEL 'MCC'	AHU-4 SUPPLY	(4) #10CU W/ (1) #8CU GND	X	
5	PANEL 'MCC'	AHU-5 SUPPLY	(4) #10CU W/ (1) #8CU GND	X	
6	PANEL 'MCC'	AHU-3 SUPPLY	(4) #10CU W/ (1) #8CU GND	X	
7	PANEL 'MCC'	AHU-2 SUPPLY	(4) #10CU W/ (1) #8CU GND	X	
8	PANEL 'MCC'	AHU-4 RETURN	(4) #10CU W/ (1) #8CU GND	X	
9	PANEL 'MCC'	AHU-5 RETURN	(4) #10CU W/ (1) #8CU GND	X	
10	PANEL 'MCC'	AHU-3 RETURN	(4) #10CU W/ (1) #8CU GND	X	
11	PANEL 'MCC'	AHU-2 RETURN	(4) #10CU W/ (1) #8CU GND	X	
12	PANEL 'MCC'	BP-3	(4) #12CU W/ (1) #8CU GND	X	
13	PANEL 'MCC'	BP-4	(4) #12CU W/ (1) #8CU GND	X	
14	PANEL 'MCC'	CHWP-1	(4) #12CU W/ (1) #8CU GND	X	
15	PANEL 'MCC'	CHWP-2	(4) #12CU W/ (1) #8CU GND	X	
16	PANEL 'MCC'	CHWP-3	(4) #12CU W/ (1) #8CU GND	X	
17	PANEL 'MCC'	CHWP-4	(4) #12CU W/ (1) #8CU GND	X	
18	PANEL 'MCC'	CWP-1	(4) #12CU W/ (1) #8CU GND	X	
19	PANEL 'MCC'	CWP-2	(4) #12CU W/ (1) #8CU GND	X	
20	PANEL 'MDS'	CHILLER	(3) #350 W/ (1) #2CU GND, 2 1/2"C.	X	
21	PANEL 'MCC'	AIR COMPRESS.	(4) #12CU W/ (1) #8CU GND	X	
22				X	
23				X	

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE
NEW SINGLE LINE DIAGRAM

REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :
E0.3

ALTERNATE NOTES:

PANEL BOARD CHANGES FOR THE ALTERNATE BID ITEMS ARE LIST BELOW:

BASE BID: VAV TRANSFORMER PANELS 1-4 (PANEL "A" & "PIA") & ALL WORK DONE IN PANEL "BP".

ALTERNATE #1: VAV TRANSFORMER PANEL 7 (PANEL "2A") & RECEPTACLE IN AHU-3 (PANEL "2A")

ALTERNATE #2: VAV TRANSFORMER PANEL 8, (PANEL "1A") AC-2, CU-2 (PANEL "1HA") & RECEPTACLE IN AHU-2 (PANEL "2A")

ALTERNATE #3: VAV TRANSFORMER PANEL 5 & RECEPTACLE IN AHU-5 (PANEL "4LB")

ALTERNATE #4: VAV TRANSFORMER PANEL 6 & RECEPTACLE IN AHU-4 (PANEL "4LB")

SHEET NOTES:

1. CONTRACTOR TO PROVIDE 20A/1P CIRCUIT BREAKER.
2. CONTRACTOR TO USE EXISTING SPARE 20A/1P CIRCUIT BREAKER.
3. CONTRACTOR TO PROVIDE 30A/3P CIRCUIT BREAKER.
4. CONTRACTOR TO PROVIDE 20A/3P CIRCUIT BREAKER.

PANEL BOARD: 1HA — EXISTING

DIRECTORY	LOAD	BKR	CIR			CIR	BKR	LOAD	DIRECTORY
(E) H2O HEATER		20/1	1	A		2	20/1		(E) LIGHTS
(E) EXIT LIGHTS			3	B		4			(E) LIGHTS
(E) TIMECLOCK/ NGT LGTS			5	C		6			SPARE
(E) HALL LIGHTING			7	A		8			
SPARE			9	B		10			
			11	C		12			
			13	A		14	30		(E) A/C UNIT
			15	B		16			
			17	C		18	3		
			19	A		20	15		(E) A/C UNIT
			21	B		22			
			23	C		24	3		
(E) XFMR T1		125	25	A		26	30	4648	AC-2, CU-2
			27	B		28		4648	
		3	29	C		30	3	4648	
(E) SERVER RM UPS		60	31	A		32	20		(E) A/C UNIT
			33	B		34			
		3	35	C		36	3		
SPARE		90	37	A		38	20		(E) A/C UNIT
			39	B		40			
		3	41	C		42	3		

CONNECTED LOAD: 13944 VA (17 A)

	VA	A
A=	4648 VA	17 A
B=	4648 VA	17 A
C=	4648 VA	17 A

OTHER NOTES:
277/480V., 3PH, 4W
200 AMP MCB
200 AMP BUS

PANEL BOARD: A — EXISTING

DIRECTORY	LOAD	BKR	CIR			CIR	BKR	LOAD	DIRECTORY
(E) LIGHTING		20/1	1	A		2	20/1		(E) COPIER
(E) RECEPT. HALLWAY			3	B		4			(E) RECEPT. RM 421
(E) RECEPT. RM 421, 422			5	C		6			(E) RECEPT. RM 426
(E) RECEPT. RM 423, 424			7	A		8			(E) RECEPT. RM 424
VAV XFMER PNL 1			9	B		10			(E) RECEPT. RM 423
VAV XFMER PNL 2			11	C		12			(E) RECEPT. RM 422
VAV XFMER PNL 3			13	A		14	-		SPACE
SPACE		-	15	B		16			
			17	C		18			
			19	A		20			
			21	B		22			
			23	C		24			
			25	A		26			
			27	B		28			
			29	C		30			

CONNECTED LOAD: 0 VA (0 A)

	VA	A
A=	0 VA	0 A
B=	0 VA	0 A
C=	0 VA	0 A

OTHER NOTES:
120/208V., 3PH, 4W
100 AMP MCB
100 AMP BUS

PANEL BOARD: 4LB — EXISTING

DIRECTORY	LOAD	BKR	CIR			CIR	BKR	LOAD	DIRECTORY
(E) RECEPT. 206,222,130		20/1	1	A		2	20/1		(E) RECEPT. 128,130,HALL
(E) RECEPT. 128,130,204,205			3	B		4			(E) RECEPT. 128,130
(E) RECEPT. 205			5	C		6			(E) RECEPT. 125,HALL
(E) RECEPT. 204,205			7	A		8			(E) RECEPT. 222
(E) RECEPT. 128,204			9	B		10			(E) RECEPT. 126,207
(E) RECEPT. 204,205			11	C		12			(E) RECEPT. 223,224
(E) RECEPT. 123,204,205			13	A		14			(E) RECEPT, ROOF ACCESS
(E) RECEPT. STATIONARY			15	B		16			(E) SITE LGT PHOTOCELL
(E) RECEPT. RESTRM., HALL			17	C		18			VAV XFMER PNL 6
(E) RECEPT. GFCI COUNTER			19	A		20			VAV XFMER PNL 5
(E) RECEPT. GFCI COUNTER			21	B		22		360	AHU-4 & 5 RECEPT.
SPARE			23	C		24			SPARE
			25	A		26			
SPACE		-	27	B		28			
			29	C		30	-		SPACE
			31	A		32			
			33	B		34			
			35	C		36			
			37	A		38			
			39	B		40			
			41	C		42			

CONNECTED LOAD: 360 VA (1 A)

	VA	A
A=	0 VA	0 A
B=	360 VA	3 A
C=	0 VA	0 A

OTHER NOTES:
120/208V., 3PH, 4W
200 AMP MCB
200 AMP BUS

PANEL BOARD: P1A — EXISTING

DIRECTORY	LOAD	BKR	CIR			CIR	BKR	LOAD	DIRECTORY
(E) RECEPT. 145,46,HALL		20/1	1	A		2	20/1		(E) SPARE
VAV XFMER PNL #4			3	B		4			
(E) SPARE			5	C		6			
			7	A		8			
			9	B		10			
			11	C		12			
			13	A		14			
			15	B		16			
			17	C		18			
			19	A		20			
			21	B		22			
			23	C		24			
			25	A		26			
			27	B		28			
			29	C		30			
			31	A		32			
			33	B		34			
			35	C		36			
			37	A		38			
			39	B		40			
			41	C		42			

CONNECTED LOAD: 0 VA (0 A)

	VA	A
A=	0 VA	0 A
B=	0 VA	0 A
C=	0 VA	0 A

OTHER NOTES:
120/208V., 3PH, 4W
200 AMP MCB
50 AMP BUS

PANEL BOARD: 1A — EXISTING

DIRECTORY	LOAD	BKR	CIR			CIR	BKR	LOAD	DIRECTORY
SPARE		100	1	A		2	20/1		(E) RECEPT. 326,327,328,HALL
			3	B		4			(E) RECEPT. 326,327,328,329
		3	5	C		6			(E) RECEPT. 328,329
(E) RESTRM., WTR FNTN 313		20/1	7	A		8			(E) RECEPT. 327
(E) RECEPT, KITCHEN GFI			9	B		10			(E) RECEPT. 322
(E) RECEPT. 315			11	C		12			(E) RECEPT. 320,321,322
(E) RECEPT. 314,315			13	A		14			(E) RECEPT. 312,320,HALL
(E) RECEPT. 313,314,315			15	B		16			(E) RECEPT. HALL PLOTTER
(E) RECEPT. SERVER RM			17	C		18			(E) RECEPT. 310,312,HALL
(E) SERVER RM EX FANS			19	A		20			(E) RECEPT. IT HALL
(E) RECEPT. ELECT. RM.			21	B		22			(E) RECEPT. 321
(E) ATTIC RECAP			23	C		24			(E) RECEPT. 321
(E) A/C UNIT		20	25	A		26			(E) RECEPT. 322
		2	27	B		28			(E) LIGHTS RM 313
(E) A/C UNIT		20	29	C		30			(E) FA PANEL - OFF
		2	31	A		32			(E) RECEPT. STORAGE
(E) AHU CONTROLS		20/1	33	B		34			(E) RECEPT. 324
			35	C		36			(E) RECEPT. 323
(E) RECEPT. ELECT RM.			37	A		38			(E) RECEPT. COUNTERTOP
VAV XFMER PNL #8		-	39	B		40			(E) RECEPT. COUNTERTOP
SPACE		-	41	C		42			(E) RECEPT. RESTRM

CONNECTED LOAD: 0 VA (0 A)

	VA	A
A=	0 VA	0 A
B=	0 VA	0 A
C=	0 VA	0 A

OTHER NOTES:
120/208V., 3PH, 4W
200 AMP MCB
200 AMP BUS

PANEL BOARD: 2A — EXISTING

DIRECTORY	LOAD	BKR	CIR			CIR	BKR	LOAD	DIRECTORY
(E) RECEPT. 308		20/1	1	A		2	20/1		(E) RECEPT. 300,301,302
(E) RECEPT. 308,309			3	B		4			(E) RECEPT. 300,301,302, HALL
(E) RECEPT. 309			5	C		6			(E) RECEPT. 300
(E) RECEPT. 308 COPIER			7	A		8			(E) RECEPT. 320,321,322
(E) RECEPT. 308 COPIER			9	B		10			(E) RECEPT. 320,321,322
(E) RECEPT. 308			11	C		12			(E) RECEPT. KITCHEN GFCI
(E) RECEPT. 308			13	A		14			(E) RECEPT. RESTRM, WF
(E) SECURITY PANEL			15	B		16			(E) RECEPT. 323
(E) RECEPT. ELEC RM			17	C		18			(E) RECEPT. 323, 326
(E) RECEPT. ELEC RM			19	A		20			(E) RECEPT. 326
(E) RECEPT. ATTIC			21	B		22			(E) RECEPT. 323
(E) AIR HANDLER PNL			23	C		24			(E) RECEPT. 323
(E) AIR HANDLER PNL			25	A		26			(E) RECEPT. COUNTERTOP GFI
(E) RECEPT. 306			27	B		28			(E) RECEPT. COUNTERTOP GFI
(E) RECEPT. 308			29	C		30			(E) RECEPT. RESTRM, 308
(E) WATER HEATER		20	31	A		32			VAV XFMER PNL #7
		2	33	B		34		360	AHU-2 & 3 RECEPT.
SPACE		-	35	C		36	-		SPACE
			37	A		38			
			39	B		40			
			41	C		42			

CONNECTED LOAD: 360 VA (1 A)

	VA	A
A=	0 VA	0 A
B=	360 VA	3 A
C=	0 VA	0 A

OTHER NOTES:
120/208V., 3PH, 4W
200 AMP MCB
200 AMP BUS

PANEL BOARD: BP — EXISTING

DIRECTORY	LOAD	BKR	CIR			CIR	BKR	LOAD	DIRECTORY
(E) LANDSCAPE CONTROL		20/1	1	A		2	20/1		(E) RECEPT. 411,413,414
(E) RECEPT. HALL, 414			3	B		4			(E) RECEPT. 412,413
(E) RECEPT. RESTRM,			5	C		6			(E) RECEPT. 411,412,414
(E) RECEPT. 401			7	A		8			(E) RECEPT. 400,415,416
(E) RECEPT. 401			9	B		10			(E) RECEPT. 416
(E) RECEPT. 415,416			11	C		12			(E) RECEPT. 415
(E) RECEPT. 415,416,417			13	A		14			(E) RECEPT. 150
(E) RECEPT. 160,162			15	B		16			(E) RECEPT. 160,165
(E) RECEPT. 160,161,162			17	C		18			(E) CUST. SERV. ROLL-UP
(E) RECEPT. 160,161,			19	A		20			(E) RECEPT. 160,162,163
(E) RECEPT. 400,405,HALL			21	B		22			(E) RECEPT. 160,163,164
(E) HCP			23	C		24			(E) RECEPT. 160,163,164
(E) RECEPT. 408			25	A		26			(E) HEAT MAT CONTROL
(E) ELEVATOR CONTROL			27	B		28		1860	B-1
(E) HXO HEATER PUMP			29	C		30		1860	B-2
(E) AIR HANDLER CONTROL			31	A		32		1176	REF-1
(E) LANDSCAPE CONTROL			33	B		34		1056	REF-2, WH-1
BP-1	444	20	35	C		36	20	444	BP-2
	444		37	A		38		444	
	444	3	39	B		40	3	444	
SPARE		20/1	41	C		42	20/1		SPARE

CONNECTED LOAD: 8616 VA (24 A)

	VA	A
A=	2064 VA	17 A
B=	3804 VA	32 A
C=	2748 VA	23 A

OTHER NOTES:
120/208V., 3PH, 4W
150 AMP MCB
150 AMP BUS

DINTER
Airfield Electrical Mechanical
385 Gentry Way
Reno, NV 89502
Ph: 775.826.4044
Fax: 775.826.4190
Web: dinter.com
J-4454

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

KELLER C. HACKBUSCH
Exp. 06/30/15
ELECTRICAL
STATE OF NEVADA
No. 013218
REGISTERED PROFESSIONAL ENGINEER

9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE
PANEL SCHEDULES

REVISIONS

DATE :
SEPTEMBER 26, 2014

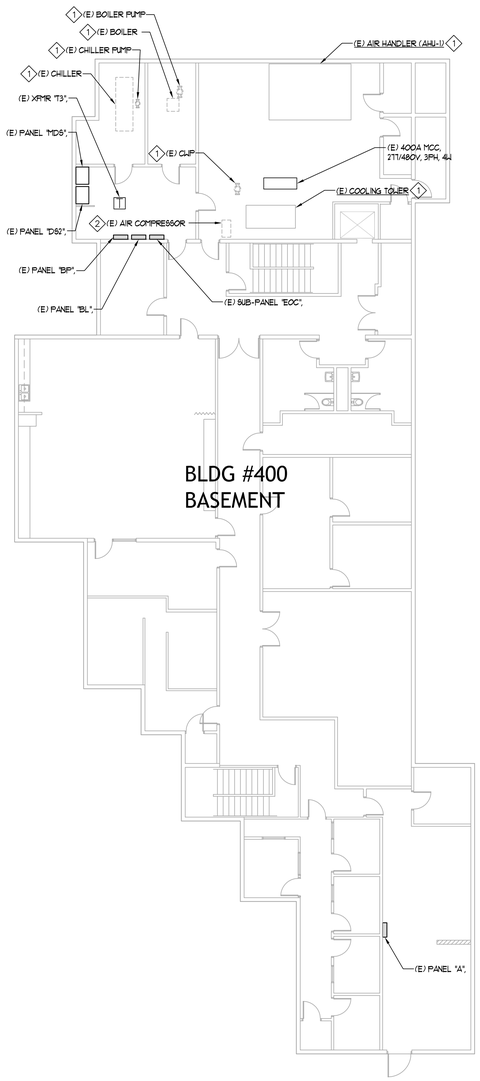
SHEET NUMBER :
E0.4

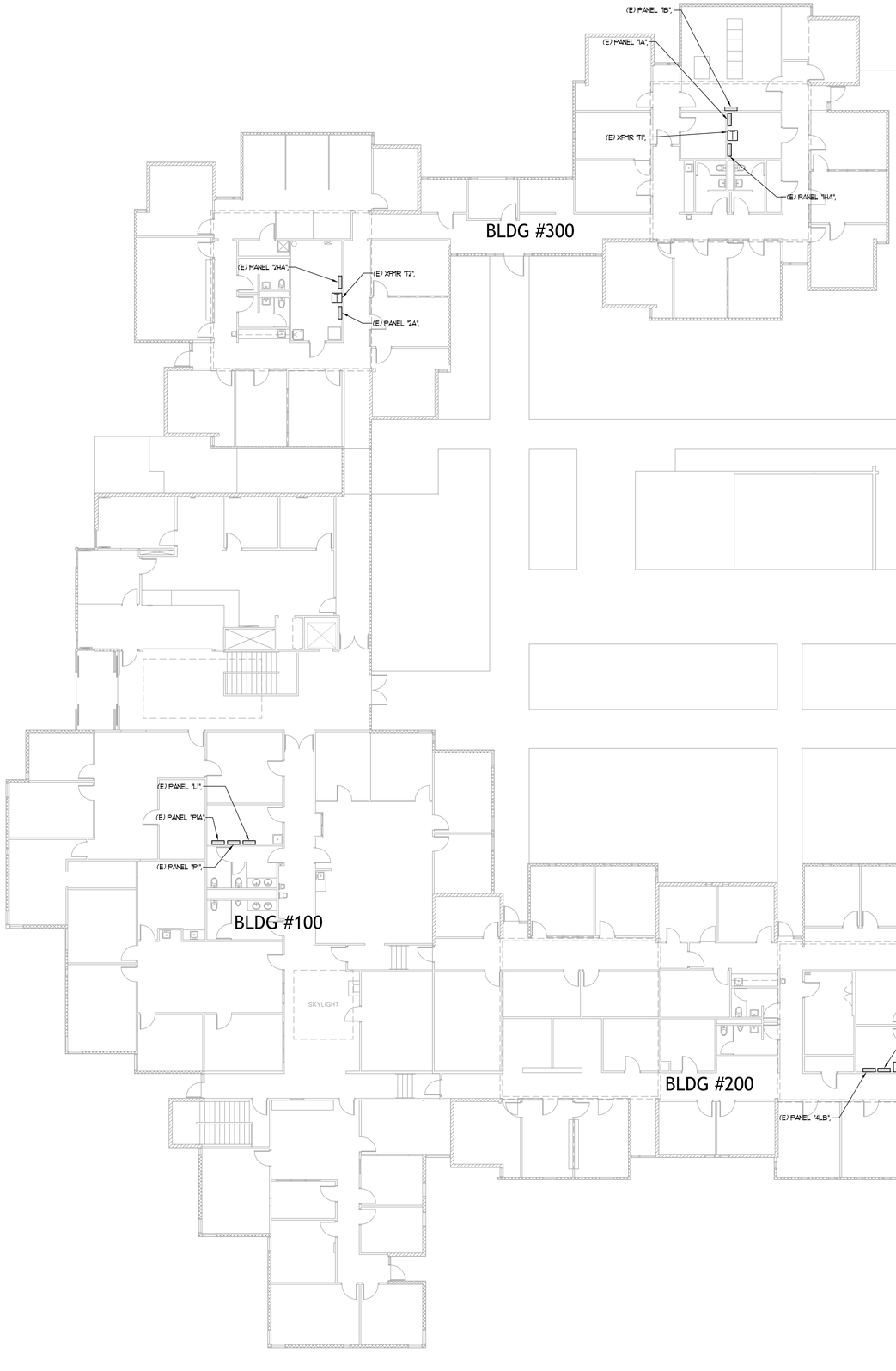
SHEET NOTES:

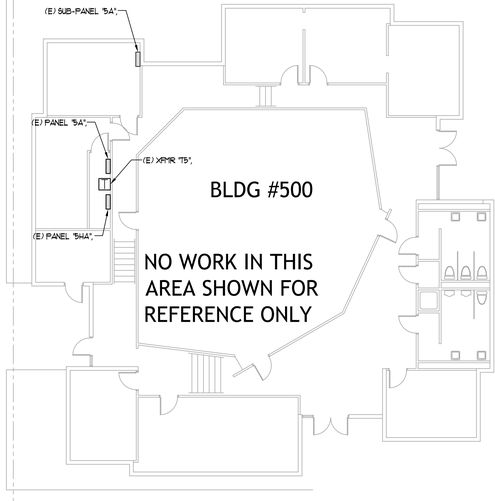
1. ELECTRICAL CONTRACTOR TO DISCONNECT ALL ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT. CONDUCTORS TO BE REMOVED BACK TO PANEL. CONDUIT TO BE REUSED. CONTROL WIRING REMOVAL TO BE COMPLETED BY MECHANICAL'S CONTROLS CONTRACTOR.
2. ELECTRICAL CONTRACTOR TO DISCONNECT AND REMOVE ALL CONDUCTORS AND CONDUIT TO PANEL. (IF ALTERNATES 1-4 ARE NOT ACCEPTED THEN THE AIR COMPRESSOR WILL BE RELOCATED AND RECONNECTED)

GENERAL NOTES:

1. THIS PLAN INDICATES EXISTING MECHANICAL EQUIPMENT AND ELECTRICAL DISTRIBUTION EQUIPMENT FOR REFERENCE ONLY. THIS PLAN DOES NOT PURPORT TO SHOW ALL EXISTING CONDITIONS. ELECTRICAL CONTRACTOR SHALL VERIFY ALL CONDITIONS IN THE FIELD.







A E1.1 MECHANICAL POWER COMPLEX DEMOLITION PLAN

SCALE: 3/32"=1'-0"

DINTER
Airfield Electrical Mechanical
385 Gentry Way
Reno, NV 89502
Ph: 775.826.4044
Fax: 775.826.4190
Web: dinter.com
J-4454

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

MMI ENGINEERING

KELLER C. HACKBUSCH
Exp. 06/30/15
ELECTRICAL
STATE OF NEVADA
REGISTERED PROFESSIONAL ENGINEER

9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE

MECHANICAL POWER COMPLEX DEMOLITION PLAN

REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :

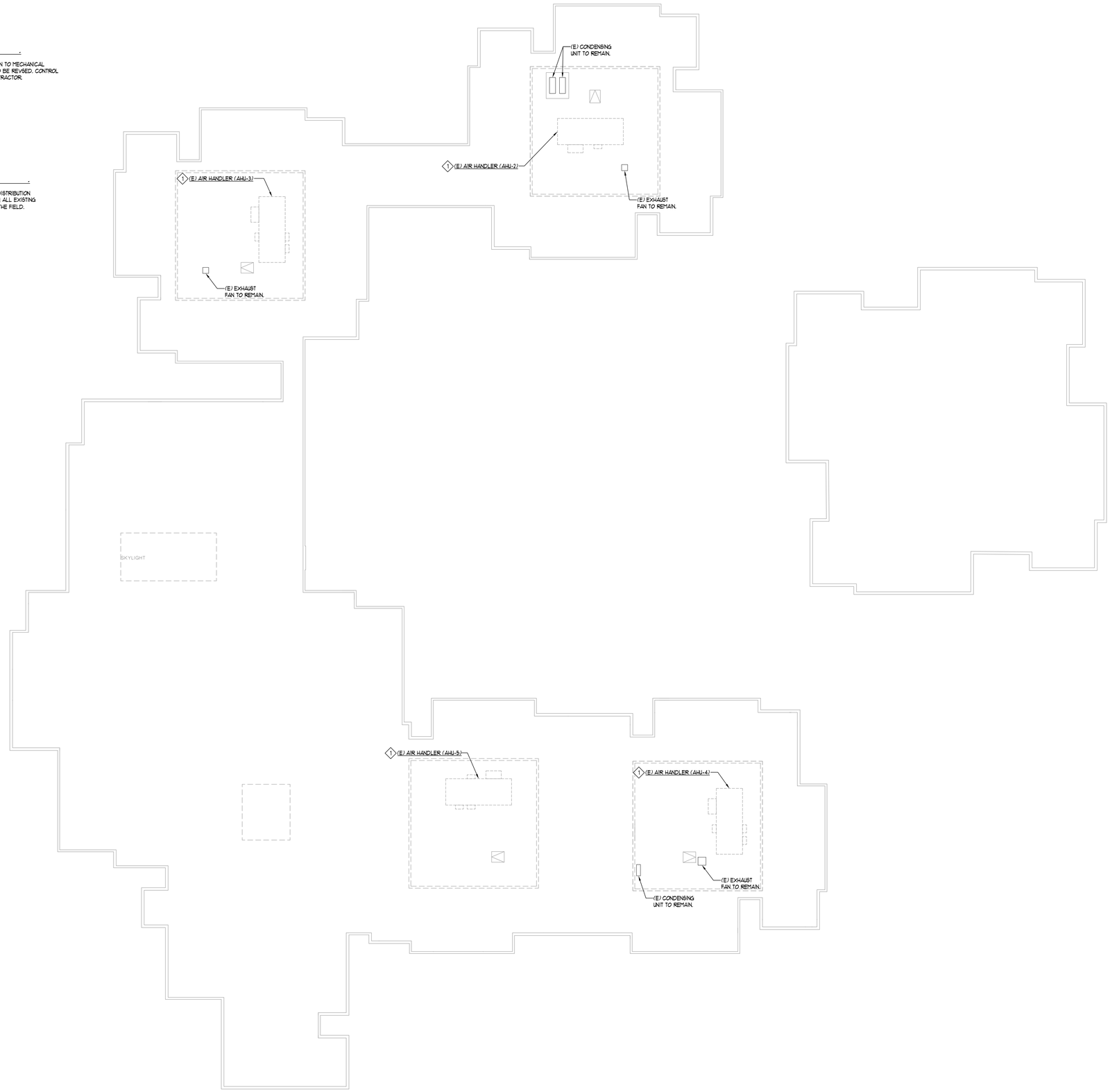
E1.1

SHEET NOTES:

1. ELECTRICAL CONTRACTOR TO DISCONNECT ALL ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT. CONDUCTORS TO BE REMOVED BACK TO PANEL. CONDUIT TO BE REVISED. CONTROL WIRING REMOVAL TO BE COMPLETED BY MECHANICAL'S CONTROLS CONTRACTOR.

GENERAL NOTES:

1. THIS PLAN INDICATES EXISTING MECHANICAL EQUIPMENT AND ELECTRICAL DISTRIBUTION EQUIPMENT FOR REFERENCE ONLY. THIS PLAN DOES NOT PURPORT TO SHOW ALL EXISTING CONDITIONS. ELECTRICAL CONTRACTOR SHALL VERIFY ALL CONDITIONS IN THE FIELD.



A E1.2 MECHANICAL POWER ROOF DEMOLITION PLAN

SCALE: 3/32"=1'-0"

DINTER
Airfield Electrical Mechanical
385 Gentry Way
Reno, NV 89502
Ph: 775.826.4044
Fax: 775.826.4190
Web: dinter.com
J-4454

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

MMI ENGINEERING

KELLER C. HACKBUSCH
Exp. 06/30/15
ELECTRICAL
REGISTERED PROFESSIONAL ENGINEER - STATE OF NEVADA

9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE

MECHANICAL POWER ROOF DEMOLITION PLAN

REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :

E1.2

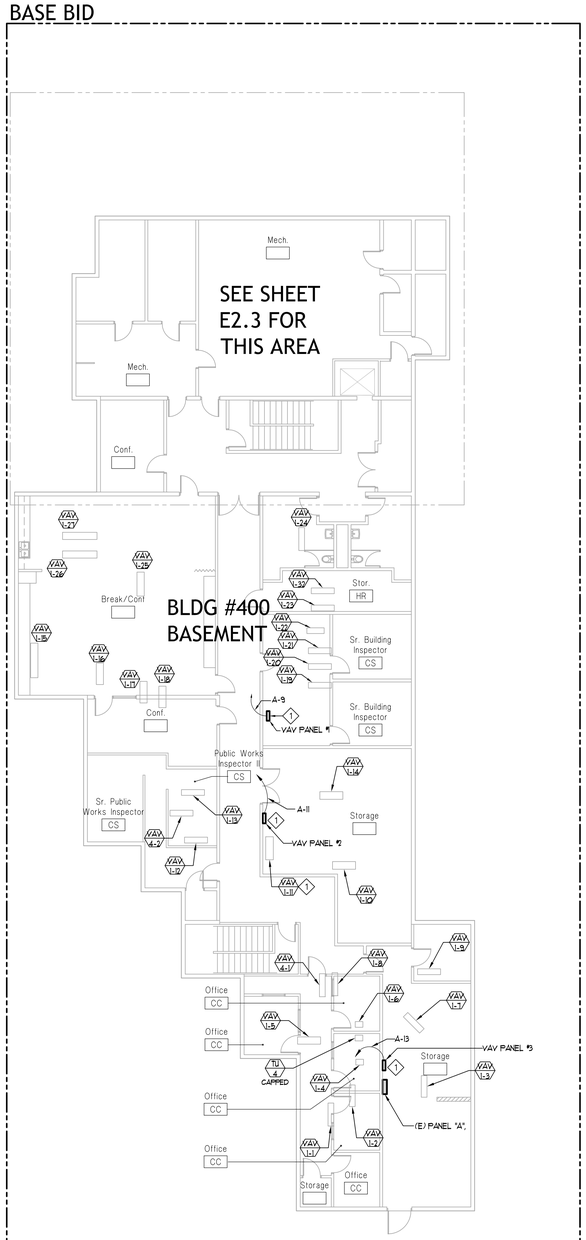
SHEET NOTES:

1. PROVIDED NEW ELECTRICAL VAV CONTROL TRANSFORMER PANEL WITH INTERNAL DISCONNECT. COORDINATE WITH CONTROLS CONTRACTOR FOR EXACT LOCATION AND POWER REQUIREMENTS. VAV UNITS ARE SHOWN FOR REFERENCE ONLY. THE CONTROLS CONTRACTOR WILL CONNECT VAV UNITS.
2. CONNECT NEW AC UNIT AND CONDENSING UNIT ON ROOF.

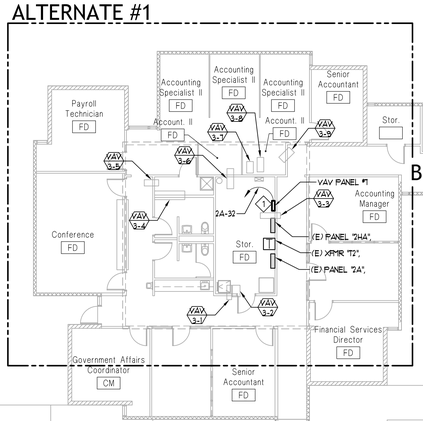
GENERAL NOTES:

1. THIS PLAN INDICATES DESIGN MECHANICAL EQUIPMENT LOCATION. ELECTRICAL CONTRACTOR TO VERIFY EXACT LOCATIONS WITH MECHANICAL CONTRACTOR DURING CONSTRUCTION.

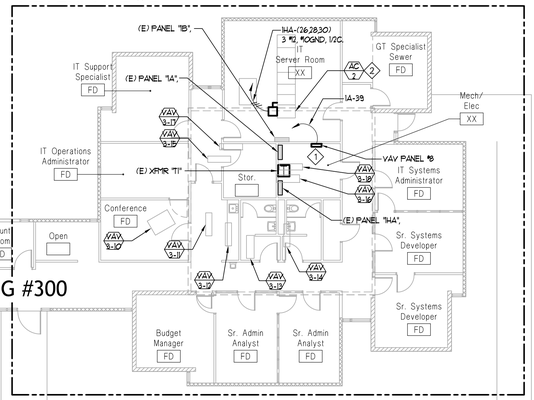
BASE BID



ALTERNATE #1

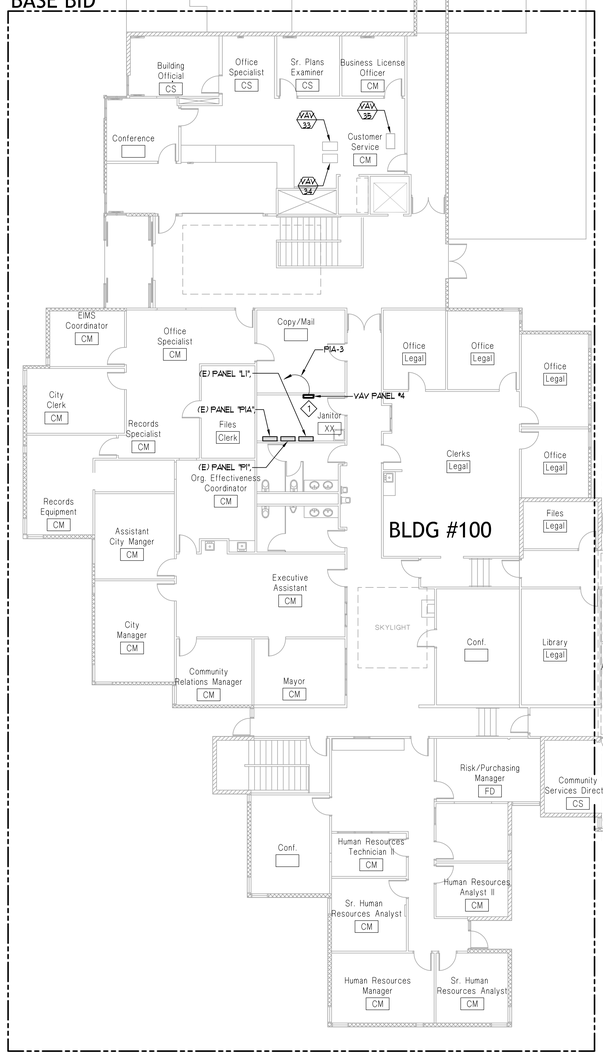


ALTERNATE #2

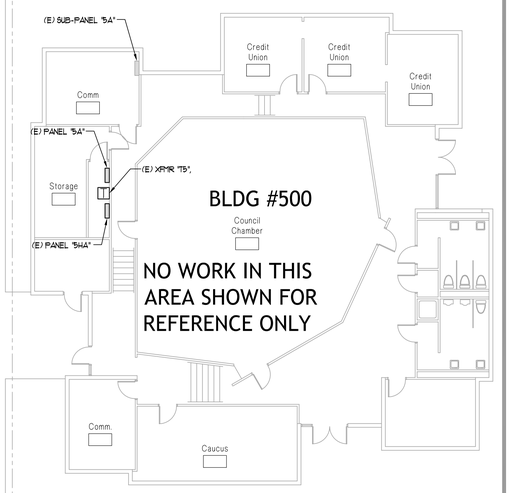


BLDG #300

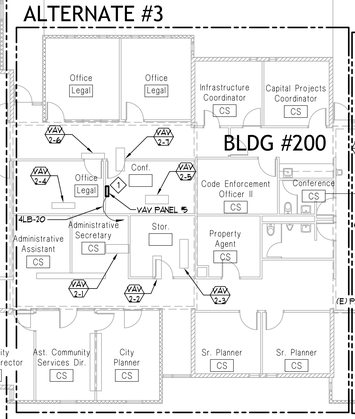
BASE BID



BLDG #100

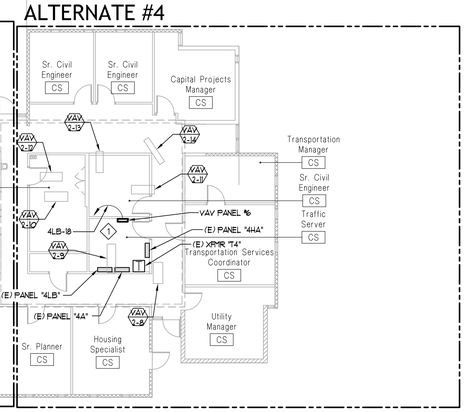


ALTERNATE #3



BLDG #200

ALTERNATE #4



A E2.1 NEW MECHANICAL POWER COMPLEX PLAN
SCALE: 3/32"=1'-0"

DINTER
Airfield Electrical Mechanical
385 Gentry Way
Reno, NV 89502
Ph: 775.826.4044
Fax: 775.826.4190
Web: dinter.com
J-4454

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

MMI ENGINEERING

KELLER C. HACKBUSCH
Exp. 06/30/15
ELECTRICAL
REGISTERED PROFESSIONAL ENGINEER - STATE OF NEVADA

9/26/2014

SPARKS CITY HALL CAMPUS HVAC UPGRADE

SPARKS, NEVADA

SHEET TITLE

NEW MECHANICAL POWER COMPLEX PLAN

REVISIONS

DATE :
SEPTEMBER 26, 2014

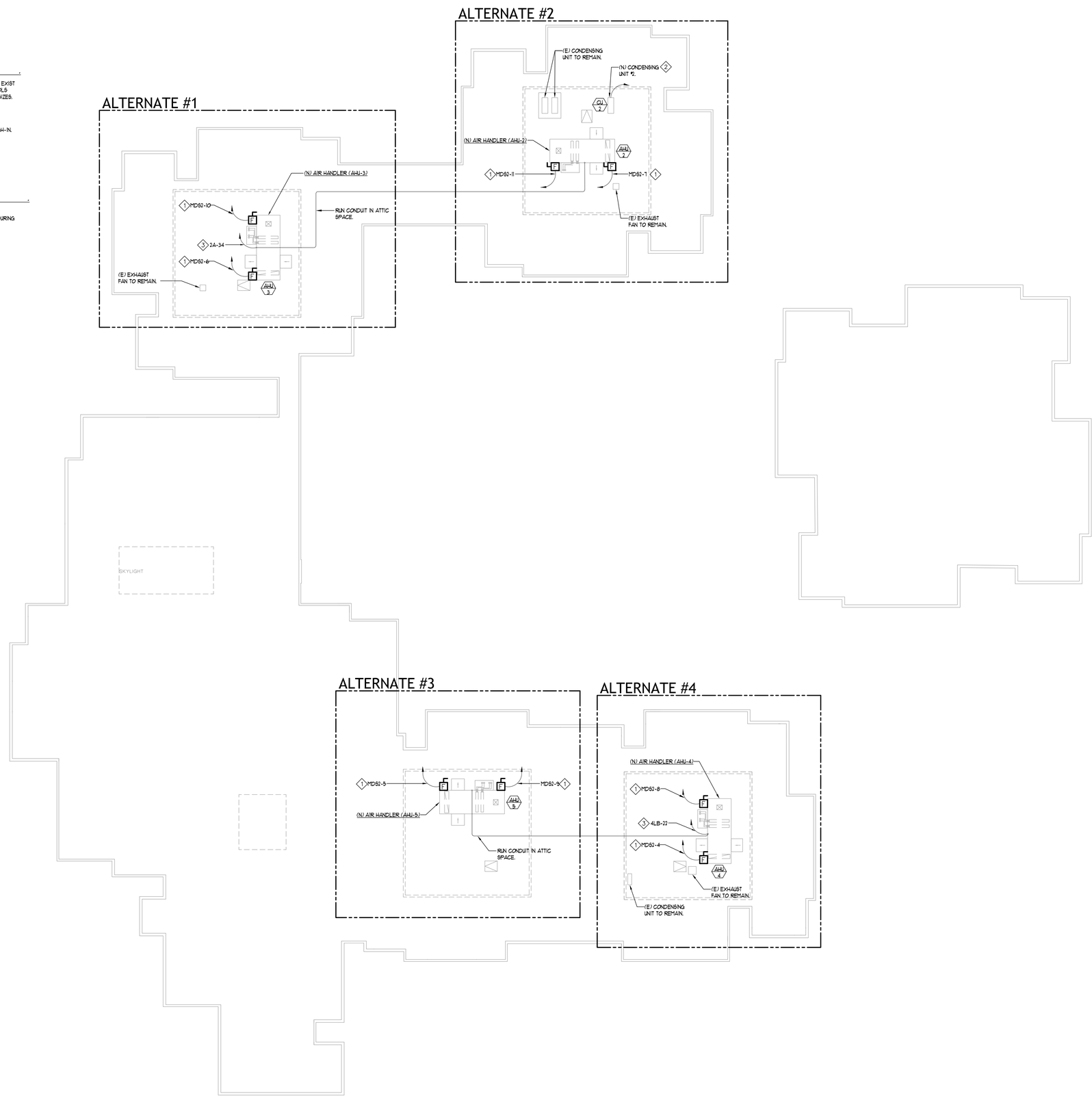
SHEET NUMBER :
E2.1

SHEET NOTES:

1. ELECTRICAL CONTRACTOR TO CONNECT AHU MECHANICAL EQUIPMENT TO EXIST PANELS. CONTROL WIRING TO BE COMPLETED BY MECHANICAL'S CONTROLS CONTRACTOR. SEE FEEDER SCHEDULE ON SHEET E0.3 FOR CONDUCTOR SIZES.
2. CONNECT NEW CONDENSING UNIT AND AC UNIT IN IT ROOM.
3. CONNECT 110V CONVENIENCE RECEPTACLE PROVIDED AS PART OF AHU. COORDINATE LOCATION WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN.

GENERAL NOTES:

1. THIS PLAN INDICATES DESIGN MECHANICAL EQUIPMENT LOCATION. ELECTRICAL CONTRACTOR TO VERIFY EXACT LOCATIONS WITH MECHANICAL CONTRACTOR DURING CONSTRUCTION.



A E2.2 NEW MECHANICAL POWER ROOF PLAN
SCALE: 3/32"=1'-0"

DINTER
Airfield Electrical Mechanical
385 Gentry Way
Reno, NV 89502
Ph: 775.826.4044
Fax: 775.826.4190
Web: dinter.com
J-4454

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

MMI ENGINEERING

KELLER C. HACKBUSCH
Exp. 06/30/15
ELECTRICAL
REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA

9/26/2014

SPARKS CITY HALL
CAMPUS HVAC UPGRADE
SPARKS, NEVADA

SHEET TITLE

NEW
MECHANICAL POWER
ROOF PLAN

REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :

E2.2

ALL WORK IS BASE BID.

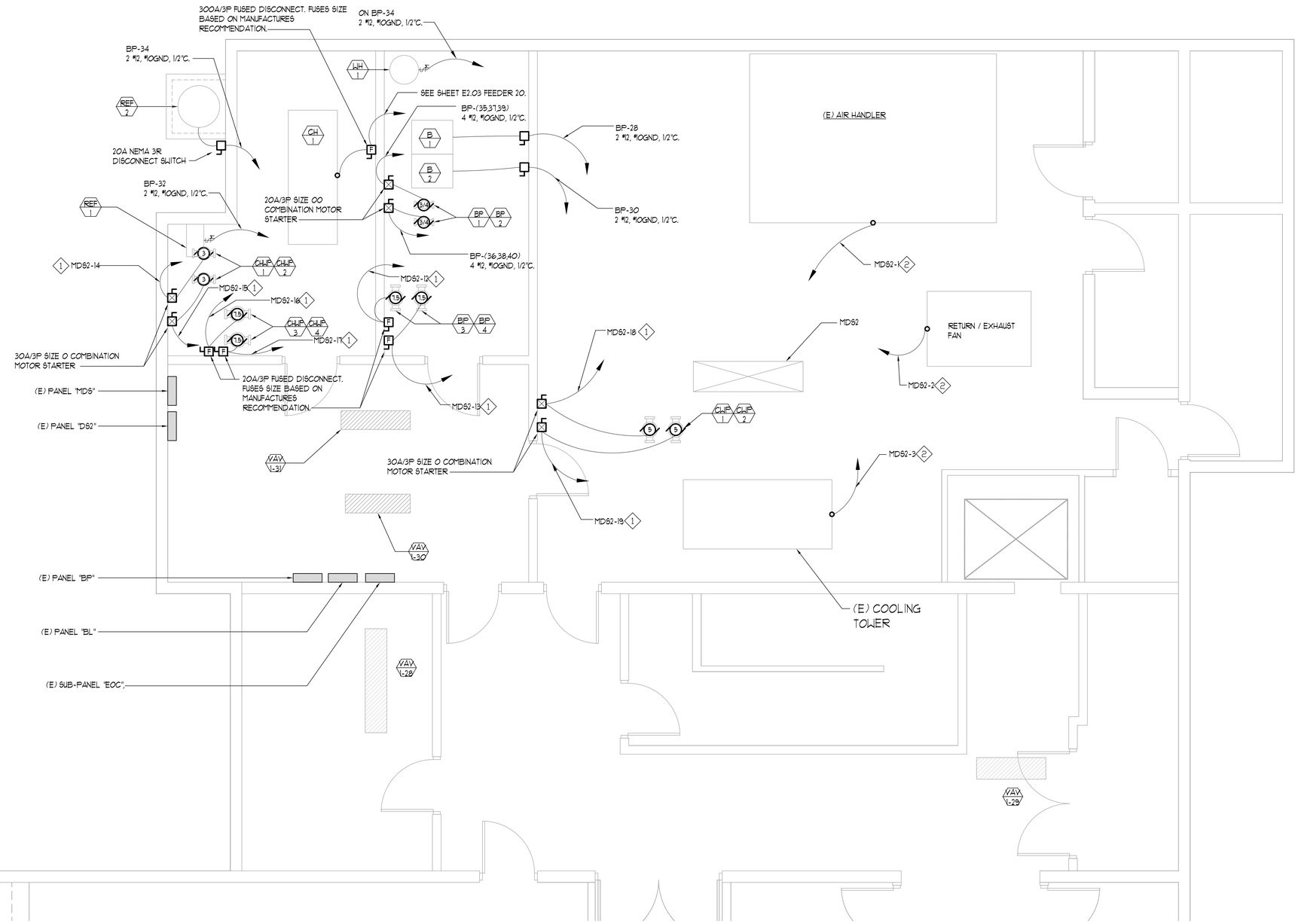
IF ALTERNATE 1-4 ARE NOT ACCEPTED THEN THE EXISTING AIR COMPRESSOR WILL BE RELOCATED AND RECONNECTED. COORDINATE NEW LOCATION WITH MECHANICAL CONTRACTOR.

SHEET NOTES:

1. ELECTRICAL CONTRACTOR TO CONNECT MECHANICAL EQUIPMENT. CONTROL WIRING TO BE COMPLETED BY MECHANICAL'S CONTROLS CONTRACTOR. SEE FEEDER SCHEDULE ON SHEET E0.3 FOR CONDUCTOR SIZES.
2. CONNECT EXISTING EQUIPMENTS NEW VARIABLE FREQUENCY DRIVES (VFD). SEE FEEDER SCHEDULE ON SHEET E0.3 FOR CONDUCTOR SIZES.

GENERAL NOTES:

1. THIS PLAN INDICATES DESIGN MECHANICAL EQUIPMENT LOCATION. ELECTRICAL CONTRACTOR TO VERIFY EXACT LOCATIONS WITH MECHANICAL CONTRACTOR DURING CONSTRUCTION.



BUILDING #400 (NORTH HALF) BASEMENT
ENLARGED NEW MECHANICAL POWER PLAN
A / E2.3
SCALE: 3/8"=1'-0"

DINTER
Airfield Electrical Mechanical
385 Gentry Way
Reno, NV 89502
Ph: 775.826.4044
Fax: 775.826.4190
Web: dinter.com
J-4454

MMI ENGINEERING
275 Monumental Cir.
Sparks, NV. 89436
(775) 750-0849
www.mmi-engineering.com

ENGINEERING

REGISTERED PROFESSIONAL ENGINEER, STATE OF NEVADA
KELLER C. HACKBUSCH
No. 16230
Exp. 06/30/15
ELECTRICAL
9/26/2014

SPARKS CITY HALL CAMPUS HVAC UPGRADE

SPARKS, NEVADA

SHEET TITLE

BUILDING #400 (NORTH) BASEMENT - ENLARGED NEW MECHANICAL POWER PLAN

REVISIONS

DATE :
SEPTEMBER 26, 2014

SHEET NUMBER :
E2.3