CITY of GAMALIEL MONROE COUNTY, KENTU

WASTEWATER TREATMENT PL DO CONTROL PROJECT

GAMALIEL, MONROE COUNTY GAMALIEL CITY COMMISSION

BOB GREER	MAYOR
TOMMY BARTLEY	MEMBER
HILLARY BURGESS	MEMBER
SHERREE EUBANK	MEMBER 🔨 🔨
JEFF GERALDS	MEMBER
RHONDA ANDREWS	CLERK-TREASURER
BILL CARDER	WASTEWATER
	SUPERINTENDENT
RICHARD JACKSON	CITY ATTORNEY

2021 BY COMMONWEALTH ENGINEERS, INC. ALL RIGHTS RESERVED. REPRODUCTION BY ANY METHOD IN WHOLE OR IN PART WITHOUT PERMISSION IS PROHIBITED

MARCH 2025



CONTRACT NO. : S24187

		SET NO.	
CKY			
ANT -			
	<section-header>VEALTH™ S, INC. aster a common goal.</section-header>		
A wealth of resources to ma BY CHURCH	<u>03/12/2025</u> DATE :		
	DATE :		

		PRO	CESS AND) INSTF	UMENTATION DIAC	GRAM LEG	END		
						TAG FUN		ABBREVIATIONS	;
INSTRUMENT TAG IDENTIFICATION AREA TAG TYPE TAG FUNCTION TAG TYPE TAG NUMBER (QUAN) (2)	DN A		ALT AL C CLOS CM COI DIFF DIF DO DISS F FAIL F(X) CH/ FOR FO' FSR FO' HOA HA HOR HA HOR HA II CURF IP CUR LL LEA LOE LO LOR LO LOR LO LOS LO MOM L/R LOC MA MA	TERNATE SED(C) MPUTER-M FFERENCE SOLVED C ARACTERI WARD-ST(WARD-ST(WARD-ST(WARD-ST(ND-OFF-A ND-OFF-A ND-OFF-R RENT TO C RENT TO C RENT TO C RENT TO C CAL-OFF-I CKOUT ST ENTARY C CAL/REMO NUAL-AUT ANUAL-OF	ANUAL OR DIFFERENTIAL XYGEN 2ED PP(OFF)-REVERSE(MAINTAIN PP-REVERSE(MOMENTARY C JTOMATIC(MAINTAINED CONTA URRENT PNEUMATIC NTAINED CONTACT) HO(ULTRASONIC SENSOR FA REMOTE(MAINTAINED CONTA OP(LOCKABLE IN "STOP" PO ONTACT) TE(MAINTAINED CONTACT) OMATIC(MAINTAINED CONTA F-AUTOMATIC(MAINTAINED CONTACT)	IED CONTACT) ITACT) ITACT) CT) AILURE) ACT) ISITION ACT) CONTACT)		O OPEH OA OFF OCA OP OC OPE OSC OP RETU 00 ON-C OOA ON OOA ON OOR ON R RUN SBL SLU SP SPEI SQRT SC SS STAI SSA STA SSL STA SSL STA (LOCK SUM SU VIB VIB X MULT	N -AUTOMATIC EN-CLOSE-AUTOMATIC(MAINT/ EN-CLOSE(D)(MAINTAINED CON EN-STOP-CLOSE(MOMENTARY RN TO CENTER POSITION) OFF(MAINTAINED CONTACT) -OFF-AUTOMATIC(MAINTAINED -OFF-REMOTE(MAINTAINED CO IDGE BLANKET INTERFACE LEN ED POT QUARE ROOT RT-STOP ART-STOP-AUTOMATIC RT-STOP-LOCK ABLE IN "STOP" POSITION. MOD MMMATION RATION FIPLY
AREA 035D: BUILDING OR PROCESS AREA NUN <u>TAG TYPE</u> P: FIRST LETTER, SEE ISA TABLE BEI AH: SUCCEEDING LETTERS, SEE ISA TABLE <u>TAG NUMBER</u> 12: P&ID NUMBER <u>3: LOOP NUMBER</u> 4: EQUIPMENT NUMBER A: DEVICE LETTER IF MULTIPLE DEVICES	IBER LOW BELOW							REV RE F/R FOV ESTP ES SPD (SP SUSP SI ALRT AI RSET R STRT S	VERSE VARD/REVERSE(MOTOR STAR STOP(EMERGENCY STOP) EED POT) JSPEND LERT ESET TART
TAG FUNCTION HOA: TAG FUNCTION ABBREVIATIO	N, SEE LIST	ING AT RIGHT				TAC	S SYM	BOLS	
(QUANTITY) (2): TOTAL NUMBER OF DEVICES WHE DEVICE IS REQUIRED. DEVICE NUMBERS / BEGINNING WITH THE TAG NUMBER SHOW IS NOT SHOWN, THEN ONE DEVICE ONLY COMPONENT SEE LISTING AT RIGHT DESIGNATOR PLC POINT TYPE	ERE MORE 1 ARE SEQUE VN. IF QUAN IS REQUIRE	THAN ONE ENTIAL NTITY ED.	SING SINGLE/M NON-C NON-F	HO FOR PH' GLE FUNCT IULTI I/O D CONFIGUR PROGRAMI	RIZONTAL BAR SYMBC 'SICAL MOUNTING OF ON EVICE MI ABLE PROG MABLE PROG	DLS DEVICE JLTI FUNCTION MULTI I/O GRAMMABLE DE	IVICE) AJ	CONTROL AND I/O DEVIC DISPLAY DD APPROPRIATE HORZ. BAR(
ANALOG INPUT ANALOG OUTPUT DISCRETE INPUT DISCRETE OUTPUT NETWORK CONNECTION					FIELD MOUNTED MAIN CONTROL ROOM PANEL NORMALLY ACCESSIBLE BEHIND MAIN CONTROL PANEL NOT NORMALLY			NON-DISPL CONFIGURABL (SEMI-PROGRA	AYED NO E DEVICE PROC MMABLE)
					LOCAL PANEL NORMALLY ACCESSIBLE			DISPLAY CONFIGURABL (SEMI-PROGRA	(ED E DEVICE PROG MMABLE) PROG
									(HMI TO SCA
			FIRST	LETTER					SUCCEEDING LETTER(S)
	LETTER	PROCESS OR II	NITIATING VARI	ABLE	MODIFIER				
	B C	BURNER COMB	BUSTION E(*)				USERS CH	HOICE(*)	USERS CHOICE(*) CONTROL
	E F	VOLTAGE FLOW RATE	Ξ(¨)		RATIO		PRIMARY	ELEMENT	
	G H	USERS CHOICE HAND (MANUAL	E(*) L)						
	J K	POWER TIME OR SCHE	DULE		SCAN TIME RATE OF CHANGE		KEYPAD(D	DATA ENTRY)	CONTROL STATION
	L M N	LEVEL MOTOR USERS CHOICE	E(*)		MOMENTARY		USERS CH	HOICE(*)	USERS CHOICE(*)
	0 P 0	USERS CHOICE PRESSURE OR	E(*) R VACUUM		INTEGRATE		ORIFICE POINT TES	ST CONNECTION	
	R S	RADIATION SPEED OR FRE	EQUENCY		SAFETY		RECORD,	TREND, LOG	SWITCH
	U V	UNIVERSAL/MU	e Jltivariable(*)			MULTIFUN VALUE	ICTION(*)	MULTIFUNCTION(*) VALVE
	W X Y	WEIGHT, FORC	CE, TORQUE (*)		X AXIS		WELL UNCLASS	IFIED(*)	W UNCLASSIFIED(*) RELAX OR COMPLITE(*)
	Z	POSITION, DIM	ENSION		Z AXIS				DRIVE, ACTUATE OR UNCLASSIFIED FINAL CONTROL ELEMENT
	(*) WHEN U	JSED, EXPLANATI(ON IS SHOWN A	ADJACENT	TO INSTRUMENT SYMBOL			SPECIAL CASES: ETM - ELAPSED TIME JBX - JUNCTION BOX NDX - INDEX # MS - MOTOR STARTEF MOR - MOTOR OVERL MPR - MOTOR PROTE	METER R OAD RELAY CTION RELAY
CONDUIT NOTES					CONTROL WIRIN		REMENT	s	INSTRUM
PVC SCHEDULE 40 BELOW GRADE.			E/	ACH ANAL	DG INPUT REQUIRES AN 18/2	2 TWISTED SHIE	LDED PAIR I	N 3/4"	INSTRUMENTS REQU
RIGID ALUMINUM OR PVC COATED RGS CONDUIT ABOVE G	RADE OUTE	DOORS.	E/	ACH ANAL	DG OUTPUT REQUIRES AN 1	8/2 TWISTED SH	IELDED PAII	R IN 3/4"	1. MAGNETIC FLC 2. TURBIDITY TRA
RIGID ALUMINUM OR PVC COATED RGS CONDUIT IN CLASS SPACES.	IFIED AND (CORROSIVE	E/	ONDUIT UI ACH DISCF	NLESS NOTED OTHERWISE. RETE INPUT REQUIRES 2 #14	's IN 3/4" CONDI	JIT UNLESS	NOTED	3. pH TRANSMITT 4. ORP TRANSMIT 5. DO TRANSMIT
NO CONDUIT SHALL BE RAN ON TOP OF A DECK, ON A WAI THAT MAY POSE A TRIP HAZARD. NO CONDUIT SHALL BE I	LKWAY, OR RAN ABOVE	N AN AREA A DECK, ABOVE				14's IN 3/4" CON			6. ULTRASONIC L 7. ULTRASONIC F 8. INFLUENT AND
AREAS SHALL BE COORDINATED WITH THE OWNER/ENGIN BELOW GRADE OR IN THE CONCRETE DECKING OR PAD. C	IEER AND S	SHALL BE RAN	N	OTED OTH					NOTE: THIS LIST IS P
DECKING OR PAD SHALL BE AVOIDED WHEN POSSIBLE. IF IN A STRUCTURAL CONCRETE DECK, PAD, WALL, ETC. IT S APPROVED BY THE ENGINEER PRIOR TO INSTALLATION. C	CONDUIT IS HALL BE C ONDUIT RA	S TO BE ROUTED OORDINATED AN N IN CONCRETE		ONTROL V ONDUIT. E WO 24VDC	/IRING OF THE <u>SAME TYPE</u> N XAMPLES: TWO 4-20MA ANA DISCRETE SIGNALS MAY BE	AAY BE COMBIN LOG SIGNALS N E C <mark>OM</mark> BINED, AN	ED INTO THE IAY BE COMI ID TWO 120\	= SAME BINED, /AC	AND IS NOT ALL INCL THE GENERAL CONT EQUIPMENT SUPPLIE
CAN IMPACT THE STRUCTURAL INTEGRITY OF CONCRETE. RESPONSIBILITY TO CONFORM TO ANY REQUIREMENTS R STRUCTURAL ENGINEER TO ACCOMMODATE THE INTEGRI	IT IS THE C EQUIRED O TY OF THF	CONTRACTORS OF THE INSTALLATION A	T N	ISCRETE S	IGNALS MAY BE COMBINED. RUMENTS AND CABLE SHALL	BE AS REQUIR	ED BY THE		REQUIREMENTS OF I AND EQUIPMENT.
NO COST TO THE OWNER. FOR A CONDUIT EMBEDDED IN C CONSIDERED IT MUST BE THE ONLY REASONABLE SOLUT ENGINEER. ALL PROPOSED INSTALLATIONS MUST COMPL	CONCRETE	TO BE ERMINED BY THE 318 AND BE		ISTRUMEN	T MANUFACTURER.		_		
									_
NO CONDUIT PENETRATIONS ON THE TOP OF ANY OUTDOO	DR PANELS	ENCLOSURES.			X				
EMT IS ACCEPTABLE IN CONDITIONED ELECTRICAL ROOMS ONLY. EMT SHALL BE TRANSITIONED PRIOR TO EXITING NO	AND OFFIC	CE/BREAK AREAS SIVE SPACES. EM1	т						
SHALL NOT BE USED WHEN IT CAN BE EXPOSED TO ANY CO	ORROSIVE	GASES.	1						

		ELECTRICAL GENERAL NOTES]		LEGEND	
	_	(GENERAL NOTES APPLICABLE TO ALL ELECTRICAL SHEETS)	-	SYMBOL		MTG HGT AFF TO CL, UON
		1. CONTRACTOR SHALL EXAMINE NOT ONLY PLANS AND SPECIFICATIONS FOR ELECTRICAL AND INSTRUMENTATION, BUT PLANS AND SPECIFICATIONS FOR OTHER			OPEN LIGHTING FIXTURE SYMBOLOGY DENOTING FIXTURES CONNECTED TO NORMAL POWER: FIXTURE TYPE DETERMINES MOLINTING	
		RELATED SECTIONS. VISIT THE SITE TO BECOME ACQUAINTED WITH ALL PROJECT CONDITIONS INCLUDING EXISTING CONDITIONS. EXECUTION OF CONTRACT IS				
		EVIDENCE THAT THE CONTRACTOR HAS EXAMINED ALL DRAWINGS AND SPECIFICATIONS AND THAT ALL CONDITIONS OF INSTALLING THE WORK IN THIS SECTION ARE VERIFIED LIFE OF AMING FOR LAROR AND MATERIALS REQUIRED DUE			POWER), UON: FIXTURE TYPE DETERMINES MOUNTING.	
		TO DIFFICULTIES ENCOUNTERED, WHICH COULD HAVE BEEN FORESEEN HAD EXAMINATIONS BEEN MADE WILL NOT BE RECOGNIZED			FIXTURES CONNECTED TO LIFE SAFETY BRANCH (OR EMERGENCY POWER), UON: FIXTURE TYPE DETERMINES MOUNTING.	
NTACT)		2. THE DRAWINGS ARE DIAGRAMMATIC AND ARE NOT INTENDED TO INCLUDE EVERY			BATTERY POWERED EMERGENCY LIGHTING UNIT	7'-6"
		DETAIL OF REQUIRED CONSTRUCTION, EQUIPMENT, AND MATERIALS. PROVIDE ALL MATERIALS AND WORK NOT SPECIFICALLY MENTIONED, SHOWN, OR CAN BE		<u> </u>	EXIT SIGN: ARROWS DENOTE DIRECTIONAL INDICATING CHEVRON RQMTS. SHADING DENOTES FACE(S) ORIENTATION.	
ED CONTACT) CONTACT)		REASONABLY INFERRED ON THE DRAWINGS BUT WHICH ARE NECESSARY TO FULLY COMPLETE THE WORK.		0	WALLWASH OR OTHER DIRECTIONALLY ADJUSTABLE/AIMABLE FIXTURE: OPEN SIDE DENOTES ORIENTATION. TYPE DETERMINES MOUNTING.	
EVEL		3. WHEN SUBSTITUTING OTHER EQUIPMENT, MATERIALS, AND PRODUCTS THAN SPECIFIED IN THE CONTRACT DOCUMENTS, INCLUDE IN PRICING ALL COSTS FOR		$\nabla \nabla \nabla$	TRACK LIGHTING FIXTURE: TYPE DETERMINES MOUNTING.	
		OTHER DESIGN CHANGES TO THE PROJECT (ALL DIVISIONS) WHICH WILL RESULT FROM USE OF THE SUBSTITUTED ITEM(S).		ন ৬	POLE-MOUNTED SITE LIGHTING FIXTURE: TYPE DETERMINES MTG.	
		4. REVIEW THE CONTRACT DOCUMENTS OF OTHER DIVISIONS, AND COORDINATE		Å	FLOOD LIGHTING FIXTURE: TYPE DETERMINES MOUNTING.	
OMENTARY CONTACT)		ELECTRICAL AND CONTROL WORK WITH THE WORK OF OTHER DISCIPLINES TO AVOID CONFLICTS AND INTERFERENCE.		Ê	PHOTO-CELL	
		5. UPON COMPLETION OF THE WORK REQUIRED UNDER THIS CONTRACT, PROVIDE		\bigcirc	ALL FIXTURES IN THIS SPACE SHALL BE SAME TYPE INDICATED, U.O.N.	
		LEAVE "SPARE" BREAKERS IN "OFF" POSITION.		S	SINGLE-POLE TOGGLE SWITCH	3'-10"
RTER COILS)		6. ALL MOUNTING HEIGHTS INDICATED ON DRAWINGS ARE TO CENTERLINE, UON.		\$	SINGLE-POLE TOGGLE SWITCH: SLASH DENOTES ESSENTIAL POWER SYSTEM CONNECTION - TYPICAL FOR ALL SWITCHES	3'-10"
,		 PROVIDE LIGHTING FIXTURES COMPATIBLE WITH CEILING CONSTRUCTION. COORDINATE WITH ARCHITECTURAL ROOM FINISH SCHEDULES. 		ଊୢ	DUAL TECHNOLOGY, WALL MNTD OCCUPANCY SENSOR WITH MANUAL OVERRIDE SWITCH	3'-10"
		8. IN AREAS HAVING FINISHED CEILINGS, LOCATE CEILING-MOUNTED ELECTRICAL		© _c	REMOTE MANUAL OVERRIDE SWITCH EOR CEILING MITH	
		PLAN. DO NOT INSTALL CEILING-MOUNTED SMOKE DETECTORS WITHIN 4 FEET OF HVAC SUPPLY DIFFUSERS		Sor	OCCUPANCY SENSOR	3'-10"
		9. IN ELECTRICAL AND MECHANICAL EQUIPMENT SPACES, COORDINATE EXACT		SD	DIMMER SWITCH	3'-10"
		LOCATIONS OF LIGHTING FIXTURES WITH CONDUIT BANKS, DUCTWORK, PIPING, STRUCTURE, SUPPORTS, AND OTHER OBSTRUCTIONS. LOCATE FIXTURES SUCH			THREE-WAY DIMMER SWITCH	3'-10"
		THAT DIALS, GAUGES, METERS, ETC. ARE PROPERLY ILLUMINATED.		SP	SINGLE-POLE TOGGLE SWITCH WITH PILOT LIGHT	3'-10"
		IU. DO NOT USE ANY LIGHTING FIXTURE AS A RACEWAY FOR CONDUCTORS NOT SERVING THAT PARTICULAR FIXTURE.		SM c_	SINGLE-POLE MOTOR-RATED TOGGLE SWITCH DISCONNECT SINGLE-POLE OR DOUBLE-POLE MANUAL MOTOR STARTER WITH	3'-10"
		11. CONNECT BATTERY-OPERATED EMERGENCY LIGHTING UNITS AND EXIT SIGNS HAVING BATTERY BACK-UP TO UNSWITCHED LEG OF LOCAL LIGHTING CIRCUIT IN) ১ ১		3-10"
JES		ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND NEC SUCH THAT FAILURE OF CIRCUIT TRANSFERS UNIT FROM NORMAL TO EMERGENCY MODE,		S.₩		3-10" 3' 10"
R(S)]		CAUSING LAMPS TO RE-ENERGIZE.		S I		3-10
		 DO NOT INSTALL OUTLET BOXES BACK-TO-BACK IN NON-RATED PARTITIONS. OFFSET AND SEAL, SIMILAR TO REQUIREMENTS FOR RATED PARTITIONS, TO MINIMIZE SOLIND TRANSMISSION 		J		5'-0"
		13 COORDINATE ROUTING OF ALL LARGE CONDUITS (2" DIA AND LARGER) AND PULL				
		BOX LOCATIONS WITH GENERAL CONTRACTOR PRIOR TO INSTALLATION TO AVOID CONFLICTS AND TO GUARANTEE REQUIRED CLEARANCE AND ACCESSIBILITY OF		Sv	VARIABLE INTENSITY CONTROLLER INCLUDED WITH OWNER-	5'-0"
NON-DISPLAYED DGRAMMABLE DEVICE		ELECTRICAL AND OTHER SYSTEMS.		S,,,	FURNISHED-CONTRACTOR-INSTALLED SURGICAL LIGHTING FIXTURE	3'-10"
(ie: PLC)		14. COORDINATE WITH OWNER OR OWNER'S SELECTED VENDOR PRIOR TO ROUGH-IN FOR EXACT LOCATIONS OF SPECIAL PURPOSE OUTLETS DEDICATED TO SPECIFIC		ws	FACTORY SUPPLIED WALL CONTROLLER FOR CEILING MOUNTED	3'-10"
		EQUIPMENT. VERIFY REQUIRED NEMA CONFIGURATION OF ALL SUCH OUTLETS.		⊕	120V DUPLEX RECEPTACLE, STANDARD MOUNTING HEIGHT	1'-6"
		THIS PROJECT.		•	120V DUPLEX RECEPTACLE, SPECIAL MOUNTING HEIGHT	ABOVE COUNTER
DISPLAYED		 INCLUDE GREEN-INSULATED GROUNDING CONDUCTOR SIZED PER 2002 NEC TABLE 250-122 WITH ALL BRANCH CIRCUIT CONDUCTORS SERVING LIGHTING FIXTURES, 		⊕	120V QUADRUPLEX RECEPTACLE, STANDARD MOUNTING HEIGHT	1'-6"
GRAMMABLE DEVICE		RECEPTACLES, MECHANICAL OR OTHER DEVICES INSTALLED AT OR BELOW 8'-0".		—	120V QUADRUPLEX RECEPTACLE, SPECIAL MOUNTING HEIGHT INSTALL AT SAME HEIGHT AS SWITCHES IF NO HEIGHT IS INDICATED	ABOVE COUNTER
		 MATCH A.I.C. RATINGS AND OTHER CHARACTERISTICS OF EXISTING DEVICES IN PANELBOARD WHEN ADDING BREAKERS TO EXISTING PANELBOARDS. 		0 -	120V SINGLE RECEPTACLE, AMP RATING (IF OTHER THAN 20A) SHOWN: STANDARD MOUNTING HEIGHT, OR OTHER HEIGHT AS NOTED	1'-6", UON
$\left(\right)$		18. ALL WORK SHALL BE IN CONFORMANCE WITH THE NATIONAL ELECTRICAL CODE -			120V GFCI DUPLEX RECEPTACLE, STANDARD MOUNTING HEIGHT	1'-6"
		LOCAL/MUNICIPAL CODE, AND THE AUTHORITIES HAVING JURISDICTION.		\$ -	120V GFCI QUADRUPLEX RECEPTACLE, SPECIAL MOUNTING HEIGHT INSTALL AT SAME HEIGHT AS SWITCHES IF NO HEIGHT IS INDICATED	ABOVE COUNTER
		19. ALL CONNECTIONS TO EQUIPMENT SUBJECT TO MOVEMENT OR VIBRATION SHALL BE LIQUID TIGHT FLEXIBLE METAL CONDUIT, NOT LESS THAN 12" IN LENGTH, NOR		0 -	120V GFCI DUPLEX RECEPTACLE, SPECIAL MOUNTING HEIGHT INSTALL AT SAME HEIGHT AS SWITCHES IF NO HEIGHT IS INDICATED	ABOVE COUNTER
CADA SOFTWARE)		GREATER THAN 36" IN LENGTH.		₼	SINGLE RECEPTACLE (OTHER THAN 120V), VOLTAGE, AMP RATING, NEMA CONFIGURATION, AND MOUNTING HEIGHT AS NOTED	
		20. ALL CONDULT PENETRATIONS SHALL BE SEALED WITH APPROPRIATE CONDULT SEALING MATERIAL.		₽	RECPTACLE OR J-BOX CONNECTION FOR X-RAY VIEWER: VERIFY CONNECTION RQMTS WITH UNIT FURNISHED PRIOR TO ROUGH-IN	
		21. ALL CABLE SIZES SHALL UTILIZE COPPER CONDUCTORS.		۲	120V DUPLEX RECEPTACLE IN FLUSH FLOOR-MOUNTED BOX	
MODIFIER		22. FIELD VERIFY LOCATIONS OF BUILDING EXPANSION JOINTS WHEN ROUTING CONDUIT. ALL CONDUITS CROSSING EXPANSION JOINTS SHALL BE INSTALLED WITH		ТР	TELE-POWER POLE	
USERS CHOICE(*)		THE EXPANSION FITTINGS, EXPANSION FITTINGS SHALL BE INSTALLED IN ACCORD <mark>ANCE WITH THE NEC AND MANUFACTURERS WRITTEN RECOMMENDATIONS.</mark>		Н	HALON DUMP STATION	
		23. FEEDERS FROM PANELBOARDS BACK TO MAIN SWITCHBOARD, BETWEEN AUTO		F	FIRE ALARM MANUAL PULL STATION	3'-10"
FEEDBACK		AND THEIR SOURCES/LOADS ARE NOT INDICATED. FEEDERS ARE PART OF THE WORK, AND SHALL BE SIZED AS INDICATED ON THE LINE DIAGRAM.		FK	FIRE ALARM MANUAL PULL STATION, KEY-OPERATED	3'-10"
HIGH		24. HOMERUNS SHALL NOT BE COMBINED IN A RACEWAY UNLESS SHOWN ON THE		D	FIRE ALARM CEILING-MOUNTED SMOKE DETECTOR	
		CONTRACT DRAWINGS. SINGLE PHASE BRANCH CIRCUIT HOMERUNS MAY BE COMBINED AT THE CONTRACTORS DISCRETION NOT GREATER THAN (3) PHASE		H	FIRE ALARM CEILING-MOUNTED HEAT DETECTOR	
		25. FACH SINGLE PHASE BRANCH CONDUCTORS, AND A GROUNDING CONDUCTOR.		р В		
		BACK TO THE PANEL.				
		26. ALL PENETRATIONS BELOW GRADE SHALL USE LINK SEALS.				
		27. WHERE LOW VOLTAGE (CONTROL) CABLING IS ALLOWED TO BE INSTALLED WITHOUT A RACEWAY, IT SHALL BE SUPPORTED NOT EXCEEDING INTERVALS OF 48",		N	FIRE ALARM CONNECTION TO SPRINKLER SYSTEM VALVE STATUS	
MULTIFUNCTION(*)		AND NOT MORE THAN 5" FROM THE CABINETS, BOXES, FITTINGS, OUTLETS, RACKS, FRAMES AND TERMINALS.		FSI	SWITCH (TAMPER SWITCH) FIRE ALARM CONNECTION TO SPRINKLER SYSTEM WATER	
UNCLASSIFIED(*)		 ALL MOUNTING HARDWARE INCLUDING NUTS, BOLTS, SCREWS, WASHERS, ETC. SHALL BE STAINLESS STEEL. 		ت FD	FIOW SWITCH FIRE ALARM AUDIO/VISUAL NOTIFICATION DEVICE-CHIME & STROBF	6'-8"
		29. MOUNT JUNCTION BOXES AND DISCONNECT SWITCHES ON STAINLESS STEEL		 [FM	FIRE ALARM AUDIO/VISIUAL NOTIFICATION DEVICE-HORN & STROBE	6'-8"
				(F)	FIRE ALARM VISUAL ONLY NOTIFICATION DEVICE - STROBE LIGHT	6'-8"
		30. ALL UNISTRUT, MOUNTING BRACKETS AND SUPPORTING STRUCTURES SHALL BE STAINLESS STEEL.		FS HS	FIRE ALARM SPEAKER: CEILING-MOUNTED, WALL-MOUNTED	6'-8"
		31. DO NOT MIX CONTROL AND POWER CONDUCTORS IN THE SAME CONDUIT. DO NOT MIX DISCRETE AND ANALOG CONTROL CONDUCTORS IN THE SAME CONDUIT		EHA	FIRE ALARM HORN, WALL-MOUNTED	AS NOTED
-		32. ADJUSTABLE SPEED DRIVES (ASD) LINE AND LOAD WIRE SHALL BE RUN IN		RI HRI	DUCT SMOKE DETECTOR ALARM REMOTE INDICATOR LIGHT: CEILING-MOUNTED, WALL-MOUNTED	6'-8"
		SEPARATE RACEWAYS.		SAI HSAI	DUCT SMOKE DETECTOR ALARM REMOTE INDICATOR LIGHT AND TEST SWITCH: CEILING-MOUNTED, WALL-MOUNTED	6'-8"
		33. CONTRACTOR SHALL COORDINATE WITH HEAT TRACE MANUFACTURER DURING BIDDING AND CONSTRUCTION AND SHALL PROVIDE ALL CONDUIT, WIRING, AND CIRCUITS AS BEQUIRED. LIFAT TRACE QUALL OF PROVIDE ALL CONDUIT, WIRING, AND		Z	FIRE ALARM ZONE ADDRESSABLE MODULE	
MENT POWER	4	ALL HEAT TRACE IS REQUIRED TO BE GFI PROTECTED.			FIRE ALARM INDIVIDUAL ADDRESSABLE MODULE	
UIRING 120 VAC:		34. CONTRACTOR SHALL NOT COMBINE POWER FEEDS FOR THREE PHASE LOADS.		•	FIRE ALARM ELECTRO-MAGNETIC DOOR HOLDER	6'-4"
OW METERS RANSMITTERS		35. THE BELOW LOCATIONS ARE WHERE GFCI OUTLETS ARE REQUIRED: 35.1. KITCHENS: ALL KITCHEN OUTLETS.		FR	FIRE RELAY	
TERS ITTERS		35.2. BATHROOMS: GECLOUTLETS ARE REQUIRED IN BATHROOMS NEAR THE SINK. 35.3. GARAGES: GECLOUTLETS ARE REQUIRED IN GARAGES THAT HAVE SINKS. 35.4. BASEMENTS: UNEINICHED PASEMENTS BECHING AT LEAST ONE OF CLOUTLETS		®	DESK MOUNTED INTERCOM	
LERS LEVEL TRANSMITTERS		35.4. DISCHIENTS, UNFINISHED DASEMENTS REQUIRE AT LEAST ONE GECTOUTLET. 35.5. OUTDOOR SPACES: GECTOUTLETS ARE REQUIRED IN OUTDOOR AREAS THAT ARE ACCESSIBLE OR AT GRADE I EVEL			WALL MOUNTED INTERCOM	
FLOW TRANSMITTERS D EFFLUENT SAMPLERS		35.6. LAUNDRY ROOMS: ALL LAUNDRY ROOM OUTLETS.35.7. CRAWL SPACES: GFCI OUTLETS ARE REQUIRED IN CRAWL SPACES WHERE		\$ _X	EXPLOSION PROOF SWITCH	3'-10"
PROVIDED AS A REFERENCE CLUSIVE. COORDINATE WITH		MECHANICAL EQUIPMENT IS LOCATED. 35.8. UTILITY ROOMS: ALL UTILITY ROOM OUTLETS.		\$ ₃	3 WAY SWITCH	3'-10"
ITRACTOR AND THE IERS FOR DETAILED WIRING		36. LIMIT CAT 6E INSTALLATION TO 230' MAXIMUM DISTANCE. CONTRACTOR SHALL		\$ ₄	4 WAY SWITCH	3'-10"
F INSTRUMENTS, SENSORS,		ROUTING EXCEEDS CAT 6E LIMITS.		\$w₽	NEMA 4X SWITCH	3'-10"
			-		PUMP AND METER LEGEND	
				SYMBOL	DESCRIPTION DESCRIPTION	
					SONIC FLOW METER	
				<u>م</u> روب	CENTRIFUGAL PUMP	
				- ®	LOBE PUMP	

LOBE PUMP

GRINDER PUMP

PERISTALTIC PUMP

SUBMERSIBLE PUMP

Ø

LEGEND					
ABBREVIATIONS					
ABV	ABOVE IG ISOLATED GROUND				
AFF	ABOVE FINISHED FLOOR	MON MONITOR			
ACLG	ABOVE FINISHED CEILING MTG MOUNTING				
BFC	BELOW FINISHED CEILING MV MULTI-VIEWER				
С	CRITICAL BRANCH OR EMERG PWR- RED DEVICE & PLATE, UON. MW MICROWAVE OVEN				
CL	CENTER-LINE	NEC	NATIONAL ELECTRIC	AL CODE	
CLG	CEILING-MOUNTED	OCPD	OVERCURRENT PRO	TECTIVE DEVICE	
COF	COFFEE MAKER	OFCI	OWNER-FURNISHED- INSTALLED	CONTRACTOR-	
СОР	COPIER	OFE	OWNER-FURNISHED	EQUIPMENT	
CTR	COUNTER	PRT	PRINTER		
ECB	ENCLOSED CIRCUIT BREAKER	PTS	PNEUMATIC TUBE ST	ATION	
EMER	EMERGENCY	Q	EQUIP BRANCH OR E RED DEVICE & PLATE	MERG PWR- ., UON.	
EWC	ELECTRIC WATER COOLER	REF	REFRIGERATOR		
EWH	ELECTRIC WATER HEATER	RQMTS	REQUIREMENTS		
FAX	FACSIMILE MACHINE	т	TAMPERPROOF DEVI	CE	
FBO	FURNISHED BY OTHERS	TSP	TWISTED SHIELDED F	PAIR	
GFCI	GROUND FAULT CIRCUIT INTERRUPT- ING - PERSONNEL PROTECTION	UON	UNLESS OTHERWISE	NOTED	
GFI	GROUND FAULT INTERRUPTING - EQUIPMENT PROTECTION	UCR	UNDER-COUNTER RE	FRIGERATOR	
HGT	HEIGHT	WP	WEATHERPROOF		
FPMR	FUSED PER MANUFACTURE'S RECOMMENDATIONS				
	1				
SYMBOL	DESCRIPTION MTG HGT AFF TO CL, UON				
	EXPOSED RACEWAY				
\square	RACEWAY CONCEALED IN OR ABOVE CEILINGS AND WITHIN WALLS				
$\left \frown \right $	OR BELOW GRADE				
	GRADE				
	LIGHTNING PROTECTION CABLING				
	OF CIRCUITS.				
	RACEWAY TURNING UP AS VIEWED FROM THE LOAD				
	RACEWAY TURNING DOWN AS VIEWED FROM THE LOAD				
	CAPPED RACEWAY				
	GENERAL LIGHTING OR OUTLET CIRCUIT - MAY BE DAISY CHAINED				
	JUNCTION BOX AS NOTED			AS NOTED	
—					
	FUSIBLE SAFETY SWITCH (AMP RATING,	POLES, FUSE	SIZE, AND		
	NEMA ENCLOSURE TYPE IF OTHER THAN NON-FUSIBLE SAFETY SWITCH (AMP RAT	N 1 NOTED) FING, POLES, A	AND		
	NEMA ENCLOSURE TYPE IF OTHER THAN COMBINATION MAGNETIC ACROSS-THE-	N 1 NOTED) LINE STARTEF	R WITH MOTOR		
	CIRCUIT PROTECTOR (NEMA STARTER SIZE NOTED) CONTROL PANEL FURNISHED INTEGRAL TO EQUIPMENT (SINGLE-				
\square	POINT ELECTRICAL CONNECTION REQUIRED)				
	FLEXIBLE CONDUIT CONNECTION				
	SURFACE- OR FLUSH-MOUNTED LIGHTIN	IG/RECEPTAC	LE PANELBOARD		
	POWER DISTRIBUTION PANELBOARD		0,		
	DRY TYPE TRANSFORMER				
	MISCELLANEOUS SYSTEMS PANEL OR CABINET: REFER TO				
	XXX ABBREVIATIONS.				
NECESSARILY APPEAR IN THIS SET OF CONTRACT DOCUMENTS. REFER ONLY TO THOSE THAT APPLY.					

	MOTOR CONTROLLER LEGEND		
SYMBOL	DESCRIPTION		
MS	ACROSS THE LINE MOTOR STARTER		
ss	SOFT STARTER		
VFD	VARIABLE FREQUENCY DRIVE		
MS	ACROSS THE LINE MOTOR STARTER WITH INTEGRAL DISCONNECT		
SS	SOFT STARTER WITH INTEGRAL DISCONNECT		
VFD	VARIABLE FREQUENCY DRIVE WITH INTEGRAL DISCONNECT		
	LIGHTING LEGEND		
SYMBOL	DESCRIPTION		

SYMBOL	DESCRIPTION
OTMBOE	
0	FIXTURE WITH STANDARD BALLAST.
	FIXTURE WITH STANDARD BALLAST AND EMERGENCY BALLAST.







VIEW OF LAB/OFFICE FROM AERATION SYSTEM

GENERAL NOTES:

- 1. THE SYSTEM INTEGRATOR IS PROVIDING ONE (1) NEW DISSOLVED OXYGEN TRANSMITTER, TWO (2) VARIABLE FREQUENCY DRIVES, ONE (1) DISSOLVED OXYGEN CONTROL PANEL (DPCP-1) FOR DISSOLVED OXYGEN CONTROL OF THE AERATION DITCH ROTORS.
- 1. THE CONTRACTOR SHALL INSTALL ALL SYSTEM INTEGRATOR FURNISHED EQUIPMENT.
- 2. THE SITE PLANS SHOWS APPROXIMATE DISTANCES FROM LAB OFFICE BUILDING TO THE AERATION DITCH ROTORS. ACTUAL CONDUIT ROUTING SHALL BE DETERMINED BY THE CONTRACTOR.
- 3. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL POWER/CONTROL CONDUIT AND WIRE.FROM THE EXISTING ELECTRICAL PANEL TO NEW VARIABLE FREQUENCY DRIVES AND TO THE EXISTING AERATION DITCH ROTORS.
- THE CONTRACTOR SHALL FURNISH AND INSTALL ALL CONTROL CONDUIT/WIRE FROM DISSOLVED OXYGEN CONTROL PANEL TO VARIABLE FREQUENCY DRIVES. ANALOG AND DIGITAL WIRING SHALL BE INSTALLED IN SEPARATE CONDUITS.
- CONDUIT SHALL BE SCHEDULE 40 PVC BELOW GRADE, SCHEDULE 80 PVC ABOVE GRADE AND EMT IN 5. LAB/OFFICE BUILDING.
- 6. THE CONTRACTOR SHALL FURNISH ALL MOUNTING HARDWARE AND BRACKETS NECESSARY FOR A COMPLETE INSTALLATION OF ALL NEW EQUIPMENT.



- $\langle 2 \rangle$ EXISTING AERATION CONTROL PANEL. THE CONTRACTOR SHALL REMOVE WIRING TO AERATION ROTORS ROTOR DISCONNECT SWITCHES. EXISTING CONDUIT AT CONTROL PANEL TO REMAIN. SEAL EXISTING CONDUITS AT CONTROL PANEL WITH SILICONE CAULK.
- $\langle 3 \rangle$ AERATION ROTOR NUMBER 1. THE CONTRACTOR SHALL DEMOLISH DISCONNECT SWITCH, CUT AND SEAL CONDUIT. CONTRACTOR SHALL FURNISH AND INSTALL NEW NEMA 3R DISCONNECT SWITCH. ROUTE NEW CONDUIT BELOW WALKWAY, PAST EDGE OF SIDE WALK TO NEW AERATION ROTOR DISCONNECT SWITCH. INSTALL 1 5/8" STAINLESS STEEL UNISTRUT EMBEDDED IN 18" DEEP CONCRETE AT GRADE TO PLATFORM RAILING TO SUPPORT NEW CONDUIT.
- AERATION ROTOR NUMBER 2. THE CONTRACTOR SHALL DEMOLISH DISCONNECT SWITCH, CUT AND SEAL $\langle 4 \rangle$ CONDUIT. CONTRACTOR SHALL FURNISH AND INSTALL NEW NEMA 3R DISCONNECT SWITCH. INSTALL 1 5/8" STAINLESS STEEL UNISTRUT EMBEDDED IN 18" DEEP CONCRETE AT GRADE TO SUPPORT NEW CONDUIT TO NEW AERATION ROTOR DISCONNECT SWITCH.
- $\langle 5 \rangle$ THE CONTRACTOR SHALL FURNISH AND INSTALL NEMA 3R DISCONNECT SWITCHES AT AERATION ROTOR MOTORS. DISCONNECT SWITCHES SHALL HAVE AUXILIARY SWITCHES TO OPEN VFD CONTROL CIRCUIT WHEN DISCONNECT IS OPENED.
- $\left< 6 \right>$ THE CONTRACTOR SHALL FURNISH AND INSTALL POWER CONDUIT AND WIRING TO NEW AERATION ROTOR DISCONNECT SWITCHES. CONTRACTOR SHALL INSTALL TWO (2) #12 THWN CONDUCTORS WITH POWER WIRE FOR VFD INTERLOCK TO DISCONNECT SWITCH AUXILIARY CONTACTS.







ile: Z:\SHARED\KY CLIENTS A-L\GAMALIEL\S24187 ENERGY SAVINGS PROJECT\06 CAD\K MECH-ELECT\ELECTRICAL taved: 3/10/2025 1:21:31 PM Plothed: 3/10/2025 3:43:57 PM Current User: John D. Gibson: ElT LastSavedBv: cmeans GENERAL NOTES

- 1. THE SYSTEM INTEGRATOR IS PROVIDING ONE (1) NEW DISSOLVED OXYGEN TRANSMITTER, TWO (2) VARIABLE FREQUENCY DRIVES, ONE (1) DISSOLVED OXYGEN CONTROL PANEL (DPCP-1) FOR DISSOLVED OXYGEN CONTROL OF THE AERATION DITCH ROTORS.
- 2. THE CONTRACTOR SHALL INSTALL ALL SYSTEM INTEGRATOR FURNISHED EQUIPMENT.
- 3. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL POWER/CONTROL CONDUIT AND WIRE.FROM THE EXISTING ELECTRICAL PANEL TO NEW VARIABLE FREQUENCY DRIVES AND TO THE EXISTING AERATION DITCH ROTORS.

THE CONTRACTOR SHALL FURNISH AND INSTALL ALL CONTROL CONDUIT/WIRE FROM DISSOLVED OXYGEN CONTROL PANEL TO VARIABLE FREQUENCY DRIVES. ANALOG AND DIGITAL WIRING SHALL BE INSTALLED IN SEPARATE CONDUITS.

5. CONDUIT SHALL BE SCHEDULE 40 PVC BELOW GRADE, SCHEDULE 80 PVC ABOVE GRADE AND EMT IN LAB/OFFICE BUILDING.

ELECTRICAL NOTES:

- $\langle 1 \rangle$ EXISTING DISSOLVED OXYGEN CHART RECORDER.
- 2 THE CONTRACTOR SHALL REMOVE ANALOG WIRING TO EXISTING CHART RECORDER AND EXTEND TO NEW AERATION ROTOR CONTROL PANEL. THE CONTRACTOR SHALL INSTALL NEW ANALOG WIRING FROM NEW DISSOLVED OXYGEN CONTROL PANEL TO INPUT OF EXISTING CHART RECORDER.
- 3 THE CONTRACTOR SHALL INSTALL POWER CONDUIT/WIRE FROM 120/240V LIGHTING PANEL TO NEW DISSOLVED OXYGEN CONTROL PANEL.
- EXISTING GENERAL ELECTRIC 3-PHASE ELECTRICAL PANEL, CATALOG NUMBER AQF3304CBXAXS5, ORDER NUMBER I162-DN27542:
 THE CONTRACTOR SHALL FURNISH AND INSTALL ONE (1) 3-POLE, 125-AMP BREAKER IN EXISTING ELECTRICAL PANEL AND ONE (1) NEW SUB PANEL WITH TWO (2) 3-POLE, 80-AMP BREAKERS TO POWER NEW VARIABLE FREQUENCY DRIVES. THE CONTRACTOR SHALL FURNISH AND INSTALL POWER CONDUIT AND WIRE FROM NEW SUB PANEL TO NEW VARIABLE FREQUENCY DRIVES. VARIABLE FREQUENCY DRIVES ARE SHOW ON EXISTING LAB/OFFICE BUILDING PLAN.
- 5 THE CONTRACTOR SHALL FURNISH AND INSTALL CONTROL CONDUIT AND WIRE FROM NEW DISSOLVED OXYGEN CONTROL PANEL TO NEW VARIABLE FREQUENCY DRIVES. ANALOG AND DIGITAL WIRING SHALL BE RAN IN SEPARATE CONDUITS.
- 6 THE CONTRACTOR SHALL FURNISH AND INSTALL POWER CONDUIT AND WIRING TO NEW AERATION ROTOR DISCONNECT SWITCHES. CONTRACTOR SHALL INSTALL TWO (2) #12 THWN CONDUCTORS WITH POWER WIRE FOR VFD INTERLOCK TO DISCONNECT SWITCH AUXILIARY CONTACTS.
- THE CONTRACTOR SHALL FURNISH AND INSTALL NEMA 3R DISCONNECT SWITCHES AT AERATION ROTOR MOTORS. DISCONNECT SWITCHES SHALL HAVE AUXILIARY SWITCHES TO OPEN VFD CONTROL CIRCUIT WHEN DISCONNECT IS OPENED.





21 -2







