

# ADDENDUM NO. ONE 10/31/2025

**PROJECT:** EULA ISD

**BUS & MAINTENANCE FACILITY** 

**BID DATE:** NOVEMBER 13<sup>TH</sup>, 2025



The following changes and/or additions shall be made to the Plans, Specifications, and Contract Documents for the above referenced project. Bidder shall acknowledge receipt of this Addendum on the Construction Costs Form.

#### **DRAWINGS**

Item #D1	<b>Sheet M0.2</b> – REPLACE sheet with attached sheet M0.2 dated 10-30-2025. UPDATED
	mechanical schedules reflecting electrical updates and change in unit heater count.

**Item #D2** Sheet M2.0 – REPLACE sheet with attached sheet M2.0 dated 10-30-2025. UPDATED mechanical plan with change in unit heater count.

**Item #D3** Sheet E0.5 – REPLACE sheet with attached sheet E0.5 dated 10-30-2025. UPDATED electrical site plan.

**Item #D4** Sheet E1.0 – REPLACE sheet with attached sheet E1.0 dated 10-30-2025. UPDATED power plan and equipment schedule.

Item #D5 Sheet E2.0 – REPLACE sheet with attached sheet E2.0 dated 10-30-2025. UPDATED lighting fixture schedule.

**Item #D6** Sheet E2.1 – REPLACE sheet with attached sheet E2.1 dated 10-30-2025. UPDATED lighting plan.

**Item #D7 Sheet E3.0** - REPLACE sheet with attached sheet E3.0 dated 10-30-2025. UPDATED feeder & breaker schedule changing building power to 3-phase.

**Item #D8** Sheet P0.2 - REPLACE sheet with attached sheet P0.2 dated 10-30-2025. UPDATED plumbing schedules reflecting electrical updates.

#### **END OF ADDENDUM**

# HEAT PUMP AIR HANDLER WITH ELECTRIC HEAT SCHEDULE

- AIR HANDLER WIRING INCLUDES SUPPLEMENTARY ELECTRIC RESISTANCE HEATING.
- EXTERNAL STATIC PRESSURE ("WG") INCLUDES DUCTWORK, BALANCING DAMPERS AND AIR DEVICES ONLY.
- LISTED CAPACITIES ARE FOR THE AIR HANDLER UNIT AND CONDENSER UNIT COMBINATION. UNITS SHALL PERFORM TO LISTED CAPACITIES.
- PROVIDE AIR HANDLER WITH FACTORY SUPPLIED CIRCUIT BREAKER.
- TRANE IS THE BASIS FOR DESIGN. ACCEPTABLE ALTERNATE MANUFACTURER'S ARE: DAIKIN, LG, CARRIER AND YORK NO EXCEPTIONS. CONTRACTOR IS RESPONSIBLE FOR VARIATIONS IN FIT AND ELECTRICAL SERVICE. PROVIDE FILTER RACK, PLACE AND ORIENT FOR EASY FILTER ACCESS. PROVIDE WITH (2) SETS OF MERV 8 FILTERS.
- PROVIDE AUXILIARY DRAIN PAN SYSTEM WITH FLOAT SWITCH INTERLOCKED WITH THE CONTROL CIRCUIT OF THE UNIT FOR HORIZONTAL UNITS. UNIT SHALL SHUTDOWN WHEN CONDENSATE BACKUP IS DETECTED.
- PROVIDE WITH 7-DAY PROGRAMMABLE, PERMANENTLY WIRED, WALL MOUNTED THERMOSTAT.
- PROVIDE WITH 24V MOTORIZED OUTSIDE AIR DAMPER HARDWIRED TO UNIT AUXILIARY TERMINAL. DAMPER SHALL OPEN WHEN UNIT SUPPLY FAN IS OPERATIONAL. PROVIDE BELIMO OR APPROVED EQUIVALENT.

		IND	OOR UI	NIT FAN			ELEC	TRICAL CONNEC	TIONS			SUPPLEME	NTAL ELECTRIC	HEATING		NET COOLIN	NG PERFORMAN	ICE			CONTROLS			
MARK	ARRANGEMENT	UNIT	O/A	FAN EXT			CIRCUI	T 1 AHU	CIRCUIT 2	ELEC HEAT	ELEC HEA	NO.	WINTER EAT	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	COOLING	COOLING	ENTERING	ENTERING		24HR/7DAY	I I	550	MANUFACTURER MAKE	REMARKS
		CFM	CFM	1	\ \ \ \	PH	MCA	МОСР	MCA	МОСР	(KW)	STAGES	D.B.	WINTER LAT D.B.	(MBH)	TOTAL CAP (MBH)	D.B.	W.B.	(LBS)	PROG. T-STAT	HUMIDISTAT	DDC	AND MODEL	
AHU-1	HORIZONTAL	1050	155	0.7	208	<b>)</b> 1	5.0	15	26.0	30 <b>3</b>	m <sup>A</sup> n	1	62.7	95	23	27.5	78.7	64.4	142	Y			TRANE 5TAM5C03AC21	1-9
AHU-2	HORIZONTAL	700	75	0.7	208	1	3.0	15	21.0	25	3	1	64.7	95	13	14.3	77.2	63.7	120	Y			TRANE 5TAM5B01AC21	1-9
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# HEAT PUMP OUTDOOR UNIT SCHEDULE

- I. SIZE, ROUTE, INSULATE AND PROVIDE APPURTENANCES FOR DX PIPING SYSTEMS, PER MANUFACTURER RECOMMENDATIONS.
- FOR LONG DX LINE RUNS, USE MANUFACTURER'S RECOMMENDED LONG LINE INSTALLATION GUIDELINES.
- 3. LISTED CAPACITIES ARE FOR THE AIR HANDLER UNIT AND CONDENSER UNIT COMBINATION. UNITS SHALL PERFORM TO LISTED CAPACITIES.
  4. TRANE IS THE BASIS FOR DESIGN. ACCEPTABLE ALTERNATE MANUFACTURER'S ARE: DAIKIN, LG, CARRIER AND YORK NO EXCEPTIONS. CONTRACTOR IS RESPONSIBLE FOR VARIATIONS IN FIT AND ELECTRICAL SERVICE.
- PROVIDE FILTER DRYER AND SIGHT GLASS ON THE DX LINES.
- PROVIDE CONDENSING UNIT WITH HAIL GUARDS

MARK         SERVES         COMP QTY         REF. TYPE         COND NO. FANS         COND FAN FLA (EA)         O.D.D.B.         V           CU-1         AHU-1         1         R-454B         1         0.64         105         208		MOCP MIN SEER	HSPF	(LBS)	MANUFACTURER MAKE AND MODEL	REMARKS
CU-1 AHU-1 1 R-454B 1 0.64 105 208						
	08 <b>)</b> 1   19.0	30 15	8.8	222	TRANE 5TWR4036A1	1-6
CU-2         AHU-2         1         R-454B         1         0.64         105         208		20 15	8.8	174	TRANE 5TWR4024A1	1-6

			ECTRIC	UN		LAILN	SCHEDULE	
	ITEGRAL THERM	OSTAT.						
2. OR APPRO	VED EQUAL.  OUNTING HARD	NΔRE						
. TROVIDE IV	CONTINOTIAND	WAIL.						
MADIC	SERVES	UNIT	ELEC HEAT	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	PH	F.L.A.	MANUFACTURER MAKE AND	REMARKS
	SERVES	CFM	MAN KWAN	~~~	<b>РП</b>	T.L.A.	MODEL	KEWAKKS
MARK		1 4220	20	208	3	56	QMARK MUH	1-3
UH-1	BUS BAYS	1320						4.0
	BUS BAYS BUS BAYS	1320	20	208	3	56	OMARK-MUH	13 _

# **EXHAUST FAN SCHEDULE**

- 1. LOREN COOK IS THE BASIS FOR DESIGN. ACCEPTABLE ALTERNATE MANUFACTURER'S ARE: GREENHECK, TWIN CITY, AND CAPTIVEAIRE NO EXCEPTIONS. CONTRACTOR IS RESPONSIBLE FOR VARIATIONS IN FIT AND ELECTRICAL SERVICE.
- 2. PROVIDE WITH MOTOR RATED ELECTRICAL DISCONNECT SWITCH.
- 3. PROVIDE INSULATED FACTORY ROOF CURB TO MATCH ROOF TYPE AND SLOPE. CURB TO BE MINIMUM 10" ABOVE ADJACENT ROOF SURFACE.
- 4. FAN TO RUN CONTINUOUSLY.
- 5. PROVIDE A MOTORIZED DAMPER. PROVIDE DAMPER TRAY. 6. PROVIDE HINGED BASE KIT FOR ACCESS TO MOTORIZED DAMPER.
- . SUSPEND FROM STRUCTURE ABOVE, USE FAN MANUFACTURER'S HANGING VIBRATION ISOLATOR KIT.
- 8. IN-LINE CABINET FAN, CENTRIFUGAL.
- 9. FAN OPERATION TO BE INTERLOCKED WITH LIGHTING CONTROLS.
- 10. PROVIDE A GRAVITY BACKDRAFT DAMPER.

L												
	MARK	SERVES	UNIT CFM	FAN EXT. S.P.	FAN HP (WATTS)	V	PH	DRIVE	SONES	WEIGHT (LBS)	MANUFACTURER MAKE AND MODEL	REMARKS
	EF-1	RESTROOMS	225	0.4	.167	120	1	DIRECT	3	37	COOK GN	1,2,7,8,9,10
	EF-2	BUS BAYS	2000	0.5	0.5	120	1	DIRECT	16	82	COOK ACRUD	1,2,3,4,5,6

# LOUVER SCHEDULE

- PROVIDE EXTRUDED ALUMINUM, 6" DRAINABLE STATIONARY WALL LOUVER WITH INSECT SCREEN. PROVIDE LOUVER WITH ANODIZED FINISH, COORDINATE COLOR WITH ARCHITECT.
- . PROVIDE WITH EXTENDED SILL.
- 5. PROVIDE TRANSITION OR ADAPTOR WHERE REQUIRED TO ADAPT DUCTWORK TO NECK SIZE.

MARK	UNIT CFM	PRESSURE DROP (IN. W.G.)	SERVES	TYPE	MATERIAL	WIDTH (IN)	HEIGHT (IN)	FREE AREA (FT²)	MOTORIZED DAMPER (Y/N)	ACTUATOR (V)	MANUFACTURER MAKE AND MODEL	REMARKS
L-1	2000	0.05	EF-2	INTAKE	ALUMINUM	42"	24"	3.43	Υ	120	RUSKIN ELF6375DX	1-5

### **AIR DEVICE SCHEDULE**

- . UNITS SHALL BE FURNISHED WITH APPROPRIATE FRAMES, ETC. FOR MOUNTING IN RESPECTIVE CEILING/WALL TYPES AND CONDITIONS. REFER TO FLOOR PLANS FOR NECK SIZE.
- . OFF-WHITE BAKED ENAMEL FINISH.
- TRANSITION FROM BACK OF GRILLE TO DUCT SIZE SHOWN. . OR APPROVED EQUAL.
- . FOUR-WAY THROW UNLESS OTHERWISE INDICATED ON PLAN.
- PROVIDE INSULATED BLANKET ON BACKSIDE OF THE DIFFUSER.

MARK	SERVES	FACE SIZE	NECK SIZE	TYPE	MATERIAL	MOUNTING	MANUFACTURER AND MODEL	REMARKS
Α	SUPPLY	24" X 24"	8"	SQUARE CONE	STEEL	LAY-IN	TITUS TMS	1,2,3,4,5,6,7
В	SUPPLY	24" X 24"	10"	SQUARE CONE	STEEL	LAY-IN	TITUS TMS	1,2,3,4,5,6,7
С	SUPPLY	12" X 12"	5"	SQUARE CONE	ALUMINUM	SURFACE	TITUS TMS	1,2,3,4,5,6,7
D	RETURN	24" X 24"	8"	PERFORATED	STEEL	LAY-IN	TITUS PAR	1,2,3,4,5
E	EXHAUST	12" X 12"	6"	PERFORATED	ALUMINUM	SURFACE	TITUS PAR	1,2,3,4,5
F	RETURN	24" X 24"	15"X15"	PERFORATED	STEEL	LAY-IN	TITUS PAR	1,2,3,4,5
G	RETURN	24" X 24"	10"	PERFORATED	STEEL	LAY-IN	TITUS PAR	1,2,3,4,5



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SHEET M0.2

Texas BPE Registration # F-207 1300 Summit Avenue 4144 N. Central Expwy Suite 500 Suite 635 Fort Worth, Texas 76102 Dallas, Texas 75204

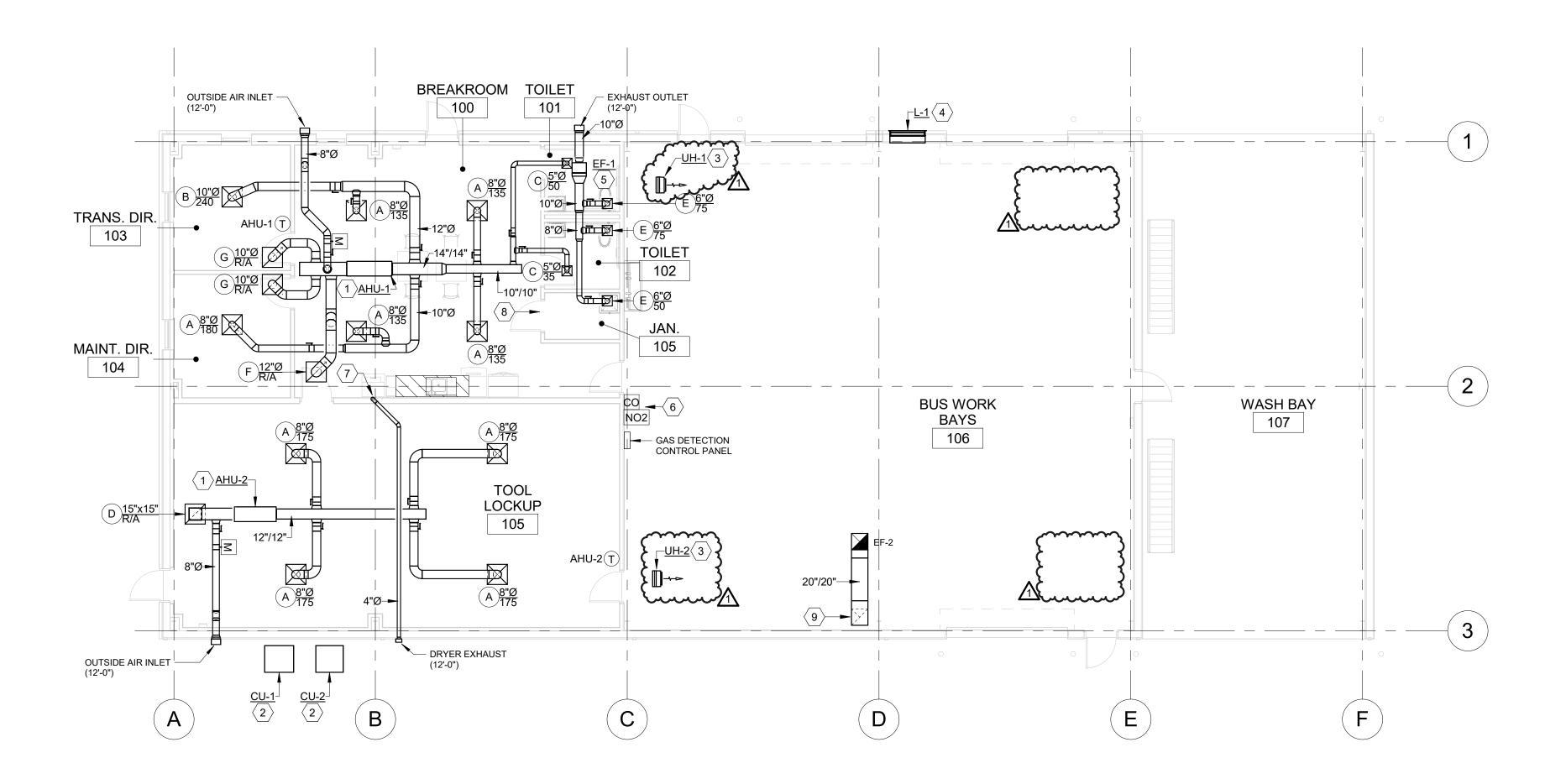
Office 817.878.4242

www.summitmep.com

	CO/NO2 DETECTOR NOTES								
NUMBER	NOTE								
1	AUTOMATIC VENTILATION CONTROL SYSTEM CONSISTING OF CARBON MONOXIDE, NITROGEN DIOXIDE DETECTORS AND CONTROLLERS, MACURCO MODEL CX-12 (OR EQUAL), AIR QUALITY CONTROLLER TO DETECT DIESEL FUMES AND EXHAUST, MACURCO MODEL DVP-120B (OR EQUAL) AND CENTRALIZED CONTROLS TRANSFORMER AND RELAYS PROVIDED BY ELECTRICAL CONTRACTOR.								
2	CONTROLLER SHALL SEND FAN CYCLE TIMER SIGNAL TO EF-2 UPON CARBON MONOXIDE LEVELS GREATER THAN 50 PPM AND/OR UPON NITROGEN DIOXIDE LEVELS GREATER THAN 2 PPM. THE ALARM SHALL BE RESET OFF ONCE CARBON MONOXIDE LEVELS FALL BELOW 35 PPM AND NITROGEN DIOXIDE LEVELS FALL BELOW 1 PPM. AN AUDIBLE VISUAL ALARM SHALL ENGAGE IF CO LEVELS REACH ABOVE 100 PPM OR IF NO2 LEVELS REACH ABOVE 5 PPM. CENTRALIZED CONTROLS SHALL INCLUDE A TIME CLOCK SET TO MAINTAIN MINIMUM FAN CYCLE TIMES (30 MINUTES, ADJUSTABLE). THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING CONTROLLERS AND ELECTRICAL CONTRACTOR SHALL ROUTE 120V CONTROL WIRING. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR CONTROLS TRANSFORMERS AND RELAYS, MOTOR STARTERS AND JUNCTION BOXES. REFER TO ELECTRICAL DRAWINGS FOR REQUIREMENTS.								

Assembly Description

	M2.0 NOTES BY SYMBOL								
NUMBER	NOTE								
1	AIR HANDLING UNIT MOUTED TO STRUCTURE ABOVE. RE: 1/M5.0.								
2	CONDENSING UNIT MOUNTED ON CONCRETE PAD. RE: 2/M5.0.								
3	ELECTRIC UNIT HEATER MOUNTED AT 12'-0" A.F.F. COORDINATE EXACT LOCATION.								
4	NEW WALL MOUNTED LOUVER. MOUNT BOTTOM OF LOUVER AT 12'-0" A.F.F. INTERLOCK WITH EF-2. REFER TO ELECTRICAL FOR POWER REQURIEMENTS.								
5	NEW INLINE EXHAUST FAN. INTERLOCK FAN WITH LIGHTING CONTROLS. RE: 4/M5.0.								
6	COMBINATION CARBON MONOXIDE AND NITROGEN DIOXIDE SENSOR. REFER TO CO/NO2 DETECTOR NOTES. COORDINATE EXACT LOCATION.								
7	PROVIDE DRYER BOX FOR STACKABLE WASHER/DRYER. RE: 1/M5.1.								
8	MINIMUM 1/2" UNDERCUT FOR TRANSFER AIR. REFER TO ARCH PLANS FOR DETAILS.								
9	EXTEND DUCTWORK DOWN TO 18" A.F.F. AND TERMINATE WITH WIRE MESH SCREEN. ATTACH DUCT DROP TO STRUCTURE AS REQUIRED FOR SUPPORT.								







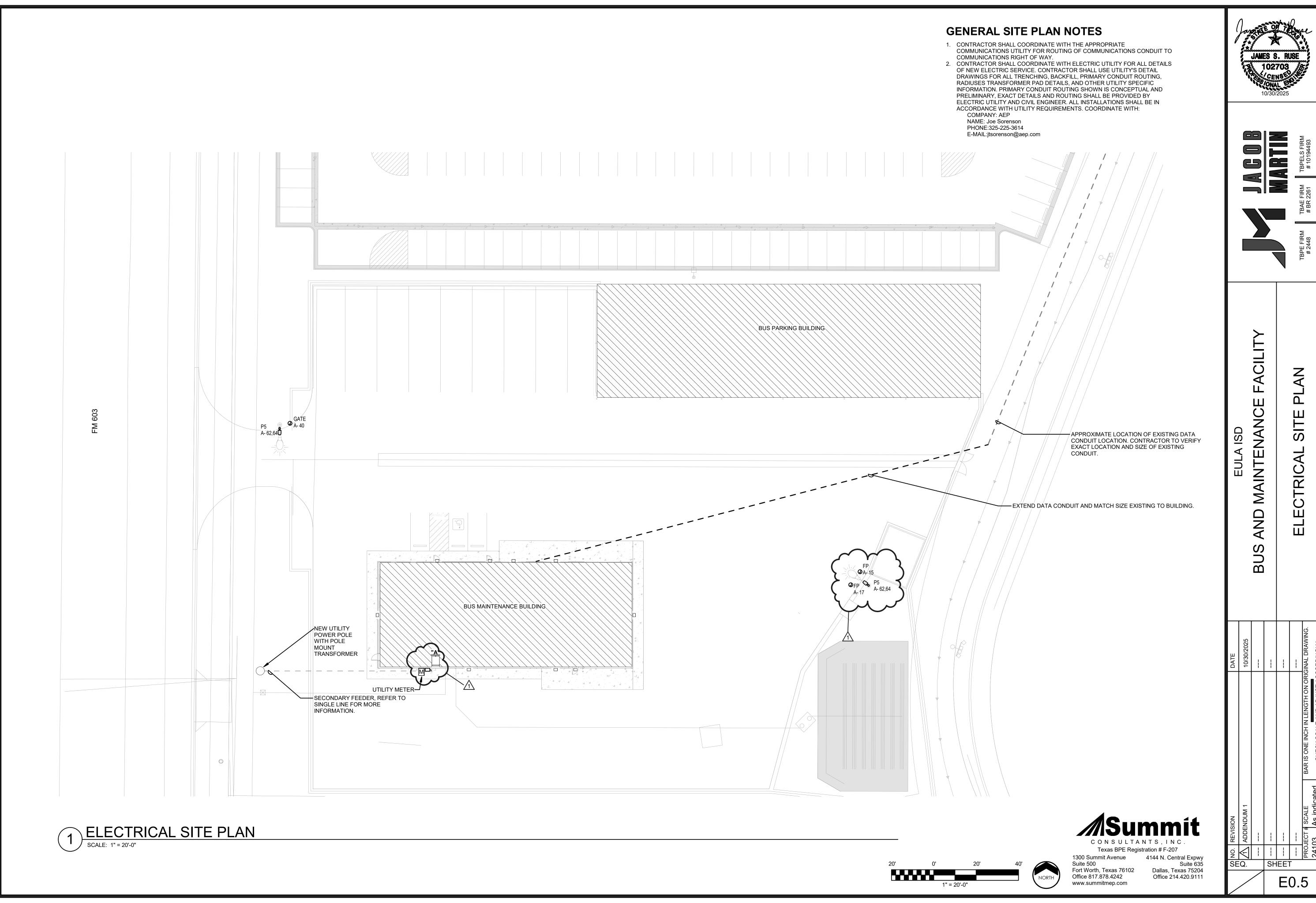


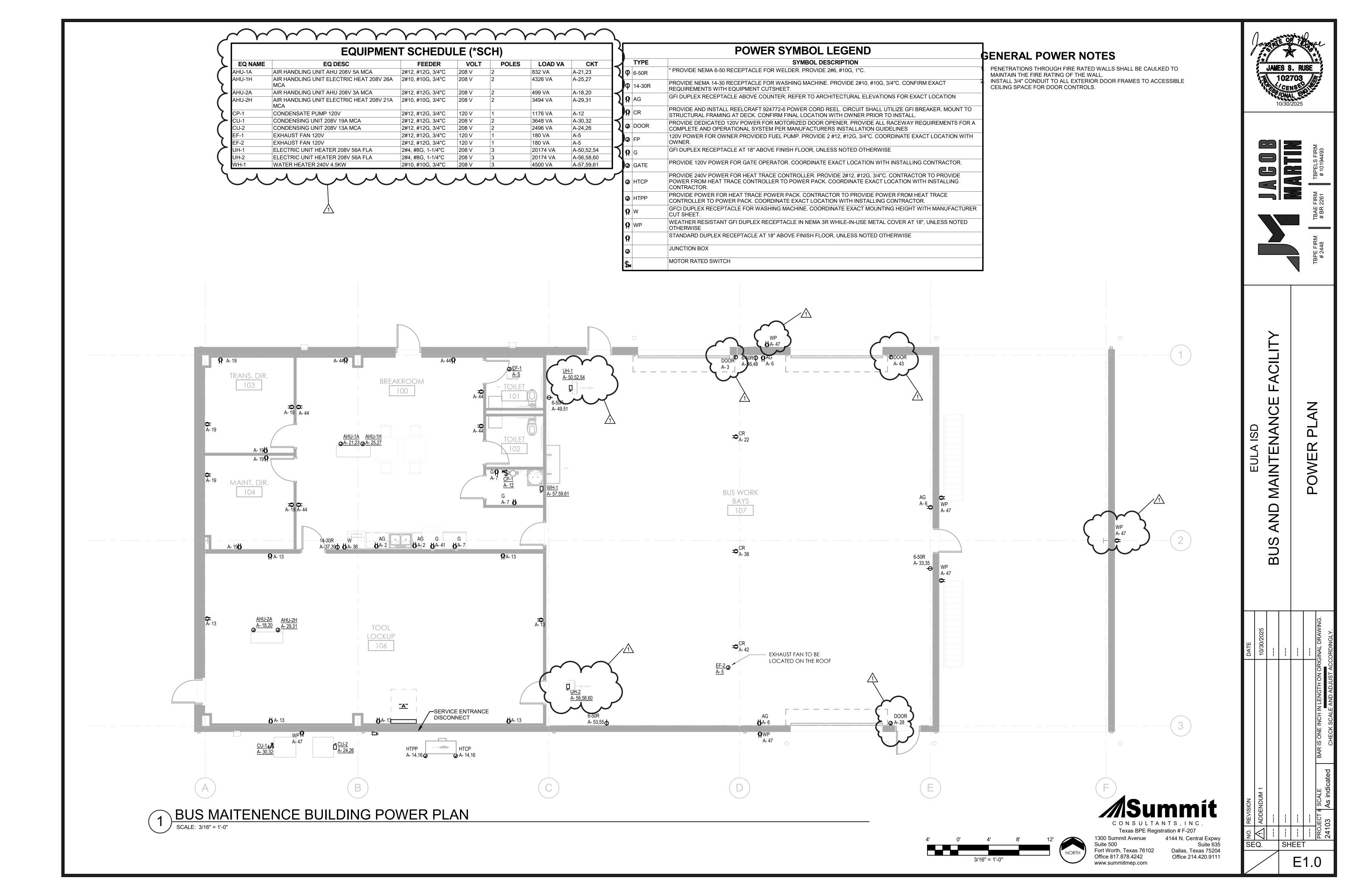
BUS AND MAINTENANCE FACILITY

MECHANICAL

SEQ.

SHEET M2.0





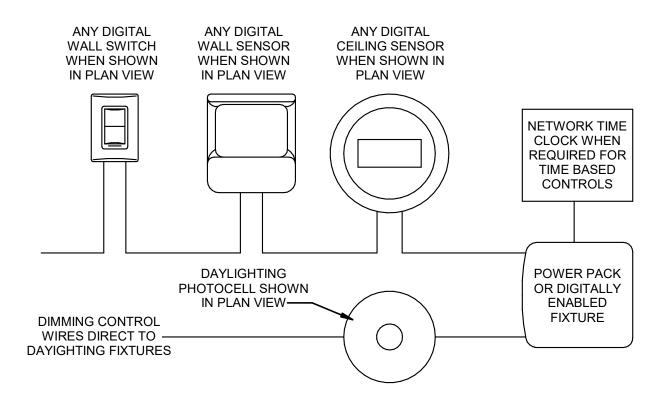
CHEDULE NOTES . PROVIDE ALL MOUNTING HARDWARE AND ACCESSORIES REQUIRED FOR MOUNTING. REFER TO ARCHITECTURAL CEILING PLANS FOR CEILING TYPES. **DESCRIPTION MANUFACTURER** MODEL# VOLT LOAD VA TEMP LUMENS **COMMENTS** 4000K 2X2 FLAT PANEL LITHONIA CPX 2X2 4000LMHE 80CRI 40K 120 120 V 35 VA 2X2 FLAT PANEL LITHONIA CPX 2X2 4000LMHE 80CRI 40K 120 E10W 35 VA 4000K IDENTICAL TO TYPE A, WITH EMERGENCY BATTERY BACKUP SITE POLE LIGHT, TYPE "V" LITHONIA DSX1 LED P5 40K TVM 208 SPA DDBXD 4000K 16328 PROVIDE 25' POLE AND POLE BASE. SEE DETAIL FOR ADDITIONAL INFORMATION. 208 V 138 VA DISTRIBUTION LITHONIA WALL PACK WSQLED P3 40K SR3 120 DDBXD 4000K 40 VA IDENTICAL TO TYPE WP, WITH EMERGENCY BATTERY BACKUP WALL PACK LITHONIA WSQLED P3 40K SR3 120 DDBXD E20WC 40 VA 4000K 4784 THERMOPLASTIC EXIT SIGN WITH LITHONIA LQM S 3 R 120/277 M6 5 VA SEE FLOORPLAN FOR NUMBER OF FACES. BATTERY UTILITY STRIP LIGHT LITHONIA ZL1D L48 5000LM FST 120 40K 90CRI WH 41 VA 4000K UTILITY STRIP LIGHT LITHONIA ZL1D L48 5000LM FST 120 40K 90CRI WH E10W 120 V 41 VA 4000K 5000 IDENTICAL TO TYPE Z. WITH EMERGENCY BATTERY BACKUP CSVT Ia48 5000LM MVOLT 40Ka80CRI UTILITY STRIP LIGHT VAPOR TIGHT LITHONIA 120 V **a** 41 VA **a** 4000K **a** 5000

### DIGITAL LIGHTING CONTROLS NOTES AND DETAIL

#### DIGITAL LIGHTING CONTROLS GENERAL NOTES:

- 1. ALL POWER PACKS TO BE MOUNTED ABOVE CEILING NEAREST THE FIRST WALL SWITCH SERVING THE ASSOCIATED ROOM. PLAN VIEW SHOWS QUANTITY OF ZONES REQUIRED MANUFACTURER MAY COMBINE POWER PACKS WHERE POSSIBLE INTO MULTI ZONE POWER PACKS.
- 2. ALL EMERGENCY BATTERY PACK DECORATIVE FIXTURES ARE TO TURN ON/OFF WITH ASSOCIATED ROOM, BUT OVERRIDE TO ON IF POWER IS LOST, REFER TO EMERGENCY LIGHTING CONTROL DETAIL WHERE PROVIDED.
- 3. ALL EXIT LIGHTING AND BATTERY PACK ONLY FIXTURES ARE TO BE WIRED TO UN-SWITCHED LEG OF CIRCUITS SHOWN FOR CONSTANT POWER. 4. DETAIL IS GENERIC IN NATURE. PLAN VIEWS WILL INDICATE NUMBER OF ZONES, PROVIDE POWER
- PACK OR EQUIVALENT FOR EACH ZONE. PLAN VIEW WILL INDICATE LOCATION OF DIGITAL WALL SWITCHES WITH NUMBER OF BUTTONS REQUIRED. ACCEPTABLE MANUFACTURERS ARE WATT STOPPER, LUTRON AND ACUITY CONTROLS. OTHERS WILL BE CONSIDERED WITH PRE-APPROVAL
- CONTRACTOR IS RESPONSIBLE FOR PROVIDING A FULLY FUNCTIONAL SYSTEM ALL WIRING SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS

#### DIGITAL LIGHTING CONTROLS DETAIL:

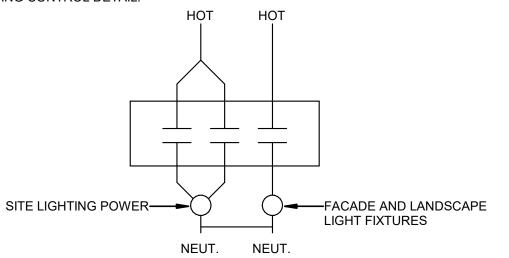


#### **EXTERIOR LIGHTING CONTROL NOTES AND DETAIL**

#### **EXTERIOR LIGHTING CONTROL GENERAL NOTES:**

- 1. FOR GENERAL EXTERIOR SITE AND BUILDING LIGHTING, PROVIDE 365/7 DAY ASTRONOMIC TIME CONTROL WITH OVERRIDE ON/OFF AND MINIMUM 2 DAY PERMANENT SCHEDULE RETENTION. PROVIDE ONE RELAY OR CONTACT PER ZONE REQUIRED.
- 2. FOR AREA SECURITY SITE LIGHTING, PROVIDE TIME SCHEDULE TO BE ONE ZONE ON AT NIGHT
- AND ONE ZONE OFF AFTER MIDNIGHT (TWO ZONES, STEP DIMMED). 3. FOR FIXTURES LIGHTING FACADE AND LANDSCAPE, PROVIDE TIME SCHEDULE TO BE ON DUSK TO
- DAWN, STEP DIMMING NOT REQUIRED. 4. CIRCUIT AS SHOWN IN PLAN VIEW.

# **EXTERIOR LIGHTING CONTROL DETAIL:**



#### **EXTERIOR LIGHTING ENERGY CODE REQUIREMENTS:**

- 1. ALL EXTERIOR LIGHTING SHALL BE CONTROLLED AS A FUNCTION OF AVAILABLE LIGHT USING AN ASTRONOMIC TIMECLOCK, PHOTOCELL OR SIMILAR MEANS, UNLESS NOTED OTHERWISE.
- 2. EXTERIOR LIGHTING SHALL BE REDUCED BY MINIMUM OF 30% AFTER MIDNIGHT AT THE LATEST TO 6AM, OR 1-HOUR AFTER CLOSING AND 1 HOUR BEFORE BUSINESS OPENING, OR ANYTIME OF INACTIVITY OF MORE THAN 15 MINUTES.
- 3. EXEMPTIONS TO EXTERIOR LIGHTING: A. EMERGENCY EGRESS LIGHTING
- COVERED VEHICLE ENTRANCES TO PARKING STRUCTURES
- C. BUILDING FACADE AND LANDSCAPE LIGHTING MAY BE PHOTOCELL ONLY; 30% DIMMING IS NOT REQUIRED.

#### GENERAL LIGHTING CONTROLS NOTES AND EXAMPLES

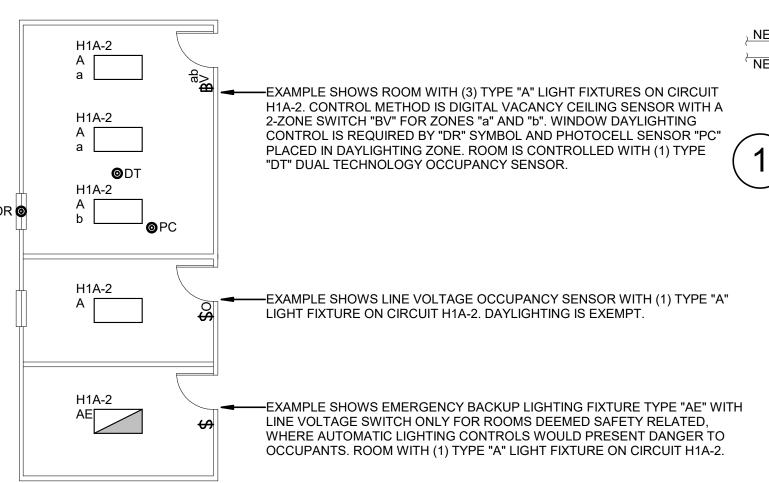
#### LIGHTING CONTROL GENERAL NOTES:

- SENSOR LOCATIONS ARE MINIMUMS. CONTRACTOR SHALL PROVIDE FOR A MINIMUM OF 10% ADDITIONAL DEVICES TO COVER DARK SPOTS DISCOVERED DURING CONSTRUCTION FROM FIELD INSTALLED OBSTRUCTIONS. CONTRACTOR SHALL ALSO ALLOW FOR A MOVE OF UP TO 5'-0" IN ANY DIRECTION FOR ALL SENSORS, AT NO ADDITIONAL COST TO THE OWNER, TO ALLOW FOR FIELD ADJUSTMENT OF SENSOR PLACEMENTS TO ACHIEVE OPTIMUM PERFORMANCE.
- INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS. CONTRACTOR SHALL PROVIDE A MINIMUM OF (2) SITE VISITS BY FACTORY TRAINED PERSONNEL TO ADJUST
- SENSORS AND TRAIN THE OWNER ON USE AND MAINTENANCE OF LIGHTING CONTROL COMPONENTS. AFTER COMMISSIONING LIGHTING CONTROLS. CONTRACTOR SHALL PROVIDE A WRITTEN TEST REPORT INDICATING THAT ALL LIGHTING CONTROL SYSTEMS HAVE BEEN COMMISSIONED, TESTED AND FOUND TO BE FUNCTIONING IN ACCORDANCE WITH CONTRACT DOCUMENT AND CODE REQUIREMENTS. CONTRACTOR SHALL ENSURE THAT CONTROL HARDWARE AND SOFTWARE ARE CALIBRATED, ADJUSTED, PROGRAMMED AND IN PROPER WORKING CONDITION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS,

MANUFACTURER'S INSTRUCTIONS AND CODE REQUIREMENTS. FUNCTIONAL TESTING SHALL BE IN

ACCORDANCE WITH IECC SECTIONS C408.3.1.1/2 FOR THE APPLICABLE CONTROL TYPES.

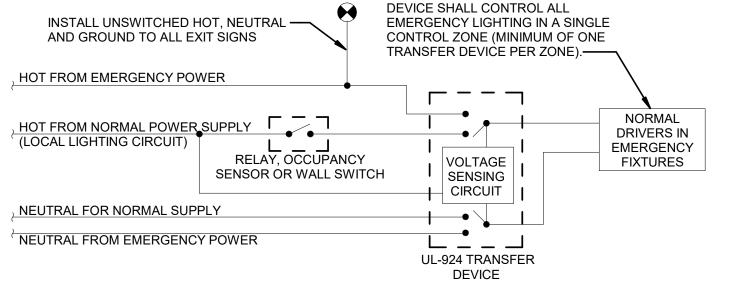
#### **GENERAL LIGHTING EXAMPLES:**



FOR CIRCUITS WITH DIMMED FIXTURES, TRANSFER DEVICE SHALL HAVE ADDITIONAL INTERNAL RELAY TO BREAK 0-10V DIMMING SIGNAL TO ENSURE DIMMED FIXTURES TURN ON WHEN NORMAL POWER FAILS. "LVS LIGHTING CONTROLS" MODEL "EPC-1-D" IS BASIS OF DESIGN FOR CIRCUITS WITH 0-10V DIMMING. SEE http://www.lvscontrols.com/

ONE EMERGENCY TRANSFER

BODINE 'BLCD-20B' IS THE BASIS OF DESIGN FOR CIRCUITS WITHOUT 0-10V DIMMING.



EMERGENCY LIGHTING CONTROL DETAIL

#### GENERAL ENERGY CODE REQUIREMENTS

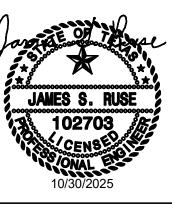
- 1. ALL AREAS LISTED BELOW SHALL HAVE OCCUPANCY SENSOR CONTROL:
- ENCLOSED SPACES 300 SQ.FT. OR LESS
- PRIVATE OFFICES RESTROOMS
- STORAGE ROOMS
- JANITORIAL CLOSETS LOUNGES
- EMPLOYEE LUNCH AND BREAK ROOMS
- LOCKER ROOMS
- FOR OCCUPANCY SENSORS, AUTOMATIC ON TO 100% OUTPUT IS ALLOWED FOR PUBLIC CORRIDORS. LOBBIES AND SIMILAR PUBLIC USE ONLY AREAS. AUTOMATIC SENSORS ON SHALL BE PROGRAMMED TO AUTOMATICALLY TURN ON LIGHTING TO NO MORE THAN 50% IN OTHER SPACES IN ACCORDANCE WITH IECC REQUIREMENTS.
- 2. AREAS NOT PROVIDED WITH OCCUPANCY SENSORS AS LISTED ABOVE SHALL BE ON A TIME BASED SCHEDULE. TIME SWITCH CONTROLS SHALL PROVIDE MAXIMUM 2-HOUR OVERRIDE (MAXIMUM 5,000 SQ.FT. EACH OVERRIDE) WITHIN SPACE CONTROLLED OR HAVE A PILOT LIGHT AND MAP OF LIGHTING CONTROLLED.
- A. MALLS, ARCADES, AUDITORIUMS, SINGLE TENANT RETAIL, INDUSTRIAL FACILITIES AND ARENAS ARE EXEMPT FROM THE 2-HOUR LIMIT ON OVERRIDE TIME AND MAY CONTROL SPACES UP TO 20,000 SQ.FT. AREAS NOT EXEMPTED FROM TIME BASE CONTROLS SHALL HAVE LIGHT REDUCTION CONTROLS (DIMMER) LOCATED IN SPACE FOR A MINIMUM 50% REDUCTION BY OCCUPANT.
- 4. LIGHTING REDUCTION IS NOT REQUIRED FOR ROOMS WITH ONLY ONE LIGHT FIXTURE, ROOMS USING LESS THAN 0.6 W/SQ.FT., CORRIDORS, EQUIPMENT ROOMS, AND PUBLIC LOBBIES.

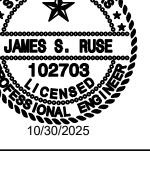
ENDANGER LIFE SAFETY, DWELLING UNITS WITHIN COMMERCIAL BUILDINGS, AND WALK-IN COOLER AND

- TIME CONTROLS SHALL HAVE A 7-DAY CLOCK WITH DIFFERENT SCHEDULE EACH DAY, HAVE HOLIDAY
- SCHEDULING CAPABILITY AND 10 HOUR BACKUP FOR PROGRAMMING. AREAS THAT HAVE SPECIAL EXEMPTIONS MUST BE EVALUATED ON A CASE BY CASE BASIS. THESE AREAS INCLUDE SLEEPING AREAS, PATIENT CARE AREAS, AREAS WHERE AUTOMATIC LIGHTING SHUTOFF WOULD
- SINGLE POLE LINE VOLTAGE TOGGLE SWITCHES MAY BE USED WHERE AUTOMATIC LIGHTING CONTROLS WOULD ENDANGER LIFE SAFETY OR ARE EXEMPT FOR EGRESS RELATED LIFE SAFETY REASONS.



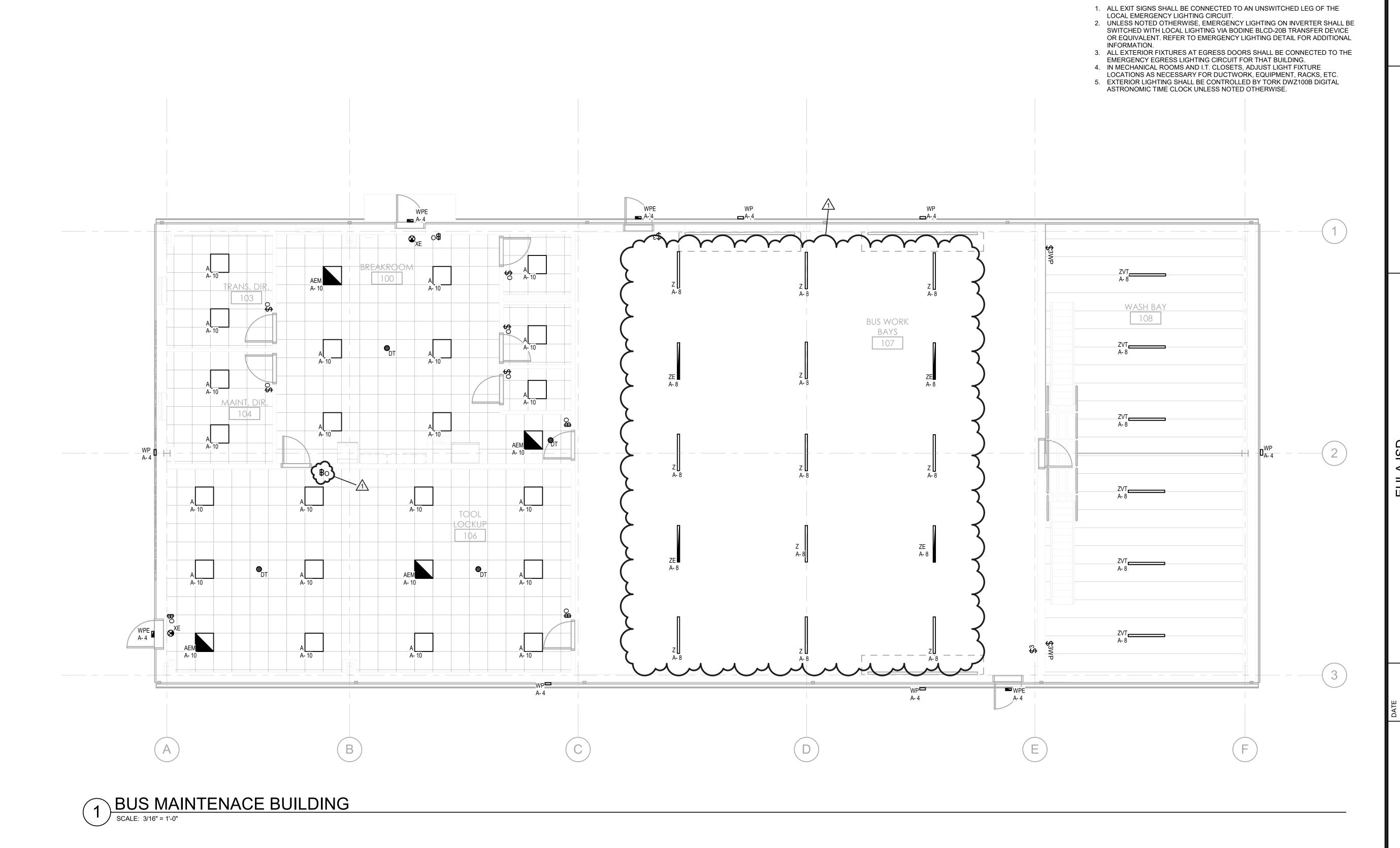
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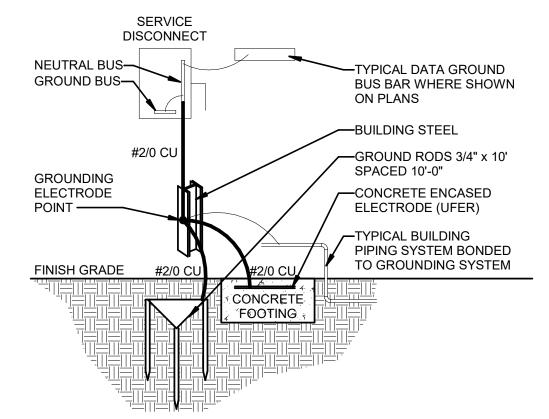


**GENERAL LIGHTING NOTES** 

MAINTENANCE LIGHTING

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E2.1

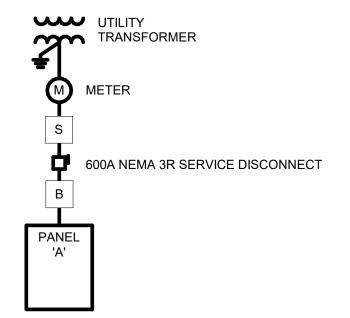


- SERVICE ENTRANCE GROUNDING DETAIL NOTES: 1. AT THE CONTRACTOR'S OPTION, ANY ONE OF THE THREE ALLOWED ELECTRODE SYSTEMS SHOWN MAY BE USED AS THE MAIN GROUNDING ELECTRODE POINT (BUILDING STEEL, GROUND RODS OR "UFER") WITH ALL OTHER ELECTRODES BONDED TO IT. THE EXAMPLE SHOWN USES BUILDING STEEL AS THE MAIN ELECTRODE POINT.
- 2. THE GROUNDING ELECTRODE CONDUCTOR (GEC) SHALL BE SIZED IN ACCORDANCE WITH NEC TABLE 250.66. REFER TO FEEDER SCHEDULE.

#### AVAILABLE FAULT CURRENT CALCULATION (INFINITE FAULT CURRENT ON PRIMARY)

AFC = <u>124 kVA x 1000</u> 208VxSQRT(3) x 2.8%

MAXIMUM  $3\Phi$  AFC = 12292A



SINGLE LINE DIAGRAM
SCALE: N.T.S.

# **Branch Panel: A**

3	Mounting: SURFACE Supply From: Enclosure: NEMA 1						Volts: 120/208 Wye Phases: 3 Wires: 4								A.I.C. Rating: 22kAIC  Mains Type: MLO  Mains Rating: 600 A					
1	СКТ	Circuit Description	BKR (A)	Р	Load (A)		A	E	3	(		Load (A)	Р	BKR (A)	Circuit Description	СК				
<b>∤</b> )	1						360					3	1	20	GFCI Receptacles	2				
<b>&lt;</b>	3	Automatic Door	20	1	2			180	400			3	1	20	Exterior Lighting	4				
1	5	EXHAUST FANS	20	1	3					360	540	5	1	20	Bus Barn Receptacles	6				
)	7	Ice Machine (GFI)	20	1	5	540	861					7	1	20	Bus Work Bay Lighting	8				
<b>\</b>	9	Building B Lighting	20	1	6			778	910			8	1	20	Breakroom And Tool-Room	10				
1	11	Building B Lighting	20	1	7					818	1176	10	1	20	CP-1	12				
)	13	Tool-Room Receptacles	20	1	11	1260	1250					12	2	20		14				
~	15	Fuel Pump	20	1	2			180	1250							16				
L	17	Fuel Pump	20	1	2					180	250	2	2	20	Air Handling Unit 2	18				
)	19	Office Receptacle	20	1	12	1440	250									20				
~	21	Air Handling Unit 1	20	2	4			416	180			2	1	20	Drop Down Chord (GFI)	22				
Į	23									416	1248	12	2	20	Condensing Unit 2	24				
)	25	Air Handling Unit 1	30	2	21	2163	1248									26				
	27							2163	180			2	1	20	Automatic Door	28				
)	29	Air Handling Unit 2	25	2	17					1747	1824	18	2	25	Condensing Unit 1	30				
	31					1747	1824									32				
	33	Welding Mac hine	60	2	48			4981	1080			9	1	20	Building B Receptacles	34				
	35									4981	180	2	1	20	Washing Machine (GFI)	36				
	37	Drying Machine	45	2	35	3600	180					2	1	20	Drop Down Chord (GFI)	38				
	39							3600	180			2	1	20	Powered Gate and Site Light	40				
	41	Fridge (GFI)	20	1	2					180	180	2	1	20	Drop Down Chord (GFI)	42				
	43	Automatic Door	20	1	2	180	1080					9	1	20	Breakroom Receptacles	44				
	45								4982			48	2	60	Welding Machine	46				
7	47	Receptacle	20	1	9					1080	4982					48				
1	49	Welding Machine	60	2	48	4982	6725					56	3	70	Utility Heater 1	50				
)	51							4982	6725							52				
7	53	Welding Machine	60	2	48					4982	6725					54				
1	55					4982	6725					56	3	70	Utility Heater 2	56				
· )	57	Water Heater	20	3	12			1500	6725							58				
<b>1</b>	59									1500	6725					60				
1	61					1500	138					1	2	20	Site Pole Lighting	62				
<b>)</b>	63	Spare	20	1				0	138							64				
<b>イ</b>	65	Spare	20	1						0	0		1	20	Spare	66				
1	67	Spare	20	1		0	0						1	20	Spare	68				
)	69	Spare	20	1				0	0				1	20	Spare	70				
$\prec$	71	Spare	20	1						0	0		1	20	Spare	72				
1	73	Spare	20	1		0	0						1	20	Spare	74				
)	75	Spare	20	1				0	0				1	20	Spare	76				
~	77	Spare	20	1						0	0		1	20	Spare	78				
L	79	Spare	20	1		0	0						1	20	Spare	80				
<b>)</b>	81	Spare	20	1				0	0				1	20	Spare	82				
		_		<u> </u>						_	_			1						

	Total Load:	43 kVA	42 kVA	40 kVA			
	Total Amps:	360 A	348 A	334 A			
Load Classification	Coni	nected Load	Demand Factor	Estimated Demand	Panel	Totals	
Cooling		6144 VA	0.01%	1 VA			
Heating		40348 VA	100.00%	40348 VA	Total Conn. Load:	125 kVA	
Lighting		4043 VA	100.00%	4043 VA	Total Connt. Amps	346 A	
Power		14200 VA	100.00%	14200 VA	Total Demand Load:	98 kVA	
Receptacle		20047 VA	74.94%	15024 VA	Total Demand Amps:	271 A	
WELDER		39851 VA	60.00%	23911 VA			
	· · · · · · · · · · · · · · · · · · ·			· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		

0 0 -- 1 20 Spare

83 Spare

TWO SECTION PANELBOARD

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	SĒ	NO.	S NO. REVISION		DATE	
	Q.		A ADDENDUM 1		10/30/2025	
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	SF	-			-	
_	IEE.		-		-	
^	Γ		-			U,
, I		PRO 241	PROJECT # SCALE 24103 N.T.S.	BAR IS ONE INCH IN LENGTH ON ORIGINAL DRAWING. CHECK SCALE AND ADJUST ACCORDINGLY.	SINAL DRAWING.	

**FACILITY** 

MAINTENANCE

DIAGRAM

FEEDER & BREAKER SCHEDULE **3-PHASE 4-WIRE COPPER** CIRCUIT CONDUCTOR SETS, CONDUIT

AMPACITY	BREAKER	QTY & S	IZE	GROUND			
NEC TABLE 310.15(B)(16)	NEC 240.4(B)	NEC TAE 310.15(B)		NEC TABLE 250.122			
20 A	20 A, 3P	1 SET OF 4	#12	#12 G	3/4"		
30 A	25 A, 3P	1 SET OF 4	#10	#10 G	3/4"		
30 A	30 A, 3P	1 SET OF 4	#10	#10 G	3/4"		
40 A	35 A or 40 A, 3P	1 SET OF 4	#8	#10 G	1"		
55 A	45 A or 50 A, 3P	1 SET OF 4	#6	#10 G	1"		
70 A	60 A, 3P	1 SET OF 4	#4	#10 G	1-1/4"		
70 A	70 A, 3P	1 SET OF 4	#4	#8 G	1-1/4"		
85 A	80 A or 90 A, 3P	1 SET OF 4	#3	#8 G	1-1/4"		
95 A	100 A, 3P	1 SET OF 4	#2	#8 G	1-1/2"		
110 A	110 A, 3P	1 SET OF 4	#1	#6 G	2"		
130 A	125 A, 3P	1 SET OF 4	#1	#6 G	2"		
150 A	150 A, 3P	1 SET OF 4	#1/0	#6 G	2"		
175 A	175 A, 3P	1 SET OF 4	#2/0	#6 G	2"		
200 A	200 A, 3P	1 SET OF 4	#3/0	#6 G	2"		
230 A	225 A, 3P	1 SET OF 4	#4/0	#4 G	2-1/2"		
255 A	250 A, 3P	1 SET OF 4	#250	#4 G	3"		
310 A	300 A, 3P	1 SET OF 4	#350	#4 G	3"		
380 A	350 A, 3P	1 SET OF 4	#500	#3 G	4"		
400 A	400 A, 3P	2 SETS OF 4	#3/0	#3 G	2"		
460 A	450 A, 3P	2 SETS OF 4	#4/0	#2 G	2-1/2"		
510 A	500 A, 3P	2 SETS OF 4	#250	#2 G	2-1/2"		
620 A	600 A, 3P	2 SETS OF 4	#350	#1 G	3"		
760 A	700 A, 3P	2 SETS OF 4	#500	#1/0 G	3"		
855 A	800 A, 3P	3 SETS OF 4	#300	#1/0 G	2-1/2"		
1,005 A	1,000 A, 3P	3 SETS OF 4	#400	#2/0 G	3"		
1,240 A	1,200 A, 3P	4 SETS OF 4	#350	#3/0 G	3"		
1,675 A	1,600 A, 3P	5 SETS OF 4	#400	#4/0 G	3"		
2,010 A	2,000 A, 3P	6 SETS OF 4	#400	#250 G	3"		
2,660 A	2,500 A, 3P	7 SETS OF 4	#500	#350 G	3.5"		
3,040 A	3,000 A, 3P	8 SETS OF 4	#500	#400 G	4"		
4,180 A	4,000 A, 3P	11 SETS OF 4	#500	#500 G	4"		
NEC	250.66	FEEDER & RREAKER SCHEDIII E NOTES:					

#### **NEC 250.66 GROUNDING ELECTRODE** CONDUCTOR

GEC FOR SERVICES, BUILDING FEEDERS AND SEPARATELY DERIVED SYSTEMS & SERVICES

#2 G

#3/0 G

OTOTEWO &	OLITAIOLO
LARGEST CONDUCTOR OR EQUIVALENT AREA OF PARALLEL CONDUCTORS (COPPER)	GEC (CU)
14 - 2	#8 G
1 - 1/0	#6 G

1100+

FEEDER & BREAKER SCHEDULE NOTES:

1. WHERE B SYMBOL IS SHOWN, PROVIDE FEEDER ACCORDING TO THE "CIRCUIT BREAKER" COLUMN SHOWN ABOVE. FEEDER TO BE 4-WIRE PLUS GROUND UNLESS NOTED OTHERWISE.

2. USE **TABLE 250.122** TO DETERMINE SIZE OF EQUIPMENT GROUNDING CONDUCTOR (EGC) FOR BRANCH CIRCUITS, RACEWAY, CONDUIT, MOTOR CIRCUITS, AND WHERE PARALLEL FEEDERS ARE RUN. USE TOTAL EQUIVALENT AREA OF PARALLELED CONDUCTORS FOR SIZING PARALLEL

3. USE COMPRESSION LUGS FOR FEEDERS OVER

4. USE **TABLE 250.66** TO DETERMINE THE GROUNDING ELECTRODE CONDUCTOR (GEC) SIZE AT THE SERVICE ENTRANCE, AT EACH BUILDING OR STRUCTURE WHERE SUPPLIED BY A FEEDER(S), AT 351 - 600 #1/0 G
601 - 1100 #2/0 G

100 - 1100 #2/0 G

100 - 1100 #2/0 G

5. WHERE SYMBOL IS SHOWN, PROVIDE SERVICE FEEDER WITH AMPACITY EQUAL TO OR GREATER THAN THAT OF THE SERVICE DISCONNECT, WITH NO EQUIPMENT GROUND CONDUCTOR. CONTRACTOR TO PROVIDE (1) SPARE CONDUIT OF EQUAL SIZE FOR SERVICE ENTRANCE FEEDERS 2,000A OR LARGER.

6. WHERE <sup>2HR</sup> SYMBOL IS SHOWN, NORMAL AND EMERGENCY FEEDERS SERVING FIRE PUMP AND FIRE SERVICE ELEVATOR SHALL BE ENCASED IN CONCRETE PROVIDING 2-HOUR FIRE RATING. A 2- HOUR RATING SHALL BE MAINTAINED FROM THE ROOM CONTAINING THE FEEDER'S SOURCE BREAKER OR DISCONNECT TO THE ROOM CONTAINING THE ATS. THE ELEVATOR FEEDER IS NOT REQUIRED TO BE ENCASED IN CONCRETE INSIDE THE ELEVATOR HOISTWAY OR

SEQ.

SHEET

DOMESTIC ELECTRIC WATER HEATER SCHEDULE . TWO ELECTRIC HEATING ELEMENTS SET FOR NON-SIMULTANEOUS OPERATION. 2. ADJUST STORAGE WATER TEMPERATURE IN ACCORDANCE WITH LOCAL ENERGY CODE REQUIREMENTS.

ELECTRICAL CHARACTERISTICS RECOVERY RATE LEAVING WATER CAPACITY (GAL) (80 RISE) (GPH) TEMPERATURE (F) # ELEMENTS KW (VOLTS PHASE ) HZ MANUFACTURER MARK SERVICE TYPE MODEL NUMBER REMARKS 140 2 4.5 208 3 60 A.O. SMITH WH1 DOMESTIC HOT WATER ELECTRIC TANK 23 DEL-40 1, 2, 3

**PUMP SCHEDULE** REMARKS LEGEND: 1. PROVIDE 7-DAY TIME CLOCK FOR OPERATION OF CIRCULATION PUMP (SET TO OPERATE DURING NORMAL BUSINESS HOURS, ADJUSTABLE). . PUMPS SHALL BE RATED FOR CONTINUOUS OPERATION AT WATER TEMPERATURE OF CONNECTED SYSTEM. B. OR EQUAL. FLOWRATE TOTAL DYNAMIC | SPEED | EFFIC. | ELECTRICAL CHARACTERISTICS | (GPM) HEAD (FEET) (RPM) (%) HP VOLTS PHASE HZ MANUFACTURER MARK REMARKS TYPE MODEL NUMBER CP1 DOMESTIC HOT WATER CIRCULATION INLINE CENTRIFUGAL PUMP 10 1750 65 1/25 115 1 60 GRUNDFOS UP 15-42 B5 1, 2, 3

			THERMO	STAT	IC MIXING	VALVE S	CHEDULE					
EMARKS LEGEND: PROVIDE AND INSTALL WITH PAINTED, SURFACE MOUNTED CABINET ASSEMBLY. VERIFY WITH ARCHITECTURAL SPECIFICATIONS FOR COLOR. MIXING VALVE SHALL MEET ASSE CERTIFICATION OF SCHEDULED USE. OR EQUAL.												
FLOWRATE CAPACITY PRESSURE DROP INLET HOT WATER INLET COLD WATER LEAVING WATER LEAVING WATER MANUFACTURER MODEL NUMBER REMARKS												
SMV/1 TEN	IPERED HOT WATER	MASTER MIXING VALVE	6	0.5	10	140	57	105	LEONARD	370-LF	1, 2, 3	

# HEAT TRACE CONTROLLER AND CABLE SCHEDULE

1. INSTALL AND SECURE HEATING CABLES, CONTROLLER, AND TEMPERATURE DETECTOR PER MANUFACTURER'S SYSTEM INSTALLATION AND OPERATION MANUAL. 2. CONTROLLER SHALL INCLUDE A SELF TESTING SEQUENCE MONTHY OR MORE FREQUENTLY. SYSTEM SHALL BE CAPABILE OF ALARMING BMS OR LOCAL CONTROL PANEL.

3. CABLE TO BE SELF REGULATING TYPE AND SHALL OPERATE ON LINE (277 V) WITHOUT THE USE OF A TRANSFORMER.

4. PROVIDE HIGH TEMPERATURE GLASS FILAMENT TAPE FOR METAL PIPE AND HIGH TEMPERATURE ALUMINUM TAPE FOR PLASTIC TO BE INSTALLED OVER HEATING CABLE.
5. BASIS OF DESIGN IS NVENT RAYCHEM. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEVIATIONS FROM THE BASIS OF DESIGN.

REMARKS LEGEND:

3. OR EQUAL.

6. PROVIDE TEMPERATURE DETECTOR FROM MANUFACTURER OF CONTROLLER.

7. HEATING CABLE SHALL BE CAPABLE OF CROSSING OVER ITSELF WITHOUT OVER HEATING.

		CONTROLLER												
MARK	LOCATION	KW	ELECTRI MOCP	CAL V/PHASE/HZ	MANUFACTURER	MODEL	MARK	LOCATION	SYSTEM TYPE	SET POINT (°F)	LENGTH (FEET)	MANUFACTURER	MODEL	REMARKS
HTC1	EXTERIOR RPZ	2.5	20	208/1/60	RAYCHEM	C910-485	HT1-1	RPZ ENCLOSURE	2" DWC	45	10	RAYCHEM	5XLE2	1,2,3,4,5,6,7

# PIPING SCHEDULE

SCHEDULE NOTES: 1. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

2. ALL WATER PIPING LESS THAN 6 INCH DIAMETER SUBJECT TO FREEZING SHALL BE INSULATED (MIN. R-3) AND HEAT TRACED, UNLESS OTHERWISE NOTED.

3. PIPE FITTINGS ARE LISTED IN ACCORDANCE WITH PIPE TYPES IN ORDER. DO NOT MIX FITTING TYPES.

4. ALL PIPING REFERS TO INDOOR AMBIENT TEMPERATURE CONTROLLED SPACES NOT EXPOSED TO SUNLIGHT UNLESS OTHERWISE NOTED IN THE SYSTEM TYPE. 5. ALL EXTERIOR PIPING SHALL BE UL RATED FOR UV EXPOSURE.

SYSTEM TYPE	ABBREVIATION	LOCATION	SIZE RANGE	PIPE TYPE	FITTING AND JOINTS	INSULATION AND JACKETING		
CONDENSATE DRAINAGE	D	INDOOR	ALL	DWV COPPER ASTM B88	PRESSURE FITTINGS AND SOLDER JOINT OR BRAZED JOINTS	1" MINERAL FIBER OR GLASS FIBER ASTM C547 TYPE 1 W/ ASJ ASTM C1136 VAPOR BARRIER AND ASTM E84 25/50		
CONDENSATE DRAINAGE		OUTDOOR	ALL	DWV COPPER ASTM B88	PRESSURE FITTINGS AND SOLDER JOINT OR BRAZED JOINTS	1" MINERAL FIBER OR GLASS FIBER ASTM C547 TYPE 1 W/ SMOOTH ROLL ALUMINUM JACKET ASTM C1729		
		ABOVE GROUND	2" AND SMALLER	TYPE L COPPER ASTM B88	PRESSURE FITTINGS AND SOLDER JOINT OR BRAZED JOINTS OR PRESS FITTINGS	1" MINERAL FIBER OR GLASS FIBER ASTM C547 TYPE 1 W/ 30 MIL PVC JACKETING ASTM D 1784 16354-C AND ASTM E84 25/50		
DOMESTIC COLD WATER	DCW -	ABOVE GROUND	2-1/2" AND LARGER	TYPE L COPPER ASTM B88	PRESSURE FITTINGS AND SOLDER JOINT OR BRAZED JOINTS	1" MINERAL FIBER OR GLASS FIBER ASTM C547 TYPE 1 W/ 30 MIL PVC JACKETING ASTM D 1784 16354-C AND ASTM E84 25/50		
DOMESTIC COLD WATER	DCVV	BELOW GROUND	3" AND SMALLER	TYPE K COPPER ASTM B88	PRESSURE FITTINGS AND SOLDER JOINT OR BRAZED JOINTS	1" MINERAL FIBER OR GLASS FIBER ASTM C547 TYPE 1 W/ 30 MIL PVC JACKETING ASTM D 1784 16354-C AND ASTM E84 25/50		
		BELOW GROUND	BELOW GROUND	BELOW GROUND	4" AND LARGER	TYPE K COPPER ASTM B88; DUCTILE IRON AWWA C151/A21.51; SOLID CORE SCH. 80 PVC	SOLDER JOINT OR BRAZED JOINT; MECHANICAL JOINT W/ THRUST RESTRAINT OR PUSH W/ GASKET; SOCKET FITTINGS AND SOLVENT-CEMENTED JOINTS	1" MINERAL FIBER OR GLASS FIBER ASTM C547 TYPE 1 W/ 30 MIL PVC JACKETING ASTM D 1784 16354-C AND ASTM E84 25/50
DOMESTIC COLD WATER	DCW	EXTERIOR	ALL	TYPE L COPPER ASTM B88	PRESSURE FITTINGS AND SOLDER JOINT OR BRAZED JOINTS	1-1/2" MINERAL FIBER OR GLASS FIBER ASTM C547 TYPE 1 W/ 30 MIL PVC JACKETING ASTM D 1784 16354-C AND ASTM E84 25/50		
DOMESTIC HOT WATER		ABOVE GROUND	2" AND SMALLER	TYPE L COPPER ASTM B88	PRESSURE FITTINGS AND SOLDER JOINT OR BRAZED JOINTS OR PRESS FITTINGS	1-1/2" MINERAL FIBER OR GLASS FIBER ASTM C547 TYPE 1 W/ 30 MIL PVC JACKETING ASTM D 1784 16354-C AND ASTM E84 25/50		
	DHW. DHWR	BELOW GROUND	2-1/2" AND LARGER	TYPE L COPPER ASTM B88	PRESSURE FITTINGS AND SOLDER JOINT OR BRAZED JOINTS	1-1/2" MINERAL FIBER OR GLASS FIBER ASTM C547 TYPE 1 W/ 30 MIL PVC JACKETING ASTM D 1784 16354-C AND ASTM E84 25/50		
			3" AND SMALLER	TYPE K COPPER ASTM B88	PRESSURE FITTINGS AND SOLDER JOINT OR BRAZED JOINTS	1-1/2" MINERAL FIBER OR GLASS FIBER ASTM C547 TYPE 1 W/ 30 MIL PVC JACKETING ASTM D 1784 16354-C AND ASTM E84 25/50		
		BELOW GROUND	4" AND LARGER	TYPE K COPPER ASTM B88; DUCTILE IRON AWWA C151/A21.51; SOLID CORE SCH. 80 PVC		1-1/2" MINERAL FIBER OR GLASS FIBER ASTM C547 TYPE 1 W/ 30 MIL PVC JACKETING ASTM D 1784 16354-C AND ASTM E84 25/50		
DRAINAGE WASTE AND VENT (INCLUDING <120°F	BS, BD, W, V,	ABOVE GROUND	ALL	SERVICE CLASS CAST-IRON SOIL PIPE; DWV COPPER ASTM B88; SOLID CORE SCH. 40 PVC ASTM D2665	CAST-IRON SOIL PIPE FITTINGS GASKETED JOINTS OR CISPI HEAVY DUTY HUBLESS PIPING COUPLINGS AND COUPLED JOINTS; DWV FITTINGS AND SOLDER JOINTS; SOCKET FITTINGS AND SOLVENT-CEMENTED JOINTS ASTM D2564	N/A		
FAT, OIL, AND GREASE DRAINAGE)	GD, GW, OW	BELOW GROUND	ALL	EXTRA HEAVY SERVICE CLASS CAST-IRON SOIL PIPE; DWV COPPER ASTM B88; SOLID CORE SCH. 40 PVC ASTM D2321	CAST-IRON SOIL PIPE FITTINGS GASKETED JOINTS OR CISPI HEAVY DUTY HUBLESS PIPING COUPLINGS AND COUPLED JOINTS; DWV FITTINGS AND SOLDER JOINTS; SOCKET FITTINGS AND SOLVENT-CEMENTED JOINTS ASTM D2564	N/A		
		ABOVE GROUND	2" AND SMALLER	SCH. 40 STEEL ASTM A53 A	MALLEABLE-IRON FITTINGS AND THREADED JOINTS OR WROUGHT STEEL FITTINGS AND WELDED JOINTS OR PRESS FITTINGS	N/A		
NATURAL GAS	G	ABOVE GIVOUID	2-1/2" AND LARGER	SCH. 40 STEEL ASTM A53 A	MALLEABLE-IRON FITTINGS AND THREADED JOINTS OR WROUGHT STEEL FITTINGS AND WELDED JOINTS	N/A		
		BELOW GROUND	ALL	POLYETHYLENE ASTM D2513	SOCKET FUSION WELDED POLYETHYLENE FITTINGS D2683 OR BUTT FUSION WELDED POLYETHYLENE FITTINGS D3261	N/A		

