

MECHANICAL SYMBOLS												
THIS IS A MASTER LEGEND AND NOT ALL SYMBOLS OR ABBREVIATIONS ARE USED.												
STANDARD MOUNTING HEIGHT		HVAC DUCTWORK AND ACCESSORIES			PIPING SYMBOLS			PIPING LINETYPES				
THERMOSTATS (USER ADJUSTABLE)(TOP OF DEVICE) CONTROLS (TOP OF DEVICE)		48" 48"										
INSTALL DEVICES AT THE MOUNTING HEIGHTS SHOWN ABOVE UNO IN THE CONSTRUCTION DOCUMENTS. MOUNTING HEIGHTS LISTED ABOVE OR ELSEWHERE IN THE CONSTRUCTION DOCUMENTS ARE AFF OR AFG TO BOTTOM OF DEVICE UNO. ALL DEVICES SHALL BE INSTALLED IN COMPLIANCE WITH CURRENT ADA AND LOCAL REQUIREMENTS.												
ANNOTATION												
MECHANICAL PLAN NOTE CALLOUT												
MECHANICAL EQUIPMENT DESIGNATION (CONTRACTOR FURNISHED AND INSTALLED UNLESS NOTED OTHERWISE)												
CONNECTION POINT OF NEW WORK TO EXISTING												
DETAIL REFERENCE. UPPER NUMBER INDICATES DETAIL NUMBER LOWER NUMBER INDICATES SHEET NUMBER												
SECTION CUT DESIGNATION												
ABBREVIATIONS												
A/C	AIR CONDITIONING	HWP	HEATING WATER PUMP									
ACC	AIR COOLED CHILLER	IN WC	INCHES OF WATER									
ACCU	AIR COOLED CONDENSING UNIT	L	LOUVER									
AFC	ABOVE FINISHED CEILING	LAT	LEAVING AIR TEMPERATURE									
AFB	ABOVE FINISHED FLOOR	LDB	LEAVING DRY BULB LOW PRESSURE									
AFG	ABOVE FINISHED GRADE	LP	LEAVING WET BULB TEMPERATURE									
AHJ	AUTHORITY HAVING JURISDICTION	LWB	LEAVING WATER TEMPERATURE									
AHU	AIR HANDLING UNIT	LWT	LEAVING WATER TEMPERATURE									
AI	ANALOG INPUT	MAU	MAKE-UP AIR UNIT									
AO	ANALOG OUTPUT	MAX	MAXIMUM									
AP	ACCESS PANEL	MBH	1000 BTU PER HOUR									
APD	AIR PRESSURE DROP	MD	MOTORIZED DAMPER									
AWG	AMERICAN WIRE GAUGE	MFR	MANUFACTURER									
B	BOILER	MIN	MINIMUM									
BAS	BUILDING AUTOMATION SYSTEM	N/A	NOT APPLICABLE									
BB	BACKBONE	N/C	NORMALLY CLOSED									
BD	BACKDRAFT DAMPER	N/O	NORMALLY OPEN									
BD	BLOWDOWN	NOM	NOMINAL									
BFC	BELOW FINISHED CEILING	NC	NOISE CRITERIA									
BFF	BELOW FINISHED FLOOR	NF	NON-FUSED									
BFG	BELOW FINISHED GRADE	NIC	NOT IN CONTRACT									
BFI	BOILER FEED PUMP	OA	OUTSIDE AIR									
BHP	BRAKE HORSEPOWER	PICV	PRESSURE INDEPENDENT CONTROL VALVE									
BI	BINARY INPUT		PROVIDE FURNISH AND INSTALL									
BO	BINARY OUTPUT	QTY	QUANTITY									
BOS	BOTTOM OF DUCT	RA	RETURN AIR									
BTU	BRITISH THERMAL UNIT	RC	ROOM CRITERIA									
CFM	CUBIC FEET PER MINUTE	RD	RETURN DUCT									
CH	CHILLER	REA	RELIEF AIR									
CLG	COOLING	RF	RETURN FAN									
CP	CONDENSATE PUMP	RFR	REFRIGERANT									
CPT	CONTROL POWER	RH	RELATIVE HUMIDITY									
CRAC	TRANSFORMER	RH	ROOF HOOD									
CRU	COMPUTER ROOM AIR	RPM	REVOLUTIONS PER MINUTE									
CT	CONDITIONING UNIT	RTU	ROOFTOP UNIT									
CV	COMPUTER ROOM UNIT	SA	SUPPLY AIR									
CT	COOLING TOWER	SCP	STEAM CONDENSATE PUMP									
CV	CONTROL VALVE	SD	SMOKE DUCT DETECTOR									
CWP	CONDENSER	SD	SUPPLY DUCT									
	WATER PUMP	SP	SUPPLY FAN									
CU	CONDENSING UNIT	SH	SENSIBLE HEAT CAPACITY									
CHWP	CHILLED WATER PUMP	SOW	SCOPE OF WORK									
DB	DECIBELS	SP	STATIC PRESSURE									
DBA	DECIBEL AVERAGE	ST	STEAM TRAP									
DDC	DIRECT DIGITAL CONTROL	STM	STEAM									
D	DIGITAL INPUT	TBD	TO BE DETERMINED									
DISC	DISCONNECT	TC/C	TEMPERATURE CONTROLS									
DN	DOWN	TCN	CONTRACTOR									
DS	DUCT SILENCER	TCF	TEMPERATURE CONTROL PANEL									
DX	DIRECT EXPANSION	TF	TRANSFER FAN									
(E)	EXISTING	TFA	TO FLOOR ABOVE									
EA	EXHAUST AIR	TFB	TO FLOOR BELOW									
EAT	ENTERING AIR	TH	TOTAL HEAT CAPACITY									
ED	AIR TEMPERATURE	TSP	TOTAL STATIC PRESSURE									
EWB	EXHAUST DUCT	TT	TEMPERATURE									
EDB	ENTERING DRY BULB	TRANSMITTAL	TRANSMITTAL									
EF	EXHAUST FAN	TYP	TYPICAL									
EFF	EFFICIENCY	UI/F	UNDERFLOOR									
EMS	ENERGY MANAGEMENT SYSTEM	UI/G	UNDERGROUND									
ESP	EXTERNAL STATIC PRESSURE	UH	UNIT HEATER									
ETR	EXISTING TO REMAIN	UNO	UNLESS NOTED OTHERWISE									
EWB	ENTERING WET BULB	VAV	VARIABLE AIR VOLUME									
EWT	ENTERING WATER TEMPERATURE	VEL	VELOCITY									
FCU	FAN COIL UNIT	VFD	VARIABLE FREQUENCY DRIVE									
FFA	FROM FLOOR ABOVE	VRF	VARIABLE REFRIGERANT FLOW									
FFB	FROM FLOOR BELOW	VRV	VARIABLE REFRIGERANT VOLUME									
FF	FINISHED FLOOR	W	WITH									
FPI	FINS PER INCH	W/O	WITHOUT									
FPM	FEET PER MINUTE	WB	WET BULB									
GC	GENERAL CONTRACTOR	WC	WATER COLUMN									
GPM	GALLONS PER MINUTE	WPD	WATER PRESSURE DROP									
HOA	HAND-OFF-AUTOMATIC	XP	EXPLOSION PROOF									
HP	HORSEPOWER											
HTG	HEATING											
				10" (NECK SIZE) CSD-1 (TYPE) 300 CFM (CFM OF SUPPLY DIFFUSER OR REGISTER)								
				24x24 (NECK SIZE) CEG-1 (TYPE) 800 CFM (CFM OF EXHAUST GRILLE)								
				MANUAL VOLUME DAMPER								
				SQUARE TO ROUND TRANSITION								
				DUCT MOUNTED SMOKE DETECTOR (SD-SUPPLY/VD-RETURN)								
				RISER DESIGNATION								
				FIRE DAMPER								
				FIRE SMOKE DAMPER								
				SMOKE DAMPER								
				VOLUME DAMPER								
				MOTORIZED DAMPER								
				BACKDRAFT DAMPER								
				ALL DUCT DIMENSIONS SHOWN ON DRAWINGS ARE INSIDE DIMENSIONS. REFER TO DUCTWORK SPECIFICATIONS FOR DUCTWORK INSULATION AND LINER INFORMATION.								
				HVAC CONTROL DEVICES								
				HUMIDISTAT								
				THERMOSTAT								
				STATIC PRESSURE SENSOR								
				TEMPERATURE SENSOR								
				CARBON MONOXIDE SENSOR								
				CARBON DIOXIDE SENSOR								
				DIFFERENTIAL PRESSURE SENSOR								
				FLOW SWITCH								
				HUMIDITY SENSOR								
				PULL STATION								
					DIRECTION OF FLOW			CONDENSATE DRAIN (CD)				
					CONTROL VALVE			AUXILIARY CONDENSATE DRAIN (ACD)				
					THREE-WAY CONTROL VALVE			NON-POTABLE WATER (NPW)				
					SHUTOFF VALVE			NATURAL GAS (G)				
					CHECK VALVE			NATURAL GAS ON ROOF (G)				
					BALANCING VALVE WITH PRESSURE PORTS			MEDIUM PRESSURE NATURAL GAS (MPG)				
					TRIPLE DUTY VALVE WITH PRESSURE PORTS			MEDIUM PRESSURE NATURAL GAS ON ROOF (MGP)				
					STRAINER			FUEL OIL SUPPLY (FOS)				
					STRAINER WITH BLOWDOWN VALVE			FUEL OIL RETURN (FOR)				
					RELIEF / SAFETY VALVE			FUEL OIL VENT (FOV)				
					SOLENOID VALVE			LIQUEFIED PETROLEUM GAS (LPG)				
					PRESSURE REDUCING VALVE			BOILER FEED WATER (BFW)				
					GAS PRESSURE REGULATOR			HIGH PRESSURE STEAM SUPPLY (HPS)				
					THERMOSTATIC MIXING VALVE			HIGH PRESSURE STEAM CONDENSATE (HPC)				
					PIPE ANCHOR			LOW PRESSURE STEAM SUPPLY (LPS)				
					EXPANSION JOINT			LOW PRESSURE STEAM CONDENSATE (LPC)				
					PIPE GUIDE			CONDENSATE PUMP DISCHARGE (PD)				
					PIPING SUPPORT			HEATING HOT WATER SUPPLY (HWS)				
					F & T TRAP			HEATING HOT WATER RETURN (HWR)				
					BUCKET TRAP			CHILLED WATER SUPPLY (CHWS)				
					THERMOSTATIC TRAP			CHILLED WATER RETURN (CHWR)				
					BACKFLOW PREVENTER			HOT / CHILLED WATER SUPPLY (HCS)				
					PRESSURE GAUGE			HOT / CHILLED WATER SUPPLY (HCR)				
					THERMOMETER			CONDENSER WATER SUPPLY (CWS)				
					PRESSURE AND TEMPERATURE TEST PLUG			CONDENSER WATER RETURN (CWR)				
					UNION			HEAT PUMP WATER SUPPLY (HPWS)				
					FLANGE CONNECTION			HEAT PUMP WATER RETURN (HPWR)				
					VACUUM RELIEF VALVE			REFRIGERANT LIQUID (RL)				
					AUTOMATIC AIR VENT			REFRIGERANT DISCHARGE (HOT GAS) (RD)				
					MANUAL AIR VENT			REFRIGERANT SUCTION (RS)				
					PRESSURE / VACUUM SWITCH			REFRIGERANT DISCHARGE BYPASS (RDB)				
					CLEANOUT			REFRIGERANT VENT (RV)				
					CAP							
					ELBOW UP							
					ELBOW DOWN							
					TEE UP							
					TEE DOWN							
					ELBOW UP WITH SHUT-OFF VALVE (SOV)							
					ELBOW DOWN WITH SHUT-OFF VALVE (SOV)							
					TEE UP WITH SHUT-OFF VALVE (SOV)							
					TEE DOWN WITH SHUT-OFF VALVE (SOV)							
					REDUCER							
					RECIRCULATION PUMP							
					P-TRAP							
					GAS COCK							
					TOP BEAM CLAMP							
					TRAPEZE HANGER							
					FLEXIBLE CONNECTION							
					LINETYPE LEGEND							
					THROUGHOUT THE DRAWINGS DIFFERENT LINETYPES ARE USED IN COMBINATION WITH THE SYMBOLS TO INDICATE THE STATUS OF ITEMS AS EXISTING, TO BE DEMOLISHED, TO BE INCLUDED AS PART OF NEW WORK AND/OR ITEMS WHICH ARE ANTICIPATED TO BE PROVIDED IN THE FUTURE. THE STATUS OF ITEMS USING THESE LINETYPES ARE RELATIVE TO THE VIEW IN WHICH THEY APPEAR. PHASING SHOWN IN DRAWINGS IS NOT INTENDED TO FULLY DESCRIBE ALL NECESSARY CONSTRUCTION PHASING, WHICH IS DETERMINED BY THE CONTRACTOR AS PART OF THEIR RESPONSIBILITIES. ANY SUCH PHASES DESCRIBED IN THE CONSTRUCTION DOCUMENTS ARE GENERAL AND ONLY INTENDED TO INDICATE A BROAD ORDER FOR THE SAKE OF DESCRIBING THE PROJECT. THE FOLLOWING LINETYPES MAY BE USED ON ANY DEVICE, EQUIPMENT, NOTE, LINE, SHAPE, ETC.							
					EXISTING			NEW				
					DEMOLISH			FUTURE				



FIRST PLAT, LOT 9
LEE'S SUMMIT, MO

Project No.: 19050.01a

Date: 05.06.22

Issued For: PERMIT

[illegible]

REGISTRATION



05/09/2022

BRADLEY E. CHAMBON
LICENSE # 028603

PROJECT TEAM

ARCHITECT FINKLE+WILLIAMS
ARCHITECTURE

CIVIL GBA

LANDSCAPE LAND 3

FOUNDATIONS BSE STRUCTURAL

STRUCTURAL BSE STRUCTURAL
ENGINEERS

PLUMBING HENDERSON
ENGINEERS

MECHANICAL HENDERSON
ENGINEERSELECTRICAL HENDERSON
ENGINEERS

FIRE PROTECTION HENDERSON
ENGINEERS

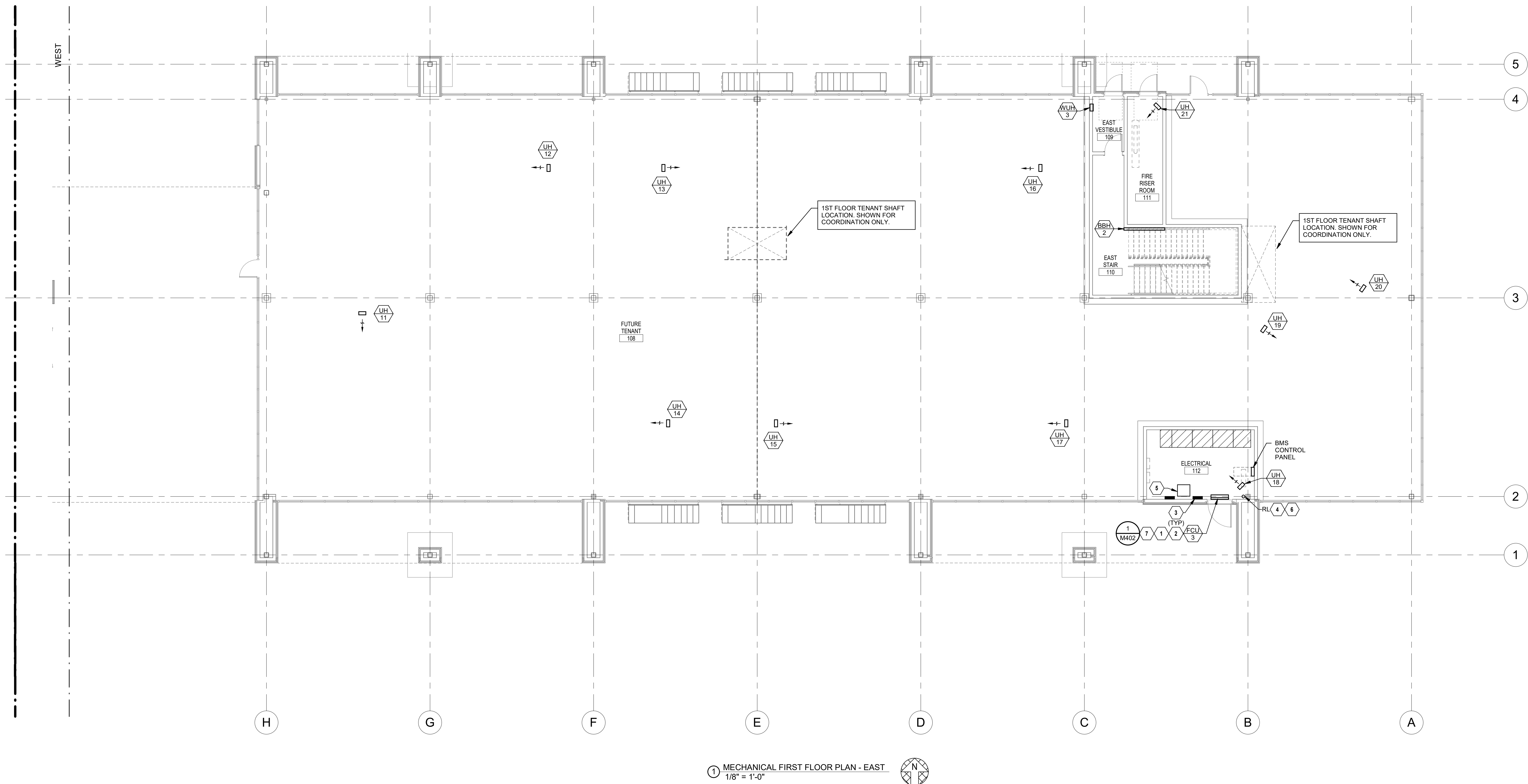


SHEET TITLE

MECHANICAL
FIRST FLOOR
PLAN - EAST

SHEET NUMBER

M101.2



① MECHANICAL FIRST FLOOR PLAN - EAST
1/8" = 1'-0"



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BRADLEY E. CHAMBON



FIRST PLAT, LOT 9
LEE'S SUMMIT, MO

Project No.: 19050.01a

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[illegible]

REGISTRATION



BRADLEY E. CHAMBERLAIN
LICENSE # 028603

PROJECT TEAM

ARCHITECT FINKLE+WILLIAMS
ARCHITECTURE

CIVIL GBA

LANDSCAPE LAND 3

FOUNDATIONS BSE STRUCTURAL

STRUCTURAL BSE STRUCTURAL
ENGINEERS

PLUMBING HENDERSON

MECHANICAL HENDERSON

ELECTRICAL HENDERSON

FIRE PROTECTION HENDERSON

CONTRACTOR GC



8345 LENEXA DRIVE, SUITE 300
LENEXA, KS 66214
TEL 913.742.5000 FAX 913.742.5001
WWW.HENDERSONENGINEERS.COM

1850004412

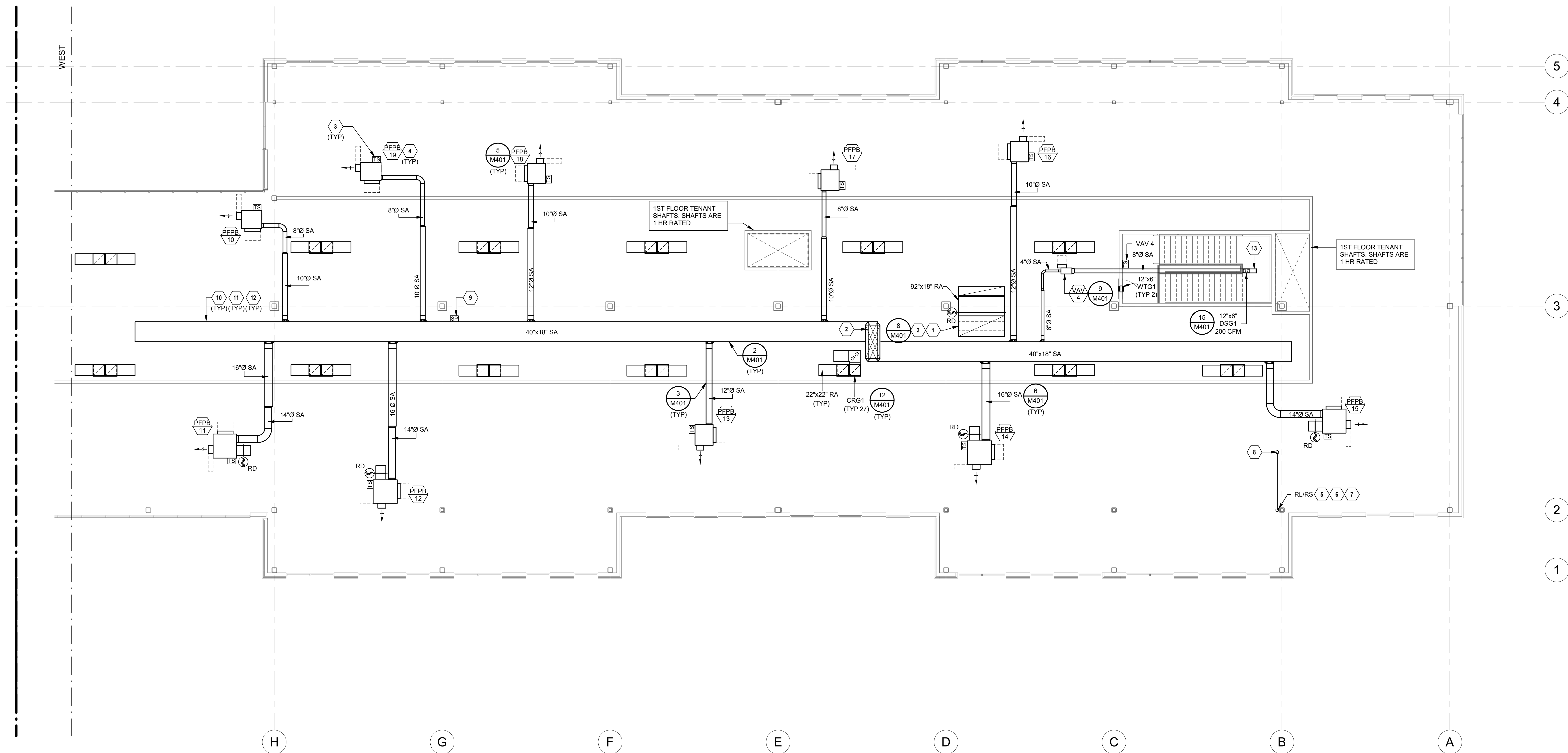
MO. CORPORATE NO: E-556D
EXPIRES 12/31/2022

SHEET TITLE

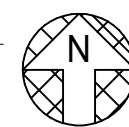
MECHANICAL
SECOND FLOOR
PLAN - EAST

SHEET NUMBER

M102.2



① MECHANICAL SECOND FLOOR PLAN - EAST
1/8" = 1'-0"



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BRADLEY E. CHAMBON



FIRST PLAT, LOT 9
LEE'S SUMMIT, MO

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REGISTRATION



5/09/2022

BRADLEY E. CHAMBON
LICENSE # 028603

PROJECT TEAM

ARCHITECT FINKLE+WILLIAMS
ARCHITECTURE

CIVIL GBA

LANDSCAPE LAND 3

FOUNDATIONS BSE STRUCTURAL
ENGINEERS

STRUCTURAL BSE STRUCTURAL
ENGINEERS

PLUMBING HENDERSON
ENGINEERS

MECHANICAL HENDERSON
ENGINEERSELECTRICAL HENDERSON
ENGINEERSFIRE PROTECTION HENDERSON
ENGINEERS

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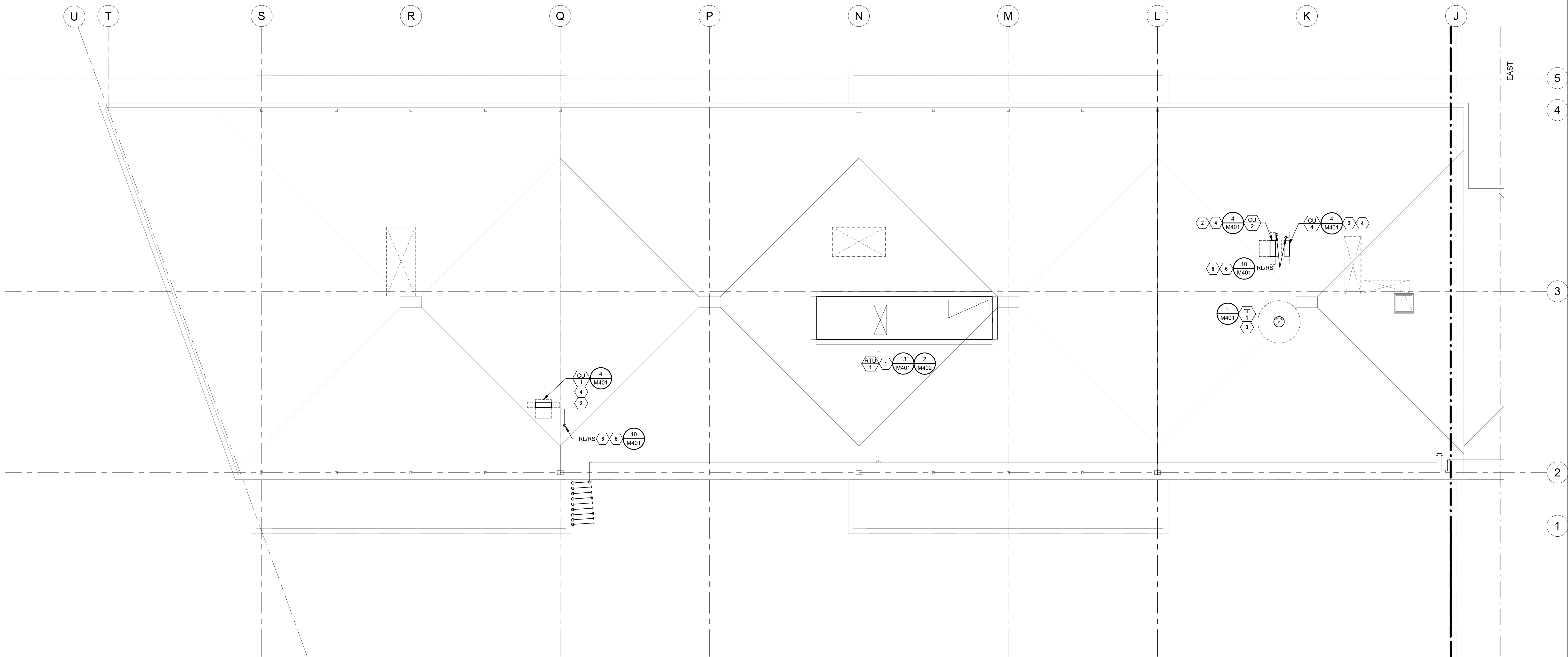
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MO. CORPORATE NO: E-556D
EXPIRES 12/31/2022

SHEET TITLE

MECHANICAL
ROOF PLAN -
WEST

SHEET NUMBER

M201.1



① MECHANICAL ROOF PLAN - WEST
1/8" = 1'-0"



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BRADLEY E. CHAMBON



FIRST PLAT, LOT 9
LEE'S SUMMIT, MO

Project No.: 19050.01a

Date: 05.06.22

Issued For: PERMIT

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REGISTRATION



05/09/2022

BRADLEY E. CHAMBERLAIN
LICENSE # 028603

PROJECT TEAM

ARCHITECT FINKLE+WILLIAMS
ARCHITECTURE

CIVIL GB

LANDSCAPE LAND 3

FOUNDATIONS BSE STRUCTURAL
ENGINEERS

STRUCTURAL BSE STRUCTURAL
ENGINEERS

PLUMBING HENDERSON
ENGINEERS

MECHANICAL HENDERSON
ENGINEERSELECTRICAL HENDERSON
ENGINEERS

FIRE PROTECTION HENDERSON
ENGINEERS

CONTRACTOR GC

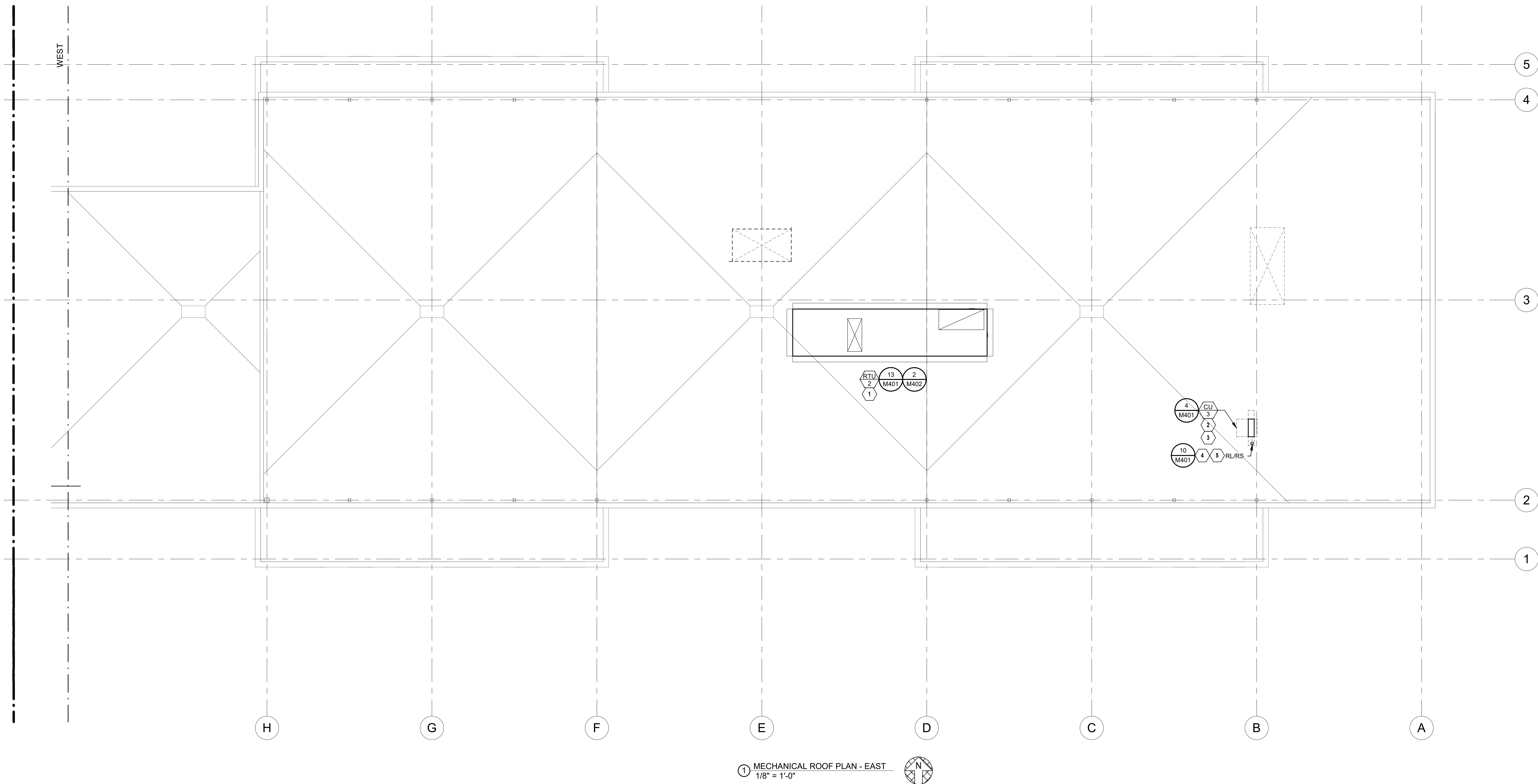


SHEET TITLE

MECHANICAL
ROOF PLAN -
EAST

SHEET NUMBER

M201.2



① MECHANICAL ROOF PLAN - EAST
1/8" = 1'-0"



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BRADLEY E. CHAMBON

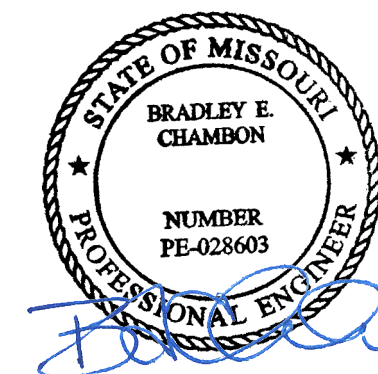


FIRST PLAT, LOT 9
LEE'S SUMMIT, MO

Project No.:	19050.01a
Date:	05.06.22
Issued For:	PERMIT

[illegible]

REGISTRATION



05/09/2022

BRADLEY E. CHAMBON
LICENSE # 028603

PROJECT TEAM

ARCHITECT	FINKLE+WILLIAMS ARCHITECTURE
CIVIL	GBA
LANDSCAPE	LAND 3
FOUNDATIONS	BSE STRUCTURAL ENGINEERS
STRUCTURAL	BSE STRUCTURAL ENGINEERS
PLUMBING	HENDERSON ENGINEERS
MECHANICAL	HENDERSON ENGINEERS
ELECTRICAL	HENDERSON ENGINEERS
FIRE PROTECTION	HENDERSON ENGINEERS
CONTRACTOR	GC



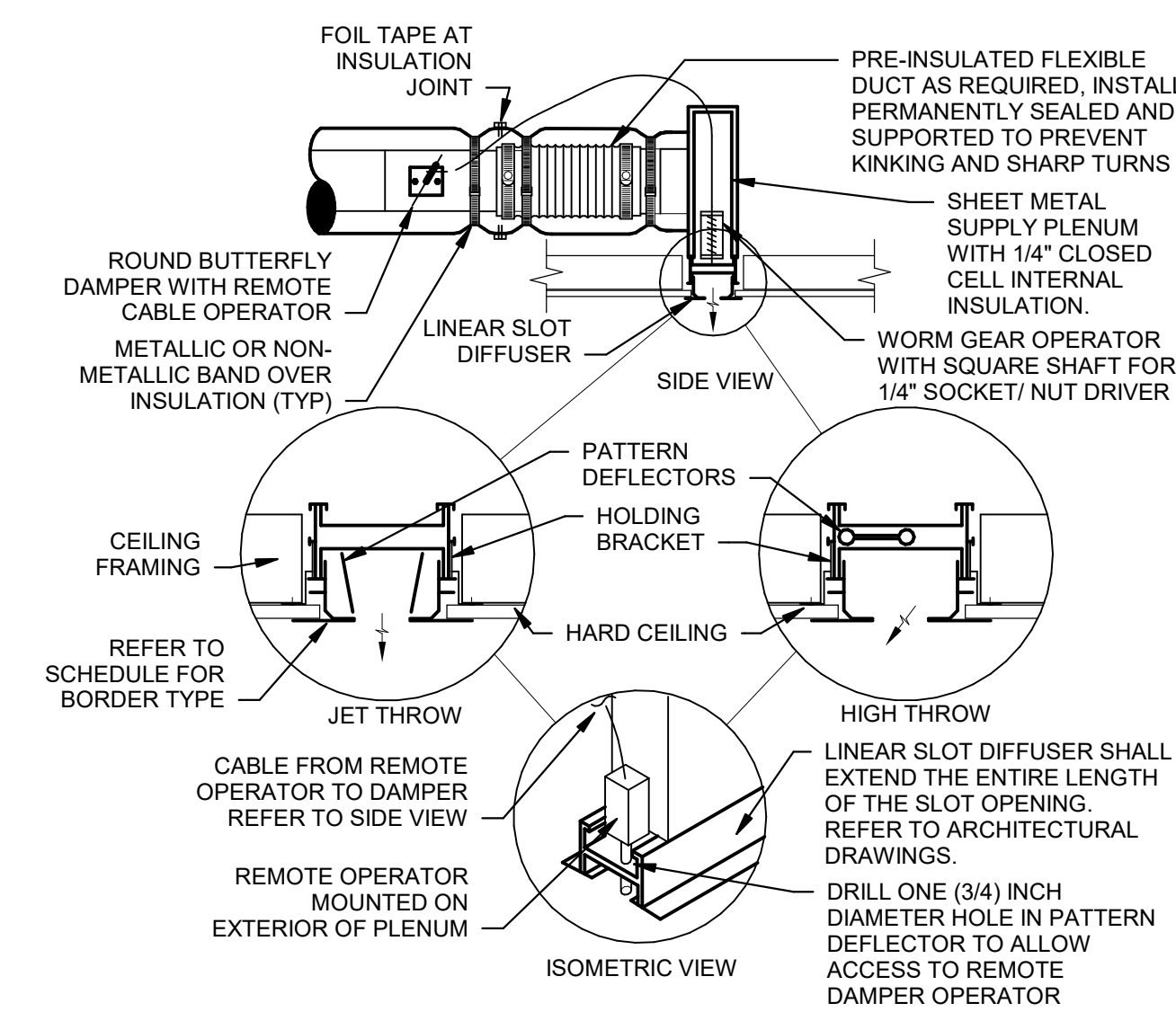
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EXPIRES 12/31/2022

SHEET TITLE

MECHANICAL DETAILS

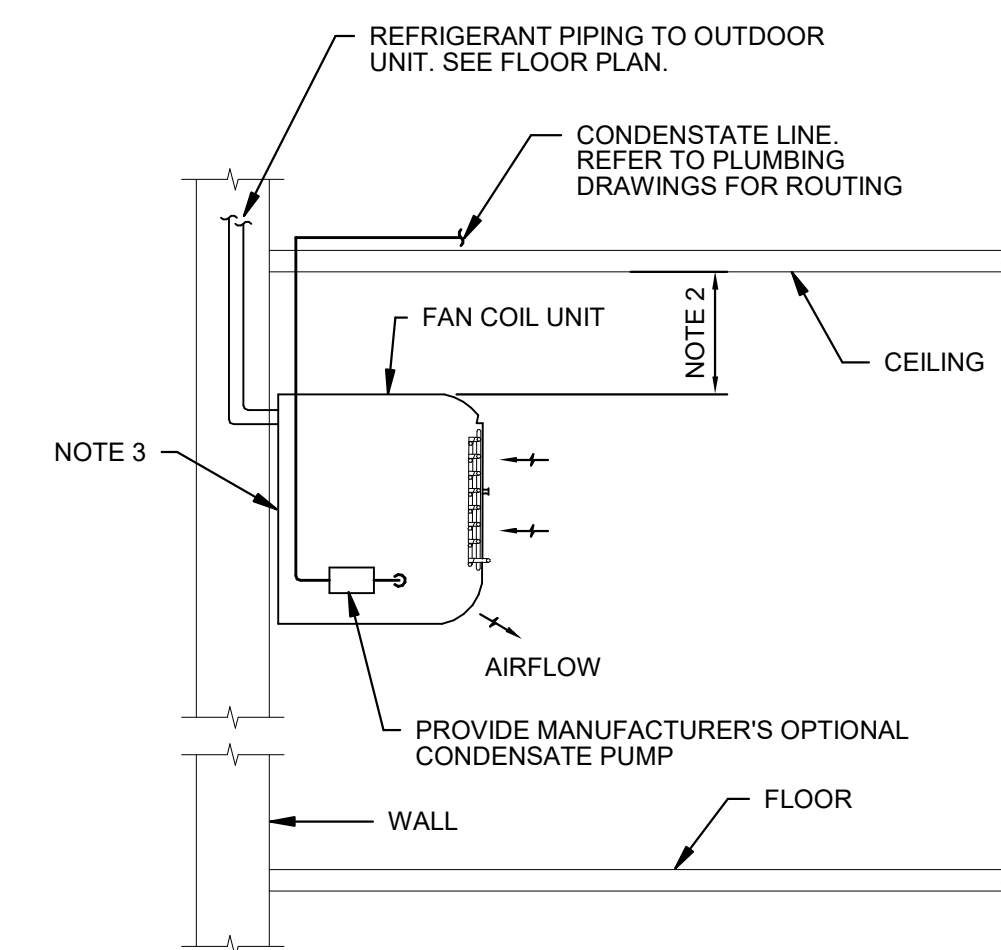
SHEET NUMBER

M402



- NOTES:
1. EXTEND HARD METAL DUCT SO THAT MAXIMUM FLEXIBLE DUCT LENGTH DOES NOT EXCEED 5'-0". PROVIDE RIGID 90° ELBOW WHERE REQUIRED TO KEEP FLEXIBLE DUCT WITHIN 5'-0" LENGTH LIMITATION.
 2. COORDINATE EXACT LENGTH AND LOCATION OF SLOT DIFFUSER WITH ARCHITECT'S REFLECTED CEILING PLAN.
 3. REFER TO DIFFUSER MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR EACH SCHEDULED BORDER TYPE.
 4. REFER TO SPECIFICATIONS FOR FLEXIBLE DUCTWORK INSTALLATION REQUIREMENTS.

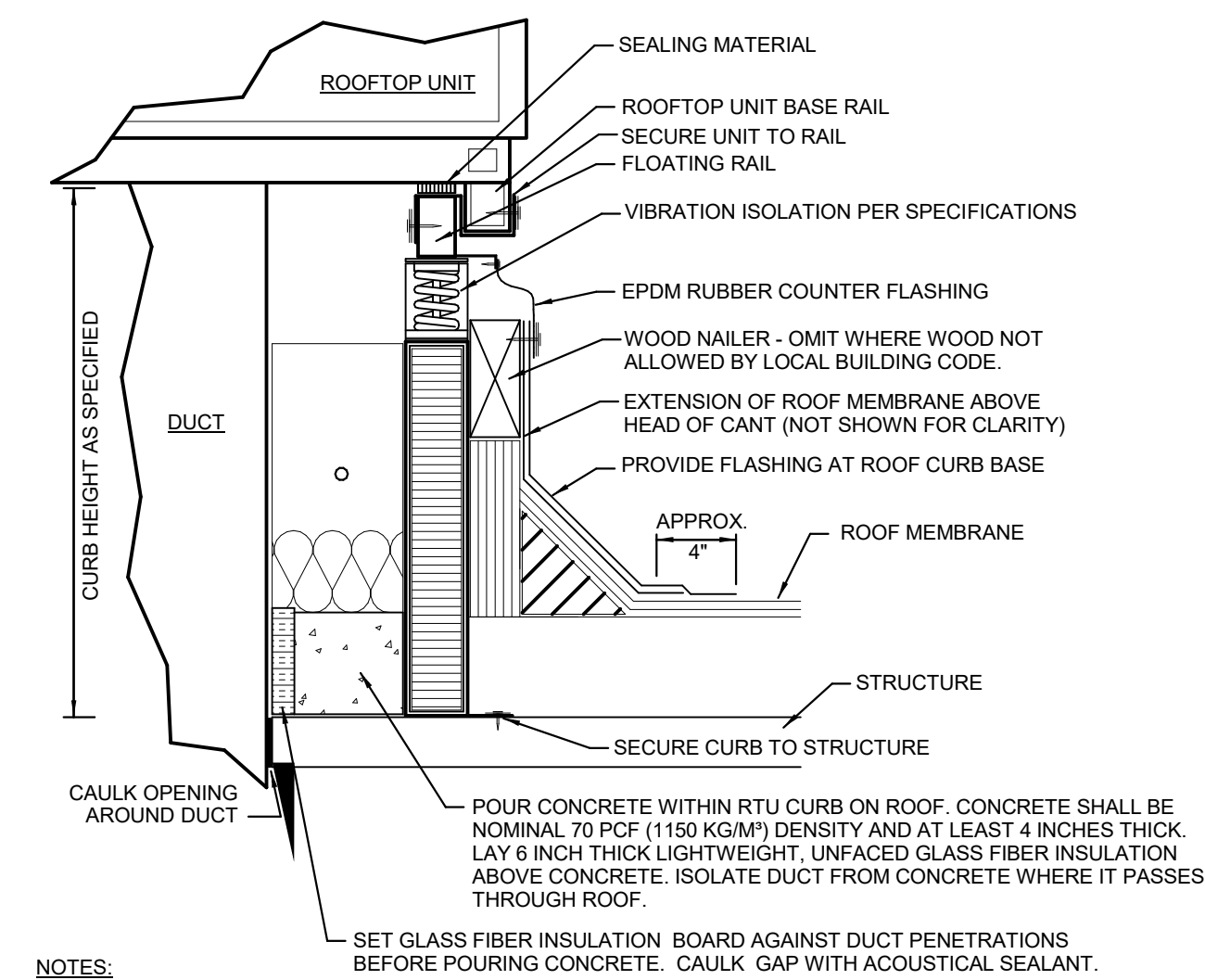
⑤ LINEAR SLOT DIFFUSER IN GYP CEILING DETAIL
NTS



- ## NOTES

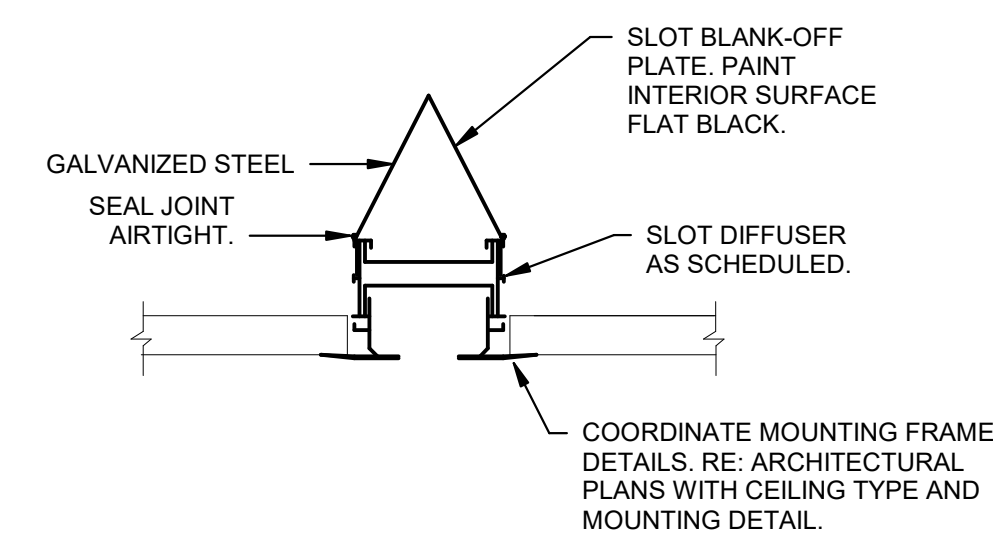
1. ARRANGEMENT SHOWN IS SCHEMATIC, ADJUST TO SUIT FIELD CONDITIONS OR MEET LOCAL CODE REQUIREMENTS.
2. PROVIDE MINIMUM 3.5" OF CLEARANCE AT THE TOP OF THE UNIT.
3. ATTACH FAN COIL UNIT TO MANUFACTURER'S PROVIDED INSTALLATION PLATE. MOUNT INSTALLATION PLATE TO WALL PER MANUFACTURER'S RECOMMENDATIONS.

① FAN COIL UNIT - WALL MOUNTED
NTS

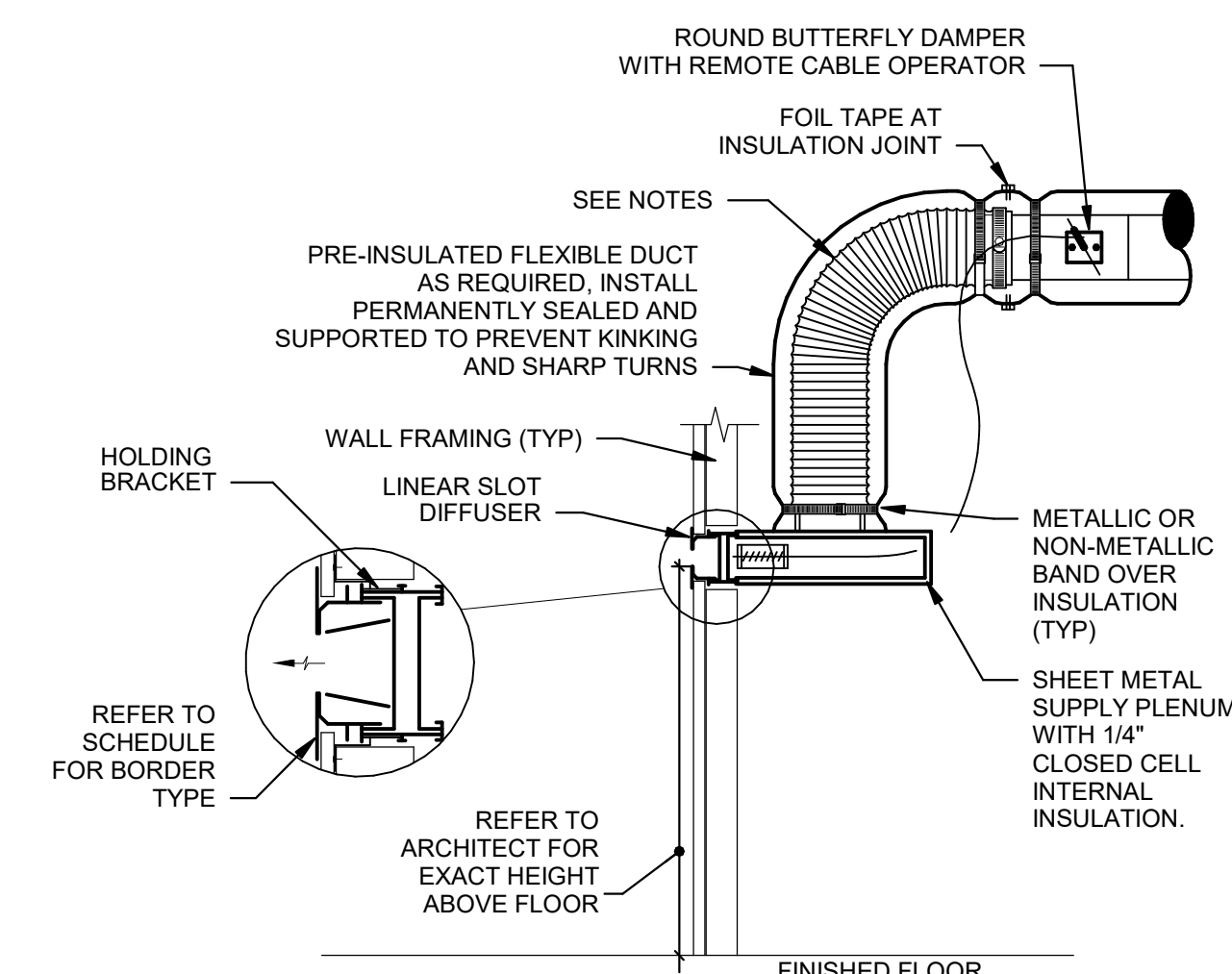


- NOTES:** BEFORE POURING CONCRETE. CAULK GAP WITH ACOUSTICAL SEALANT.
- CUT METAL DECKING TO ALLOW CURB INSTALLATION ON STEEL FRAMING. AFTER CURB IS SET IN PLACE, TRIM REMAINING METAL DECKING AND INSTALL WITHIN CURB. TACK WELD DECKING TO SUPPORT STEEL DO NOT WELD INTERIOR DECKING TO ROOF CURB. PROVIDE ADDITIONAL CROSS FRAMING TO SUPPORT INTERIOR DECKING AND FILL MATERIAL AS REQUIRED.

② VIBRATION ISOLATION ROOF CURB AND DUCT ISOLATION DETAIL
NTS



③ SLOT BLANK OFF PLATE DETAILS



- NOTES:
1. EXTEND HARD METAL DUCT SO THAT MAXIMUM FLEXIBLE DUCT LENGTH DOES NOT EXCEED 5'-0". PROVIDE RIGHT 90° ELBOW WHERE REQUIRED TO KEEP FLEXIBLE DUCT WITHIN 5'-0" LENGTH LIMITATION.
 2. COORDINATE EXACT LENGTH AND LOCATION OF SLOT DIFFUSER WITH ARCHITECT'S REFLECTED CEILING PLAN.
 3. REFER TO DIFFUSER MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR EACH SCHEDULED BORDER TYPE.
 4. REFER TO SPECIFICATIONS FOR FLEXIBLE DUCTWORK INSTALLATION REQUIREMENTS.

④ SIDEWALL LINEAR SLOT DIFFUSER DETAIL
NTS

[illegible]

STATE OF MISSOURI
BRADLEY E. CHAMBON
NUMBER
PE-028603
PROFESSIONAL ENGINEER

BRADLEY E. CHAMBON
LICENSE # 028603

ARCHITECT FINKLE+WILLIAMS
ARCHITECTURE

CIVIL	GBA
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LANDSCAPE LAND 3

FOUNDATIONS BSE STRU

STRUCTURAL BSE STRUCTURAL

PLUMBING HENDERSON

MECHANICAL HENDERSON

ELECTRICAL HENDERSON

CONTRACTOR	GC
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HENDERSON

8345 LENEXA DRIVE, SUITE 300
LENEXA, KS 66214

1850004412

EXPIRES 12/31/2022

SHEET TITLE
PAGE NO. 10

LEGENDS AND

GENERAL NOTES

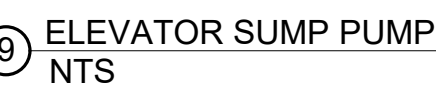
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FOOO

THIS IS A MASTER LEGEND AND NOT ALL SYMBOLS OR ABBREVIATIONS ARE USED.

V2.01

STANDARD MOUNTING HEIGHTS			PIPING SYMBOLS		PIPING LINETYPES	
REFER TO THE ARCHITECTURAL DRAWINGS FOR PLUMBING FIXTURE MOUNTING HEIGHTS. UNO, INSTALL PLUMBING FIXTURES WITH THE MOUNTING HEIGHTS AS LISTED BELOW WITH FINAL APPROVAL BY THE ARCHITECT.						
LAVATORY OR SINK STANDARD HEIGHT ADA ACCESSIBLE CHILD HEIGHT			31" FLOOR TO RIM 34" FLOOR TO RIM 24" FLOOR TO RIM			
URINAL STANDARD HEIGHT ADA ACCESSIBLE CHILD HEIGHT			24" FLOOR TO RIM 17" FLOOR TO RIM 14" FLOOR TO RIM			
WATER CLOSET STANDARD HEIGHT ADA ACCESSIBLE CHILD HEIGHT			15" FLOOR TO RIM 17" TO 19" FLOOR TO TOP OF SEAT 10" FLOOR TO RIM			
WATER COOLER OR DRINKING FOUNTAIN STANDARD HEIGHT ADA ACCESSIBLE CHILD HEIGHT			41" FLOOR TO SPOUT 36" FLOOR TO SPOUT 30" FLOOR TO SPOUT			
SHOWER VALVES STANDARD HEIGHT - MEN STANDARD HEIGHT - WOMEN ADA ACCESSIBLE			48" FLOOR TO CENTERLINE 42" FLOOR TO CENTERLINE 38" MIN TO 48" MAX FLOOR TO CENTERLINE			
SHOWER HEADS MEN WOMEN			6'-0" FLOOR TO CENTERLINE 6'-0" FLOOR TO CENTERLINE			
TUB VALVES STANDARD HEIGHT ADA ACCESSIBLE			32" FLOOR TO CENTERLINE CENTER BETWEEN GRAB BAR AND TUB RIM			
CLINIC SERVICE SINKS			30" FLOOR TO RIM			
SURGEON'S SCRUB-UP SINKS			35" FLOOR TO FRONT RIM			
ICE MAKER OUTLET BOXES			24" FLOOR TO CENTER OF BOX			
WASHING MACHINE OUTLET BOXES			42" FLOOR TO RIM			
JANITOR'S SINK FAUCET FITTING			42" FLOOR TO CENTERLINE			
HOSE BIBBS			36" AFF TO CENTERLINE			
NON-FREEZE WALL HYDRANTS			18" AFG TO CENTERLINE			
USE THE DEFAULT MOUNTING HEIGHTS SHOWN ABOVE UNLESS NOTED OTHERWISE IN THE SPECIFICATIONS OR ELSEWHERE. MOUNTING HEIGHTS LISTED ARE ABOVE FINISHED FLOOR (AFF) OR ABOVE FINISHED GRADE (AFG). ALL DEVICES SHALL BE INSTALLED IN COMPLIANCE WITH CURRENT ADA AND LOCAL REQUIREMENTS.						
ANNOTATION						
① PLUMBING PLAN NOTE CALLOUT						
① PLUMBING EQUIPMENT DESIGNATION, (CONTRACTOR FURNISHED AND INSTALLED), REFER TO PLUMBING FIXTURE OR EQUIPMENT SCHEDULES						
① EQUIPMENT DESIGNATION (OWNER FURNISHED, CONTRACTOR INSTALLED)						
CU MECHANICAL EQUIPMENT DESIGNATION (CONTRACTOR FURNISHED AND INSTALLED UNLESS NOTED OTHERWISE)						
⊕ CONNECTION POINT OF NEW WORK TO EXISTING						
① P1 DETAIL REFERENCE UPPER NUMBER INDICATES DETAIL NUMBER LOWER NUMBER INDICATES SHEET NUMBER						
△ SECTION CUT DESIGNATION						
ABBREVIATIONS						
ADA	AMERICANS WITH DISABILITIES ACT	MIN	MINIMUM			
AFB	ABOVE FINISHED FLOOR	NIC	NORMALLY CLOSED			
AFG	ABOVE FINISHED GRADE	NO	NORMALLY OPEN			
AHU	AIR HANDLING UNIT	NIC	NOT IN CONTRACT			
AP	ACCESS PANEL	ORD	OVERFLOW ROOF DRAIN			
BAS	BUILDING AUTOMATION SYSTEM	PDI	PLUMBING DRAINAGE INSTITUTE			
BFF	BELOW FINISHED FLOOR	PHV	PHASE			
BFG	BELOW FINISHED GRADE	PRV	PRESSURE REDUCING VALVE			
BOP	BOTTOM OF PIPE	PVC	POLYVINYL CHLORIDE			
BOS	BOTTOM OF STRUCTURE	RCP	REINFORCED CONCRETE PIPE			
BTU	BRITISH THERMAL UNIT	RD	ROOF DRAIN			
CPVC	CONDENSATE PUMP CHLORINATED POLYVINYL CHLORIDE	RM	REVOLUTIONS PER MINUTE			
CU	COPPER	RTU	ROOFTOP UNIT			
DN	DUCTILE IRON	SF	SQUARE FEET			
DN	DOWN	SP	SUMP			
DFU	DRAINAGE FIXTURE UNIT	SS	STAINLESS STEEL			
DS	DOWNSPOUT		SANITARY SEWER, SOIL STACK			
(E)	EXISTING	TDH	TOTAL DYNAMIC HEAD			
EMS	ENERGY MANAGEMENT SYSTEM	TFA	TO FLOOR ABOVE			
ETR	EXISTING TO REMAIN	TFB	TO FLOOR BELOW			
EVC	ELECTRIC WATER COOLER	TYL	TYPICAL			
FD	FLOOR DRAIN	U	UNDERWRITERS LABORATORIES, INC. UNLESS NOTED OTHERWISE			
FFB	FROM FLOOR ABOVE	UNO	UNINTERRUPTIBLE POWER SUPPLY			
FLB	FROM FLOOR BELOW	VCD	VITRIFIED CLAY PIPE			
FLR	FLOOR	VFP	VARIABLE FREQUENCY DRIVE			
GPM	GALLONS PER MINUTE	VS	VENT STACK			
HD	HEAD, HUB DRAIN	VTR	VENT THROUGH ROOF			
IE	INVERT ELEVATION	W	WITH			
IN WC	INCHES OF WATER COLUMN	WO	WITHOUT			
JB	JUNCTION BOX	WIO	WATER COLUMN			
J-BOX	JUNCTION BOX	WS	WASTE STACK			
KW	KILOWATT	WSFU	WATER SUPPLY FIXTURE UNIT			
MAU	MAKE-UP AIR UNIT					
MAX	MAXIMUM					
MBH	1000 BTU PER HOUR	WVS	WASTE VENT STACK			
MH	MANHOLE					
			LINETYPE LEGEND			
			THROUGHOUT THE DRAWINGS DIFFERENT LINETYPES ARE USED IN COMBINATION WITH THE SYMBOLS TO INDICATE THE STATUS OF ITEMS AS EXISTING, TO BE DEMOLISHED, TO BE INCLUDED AS PART OF NEW WORK AND/OR ITEMS WHICH ARE ANTICIPATED TO BE PROVIDED IN THE FUTURE. THE STATUS OF ITEMS USING THESE LINETYPES ARE RELATIVE TO THE VIEW IN WHICH THEY APPEAR. PHASING SHOWN IN DRAWINGS IS NOT INTENDED TO FULLY DESCRIBE ALL NECESSARY CONSTRUCTION PHASING, WHICH IS DETERMINED BY THE CONTRACTOR AS PART OF THEIR RESPONSIBILITIES. ANY SUCH PHASING DESCRIBED IN THE CONSTRUCTION DOCUMENTS ARE GENERAL AND ONLY INTENDED TO INDICATE A BROAD ORDER FOR THE SAKE OF DESCRIBING THE PROJECT. THE FOLLOWING LINETYPES MAY BE USED ON ANY DEVICE, EQUIPMENT, NOTE, LINE, SHAPE, ETC.			
			EXISTING _____		NEW _____	
			DEMOLISH - - - - -		FUTURE - - - - -	



ELECTRIC STORAGE WATER HEATER SCHEDULE

MARK	MANUFACTURER	MODEL#	AREA SERVED	TANK SIZE (GALLONS)	ELECTRICAL DATA	RECOVERY (GPH)	NOTES
WH-1	A.O. SMITH	#DEN-30	FLOOR 2 RESTROOMS	30	VOLTS 208 PHASE 1 KW 5	22	A, D, F

NOTES:

- A. 93°F TEMPERATURE RISE WITH 140°F OPERATING TEMPERATURE
B. 73°F TEMPERATURE RISE WITH 120°F OPERATING TEMPERATURE
C. SINGLE ELEMENT
D. DUAL ELEMENT WIRED FOR NON-SIMULTANEOUS OPERATION
E. DUAL ELEMENT WIRED FOR SIMULTANEOUS OPERATION WITH UNBALANCED THREE PHASE CIRCUIT
F. FURNISH WITH IMMERSION THERMOSTAT
G. LOW BOY DESIGN

PLUMBING EXPANSION TANK SCHEDULE

MARK	MANUFACTURER	MODEL	TANK SIZE (GALLONS)	MIN. ACCEPTANCE VOLUME (GALLONS)	SERVICE	NOTES
ET-1	AMTROL	ST-5	2	0.9	WH-1	A

NOTES:

- A. CHARGE TANK WITH AIR TO IDENTICAL PRESSURE AS STATIC DOMESTIC WATER PRESSURE.

RECIRCULATION PUMP SCHEDULE

MARK	MANUFACTURER	MODEL	LOCATION	GPM	HEAD (FT.)	CONNECTION SIZE	ELECTRICAL DATA	NOTES
RP-1	BELL & GOSSETT	NBF-6U	FLOOR 2 JANITOR	1	7	3/4"	120 1 1/18	A,B,C,D

NOTES:

- A. ALL LEAD FREE CAST BRONZE BOOSTER.
B. PROVIDE WITH STRAINER UPSTREAM OF PUMP.
C. PROVIDE ADJUSTABLE SURFACE MOUNTED AQUASTAT - HONEYWELL L6006C.
D. SET AQUASTAT TO SHUT OFF RECIRCULATION PUMP AT WATER HEATER SET POINT AND ON AT 10°F BELOW SET POINT.

ELEVATOR SUMP PUMP SCHEDULE

MARK	MANUFACTURER	MODEL	LOCATION	GPM	HEAD (FT.)	DISCHARGE SIZE (IN.)	ELECTRICAL	NOTES
ESP-1	WEIL	1413-500	ELEVATOR PIT	50	20.5	3"	VOLTS 208 PH 1 HP 0.5	A-F

NOTES:

- A. PROVIDE WEIL #320.158.523A 208V SINGLE PHASE FLOAT SWITCH WITH POWER CORD AND PIGGYBACK PLUG.
B. PROVIDE WITH WEIL #8341K1016 HIGH LEVEL ALARM WITH AUXILIARY CONTACT. REFER TO SPECIFICATIONS.
C. REFER TO DETAIL FOR MORE INSTALLATION INFORMATION.
D. INSTALL IN 24" SQUARE X 24" DEEP SUMP PIT LOCATED IN ELEVATOR PIT. SEE ARCHITECTURAL DRAWINGS.
E. PROVIDE FIBERBASIN #FB24SQ 28" X 1.5" THICK SQUARE LIGHT DUTY FIBERGLASS GRID GRATE WITH FRAME.
F. PROVIDE 2" DISCHARGE PIPING, SHUT OFF VALVE AND ZOEGLER #30-0030 FLAPPER NON-CLOS CHECK VALVE.

FIXTURE BRANCH CONNECTION SCHEDULE

FIXTURE	COLD WATER	HOT WATER	WASTE	VENT
WATER CLOSET (FV)	1 1/4"		4"	2"
URINAL	1"		2"	2"
MULTI-STATION LAVATORY	1/2"	1/2"	2"	1 1/2"
DRINKING FOUNTAIN	1/2"		2"	1 1/2"
JANITORS SINK	1/2"	1/2"	3"	2"
SINK	1/2"	1/2"	2"	2"

NOTE: PIPE SIZES SHOWN ARE MINIMUM.

TOTAL CONNECTED NATURAL GAS LOAD

EQUIPMENT DESIGNATION	QUANTITY	DESCRIPTION	CFH (EACH)	TOTAL CFH
MECHANICAL EQUIPMENT				
RTU 1	1	ROOFTOP UNIT	500	500
RTU 2	1	ROOFTOP UNIT	500	500

Grand total

NATURAL GAS SYSTEM OPERATING PRESSURE OF 2.0 PSI.

NATURAL GAS SYSTEM SIZED WITH TOTAL DEVELOPED LENGTH FROM GAS METER TO MOST REMOTE PIECE OF EQUIPMENT OF 700' WITH A PRESSURE DROP OF 1.5 PSI.

HIGH PRESSURE GAS PIPE SIZING CHART

PIPE SIZE	LOAD (CFH)
1/2"	199
3/4"	416
1"	784
1-1/4"	1,609
1-1/2"	2,411
2"	4,643
2-1/2"	7,400
3"	13,082
4"	26,084
6"	78,168

SPECIFIC GRAVITY OF GAS =	0.60
UPSTREAM PRESSURE (PSI) =	2
DOWNSTREAM PRESSURE (PSI) =	0.5
PRESSURE LOSS (PSI) =	1.5
TOTAL DEVELOPED LENGTH (FEET) =	700

BASED ON NFPA 54 EQUATION 4-2

WATER PIPE SIZING CHART (IPC)

FIXTURE UNITS VS. PRESSURE LOSS IN PSI / 100 FEET FOR TYPE "L" COPPER TUBE									
COLD WATER @ 3.00" PSI / 100'					HOT WATER @ 3.0" PSI / 100'				
PIPE SIZE	INTERNAL DIAMETER	FLUSH TANK SFU	FLUSH VALVE SFU	VELOCITY FEET / SEC	FLOW GPM	FLUSH TANK SFU	VELOCITY FEET / SEC	FLOW GPM	
1/2"	0.545	0.6	N/A	2.5	1.8	*	*	*	
3/4"	0.785	1.8	N/A	3.1	4.7	*	*	*	
1"	1.025	5.1	N/A	3.7	9.5	*	*	*	
1-1/4"	1.265	13.3	5.6	4.3	16.6	*	*	*	
1-1/2"	1.505	40.0	9.7	4.7	26.3	*	*	*	
2"	1.985	148.7	61.1	5.7	54.4	120.9	5	48.2	
2-1/2"	2.465	356.4	228.5	6.5	96.2	246.8	5	74.3	
3"	2.945	661.5	578.8	7.2	153.7	406	5	106.1	
4"	3.905	1764.4	1764.4	8.0	298.6	859.4	5	186.6	
6"	5.845	5269.9	5269.9	8.0	669.0	2659.7	5	418.1	
8"	7.725	10143.1	10143.1	8.0	1168.6	5653.3	5	730.3	
SIZED WITH HAZEN WILLIAMS CONSTANT "C" =					135	*UTILIZE COLD WATER SIZING CHART			

GAS PRESSURE REGULATOR SCHEDULE FOR 2 PSI SYSTEMS

MARK	MANUFACTURER	MODEL	VALVE TYPE	VALVE BODY SIZE (INCHES)	MAX. FLOW RATE CFH	INLET PRESSURE PSI	OUTLET PRESSURE INCHES WATER COLUMN	SERVICE	NOTES
GPR-1	PIETRO-FIORENTINI	31051	C	1/2"	552	1	14	RTU-1	A, C, D, E, F, G, H
GPR-2	PIETRO-FIORENTINI	31051	C	1/2"	552	1	14	RTU-2	

NOTES:

- C = SELF CONTAINED "DIRECT ACTING" DIAPHRAGM TYPE WITH INTERNAL VENT LIMITER.
B. DROOP = 1" WATER COLUMN MAXIMUM.
D. DROOP = 2" WATER COLUMN MAXIMUM.
C. 65# ALUMINUM BODY, SCREWED CONNECTIONS AND OVERPRESSURE PROTECTION TO 25#.
E. MAXIMUM FLOW RATE SCHEDULED, MATCH BODY SIZE AND MAXIMUM FLOW RATE TO EQUIPMENT FLOW RATE. REFER TO EQUIPMENT SHOP DRAWINGS FOR EXACT LOADS.
F. LISTED TO MEET ANSI Z21.80 / CSA6.22 WITH CSA LISTING STAMP ON REGULATORY BODY.
G. GAS PRESSURE REGULATOR INLET PRESSURE = OPERATING PRESSURE - DESIGN FRICTION LOSS.
H. 2 PSI MAXIMUM INLET PRESSURE AND 1 PSI MINIMUM INLET PRESSURE.

PLUMBING FIXTURE SCHEDULE

FIXTURES IN THIS SCHEDULE OR THEIR APPROVED EQUIVALENT ARE PROVIDED BY THE PLUMBING CONTRACTOR. SUBMIT SHOP DRAWINGS ON EACH OF THESE ITEMS. REFER TO SPECIFICATIONS FOR FURTHER INFORMATION AND INSTALLATION REQUIREMENTS. VERIFY ROUGH-IN REQUIREMENTS WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS AND INSTALL PER MANUFACTURER'S RECOMMENDATIONS. REFER TO THE ARCHITECTURAL DRAWINGS FOR THE PLUMBING FIXTURE MOUNTING HEIGHTS.

PLUMBING FIXTURE SCHEDULE

PLUMBING PLAN MARK	Description
DSC	DOWNSPOUT COVER: JAY R. SMITH # 1775, ROUND FABRICATED STAINLESS STEEL FRAME WITH FABRICATED SECURED PERFORATED STAINLESS STEEL HINGED COVER. PROVIDE OUTLET SIZE AS SHOWN ON PLANS.
DSN	DOWNSPOUT NOZZLE: JAY R. SMITH # 1770T, CAST BRONZE BODY AND FLANGE. PROVIDE OUTLET SIZE AS SHOWN ON PLANS.
EL1	EXPANSION LOOP - NATURAL GAS (FOR PIPE SIZES 1/2" THRU 4"). METRAPLEX # MLCAT4000 SERIES. REFER TO PLANS FOR PIPE SIZE. LOOPS 2" AND LARGER INSTALLED IN ANY ORIENTATION OTHER THAN HANGING DOWN MUST HAVE THE 180° RETURN SUPPORTED. INSTALL PER MANUFACTURER RECOMMENDATIONS.
FCO	FLOOR CLEANOUT: JAY R. SMITH, CAST IRON BODY, FLASHING FLANGE WITH CLAMPING COLLAR, ABS PLUG, AND ADJUSTABLE, ROUND, SECURED, NICKEL BRONZE, TOP. # 4031L (F-C), SCORATED TOP FOR EXPOSED, FLUSH WITH FINISHED FLOOR. APPLICATIONS: # 4031L (F-C-Y), STAINLESS STEEL MARKER FOR INSTALLATION IN CARPETED FLOOR AREAS; # 4151 (F-C), 1/8" RECESS FOR INSTALLATION IN TILED FLOOR AREAS; # 4191 (F-C), 1/2" RECESS FOR INSTALLATION IN TERRAZZO AND SIMILAR POURED FLOOR AREA(S). REFER TO SPECIFICATIONS FOR INSTALLATION.
FD-1	PVC FLOOR DRAIN: SIOUX CHIEF # 342 SERIES WITH ADJUSTABLE SIX AND ONE-HALF INCH ROUND MEDIUM DUTY CAST NICKEL STRAINER, WITH FLANGED PVC ADAPTER AND TRAP PRIMER PORT. CLEAN AND POLISH STRAINER AFTER INSTALLATION. PROVIDE A DEEP SEAL TRAP AND FLANGED PVC ADAPTER WITH BLANK TRAP PRIMER PORT IF NO TRAP PRIMER IS PROVIDED ON THE DRAWINGS.
FS-1	FLOOR SINK: JAY R. SMITH # 3041C (F2), 6" DEEP CAST IRON BODY WITH ACID RESISTING EENAMELED INTERIOR, ANCHOR FLANGE WITH SEEPAGE HOLES, CLAMP COLLAR, WHITE ABS SEDIMENT BUCKET, AND 8-1/2" ROUND NICKEL BRONZE RIM AND HALF GRATE. USE CAULK JOINT OF OUTLET SIZE AS SHOWN ON PLANS.
HB	HOSE BIBB: PRIER PRODUCTS # C-258CP.75, POLISHED CHROME PLATED BRASS 3/4" MALE INLET, 3/4" THREADED HOSE CONNECTION, LOOSE KEY HANDLE, AND ASSE 1011 INTEGRAL VACUUM BREAKER.
HD	HUB DRAIN FLOOR SINK: JAY R. SMITH # 3821T (DBS), 7" DEEP X 4" DIAMETER CAST IRON BODY WITH ACID RESISTING EENAMELED INTERIOR AND EXTERIOR FUNNEL WITH 2" CAST IRON P-TRAP WITH THREADED CONNECTION AND ALUMINUM DOME BOTTOM STRAINER.
JS-1	JANITORS SINK: FIAT # MSB-2424, 24" x 24" x 10" HIGH MOLDED STONE BASIN WITH FACTORY INSTALLED STAINLESS STEEL DOME STRAINER AND SEDIMENT BASKET.
NWH	NON-FREEZE WALL HYDRANT: PRIER PRODUCTS # C-634NBX1, SATIN NICKEL PLATED BRASS 1" MALE INLET BY 3/4" FEMALE INLET, 3/4" THREADED HOSE CONNECTION, LOOSE KEY HANDLE, HYDRANT LENGTH AS REQUIRED FOR INSTALLED WALL THICKNESS, ADJUSTABLE WALL CLAMP, BRASS BOX WITH SATIN NICKEL PLATED FINISH AND INTEGRAL ASSE 1062 DOUBLE CHECK VACUUM BREAKER.
ORD	OVERFLOW ROOF DRAIN: JAY R. SMITH # 1080Y (EOX-C-R-CID), 15" DIAMETER CAST IRON BODY, FLASHING CLAMP, GRAVEL STOP, UNDERDECK CLAMP, SUMP RECEIVER, HUBLESS OUTLET, FIXED EXTENSION - HEIGHT AS REQUIRED BY INSTALLED INSULATION THICKNESS, CAST IRON DOME BOLTED OR LOCKED DOWN AND 2" HIGH WATER DAM. PROVIDE OUTLET SIZE AS SHOWN ON PLANS.
PFV	FLOOD PROTECTION VALVE: WATTS #LF113-8RFP, (X) LEAD FREE EPOXY COATED 300# DUCTILE IRON GLOBE PATTERN BODY WITH FLANGED CONNECTIONS, STAINLESS STEEL SEAT, STEM AND SPRING, "FLO-CLEAN" STRAINER, ISOLATION COCK, PILOT OPERATED DIAPHRAGM, #JB113 WALL-MOUNTED JUNCTION BOX, FIG. 51 LIMIT SWITCH FOR REMOTE ALARM, #FS89 FLOW SENSOR, AND OUTLET SIZE AS SHOWN ON PLANS. ELECTRICAL REQUIREMENTS: 120V SINGLE PHASE.
PRV-1	PRESSURE REDUCING VALVE: 2" WATTS # LF223, BRONZE BODY, STAINLESS STEEL SEAT, STAINLESS STEEL BOLTS, INLET AND OUTLET SIZE AS SHOWN ON PLANS, 25 - 75 PSI REDUCED PRESSURE RANGE, SET OUTLET PRESSURE TO 77 PSI WITH FLOW RATE OF 120 GPM AT A FALL OFF PRESSURE OF 44 PSI DIFFERENTIAL.
PRV-2	PRESSURE REDUCING VALVE: 1-1/4" WATTS # LF223, BRONZE BODY, STAINLESS STEEL SEAT, STAINLESS STEEL BOLTS, INLET AND OUTLET SIZE AS SHOWN ON PLANS, 25 - 75 PSI REDUCED PRESSURE RANGE, SET OUTLET PRESSURE TO 72 PSI WITH FLOW RATE OF 60 GPM AT A FALL OFF PRESSURE OF 44 PSI DIFFERENTIAL.
RD	ROOF DRAIN: JAY R. SMITH # 1010Y (EOX-C-R-CID), 15" DIAMETER CAST IRON BODY, FLASHING CLAMP, GRAVEL STOP, UNDERDECK CLAMP, SUMP RECEIVER, HUBLESS OUTLET, FIXED EXTENSION - HEIGHT AS REQUIRED BY INSTALLED INSULATION THICKNESS, AND CAST IRON DOME BOLTED OR LOCKED DOWN. PROVIDE OUTLET SIZE AS SHOWN ON PLANS.
RH	ROOF NON-FREEZE POST HYDRANT: MAPA PRODUCTS # MPH-246P FREEZE PROOF POST HYDRANT MEETING ASSE #1057 WITH BLACK POWDER COATED CAST ALUMINUM WEATHER-GUARD DOME HANDLE, STAINLESS STEEL SHROUD WITH WELDED STAINLESS STEEL FLANGE, UNDER DECK CLAMP, BRONZE GLOBE ANGLE VALVE, 3/4" HOSE CONNECTION, QUICK DISCONNECT WITH BUILT-IN VACUUM BREAKER, STAINLESS STEEL RESERVOIR.
RPZ	REDUCED PRESSURE ZONE BACKFLOW PREVENTER: WATTS # 957-NRS, MEETING ASSE 1013, 304 STAINLESS STEEL BODY AND SLEEVE, QUARTER TURN TEST COCKS, RESILIENT SEATED NON-RISING STEM GATE VALVES AND WATTS #777-31-FA EPOXY COATED CAST IRON STRAINER AND # 957AG AIR GAP FITTING.
RT	REMOTE TOTALIZER: BADGER METER # RTR PULSE GENERATOR FOR MOUNTING IN METER REGISTER WITH REMOTE TOTALIZER. PULSE GENERATOR WITH SEALED THERMOPLASTIC BODY AND LITHIUM BATTERY POWER. REMOTE TOTALIZER RRED WITH PLASTIC BODY, SOLENOID AND RATCHET ARM AND REGISTERED IN GALLONS. PROVIDE CONTROL WIRING FROM PULSE GENERATOR TO TOTALIZER PER MANUFACTURERS INSTALLATION INSTRUCTIONS.

PLUMBING FIXTURE SCHEDULE

PLUMBING PLAN MARK	Description
SWM-1	WATER METER: BADGER METER # M170 2", LEAD FREE BRONZE MAINCASE AND MEASURING CHAMBER, BOTTOM PLATE, STAINLESS STEEL TRIM AND BOLTS, THERMOPLASTIC STRAINER, OSCILLATING PISTON MEASURING ELEMENT, STRAIGHT READING HERMETICALLY SEALED REGISTER, REGISTRATION IN US GALLONS, MAGNETIC DRIVE, AND COMPLIANCE WITH ANSI / AWWA C700. PROVIDE WITH REMOTE READING SYSTEM IF / AS REQUIRED.
SWM-2	WATER METER: BADGER METER # 55 1", LEAD FREE BRONZE MAINCASE AND MEASURING CHAMBER, BOTTOM PLATE, STAINLESS STEEL TRIM AND BOLTS, THERMOPLASTIC STRAINER, OSCILLATING PISTON MEASURING ELEMENT, STRAIGHT READING HERMETICALLY SEALED REGISTER, REGISTRATION IN US GALLONS, MAGNETIC DRIVE, AND COMPLIANCE WITH ANSI / AWWA C700. PROVIDE WITH REMOTE READING SYSTEM IF / AS REQUIRED.
TMV	THERMOSTATIC MIXING VALVE: POWERS # LFG480, SOLID LEAD FREE BRASS OR BRONZE BODY, THERMOSTATIC WAX ELEMENT, CORROSION RESISTANT INTERNAL PARTS, AND INTEGRAL CHECKS, ASSE 1070 COMPLIANT, CAPABLE OF 1.6 GPM WITH A 20 PSI DIFFERENTIAL AND A MINIMUM FLOW RATE OF 0.25 GPM. SET TEMPERATURE TO 110°F FOR DUAL TEMPERATURE LAVATORIES AND HAND SINKS, 100°F FOR SINGLE TEMPERATURE LAVATORIES AND HAND SINKS, 120°F FOR SINKS. MOUNT BELOW THE PLUMBING FIXTURE WHERE INDICATED ON PLANS).
TS	TIME SWITCH: INTERMATIC #ET170SCSPST, 7 DAY, ONE CIRCUIT SINGLE POLE SINGLE THROW, ELECTRONIC TIME SWITCH OR EQUAL BY TORK. TIME SWITCH SHALL BE MOTOR RATED (1 H.P. @ 120 VOLT, SINGLE PHASE), MINIMUM OF 20 SET POINTS (14 ON/OFF CYCLES) AND BATTERY BACK UP. COORDINATE WITH DIVISION 16 FOR INSTALLATION AND INTERLOCK OF TIME SWITCH IN SERIES WITH THE AQUASTAT AND RECIRCULATION PUMP.
UCL	UNDERCOUNTER LAVATORY & FAUCET: BRADLEY WB1-WB-ER1 "WASHBAR WITH EVERO UNDERMOUNT" 24" X 14-7/16" SQUARE CAST EVERO UNDERMOUNT BASIN, PATAGONIA IN COLOR. WASHBAR: ALL-IN-ONE FAUCET WITH 0.5 GPM AERATORS, HAND DRYER, AND LIQUID SOAP DISPENSER, STAINLESS STEEL, SWING DOWN ACCESS PANEL. SET IN BED OF SILICONE SEALANT WITH PROVIDED CLIPS. TRIM: MCGUIRE # LF2165CCLK LEAD FREE BRASS LOOSE KEY COMPRESSION ANGLE STOP VALVES WITH RISERS AND ESCUTCHEONS, MCGUIRE # BR9720F 1-1/4" 17 GAUGE CAST CHROME PLATED BRASS ADJUSTABLE P-TRAP AND WASTE ARM WITH CLEANOUT PLUG AND ESCUTCHEON.
UR-1	URINAL: AMERICAN STANDARD # 6561 017 "TRIMBROOK" WHITE VITREOUS CHINA FIXTURE WITH FLUSHING RIM, 3/4" TOP SPUD, AND SIPHON FLUSH ACTION. VALVE - SLOAN "SLOAN" # 8186-0.125 GALLON PER FLUSH, EXPOSED, CHROME-PLATED, TOP MOUNTED PLASTIC AND CHROME PLATED METAL HOUSING WITH OVERRIDE BUTTON, BATTERY POWERED SENSOR OPERATED, DIAPHRAGM TYPE FLUSH VALVE WITH CHLORAMINE RESISTANT DIAPHRAGM WITH PROTECTED ORIFICE, ESCUTCHEON, INTEGRAL SCREWDRIVER STOP WITH VANDAL RESISTANT CAP, VACUUM BREAKER AND 3/4" FLUSH TUBE, AND SWEAT ADAPTER KIT. TRIM: SUITABLE CARRIER WITH STANCHIONS TO FLOOR.
UR-2	URINAL (ADA ACCESSIBLE): AMERICAN STANDARD # 6561 017 "TRIMBROOK" WHITE VITREOUS CHINA FIXTURE WITH FLUSHING RIM, 3/4" TOP SPUD, AND SIPHON FLUSH ACTION. VALVE - SLOAN "SLOAN" # 8186-0.125 GALLON PER FLUSH, EXPOSED, CHROME-PLATED, TOP MOUNTED PLASTIC AND CHROME PLATED METAL HOUSING WITH OVERRIDE BUTTON, BATTERY POWERED SENSOR OPERATED, DIAPHRAGM TYPE FLUSH VALVE WITH CHLORAMINE RESISTANT DIAPHRAGM WITH PROTECTED ORIFICE, ESCUTCHEON, INTEGRAL SCREWDRIVER STOP WITH VANDAL RESISTANT CAP, VACUUM BREAKER AND 3/4" FLUSH TUBE, AND SWEAT ADAPTER KIT. TRIM: SUITABLE CARRIER WITH STANCHIONS TO FLOOR.
WC-3	WALL-MOUNTED WATER CLOSET: AMERICAN STANDARD # 2257.103 "AFWALL" WHITE VITREOUS CHINA FIXTURE WITH ELONGATED BOWL, 1.6 GALLON PER FLUSH, AND DIRECT-FED SIPHON JET ACTION. VALVE - SLOAN "SLOAN" # 111 SFSM-1.28 1.28 GALLON PER FLUSH, EXPOSED, CHROME-PLATED, SIDE MOUNTED PLASTIC AND CHROME PLATED METAL HOUSING WITH OVERRIDE BUTTON, BATTERY POWERED SENSOR OPERATED, DIAPHRAGM TYPE FLUSH VALVE WITH CHLORAMINE RESISTANT DIAPHRAGM WITH PROTECTED ORIFICE, ESCUTCHEON, INTEGRAL SCREWDRIVER STOP WITH VANDAL RESISTANT CAP, VACUUM BREAKER AND 1-1/2" FLUSH TUBE AND SWEAT ADAPTER KIT. TRIM: CHURCH # 9505SSCT WHITE OPEN-FRONT CONTOURED, SOLID PLASTIC, HEAVY DUTY, SEAT LESS COVER WITH SELF-SUSTAINING CHECK HINGES AND STAINLESS STEEL BOLTS. PROVIDE SUITABLE FIXTURE CARRIER.
WC-4	WALL-MOUNTED WATER CLOSET (ADA ACCESSIBLE): AMERICAN STANDARD # 3351.101 "AFWALL MILLENNIUM FLOWWISE WHITE VITREOUS CHINA FIXTURE WITH ELONGATED UNIVERSAL BOWL AND DIRECT-FED SIPHON JET ACTION. VALVE - SLOAN "SLOAN" # 111 SFSM-1.28 1.28 GALLON PER FLUSH, EXPOSED, CHROME-PLATED, SIDE MOUNTED PLASTIC AND CHROME PLATED METAL HOUSING WITH OVERRIDE BUTTON, BATTERY POWERED SENSOR OPERATED, DIAPHRAGM TYPE FLUSH VALVE WITH CHLORAMINE RESISTANT DIAPHRAGM WITH PROTECTED ORIFICE, ESCUTCHEON, INTEGRAL SCREWDRIVER STOP WITH VANDAL RESISTANT CAP, VACUUM BREAKER AND 1-1/2" FLUSH TUBE AND SWEAT ADAPTER KIT. TRIM: CHURCH # 9505SSCT WHITE OPEN-FRONT CONTOURED, SOLID PLASTIC, HEAVY DUTY, SEAT LESS COVER WITH SELF-SUSTAINING CHECK HINGES AND STAINLESS STEEL BOLTS. PROVIDE SUITABLE FIXTURE CARRIER.
WCO	WALL CLEANOUT: SIOUX CHIEF #873 SERIES, BRASS COUNTERSUNK PLUG, 20 GAUGE STAINLESS STEEL COVER AND SCREW. CLEANOUT TEE TO BE PROVIDED SEPARATELY. REFER TO SPECIFICATIONS FOR INSTALLATION.
WHA	WATER HAMMER ARRESTER: PRECISION PLUMBING PRODUCTS, HARD DRAWN COPPER BODY WITH WRO

FIRST PLAT, LOT 9
REE'S SUMMIT, MO

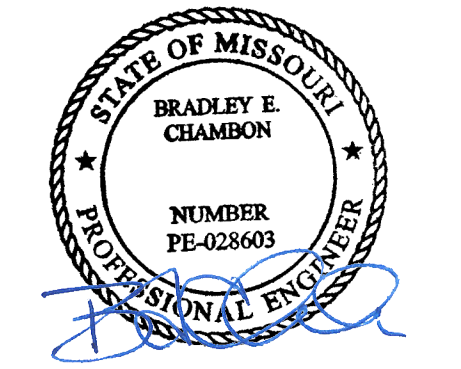
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REGISTRATION



5/09/2022

BRADLEY E. CHAMBON
LICENSE # 028603

PROJECT TEAM

ARCHITECT	FINKLE+WILLIAMS ARCHITECTURE
CIVIL	GBA
LANDSCAPE	LAND 3
FOUNDATIONS	BSE STRUCTURAL ENGINEERS
STRUCTURAL	BSE STRUCTURAL ENGINEERS
PLUMBING	HENDERSON ENGINEERS
MECHANICAL	HENDERSON ENGINEERS
ELECTRICAL	HENDERSON ENGINEERS
FIRE PROTECTION	HENDERSON ENGINEERS
CONTRACTOR	GC

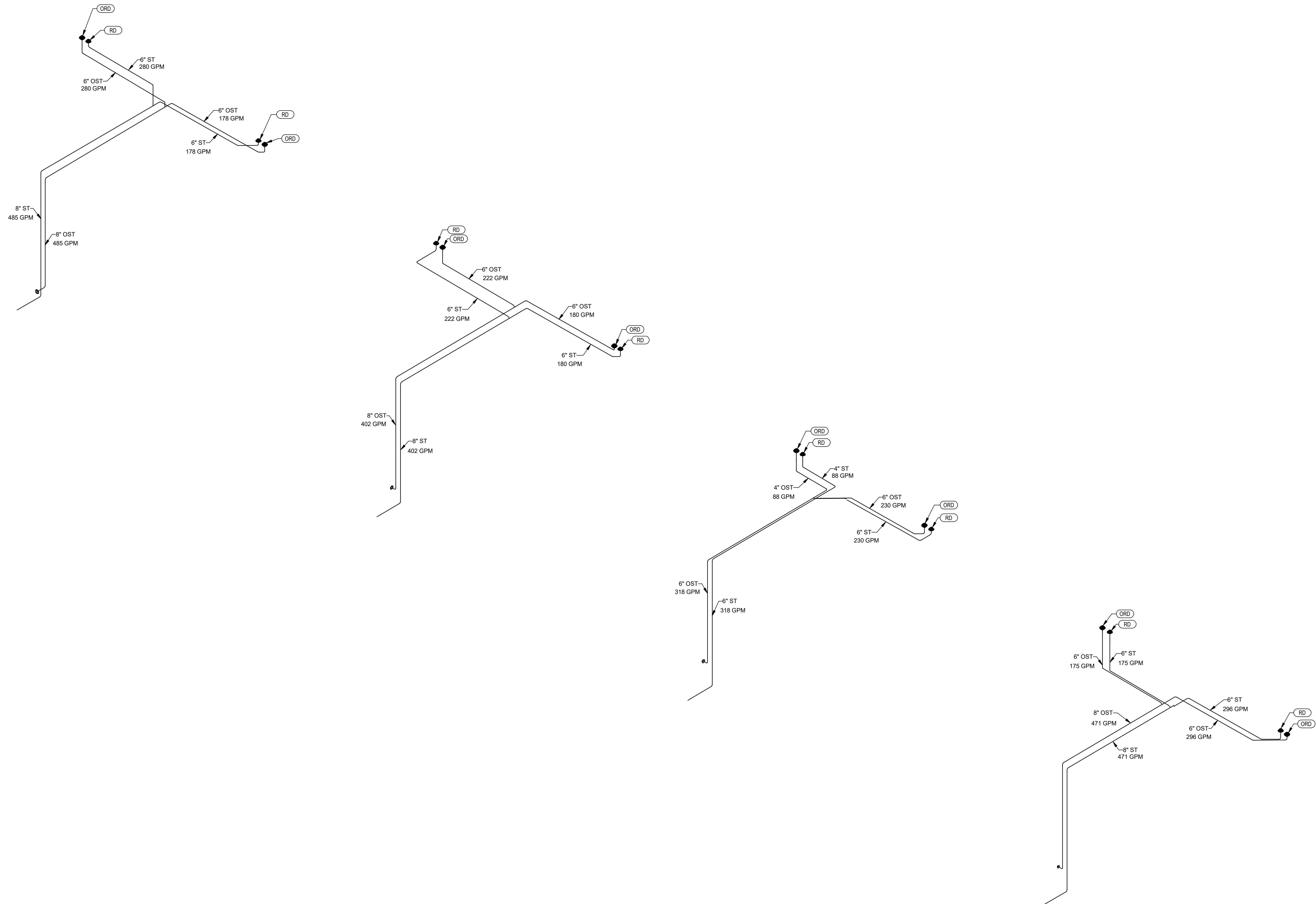


SHEET TITLE

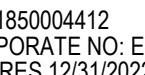
PLUMBING STORM RISER DIAGRAM

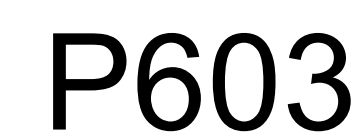
SHEET NUMBER

P601



① PLUMBING STORM RISER DIAGRAM





A. PLUMBING FIXTURES

B. PLUMBING FIXTURE TRIM

Fixture trim shall have the manufacturer's name stamped clearly and visibly on each item

Provide diaphragm type flush valves as specified on drawings: Sloan or equal by Delaney or Zurn

C. WATER HEATER

Recirculation Pump: By B&G as scheduled on the drawings, or equal by Armstrong, Grundfos or Taco, of all bronze construction with Aquastat and/or timer.

D. ELEVATOR SUMP PUMP AND HIGH LEVEL ALARM

2. COMMISSIONING

IECC Commissioning Requirements: Provide commissioning of all service water heating systems included in the scope of work.

Commissioning plan shall include the following

- Submit a copy of the preliminary commissioning report to the AHJ. Preliminary commissioning report shall include the following:

- Final commissioning report shall include the following:

1. Results of final functional performance tests. Organize equipment and components specified by other Divisions in separate sections for independent review.
2. List of functional performance testing procedures used during commissioning, including measurable criteria for test acceptance.
3. Itemization of resolved deficiencies found during preliminary commissioning.
4. List of deferred tests that cannot be performed at the time of final commissioning report preparation because of climatic conditions.

Conduct functional performance tests on equipment, controls, and economizers. Functional performance tests shall demonstrate the following:

1. The operation, function, and maintenance serviceability for each commissioned equipment, component, and system is confirmed according to the approved plans and specifications.
2. The sequence of operations, including modes, backup modes (if applicable), alarms, and mode of operation upon a loss of power and restoration of power for each control device, equipment, component, and system.
3. Control devices, components, equipment, and systems are calibrated, adjusted, and operate in accordance with the approved plans and specifications.
4. Air economizers operated in accordance with manufacturer's specifications and specified sequence of operation.

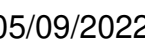
END OF SECTION 22



FIRST PLAT, LOT 9
LEE'S SUMMIT, MO

[illegible]

REGISTRATION



BRADLEY E. CHAMBERLAIN
LICENSE # 028603

PROJECT TEAM

ARCHITECT	FINKLE+WILLIAMS ARCHITECTURE
CIVIL	GBA
LANDSCAPE	LAND 3
FOUNDATIONS	BSE STRUCTURAL ENGINEERS
STRUCTURAL	BSE STRUCTURAL ENGINEERS
PLUMBING	HENDERSON ENGINEERS
MECHANICAL	HENDERSON ENGINEERS
ELECTRICAL	HENDERSON ENGINEERS
FIRE PROTECTION	HENDERSON ENGINEERS
CONTRACTOR	GC



SHEET TITLE

PLUMBING SPECIFICATIONS

SHEET NUMBER

P702

SPECIAL SYSTEMS SUPPLEMENTAL SPECIFICATIONS:

1. PROVIDE NECESSARY BOXES, CONDUIT AND MAKE FINAL CONNECTIONS TO TEMPERATURE CONTROL DEVICES PER MANUFACTURER'S RECOMMENDATIONS. THIS INCLUDES BUT IS NOT LIMITED TO: MAIN CONTROL PANELS, THERMOSTATS, HUMIDISTATS, AC SOLENOIDS, HEAT RECLAIM WIRING, AHU CONTROL WIRING, DUCT FURNACE CONTROL WIRING, TIMERS, AND SIMILAR CONTROLS. PROVIDE CONDUIT FOR ALL WIRING WITHIN WALLS. PROVIDE CONTROL AND INTERLOCK WIRING WHEN NOT PROVIDED BY OTHER TRADES. COORDINATE REQUIREMENTS WITH EQUIPMENT SUPPLIERS AND OTHER TRADES PRIOR TO ROUGH-IN.
2. PROVIDE LINE VOLTAGE WIRING AND MAKE FINAL CONNECTIONS TO ALL DUCT-MOUNTED SMOKE DETECTORS, FIRESMOKE AND SMOKE DAMPERS WHERE APPLICABLE. COORDINATE REQUIREMENTS WITH OTHER TRADES PRIOR TO INSTALLATION.
3. DEVICES MOUNTED ON ACOUSTICAL TILE CEILINGS SHALL BE CENTERED ON THE TILE, UNO.
4. PROVIDE BOX AND 3/4" CONDUIT FROM EACH THERMOSTAT LOCATION TO MECHANICAL EQUIPMENT. (FLUSH MOUNT BOX WHEREVER PRACTICABLE). COORDINATE LOCATION OF ALL THERMOSTAT BOXES WITH MECHANICAL/CONTROLS CONTRACTOR AND OWNER PRIOR TO ROUGH-IN.
5. PROVIDE BOXES AND CONDUITS FOR THE FIRE PROTECTION SYSTEM LOW VOLTAGE WIRING AS REQUIRED. THIS INCLUDES EXPOSED WIRING LESS THAN 96" AFF. AT A MINIMUM, PROVIDE 3/4" CONDUIT, UNLESS NOTED OTHERWISE. COORDINATE REQUIREMENTS AND LOCATIONS WITH SYSTEM INSTALLER AND FIRE ALARM SPECIFICATIONS.
6. AT A MINIMUM, PROVIDE EXTRA DEEP, DOUBLE GANG COMMUNICATION OUTLET BOXES. (FLUSH MOUNTED WHEREVER PRACTICABLE). WITH SINGLE-GANG PLASTER RING AND 1" CONDUIT STUBBED-UP CONCEALED TO ACCESSIBLE CEILING SPACE, UNLESS NOTED OTHERWISE. PROVIDE SURFACE MOUNTED DATA BOXES WITH CABINETRY, AND SELECT OTHER LOCATIONS AS INDICATED ON THE DRAWINGS. COORDINATE TELEPHONE/DATA BOX AND CONDUIT LOCATIONS AND SIZES WITH OWNER AND OTHER TRADES PRIOR TO ROUGH-IN.
7. PROVIDE NYLON BUSHINGS FOR ALL COMMUNICATIONS AND LOW VOLTAGE WIRING CONDUITS AND SLEEVES, UNLESS NOTED OTHERWISE.
8. ALL COMMUNICATIONS AND LOW VOLTAGE WIRING CONDUIT SHALL BE INSTALLED WITH AN ACCESSIBLE PULLBOX BETWEEN EVERY 180 DEGREE CHANGE IN DIRECTION AND AT 100' INTERVALS OF CONTINUOUS RUNS.
9. MINIMUM BEND RADIUS FOR COMMUNICATIONS CONDUIT IS 8 TIMES THE INSIDE DIAMETER FOR CONDUITS 2" IN DIAMETER AND SMALLER AND 10 TIMES THE INSIDE DIAMETER FOR CONDUITS GREATER THAN 2" IN DIAMETER, UNLESS NOTED OTHERWISE.
10. LOW VOLTAGE COMMUNICATION, ENERGY MANAGEMENT, SOUND SYSTEM, SECURITY AND RELATED WIRING IS TO BE PERFORMED BY OTHERS UNDER A SEPARATE CONTRACT, UNLESS NOTED OTHERWISE. PROVIDE BOXES AND CONDUIT IN FINISHED AND RATED FLOORS/WALLS/CEILINGS TO ACCESSIBLE LOCATIONS FOR ALL LOW VOLTAGE WIRING. PROVIDE ALL LINE VOLTAGE CIRCUITRY (120V AND HIGHER) TO OWNER FURNISHED EQUIPMENT AND LOW VOLTAGE STEP-DOWN TRANSFORMERS AS REQUIRED. COORDINATE ELECTRICAL REQUIREMENTS AND LOCATIONS WITH SYSTEM INSTALLER AND OWNER.
11. ALL LOW VOLTAGE CLASS 2 OR 3 WIRING NOT IN CONDUIT SHALL BE PLENUM RATED WHERE APPLICABLE.
12. LOW VOLTAGE CABLE SHEATH LABELS AND RELATED MANUFACTURER INFO SHALL REMAIN APPARENT IN ALL EXPOSED APPLICATIONS. PROTECT ALL EXPOSED CABLING FROM PAINTING AND OVERSPRAY (INCLUDES CABLE NOT ROUTED IN CONDUIT AND THAT IS IN CABLE TRAY).
13. CABLES SHALL BE ROUTED THROUGH THE BUILDING CABLE TRAY/RACEWAY SYSTEM, UNLESS NOTED OTHERWISE. EXPOSED CABLE SHALL NOT BE ROUTED IN AREAS EXPOSED TO STRUCTURE UNLESS SPECIFICALLY PERMITTED BY THE OWNER. IN AREAS WHERE EXPOSED CABLES ARE ALLOWED, IT SHALL BE INSTALLED IN A NEAT AND WORKMAN LIKE MANNER IN ACCORDANCE WITH THE OWNER'S REQUIREMENTS. WHERE REQUIRED, PROVIDE CONDUIT TO ROUTE LOW VOLTAGE CABLING TO THE CABLE TRAY OR NEAREST ACCESSIBLE CEILING SPACE.
14. CONDUITS FOR COMMUNICATIONS OUTLETS SERVING ELEVATOR EQUIPMENT ROOMS, FACP, AND SIMILAR CRITICAL EQUIPMENT AS DESIGNATED BY THE OWNER SHALL BE CONTINUOUS ("HOMERUN") FROM OUTLET TO SERVING COMMUNICATIONS ROOM.
15. FLEXIBLE CONDUIT IS ONLY PERMITTED WHERE SPECIFICALLY ALLOWED IN THE CONSTRUCTION DOCUMENTS, WHERE CONCEALED FROM VIEW OR EXPOSED FINAL CONNECTIONS TO LIGHT FIXTURES AND EQUIPMENT IN LENGTHS OF 6'-0" OR LESS.
16. ALL EMPTY CONDUIT/RACEWAY SHALL BE INSTALLED WITH PULL STRINGS. TERMINATE CONDUIT STUB-UP WITH A NYLON BUSHING.
17. EXPOSED CONDUIT/RACEWAY SHALL BE PAINTED TO MATCH ADJACENT SURFACE, UNLESS NOTED OTHERWISE. COORDINATE REQUIREMENTS WITH ARCHITECT AND OWNER PRIOR TO INSTALLATION.
18. CONDUITS/RACEWAYS SHALL BE CONCEALED FROM VIEW WHEREVER PRACTICABLE, UNLESS NOTED OTHERWISE. ROUTE CONDUITS SERVING ROOFTOP EQUIPMENT CONCEALED INSIDE EQUIPMENT CURB AND MINIMIZE ROOF PENETRATIONS. PROVIDE EXTERIOR CONDUIT RUNS WHERE PRACTICABLE. SUPPORT RACEWAY FROM STRUCTURE, NOT ROOF DECK. MAINTAIN 2" MIN SPACING FROM BOTTOM OF ROOF DECK TO PREVENT ROOFING SCREWS FROM PENETRATING RACEWAY. DO NOT ROUTE CONDUITS ACROSS SKYLIGHTS, ACCESS PANELS, HATCHED TILES, HVAC DIFFUSERS, OR EQUIPMENT WORKING CLEARANCE SPACE. ROUTE ALL EXPOSED NON-FLEXIBLE CONDUITS TIGHT TO STRUCTURE, PARALLEL TO BUILDING LINES AND IN STRUT OR CABLE/PPIPE TRAY WHERE PRACTICABLE. INSTALL CONDUITS PLUMB/LEVEL WHERE EXPOSED TO VIEW. COORDINATE RACEWAY ROUTING AND INSTALLATION WITH OTHER TRADES PRIOR TO ROUGH-IN.
19. WHERE PRACTICABLE, ALL UNDER-FLOOR/UNDER-GROUND CONDUITS/RACEWAY SHALL BE INSTALLED A MINIMUM OF 24" BELOW BOTTOM OF SLAB/PAVING/GRADE, UNLESS NOTED OTHERWISE. NOTE: THE DESIGN INTENT FOR INSTALLING ELECTRICAL CIRCUITRY AT THIS DEPTH IS TO PROTECT THE ELECTRICAL CIRCUITRY FROM DAMAGE DUE TO FUTURE WORK.
20. PROVIDE LABEL AT EACH RECEPTACLE COVER PLATE WITH THE RESPECTIVE "PNLBD-CKT#" DESIGNATION. COORDINATE LABEL REQUIREMENTS WITH THE OWNER PRIOR TO INSTALLATION. REFER TO THE SPECIFICATIONS FOR MORE INFORMATION.
21. MULTIWIRE BRANCH CIRCUITS ARE NOT ALLOWED, UNLESS NOTED OTHERWISE.
22. PROVIDE INSULATED EQUIPMENT GROUNDING CONDUCTOR FOR ALL CIRCUITS, UNLESS NOTED OTHERWISE.

ELECTRICAL SUPPLEMENTAL SPECIFICATIONS:

1. PRIOR TO SUBMITTING BID, VISIT THE JOB SITE AND BECOME FULLY ACQUAINTED WITH THE EXISTING CONDITIONS. AS APPLICABLE, REVIEW THE LANDLORD CRITERIA, GENERAL NOTES, OTHER TRADE DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS THAT MAY NOT BE CALLED OUT IN THIS PORTION OF THE CONSTRUCTION DOCUMENTS. NOTIFY ARCHITECT AND ENGINEER OF ANY CONFLICTS OR DISCREPANCIES PRIOR TO SUBMITTING BID.
2. ALL WORK SHALL CONFORM TO ALL LOCAL CODES AND ORDINANCES AS WELL AS APPLICABLE INDUSTRY STANDARDS. ALL EQUIPMENT SHALL BEAR LABELS FOR THE USE INTENDED BY AN AHJ. ACCEPTED NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL), SUCH AS UL OR ETL. THE FINAL ELECTRICAL INSTALLATION OF THE FACILITY OCCUPIED BY OWNER SHALL BE FREE FROM ELECTRICAL DEFECTS TO THE SATISFACTION OF THE AHJ, OWNER, ARCHITECT AND ENGINEER.
3. COORDINATE FINAL LOCATION AND INSTALLATION REQUIREMENTS OF ALL LIGHT FIXTURES, ELECTRICAL EQUIPMENT AND ELECTRICAL DEVICES WITH ARCHITECTURAL DRAWINGS, EXISTING CONDITIONS AND OTHER TRADES PRIOR TO ROUGH-IN. PROVIDE ALL NECESSARY DEVICES, CORDS, PLUGS, DISCONNECTS AND FINAL CONNECTIONS TO ELECTRICAL EQUIPMENT FOR PROPER OPERATION IN ACCORDANCE WITH CODE, OWNER AND MANUFACTURER REQUIREMENTS.
4. ELECTRICAL DRAWINGS ARE DIAGRAMMATIC/SCHEMATIC IN NATURE AND REPRESENT THE GENERAL SCOPE OF WORK. IT IS NOT WITHIN THE SCOPE OF THE ELECTRICAL DRAWINGS TO SHOW ALL NECESSARY RACEWAY ROUTING, BENDS, OFFSETS, PULL BOXES AND OBSTRUCTIONS. CONTRACTOR SHALL COORDINATE THE FINAL LOCATION OF EQUIPMENT AND WIRING DEVICES WITH OTHER TRADES PRIOR TO INSTALLATION AND INSTALL ALL WORK TO CONFORM TO THE OWNER REQUIREMENTS.
5. ALL CONDUCTOR AND CONDUIT LENGTHS SHOWN IN THESE DESIGN DOCUMENTS ARE INTENDED SOLELY FOR USE IN THE DESIGN CALCULATIONS BY THE DESIGN PROFESSIONAL, UNLESS NOTED OTHERWISE. LENGTHS SHOWN SHALL NOT BE USED TO ASSIST IN THE BIDDING TAKEOFF PROCESS. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE MATERIAL QUANTITIES REQUIRED TO BID AND CONSTRUCT THE COMPLETE PROJECT.
6. PROVIDE PROPER FIRE PROOFING AND SEALANT FOR PENETRATIONS THROUGH FIRE RATED ASSEMBLIES. THE FIRE STOPPING METHOD, MATERIAL AND ITS APPLICATION SHALL BE NRTL LISTED, CODE COMPLIANT AND APPROVED BY AHJ.
7. FOR CAST-IN-PLACE CONCRETE, TILT-UP WALLS, PRECAST OR SIMILAR PRE-ENGINEERED WALL SYSTEMS, COORDINATE THE FINAL LOCATION OF ALL ELECTRICAL DEVICES, RACEWAYS, LIGHT FIXTURES AND PENETRATIONS WITH ARCHITECT, WALL SUPPLIER AND OTHER TRADES PRIOR TO WALL CONSTRUCTION. CONDUIT/RACEWAY EMBEDDED IN CONCRETE WALLS SHALL BE SCHEDULE 80 PVC OR LFMC; OTHER TYPES MAY BE ALLOWED IF APPROVED BY WALL SYSTEM MANUFACTURER AND ENGINEER.
8. WHEN CONCRETE TRENCHING/CORING IS REQUIRED, THE METHODS, DEPTHS, AND LOCATIONS SHALL BE PRE-APPROVED BY THE LANDLORD, ARCHITECT, AND STRUCTURAL ENGINEER PRIOR TO THE START OF WORK. X-RAY SLABS AS NECESSARY TO AVOID DAMAGING ANY UNDER-SLAB UTILITIES OR STRUCTURE. SLAB REPLACEMENT SHALL BE INSTALLED WITH DOWELLING AND REINFORCED CONCRETE AS DIRECTED BY THE STRUCTURAL ENGINEER. WHERE SLAB ON GRADE IS SAW-CUT AND REMOVED FOR TRENCHING THE CONTRACTOR SHALL INSTALL MOISTURE BARRIER PER LANDLORD'S REQUIREMENTS. PROVIDE 3/4" MINIMUM CONDUITS ROUTED THROUGH SLAB AND STUBBED UP INTO DEVICES. FOR SLAB ON DECK, THE FLOOR SHALL BE SLEEVED AND EQUIPPED WITH THE APPROPRIATE LISTED ASSEMBLY. PROVIDE 3/4" MINIMUM CONDUITS ROUTED BELOW SLAB, TIGHT TO STRUCTURE, AND STUBBED UP INTO DEVICES.
9. ALL APPLICABLE SWITCHES, RECEPTACLES, OUTLETS, AND CONTROLS SHALL BE PLACED AT HEIGHTS THAT ARE IN ACCORDANCE WITH ADA ACCESSIBILITY GUIDELINES.
10. COORDINATE FLOOR MOUNTED BOX, RECEPTACLE, AND COVER PLATE TYPES WITH ARCHITECT AND OWNER PRIOR TO ORDER.
11. WIRING DEVICES ADJACENT TO EACH OTHER SHALL BE INSTALLED UNDER A SINGLE COVER PLATE, UNO.
12. WIRING DEVICES SHOWN BACK-TO-BACK ON A COMMON WALL SHALL BE OFFSET A MINIMUM OF 12" HORIZONTALLY TO REDUCE SOUND TRANSMISSION BETWEEN ROOMS, UNO.
13. ALL WP OUTLET BOX HOODS SHALL BE "EXTRA-DUTY" AND "WHILE-IN-USE COVER" TYPE. OUTLET BOX HOODS SHALL BE LOW PROFILE WHEREVER PRACTICABLE, UNLESS NOTED OTHERWISE. THE USE OF LARGE BUBBLE COVERS SHALL BE AVOIDED ON THE EXTERIOR OF THE BUILDING OR BEHIND EQUIPMENT IN ORDER TO PREVENT DAMAGE TO THE COVER AND TO ALLOW THE EQUIPMENT TO BE LOCATED CLOSE TO THE WALL.
14. ALL 120V RECEPTACLES 50A OR LESS, 208V AND 240V RECEPTACLES 100A OR LESS, SHALL BE GFCI PROTECTED IN LOCATIONS REQUIRED BY CODE, INCLUDING UNDERCOUNTERS, KITCHENS/FOOD PREP AREAS, EXTERIOR LOCATIONS AND RECEPTACLES WITHIN 6 FEET OF A SINK. GFCI RECEPTACLES SHALL BE READILY ACCESSIBLE AND SHALL NOT BE LOCATED BEHIND STATIONARY EQUIPMENT. GFCI PROTECTION MAY BE VIA A GFCI CIRCUIT BREAKER OR GFCI RECEPTACLE, UNLESS NOTED OTHERWISE. WHERE NECESSARY, GFCI PROTECTION MAY BE ACHIEVED VIA A BLANK FACE GFCI DEVICE LOCATED IN A READILY ACCESSIBLE LOCATION NEAR RECEPTACLE BEING PROTECTED. FOR DOWNSTREAM WIRING DEVICES LOCATED ON THE SAME BRANCH CIRCUIT, THE GFCI PROTECTION MAY BE PROVIDED FOR BY A SINGLE UPSTREAM DEVICE IF ALL PROTECTED DEVICES ARE LABELED PER CODE.
15. FLEXIBLE CONDUIT IS ONLY PERMITTED WHERE SPECIFICALLY ALLOWED IN THE CONSTRUCTION DOCUMENTS, WHERE CONCEALED FROM VIEW OR EXPOSED FINAL CONNECTIONS TO LIGHT FIXTURES AND EQUIPMENT IN LENGTHS OF 6'-0" OR LESS.
16. ALL EMPTY CONDUIT/RACEWAY SHALL BE INSTALLED WITH PULL STRINGS. TERMINATE CONDUIT STUB-UP WITH A NYLON BUSHING.
17. EXPOSED CONDUIT/RACEWAY SHALL BE PAINTED TO MATCH ADJACENT SURFACE, UNLESS NOTED OTHERWISE. COORDINATE REQUIREMENTS WITH ARCHITECT AND OWNER PRIOR TO INSTALLATION.
18. CONDUITS/RACEWAYS SHALL BE CONCEALED FROM VIEW WHEREVER PRACTICABLE, UNLESS NOTED OTHERWISE. ROUTE CONDUITS SERVING ROOFTOP EQUIPMENT CONCEALED INSIDE EQUIPMENT CURB AND MINIMIZE ROOF PENETRATIONS. PROVIDE EXTERIOR CONDUIT RUNS WHERE PRACTICABLE. SUPPORT RACEWAY FROM STRUCTURE, NOT ROOF DECK. MAINTAIN 2" MIN SPACING FROM BOTTOM OF ROOF DECK TO PREVENT ROOFING SCREWS FROM PENETRATING RACEWAY. DO NOT ROUTE CONDUITS ACROSS SKYLIGHTS, ACCESS PANELS, HATCHED TILES, HVAC DIFFUSERS, OR EQUIPMENT WORKING CLEARANCE SPACE. ROUTE ALL EXPOSED NON-FLEXIBLE CONDUITS TIGHT TO STRUCTURE, PARALLEL TO BUILDING LINES AND IN STRUT OR CABLE/PPIPE TRAY WHERE PRACTICABLE. INSTALL CONDUITS PLUMB/LEVEL WHERE EXPOSED TO VIEW. COORDINATE RACEWAY ROUTING AND INSTALLATION WITH OTHER TRADES PRIOR TO ROUGH-IN.
19. WHERE PRACTICABLE, ALL UNDER-FLOOR/UNDER-GROUND CONDUITS/RACEWAY SHALL BE INSTALLED A MINIMUM OF 24" BELOW BOTTOM OF SLAB/PAVING/GRADE, UNLESS NOTED OTHERWISE. NOTE: THE DESIGN INTENT FOR INSTALLING ELECTRICAL CIRCUITRY AT THIS DEPTH IS TO PROTECT THE ELECTRICAL CIRCUITRY FROM DAMAGE DUE TO FUTURE WORK.
20. PROVIDE LABEL AT EACH RECEPTACLE COVER PLATE WITH THE RESPECTIVE "PNLBD-CKT#" DESIGNATION. COORDINATE LABEL REQUIREMENTS WITH THE OWNER PRIOR TO INSTALLATION. REFER TO THE SPECIFICATIONS FOR MORE INFORMATION.
21. MULTIWIRE BRANCH CIRCUITS ARE NOT ALLOWED, UNLESS NOTED OTHERWISE.
22. PROVIDE INSULATED EQUIPMENT GROUNDING CONDUCTOR FOR ALL CIRCUITS, UNLESS NOTED OTHERWISE.

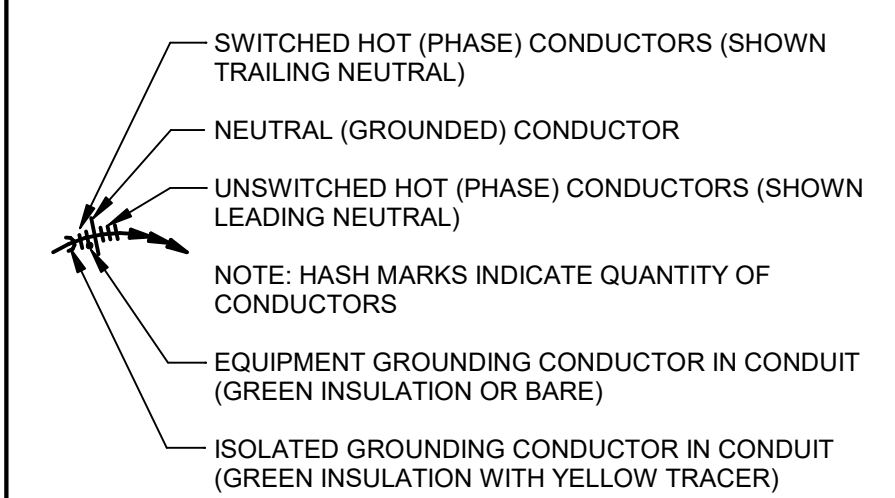
ELECTRICAL SYMBOLS

THIS IS A MASTER LEGEND AND NOT ALL SYMBOLS OR ABBREVIATIONS ARE USED.

STANDARD MOUNTING HEIGHTS				ANNOTATION	
AUDIBLE APPLIANCES (CENTERLINE)				84"	
ALARMS				48"	
ANNUNCIATOR PANELS (DISPLAY)				60"	
CONTROLS (TOP OF DEVICE)				48"	
EXIT SIGNS (WALL MOUNTED)				24"	
FIRE ALARM ANNUNCIATOR PANEL (DISPLAY)				60"	
FIRE ALARM BELL (EXTERIOR) (CENTERLINE)				120"	
FIRE ALARM CONTROL PANEL/UNIT (DISPLAY)				60"	
INTERCOM (AREA ONLY)				36"	
INTERCOMS (TOP OF DEVICE)				44"	
PULL STATIONS (TOP OF DEVICE)				48"	
PHOTOCELLS				144"	
RECEPTACLES				18"	
RECEPTACLES (EXTERIOR)				24"	
RECEPTACLES (GARAGES)				24"	
RECEPTACLES (POOLS)				27"	
RECEPTACLES (ABOVE COUNTER) +6" ABOVE BACKSPASH/COUNTER, 40" MAX				44"	
RECEPTACLES IN EQUIPMENT ROOMS				44"	
REMOTE INDICATING LIGHT (EQUIPMENT ROOMS)				48"	
REMOTE INDICATING LIGHT (FINISHED AREAS)				CEILING	
SAFETY SWITCHES (TOP OF DEVICE)				48"	
STARTERS (TOP OF DEVICE)				48"	
SWITCHES (TOP OF DEVICE)				44"	
TELEPHONE, DATA OUTLETS				SAME AS ADJACENT DEVICE, UNO	
TELEPHONE TERMINAL BOARD (BOTTOM)				84"	
TELEVISION OUTLETS				REFER TO ARCH DRAWINGS	
VISIBLE APPLIANCES (CENTERLINE)				60"	
INSTALL OUTLET BOXES AT THE MOUNTING HEIGHTS SHOWN ABOVE UNO IN THE CONSTRUCTION DOCUMENTS. MOUNTING HEIGHTS LISTED ABOVE, OR ELSEWHERE IN THE CONSTRUCTION DOCUMENTS, SHALL BE USED TO BOTTOM OF OUTLET BOX, UNO. ALL DEVICES SHALL BE INSTALLED IN COMPLIANCE WITH CURRENT ADA AND LOCAL REQUIREMENTS.					
ABBREVIATIONS		CIRCUITING & WIRING			
AF	AMPERE FUSE SIZE	MCC	MOTOR CONTROL CENTER	HOMERUN TO PANELBOARD. INFORMATION AT ARROWS ARE CIRCUIT NUMBERS AND PANELBOARD FOR TERMINATION. REFER TO PANELBOARD SCHEDULES FOR BRANCH CIRCUIT CONDUCTOR SIZES.	
AFG	ABOVE FINISHED CEILING	MFR	MANUFACTURER		
AFB	ABOVE FINISHED FLOOR	MN	MINIMUM	INDICATES MULTI-VOLTAGE CIRCUIT. "1480/277/3" DENOTES PHASE VOLTAGE/NEUTRAL VOLTAGE/PHASE POLES. CONTRACTOR SHALL PULL NEUTRAL WIRE IN ORDER TO DERIVE NEUTRAL VOLTAGE SHOWN. COORDINATE WITH EQUIPMENT PROVIDED FOR PROPER CONNECTIONS.	
AFG	ABOVE FINISHED GRADE	MLO	MAIN LUGS ONLY		
AHJ	AUTHORITY HAVING JURISDICTION	MLV	MAGNETIC LOW-VOLTAGE	INDICATES RELAY NUMBER	
AHU	AIR HANDLING UNIT	MOCP	MAXIMUM OVERCURRENT PROTECTION		
AIC	AMPERE INTERRUPTING CAPACITY	MTD	MOUNTED	CIRCUIT CONTINUATION OR PARTIAL CIRCUIT	
AS	AMPERE SWITCH SIZE	NF	NON-FUSED		
AT	AMPERE TRIP SETTING	NF	NON-FUSED	CONDUIT CONCEALED	
ATS	AUTOMATIC TRANSFER SWITCH	NRTL	NATIONALLY RECOGNIZED TESTING LABORATORY (CSA, ETL, NSF, UL)		
AV	AUDIO VISUAL	OS	OCCUPANCY SENSOR	CONDUIT CONCEALED (EMERGENCY)	
BA	BUILDING AUTOMATION SYSTEM	P	POLE		
BKR	BREAKER	PART	PARTIAL CIRCUIT	CONDUIT IN UNDER FLOOR/GROUND CONSTRUCTION	
C	CATEGORY	PHI	PHASE		
CATV	CABLE TELEVISION SYSTEM	PANEL	PANEL	EXPOSED CONDUIT	
CD	CLOSED CIRCUIT TELEVISION	PNLBD	PANELBOARD		
CD	CANDLEA CIRCUIT	PROV	PROVIDE FURNISH AND INSTALL	EXPOSED CONDUIT (EMERGENCY)	
CKT	CIRCUIT	QTY	POTENTIAL TRANSFORMER QUANTITY		
CODE	APPLICABLE CODE	R/REL	RELOCATE	FLEXIBLE CONDUIT	
CT	ADOPTED BY JURISDICTION	RCPT	RECEPTACLE		
CTR	CENTRAL TRANSFORMER	R/LA	RUNNING LOAD AMPS	LOW VOLTAGE CABLE (NOT ROUTED IN CONDUIT)	
CVD	CUMULATIVE VOLTAGE DROP	R/TA	ROOFTOP UNIT		
D/DEM	DEMOLITION	SCCR	SHORT-CIRCUIT CURRENT RATING	CONDUIT TURNING DOWN	
DPDT	DOUBLE-THROW DOUBLE-POLE, SINGLE-THROW	SD	SINGLE-THROW		
DPST	DOUBLE-THROW DOUBLE-POLE, SINGLE-THROW	SPDT	SINGLE-THROW	CONDUIT TURNING UP	
E/EXTREX	EXISTING TO REMAIN	SPST	SINGLE-POLE, SINGLE-THROW		
EC	ELECTRICAL CONTRACTOR	SSBJ	SINGLE-SIDE BONDING	CONNECTION POINT OR EQUIPMENT TERMINATION	
EM	EMERGENCY	ST	SHUNT TRIP		
EMS	ENERGY MANAGEMENT SYSTEM	SWBD	SWITCHBOARD	EQUIPMENT TERMINATION	
ELV	ELECTRONIC LOW-VOLTAGE	SWGR	SWITCHGEAR		
EVAC	ELECTRIC WATER COOLER	TBB	TELECOMMUNICATIONS BONDING BACKBONE	WHERE TICK MARKS ARE SHOWN, THE FOLLOWING SHALL GOVERN:	
FAAP	FIRE ALARM ANNUNCIATOR PANEL	TBD	TO BE DETERMINED		
FACP	FIRE ALARM CONTROL PANEL	TGB	TELECOMMUNICATIONS GROUND BUS BAR	SWITCHED HOT (PHASE) CONDUCTORS (SHOWN TRAILING NEUTRAL)	
FCU	FAULT CURRENT AMPS AVAILABLE	TMBG	TELECOMMUNICATIONS MAIN GROUND BUS BAR		
FLU	FAN COIL UNIT	TYP	TYPICAL	NEUTRAL (GROUNDED) CONDUCTOR	
FL	FINISHED FLOOR	U/F	UNDER FLOOR		
FLA	FULL LOAD AMPS	UH	UNIT HEATER	UNSWITCHED HOT (PHASE) CONDUCTORS (SHOWN LEADING NEUTRAL)	
FLR	FLOOR	UNO	UNLESS NOTED OTHERWISE		
FLR	FLOOR	UP	UNINTERRUPTIBLE POWER SUPPLY	NOTE: HASH MARKS INDICATE QUANTITY OF CONDUCTORS	
GC	GENERAL CONTRACTOR	VDS	VOLTAGE DROP		
GEC	GROUNDING ELECTRODE CONDUCTOR	VFD	VARIABLE FREQUENCY DRIVE	EQUIPMENT GROUNDING CONDUCTOR IN CONDUIT (GREEN INSULATION OR BARS)	
GES	GROUNDING ELECTRODE SYSTEM	VS	VACUANCY SENSOR		
GFR	GROUND FAULT RELAY	W	WIRE	ISOLATED GROUNDING CONDUCTOR IN CONDUIT (GREEN INSULATION WITH YELLOW TRACER)	
IG	ISOLATED GROUND	WT	WEATHER RESISTANT		
ISC	SHORT CIRCUIT CURRENT	WP	WEATHER PROOF	ISOLATED GROUNDING CONDUCTOR IN CONDUIT (GREEN INSULATION WITH YELLOW TRACER)	
JBU-BOX	JUNCTION BOX	WR	WATERIGHT		
LF	LINEAR FEET	XP	EXPLOSION PROFF		
LRA	LOCKED ROTOR AMPS				
LTGLTS	LIGHTING LIGHTS				
MAU	MAKE-UP AIR UNIT				
MAX	MAXIMUM				
MCA	MINIMUM CIRCUIT AMPACITY				
MCB	MAIN CIRCUIT BREAKER				

CONDUCTOR TICK MARK LEGEND

WHERE TICK MARKS ARE SHOWN, THE FOLLOWING SHALL GOVERN:



BRANCH CIRCUIT CONDUCTOR TABLE

WHERE TICK MARKS ARE NOT SHOWN, THE FOLLOWING SHALL GOVERN:

# OF POLES	HOT (PHASE)	NEUTRAL	GROUNDING	***
1P	(1)	(1) UNO		
2P	(2)	(1) UNO	(1)	
3P	(3)	(1) UNO	(1)	

- * PROVIDE ADDITIONAL CONDUCTORS THROUGH ENTIRE CIRCUIT (SWITCHED, UNSWITCHED, ETC.) AS INDICATED THROUGHOUT CONSTRUCTION DOCUMENTS AND AS REQUIRED FOR A COMPLETE AND WORKING SYSTEM.
- ** REFER TO SPECIFICATIONS FOR LIMITATIONS ON SHARING NEUTRAL (GROUNDED) CONDUCTORS. DO NOT CIRCUIT AS A MULTI-WIRE BRANCH CIRCUIT, UNO.
- *** PROVIDE ADDITIONAL ISOLATED GROUNDING CONDUCTORS WHERE INDICATED.

REFER TO SPECIFICATIONS, PLANS, NOTES, WIRING AND CONTROL DIAGRAMS FOR ADDITIONAL CIRCUITING REQUIREMENTS.

SIGNALING

- SIGNALING BELL
- SIGNALING BUZZER
- LV TRANSFORMER

LIGHTING

- LIGHT FIXTURE
- a = LOWER CASE LETTER IS SWITCH IDENTIFIER
- A = UPPER CASE LETTER INDICATES LIGHT FIXTURE TYPE
- ⊥ = WALL MOUNT
- > = ARROW INDICATED AIMING DIRECTION
- LIGHT FIXTURE CIRCUITED AS A NIGHT LIGHT (NL)
- EMERGENCY LIGHT FIXTURE WITH EMERGENCY LIGHTING BATTERY PACK OR CONNECTED TO EMERGENCY SOURCE
- NIGHT LIGHT/EMERGENCY LIGHT FIXTURE WITH EMERGENCY BATTERY PACK OR CONNECTED TO EMERGENCY SOURCE
- LIGHT FIXTURE WITH DUAL BALLASTS CIRCUITED SEPARATELY (SHADING IMPLIES EMERGENCY LIGHT FIXTURE)
- LIGHTING TRACK (H INDICATES RELAY NUMBER)
- MIRROR LIGHTS
- EXTERIOR PARKING LOT LIGHT FIXTURE
- EXTERIOR PEDESTRIAN POST TOP LIGHT FIXTURE
- EXTERIOR LOT BOLLARD LIGHT
- EXIT SIGN - CEILING / WALL MOUNTED, ARROWS AS INDICATED, FENCE HATCHED
- EMERGENCY LIGHTING UNIT EQUIPMENT WITH BATTERY PACK - CEILING/WALL MOUNTED
- AFEA (AREA FOR EVACUATION ASSISTANCE) SIGN - CEILING/WALL MOUNTED, ARROWS AS INDICATED
- REFER TO LIGHT FIXTURE SCHEDULE FOR MORE INFORMATION
- POWER EQUIPMENT & DEVICES

ELECTRICAL PANELBOARD (SURFACE OR FLUSH MOUNT)

ELECTRICAL CABINET (SURFACE OR FLUSH MOUNT), TYPE AS NOTED

PLYWOOD TERMINAL BOARD FOR TELEPHONE SYSTEM, UNO, SIZE AS NOTED

SWITCHBOARD OR MOTOR CONTROL CENTER ON HOUSEKEEPING PAD

ELECTRICAL DISTRIBUTION PANELBOARD

TRANSFORMER

DISCONNECT SWITCH - "2003/150/3R" DENOTES AMPERES/POLE/FUSE/NEUMA ENCLOSURE RATING, NF= NON-FUSED, CB= CIRCUIT BREAKER (303/CB1), NO VALUE (2003/150/1) FOR NEUMA ENCLOSURE MEANS STANDARD NEMA 1 ENCLOSURE RATING

MAGNETIC MOTOR STARTER, NEMA SIZE AS NOTED, 3-POLE, UNO

VARIABLE FREQUENCY DRIVE

INDICATING LIGHT

EMERGENCY POWER OFF BUTTON

STOP-START PUSH BUTTON CONTROL STATION

HAND-OFF-AUTO PUSH BUTTON CONTROL STATION

MUSHROOM-TYPE PUSH BUTTON

OVERHEAD PADDLE FAN

BOXES, LIGHTING CONTROL & WIRING DEVICES

- SWITCH LETTER DESIGNATIONS AS FOLLOWS:
BLANK = SINGLE
2 = TWO POLE
3 = THREE-WAY
4 = FOUR-WAY
D = DIMMER
F = FAN SPEED CONTROL
FH = FRACTIONAL HORSEPOWER MANUAL CONTROLLER
IH = INTEGRAL HORSEPOWER MANUAL CONTROLLER
KEY =
LV# = LOW VOLTAGE / DIGITAL
M = MANUAL, MOTOR STARTER DISCONNECT
OSH = OCCUPANCY SENSOR
P = SPST PILOT LIGHT
WP = WEATHER PROOF
= REFER TO LIGHTING CONTROL DEVICE SCHEDULE
- AUTOMATIC LOAD CONTROL RELAY
- BRANCH CIRCUIT TRANSFER SWITCH
- CEILING / WALL MOUNTED OCCUPANCY SENSOR (# INDICATES TYPE PER SCHEDULE)
- CORNER 90 DEGREE SENSING ONE-DIRECTION SENSING, CEILING/WALL MOUNT - CEILING MOUNT, TWO DIRECTION SENSING - CEILING MOUNT, FOUR DIRECTION SENSING
- CONTACTOR (SIZE, COIL VOLTAGE AND NUMBER OF POLES AS INDICATED)
- TRACK-MOUNTED CURRENT LIMITER (# INDICATES AMPERAGE)
- DAYLIGHT SENSOR (# INDICATES TYPE PER SCHEDULE)
- LIGHTING CONTROLS PROCESSOR AND/OR EQUIPMENT
- POWER PACK (# INDICATES TYPE PER SCHEDULE)
- PHOTOELECTRIC SWITCH
- ROOM CONTROLLER (# INDICATES TYPE PER SCHEDULE)
- TIME SWITCH
- SIMPLEX RECEPTACLE - NEMA 5-20R, UNO
- DUPLEX RECEPTACLE - NEMA 5-20R, UNO
-



FIRST PLAT, LOT 9
LEE'S SUMMIT, MO

Project No.: 19050.01a

Date: 05.06.22

Issued For: PERMIT

[illegible]

REGISTRATION



05/09/2022

ANDREA C. MULVANY
LICENSE # PE-2013039892

PROJECT TEAM

ARCHITECT FINKLE+WILLIAMS
ARCHITECTURE

IVIL GBA

LANDSCAPE LAND 3

FOUNDATIONS BSE STRUCTURAL

STRUCTURAL BSE STRUCTURAL
ENGINEERS

LUMBING HENDERSON
ENGINEERS

MECHANICAL HENDERSON

ELECTRICAL HENDERSON

FIRE PROTECTION HENDERSON

CONTRACTOR GC



1801 MAIN STREET, SUITE 300
KANSAS CITY, MO 64108
TEL 816.663.8700 FAX 816.663.8701
WWW.HENDERSONENGINEERS.COM

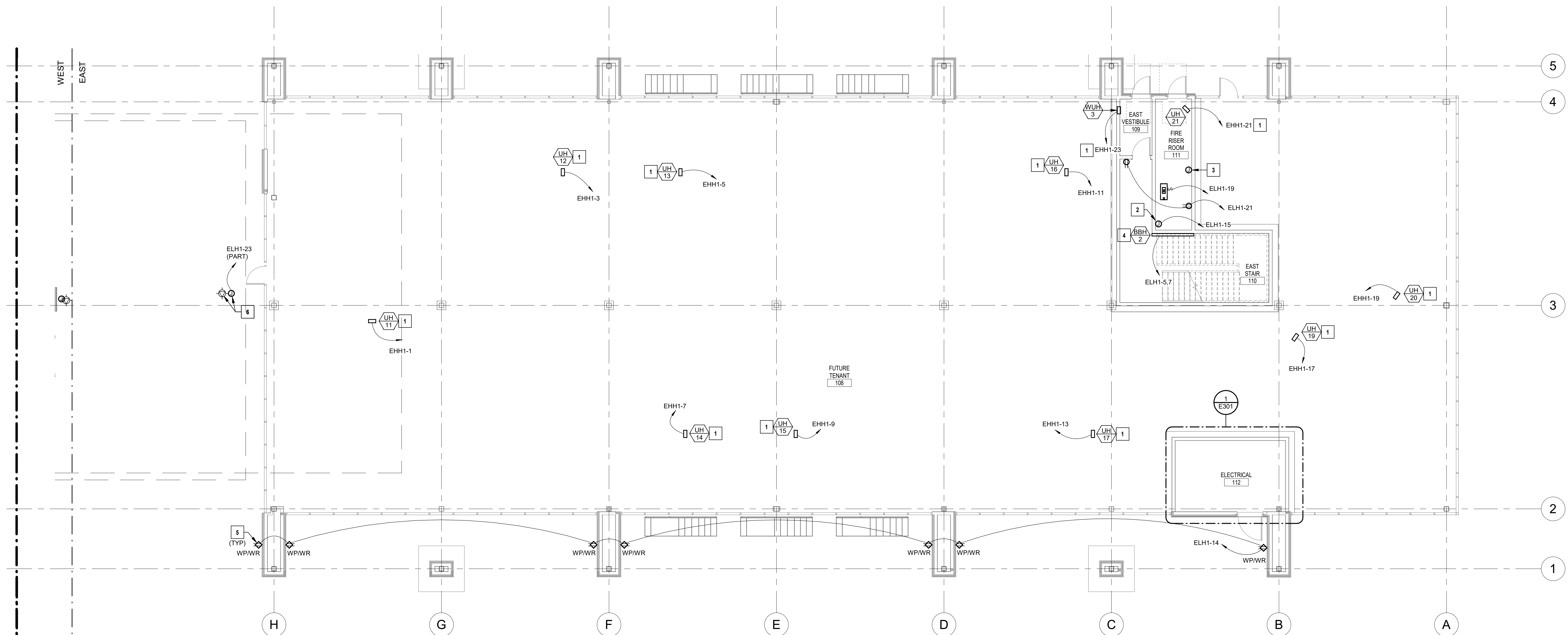
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MO. CORPORATE NO: E-556D
EXPIRES 12/31/2022

SHEET TITLE

ELECTRICAL
FIRST FLOOR
PLAN - EAST

SHEET NUMBER

E101.2








① ELECTRICAL FIRST FLOOR PLAN - EAST
1/8" = 1'-0"

E102.1





LIGHTING CONTROL DEVICE SCHEDULE						
LINE-VOLTAGE WALL SWITCH OCCUPANCY SENSORS						
SYMBOL TAG	MANUFACTURER MODEL/SERIES	ALTERNATE MANUFACTURER	DEVICE DESCRIPTION	COVERAGE (W X D)	VOLTAGE	NOTES
 CS	LEGRAND PW-100	ACUTY, COOPER HUBBELL, LEVITON LUTRON	WALL MOUNT PASSIVE INFRARED OCCUPANCY SENSOR. INTEGRAL MANUAL OVERRIDE SWITCH. SINGLE RELAY. LINE VOLTAGE. LOAD: 120V=800W, 277V=1200W.	MAJOR 30" x 35" MINOR 15" x 20"	120V 277	
STAND-ALONE LOW-VOLTAGE LIGHTING CONTROL SYSTEMS						
STAND-ALONE LOW-VOLTAGE OCCUPANCY SENSORS						
SYMBOL TAG	MANUFACTURER MODEL/SERIES	ALTERNATE MANUFACTURER	DEVICE DESCRIPTION	COVERAGE (W X D)	VOLTAGE	NOTES
 CS	LEGRAND CI-300	ACUTY, COOPER HUBBELL, LEVITON	CEILING MOUNT PASSIVE INFRARED OCCUPANCY SENSOR. 360 DEGREE COVERAGE. LOW VOLTAGE. ISOLATED RELAY.	MAJOR 44" Ø MINOR 25" Ø	24	
 CS	LEGRAND UT-300-1	COOPER, HUBBELL, LEVITON	CEILING MOUNT ULTRASONIC OCCUPANCY SENSOR. 360 DEGREE COVERAGE. LOW VOLTAGE. ISOLATED RELAY.	24" x 24"	24	
STAND-ALONE LOW-VOLTAGE POWER PACKS						
SYMBOL TAG	MANUFACTURER MODEL/SERIES	ALTERNATE MANUFACTURER	DEVICE DESCRIPTION		VOLTAGE	NOTES
 P	LEGRAND BZ-250	ACUTY, COOPER HUBBELL, LEVITON	POWER PACK FOR LOW VOLTAGE OCCUPANCY SENSORS. 20A LOAD. (1) RELAY, MANUAL- AND AUTO-ON MODES. HOLD-ON AND -OFF INPUTS. LOAD: 16A AT 120V OR 277V. OUTPUT: 255mA AT 24V. PLENUM RATED.		120V 277	
STAND-ALONE LOW-VOLTAGE SWITCHES						
SYMBOL TAG	MANUFACTURER MODEL/SERIES	ALTERNATE MANUFACTURER	DEVICE DESCRIPTION		VOLTAGE	NOTES
 S	SUPERBRIGHT LEDS E2D-RGB-WM E2D-4CBA	ACUTY, COOPER HUBBELL, LEGRAND	WALL MOUNT WIRELESS RGB LED CONTROLLER. LOW VOLTAGE.		24	
GENERAL NOTES: A. OCCUPANCY SENSOR LAYOUT DESIGNED FROM BASIS-OF-DESIGN COVERAGE PATTERNS. IF SUBMITTING ALTERNATE PER EQUIVALENT MANUFACTURER COLUMN, ADJUST SENSOR QUANTITIES AND LOCATIONS PER MANUFACTURER-SPECIFIC SPACING CRITERIA. B. PROVIDE SHOP DRAWINGS FOR ENGINEER AND ARCHITECT REVIEW THAT INCLUDE PRODUCT CUTSHEETS AND PROJECT-SPECIFIC LAYOUTS. LAYOUTS MUST INCLUDE SENSOR LOCATIONS, HEIGHTS, ORIENTATION, AND COVERAGE AREAS. SHOW COORDINATION WITH ALL OTHER CEILING DEVICES INCLUDING BUT NOT LIMITED TO HVAC SUPPLY AND RETURN GRILLES, SPRINKLERS, LIGHT FIXTURES, AND OTHER OWNER-PROVIDED CEILING MOUNTED DEVICES SUCH AS SPEAKERS, SECURITY CAMERAS, PROJECTORS, ETC. (SENSORS MAY BE ADVERSELY AFFECTED IF LOCATED TOO CLOSE TO OTHER CEILING MOUNTED DEVICES) ALSO PROVIDE SCHEMATICS AND SCHEDULES WHEN APPLICABLE. C. LIGHTING CONTROLS PRICING SHALL BE COMPLETELY SEPARATE OF ANY LIGHT FIXTURE PRICING. D. VERIFY COLOR(S) FOR ALL WALL AND CEILING MOUNTED DEVICES WITH THE ARCHITECT. E. ALL WALL SWITCH AND CEILING SENSORS SHALL HAVE AN ADJUSTABLE TIME DELAY RANGE OF 0-30 MIN. UNO. CONFIRM SENSOR SETTINGS WITH SEQUENCE OF OPERATIONS AND OWNER PRIOR TO SYSTEM COMMISSIONING. F. PROVIDE COPIES OF OPERATION AND MAINTENANCE INSTRUCTIONS FOR ALL DEVICES TO OWNER. G. PROVIDE A NEUTRAL CONDUCTOR TO ALL WALL SWITCH LOCATIONS PER NEC REQUIREMENTS. H. DO NOT SHARE NEUTRAL CONDUCTOR ON LOAD SIDE OF DIMMERS.						
VERSION 4						

LIGHTING CONTROL PANEL SCHEDULE					
PANEL NAME: LC1		MOUNTING: SURFACE			
LOCATION: WEST ELECTRICAL ROOM		VOLTAGE: 120V			
RELAY	CIRCUIT	LOAD CONTROLLED	MODULE TYPE	LOAD (WATTS)	ZONE
1	WLH1-2	BREEZEWAY WEST COVE	ELV	316	
2	WLH1-4	WEST CANOPY DOWNLIGHTS	NON-DIM	627	
3	WLH1-22	BREEZEWAY CEILING	ELV	105	
4	WLH1-8	WEST EXTERIOR SCONCES	NON-DIM	324	
5	WLH1-12	NORTH PLANTERS RECEPTACLES	NON-DIM	1080	
6	WLH1-14	SOUTH PLANTERS RECEPTACLES	NON-DIM	1080	
7	WLH1-16	CENTRAL PLANTERS RECEPTACLES	NON-DIM	720	
8	WLH1-6	WEST EXTERIOR FLOODLIGHTS	NON-DIM	75	
9	WLH1-10	SOUTH EXTERIOR JUNCTION BOXES	NON-DIM	500	
10	WLH-24	EXTERIOR AWNING STRIP LIGHTS	0-10V	300	
11		SPARE			
12		SPARE			
MODULE TYPE LEGEND: ELV = ELECTRONIC LOW VOLTAGE DIMMING MLV = MAGNETIC LOW VOLTAGE DIMMING NON-DIM = SWITCHING ONLY LOAD (NO DIMMING) FAN = FAN SPEED CONTROL MOTOR = MOTOR CONTROL					
0-10V = 0-10V DIMMING 2-WIRE = 2-WIRE DIMMING 3-WIRE = 3-WIRE DIMMING DMX = COLOR CHANGING DIMMING					
NOTE: RELAY NUMBERING ON SCHEDULE IS INTENDED TO COMMUNICATE DESIGN INTENT AND IS FOR INFORMATIONAL PURPOSES ONLY. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING FINAL RELAY CONFIGURATION WITH LIGHTING CONTROL VENDOR AND FIELD CONDITIONS.					

LIGHTING CONTROL PANEL SCHEDULE					
PANEL NAME: LC2		MOUNTING: SURFACE			
LOCATION: EAST ELECTRICAL ROOM		VOLTAGE: 120V			
RELAY	CIRCUIT	LOAD CONTROLLED	MODULE TYPE	LOAD (WATTS)	ZONE
1	ELH1-10	BREEZEWAY EAST COVE	ELV	316	
2	ELH1-4	EAST EXTERIOR FLOODLIGHTS	ELV	75	
3	ELH1-6	EAST EXTERIOR SCONCES	0-10V	324	
4	ELH1-12	EAST CANOPY DOWNLIGHTS	NON-DIM	456	
5	ELH1-16	NORTH PLANTERS RECEPTACLES	NON-DIM	720	
6	ELH1-18	SOUTH PLANTERS RECEPTACLES	NON-DIM	540	
7	EHH1-16, 12	EXTERIOR PARKING LOT LIGHTS	NON-DIM	4500	
8	EHH1-14, 16	EXTERIOR PARKING LOT LIGHTS	NON-DIM	4500	
9	ELH1-8	SOUTH EXTERIOR JUNCTION BOXES	NON-DIM	500	
10	ELH1-2	EXTERIOR AWNING STRIP LIGHTS	0-10V	360	
11		SPARE			
12		SPARE			
MODULE TYPE LEGEND: ELV = ELECTRONIC LOW VOLTAGE DIMMING MLV = MAGNETIC LOW VOLTAGE DIMMING NON-DIM = SWITCHING ONLY LOAD (NO DIMMING) FAN = FAN SPEED CONTROL MOTOR = MOTOR CONTROL					
0-10V = 0-10V DIMMING 2-WIRE = 2-WIRE DIMMING 3-WIRE = 3-WIRE DIMMING DMX = COLOR CHANGING DIMMING					
NOTE: RELAY NUMBERING ON SCHEDULE IS INTENDED TO COMMUNICATE DESIGN INTENT AND IS FOR INFORMATIONAL PURPOSES ONLY. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING FINAL RELAY CONFIGURATION WITH LIGHTING CONTROL VENDOR AND FIELD CONDITIONS.					

LIGHTING CONTROL PANEL SCHEDULE					
PANEL NAME: LC3		MOUNTING: SURFACE			
LOCATION: 2ND FLOOR ELECTRICAL ROOM		VOLTAGE: 120V			
RELAY	CIRCUIT	LOAD CONTROLLED	MODULE TYPE	LOAD (WATTS)	ZONE
1	EHO1-67	RESTROOM LIGHTING	NON-DIM	742	
2	EHO1-73	LOBBY NORMAL LIGHTING	0-10V	646	
3	EHO1-75	LOBBY EMERGENCY LIGHTING	0-10V	86	
4	EL01-6	LOBBY TRACK	ELV	208	
5	EHO1-62	SOUTH WEST PARAPET	NON-DIM	2744	
6	EHO1-64	NORTH WEST PARAPET	NON-DIM	2744	
7	EHO1-66	SOUTH EAST PARAPET	NON-DIM	2744	
8	EHO1-68	NORTH EAST PARAPET	NON-DIM	2744	
MODULE TYPE LEGEND: ELV = ELECTRONIC LOW VOLTAGE DIMMING MLV = MAGNETIC LOW VOLTAGE DIMMING NON-DIM = SWITCHING ONLY LOAD (NO DIMMING) FAN = FAN SPEED CONTROL MOTOR = MOTOR CONTROL					
0-10V = 0-10V DIMMING 2-WIRE = 2-WIRE DIMMING 3-WIRE = 3-WIRE DIMMING DMX = COLOR CHANGING DIMMING					
NOTE: RELAY NUMBERING ON SCHEDULE IS INTENDED TO COMMUNICATE DESIGN INTENT AND IS FOR INFORMATIONAL PURPOSES ONLY. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING FINAL RELAY CONFIGURATION WITH LIGHTING CONTROL VENDOR AND FIELD CONDITIONS.					

LIGHT FIXTURE SCHEDULE

TYPE	MANUFACTURER / MODEL #	APPROVED ALTERNATES	LAMPING / LIGHT SOURCE	DIMMING TYPE	VOLTAGE	INPUT WATTS	INPUT VA	DESCRIPTION	NOTES
C1	VIBIA - DUO - 4870 4870-18	-	LED 90 CRI, 2700K 1705 LUMENS	0-10V	UNV (120-277V)	31	34	19" ROUND LED SURFACE MOUNT DOWNLIGHT, ALUMINUM HOUSING WITH WOOD SHADE, UNIVERSAL VOLTAGE (120-277V) 0-10V DIMMING DRIVER, 1705 LUMENS, 2700K CCT, 90 CRI, BLACK FINISH	
C2	VIBIA - DUO - 4872 4872-18	-	LED 90 CRI, 2700K 4032 LUMENS	0-10V	UNV (120-277V)	62	69	31" ROUND LED SURFACE MOUNT DOWNLIGHT, ALUMINUM HOUSING WITH WOOD SHADE, UNIVERSAL VOLTAGE (120-277V) 0-10V DIMMING DRIVER, 4032 LUMENS, 2700K CCT, 90 CRI, BLACK FINISH	
C3	VIBIA - DUO - 4880 4880-18	-	LED 90 CRI, 2700K 1705 LUMENS	0-10V	UNV (120-277V)	31	34	28" ROUND LED SURFACE MOUNT DOWNLIGHT, ALUMINUM HOUSING WITH WOOD SHADE, UNIVERSAL VOLTAGE (120-277V) 0-10V DIMMING DRIVER, 1705 LUMENS, 2700K CCT, 90 CRI, BLACK FINISH	
D1	FOCAL POINT - ID+ TRIMLESS FLC4D-RT-1000L-UNV-LD1 LCA-RT-1000L-835K-CN-FL2-CD	-	LED 80 CRI, 3500K 1000 LUMENS 204,000 HRS	0-10V	UNV (120-277V)	11	12	4" TRIMLESS LED DOWNLIGHT, ALUMINUM HOUSING, UNIVERSAL VOLTAGE (120-277V) 0-10V DIMMING DRIVER, 1000 LUMENS, 3500K CCT, 80 CRI, 90 DEGREE CUT-OFF, FLOOD 2 DISTRIBUTION WITH CLEAR DIFFUSE LENS	
D1E	FOCAL POINT - ID+ TRIMLESS FLC4D-RT-1000L-UNV-LD1 LCAEM-RT-1000L-835K-CN-FL2-CD	-	LED 80 CRI, 3500K 1000 LUMENS 204,000 HRS	0-10V	UNV (120-277V)	11	12	SAME AS FIXTURE TYPE D1 EXCEPT WITH INTEGRAL 7 WATT EMERGENCY BATTERY CAPABLE OF PROVIDING AT LEAST 60 LUMENS FOR 90 MINUTES. UL 924 LISTED.	
EM1	EELP - OMEL OMEL-10W-W-EM-CC-SD	-	LED	N/A	UNV (120-277V)	10	10	ARCHITECTURAL MULLION MOUNTED LED EMERGENCY EGRESS LIGHT, ALUMINUM HOUSING, UNIVERSAL VOLTAGE (120-277V) DRIVER, INTEGRAL BATTERY PACK CAPABLE OF PROVIDING AT LEAST 90 MINS OF RUN TIME, UL 924 LISTED SELF DIAGNOSTIC, CUSTOM COLOR	1
F1	BEULUX - FLORENCE - RGBW CT02-F-RGB-IP20 DTR-150-IP67 POWER SUPPLY	-	LED 330 LUMENS/FT	0-10V	277-24V	7.3 PER FT	8.1 PER FT	RGB LED TAPE LIGHT, CT02 SURFACE MOUNT ALUMINUM EXTRUSION, 277-24V 0-10V DIMMING DRIVER, SATINED LENS, 330 LUMENS PER FOOT	2
F2	FOCAL POINT - SEEM 2 F5M2L-WL-FL-375L-F-39K-1C-UNV-LD1-XFN-FW-WH-XX	-	LED 80 CRI, 3500K 375 LUMENS/FT 270,000 HRS	0-10V	UNV (120-277V)	4.75 PER FT	5.2 PER FT	RECESSED WET LOCATION LED COVE LIGHT, ALUMINUM HOUSING, UNIVERSAL VOLTAGE (120-277V) 0-10V DIMMING DRIVER, 375 LUMENS PER FOOT, 3500K CCT, 80 CRI, HARD SURFACE MOUNTING HARDWARE, WHITE FINISH	2
F3	DIODE LED - NEON BLAZE 24V-SE-NBL2-35-32	-	LED 80 CRI, 3500K 120 LUMENS/FT	0-10V	24V	2.44 PER FT	2.73 PER FT	WET LOCATION FLEXIBLE LED STRIP LIGHT, DIFFUSED LIGHT OUTPUT PROVIDE WITH 60W DRIVER PER 20 FEET OF FIXTURE LENGTH	
F4	EATON - METALUX - SNLED LENSED 4SNLED-LD5-295L-SLW-UNV-EL14W-L840-CD1	-	LED 80 CRI, 4000K 2900 LUMENS 60,000 HRS	0-10V	UNV (120-277V)	25	28	4 FT LED STRIP LIGHT, COLD ROLLED STEEL HOUSING, FROSTED SQUARE LENS, UNIVERSAL (120-277V) 0-10V DIMMING DRIVER, 2900 LUMENS, 4000K CCT, 80 CRI	
F4E	EATON - METALUX - SNLED LENSED 4SNLED-LD5-295L-SLW-UNV-EL14W-L840-CD1	-	LED 80 CRI, 4000K 2900 LUMENS 60,000 HRS	0-10V	UNV (120-277V)	25	28	SAME AS FIXTURE TYPE F4 EXCEPT WITH INTEGRAL 14 WATT EMERGENCY BATTERY AND TEST / INDICATOR LIGHT CAPABLE OF PROVIDING AT LEAST 1600 LUMENS FOR 90 MINUTES. UL 924 LISTED.	
F8	EATON - METALUX - SNLED LENSED 8TSNLED-LD5-705L-SLW-UNV-EL14W-L840-CD1	-	LED 80 CRI, 4000K 7000 LUMENS 60,000 HRS	0-10V	UNV (120-277V)	61	68	8 FT LED STRIP LIGHT, COLD ROLLED STEEL HOUSING, FROSTED SQUARE LENS, UNIVERSAL (120-277V) 0-10V DIMMING DRIVER, 7000 LUMENS, 4000K CCT, 80 CRI	
F9	LITELINE - LUNA LED RA2S-7F-BK		LED 90 CRI, 4000K 560 LUMENS	ELV	120	7	7.9	RECESSED 2" SQUARE, ALUMINUM HOUSING, 40 DEGREE BEAM SPREAD , SUITABLE FOR WET LOCATIONS PROVIDE ADD ALTERNATE FOR FULL RANGE RGB VERSION	
F8E	EATON - METALUX - SNLED LENSED 8TSNLED-LD5-705L-SLW-UNV-EL14W-L840-CD1	-	LED 80 CRI, 4000K 7000 LUMENS 60,000 HRS	0-10V	UNV (120-277V)	61	68	SAME AS FIXTURE TYPE F8 EXCEPT WITH INTEGRAL 14 WATT EMERGENCY BATTERY AND TEST / INDICATOR LIGHT CAPABLE OF PROVIDING AT LEAST 1600 LUMENS FOR 90 MINUTES. UL 924 LISTED.	
L4	EATON - CORELITE - CONTINUUA WALL LED CTW-F-2575-40L-835-1D-UNV-STD-W-WM-4	-	LED 80 CRI, 3500K 4000 LUMENS 121,000 HRS	0-10V	UNV (120-277V)	35	39	4 FT LED DIRECT / INDIRECT WALL MOUNT STRIP FIXTURE, ALUMINUM HOUSING WITH FROSTED LENS, UNIVERSAL VOLTAGE (120-277V) 0-10V DIMMING DRIVER, 25% UP - 75% DOWN DISTRIBUTION, 4000 LUMENS, 3500K CCT, 80 CRI WHITE FINISH	
L4E	EATON - CORELITE - CONTINUUA WALL LED CTW-F-2575-40L-835-1D-UNV-STD-BSL6-W-WM-4	-	LED 80 CRI, 3500K 4000 LUMENS 121,000 HRS	0-10V	UNV (120-277V)	35	39	SAME AS FIXTURE TYPE L4 EXCEPT WITH INTEGRAL 6 WATT EMERGENCY BATTERY PACK CAPABLE OF PROVIDING AT LEAST 600 LUMENS FOR 90 MINUTES. UL 924 LISTED.	
P1	EATON - PORTFOLIO - LSR8B LSR8B2010MB-ECB810208035-8LBM3B-P839MB-SPR0	-	LED 80 CRI, 3500K 1000 LUMENS 50,000 HRS	0-10V	UNV (120-277V)	11	12	8 INCH ROUND DECORATIVE SURFACE MOUNT CYLINDER, ALUMINUM HOUSING, UNIVERSAL VOLTAGE (120-277V) DIMMING DRIVER, 1000 LUMENS, 3500K CCT, 80 CRI, MATTE BLACK FINISH WITH SPECULAR BLACK MEDIUM DISTRIBUTION REFLECTOR, 60" MATTE BLACK PENDANT STEM KIT	
P2	EATON - PORTFOLIO - LSR8B LSR8B20D010MB-ECB810208035-8LBM3B-P839MB-SPR0	-	LED 80 CRI, 3500K 2000 LUMENS 50,000 HRS	0-10V	UNV (120-277V)	21	23	8 INCH ROUND DECORATIVE SURFACE MOUNT CYLINDER, ALUMINUM HOUSING, UNIVERSAL VOLTAGE (120-277V) DIMMING DRIVER, 2000 LUMENS, 3500K CCT, 80 CRI, MATTE BLACK FINISH WITH SPECULAR BLACK MEDIUM DISTRIBUTION REFLECTOR, 60" MATTE BLACK PENDANT STEM KIT	
P3	BARBICAN - SALSA 16-2001-52D-42H-XX-SM-BLK-9W/L-F-277V-3500K-90CRI-DB(0-10V)	-	LED 90 CRI, 3500K 900 LUMENS	0-10V	277V	18	20	DECORATIVE LED PENDANT FIXTURE, FABRIC PETAL SHADES OVER ALUMINUM HOUSING, 277V 0-10V DIMMING DRIVER, 900 LUMENS, 3500K CCT, 90 CRI, BLACK STEM AND CANOPY	
T	HALO SINGLE CIRCUIT TRACK L653-PMB		TRACK	-	120	-	-	COORDINATE FABRIC FINISH WITH ARCHITECT AND OWNER PRIOR TO ORDERING SINGLE CIRCUIT LINE VOLTAGE TRACK (W)(B) ON PLAN INDICATES WHITE OR BLACK FINISH	
T1	HALO MINI SERIES L812 TRACK HEAD L-812-11-NF-90-35-PMB		LED 90 CRI, 3500K	ELV	120	15.5	17	LED MINI TRACK HEAD, (W)(B) ON PLAN INDICATES WHITE OR BLACK FINISH	
W1	TECH LIGHTING - KENWAY WALL 700WKNWBLED930-277	-	LED 90 CRI, 3000K 734 LUMENS 50,000 HRS	0-10V	277V	11	12	17 INCH TALL WALL MOUNTED LED VANITY FIXTURE, ALUMINUM HOUSING WITH ACRYLIC SHADE, 277 VOLT 0-10V DIMMING DRIVER, 734 LUMENS, 3000K CCT, 90 CRI, MATTE BLACK FINISH	
WL-1	LIGHTWAY MERW-63B-LED-2-X-B1-SC	-	LED 80 CRI, 3000K	0-10V	UNV (120-277V)	27	31	EXTERIOR LED DECORATIVE WALL SCONCE, SATING BLACK, STEEL HOUSING, CUSTOM ACCENT MATERIAL	
WL-2	MOVIT - RECTANGULAR S-3000W-JB-REM-01 REMOTE DRIVER - 4548-0024-025-UNV-ND	-	LED 90 CRI, 3000K 700 LUMENS	NON-DIM	UNV (120-277V)	12.5	14	SURFACE MOUNTED, SURFACE SLIM FLOODLIGHT PROJECTOR, ASYMMETRICAL, INDIRECT PROVIDE ADD ALTERNATE FOR FULL RANGE RGB VERSION	
WL-4	SENIK G4 P2M-WVG4-120277-3000K-WH-25	-	LED 3000K 4800 LUMENS	NON-DIM	UNV (120-277V)	98	110	HEAVY DUTY 4FT LINEAR WALL WASHER PROVIDE ADD ALTERNATE FOR FULL RANGE RGB VERSION	
X1A	EATON - SURE-LITES - ES SERIES ES7-1-70-S-BL-G-W	-	LED	N/A	UNV (120-277V)	2	3.2	LED EDGE LIT SURFACE WALL MOUNT EXIT SIGN, STEEL HOUSING, GREEN LETTERS ON HIGH IMPACT ACRYLIC PANEL, SINGLE FACE, NO CHEVRONS, BLACK FINISH. INTEGRAL BATTERY BACKUP CAPABLE OF PROVIDING AT LEAST 90 MINUTES OF RUN TIME, UL 924 LISTED.	
X1B	EATON - SURE-LITES - ES SERIES ES7-1-70-S-BL-G-C	-	LED	N/A	UNV (120-277V)	2	3.2	LED EDGE LIT SURFACE CEILING MOUNT EXIT SIGN, STEEL HOUSING, GREEN LETTERS ON HIGH IMPACT ACRYLIC PANEL, SINGLE FACE, NO CHEVRONS, BLACK FINISH. INTEGRAL BATTERY BACKUP CAPABLE OF PROVIDING AT LEAST 90 MINUTES OF RUN TIME, UL 924 LISTED.	
X1C	EATON - SURE-LITES - ES SERIES ES7-2-70-S-BL-G-DA-C	-	LED	N/A	UNV (120-277V)	2	3.2	LED EDGE LIT SURFACE CEILING MOUNT EXIT SIGN, STEEL HOUSING, GREEN LETTERS ON HIGH IMPACT ACRYLIC PANEL, DOUBLE FACE, DOUBLE CHEVRONS, BLACK FINISH. INTEGRAL BATTERY BACKUP CAPABLE OF PROVIDING AT LEAST 90 MINUTES OF RUN TIME, UL 924 LISTED.	
X2	EATON - SURE-LITES - LPX SERIES LPX7SD	-	LED	N/A	UNV (120-277V)	1	1	LED EXIT SIGN, GREEN LETTERING ON WHITE HIGH IMPACT POLYCARBONATE HOUSING, INTEGRAL BATTERY BACKUP CAPABLE OF PROVIDING AT LEAST 90 MINUTES OF RUN TIME, SELF DIAGNOSTIC, UL 924 LISTED.	
GENERAL NOTES: A. REFER TO LIGHT FIXTURE SCHEDULE GENERAL NOTES AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.									
NOTES: 1. COORDINATE LIGHT FIXTURE FINISH COLOR WITH ARCHITECT, GENERAL CONTRACTOR AND CURTAIN WALL SYSTEM MANUFACTURER PRIOR TO ORDERING. 2. CONTRACTOR TO FIELD VERIFY AND COORDINATE LENGTHS WITH ARCHITECT PRIOR TO ORDERING.									

LIGHT FIXTURE SCHEDULE GENERAL NOTES:

- ALL LIGHT FIXTURES AND RELATED COMPONENTS SHALL BE PROVIDED BY THE CONTRACTOR, UNLESS NOTED OTHERWISE.
- THE PARTY SUPPLYING THE LIGHT FIXTURES IS RESPONSIBLE FOR SUPPLYING THE PROPER QUANTITY OF LIGHT FIXTURES.

LIGHT FIXTURE SCHEDULE SUPPLEMENTAL SPECIFICATIONS:

- ANY PROPRIETARY, SOLE-SOURCED LIGHT FIXTURE LISTED IN THE LIGHT FIXTURE SCHEDULE SHALL BE UNIT PRICED ONLY. NO PACKAGING OR LOT PRICING OF THESE LIGHT FIXTURES SHALL BE ALLOWED. UNIT PRICES SHALL BE CLEARLY IDENTIFIED ON THE BID FORM.
- PACKAGING OF LIGHT FIXTURES WILL NOT BE CONSIDERED OR APPROVED. REPRESENTATIVE AGENTS SHALL BE ALLOWED TO OFFER MINI-LOT PRICING (MLP) FOR LIGHT FIXTURES AS ALLOWED IN ELECTRICAL SPECIFICATIONS.
- LIGHTING CONTROLS PRICING, INCLUDING BUT NOT LIMITED TO THOSE REFERENCED IN ELECTRICAL SPECIFICATIONS, SHALL BE COMPLETELY SEPARATE OF ANY LIGHT FIXTURE PRICING. ANY LIGHTING CONTROLS PRICING THAT IS SUBMITTED WITH LIGHT FIXTURE PRICING (UNIT OR MINI-LOT) WILL BE IMMEDIATELY REJECTED IN ITS ENTIRETY.
- CATALOG NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND CATALOG NUMBERS ONLY. FIRST READ THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS IN CONJUNCTION WITH THE CATALOG NUMBER TO DETERMINE THE MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

- FOR SUBSTITUTIONS: PROVIDE PHOTOMETRIC CALCULATIONS AND OTHER NECESSARY INFORMATION FOR ENGINEER REVIEW. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
- COORDINATE LIGHT FIXTURE MOUNTING HARDWARE AND TRIMS NEEDED TO SUIT CEILING CONDITIONS. LIGHT FIXTURES NEAR OR IN CONTACT WITH INSULATION SHALL COMPLY WITH CODE. MAINTAIN 3" MINIMUM WORKING CLEARANCE BETWEEN NON-IC RATED LIGHT FIXTURE HOUSINGS AND INSULATION ON ALL ADJACENT DUCTWORK, PIPING,

Division 26: GENERAL ELECTRICAL REQUIREMENTS

1. GENERAL INSTRUCTIONS

A. GENERAL REQUIREMENTS

All requirements under Division 01 and all the general and supplementary conditions of these specifications apply to this section and division. Where the requirements of this section and division exceed those of Division 01, this section and division take precedence. Become thoroughly familiar with all its contents so as requirements that affect this section, division, or both. Work required under this division includes all material, equipment, appliances, transportation, services, and labor required to complete the entire system as required by the drawings and specifications, or reasonably inferred to be necessary to facilitate the function of each system as implied by the design and the equipment specified.

The specifications and drawings for the project are complementary, and any portion of work described in one shall be provided as it is described in both. In the event of discrepancies, notify the Engineer and request clarification prior to proceeding with the work involved.

Drawings are graphic representations of the work upon which the contract is based. They show the materials and their relationship to one another, including sizes, shapes, locations, and connections. They convey the intended general arrangement of the systems without showing all of the exact details as to elevations, offsets, control lines, and other installation requirements. Use the drawings as a guide when laying out the work and to verify that materials and equipment will fit into the designated spaces, and which when installed per manufacturers' requirements, will ensure a complete, coordinated, satisfactory, and properly operating system.

B. DEFINITIONS

Division: References contained in this specification follow the numbering system defined in the Construction Specifications Institute (CSI) MasterFormat 2004 Edition. Specification Division 01 through 13 provided with this project may reference the CSI MasterFormat 1995 Edition. The corresponding division references between the 2004 Edition and 1995 Edition are as follows:

2004 Edition	1995 Edition
1. Division 21 - Fire Suppression	Division 15
2. Division 22 - Plumbing	Division 15
3. Division 23 - HVAC	Division 15
4. Division 26 - Electrical	Division 16
5. Division 27 - Communications	Division 16
6. Division 28 - Electronic Safety and Security	Division 16

Furnish: "to supply and deliver to the project site, ready for unloading, unpacking, assembling, installing, and similar operations."

Install: "to perform all operations for the project site including, but not limited to, the actual unloading, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, testing, commissioning, starting up and similar operations, complete, and ready for the intended use."

Provide: "to furnish and install."

Furnished by Owner (or Owner-Furnished) or Furnished by Others: "an item furnished by the Owner or under other divisions or contracts, and installed under the requirements of this division, complete, and ready for the intended use, including all items and services incident to the work necessary for proper installation and operation. Include the installation under the warranty required by this division."

Engineer: Where referenced in this Division, "Engineer" is the Engineer of Record and the Design Professional for the work under this division, and is a consultant to, and an authorized representative of the Architect, as defined in the General and Supplementary Conditions. When used in this division, Engineer means increased involvement by and obligations to the Engineer, in addition to involvement by and obligations to the Architect.

AHJ: The local code and/or inspection agency (Authority Having Jurisdiction over the Work

NRTL: National Recognized Testing Laboratory, as defined and listed by OSHA in 29 CFR 1910.7 (e.g., UL, ETL, CSA), and acceptable to the AHJ over this project. Nationally recognized testing laboratories and standards listed are only to represent the characteristics required and are not intended to restrict the use of other NRTLs that are acceptable to the AHJ and standards that meet the specified criteria.

Header: That portion of an electrical circuit originating at a junction box, termination box, receptacle, or switch with termination at an electrical panelboard. Note: Where MC cable is utilized for receptacle and/or lighting branch circuits including loads, the originating point of the header shall be at the first load in the circuit or at a junction box located in an accessible ceiling space as close as possible to the first load.

Substitution: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor. Substitutions include Value Engineering proposals.

1. Substitution for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.

2. Substitution for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

The term "approved quality," "equivalent," or "equal" are used synonymously and shall mean "accepted by or acceptable to the Engineer as equivalent to the item or manufacturer specified." The term "approved" shall mean labeled, listed, certified, or all three, by an NRTL, and acceptable to the AHJ over this project.

C. PRE-BID SITE VISIT

Prior to submitting bid, visit the site of the proposed work and become fully informed as to the conditions under which the work is to be done. Failure to comply with this requirement shall not be considered sufficient justification to request or obtain extra compensation over and above the contract price.

D. MATERIAL AND WORKSMANSHIP

Provide new material, equipment, and apparatus under this contract unless otherwise stated herein, of best quality normally used for the purpose in good commercial practice, and free from defects. Model numbers listed in the specifications or shown on the drawings are not necessarily intended to designate the required trim, written descriptions of the trim govern model numbers.

Provide markings or a nomenclature for all material and equipment identifying the manufacturer and providing sufficient reference to establish quality, size, and capacity. All workmanship shall be of the finest possible by experienced mechanics of the proper trade. In general, provide the following quality grade(s) for all materials and equipment.

Commercial specification grade:

Provide all ladders, scaffolds, staging, runways, ladders, tools, machinery, and equipment required for the performance of the electrical work. Store and maintain material and equipment in clean condition, and protected from weather, moisture, and physical damage.

Furnish only material and equipment that are listed, labeled, certified, or all three, by an NRTL whenever any listing or labeling exists for the types of material and equipment specified.

At a minimum, general work practices for electrical construction shall be in accordance with NECA 1 (latest edition), "Standard Practices for Good Workmanship in Electrical Construction".

E. MANUFACTURERS

In other articles where lists of manufacturers are introduced, subject to compliance with requirements, provide products by one of the manufacturers specified.

Where a list is provided, manufacturers are listed alphabetically and not in accordance with any ranking or preference.

Where manufacturers are not listed, provide products subject to compliance with requirements from manufacturers that have been actively involved in manufacturing the specified product for no less than 5 years.

F. COORDINATION

Coordinate all work with other divisions and trades so that various components of the systems are installed at the proper time, fit available space, and allow proper service access to those items requiring maintenance. Components which are installed without regard to the above shall be relocated at no additional cost to the Owner.

Unless otherwise indicated, the General Contractor shall provide chases and openings in building construction required for installation of the systems specified herein. Contractor shall furnish the General Contractor with information where chases and openings are required. Contractor shall keep informed as to the work of other trades engaged in the construction of the project and shall execute work in a manner as to not interfere with or delay the work of other trades.

Figured dimensions shall be taken in preference to scale dimensions. Contractor shall take his own measurements at the building; as variations may occur. Contractor shall be held responsible for errors that cannot be avoided by proper checking and inspection.

Provide materials with trim that will properly fit the types of ceiling, wall, or floor finishes actually installed. Model numbers listed in the specifications or shown on the drawings are not intended to designate the required trim.

Make all efforts required to protect clean rooms, and other structural members, and to facilitate concealing raceways in the manner indicated in the design. Provide materials with trim that will fit properly the types of ceiling, wall, or floor finishes actually installed.

G. ORDINANCES AND CODES

Work performed under this contract shall, at a minimum, be in conformance with applicable national, state and local codes having jurisdiction. Equipment furnished and associated installation work performed under this contract shall be in strict compliance with current applicable codes adopted by the local AHJ, including any amendments and standards as set forth by the following:

- National Fire Protection Association (NFPA)
- Underwriters Laboratories (UL)
- Occupational Safety and Health Administration (OSHA)
- American National Standards Institute (ANSI)
- American Society of Testing Materials (ASTM)
- Rules and regulations of public utilities and municipal departments affected by connection of services.
- Other national standards and codes where applicable.

Where the contract documents exceed the requirements of the referenced codes, standards, etc., the contract documents shall take precedence. Where conflicts between various codes, ordinances, rules, and regulations exist, comply with the most stringent.

Promptly bring all conflicts observed between codes, ordinances, rules, regulations, referenced standards, and these documents to the attention of the Architect and Engineer for final resolution. Contractor will be held responsible for any violation of the law.

Procure and pay for permits and licenses required for the accomplishment of the work herein described. Where required, obtain, pay for, and furnish certificates of inspection to Owner. Provide all safety lights, guards, and warning signs required for the performance of the work and for the safety of the public.

H. PROTECTION OF EQUIPMENT AND MATERIALS

Store and protect from damage equipment and materials delivered to job site. For materials and equipment susceptible to changing weather conditions, dampness, or temperature variations, store inside in conditioned spaces. For materials and equipment not susceptible to these conditions, cover with waterproof, tear-resistant, heavy duty or polyethylene plastic as required to protect from plaster, dirt, paint, water, or physical damage. Equipment and material damaged by construction activities shall be rejected, and Contractor shall furnish new equipment and material of a like kind at his own expense.

Keep premises clean and clear of foreign material created during work performed under this contract. Conduit, equipment, etc. shall have a neat and clean appearance at the termination of the work.

Plug or cap open ends of conduits while stored and installed during construction when not in use to prevent the entrance of debris into the systems.

I. SUBSTITUTIONS

Materials, products, equipment, and systems described in the Bidding Documents establish a standard of required function, dimension, appearance and quality to be met by the proposed substitution. The bidders shall include only the products from manufacturers specifically named in the drawings and specifications. To request a substitution, request the Substitution Request Form from the Architect or Engineer. Complete and send the Substitution Request Form for each material, product, equipment, or system that is proposed to be substituted. The burden of proof of the proposed substitution is upon the proposer.

- Unless stated otherwise in writing to the Engineer by the Contractor, Contractor warrants to the Engineer, Architect, and Owner the following:
- Proposed substitution has been fully investigated and determined to not exceed the specified Work in all respects unless stated otherwise in the substitution request.
 - Proposed substitution is consistent with the Contract Documents and will produce indicated results, including functional characteristics, maintenance service, and sourcing of replacement parts.
 - Proposed substitution has received necessary approvals of authorities having jurisdiction.
 - Same warranty will be furnished for proposed substitution as for specified Work.
 - If accepted substitution fails to perform as required, Contractor shall replace substitute material or system with that originally specified and bear costs incurred thereby.
 - Coordination, installation and changes in the Work is necessary for accepted substitution will be complete in all respects.

No substitutions will be considered unless the Substitution Request Form is completed and attached with the appropriate substitution documentation. No substitution will be considered prior to receipt of bids unless written request for approval has been received by the Engineer at least ten (10) calendar days prior to the date for receipt of bids. Verbal approval will not be given. No substitutions will be considered after the contract is awarded unless specifically provided in the Contract documents.

If the proposed substitution is approved prior to receipt of bids, such approval will be stated in an addendum. Bidders shall not rely upon approvals made in any other way. Verbal approval will not be given. No substitutions will be considered after the contract is awarded unless specifically provided in the Contract documents.

Provide factory generated point-by-point calculations for all exterior light fixtures (photometric files supplied so the engineer can generate a point-by-point or no surface for the point-by-point calculations). Provide interior point-by-point calculations at the discretion of the engineer.

J. SUBMITTALS

Assemble and submit for review shop drawings, material lists, manufacturer product literature for equipment to be furnished, and items requiring coordination between contractors under this contract. Provide submittals in sufficient detail so as to demonstrate compliance with these Contract Documents and the design concept. Prior to transmitting submittals, verify that the equipment submitted is mutually compatible with and suitable for the intended use, will fit the available space, and maintain manufacturer recommended service clearances. If the size of equipment furnished makes necessary any change in location or configuration, submit a shop drawing showing the proposed layout.

Transmit submittals as early as required to support the project schedule. Allow two weeks for Engineer review time, plus sufficient mailing time via the Architect, plus a duplication of this time for resubmittals, if required. Only resubmit those sections requested for resubmittal.

Submittals shall contain the project name, applicable specification section, submittal data, equipment identification specifications as used on the drawings, and the Contractor's stamp. The stamp shall certify that the submittal has been checked by the Contractor, complete with the drawings and specifications, and is coordinated with other trades. Manufacturer product literature shall include shop drawings, product data, performance sheets, samples, and other submittals required for the drawings. Highlight mark, list, or indicate the materials, performance criteria, and accessories that are being proposed. General product catalog data not specifically noted to be part of the specified product will be rejected and returned without review.

Separate and shop drawings shall not contain firm name, logo, seal, or signature of the Engineer. They shall not be copies of the work product of the Engineer. If the Contractor desires to use elements of such product, refer to paragraph "Electronic Drawing Files" for procedures to be used.

Submittals should correspond to individual specification sections. Flagable submittals will be rejected and returned without review. Catalog data will be properly bound, identified, indexed and tabbed in a 3-ring binder. Each item or model number shall be clearly marked and accessories indicated. Label the catalog data with the equipment identification number or number as used on the drawings and include performance curves, capacities, sizes, and weights. Materials, finishes, wiring diagrams, electrical requirements and deviations from specified equipment or materials. Mark on insupportable items. Shop drawings will be returned without review if the above mentioned requirements are not met.

Provide the quantity of submittals required by Division 01. If not indicated and hand-copy sets are provided, submit a minimum of six (6) copies. Refer to Division 01 for acceptance of electronic submittals for this project. For electronic submittals, Contractor shall submit the documents in accordance with the procedures specified in Division 01. Contractor shall notify the Engineer that the submittals have been received. If electronic submittal procedures are not defined in Division 01, Contractor shall include the website, user name, and password information needed to access the submittals. For submittals sent by e-mail, Contractor shall send the designated representatives of the Architect and Engineer. Contractor shall allow for the Engineer review time as specified above in the construction schedule. Contractor shall submit only the documents required to purchase the material and/or equipment in the submittal.

The checking and subsequent acceptance of submittals by the Engineer and/or Architect shall not relieve the Contractor from responsibility for deviations from the drawings and specifications, errors in dimensions, details, sizes of equipment, or quantities, omissions of components or fittings, coordination of electrical requirements, and coordinating items with actual building conditions and adjacent work. Contractor shall request and secure written acceptance from the Engineer and Architect prior to implementing any deviation.

K. ELECTRONIC DRAWING FILES

In preparation of shop drawings or record drawings, Contractor may, at his option, obtain electronic drawing files in AutoCAD or DXF format on CD-ROM disk, DVD disk, flash drive, or direct download, as desired, from the Engineer for a shipping and handling fee of \$200 for a drawing set up to 12 sheets and \$15 per sheet for each additional sheet. Contact the Architect for written authorization and Agreement for the necessary agreement form and to specify shipping method and drawing format. In addition to payment, the written authorization from the Architect and Release Agreement from the Engineer must be received before electronic drawing files will be sent.

L. RECORD DRAWINGS (AS-BUILT DRAWINGS)

During progress of the work in this division, Contractor shall maintain an accurate record of all changes made during the installation of the system. Upon completion of the work, accurately transfer all record information to three identical sets of the approved shop drawings. Insert one set into each copy of the manual described below.

See Division 01 and General Conditions for additional information.

M. OPERATION AND MAINTENANCE INSTRUCTIONS

During the course of construction, collect and compile a complete brochure of equipment furnished and installed on this project. Include operational and maintenance instructions, manufacturer's catalog sheets, wiring diagrams, parts lists, approved submittals and shop drawings, warranties, and descriptive literature as furnished by the equipment manufacturer. Include an inside cover sheet that lists the project name, date, Owner, Architect, Engineer, General Contractor, Sub-Contractor, and an index of contents.

Submit three copies of literature bound in approved binders with index tabs separating equipment items to the Architect, for Engineer's review, at the termination of the work. Paper clips, staples, rubber bands, loose-leaf binding, and making envelopes are not considered approved binders. Final apprais of systems installed under this contract shall be withheld until this equipment brochure is received and deemed complete by the Architect and Engineer. Insure workmen to save required literature shipped with the equipment itself for inclusion in this brochure.

Include Record Drawings as described above.

Refer to Division 01 for acceptance of electronic manuals for this project. For electronic manuals, refer to paragraph "Submittals" for requirements.

N. WARRANTIES

Warrant each system and each element thereof against all defects due to faulty workmanship, design, or material for a period of 12 months from date of Substantial Completion, unless specific items are noted to carry a longer warranty in these construction documents or manufacturer's standard warranty exceeds 12 months. Remedy all defects occurring within the warranty periods(s) as stated in the General Conditions and Division 01.

Warranties shall include labor and material, including travel expenses. Make repairs or replacements without any additional costs to the Owner, and to the satisfaction of the Owner, Architect, and Engineer.

Perform the remedial work promptly upon written notice from the Engineer or Owner.

Also warrant the following additional items:

- All raceways are free from obstructions, holes, crushing, or breaks of any nature.
- All raceway seals are effective.
- The entire electrical system is free from all short-circuits and unwanted open circuits and grounds.

At the time of Substantial Completion, deliver to the Owner all warranties, in writing and properly executed, including time limits for warranties extending beyond the one year period and any actions the Owner must take in order to maintain warranty status. Each warranty instrument shall be addressed to the Owner and state the commencement date and term.

2. GENERAL MATERIALS AND INSTALLATION

A. BUILDING OPERATION

Comply with the schedule of operations as outlined in the architectural portions of this specification. Building shall be in operation during normal workday hours. Accomplish work requiring interruption of building operation at a time when the building is not in operation and only with written approval of building Owner and/or tenant. Coordinate interruption of building operation with the Owner and/or tenant in maximum 6-inch layers of wall lapped by earth in a manner to prevent future settlement.

B. EXCAVATION AND BACKFILLING

Perform excavation and backfill required for installation of underground work under this contract. Trenches shall be of sufficient width, crib or brace trenches to prevent cave-in or settlement. Do not excavate trenches close to columns and walls of new building without prior consultation with the Architect. Use pumping equipment if required to keep trenches free of water. Backfill trenches in maximum 6-inch layers of well lapped dry earth in a manner to prevent future settlement.

Excavation as specified herein shall be classified as common excavation. Common excavation shall comprise the satisfactory removal and disposition of material of whatever substances and of every description encountered, including rock, if any, within the limits of the work as specified and shown on the drawings. Excavation shall be performed to the lines and grades indicated on the drawings. Dispose of excavated materials that are considered unsuitable for backfill, and surplus of excavated material, which is not required for backfill, all to the satisfaction of the Engineer.

C. COINCIDENTAL DAMAGE

Repair stairs, sidewalks, drives, paving, walls, finishes, and other facilities damaged in the course of this Work. Repair materials shall match existing construction. Repair work shall meet all requirements of the Owner, local authorities having jurisdiction, and meet the satisfaction of the Architect. Repair work shall be thoroughly first class.

D. CUTTING AND PATCHING

Conform to the requirements in Division 01. Cut walls, floors, ceilings, and other portions of the facility as required to install work under this division. Obtain permission of the Architect prior to cutting. Do not cut or disturb structural members without prior approval from the Architect. Cut holes as small as possible. Patch walls, floors, and other portions of the facility as required by work under this division. Patching shall match the original material and construction including fire ratings, if applicable. Repair and refinish areas disturbed by work to the condition of adjoining surfaces in a manner the satisfaction of the Engineer.

E. ROUGH-IN

Coordinate without delay all rough-in with other divisions. Consider all conduit and raceways except in unfinished areas and where otherwise indicated on the drawings.

F. CONCRETE BASES

Provide concrete bases (e.g., housekeeping pads) for equipment where indicated on the drawings and as specified herein. Concrete bases shall have chamfered edges. Size of base shall be a minimum of 4 inches greater than the footprint of the equipment that it is supporting and shall have a minimum height of 3-1/2 inches.

Construct equipment bases of a minimum 28-day, 4000-psi concrete conforming to American Concrete Institute Standard Building Code for Reinforced Concrete (ACI 318) and the most applicable recommendations of the ACI standard practice manual. Concrete shall be composed of concrete conforming to ASTM C150 Type I, aggregate conforming to ASTM C33, and potable water. Exposed exterior concrete shall contain 5 to 7 percent air entrainment.

Other utilities specified or shown on the structural drawings, reinforce equipment bases with No. 4 reinforcing bars conforming to ASTM A615 or 6-#2 x W-9.2 welded wire mesh conforming to ASTM A185. Place reinforcing bars 24 inches on center with a minimum of two bars each direction.

Provide galvanized anchor bolts for equipment placed on concrete bases or on concrete slabs. Anchor bolts size, number, and placement shall be as recommended by the manufacturer of the equipment.

G. SUPPORT SYSTEMS

Steel Slotted Support Systems (Slotted Channel): Comply with MFMA-3, factory-fabricated components for field assembly; 12-gauge, 1-5/8-inch by 1-5/8-inch.

Finishes:

- Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-3.

Aluminum Slotted Support Systems (Slotted Channel): Comply with MFMA-3, Type 6063-T6, per ASTM B221; factory-fabricated components for field assembly; 12-gauge, 1-5/8-inch by 1-5/8-inch.

Manufacturers: Cooper B-Line, EBCO International, Hilti, Power-Strut, Thomas and Betts, or Unistrut.

Field Fabrication:

Where field cutting of standard lengths of channel are required, make cuts straight and perpendicular to manufactured surfaces.

For field-cut or damaged surfaces of coated channels, dress cut ends, damaged surfaces, or both, with an abrasive material (e.g., file, grinding stone, or similar) and cleanser to remove oils, rust, sharp edges, and burrs.

For field-cut with a factory applied coating, a finish grade with a coating compatible with the factory finish and as recommended by the manufacturer (e.g., manufacturer's touch-up paint or zinc-rich cold galvanizing compound, as applicable).

H. ACCESS DOORS

Provide access doors for all concealed equipment where indicated or as required, except where above-joint ceilings. Access doors shall be adequately sized for the device served with a minimum size of 18 inches x 18 inches. Access doors must be of the proper construction in which it is installed. Obtain Architect's approval of type, size, location and color before ordering. Provide factory-fabricated and assembled units, complete with attachment devices and fasteners ready for installation, concealed hinges, flush screwdriver-operated cam lock, and anchor straps. Provide access doors manufactured by: Bus Co., J.L. Industries, Key Associates, McKee Systems Building Products, Locke, or Zum.

I. PENETRATIONS

Coordinate sleeve selection and application with selection and application of fire-stopping specified in Division 07 section "Through-Penetration Firestop Systems."

Roofs:

- Coordinate all roof penetrations with Engineer, Owner, and as applicable, the roofing contractor providing a roof warranty.
- Keep all raceway penetrations within mechanical equipment bases wherever possible. Coordinate with Division 01.
- Flash and counterflash all openings through roof, and/or provide pre-fabricated molded seals compatible with the roof construction installed, or as required by the Engineer, Owner, or roofing contractor. All roof penetrations shall be leaktight at the termination of the work and shall not void any new or existing roof warranties.

Walls and Floors:

- Steel Pipe Sleeves for Raceways and Cables: ASTM A53/A583, Type E, Grade B, Schedule 40, galvanized steel, plain ends, and drip rings.
- Cable Pipe Sleeves for Raceways and Cables: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral warranty, unless otherwise specified.
- Sleeves for Rectangular Openings: Galvanized steel sheet with minimum 0.052 inch thickness and of length to suit application.

J. FIRESTOPPING

Sealants and accessories shall have fire-resistance ratings indicated, as established by testing identical assemblies in accordance with UL 2079 or ASTM E 814, or other NRTL acceptable to AHJ.

Manufacturers: Hilti, RecoSeal, Specified Technologies Inc., United States Gypsum Company, or 3M Corp.

Through and Membrane Penetration Firestopping Systems Product Schedule: Provide UL listing, listing, and floor rating, and installation drawing for each penetration fire stop system.

Where project conditions require modification to qualified testing and inspecting agency's illustrations for a particular firestopping condition, submit illustration, with modifications marked, approved by penetration firestopping manufacturer's fire protection engineer as an engineering judgment or equivalent fire-resistance rated assembly. Include qualifications data for testing agency.

K. EQUIPMENT FURNISHED BY OTHERS

Provide necessary equipment and accessories that are not provided by the equipment supplier or Owner to complete installation of equipment furnished by others in locations as indicated on the drawings, specified herein, or both. Equipment and accessories not provided by the equipment supplier may include, but are not limited to, flexible conduits and plugs as required for proper operation of the complete system, in accordance with the manufacturer's instructions.

Contractor shall be responsible for correct rough-in dimensions, and verify them with Architect and/or equipment supplier prior to rough-in and service installations.

L. SYSTEM TESTING AND ADJUSTING

Adjust, align, and test all electrical equipment on this project provided under this division and all electrical equipment furnished by others for installation or wiring under this division for proper operation.

Test all systems and equipment according to the requirements in NFPA 70E (latest edition) and all additional requirements specified in following sections.

Maintain the following on the project premises at all times: a RMS reading voltmeter, a true RMS reading ammeter, and a megohmmeter insulation resistance tester. Provide test data readings as requested or as required by the Engineer.

M. EQUIPMENT IDENTIFICATION

Provide equipment identification nomenclature on all switchboards, panelboards, electrical equipment enclosures, access doors, transformers, disconnect switches, enclosed circuit breakers, motor starters, feeder devices in switchboards, distribution panelboards, and motor control centers.

Nomenclature:

- Engraved, contrasting color, three-layer, laminated plastic - indicating the name of the equipment, load, or circuit as designated on the drawings and in the specifications;
- Field-applied permanent epoxy adhesive, compatible with the equipment finish.

Attachment method shall be acceptable to the manufacturers of the equipment to which the nomenclatures are being applied.

Nomenclature Color:

- Black background with white letters for Normal Power;
- Letter height: 3/8-inch minimum.

N. SYSTEM START UP

Perform the following prior to starting up the electrical systems:

- Check all components and devices and lubricate items accordingly.
- Tighten screws and bolts and tighten nuts according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 484A and UL 484B.
- Adjust tap on circuit breaker for rated secondary voltage when the transformer is at a minimum load.
- Check and record building's service entrance voltage, grounding conditions, grounding resistance, and proper phasing.
- Replace all burned-out lamps and lamps used for temporary construction lighting in permanent light fixtures.
- After all systems have been inspected and adjusted, confirm all operating functions required by the drawings and specifications and make final adjustments as necessary.

END OF SECTION 26

Division 26: BASIC ELECTRICAL MATERIALS AND METHODS

1. RACEWAYS

A. METALLIC CONDUIT AND TUBING

Electrical Metallic Tubing, Couplings, and Fittings (EMT): ANSI C80.3, UL 797. Only steel products allowed. Reduced wall EMT is not allowed.

Flexible Metal Conduit (FMC): Zinc-coated steel or aluminum; UL 1. Reduced-wall FMC is not allowed.

Intermediate Metal Conduit (IMC): Hot-dip Galvanized Rigid Steel Conduit; ANSI C80.3, UL 1242.

Liquidtight Flexible Metal Conduit (LFMC): Flexible steel conduit with PVC jacket, UL 360; Fittings: NEMA FB 1.

Rigid Metal Conduit (RMC):

- Hot-dip Galvanized Rigid Steel Conduit (GRS): ANSI C80.1, UL 6.
- Black Steel Conduit (BSC), RMC, and Fittings: NEMA RST 1, NRTL listed. Coating thickness of 0.04 inches minimum.

DAC and RMC Fittings: NEMA FB 1; compatible with conduit type and material, NRTL listed.

Manufacturers: ACF Cable, Ahlflex, Ansumet Electrical, Electri-Flex, Indalex, Manhattan/CDT/Cole-Flex, O-Z/Geshey, Republic Raceway, Tyco International, Western Tube and Conduit, or Wheelabrator Tube.

B. NON-METALLIC CONDUIT AND TUBING

Rigid Nonmetallic Conduit (RNC): Schedule 40 PVC, 90 deg C rated, NEMA TC-2, UL 651

Fittings: NEMA TC-3, TC 6-UL 651, compatible with conduit/tubing type and material, NRTL listed.

Manufacturers: ACF Cable, American International, Ansumet Electrical, Amco, Conco, Certainteed, Conduco International, Eletscoy, Electri-Flex, Lamson and Sessions, Manhattan/CDT/Cole-Flex, Prime Conduit, Raco, Spiraflex, Superflex Ltd., or Thomas and Betts.

2. RACEWAY INSTALLATION

A. GENERAL RACEWAY INSTALLATION REQUIREMENTS

Install raceways parallel and perpendicular to building lines.

Install raceways to requirements of structure, to requirements of all other work on the project, and to clear all openings, depressions, pipes, ducts, reinforcing steel, and other immovable obstacles.

Install raceways set in forms for concrete structure in such a manner that installation will not affect the strength of

1. PRIOR TO SUBMITTING BID, VISIT THE JOB SITE AND BECOME FULLY ACQUAINTED WITH THE EXISTING CONDITIONS OF THE PROJECT. THE BIDDER SHALL BE RESPONSIBLE FOR OBTAINING ALL SPECIFICATIONS AND OTHER DRAWINGS FOR ADDITIONAL REQUIREMENTS WHICH MAY NOT BE SPECIFICALLY CALLED OUT IN THIS PROJECT. THE BIDDER SHALL BE RESPONSIBLE FOR VERIFYING THE ARCHITECT, ENGINEER AND/OR OWNER OF CONFLICTS OR DISCREPANCIES PRIOR TO SUBMISSION OF BID.
2. SYSTEM DESIGN, INSTALLATION AND MATERIALS SHALL BE IN ACCORDANCE WITH APPLICABLE NFPA STANDARDS. SYSTEM DESIGN SHALL MEET ALL CITY, STATE AND FEDERAL CODES, FIRE CODES AND THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION AND INSURANCE CARRIER. VERIFY REQUIREMENTS PRIOR TO SUBMITTAL.
3. INFORMATION ON CONTRACT DOCUMENTS IS GENERAL INFORMATION ONLY. THE BIDDER SHALL BE RESPONSIBLE FOR THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE FINAL SYSTEM DESIGN AND LAYOUT OF ALL COMPONENTS; COORDINATION WITH OTHER TRADES; AND OBTAINING ALL PERMITS REQUIRED FOR APPROVAL BY THE AUTHORITY HAVING JURISDICTION, ENGINEER, AND OWNER'S INSURER.
4. THE CONTRACTOR SHALL FOLLOW THE ENGINEER OF RECORD'S SYSTEM DESIGN AND LAYOUT OF ALL COMPONENTS. ANY MODIFICATIONS TO THE DESIGN ARE NECESSARY MODIFICATIONS SHALL BE REFLECTED IN THE CONTRACTOR'S SHOP DRAWINGS AND CALCULATIONS.
5. DEVIATIONS FROM ENGINEER'S DESIGN WILL NOT BE CONSIDERED UNLESS A FORMALLY SUBMITTED RFI IS REVIEWED AND APPROVED.
6. THE CONTRACTOR SHALL PROVIDE ALL EQUIPMENT AND LABOR REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM AS INDICATED IN THE DRAWINGS AND SPECIFICATIONS.
7. PROVIDE ADDITIONAL MATERIALS AND LABOR REQUIRED DUE TO MODIFICATION OR TO MEET AUTHORITY HAVING JURISDICTION AND INSURANCE CARRIER REQUIREMENTS AT NO ADDITIONAL COST TO THE OWNER.
8. FORWARD COMPLETED CERTIFICATE OF COMPLETION AND CONTRACTOR MATERIAL TEST CERTIFICATES TO THE OWNER.
9. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.

THIS IS A MASTER LEGEND AND NOT ALL SYMBOLS OR ABBREVIATIONS ARE USED.

V2.01

ABBREVIATIONS		FIRE ALARM	
AF	ABOVE FINISHED FLOOR	NOT IN CONTRACT	
AFG	ABOVE FINISHED GRADE	ON CENTER	FACP
CD	CANDELA	NIC	FACP
DI	DUCTILE IRON	OC	FACP
ESFR	EARLY SUPPRESSION FAST RESPONSE	OC	FACP
ETR	EXISTING TO REMAIN	RD	FACP
FHC	FIRE HOSE CABINET	RD	FACP
FP	FIRE PROTECTION	REV	FACP
FC	CONTRACTOR	SD	FACP
GPM	GALLONS PER MINUTE	SF	FACP
JBU-BOX	JUNCTION BOX	SP	FACP
MA	MAXIMUM	TP	FACP
MIN	MINIMUM	UNO	FACP
N/A	NOT APPLICABLE	V	FACP
		W	FACP
		WP	FACP
ANNOTATION		FIRE ALARM	
①	FIRE PROTECTION PLAN NOTE CALLOUT	FACP	FIRE ALARM CONTROL PANEL/UNIT
⊙	CONNECTION POINT OF NEW WORK TO EXISTING	FACP	RECESSED FIRE ALARM CONTROL PANEL/UNIT
① F1	DETAIL REFERENCE UPPER NUMBER INDICATES DETAIL NUMBER LOWER NUMBER INDICATES SHEET NUMBER	FACP	FIRE ALARM ANNUNCIATOR PANEL
① F1	SECTION CUT DESIGNATION	FACP	RECESSED FIRE ALARM ANNUNCIATOR PANEL
STANDARD MOUNTING HEIGHTS		FACP	AMPLIFIER PANEL
FIRE ALARM		FACP	REMOTE POWER SUPPLY
AUDIBLE APPLIANCES (CENTERLINE)		FACP	REMOTE TEST STATION WITH INDICATING LIGHT
FIRE ALARM ANNUNCIATOR PANEL (DISPLAY)		FACP	REMOTE INDICATING LIGHT
FIRE ALARM BELL (EXTERIOR)		FACP	PRESSURE SWITCH LOW/HIGH
FIRE ALARM CONTROL PANEL/UNIT (DISPLAY)		FACP	WATERFLOW ALARM SWITCH
PULL STATIONS (HANDLE)		FACP	CONTROL VALVE TAMPER SWITCH
VISIBLE APPLIANCES (CENTERLINE)		FACP	MAGNETIC DOOR HOLD OPEN DEVICE
		FACP	CONTROL MODULE
		FACP	MONITOR MODULE
		FACP	FIRE DEPARTMENT KEY BOX
		FACP	PULL STATION
		FACP	FIREFIGHTER'S PHONE JACK
		FACP	HEAT DETECTOR (E INDICATES ELEVATOR RECALL)
		FACP	SMOKE DETECTOR (E INDICATES ELEVATOR RECALL)
		FACP	SINGLE STATION SMOKE DETECTOR
		FACP	PROJECTED BEAM SMOKE DETECTOR
		FACP	DUCT MOUNTED SMOKE DETECTOR (SD=SUPPLY/RD=RETURN)
		FACP	CARBON MONOXIDE DETECTOR
		FACP	AREA OF REFUGE 2-WAY COMMUNICATION SYSTEM
		FACP	WALL MOUNTED AUDIBLE NOTIFICATION APPLIANCE
		FACP	#W INDICATES WATTAGE (VOICE EVACUATION SYSTEMS ONLY)
		FACP	WALL MOUNTED VISIBLE NOTIFICATION APPLIANCE
		FACP	#W INDICATES CANDELA
		FACP	WALL MOUNTED AUDIBLE/VISIBLE NOTIFICATION APPLIANCE
		FACP	#W INDICATES CANDELA
		FACP	#W INDICATES WATTAGE (VOICE EVACUATION SYSTEMS ONLY)
		FACP	CEILING MOUNTED AUDIBLE NOTIFICATION APPLIANCE
		FACP	#W INDICATES WATTAGE (VOICE EVACUATION SYSTEMS ONLY)
		FACP	CEILING MOUNTED VISIBLE NOTIFICATION APPLIANCE
		FACP	#W INDICATES CANDELA
		FACP	CEILING MOUNTED AUDIBLE/VISIBLE NOTIFICATION APPLIANCE
		FACP	#W INDICATES CANDELA
		FACP	#W INDICATES WATTAGE (VOICE EVACUATION SYSTEMS ONLY)
THROUGHOUT THE DRAWINGS DIFFERENT LINTYPES ARE USED IN COMBINATION WITH THE SYMBOLS TO INDICATE THE STATUS OF ITEMS AS EXISTING, TO BE DEMOLISHED, TO BE INCLUDED AS PART OF NEW WORK, AND/OR ITEMS WHICH ARE ANTICIPATED TO BE PROVIDED IN THE FUTURE. THE STATUS OF ITEMS USING THESE LINTYPES ARE RELATIVE TO THE VIEW IN WHICH THEY APPEAR. PHASING SHOWN IN DRAWINGS IS NOT INTENDED TO FULLY DESCRIBE ALL NECESSARY CONSTRUCTION PHASING, WHICH IS DETERMINED BY THE CONTRACTOR AS PART OF THEIR RESPONSIBILITIES. ANY SUCH PHASES DESCRIBED IN THE CONSTRUCTION DOCUMENTS ARE GENERAL AND ONLY INTENDED TO INDICATE A BROAD ORDER FOR THE SAKE OF DESCRIBING THE PROJECT. THE FOLLOWING LINTYPES MAY BE USED ON ANY DEVICE, EQUIPMENT, NOTE, LINE, SHAPE, ETC.			
EXISTING	NEW		
DEMOLISH	FUTURE		
		END OF LINE RESISTOR	
		ABORT SWITCH	
		BELL	

PARAGON STAR
BLDG 2 / LOT 9

FIRST PLAT, LOT 9
LEE'S SUMMIT, MO

Project No.: 19050.01a

Date: 05.06.22

Issued For: PERMIT

[illegible]

REGISTRATION



05/09/2022

CHRISTOPHER J. CULP
LICENSE # PE-2013037646

PROJECT TEAM

ARCHITECT	FINKLE+WILLIAMS ARCHITECTURE
CIVIL	GBA
LANDSCAPE	LAND 3
FOUNDATIONS	BSE STRUCTURAL ENGINEERS
STRUCTURAL	BSE STRUCTURAL ENGINEERS
PLUMBING	HENDERSON ENGINEERS
MECHANICAL	HENDERSON ENGINEERS
ELECTRICAL	HENDERSON ENGINEERS
FIRE PROTECTION	HENDERSON ENGINEERS
CONTRACTOR	GC

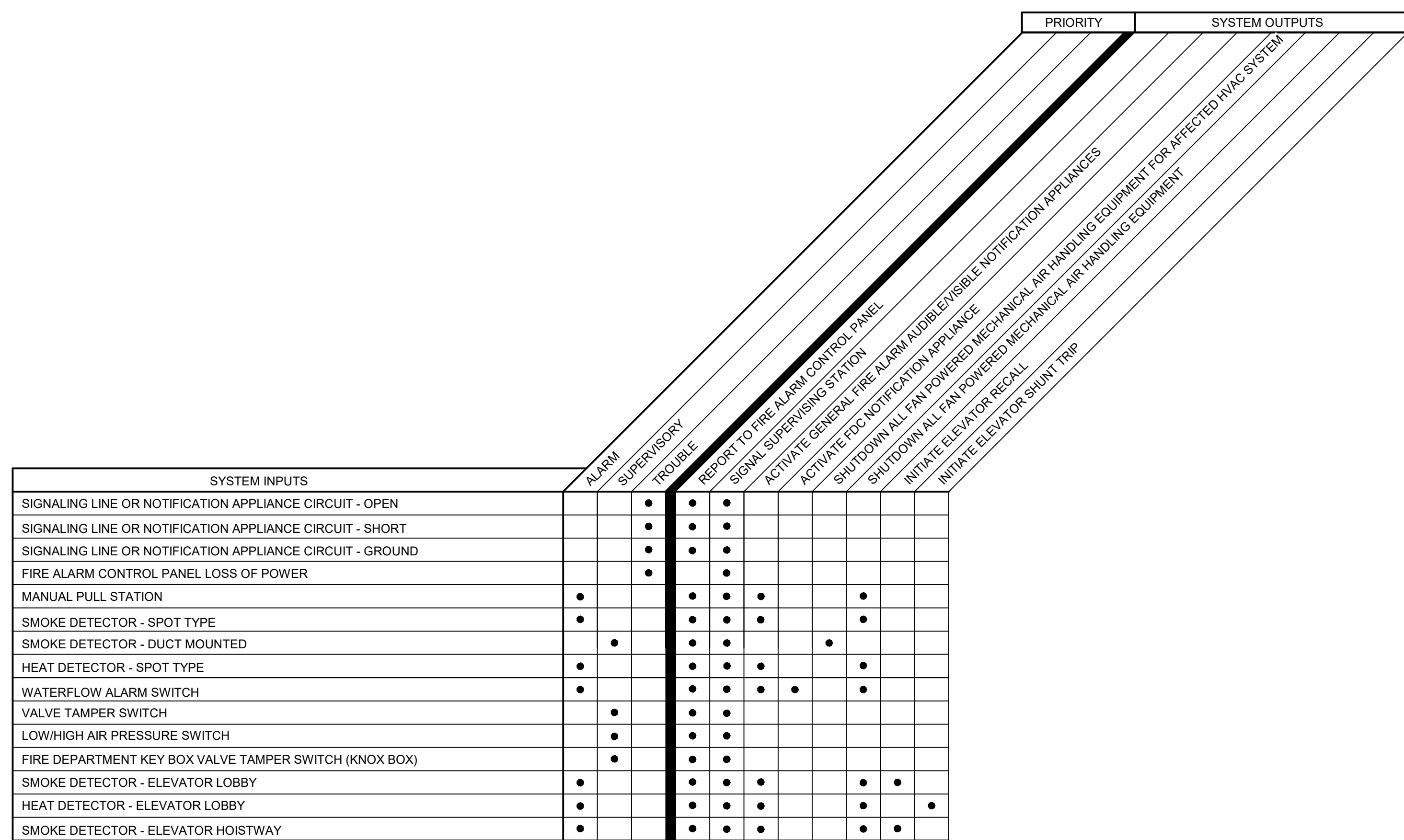


SHEET TITLE

FIRE ALARM LEGENDS AND GENERAL NOTES

SHEET NUMBER

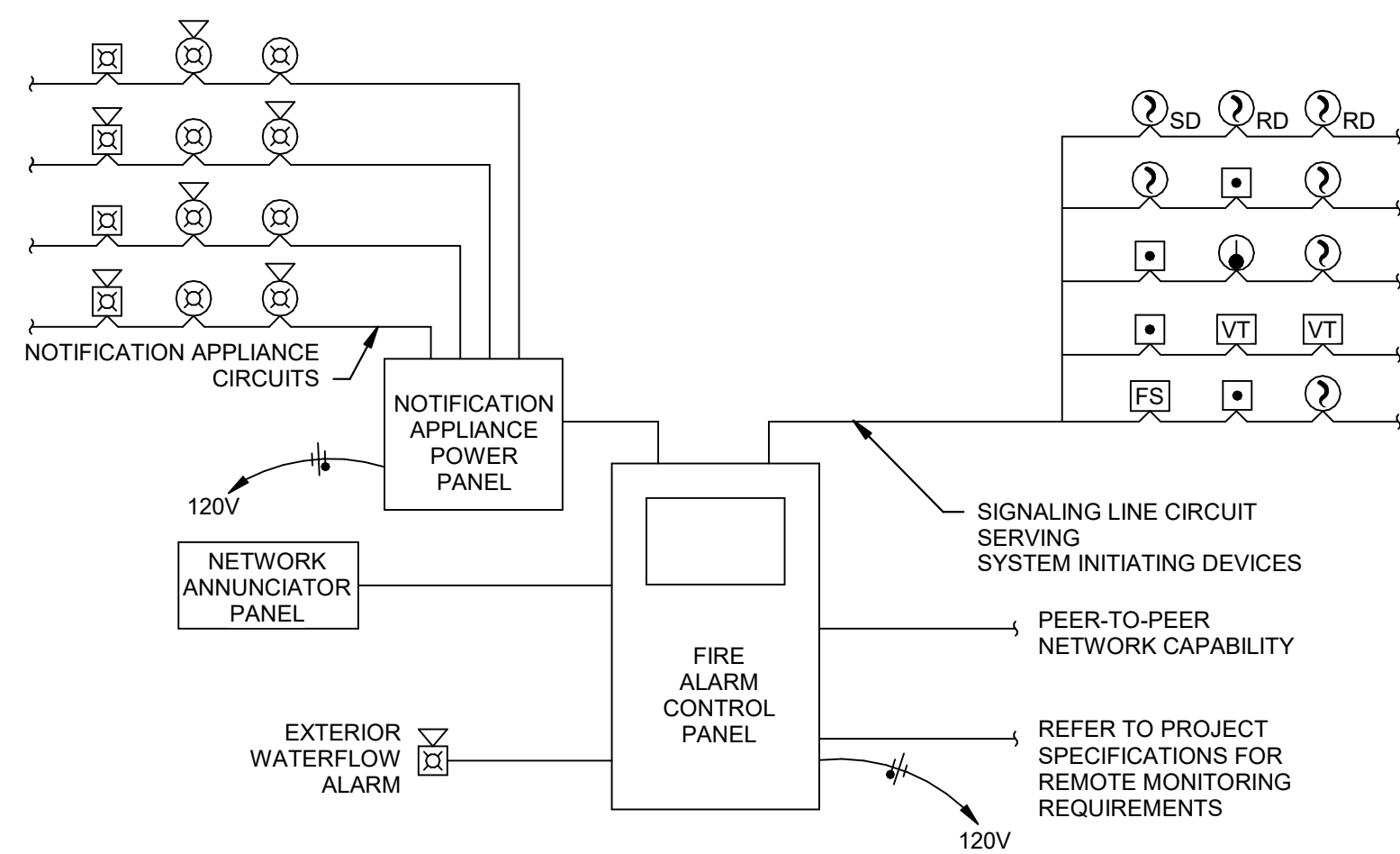
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CONTRACTOR TO PROVIDE ALL NECESSARY EQUIPMENT AND CONNECTIONS REQUIRED TO ACCOMPLISH THE FUNCTIONS INDICATED, AT MINIMUM.

SEQUENCE OF OPERATIONS INDICATED IS SCHEMATIC. MODIFY TO SUIT CONDITIONS AND MEET APPLICABLE CODE REQUIREMENTS

② SEQUENCE OF OPERATIONS



RISER DIAGRAM IS SCHEMATIC IN NATURE. NOT ALL DEVICES ARE SHOWN. REFER TO PLANS FOR EQUIPMENT QUANTITIES AND LOCATIONS.

DUCT DETECTORS MAY HAVE INTEGRAL RELAYS FOR AIR HANDLING UNIT SHUT-DOWN AND FIRE/SMOKE DAMPER CONTROL. WIRING FOR THIS FUNCTION HAS NOT BEEN SHOWN. COORDINATE WITH MECHANICAL SYSTEM INSTALLER.

REFER TO PLANS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.

① FIRE ALARM RISER DIAGRAM - ADDRESSABLE SYSTEM (NON-VOICE)
NTS



FIRST PLAT, LOT 9
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ELECTRICAL	HENDERSON ENGINEERS
EROSION PROTECTION	HENDERSON ENGINEERS
CONTRACTOR	GC

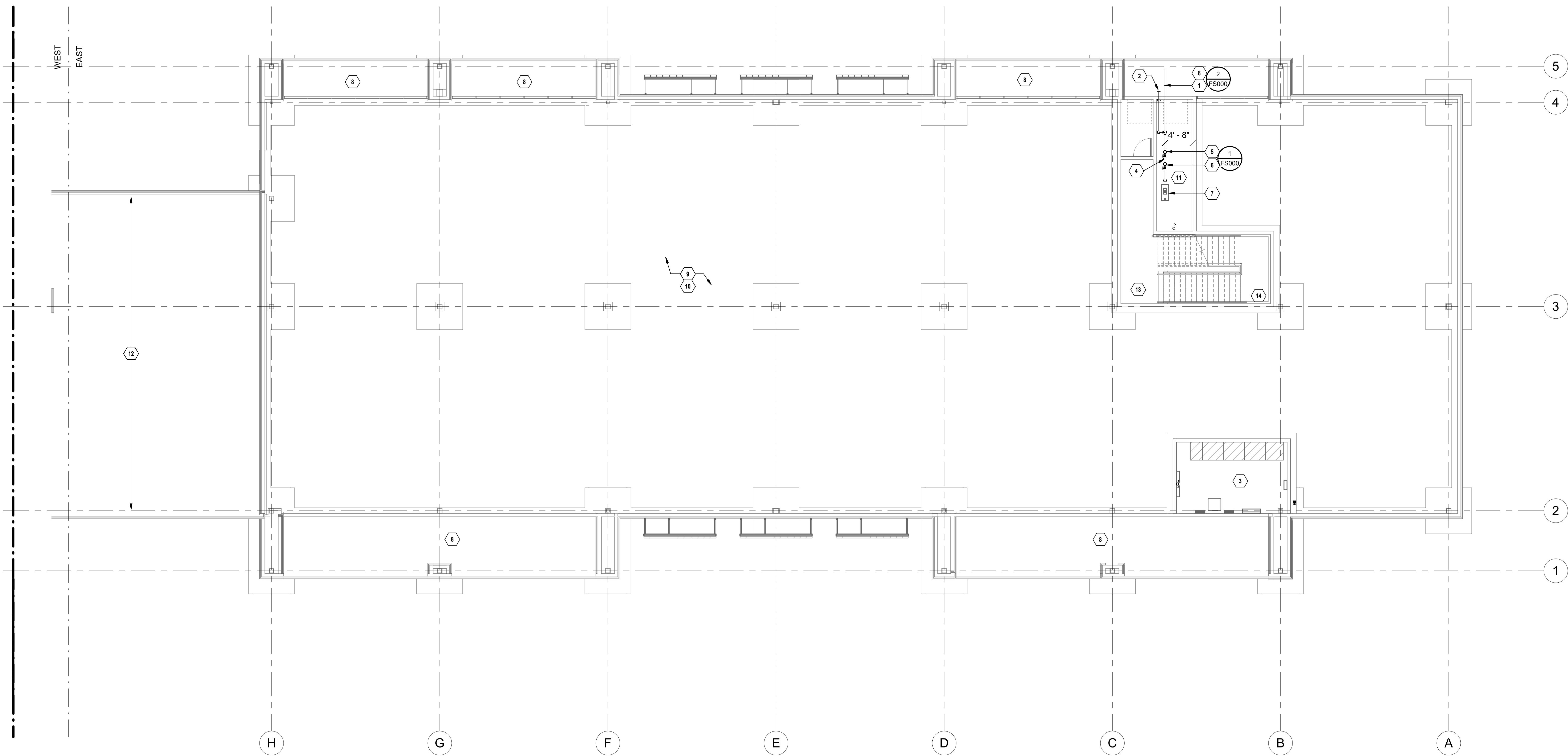


SHEET TITLE

FIRE SPRINKLER
FIRST FLOOR
PLAN - EAST

SHEET NUMBER

FS101.2



① FIRE SPRINKLER FIRST FLOOR PLAN - EAST
1/8" = 1'-0"

