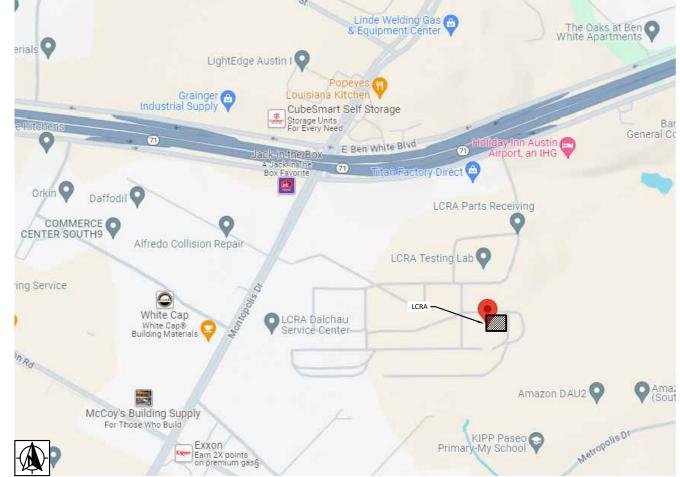
PROJECT LOCATION MAP





LOWER COLORADO **RIVER AUTHORITY**

DSC STORES BLDG. UPGRADES LCRA PROJECT NO.: PLC 5472 3505 MONTOPOLIS AUSTIN, TEXAS 78744 100% CONSTRUCTION SET DATE: FEBRUARY 23, 2024

DESIGN TEAM	DESIGN
	BUILDIN
MECHANICAL, ELECTRICAL ENGINEER	
ENCOTECH	 2021 II 2021 II 2023 N 2021 II
	CONSE
ENGINEERING CONSULTANTS	
ENGINEERING CONSULTANTSTBPE Firm8500 Bluffstone Cove, Suite B-103 Austin, Texas 78759 512.338.1101 Project No.: 18031.M.AUS	

• -• M000 • M001 • M002 • M101 • M500 • E000 • E001 • E002 • E100 • E200 • E201 • E500 • E501

DATA

CODES:

ERNATIONAL BUILDING CODE ERNATIONAL MECHANICAL CODE FIONAL ELECTRICAL CODE ERNATIONAL ENERGY ATION CODE

DRAWINGS

COVER SHEET MECHANICAL GENERAL NOTES MECHANICAL GENERAL NOTES MECHANICAL SPECIFICATIONS MECHANICAL FLOOR PLANS MECHANICAL SCHEDULES, CONTROLS AND DETAILS ELECTRICAL GENERAL NOTES ELECTRICAL SPECIFICATIONS ELECTRICAL SPECIFICATIONS LIGHTING PLAN ELECTRICAL SITE PLAN ELECTRICAL POWER PLAN ONE-LINE DIAGRAM ELECTRICAL SCHEDULES

MECHANICAL GENERAL NOTES:

- A. THE MECHANICAL WORK CONSISTS OF PROVIDING LABOR, MATERIALS, PRODUCTS, AND PERFORMING ALL OPERATIONS REQUIRED FOR THE COMPLETE OPERATING INSTALLATION OF ALL MECHANICAL SYSTEMS IN ACCORDANCE WITH SPECIFICATIONS, APPLICABLE DRAWINGS, TERMS, CONDITIONS OF THE CONTRACT, AND ALL APPLICABLE CODES AND ORDINANCES GOVERNING THE INSTALLATION OF THE VARIOUS MECHANICAL SYSTEMS. ALL WORK SHALL BE FULLY CORRELATED WITH THE WORK OF OTHER CRAFTS.
- B. EACH CONTRACTOR SHALL STUDY THE CONTRACT DOCUMENTS TO DETERMINE THE EXTENT OF WORK PROVIDED UNDER THIS CONTRACT, AS WELL AS TO ASCERTAIN THE DIFFICULTY TO BE ENCOUNTERED IN PERFORMING THE WORK ON THE DRAWINGS AND OUTLINED HEREINAFTER, AND IN MAKING CONNECTIONS TO EXISTING UTILITIES, INSTALLING NEW EQUIPMENT AND SYSTEMS AND COORDINATING THE WORK WITH THE OTHER TRADES.
- C. EXAMINATION OF SITE: CONTRACTOR SHALL THOROUGHLY EXAMINE SITE AND SATISFY THEMSELVES AS TO THE CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED. THE CONTRACTOR SHALL VERIFY, AT THE SITE, ALL MEASUREMENTS AFFECTING THEIR WORK AND SHALL BE RESPONSIBLE FOR THE CORRECTNESS OF SAME. NO EXTRA COMPENSATION WILL BE ALLOWED TO CONTRACTOR FOR EXPENSES DUE TO THEIR NEGLECT TO EXAMINE OR FAILURE TO DISCOVER CONDITIONS WHICH AFFECT THEIR WORK. NO EXTRA COMPENSATION WILL BE ALLOWED ON ACCOUNT OF DIFFERENCES BETWEEN ACTUAL DIMENSIONS AND THOSE INDICATED ON THE DRAWINGS.
- D. PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE MECHANICAL SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED, AND AS REQUIRED BY CODE.
- E. INSTALL ALL MECHANICAL EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS.
- F. SHOULD DISCREPANCIES EXIST WITHIN THE CONTRACT DOCUMENTS, THE MORE STRINGENT AND MORE COSTLY APPROACH SHALL APPLY FOR BIDDING PURPOSES. THE CONTRACTOR IS TO NOTIFY THE OWNER'S REPRESENTATIVE OF DISCREPANCIES FOR CLARIFICATION. CLARIFICATIONS ISSUED AFTER THE CONTRACT IS AWARDED ARE TO BE INCORPORATED BY THE CONTRACTOR AT NO ADDITIONAL COSTS AND ARE TO BE REVIEWED BY THE OWNER'S REPRESENTATIVE TO DETERMINE IF A REDUCTION IN COST IS JUSTIFIED.
- G. CONTRACTOR SHALL OBTAIN ALL PERMITS AND PAY ALL FEES AND CHARGES TO ALL LOCAL AND OTHER RELATED AGENCIES AS REQUIRED.
 H. PROVIDE VIBRATION ISOLATION FOR ALL MECHANICAL EQUIPMENT TO
- PREVENT TRANSMISSION OF VIBRATION TO BUILDING STRUCTURE.
 ALL EQUIPMENT, PIPING, DUCTWORK, ETC. SHALL BE SUPPORTED AS DETAILED,
- J. PROVIDE VIBRATION ISOLATORS FOR ALL PIPING SUPPORTS CONNECTED TO,
- AND WITHIN 50' OF, ISOLATED EQUIPMENT (EXCEPT AT BASE ELBOW SUPPORTS AND ANCHOR POINTS) THROUGHOUT MECHANICAL EQUIPMENT ROOMS.
- K. IF APPLICABLE, THE LOCATION OF EXISTING UNDERGROUND UTILITIES IS SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR SHALL PAY FOR AND REPAIR ALL DAMAGES CAUSED BY FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES UNLESS OTHERWISE INDICATED.
- L. COORDINATE CONSTRUCTION OF ALL MECHANICAL WORK WITH ARCHITECTURAL, STRUCTURAL, CIVIL, ELECTRICAL, PLUMBING WORK, ETC., SHOWN ON OTHER CONTRACT DOCUMENT DRAWINGS.
- M. MAINTAIN AN ADEQUATE CLEARANCE TO THE UNDERSIDE OF PIPES, DUCTS, CONDUITS, SUSPENDED EQUIPMENT, ETC., THROUGHOUT ACCESS ROUTES IN MECHANICAL ROOMS, ATTIC SPACES, CRAWL SPACES, ETC.
- N. ALL TESTS (PRESSURE TESTS, FLOW TESTS, ETC.) SHALL BE COMPLETED BEFORE ANY MECHANICAL EQUIPMENT OR PIPING INSULATION IS APPLIED.
- O. LOCATE ALL TEMPERATURE, PRESSURE, AND FLOW MEASURING DEVICES IN ACCESSIBLE LOCATIONS WITH THE STRAIGHT SECTION OF PIPE OR DUCT UP AND DOWNSTREAM PER MANUFACTURER'S INSTALLATION GUIDELINES AND REQUIREMENTS.
- P. WHERE TWO OR MORE ITEMS OF THE SAME TYPE OF EQUIPMENT ARE REQUIRED, THE PRODUCT OF ONE MANUFACTURER SHALL BE USED.
- Q. ALL MATERIALS, EQUIPMENT, AND APPARATUS INSTALLED ON THE PROJECT SHALL BE NEW AND INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTRUCTIONS. THE MANUFACTURER OR THEIR AUTHORIZED REPRESENTATIVE SHALL CERTIFY IN WRITING TO THE OWNER AND THE OWNER'S REPRESENTATIVE, THAT THE INSTALLATION HAS BEEN MADE IN ACCORDANCE WITH SUCH PRINTED REQUIREMENTS.
- R. COORDINATE ALL EQUIPMENT CONNECTIONS WITH MANUFACTURER'S CERTIFIED DRAWINGS. COORDINATE AND PROVIDE ALL DUCT AND PIPING TRANSITIONS REQUIRED FOR FINAL EQUIPMENT CONNECTIONS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DUCT AND PIPING DIMENSIONS BEFORE FABRICATION.
- S. ALL CONTROL WIRE AND CONDUIT SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE (NEC) AND DIVISION 26 OF THE SPECIFICATION.
- T. CONCRETE HOUSEKEEPING PADS SHALL BE PROVIDED BY THE GENERAL CONTRACTOR. IT SHALL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR TO COORDINATE THE SIZE AND LOCATION OF CONCRETE HOUSEKEEPING PADS WITH THE GENERAL CONTRACTOR.
- U. ALL MECHANICAL ROOM DOORS SHALL BE A MINIMUM OF 4'-0" WIDE. COORDINATE WITH ARCHITECT.
- V. DO NOT CUT BEAMS OR SLABS WITHOUT PRIOR AUTHORIZATION FROM STRUCTURAL ENGINEER. WHERE BEAMS ARE INDICATED TO BE PENETRATED WITH DUCTWORK OR PIPING, CONTACT STRUCTURAL ENGINEER FOR APPROVAL AND COORDINATE DUCTWORK AND PIPING LAYOUT WITH BEAM OPENING SIZE AND OPENING LOCATIONS. COORDINATION SHALL BE DONE PRIOR TO THE FABRICATION OF DUCTWORK, CUTTING OF PIPING, AND

FABRICATION OF BEAMS.

- W. WHEN MECHANICAL WORK IS SUBCONTRACTED, IT SHALL BE THE MECHANICAL CONTRACTOR'S RESPONSIBILITY TO COORDINATE SUBCONTRACTORS AND THE ASSOCIATED CONTRACTS. WHEN DISCREPANCIES ARISE PERTAINING TO WHICH CONTRACTOR PROVIDES A PARTICULAR ITEM OF THE MECHANICAL CONTRACT OR WHICH CONTRACTOR PROVIDES FINAL CONNECTIONS FOR A PARTICULAR ITEM OF THE MECHANICAL CONTRACT, IT SHALL BE BROUGHT TO THE ATTENTION OF THE MECHANICAL CONTRACTOR, WHOSE DECISION SHALL BE FINAL.
- X. THE LOCATIONS OF ALL ITEMS SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS NOT DEFINITIVELY FIXED BY DIMENSIONS ARE APPROXIMATE ONLY. THE EXACT LOCATIONS NECESSARY TO SECURE THE BEST CONDITIONS AND RESULTS MUST BE DETERMINED BY THE PROJECT SITE CONDITIONS AND SHALL HAVE THE APPROVAL OF THE ENGINEER BEFORE BEING INSTALLED. DO NOT SCALE DRAWINGS.
- Y. ALL MISCELLANEOUS STEEL REQUIRED TO ENSURE PROPER INSTALLATION AND/OR AS SHOWN IN DETAILS FOR PIPING, DUCTWORK, AND EQUIPMENT (UNLESS OTHERWISE NOTED) SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR.
- Z. ALL DUCTWORK, PIPING, AND EQUIPMENT SUPPORTED DIRECTLY FROM STRUCTURE SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR. ALL ATTACHMENTS TO STEEL BAR JOISTS, TRUSSES, OR JOIST GIRDERS SHALL BE AT PANEL POINTS. PROVIDE BEAM CLAMPS AS REQUIRED. WELDING TO STRUCTURAL MEMBERS SHALL NOT BE PERMITTED.
- AA. ALL ROOF-MOUNTED EQUIPMENT CURBS FOR EQUIPMENT PROVIDED BY THE MECHANICAL CONTRACTOR SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR AND INSTALLED BY THE GENERAL CONTRACTOR.
- BB. ANY ROOF PENETRATION SHALL BE COORDINATED WITH ROOFING CONTRACTOR, ROOF SYSTEM MANUFACTURER, ARCHITECT, AND ALL OTHER TRADES INVOLVED. ALL ROOF PENETRATIONS SHALL BE REVIEWED AND APPROVED BY ROOF SYSTEM MANUFACTURER FOR COMPLIANCE WITH THE ROOFING WARRANTY.
- CC. LOCATIONS AND SIZES OF ALL FLOOR AND WALL PENETRATIONS SHALL BE COORDINATED WITH ALL OTHER TRADES INVOLVED.
- DD. PROVIDE DAMPERS WITH APPROPRIATE RATINGS AT SUPPLY AIR AND RETURN AIR DUCT PENETRATIONS THRU RATED CEILINGS, PARTITIONS, FLOORS AND WALLS. MAINTAIN ALL RATINGS BY PROVIDING AN APPROVED FIRESTOPPING MATERIAL FOR ALL PENETRATIONS THROUGH RATED CEILINGS, PARTITIONS, FLOORS AND WALLS.
- EE. DUCT SMOKE DETECTORS SHALL BE LOCATED WITHIN 5' OF FIRE SMOKE DAMPERS AND SMOKE DAMPERS.
- FF. ALL AIR CONDITIONING CONDENSATE DRAIN LINES FROM EACH AIR HANDLING UNIT AND ROOFTOP UNIT SHALL BE PIPED FULL SIZE OF THE UNIT DRAIN OUTLET, WITH P-TRAP, AND PIPED TO THE NEAREST DRAIN, UNLESS OTHERWISE NOTED.
- GG. PROVIDE ACCESS PANELS FOR INSTALLATION IN WALLS AND CEILINGS, WHERE REQUIRED, FOR ACCESS TO SERVICE DAMPERS, VALVES, SMOKE DETECTORS, AND OTHER CONCEALED MECHANICAL EQUIPMENT. ACCESS PANELS SHALL BE TURNED OVER TO THE GENERAL CONTRACTOR FOR INSTALLATION. COORDINATE WITH OWNER AND ARCHITECT PRIOR TO INSTALLATION.
- HH. LOCATE ALL MECHANICAL EQUIPMENT FOR UNOBSTRUCTED ACCESS TO UNIT ACCESS PANELS, CONTROLS, AND VALVING.
- II. PIPING, DUCTWORK, LEAK PROTECTION APPARATUS OR OTHER EQUIPMENT FOREIGN TO ELECTRICAL SWITCHBOARDS, PANELBOARDS, DISTRIBUTION BOARDS, VARIABLE FREQUENCY DRIVES (VFD), MOTOR CONTROLLERS, OR MOTOR CONTROL CENTERS SHALL BE INSTALLED WITH THE REQUIRED SPACE FOR WORKING CLEARANCES OR DEDICATED SPACES OF THE ELECTRICAL EQUIPMENT, EXTENDING IN FRONT OF AND FROM FLOOR TO STRUCTURAL CEILING WITH A WIDTH AND DEPTH OF THE ELECTRICAL EQUIPMENT IN ACCORDANCE WITH NEC 110.26. MECHANICAL EQUIPMENT, DUCTWORK, PIPING, ETC. SHALL NOT BE INSTALLED DIRECTLY ABOVE ELECTRICAL AND/OR IT EQUIPMENT.
- JJ. UNLESS OTHERWISE SHOWN, LOCATE ALL ROOM THERMOSTATS, HUMIDISTATS, CO2 SENSORS, ETC. 4'-0" (CENTERLINE) ABOVE THE FINISHED FLOOR (TO HIGHEST BUTTON) AND NEXT TO THE LIGHT SWITCH WHERE APPLICABLE. NOTIFY THE ENGINEER OF ANY ROOMS WHERE THE PRECEDING LOCATION CANNOT BE MAINTAINED OR WHERE THERE IS A QUESTION ON LOCATION. NOTIFY THE ENGINEER WHEN A RELOCATION IS DIRECTED BY ARCHITECT.

NOTE NOT ALL ABBREVIATIONS AND SYMBOLS ON THIS SHEET ARE APPLICABLE TO THIS PROJECT.

	MECHANIC	AL ABBREVIATIONS:		
L E	А	AMPERE	ENGR	ENGINEER
L H	ABV	ABOVE	EQ	EQUAL
Т	AC AD	AIR CONDITIONING ACCESS DOOR	EQUIP ER	EQUIPMENT EXISTING TO BE RELOCATED
R	AD	ADDENDUM	ERV	ENERGY RECOVERY VENTILATOR
E F	ADJ	ADJUSTABLE	ESP	EXTERNAL STATIC PRESSURE
	AFF	ABOVE FINISHED FLOOR	ET	EXPANSION TANK
Ν	AFG	ABOVE FINISHED GRADE	ETC	
E	AFUE AFMS	ANNUAL FUEL UTILIZATION EFFICIENCY AIR FLOW MONITORING STATION	ETR EWB	EXISTING TO REMAIN ENTERING WEB BULB (TEMPERATURE)
T	AH	AIR HANDLER UNIT	EWT	ENTERING WATER TEMPERATURE
E E	AHJ	AUTHORITY HAVING JURISDICTION	EXH	EXHAUST
	AHRI AHU	AC, HEATING AND REFRIGERATION INSTITUTE AIR HANDLER UNIT	EXIST	EXISTING
Ν	AL	ALUMINUM	EXP EXT	EXPOSED EXTERIOR / EXTERNAL
Т	AMP	AMPERE	EXT	
Ε	APPROX	APPROXIMATE(LY)	F/A	FIRE ALARM
_	ARCH('L) AS	ARCHITECT(URAL) AIR SEPARATOR	F	FAHRENHEIT
√I I	AUX	AUXILIARY	FA FC	FREE AREA FLUID COOLER
ι- Τ			FCO	FLOOR CLEAN OUT
0	BDD	BACKDRAFT DAMPER	FCU	FAN COIL UNIT
	BHP BLDG	BRAKE HORSEPOWER BUILDING	FD	
E	BLW	BELOW	FIN('D) FIXT	FINISH(ED) FIXTURE
	BOD	BOTTOM OF DUCT	FF	FINISHED FLOOR
G	BOJ	BOTTOM OF JOIST	FLA	FULL LOAD AMPS
R	BOP BTU	BOTTOM OF PIPE BRITISH THERMAL UNIT	FLEX FLR	FLEXIBLE FLOOR
D	BTUH	BRITISH THERMAL UNIT PER HOUR	FLR	FILTER
E			FM	FLOW METER
r.	CAP CD	CAPACITY CONDENSATE DRAIN	FP	FIRE PROOFING / FIRE PROTECTION
E Contraction of the second	CFH	CUBIC FEET PER HOUR	FPB FPM	FAN POWERED BOX FEET PER MINUTE
Ν	CFM	CUBIC FEET PER MINUTE	FR	FIRE RATED
D	CHWP	CHILLED WATER PUMP	FS	FLOW SWITCH
G	CHWR CHWS	CHILLED WATER RETURN CHILLED WATER SUPPLY	FSD	FIRE/SMOKE DAMPER
S,	CI	CAST IRON	FT	FOOT / FEET / FINNED TUBE
E	CL	CENTERLINE	GA	GAUGE
E	CLG	CEILING / COOLING	GAL	GALLON(S)
G	CM CMU	CONSTRUCTION MANAGER CONCRETE MASONRY UNIT	GALV	GALVANIZED
N	CNTR	CENTER	GC GEN	GENERAL CONTRACTOR GENERATOR
S	CO	CARBON MONOXIDE	GFU	GAS FURNACE UNIT
	CO2		GND	GROUND
	COD CONC	CABLE (REMOTE) OPERATED DAMPER CONCRETE	GPM	GALLONS PER MINUTE
s, F	CONST	CONSTRUCTION	GPR GSHP	GAS PRESSURE REGULATOR GROUND SOURCE HEAT PUMP
	CONT	CONTINUOUS / CONTINUATION	GV	GRAVITY VENTILATOR
	CORR CPVC	CORRIDOR CHLORINATED POLYVINYL CHLORIDE	GYP	GYPSUM BOARD
Т	CRD	CEILING RADIATION DAMPER		
_	СТ	COOLING TOWER / CURRENT SWITCH	HP HTG	HEAT PUMP / HORSEPOWER HEATING
	CTR	CENTER	HHW	HEATING HOT WATER
R	CU CW	CONDENSING UNIT / COPPER CONDENSER WATER	HHWP	HEATING HOT WATER PUMP
E	CWP	CONDENSER WATER PUMP	HHWR HHWS	HEATING HOT WATER RETURN HEATING HOT WATER SUPPLY
	CWR	CONDENSER WATER SUPPLY	HSPF	HEATING SEASONAL PERFORMANCE FACTOR
L N	CWS	CONDENSER WATER RETURN	HTR	HEATER
ζ,	D, Ø	DIAMETER	HVAC HZ	HEATING, VENTILATION & AIR CONDITIONING HERTZ
Т	DB	DRY BULB	112	HERIZ
	DBL	DOUBLE	ID	INSIDE DIAMETER
	DCW DEG	DOMESTIC COLD WATER DEGREE(S)	IN	INCH / INCHES
E	DEMO	DEGREE(S) DEMOLISH / DEMOLITION	INFO INSUL	INFORMATION INSULATION
G	DEPT	DEPARTMENT	INT	INTERIOR
N X	DET		IPLV	INTEGRATED PART LOAD VALUE
1	DH DIA	DEHUMIDIFIER DIAMETER		JUNCTION BOX
	DIM	DIMENSION	JD, J-DOX	JUNCTION BOX
	DISC	DISCONNECT	KEF	KITCHEN EXHAUST FAN
	DIV DN	DIVISION DOWN	КО	KNOCK OUT
	DN	DUCTLESS SPLIT UNIT	KW	KILOWATTS
	DSD	DUCT SMOKE DETECTOR	LAT	LEAVING AIR TEMPERATURE / LATENT
	DWG(S)	DRAWING(S)	LB(S)	POUND(S)
	DX	DIRECT EXPANSION	LD LDB	LINEAR DIFFUSER LEAVING DRY BULB (TEMPERATURE)
	(E)	EXISTING	LDB LF	LINEAR FOOT / LINEAR FEET
	EA	EXHAUST AIR / EACH	LVG	LEAVING
	EAT	ENTERING AIR TEMPERATURE	LWB	LEAVING WET BULB (TEMPERATURE)
	EC EDB	ELECTRICAL CONTRACTOR ENTERING DRY BULB (TEMPERATURE)	LWT	LEAVING WATER TEMPERATURE
	EER	ENERGY EFFICIENCY RATIO	MA	MIXED AIR
	EF	EXHAUST FAN	MAT	MIXED AIR TEMPERATURE
	EFF EL	EFFICIENCY ELEVATION	MAU	
	ELEV	ELEVATION ELEVATION / ELEVATOR	MAX MCA	MAXIMUM MINIMUM CIRCUIT AMPACITY
	ELEC	ELECTRIC / ELECTRICAL	MBH	THOUSAND BTU PER HOUR
	EM, EMER	EMERGENCY	MD	MOTORIZED DAMPER (2-POS OR MODULATING)
	1			

			APPLICABLI (WITH CITY (
DESIGN CRITERIA:	SUMMER	WINTER	
OUTDOOR CONDITIONS (VENTILATION)	99°F DB / 74°F WB	29°F	
OUTDOOR CONDITIONS (CONDENSING EQUIPMENT)	105°F DB	(SEE SPEC)	
OUTDOOR DEHUMIDIFICATION	81°F DB /	78°F WB	
INDOOR CONDITIONS	75°F DB / 50% RH	70°F	

MECHANICAL MINIMUM EFFICIENCY REPORTING VALUE MEZZANINE MANUFACTURE(R) MANHOLE MINIMUM MISCELLANEOUS MAXIMUM OVERCURRENT PROTECTION MOP SINK METAL MATERIAL MATERIAL MAKE-UP AIR MULTIPLE

MECH

MERV

MEZZ

MFR

MH

MIN

MISC

MOCP

MS

MTL

MTRL

MUA

MULT

N/A

NAT

NC

NEC

NIC

NO

NEMA

NOM

NO, #

NPLV

NTS

OA

OAU

OAD

OUT

PART

PH, Ø

PLBG

PNL

PSI

PTAC

PVC

QTY

RA

RD

REC

REF

RECEPT

REFRIG

REQ('D)

RFINF

RGS

RH

RLA

RM

RPM

RTU

SA

SCH

SD

SECT

SEER

SENS

SF

SHR

SPR

SQ

SS

SST

STL

SW

SUCT

TEMP

THRU

TOD

TOP

TOS

ΤS

TSP

ТΧ

TYP

SQ FT

SPEC(S)

SP

SCHED

R, RAD

PD

NOT APPLICABLE NATURAL NOISE CRITERIA / NORMALLY CLOSED NATIONAL ELECTRICAL CODE NAT'L ELECTRICAL MFGR ASSOCIATION NOT IN CONTRACT NOMINAL NORMALLY OPEN NUMBER NON-STANDARD PART LOAD VALUE NOT TO SCALE

OUTSIDE AIR OUTSIDE AIR UNIT OUTSIDE AIR DAMPER OUTLET

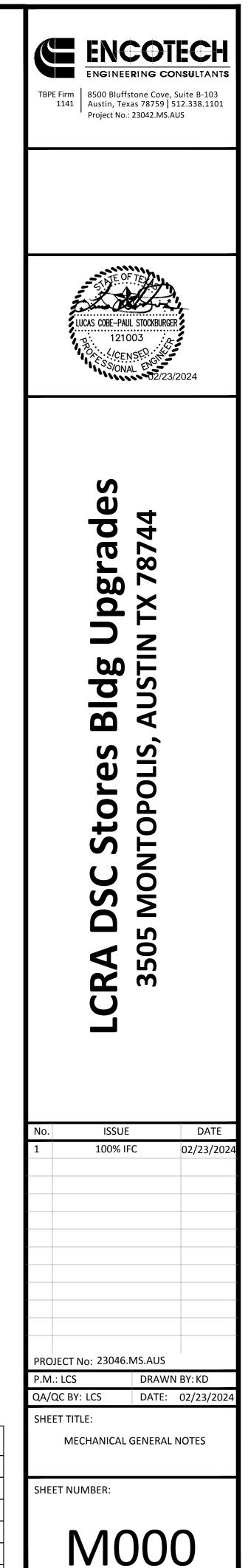
PARTIAL PRESSURE DROP PHASE PLUMBING PANEL POUNDS PER SQUARE INCH PACKAGED TERMINAL AIR CONDITIONER POLYVINYL CHLORIDE

QUANTITY

RADIUS RETURN AIR ROOF DRAIN RECESSED RECEPTACLE REFER TO / REFERENCE REFRIGERATION / REFRIGERANT REINFORCE REQUIRE(D) RIGID GALVANIZED STEEL RELATIVE HUMIDITY RUNNING LOAD AMPS ROOM REVOLUTIONS PER MINUTE ROOFTOP UNIT

SUPPLY AIR SCHEDULE(D) SCHEDULE(D) **SMOKE DAMPER** SECTION SEASONAL ENERGY EFFICIENCY RATIO SENSIBLE SQUARE FEET / SQUARE FOOT / SUPPLY FAN SENSIBLE HEAT RATIO STATIC PRESSURE SPECIFICATION(S) SPRINKLER SOUARE SQUARE FOOT / SQUARE FEET SANITARY SEWER / STAINLESS STEEL STAINLESS STEEL STEEL SUCTION SWITCH TEMPERATURE / TEMPORARY THROUGH TOP OF DUCT TOP OF PIPE

TOP OF PIPE TOP OF STEEL TAMPER SWITCH TOTAL STATIC PRESSURE TEXAS TYPICAL



E CODES AND STANDARDS OF AUSTIN AMENDMENTS):
2021 IMC
2021 IPC
2021 IBC
2021 NEC
2021 IECC
2021 TAS

		MECHANICAL SHEET LIST
	M000	MECHANICAL GENERAL NOTES
	M001	MECHANICAL GENERAL NOTES
	M002	MECHANICAL SPECIFICATIONS
	M003	MECHANICAL SPECIFICATIONS
	M101	MECHANICAL FLOOR PLAN
	M400	MECHANICAL SCHEDULES, CONTROLS, AND DETAILS

MECHANICAL ABBREVIATIONS (CONTINUED):

IVIECHANICAL ADDREVIATIONS (CONTINUED).							
UC	UNDERCUT						
UG	UNDERGROUND						
UH	UNIT HEATER						
UL	UNDERWRITERS LABORATORIES, INC.						
UNO	UNLESS NOTED OTHERWISE						
UTIL	UTILITY / UTILITIES						
V	VOLTAGE / VOLTS						
VAV	VARIABLE AIR VOLUME						
VD	VOLUME DAMPER (MANUAL)						
VFD	VARIABLE FREQUENCY DRIVE						
VOL	VOLUME						
VRF	VARIABLE REFRIGERANT FLOW						
VTAC	VERTICAL TERMINAL AIR CONDITIONER						
VTR	VENT THROUGH ROOF						
W/	WITH						
W/O	WITHOUT						
WB	WET BULB						
WC	WATER COLUMN						
WCO	WALL CLEAN OUT						
WG	WATER GAUGE						
WH	WATER HEATER						
WMS	WIRE MESH SCREEN						
WPD	WATERSIDE PRESSURE DROP						
WSHP	WATER SOURCE HEAT PUMP						
WT	WEIGHT						

XFMR TRANSFORMER

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HANICAL SYN	MBOLS:	MECHANICAL C	CONTROLS SYMBOLS:	MECHANICAL P	IPING SYMBOLS:
S#/CFM	SUPPLY AIR GRILLE	CO2	CARBON DIOXIDE SENSOR	CHWR	EXISTING CHILLED WATER
R#/CFM	RETURN AIR GRILLE	CO	CARBON MONOXIDE SENSOR	—— снws ——	EXISTING CHILLED WATER
E#/CFM	EXHAUST AIR GRILLE	H2	HYDROGEN SENSOR	HHWR	EXISTING HEATING HOT V
\boxtimes	SUPPLY DUCT UP		TEMPERATURE SENSOR	—— HHWS ——	EXISTING HEATING HOT V
X	SUPPLY DUCT DOWN	H	HUMIDITY SENSOR	C	EXISTING CONDENSATE D
\square	EXHAUST / RETURN DUCT UP	\$	LIGHT SWITCH	CHWR	CHILLED WATER RETURN
/	EXHAUST / RETURN DUCT DOWN	СР	CONTROL PANEL	— снws —	CHILLED WATER SUPPLY F
T	THERMOSTAT	Р	PRESSURE SWITCH	HHWR	HEATING HOT WATER RE
H	HUMIDISTAT	CT (CURRENT SWITCH	— HHWS —	HEATING HOT WATER SU
-050	DUCT SMOKE DETECTOR	ار-قصر	DIFFERENTIAL PRESSURE	— св —	CONDENSATE DRAIN PIPE
<	COMBINATION FIRE/SMOKE DAMPER	-x-FS	FLOW SWITCH	-⋈ □A.A.V.	AUTOMATIC AIR VENT
x	FIRE DAMPER	ET	LOW TEMPERATURE LIMIT SWITCH	ECCCCCCE	FLEXIBLE HOSE / FLEXIBLE
v	SMOKE DAMPER	HT	HIGH TEMPERATURE LIMIT SWITCH	I	BALL VALVE
****	FLEXIBLE DUCTWORK		SINGLE POINT TEMPERATURE SENSOR	IN	BUTTERFLY VALVE
-	MANUAL DAMPER		AVERAGING TEMPERATURE SENSOR	N	CHECK VALVE, SWING GA
	MOTORIZED DAMPER	—SP	DUCT STATIC PRESSURE SENSOR	, → ,	DIRECTION OF FLOW
ф	TAKEOFF WITH DAMPER	M	MOTOR		FLOW METER
-	TAKEOFF WITHOUT DAMPER	S	STARTER	FS	FLOW SWITCH
→ ♪ -₽	SIDEWALL GRILLE OR LOUVER	НОА	HAND-AUTO-OFF SWITCH	M	GATE VALVE
þ	WALL CAP LOUVER	図	FLOW CONTROL VALVE (2-WAY)	内	GATE VALVE (OS&Y)
•	CONNECT TO EXISTING	& /	FLOW CONTROL VALVE (3-WAY)	l li	PIPE UNION
•	DISCONNECT FROM EXISTING	~~~~` `	DAMPER WITH BLADES (SEE SPEC FOR TYPE)	O×4	PRESSURE GAUGE ASSEM
ŧ/##	DUCT DIMENSIONS		FILTER	ka l	PRESSURE RELIEF VALVE
# Ø	DIAMETER OF ROUND DUCT	C C	COOLING COIL		STRAINER
	EXISTING DUCTWORK, PIPING, ETC	DX	DIRECT EXPANSION COIL	o	PIPING UP
⋥⋥	TRANSITION RECTANGULAR TO ROUND DUCT	H C	HEATING HOT WATER COIL	c	PIPING DOWN
	DOUBLE WALL SPIRAL DUCTWORK		ELECTRIC RESISTIVE HEATING COIL	o	PIPING TEE UP
	INCLINED RISE, IN DIRECTION OF AIRFLOW				PIPING TEE DOWN
₽₽	INCLINED DROP, IN DIRECTION OF AIRFLOW				THERMOMETER
UC	1" UNDERCUT DOOR				
	RECTANGULAR DUCT ELBOW				
	RADIUS DUCT ELBOW				

MECHANICAL DEMOLITION (DEMO) SYMBOLS LIST:

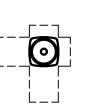
数 撥 撥 め DEMO AIR DEVICE

441744	DEMO (GENERAL) (DUCTWORK, PIPING, ETC)
	DEMO EQUIPMENT

MECHANICAL EQUIPMENT SYMBOLS

MECHANICAL EQUIPMENT

MECHANICAL EQUIPMENT WITH CLEARANCES SHOWN DASHED



CONDENSING UNIT WITH CLEARANCES



SHOWN DASHED

TERMINAL UNIT

HVAC EQUIPMENT TAGS: **ENCOTECH** <u>S1/200</u> AIR DISTRIBUTION DEVICE TING CHILLED WATER RETURN PIPE TING CHILLED WATER SUPPLY PIPE ENGINEERING CONSULTANTS CFM TBPE Firm8500 Bluffstone Cove, Suite B-1031141Austin, Texas 78759 | 512.338.1101Project No.: 23042.MS.AUS ∕— TAG TING HEATING HOT WATER RETURN PIPE AIR HANDLING UNIT TING HEATING HOT WATER SUPPLY PIPE AHU-1 TING CONDENSATE DRAIN PIPE ∕— AHU NUMBER LLED WATER RETURN PIPE SINGLE DUCT TERMINAL UNIT LLED WATER SUPPLY PIPE VAV-1-1 ATING HOT WATER RETURN PIPE AHU NUMBER TING HOT WATER SUPPLY PIPE FPB-1-1 FAN POWERED BOX UNIT NDENSATE DRAIN PIPE TERMINAL NUMBER AHU NUMBER XIBLE HOSE / FLEXIBLE CONNECTION LUCAS COBE-PAUL STOCKBURGER FCU-1-1 FAN COIL UNIT 121003 CENSED. $\$ FCU NUMBER SIONAL EN 1111102/23/2024 └─ CU NUMBER ECK VALVE, SWING GATE DRAFTING SYMBOLS: S de 78744 DIRECTION OF VIEW FOR SECTION CUT pgra SSURE GAUGE ASSEMBLY - DIRECTION OF ELEVATION MARK SSURE RELIEF VALVE VIEW FOR X ELEVATION χ/ΜΧΧΧ SHEET NUMBER AUSTIN SECTION NUMBER gpl 1 PLAN NAME/DETAIL NAME PLAN DESIGNATION Ω SCALE VIEW NUMBER OPOLIS, S tore DETAIL NUMBER DETAIL DESIGNATION MXXX DETAIL REFERENCE MONT S U S **RA C** 3505 Ū DATE ISSUE No. 100% IFC 02/23/202 PROJECT No: 23046.MS.AUS P.M.: LCS DRAWN BY: KD QA/QC BY: LCS DATE: 02/23/202 SHEET TITLE: MECHANICAL GENERAL NOTES SHEET NUMBER: M001

1.1		RAL REQUIREMENTS		E. F.	CONTRACTOR SHALL STORE AND PROTEC REPLACE ALL DAMAGED EQUIPMENT AT CO UPON DELIVERY TO SITE, ALL EQUIPMENT
	SCOP A.	E THE WORK HEREIN CONSISTS OF THE CONTRACTOR PROVIDING LABOR, MATERIALS, PRODUCTS, AND		г.	DAMAGE. STORAGE SHALL PROTECT EQUIPMENT WATER, SUN, DEBRIS, PHYSICAL DAMAGE
		PERFORMING ALL OPERATIONS REQUIRED FOR THE COMPLETE OPERATING INSTALLATION OF ALL SYSTEMS IN ACCORDANCE WITH SPECIFICATIONS, APPLICABLE DRAWINGS, TERMS, CONDITIONS OF THE		C	DAMAGED DURING CONSTRUCTION SHALL
		CONTRACT, AND ALL APPLICABLE CODES AND ORDINANCES GOVERNING THE INSTALLATION OF THE VARIOUS SYSTEMS HEREIN. ALL WORK SHALL BE FULLY CORRELATED WITH THE WORK OF OTHER		G.	DURING CONSTRUCTION, CONTRACTOR SE WORK, ALL CONSTRUCTION WASTE MATER
	В.	CRAFTS. DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY, EACH TO THE OTHER; WHAT IS SHOWN ON		Н.	ANY EXISTING PROPERTY THAT WAS DAMA OR REPLACED TO THE SATISFACTION OF TH
		ONE IS AS BINDING AS IF CALLED FOR IN BOTH.		١.	ALL MISCELLANEOUS STEEL REQUIRED TO FOR EQUIPMENT AND COMPONENTS IN T
	C.	SHOULD THE DRAWINGS DISAGREE IN THEMSELVES, OR WITH THE SPECIFICATIONS, THE BETTER QUALITY OR GREATER QUANTITY OF WORK OR MATERIALS SHALL BE USED.			CONTRACTOR.
	D.	INTENT: THE DRAWINGS ARE DIAGRAMMATIC AND SHOW GENERAL ARRANGEMENTS AND THE EXTENT OF THE WORK. THE DRAWINGS DO NOT SHOW, IN MINUTE DETAIL, ALL FEATURES OF THE		J.	FOR ALL EQUIPMENT, PROVIDE IDENTIFIC. 1" HIGH LETTERING. TAGS SHALL MATC
		INSTALLATION. FOLLOW THE DRAWINGS AS CLOSELY AS ACTUAL CONSTRUCTION WILL PERMIT. ALL MATERIAL AND LABOR NECESSARY TO COMPLETE THE WORK IN ACCORDANCE WITH THE INTENT OF		К.	SCHEDULE AND LETTERING SHALL BE OF CO INSTALL ALL EQUIPMENT, MATERIA
		THE SPECIFICATIONS AND DRAWINGS SHALL BE FURNISHED BY THE CONTRACTOR WITHOUT ADDITIONAL CHARGE. THE JOB SHALL BE BID AND INSTALLED COMPLETE AND CONSISTENT IN EVERY			RECOMMENDATIONS AND INSTRUCTIONS. INSTALL HANGERS, SUPPORTS, CLAMPS,
	E.	REQUEST. EACH CONTRACTOR SHALL STUDY THE CONTRACT DOCUMENTS TO DETERMINE THE EXTENT OF WORK		L.	PROPERLY SUPPORT ALL COMPONENTS. SE PREVENT A HAZARD TO HUMAN LIFE A
	L.	PROVIDED UNDER THIS CONTRACT, AS WELL AS TO ASCERTAIN THE DIFFICULTY TO BE ENCOUNTERED IN PERFORMING THE WORK ON THE DRAWINGS AND OUTLINED HEREINAFTER, AND IN MAKING			CONSTRUCTION UNDER ALL CONDITIONS (
		CONNECTIONS TO EXISTING UTILITIES, INSTALLING NEW EQUIPMENT AND SYSTEMS AND COORDINATING THE WORK WITH THE OTHER TRADES.		M.	EQUIPMENT SUPPORTS SHALL BE WELDEI FROM STRUCTURAL CARBON-STEEL SHAPE
	F.	EXAMINATION OF SITE: THE CONTRACTOR SHALL THOROUGHLY EXAMINE SITE AND SATISFY		N. O.	CUT MATERIALS ACCURATELY FROM MEAS DO NOT SPRING OR BEND MATERIALS OR (
		THEMSELVES AS TO THE CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED. THE CONTRACTOR SHALL VERIFY, AT THE SITE, ALL MEASUREMENTS AFFECTING THEIR WORK AND SHALL BE	1.8	-	MITTALS
		RESPONSIBLE FOR THE CORRECTNESS OF SAME. NO EXTRA COMPENSATION WILL BE ALLOWED TO THE CONTRACTOR FOR EXPENSES DUE TO THEIR NEGLECT TO EXAMINE OR FAILURE TO DISCOVER CONDITIONS WHICH AFFECT THEIR WORK. NO EXTRA COMPENSATION WILL BE ALLOWED ON ACCOUNT		Α.	SUBMITTALS SHALL BE COMPLETE FO EQUIPMENT, MATERIALS, SUPPORTS, AND
		OF DIFFERENCES BETWEEN ACTUAL DIMENSIONS AND THOSE INDICATED ON THE DRAWINGS.		В.	PROVIDE PRODUCT DATA FOR MANU PERFORMANCE RATINGS, CONSTRUCTION
	G.	SHOULD ANY DISCREPANCIES OCCUR WITHIN THE CONTRACT DOCUMENTS DURING THE BIDDING PHASE, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER OF SUCH DISCREPANCIES FOR		C.	IF A SUBSTITUTE IS SUBMITTED FOR AP
		CLARIFICATION PRIOR TO PROCEEDING WITH THE WORK. CLARIFICATIONS ISSUED AFTER THE CONTRACT IS AWARDED ARE TO BE INCORPORATED BY THE CONTRACTOR AT NO ADDITIONAL COSTS.			IMPACT OF THE CHANGE UPON OTHER SOLUTION WILL BE AN EQUIVALENT SOLU
	Н.	SHOULD THE CONTRACTOR FIND, AT ANY TIME, DURING THE PROGRESS OF THE WORK, THAT IN THEIR JUDGEMENT, EXISTING CONDITIONS MAKE DESIRABLE A MODIFICATION IN REQUIREMENTS COVERING		D.	BE APPROVED BY OWNER AND ENGINEER WHERE EQUIPMENT OF THE ACCEPTABLE
		ANY PARTICULAR ITEM OR ITEMS, THEY SHALL REPORT SUCH ITEMS PROMPTLY TO THE PROJECT MANAGER FOR COORDINATION.			CONNECTIONS FROM WHAT IS SCHEDULE INSTALL THE EQUIPMENT TO OPERATE PF
	I.	THE COMPLETION OF WORK SHALL BE AS DESCRIBED IN BOTH THE DRAWINGS, SPECIFICATIONS,			THE DRAWINGS AND SPECIFICATIONS. C AFFECTED RELATED WORK PROVIDED UN
	J.	ADDENDUMS, AND ALL OTHER APPLICABLE CONTRACT DOCUMENTS. CONTRACTOR SHALL PROVIDE THE REQUIRED NUMBER OF SKILLED WORKERS, TRAINED, AND			CONNECTIONS BY OTHER TRADES, CONI MADE AT NO INCREASE IN THE CONTRA
		EXPERIENCED IN THEIR TRADE AND WHO ARE FAMILIAR WITH THE SPECIFICATIONS AND MEANS AND METHODS FOR PERFORMING THE WORK AS SHOWN ON THE PLANS AND SPECIFICATIONS.	1.9	COM	AND/OR OWNER. PLETION
	К.	ITEMS NOT SPECIFICALLY SHOWN ON PLANS OR SPECIFICATIONS WHICH ARE ESSENTIAL FOR THE PROPER INSTALLATION AND OPERATION OF THE NEW SYSTEMS ARE INCLUDED IN THE SCOPE OF WORK	115	A.	UPON COMPLETION OF INSTALLATION OF
1.2	PEGU	AND SHALL BE PROVIDED BY THE CONTRACTORS AT NO ADDITIONAL COSTS TO THE OWNER. LATORY REQUIREMENTS		В.	AND TESTING AS PER THE MANUFACTURE GUARANTEE: UNLESS OTHERWISE REST
1.2	A.	CODES AND ORDINANCES: PERFORM ALL WORK IN ACCORDANCE WITH ALL STATE AND LOCAL CODES			EQUIPMENT AND WORK SHALL BE GUA SUBSTANTIAL COMPLETION DATE. ANY
		AND ORDINANCES, INCLUDING THE AMERICANS WITH DISABILITIES ACT (ADA) (LATEST EDITION), THE CURRENT EDITION OF THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA), UNDERWRITERS			PROMPTLY REPAIRED OR REPLACED BY OWNER. THE GUARANTEE PERIOD OF AN
		LABORATORIES, INC. (UL), OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI), AMERICAN STANDARD OF TESTING MATERIALS (ASTM), THE	1 10	CLOS	PERIOD OF TWELVE (12) MONTHS FROM T E-OUT DOCUMENTS
		LATEST ADOPTED BUILDING CODE AND ALL CURRENT SUPPLEMENTS THERETO, AND ANY OTHER AUTHORITIES HAVING JURISDICTION (AHJ) OVER THE WORK.	1.10	A.	ALL CLOSE-OUT DOCUMENTS SHALL BE
	В.	PERMITS AND FEES: PROCURE AND PAY FOR ALL PERMITS, LICENSES, FEES AND CHARGES, AND GIVE ALL NOTICES NECESSARY, AND OBTAIN FINAL INSPECTION AND APPROVAL FROM THE INSPECTION		В.	APPROVAL. ONCE APPROVED BY A/E TEAM, CONTRA
		DEPARTMENT HAVING JURISDICTION.		C	THE OPERATION, INSTALLATION AND MAI
	C.	IN CASE OF CONFLICT BETWEEN THE CONTRACT DOCUMENTS AND REQUIREMENTS OF ANY CODE OR AHJ, THE MOST STRINGENT REQUIREMENTS OF THE AFOREMENTIONED SHALL GOVERN.		C.	OPERATIONS AND MAINTENANCE (0&M) SHALL SUBMIT TO THE OWNER THE 0&I
	D.	SHOULD THE CONTRACTOR PERFORM ANY WORK THAT DOES NOT COMPLY WITH THE REQUIREMENTS OF THE APPLICABLE BUILDING CODES, STATE LAWS, LOCAL ORDINANCES, AND INDUSTRY STANDARDS,		D.	COPY AND PHYSICAL COPY). AS-BUILT DRAWINGS AND A COMPLET
		CONTRACTOR SHALL BEAR ALL COSTS ARISING IN CORRECTING THE DEFICIENCIES, AS APPROVED BY THE ARCHITECT.			PROVIDED TO OWNER.
1.3			PART 2 -	GEN	ERAL MECHANICAL REQUIREMENTS
	A.	EACH CONTRACTOR SHALL COMPARE THEIR RESPECTIVE DRAWINGS AND SPECIFICATIONS WITH THOSE OF OTHER TRADES. ALL WORK SHALL BE INSTALLED IN COOPERATION WITH OTHER TRADES INSTALLING	2.1	REGL A.	JLATORY REQUIREMENTS FOR MECHANICAL CODES AND ORDINANCES: PERFORM A
		INTERRELATED WORK. BEFORE INSTALLATION, ALL TRADES SHALL MAKE PROPER PROVISIONS TO AVOID INTERFERENCES (THIS MAY REQUIRE THE DEVELOPMENT OF MULTI-TRADE COORDINATION DRAWINGS		7	MECHANICAL ENGINEERS (ASME), AME CONDITIONING ENGINEERS (ASHRAE), AM
		BY THE CONTRACTOR). ALL ITEMS REQUIRING MAINTENANCE OR SERVICE ACCESS MUST BE PROVIDED ADEQUATE SPACE.			ADOPTED MECHANICAL CODE, LATEST AU THERETO.
	В.	TIMING OF INSTALLATION SHALL BE COORDINATED ACROSS TRADES TO ALLOW PROPER INSTALLATION OF ALL EQUIPMENT AND COMPONENTS ACROSS DISCIPLINES.	2.2	COO	RDINATION OF MECHANICAL WORK
	C.	CONTRACTOR SHALL COORDINATE THE LOCATION OF THEIR SYSTEMS SO THAT ALL ELECTRICAL COMPONENTS COMPLY WITH LATEST CODE REQUIREMENTS FOR CLEARANCES, ETC.		A.	EACH CONTRACTOR SHALL COORDINATE
	D.	EXACT ROUTING AND LOCATION OF SYSTEMS SHALL BE DETERMINED PRIOR TO FABRICATION OR			CROSS-CONTAMINATION. OUTSIDE AIR I EXHAUST OUTLETS AND PLUMBING VEN
		INSTALLATION. LOCATIONS OF ANY AND ALL COMPONENTS AND EQUIPMENT SHALL BE ADJUSTED IF NEEDED TO ACCOMMODATE THE WORK WITH INTERFERENCES ANTICIPATED AND ENCOUNTERED.			DRAWINGS. EXHAUST OUTLETS SHALL BE AND SHALL NOT DISCHARGE IN LOCATION
	Ε.	PRIOR TO BID, CONTRACTOR SHALL VERIFY AND COORDINATE ALL REQUIRED CONNECTIONS AND/OR RELOCATIONS OF UTILITIES WITH UTILITY COMPANIES. PERFORM SUCH WORK IN ACCORDANCE WITH		В.	OFFSETS AND CHANGES OF DIRECTION IN REQUIRED TO MAINTAIN PROPER HEADRO
		UTILITY COMPANY REGULATIONS. CONTRACTOR SHALL PAY ALL APPLICABLE FEES AND COSTS, INCLUDING THOSE FOR ANY EXTENSIONS, RELOCATIONS AND/OR CONNECTIONS.		C.	CONTRACTOR TO PROVIDE TEMPORAF CONDITIONING DURING CONSTRUCTION.
	F.	CONTRACTOR SHALL VERIFY LOCATIONS OF ALL ABOVE GROUND, BELOW GROUND, AND MARKED UTILITIES.	2.3	MEC	HANICAL SERVICEABILITY
1.4	CUTT	NG AND PATCHING		Α.	COORDINATE INSTALLATION OF PIPING, D PRODUCTS TO ALLOW PROPER SERVICE
	Α.	STRUCTURAL SUPPORTS AND MEMBERS MAY NOT BE CUT OR MODIFIED WITHOUT PRIOR APPROVAL FROM ARCHITECT AND STRUCTURAL ENGINEER.			REPLACEMENT FOR SHUTOFF VALVES, V REQUIRING ACCESS FOR SERVICE, MAINTE
	В.	DO NOT CUT OR MODIFY WALLS, FLOORS, CEILINGS, OR SURFACES WITHOUT PRIOR APPROVAL FROM ARCHITECT.		В.	ACCESS PANELS SHALL BE PROVIDED FOR
	C.	ALL CUTTING, REPAIRING AND REQUIRED STRUCTURAL REINFORCING FOR INSTALLATION OF THIS			AND ALL SERVICEABLE OR OPERABLE EQU SIMILAR CEILINGS, OR BEHIND GYPSUM, P
		WORK SHALL BE DONE IN CONFORMANCE WITH ARCHITECT'S DIRECTIONS AND ANY DAMAGE CAUSED BY CUTTING SHALL BE REPAIRED EQUAL TO ORIGINAL CONDITIONS. UNLESS OTHERWISE NOTED,	2.4	BASIC A.	C MECHANICAL METHODS ALL DUCTWORK, PIPING, EQUIPMENT, ET
		PATCHING OF WALLS, FLOORS, CEILING, AND SURFACES SHALL MATCH CONSTRUCTION, MATERIAL, FINISH, AND COLOR OF ADJOINING AREAS.			COLD, OR TO PREVENT FREEZING OR JACKETING IF OUTDOORS.
1.5	EXCA A.	/ATION AND BACKFILLING EXCAVATE BY HAND AND WITH CAUTION TO LOCATE ALL UTILITIES IN THE BOUNDS OF THE AREA TO BE		В.	DUCT AND PIPE OPENINGS SHALL BE TEM PREVENT CONSTRUCTION DIRT, DUST, ANI
		EXCAVATED PRIOR TO MACHINE EXCAVATING. PROCEED WITH SAFETY AND CAUTION SO THAT NO UTILITY IS DAMAGED OR INTERRUPTED.		C.	PROTECT ALL FLOOR DRAINS, FLOOR SIN
	В.	TRENCHES SHALL BE SIZED WITH SUFFICIENT WIDTH TO ALLOW SAFE INSTALLATION OF PIPING AND			DURING CONSTRUCTION. REMOVE ANY COMPLETION OR WORK AND CLEAN GRAT
	C.	EQUIPMENT. SECURE, BRACE, OR GRADE TRENCHES TO PREVENT SETTLING. DO NOT EXCAVATE NEAR WALLS, COLUMNS, STRUCTURAL SUPPORTS, OR PITS WITHOUT APPROVAL BY		D.	INSTALL EQUIPMENT WITH RESILIENT MO CONNECTIONS SPECIFIED BETWEEN ALL
	D.	STRUCTURAL ENGINEER AND ARCHITECT. ANY MATERIAL EXCAVATED THAT IS NOT USED FOR BACKFILLING MUST BE REMOVED FROM THE SITE		-	SHALL NOT BE IN TENSION WHILE RUNNIN
	5.	BY THE CONTRACTOR AT CONTRACTOR'S EXPENSE. UNUSED EXCAVATED MATERIAL REMOVED FROM SITE IS THE RESPONSIBILITY OF CONTRACTOR AND MUST BE DISPOSED OF IN A MANNER ACCEPTABLE		E.	DO NOT OPERATE FANS FOR ANY PUR BEARINGS ARE LUBRICATED, AND A TEST F
1.0	(FD)//	TO THE ARCHITECT.		F. G.	PROVIDE SHEAVES AND ADDITIONAL BELT CONTRACTOR SHALL FURNISH AND INS
1.6	A.	CEABILITY FURNISH ALL PRODUCTS TO PROVIDE THE PROPER ORIENTATION OF SERVICEABLE COMPONENTS TO	2.5		REQUIRED FOR DISCONNECT AND MAINTE HANICAL ROUTING
	В.	ACCESS SPACE PROVIDED. REPLACE OR RELOCATE ALL PRODUCTS INCORRECTLY ORDERED OR INSTALLED TO PROVIDE PROPER	2.5	A.	UNLESS OTHERWISE NOTED, ROUTE ALL
		SERVICEABILITY.		В.	HIGH AS POSSIBLE WHILE MAINTAINING G ROUTE DUCTS AND PIPING TO CLEAR ALI
	C.	ACCESS PANELS/DOORS: (i) AT A MINIMUM, PROVIDE ACCESS PANELS WHERE REQUIRED BY CODE AND FOR MAINTENANCE		ſ	ALL OTHER PIPES, DUCTS, LIGHT FIXTURES
		(ii) FOR EACH ROOM, CONTRACTOR SHALL COORDINATE ALL ACCESS PANEL LOCATIONS TO		C.	CONTRACTOR SHALL FURNISH AND INST AND PARTITIONS. PERFORM CUTTING A
		MINIMIZE THE NUMBER OF ACCESS PANELS. COORDINATE ALL ACCESS PANELS WITH ARCHITECT.		D.	PIPING. CONTRACTOR SHALL PLACE ANY SLEEVES
		ARCHITECT SHALL APPROVE TYPE, SIZE, COLOR, AND LOCATION PRIOR TO INSTALLATION. (iii) UNLESS OTHERWISE NOTED, ACCESS PANELS SHALL BE FLANGED STAINLESS STEEL			CONCRETE IS POURED, AND BE RESPONS
		CONSTRUCTION, WITH CONTINUOUS HINGE AND WITH QUARTER TURN SCREW LOCK, INSTALLED FLUSH WITH ADJACENT SURFACES AND PAINTED TO MATCH, SIZED AND LOCATED FOR EASY	2.6		HANICAL SUBMITTALS
		ACCESS TO AND REPLACEMENT OF EQUIPMENT, AND NOT LESS THAN 24" X 24". METHODS		A.	PROVIDE SHOP DRAWINGS FOR ALL D EQUIPMENT LOCATIONS.
1 7	RVCIC			В.	PROVIDE SHOP DRAWINGS FOR ALL P EQUIPMENT LOCATIONS.
1.7	BASIC A.	ALL WORK SHALL BE EXECUTED IN A WORKMANLIKE MANNER AND SHALL PRESENT A NEAT AND			EQUILIBERT ECCATIONS.
1.7		ALL WORK SHALL BE EXECUTED IN A WORKMANLIKE MANNER AND SHALL PRESENT A NEAT AND ORGANIZED APPEARANCE WHEN COMPLETED. PERFORM ALL WORK WITH HIGHEST REGARD TO SAFETY. ALL EQUIPMENT AND MATERIALS FURNISHED AND INSTALLED BY CONTRACTOR SHALL BE NEW,	2.7		PLETION OF MECHANICAL WORK
1.7	A.	ORGANIZED APPEARANCE WHEN COMPLETED. PERFORM ALL WORK WITH HIGHEST REGARD TO SAFETY.	2.7	COM A.	PLETION OF MECHANICAL WORK UPON COMPLETION OF ALL MECHANICAL OWNER'S SATISFACTION THAT THE SYST
1.7	A.	ORGANIZED APPEARANCE WHEN COMPLETED. PERFORM ALL WORK WITH HIGHEST REGARD TO SAFETY. ALL EQUIPMENT AND MATERIALS FURNISHED AND INSTALLED BY CONTRACTOR SHALL BE NEW, MANUFACTURED, FREE FROM DEFECTS, OF THE QUALITY SPECIFIED, AND CERTIFIED TO COMPLY WITH	2.7		

SQUEALING, SQUEAKING, OR NOISE GENERATION BY EQUIPMENT IS NOT ACCEPTABLE. LL EQUIPMENT BEING RELOCATED. CONTRACTOR SHALL Δ RACTOR'S EXPENSE. ND MATERIAL MUST BE STORED AND PROTECTED FROM MENT AND MATERIALS FROM DAMAGE DUE TO DIRT. ANDALISM, AND ANY OTHER DAMAGE. ANY EQUIPMENT

REPLACED AT CONTRACTOR'S EXPENSE KEEP SITE CLEAN OF DEBRIS. PRIOR TO COMPLETION OF LS SHALL BE REMOVED FROM THE SITE.

ED AS A RESULT OF WORK PERFORMED SHALL BE REPAIRED AMAGED PROPERTY'S OWNER AND AHJ. SURE PROPER INSTALLATION AND AS SHOWN ON DETAILS PACKAGE SHALL BE FURNISHED AND INSTALLED BY THIS

ION TAGS MADE OF EMBOSSED ACRYLIC WITH MINIMUM THE TAGS/MARKS INDICATED ON THE DRAWINGS AND RASTING COLOR TO TAG (E.G., BLACK AND WHITE, ETC). ETC IN ACCORDANCE WITH MANUFACTURER'S

ND ATTACHMENTS AS PER INDUSTRY STANDARDS TO RELY FASTEN ALL WORK DIRECTLY TO THE STRUCTURE TO LIMB, AND TO PREVENT DAMAGE TO PRODUCTS OF OPERATION.

SHOP OR FIELD-FABRICATED EQUIPMENT SUPPORT MADE EMENTS TAKEN ON THE JOB SITE.

IPONENTS TO FIT CONDITIONS OR MAKE UP JOINTS.

YSTEM(S) INVOLVED. PROVIDE SUBMITTALS FOR ALL PURTENANCES.

TURED EQUIPMENT FOR REVIEW. INCLUDE CATALOG YSICAL DIMENSIONS AND CLEARANCE REQUIREMENTS. VAL, CONTRACTOR MUST PROVIDE IDENTIFICATION OF CIPLINES. THE BURDEN OF PROOF THAT THE PROPOSED ON IS UPON THE CONTRACTOR. THE SUBSTITUTION MUST

ORE THE SUBSTITUTION MAY BE MADE. ANUFACTURERS REQUIRES DIFFERENT ARRANGEMENT OR SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ERLY AND IN HARMONY WITH THE ORIGINAL INTENT OF RACTOR SHALL MAKE ALL NECESSARY CHANGES IN ALL OTHER SECTIONS INCLUDING LOCATION OF ROUGH-IN SUPPORTS, INSULATION, ETC. ALL CHANGES SHALL BE AMOUNT OR ADDITIONAL COST TO THE OTHER TRADES

W EQUIPMENT, CONTRACTOR SHALL FACILITATE STARTUP VRITTEN INSTRUCTIONS AND CHECKLIST.

ED ELSEWHERE IN THE CONTRACT DOCUMENTS, ALL ITEED FOR A PERIOD OF TWELVE (12) MONTHS FROM FECTS IN EQUIPMENT OR WORKMANSHIP SHALL BE CONTRACTOR WITHOUT ADDITIONAL EXPENSE TO THE ART OF THE REPAIRED ITEM SHALL BE EXTENDED FOR A DATE OF SUCH REPAIR OR REPLACEMENT.

BMITTED BY THE CONTRACTOR TO THE A/E TEAM FOR OR SHALL PROVIDE DIGITAL COPY AND PHYSICAL COPY OF

NANCE MANUALS TO OWNER. NUALS: AFTER SUBSTANTIAL COMPLETION, CONTRACTOR MANUALS FOR ALL EQUIPMENT AND PRODUCTS (DIGITAL

ARTS LIST FOR ALL INSTALLED EQUIPMENT SHALL BE

WORK IN ACCORDANCE WITH AMERICAN SOCIETY OF CAN SOCIETY OF HEATING, REFRIGERATION, AND AIR ICAN SOCIETY OF PLUMBING ENGINEERS (ASPE), LATEST IED PLUMBING CODE, AND ALL CURRENT SUPPLEMENTS

LOCATION OF THEIR SYSTEMS SO THAT ALL OUTSIDE AIR FANS ARE LOCATED IN SUCH A WAY AS TO PREVENT KES SHALL BE LOCATED NOT LESS THAN 10'-0" FROM AND A GREATER DISTANCE WHERE INDICATED ON THE CATED A MINIMUM OF 10'-0" FROM OPERABLE WINDOWS HAT MAY CAUSE NUISANCE.

L DUCTWORK AND PIPING SYSTEMS SHALL BE MADE AS AND PITCH OF SLOPING LINES. COOLING AND HEATING FOR AREAS THAT REQUIRE

WORK, EQUIPMENT, SYSTEM COMPONENTS, AND OTHER ALL ITEMS REQUIRING PERIODIC MAINTENANCE OR JME DAMPERS, ACCESS PANELS, AND TO OTHER ITEMS NCE, OR OPERATIONAL PURPOSES.

CESS TO TRAPS, VALVES, DAMPERS, AUTOMATIC DEVICES, ENT IN CONCEALED SPACES, ABOVE GYPSUM, PLASTER OR TER OR SIMILAR WALLS.

WHICH NEEDS TO BE INSULATED TO CONSERVE HEAT OR DENSATION, SHALL BE INSULATED, WITH ALUMINUM

RARILY PLUGGED OR CAPPED DURING CONSTRUCTION TO BRIS FROM ENTERING THE SYSTEMS. HUB DRAINS, TRENCH DRAINS, AND DRAINAGE TROUGHS DTECTIVE COVERINGS FROM DRAINAGE FIXTURES UPON

COVERS PRIOR TO OCCUPANCY. TINGS AND FLEXIBLE ELECTRICAL LEADS. INSTALL FLEXIBLE ET AND DISCHARGE DUCTWORK. FLEXIBLE CONNECTORS

UNTIL DUCTWORK IS CLEAN, FILTERS ARE IN PLACE, OF FAN HAS BEEN PERFORMED UNDER OBSERVATION. REQUIRED FOR FINAL AIR BALANCE.

- UNIONS ADJACENT TO ALL EQUIPMENT AND WHERE NCE OF EQUIPMENT.
- TS AND PIPING PARALLEL WITH BUILDING LINES AND AS DIENT FOR PITCHED PIPING.
- ORS, WINDOWS, AND OTHER OPENINGS, AND TO AVOID SIMILAR PRODUCTS. ALL SLEEVING FOR PIPE PENETRATIONS THROUGH SLABS PATCHING OF ROUGH CONSTRUCTION FOR DUCTS AND

ASES, CONCRETE INSERTS, ANCHOR BOLTS, ETC BEFORE FOR CORRECT LOCATION AND INSTALLATION OF THESE

WORK ROUTING, SIZING, AIR DEVICE LOCATIONS AND

ROUTING, SIZING, HYDRONIC DEVICE LOCATIONS AND

TALLATIONS, CONTRACTOR SHALL DEMONSTRATE TO THE HAVE BEEN INSTALLED IN A SATISFACTORY MANNER IN ABLE CODES. CONTRACTOR SHALL DEMONSTRATE THAT: LY ADJUSTED IN ACCORDANCE WITH THE REQUIREMENTS AS ARE PROPERLY BALANCED; ALL EQUIPMENT OPERATES CLEAN; AND ALL COMPONENTS OF ALL SYSTEMS ARE ATION.

2.8 MECHANICAL RECORD AS-BUILT DRAWINGS MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR MARKING UP A CLEAR SET OF AS-BUILT MECHANICAL DRAWINGS AS THE WORK PROGRESSES TO SHOW THE DEVIATIONS FROM THE SEALED CONSTRUCTION MECHANICAL DRAWINGS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING: (i) RE-ROUTING OF HVAC SUPPLY AIR, RETURN AIR, EXHAUST AIR AND OUTSIDE AIR DUCTWORK.

- (ii) RE-ROUTING OF HVAC PIPING.
- (iii) RE-SIZING OF HVAC DUCTWORK.
- (iv) RE-SIZING OF HVAC PIPING.
- (v) RELOCATION OF ALL HVAC EQUIPMENT, AIR TERMINAL DEVICES, AIR OUTLETS, REGISTERS AND GRILLES. AND ASSOCIATED DUCTWORK. (vi) INDICATE LOCATION OF ALL BRANCH LINE SHUT-OFF VALVES.
- CONTRACTOR SHALL KEEP THE MARKED-UP AS-BUILT DRAWINGS ON SITE UNTIL COMPLETION OF THE PROJECT.
- C. GENERAL CONTRACTOR SHALL TURN OVER A DIGITAL COPY AND PHYSICAL COPY OF THE RECORD AS-BUILT DRAWINGS TO THE OWNER UPON COMPLETION OF THE PROJECT.

PART 3 -SPECIALTY MECHANICAL REQUIREMENTS

3.1 TESTING, ADJUSTING, AND BALANCING (TAB)

- A. CONTRACTOR SHALL UTILIZE AN INDEPENDENT TEST AND BALANCE FIRM TO PROVIDE FULL TAB SERVICE FROM AN IMPARTIAL NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB) OR ASSOCIATED AIR BALANCE COUNCIL (AABC) CERTIFIED FIRM. CERTIFICATION SHALL BE CURRENT AND PRESENTED TO ENGINEER FOR REVIEW AND APPROVAL PRIOR TO COMMENCEMENT OF TAB WORK. B. ALL INSTRUMENTS USED SHALL BE PROPERLY CALIBRATED WITHIN FOUR (4) MONTHS PRIOR TO USE ON
- THIS PROJECT. C. IF PROBLEMS ARE ENCOUNTERED DURING BALANCING, THE TAB CONTRACTOR SHALL NOTIFY THE GENERAL CONTRACTOR AND, IF NECESSARY, THE ARCHITECT/ENGINEER FOR INSTRUCTIONS BEFORE
- COMPLETION OF TAB WORK. D. UPON COMPLETION OF HVAC WORK AND PRIOR TO OCCUPANCY, SUPPLY, RETURN, AND EXHAUST FANS AND EQUIPMENT WITH FANS SHALL BE ADJUSTED AND BALANCED TO WITHIN +/- 5% OF
- SCHEDULED DESIGN AIR QUANTITIES. ALL AIR OUTLETS, AIR INLETS AND WATER SYSTEMS SHALL BE ADJUSTED AND BALANCED TO WITHIN +/- 10% OF INDICATED DESIGN AIR QUANTITIES AND WATER OUANTITIES. E. ALL BALANCING SHALL BE PERFORMED IN ACCORDANCE WITH ALL NEBB OR AABC RECOMMENDATIONS
- AND PROCEDURES. MARK EQUIPMENT AND BALANCING DEVICES. INCLUDING DAMPER CONTROL POSITIONS, VALVE
- POSITION INDICATORS, FAN SPEED CONTROL LEVERS, AND SIMILAR CONTROLS AND DEVICES, WITH PAINT OR OTHER SUITABLE, PERMANENT IDENTIFICATION MATERIAL TO SHOW FINAL SETTINGS. G. TAB FIRM TO SUBMIT A COMPLETED COPY OF THE CERTIFIED TAB REPORT TO THE ENGINEER FOR
- REVIEW. TABULATE ALL TEST DATA ON NEBB OR AABC FORMS. 3.2 SUSTAINABILITY REQUIREMENTS
 - A. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL REQUIRED DOCUMENTATION PER ARCHITECTURAL SPECIFICATIONS.
 - B. ALL SEALANT AND ADHESIVES CONTAINING VOLATILE ORGANIC COMPOUNDS (VOC) SHALL COMPLY WITH THE ESTABLISHED MAXIMUM QUANTITIES OF THE SUSTAINABILITY STANDARD BEING PURSUED. MATERIAL SAFETY DATA SHEETS (MSDS) AND SUSTAINABILITY COMPLIANCE LETTERS SHALL BE PROVIDED WHERE REQUIRED WITH PRODUCT MATERIAL SUBMITTALS.
 - SUBMITTALS SHALL INDICATE PRODUCT DATA FOR ADHESIVES, COATINGS AND SEALANTS SHALL INDICATE VOC CONTENT. LABORATORY TEST REPORTS FOR ADHESIVES, COATINGS AND SEALANTS SHALL INDICATE COMPLIANCE WITH REQUIREMENTS FOR LOW-EMITTING MATERIALS.

PART 4 - PRODUCTS

4.1 INSULATION (GENERAL)

- A. FURNISH ALL LABOR AND MATERIALS NECESSARY FOR THE COMPLETE INSTALLATION OF THERMAL INSULATION ON ALL HOT AND COLD PIPING SURFACES AND DUCTWORK INSTALLED UNDER THIS CONTRACT WHICH REQUIRE INSULATION FOR HEAT OR COLD CONSERVATION; FREEZE PROTECTION; PREVENTION OF CONDENSATION OR DRIPPING: COMFORT FOR OCCUPANTS: EFFICIENCY OR EASE OF OPERATION. MECHANICAL INSULATION SHALL BE COMPLETE AND EFFECTIVE THROUGHOUT THE PROJECT. ALL INSULATION SHALL MEET THE MINIMUM THERMAL RESISTANCE REQUIREMENTS AS DETAILED WITHIN THIS SPECIFICATION AND SHALL COMPLY WITH THE AHJ ADOPTED ENERGY CODE.
- PRODUCT INSULATION AND ADHESIVES SHALL HAVE A FLAME SPREAD INDEX OF LESS THAN 25 AND A SMOKE SPREAD INDEX OF LESS THAN 50. INSULATION TO BE INSTALLED AFTER ALL NECESSARY AND REQUIRED TESTING OF APPLICABLE SYSTEMS
- HAS BEEN COMPLETED PRODUCTS SHALL NOT CONTAIN ASBESTOS, LEAD, MERCURY, OR MERCURY COMPOUNDS.

4.2 AIR DISTRIBUTION ACCESSORIES

- A. MOTORIZED VOLUME DAMPERS: TESTED AND RATED IN ACCORDANCE WITH AMCA 511. FRAMES SHALL BE 0.08" THICK EXTRUDED ALUMINUM IF INSTALLED IN ALUMINUM DUCTWORK: 16-GAUGE-THICK. GALVANIZED SHEET STEEL IF INSTALLED IN GALVANIZED SHEET METAL DUCTWORK; 18-GAUGE-THICK STAINLESS STEEL IF INSTALLED IN STAINLESS STEEL DUCTWORK. AIR LEAKAGE OF 4 CFM PER SF OR LESS AT A 1" W.C. PRESSURE DIFFERENTIAL RATED UP TO VELOCITIES UP 2500 FPM AND PRESSURES UP TO 2" W.C. UNLESS OTHERWISE INDICATED, USE PARALLEL-BLADE CONFIGURATION FOR TWO-POSITION CONTROL, EQUIPMENT ISOLATION SERVICE, AND WHEN MIXING TWO AIRSTREAMS. FOR OTHER APPLICATIONS, USE OPPOSED-BLADE CONFIGURATION. BLADES SHALL BE 6" EACH IN WIDTH. BLADE-LINKAGE HARDWARE SHALL BE ZINC-PLATED STEEL AND BRASS; ENDS SEALED AGAINST BLADE BEARINGS. LINKAGE MOUNTED OUT OF AIR STREAM.
- (i) COMPONENTS SHALL BE UL 873 PLENUM RATED.
- (ii) TWO-POSITION WITH FAIL-SAFE SPRING RETURN, WITH SUFFICIENT MOTOR TORQUE AND SPRING TORQUE TO DRIVE DAMPER FULLY CLOSED WITH ADEQUATE FORCE TO ACHIEVE REQUIRED DAMPER SEAL, MINIMUM 90-DEGREE DRIVE ROTATION, CLOCKWISE OR COUNTERCLOCKWISE DRIVE ROTATION AS REQUIRED FOR APPLICATION.
- (iii) ENVIRONMENT OPERATING RANGES: TEMPERATURE OF MINUS 10 TO PLUS 130 DEG F, AND HUMIDITY OF 5% TO 95% RELATIVE HUMIDITY NONCONDENSING. (iv) ENVIRONMENTAL ENCLOSURE: NEMA RATED ENCLOSURE SUITABLE FOR ENVIRONMENT OF
- INSTALLATION. ACTUATOR TO BE FACTORY MOUNTED AND PROVIDED WITH A SINGLE-POINT WIRING
- CONNECTION; VOLTAGE TO BE COORDINATED WITH ELECTRICAL CONTRACTOR. B. BACKDRAFT DAMPERS
- (i)
- MANUFACTURERS: GREENHECK, POTTORFF, RUSKIN, OR APPROVED EQUAL. (ii) TESTED AND RATED IN ACCORDANCE WITH AMCA 511, GRAVITY BALANCED, MAXIMUM AIR VELOCITY OF 2,000 FPM, MAXIMUM SYSTEM PRESSURE OF 2" W.G., RETURN SPRING WITH ADJUSTABLE TENSION, TIE BARS AND BRACKETS SHALL MATCH DUCTWORK MATERIAL, STEEL BALL BEARINGS.
- (iii) FRAME: HAT-SHAPED, GALVANIZED SHEET STEEL 16-GAUAGE FOR DAMPERS INSTALLED IN GALVANIZED SHEET METAL DUCTWORK: EXTRUDED ALUMINUM 0.093" THICK FOR DAMPERS INSTALLED IN ALUMINUM DUCTWORK; STAINLESS STEEL 18-GAUGE FOR DAMPERS INSTALLED IN STAINLESS STEEL DUCTWORK. FRAME SHALL BE WELDED OR MECHANICALLY ATTACHED CORNERS AND SHALL INCLUDE MOUNTING FLANGE, WITH WELDED CORNERS OR MECHANICALLY ATTACHED.
- (iv) BLADES: PARALLEL ACTION, MULTIPLE SINGLE-PIECE BLADES, CENTER PIVOTED, MAXIMUM 6" WIDTH, 0.050" THICK ALUMINUM SHEET WITH SEALED EDGES; SEALS SHALL BE EXTRUDED VINYL, MECHANICALLY LOCKED NEOPRENE OR MECHANICALLY LOCKED.
- (v) PROVIDE THE FOLLOWING: ADJUSTMENT DEVICE TO PERMIT SETTING FOR VARYING DIFFERENTIAL STATIC PRESSURE; COUNTERWEIGHTS AND SPRING-ASSIST KITS FOR VERTICAL AIRFLOW INSTALLATIONS; ELECTRIC ACTUATORS; FRONT-MOUNTED INSECT SCREEN IN 6" LENGTH ALUMINUM SLEEVE WITH 90 DEGREE STOPS.
- (vi) PROVIDE ELECTRIC ACTUATORS; COORDINATE VOLTAGE AND PHASE WITH ELECTRICAL CONTRACTOR
- C. AIR OUTLETS
 - PROVIDE THE SCHEDULED SUPPLY, RETURN, AND EXHAUST AIR DEVICES AS SCHEDULED OR (i) APPROVED EQUAL
- (ii) MANUFACTURERS: PRICE, METALAIRE, TITUS, TUTTLE AND BAILEY, KRUEGER, OR APPROVED EQUAL.
- (iii) ALL FINISHES AND COLORS SHALL BE APPROVED BY ARCHITECT.
- (iv) PROVIDE ALL FACTORY ACCESSORIES REQUIRED FOR COMPLETE INSTALLATION. WHERE REQUIRED PROVIDE FACTORY MOUNTING FRAME FOR INSTALLATION INTO SHEETROCK CEILINGS AND WALLS. PROVIDE MOUNTING AND BLOCKING.
- MANUFACTURER RESPONSIBLE FOR EXAMINING APPLICATION OF EACH OUTLET AND PROVIDE (v) REQUIRED NC LEVELS AND COMFORT SPACE CONDITIONS WITHOUT DRAFTS THROUGHOUT OPERATING RANGE.
- (vi) INSTALLATION: CHECK LOCATION OF AIR OUTLETS AND INLETS AND MAKE NECESSARY ADJUSTMENTS IN POSITION TO CONFORM WITH ARCHITECTURAL FEATURES, SYMMETRY, AND LIGHTING ARRANGEMENT.

D. LOUVERS AND WALL CAPS

- BASIS-OF-DESIGN PRODUCT: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE (i) PRODUCT INDICATED ON DRAWINGS, MATCHING EXISTING EQUIPMENT OR COMPARABLE PRODUCT BY ONE OF THE FOLLOWING MANUFACTURERS: GREENHECK, RUSKIN, METALAIRE, TITUS, TUTTLE AND BAILEY, KRUEGER, OR APPROVED EQUAL
- (ii) MATCH FINISH AND COLOR TO ARCHITECT AND OWNER REQUIREMENTS.

В. С. D. Ε. FILTER, AND INSTALL NEW FILTERS. G. H. SWAYING. 5.2 NOTES FOR SPECIFIC SYSTEMS POWER LEVELS. 5.3 WALL-MOUNTED EXHAUST FANS Α.

PART 5 - EQUIPMENT

В.

C.

F.

5.1 GENERAL NOTES (APPLIES TO ALL EQUIPMENT LISTED BELOW)

A. INSTALL EQUIPMENT AND SPECIALTIES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. INSTALL ALL EQUIPMENT LEVEL AND PLUMB.

PROVIDE IDENTIFICATION TAGS MATCHING THE TAGS SHOWN ON THE DRAWINGS.

ELECTRICAL CHARACTERISTICS AND COMPONENTS: REFER TO SCHEDULE.

DISCONNECT SWITCH: REFER TO NOTES ON SCHEDULE

FOR EQUIPMENT REQUIRING FILTERS, PRIOR TO STARTUP OF UNIT CONFIRM THE SPECIFIED FILTER HAS BEEN INSTALLED IN THE UNIT. FOR NON-DUCTED RETURN SYSTEM, DURING CONSTRUCTION PROVIDE A TEMPORARY CONSTRUCTION GRADE FILTER ON THE INLET OF THE UNIT AS WELL AS INSTALLING THE SPECIFIED FILTER. AFTER CONSTRUCTION, REMOVE THE TEMPORARY FILTER, REMOVE THE SPECIFIED

FOR ANY EQUIPMENT WHICH INCORPORATES A BELT-DRIVEN FAN, ADJUST MOTOR PULLEYS, BELTS AND SHEAVES AS NEEDED FOR FINAL SYSTEM TESTING AND BALANCING.

FOR AIR HANDLING UNITS WITH SURFACES IN CONTACT WITH AIRSTREAM, COMPLY WITH REQUIREMENTS OF LATEST ASHRAE 62.1. INSTALL LATERAL BRACING WITH EQUIPMENT HANGERS AND SUPPORTS AS NEEDED TO PREVENT

A. FOR ALL FANS AND FOR ANY EQUIPMENT CONTAINING FANS: FANS SHALL BE TESTED AND RATED IN ACCORDANCE WITH AMCA STANDARD 210 AND SHALL BE PROVIDED WITH AMCA SEAL. SOUND AND

FOR ANY FIELD-ERECTED AND FACTORY-ASSEMBLED AIR HANDLING UNITS: COILS SHALL BE ARRANGED FOR REMOVAL FROM THE UPSTREAM SIDE WITHOUT DISMANTLING SUPPORTS.

MANUFACTURERS: GREENHECK, COOK, PENN BARRY, ZEPHR / ZEPHRETTTE, OR APPROVED EQUAL. FAN SHALL BE AMCA RATED.

HOUSING: ALUMINUM WITH BIRD SCREEN MOUNTED TO PERIMETER OF DISCHARGE.

FAN: DIRECT OR BELT DRIVEN, AS SCHEDULED, WITH CENTRIFUGAL BACKWARD-INCLINE WHEEL OF ALUMINUM CONSTRUCTION.

BEARINGS: SELF-ALIGNING, GREASE LUBRICATED, BALL BEARINGS WITH LUBRICATION FITTINGS EXTENDED TO EXTERIOR OF CASING. MOUNTING: MOTOR ISOLATED ON SHOCK MOUNTS WITH CORROSION RESISTANT FASTENERS

ENGINEERING CONSULTANT TBPE Firm8500 Bluffstone Cove, Suite B-103 1141 | Austin, Texas 78759 | 512.338.1101 Project No.: 23042.MS.AUS 121003 σ す σ $\mathbf{0}$ \Box Ζ Γ S σ \mathbf{m} G 0 Ω \bigcirc \mathbf{O} U 0 Σ L 0 Ŋ m ISSUE DATE 100% IFC 02/23/20 PROJECT No: 23046.MS.AUS P.M.: LCS DRAWN BY: KD QA/QC BY: LCS DATE: 02/23/202 SHEET TITLE: MECHANICAL SPECIFICATIONS SHEET NUMBER:

PART	T 6 - GAS DETECTION SYSTEM			MINIMUM 1/2-INCH-HIGH LETTERS C
	SECTION INCLUDES GAS DETECTION SYSTEM, MONITORS, AND NOTIFICATION APPLIANCES		B.1.	CANDELA. GENERAL PURPOSE "ELECTRAFLASE
	DEFINITIONS		B.2.	,
	A. LFL: LOWER FLAMMABILITY LIMIT		B.3. B.4.	
	B. LEL: LOWER EXPLOSIVE LIMIT		B.5.	BASIS OF DESIGN PRODUCT: FEDER
1.2	ACTION SUBMITTALS A. PRODUCT DATA:	3.1	INSTALLAT	ION
	A.1. FOR EACH TYPE OF GAS MONITOR INDICATED, INCLUDE SENSING RANGE IN I	PPM,		INSTALL WARNING SIGNS, LABELS, A DEVICES ACCORDING TO SPECIFICATIO
	TEMPERATURE AND HUMIDITY RANGE, ALARM OUTPUTS, DISPLAY RANGE, FURNISHED SPECIALTIES, INSTALLATION REQUIREMENTS, AND ELECTRIC POV	VER		AND EQUIPMENT. LABELS SHALL BE LEG
	REQUIREMENT. B. SHOP DRAWINGS:			AUDIBLE ALARM-INDICATING DEVICES: ROOM, AND POSITION NOT LESS THAN
	B.1. AIR-SAMPLING TUBING: SIZE, ROUTING, AND TERMINATION INCLUDING			ON FLUSH-MOUNTED BACK BOXES CONCEALED BEHIND A GRILLE.
	ELEVATION ABOVE FINISHED FLOOR. B.2. WIRING DIAGRAMS: POWER, SIGNAL, AND CONTROL WIRING.			VISIBLE ALARM-INDICATING DEVICES: I EACH ENTRY DOOR TO EQUIPMENT RO
1.3	INFORMATIONAL SUBMITTALS			THE CEILING.
	A. FIELD QUALITY-CONTROL TEST REPORTS.			INSTALL MONITOR PANEL AT 48" ABOVI
1.4	CLOSEOUT SUBMITTALS A. OPERATION AND MAINTENANCE DATA.			WIRING SHALL BE INSTALLED IN META SPECIFICATION SECTION CONTROL-V
1 5	WARRANTY	2.2		PATHWAYS FOR COMMUNICATIONS SYS
1.5	A. TWO YEAR PART AND LABOR WARRANTY.	3.2		ON SCHEDULE INSTALL MONITORS AND SENSORS
2.1	SINGLE OR DUAL ZONE HAZARDOUS GAS MONITOR			MANUFACTURER LISTED COVERAGE CEILINGS ACCORDING TO MANUFA
2.1	A. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, AVAI			SPECIFICATIONS FOR RACEWAYS AND B
	MANUFACTURERS OFFERING PRODUCTS THAT MAY BE INCORPORATED INTO WORK INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING:	D THE		INSTALLATION OF SPECIFIC EQUIPMENT HYDROGEN GAS
	A.1. ARMSTRONG MONITORING.			1.1. WALL MOUNTED AT 28' ABOV
	A.2. FEDERAL SIGNAL CORPORATION B. GAS MONITOR: DUAL ZONE, ELECTRONIC GAS DETECTION PANEL.			1.2. PVC ENCLOSURE GAS DETECTION CONTROL PANEL
	B.1. BASIS OF DESIGN PRODUCT: ARMSTRONG AMC-1A		C.1.	
	B.2. ENCLOSURE			HORN
	B.2.1. MATERIAL: ASA 61 GRAY ENAMEL 16-GAUGE STEEL		D.1. D.2.	
	B.3 RATING: NEMA 4XB.4 POWER: 120 VAC, 1PH 60HZ.		D.3.	
	B.5 OPERATING TEMPERATURES: 0 DEG F TO 100 DEG F			STROBE
	B.6 RELAY CONTACTS: 4 DPDT, 10A WITH 250 VAC RESOLUTION.		E.1. E.2.	
	B.6 INDICATORS (PER ZONE)		E.3.	
	B.6.1 ZONES: 1	2.2	E.4.	
	B.6.2 RED LED: ALARM	3.3	-	LITY CONTROL PERFORM TESTS AND INSPECTIONS AND
	B.6.3 YELLOW LED: WARNING B.6.4 GREEN LED: RUN, FAULT, OFF		В.	TESTS AND INSPECTIONS:
	B.6.5 GAS DETECTION MODULES (PER ZONE): 8		B.1.	INSPECT FIELD-ASSEMBLED COMPC ELECTRICAL CONNECTIONS FOR CO
	C. FEATURES: C.1. LARM DISABLE DURING WARMUP		B.2.	
	C.2. SYSTEM TEST SWITCH		B.3. B.3	TEST REPORTS: PREPARE A WRITTE 3.1. TEST PROCEDURES USED.
	C.3. MINIMUM RUN TIMERC.4. ACTIVATION DELAYS: FIVE MINUTES TO WARNING AND/OR ALARM SET POIN	ITC	В.3	3.2. TEST RESULTS THAT COMPLY V
	C.5. 95 DBA AUDIO ALARM AND WARNING. ALARM SET POINTS.	115.	В.3	3.3. TEST RESULTS THAT DO NOT C CORRECTIVE ACTION TAKEN TO
	C.6. LATCHING RELAYS WITH MANUAL RESET.		C.	REQUIREMENTS. DEMONSTRATION:
	C.7. MANUALLY ACTIVATE RELAYS (PURGE EXHAUST) THROUGH MONITOR. D. DESCRIPTION: SENSOR SHALL BE FACTORY TESTED, CALIBRATED, AND CERTIFIE	ed to	C.1.	
	CONTINUOUSLY MONITOR SPECIFIC GAS CONCENTRATION AND SHALL BE CAPAE INDICATING, ALARMING AND ENABLING EXHAUST SYSTEMS. SYSTEM SHA		C.2.	MAINTAIN INSTRUMENTATION ANI COORDINATE VIDEO WITH OPERAT
	CAPABLE OF SAMPLING UP TO EIGHT (8) DETECTION MODULES PER ZONE.		0.2.	CLASSROOM INSTRUCTION FOR US AND TROUBLESHOOTING.
	 E. HAZARDOUS GAS DETECTION REQUIREMENTS: E.1. FOR THE FOLLOWING GAS TYPES: LIQUIFIED PETROLEUM GAS AND COMPRES 	SSED	D.	REPAIR OR REPLACE MALFUNCTIONING
	NATURAL GAS			
	E.1.1. BASIS OF DESIGN PRODUCT: ARMSTRONG AMC-360 E.1.2. RANGE: 0% LEL TO 100% LEL			
	E.1.3. STANDARD TRIP POINTS: MINIMUM TWO.			
	E.1.3.1. LEVEL 1: 40% LEL E.1.3.2. LEVEL 2: 60% LEL			
	E.1.4. OPERATING TEMPERATURE: 0 DEG F TO 100 DEG F			
	E.1.5. OPERATING HUMIDITY: 15% RH TO 90% RH E.1.6. COVERAGE RADIUS: 25 FEET.			
	F. INPUT/OUTPUT FEATURES:			
	F.1. MAXIMUM POWER INPUT: 120-V AC, 60 HZ, 75 W.F.2. NUMBER OF SAMPLING MODULES: UP TO 1 PER ZONE.			
	F.3. NUMBER OF SAMPLING ZONES: UP TO 1 ZONE			
	F.4. LED INDICATORS (PER ZONE) F.4.1. RED LED: ALARM			
	F.4.2. YELLOW LED: WARNING			
	F.4.3. GREEN LED: RUN, FAULT, AND OFF INDICATIONF.5. RELAYS: FOUR DOUBLE POLE DOUBLE THROW 10A 250 VAC CONTACTS			
	F.6. SYSTEM TEST SWITCH			
	F.7. MINIMUM RUN TIMERF.8. 95 DBA AUDIO ALARM WITH WARNING AND ALARM SET POINTS			
	F.8. 95 DBA AUDIO ALARM WITH WARNING AND ALARM SET POINTSF.9. HINGED DOOR			
	F.10. LATCHING RELAYS WITH MANUAL RESET.			
	F.11. AUDIBLE OUTPUT: MINIMUM 75 DB DB AT 10 FEET.F.12. VISIBLE OUTPUT: STROBE LIGHT.			
	F.13. SENSOR ANALOG OUTPUT: 0- TO 10-V DC INTO 2K OHMS, OR 4- TO 20-MA IN	NTO		
	1K OHMS. F.14. ENCLOSURE: NEMA 250, TYPE 1, WITH LOCKING QUARTER-TURN LATCH AND) KEY.		
2.2	NOTIFICATION APPLIANCES			
	A. HORNS: COMPLY WITH UL 464; ELECTRIC-VIBRATING-POLARIZED TYPE, LISTED QUALIFIED TESTING AGENCY WITH PROVISION FOR HOUSING THE OPER.			
	MECHANISM BEHIND A GRILLE. HORNS SHALL PRODUCE A SOUND-PRESSURE LEV 90 DBA, MEASURED 10 FEET FROM THE HORN.			
	A.1. GENERAL PURPOSE INDUSTRIAL RATED SIREN.			
	A.2. METAL HOUSING			
	A.3. RATED FOR 108 DB.A.4. INCLUDE MOUNTING KIT FOR WALL MOUNT APPLICATIONS.			
	A.5. BASIS OF DESIGN PRODUCT: FEDERAL SIGNAL A-120 ELECTRIC SIREN			
	B. VISIBLE ALARM DEVICES: COMPLY WITH UL 1971; BLUE POLYCARBONATE MOUNTED ON AN ALUMINUM FACEPLATE. THE WORDS "GAS DETECTION" PRINT			

ASH" STROBE WARNING LIGHT.

ALL MOUNT APPLICATIONS.

DERAL SIGNAL ELECTRAFLASH 141ST-120A

5, AND NAMEPLATES TO IDENTIFY DETECTION FION SECTION IDENTIFICATION FOR HVAC PIPING LEGIBLE FROM 50FT.

ES: INSTALL AT EACH ENTRY DOOR TO EQUIPMENT AN 6 INCHES BELOW THE CEILING. INSTALL HORNS ES WITH THE DEVICE-OPERATING MECHANISM

S: INSTALL ADJACENT TO EACH ALARM HORN AT ROOM, AND POSITION AT LEAST 6 INCHES BELOW

OVE FINISHED FLOOR. ETAL CONDUIT AND RACEWAYS ACCORDING TO L-VOLTAGE ELECTRICAL POWER CABLES AND SYSTEMS.

DRS FOR 100% COVERAGE ACCORDING TO E AREAS. MOUNT TO WALL, COLUMNS AND FACTURER REQUIREMENTS AND DIVISION 26 D BOXES.

INT SHALL COMPLY AS FOLLOWS:

OVE FINISHED FLOOR

GHEST OPERABLE BUTTON.

POWER WIRED THOUGH GAS MONITOR RELAY.

POWER WIRED THOUGH GAS MONITOR RELAY.

AND PREPARE TEST REPORTS.

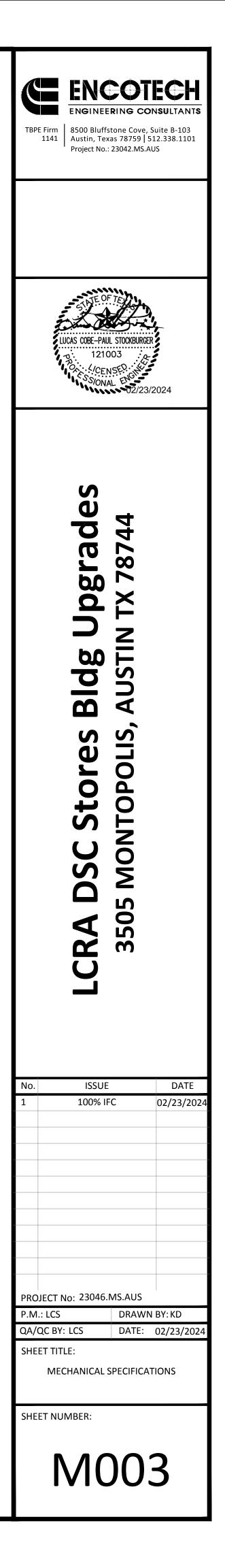
1PONENTS, EQUIPMENT INSTALLATION, AND COMPLIANCE WITH REQUIREMENTS. ND SAFETIES.

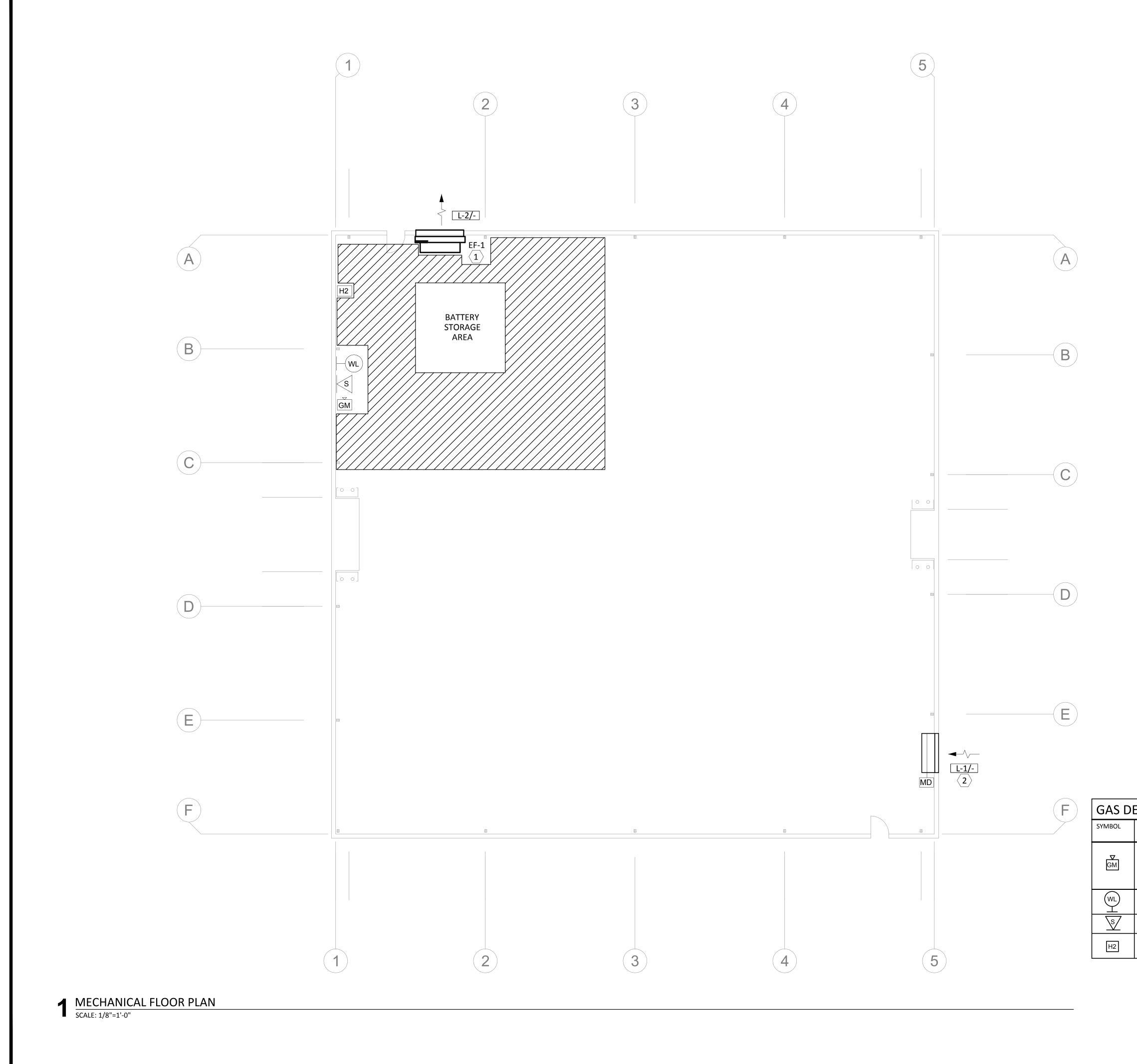
TTEN REPORT TO RECORD THE FOLLOWING:

T COMPLY WITH REQUIREMENTS AND N TO ACHIEVE COMPLIANCE WITH

E PERSONNEL TO ADJUST, OPERATE, AND AND CONTROL DEVICES. RATION AND MAINTENANCE MANUALS AND & USE BY OWNER IN OPERATING, MAINTAINING,

NG UNITS AND RETEST AS SPECIFIED ABOVE.



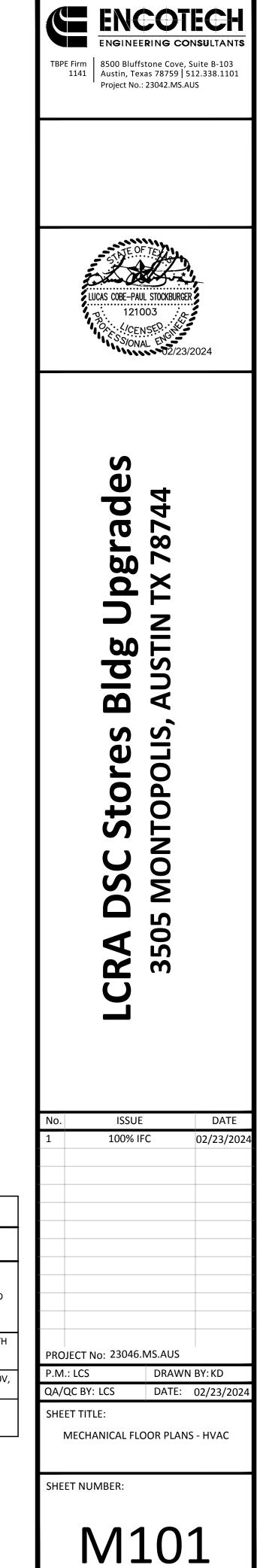


GENERAL SHEET NOTES

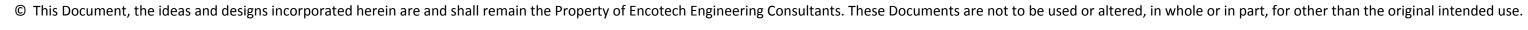
- A. PROTECT ALL MECHANICAL EQUIPMENT FROM DAMAGE, DUST, AND DEBRIS PRIOR TO AND DURING CONSTRUCTION.
 B. MAINTAIN A MINIMUM OF 10'-0" BETWEEN ALL MECHANICAL AIR INTAKES AND ANY EXHAUST TERMINATIONS OR PLUMBING VENT.
 C. CONTRACTOR SHALL COORDINATE TO PROVIDE A MINIMUM 2'-0" CLEARANCE AROUND ANY NEW PENETRATIONS WHERE REQUIRED FOR THE PROJECT. IF CONFLICT WITH THIS REQUIREMENT ARISES, CONTRACTOR IS RESPONSIBLE FOR NOTIFYING A/E.

KEYNOTE LEGEND

- 1 PROVIDE PROPELLER EXHAUST FAN BOLTED TO LOUVER. INSTALL AS HIGH AS POSSIBLE,
- BUT BELOW STRUCTURE. 2 MOUNT LOUVER CENTERED IN WALL 12" AFF TO BOTTOM OF LOUVER.



TECTION SYSTEM SYMBOLS LEGEND								
MANUFACTURER/ MODEL	MOUNTING HEIGHT	DESCRIPTION						
ARMSTRONG AMC-A1	4'-0" AFF	DUAL CHANNEL GAS DETECTION MONITOR WITH HIGH AND LOW ALARM. LED STATUS LIGHTS FOR LOW, HIGH, AND FAIL ALARM STATE. PROVIDE RELAYS TO, SIREN, STROBE LIGHT AND EF-1. INSTALL PER MANUFACTUER RECOMMENDATIONS.						
FEDERAL SIGNAL CORPORATION ELECTRAFLASH 141ST	10'-0"AFF	STROBE TYPE WARNING LIGHT. 0.1A, 120V, 1PH. PROVIDE WITH MOUNTING KIT. BLUE LENS COLOR.						
FEDERAL SIGNAL CORPORATION GENERAL ALARM MODEL A	10'-0" AFF	GENERAL INDUSTRIAL ELECTRO-MECHANICAL SIREN. 1.8A, 120V, 1PH. RATED AT 108dB AT 10'.						
AMC-360	28'-0" AFF	MOUNT HIGH, 2' FROM STRUCTURE. 24VAC LEL DETECTOR.						



	FAN SCHEDULE															
		 	AIRFLOW			FAN/	FAN/MOTOR DATA			ELECTRICAL DATA			OPERATING			
MARK	AREAS SERVED	TYPE	LOW/HIGH (CFM)	DRIVE TYPE	INTERLOCK	ESP (IN)	внр	RPM	VOLTS	PHASE	ΗZ	FLA	WEIGHT (LBS)	MFGR	MODEL	NOTES
EF-1	WAREHOUSE	SIDEWALL	250/750	DIRECT	GAS DETECTION	0.2	0.07	1025	208	1	60	2.1	60	GREENHECK	AER-20-02-0305-VG	1,2,3
REQUIREMENTS (REQUIREMENTS (APPLIES TO ALL ITEMS):															
			~T													

A. INSTALL WITH MANUFACTURE PROVIDED DISCONNECT.

B. FURNISH AND INSTALL VIBRATION ISOLATION.

C. INSTALL WITH MANUFACTURE PROVIDE WALL HOUSING. D. FAN SHALL BE SPECIFIED TO BE EXPLOSION PROOF AND SPARK PROOF.

NOTES: 1. FURNISH WITH ADJUSTABLE EC MOTOR (DIRECT DRIVE ONLY)

2. PROVIDE WITH VARI-GREEN TWO SPEED CONTROL MODULE (OR APPROVED EQUAL).

3. PROVIDE WITH MANUFACTURE WALL CO/HR AND MOUNTING FLANGES FOR INSTALLATION.

	LOUVER SCHEDULE												
MARK	SERVICE	NOMINAL SIZE (IN)	MINIMUM FREE AREA (SF)	AIRFLOW (CFM)	MAX. AIR VELOCITY (FPM)	MAX. PRESSURE DROP (IN H2O)	MFGR	MODEL					
L-1	INTAKE	22X28	1.6	750	480	0.04	GREENHECK	EHH-401					
L-2	EXHAUST	32X20	1.5	750	488	0.04	GREENHECK	EHH-401					
REQUIREMENTS (A	REQUIREMENTS (APPLIES TO ALL ITEMS):												

A. COORDINATE EXACT LOCATION AND MOUNTING OF LOUVER WITH PREFABRICATED BUILDING ELEVATION.

B. COORDINATE FRAME TYPE WITH WALL CONSTRUCTION.

C. PROVIDE TRANSITION AS REQUIRED TO CONNECT DUCT TO LOUVERS. D. PROVIDE MOTORIZED BACKDRAFT DAMPER AND 1/4" GALVANIZED BIRDSCREEN.

EXHAUST FANS EF-1 SEQUENCE OF OPERATION

SYSTEM DESCRIPTION CONSTANT VOLUME EXHAUST FAN.

- A. DETECTION LEVEL 1: SUSTAINED LEVEL 1 LEVELS DETECTED PER SENSOR SETTING. ILLUMINATE YELLOW LIGHT ON GAS DETECTION SYSTEM PANEL. CLOSE RELAY TO ENERGIZE PURGE EXHAUST SYSTEM. REFER TO MECHANICAL PLAN SEQUENCE OF OPERATION.
- B. DETECTION LEVEL 2: ILLUMINATE RED LIGHT ON GAS DETECTION SYSTEM. SOUND ALARM HORNS AND CYCLE BLUE STROBE LIGHTS. VENTILATION SYSTEM SHALL CONTINUE TO OPERATE TO PURGE AIR FROM ROOM. REFER TO MECHANICAL PLAN SEQUENCE OF OPERATION. PROVIDE MANUAL RESET FOR THIS DETECTION LEVEL.
- C. SENSOR FAULT/TROUBLE: ILLUMINATE TROUBLE LIGHT UPON FAULT DETECTION.

EXHAUST FAN CONTROL - EF-1

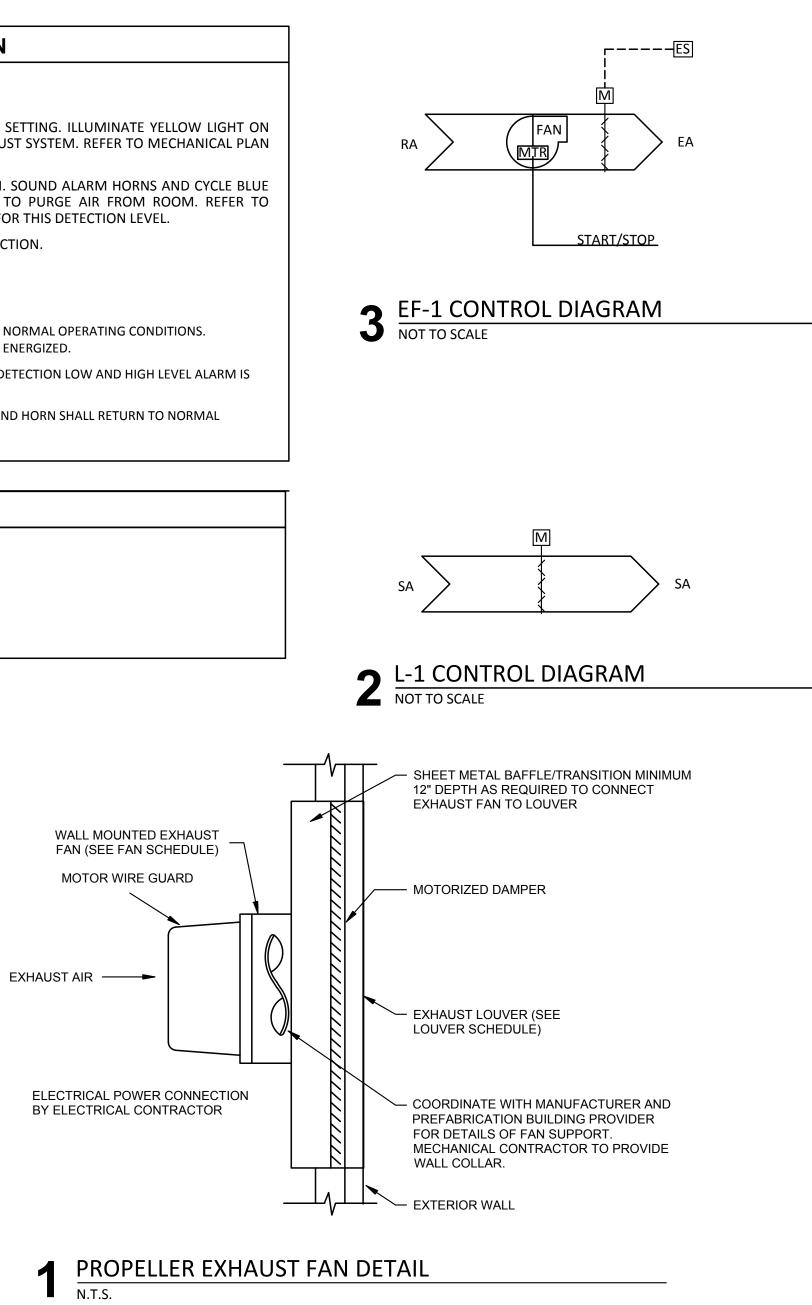
- FAN MOTOR ON/OFF CONTROL: 1. THE EXHAUST FAN SHALL RUN CONTINUOUSLY AT 250 CFM "LOW" SPEED DURING NORMAL OPERATING CONDITIONS. INTAKE LOUVER DAMPER SHALL REMAIN FULLY OPEN WHILE EXHAUST FAN EF-1 IS ENERGIZED.
- 2. FAN SHALL ENTER PURGE MODE AND RUN AT 750 CFM "HIGH" SPEED WHEN GAS DETECTION LOW AND HIGH LEVEL ALARM IS TRIGGERED AS A RESULT OF DETECTION OF HYDROGEN (H2) GAS.
- 3. WHEN H2 LEVELS RETURN TO NORMAL CONDITIONS THE EXHAUST FAN, STROBE AND HORN SHALL RETURN TO NORMAL OPERATING CONDITIONS.

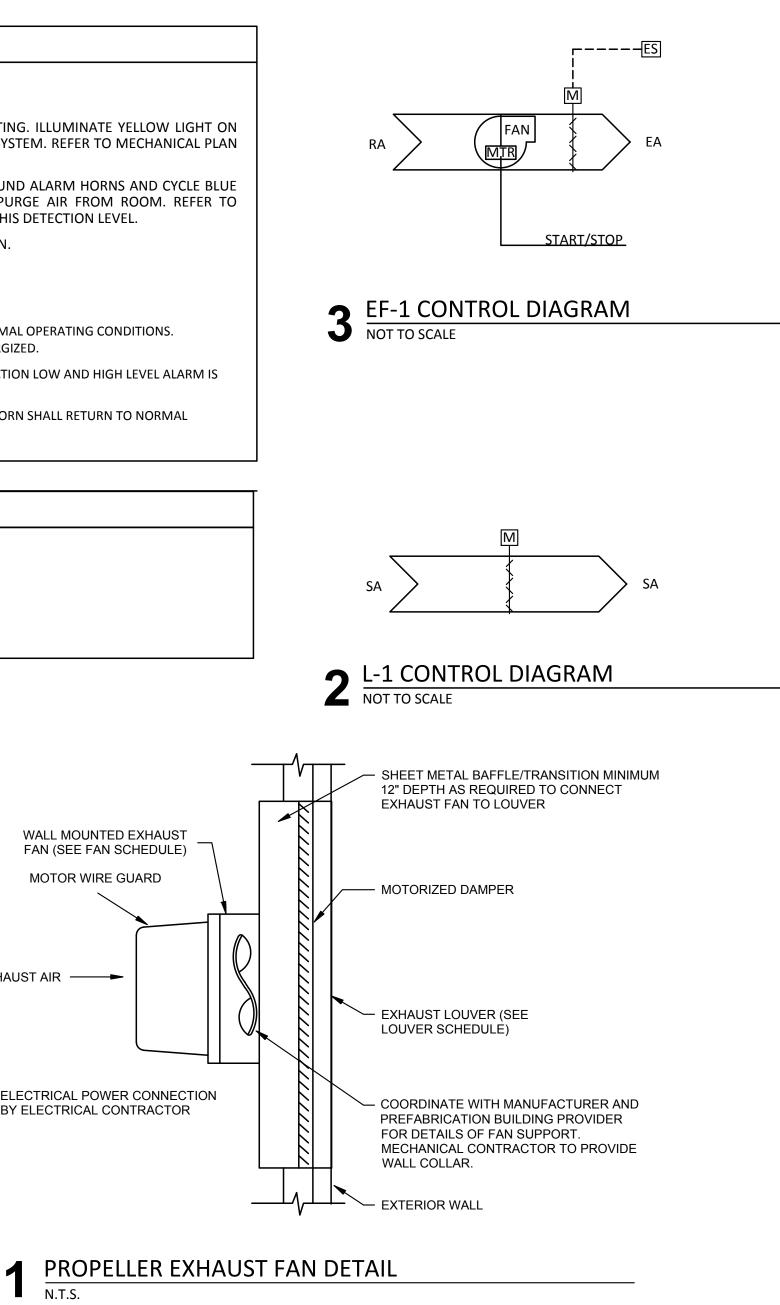
INTAKE LOUVER L-1 SEQUENCE OF OPERATION

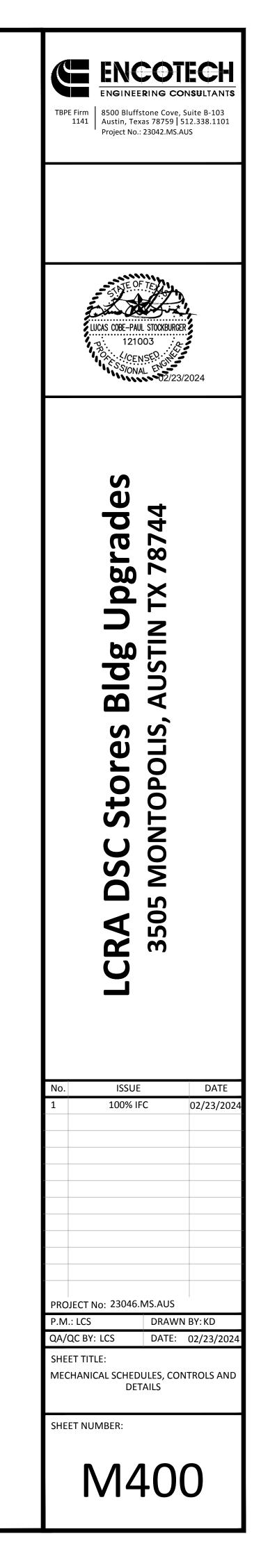
SYSTEM DESCRIPTION

LOUVER SHALL POSITION IN THE FULLY OPEN AT ALL TIMES WHILE EXHAUST FAN IS ENERGIZED.

LOUVER SHALL CLOSE WHEN EXHAUST FAN DEENERGIZES.







A ABV	AMPERE ABOVE	KO kVA	KNOCK OUT KILOVOLT-AMPS	
AC AFF	AIR CONDITIONING ABOVE FINISHED FLOOR	KW	KILOWATTS	
	ABOVE FINISHED FLOOR ABOVE FINISHED GRADE	IB(S)		
	AIR HANDLER UNIT	LB(S) LC	POUND(S) LIGHTING CONTRACTOR	
λΗĴ	AUTHORITY HAVING JURISDICTION	LCP	LIGHTING CONTROL PANEL	
	ALUMINUM	LF	LINEAR FOOT / LINEAR FEET	
		LFMC	LIQUIDTIGHT FLEXIBLE METAL CON	NDUIT
APPROX ARCH('L)	APPROXIMATE(LY) ARCHITECT(URAL)	MAU	MAKE-UP AIR UNIT	
ATS	AUTOMATIC TRANSFER SWITCH	MAX	MAXIMUM	
		MCA	MINIMUM CIRCUIT AMPACITY	
BLW BLDG	BELOW BUILDING	MCB	MAIN CIRCUIT BREAKER	
LDG	BOILDING	MCC MD	MOTOR CONTROL CENTER MOTORIZED DAMPER	
2	CONDUIT	MECH	MECHANICAL	
СВ	CIRCUIT BREAKER	MEZZ	MEZZANINE	
CD CKT	CONDENSATE DRAIN CIRCUIT	MFR	MANUFACTURE(R)	
L .	CENTERLINE	MH MICRO	MANHOLE MICROWAVE	
CLG	CEILING / COOLING	MIN	MINIMUM	
M	CONSTRUCTION MANAGER	MISC	MISCELLANEOUS	
CMU CONC	CONCRETE MASONRY UNIT CONCRETE	MLO MOCP	MAIN LUG ONLY MAXIMUM OVERCURRENT PROTE	
CONST	CONSTRUCTION	MULT	MULTIPLE	chon
CONT	CONTINUOUS / CONTINUATION			
CORR	CORRIDOR	N1, N3R	NEMA RATING (E.G., NEMA 1, NEM	/IA 3R)
CR TT	CARD READER	N/A		
CT CTR	CURRENT TRANSFORMER / COOLING TOWER COUNTER	NEC NIC	NATIONAL ELECTRICAL CODE NOT IN CONTRACT	
CU	COPPER / CONDENSING UNIT	NL	NIGHT LIGHT	
		NO, #	NUMBER	
DBL		NOM	NOMINAL	
DEMO DEPT	DEMOLISH / DEMOLITION DEPARTMENT	NTS	NOT TO SCALE	
DET	DETAIL	OAU	OUTSIDE AIR UNIT	
DIA	DIAMETER	OAD	OUTSIDE AIR DAMPER	
MIC		Р	POLE	
DISC DIV	DISCONNECT DIVISION	P PART	POLE PARTIAL	
DN	DOWN	PC	PHOTOCELL	
DS	DUCTLESS SPLIT UNIT	PH, Ø	PHASE	
DSD	DUCT SMOKE DETECTOR	PLBG	PLUMBING	
DWG(S)	DRAWINGS	PNL PP	PANEL POWER POLE	
E)	EXISTING	PTAC	PACKAGED TERMINAL AIR CONDIT	IONER
EA	EACH	PVC	POLYVINYL CHLORIDE	
C	ELECTRICAL CONTRACTOR			
F	EXHAUST FAN	QTY	QUANTITY	
LEC LEV	ELECTRICAL ELEVATOR	R, RAD	RADIUS	
	EMERGENCY	REC	RECESSED	
MT	ELECTRICAL METALLIC TUBING	RECEPT	RECEPTACLE	
NGR	ENGINEER	REF	REFRIGERATOR / REFER TO / REFE	RENCE
EQ EQUIP	EQUAL EQUIPMENT	REQ('D) RGS	REQUIRE(D) RIGID GALVANIZED STEEL	
R	EXISTING TO BE RELOCATED	RLA	RUNNING LOAD AMPS	
RV	ENERGY RECOVERY VENTILATOR	RM	ROOM	
TC	ETCETERA	RPM	REVOLUTIONS PER MINUTE	
TR WC	EXISTING TO REMAIN ELECTRIC WATER COOLER	RTU	ROOFTOP UNIT	
XIST	EXISTING	SCH	SCHEDULE(D)	
XT	EXTERIOR / EXTERNAL	SD	SMOKE DAMPER	
		SDE	SERVICE DISTRIBUTION ENCLOSUR	RE
A ACP	FIRE ALARM FIRE ALARM CONTROL PANEL	SECT SF	SECTION SQUARE FEET / SQUARE FOOT / SL	
ACP	FIRE ALARM ANNUNCIATOR PANEL	SMC	STRUCTURED MEDIA CENTER	
°C	FLUID COOLER	SPD	SURGE PROTECTIVE DEVICE	
CU	FAN COIL UNIT	SPEC(S)	SPECIFICATION(S)	
IN('D)	FINISH(ED)	SPR SQ	SPRINKLER	
IXT F	FIXTURE FINISHED FLOOR		SQUARE SQUARE FOOT / SQUARE FEET	
LA	FULL LOAD AMPS	SQ FT SS, SST	STAINLESS STEEL	
LR	FLOOR	STL	STEEL	
MC	FLEXIBLE METAL CONDUIT	SW		
P PB	FIRE PROOFING / FIRE PROTECTION FAN POWERED BOX	SWBD	SWITCHBOARD	
R	FIRE RATED	ТС	TIMECLOCK	
SD	FIRE/SMOKE DAMPER	TEL	TELEPHONE	
Т	FOOT / FEET		TELEPHONE / DATA COMBO	
à	GROUND	TEMP THRU	TEMPERATURE / TEMPORARY THROUGH	
5 GA	GAUGE	TMB	TELEPHONE MOUNTING BOARD	
GALV	GALVANIZED	TS	TAMPER SWITCH	
SC STC	GENERAL CONTRACTOR	TV TV	TELEVISION	
GEC GEN	GROUNDING ELECTRICAL CONDUCTOR GENERATOR	ΤΧ ΤΥΡ	TEXAS TYPICAL	
GF, GFCI	GROUND FAULT CIRCUIT INTERRUPTER	I I F		
GFU	GAS FURNACE UNIT	UG	UNDERGROUND	
SND	GROUND	UH		
GRC GRS	GALVANIZED RIGID CONDUIT GALVANIZED RIGID STEEL	UL UNO	UNDERWRITERS LABORATORIES, II UNLESS NOTED OTHERWISE	NC.
JKS JS	GALVANIZED RIGID STEEL GALVANIZED STEEL	UNO UPS	UNINTERRUPTIBLE POWER SUPPLY	(
SSHP	GROUND SOURCE HEAT PUMP	UTIL	UTILITY / UTILITIES	
GYP	GYPSUM BOARD	.,		
IP	HEAT PUMP / HORSEPOWER	V VA	VOLTAGE / VOLTS VOLT-AMPS	
1P ITR	HEAT PUMP / HORSEPOWER HEATER	VA VAV	VOLT-AMPS VARIABLE AIR VOLUME	1
IVAC	HEATING, VENTILATION & AIR CONDITIONING	VFD	VARIABLE FREQUENCY DRIVE	1
łZ	HERTZ	VRF	VARIABLE REFRIGERANT FLOW	
G	ISOLATED GROUND	VTAC	VERTICAL TERMINAL AC	#12 AV
G N	INCH / INCHES	W/	WITH	
NFO	INFORMATION	W/O	WITHOUT	#10 AV
NSUL	INSULATION	WH	WATER HEATER	#8 AW
	INTERIOR	WP	WEATHERPROOF	#6 AW
NT		WR WSHP	WEATHER RESISTANT WATER SOURCE HEAT PUMP	#4 AV
NT B, J-BOX	JUNCTION BOX	WT	WEIGHT	
	JUNCTION BOX KILOAMPERE INTERRUPTING CAPACITY KITCHEN EXHAUST FAN			(VERIF

APPLICABLE CODES
2021 IBC
2023 NEC
2021 IECC
2012 TAS
2015 IFC
LOCAL CODES AND ORDINANCES

VOLTAGE DROP TABLE

(20A CIRCUITS ONLY)

120V, 1Ø

0 - 50 FT.

51 - 90 FT.

91 - 140 FT.

141 - 225 FT.

226 - 300 FT.

208V, 1Ø

0 - 90 FT.

91 - 150 FT.

151 - 250 FT.

251 - 390 FT.

391 - 630 FT.

SIZE, PER N.E.C.)

INIMUM VOLTAGE DROP AND CONDUIT

SYMBOL	DESCRIPTION	SYMBOL	RE NOT NECESSARILY USED. DESCRIPTION	1	THESE DRAWING NOTES ACCO
	1X4 LINEAR FIXTURE W/ DESIGNATION		PANELBOARD OR LOAD CENTER - SURFACE MOUNT,	1.	(PROJECT MANUAL).
A	2X2 LINEAR FIXTURE W/ DESIGNATION		RECESSED MOUNT TRANSFORMER	2.	EXISTENCE AND LOCATION OF EXISTING WAS TAKEN FROM E IN FIELD PRIOR TO ANY PRICING
A	2X4 LINEAR FIXTURE W/ DESIGNATION		DISCONNECT SWITCHES - NON-FUSED, FUSED. FUSE	3.	COORDINATE LOCATION AND
	EMERGENCY LIGHT FIXTURE (HALF-SHADED FOR ANY		SIZES NOTED ON DRAWINGS WITH "AF".	Δ	DRAWINGS, REFLECTED CEILING
	FIXTURE)		MAGNETIC MOTOR STARTER	4.	VERIFY DIMENSIONS AND WC CONTRACTOR CERTIFIES FAMI
	LINEAR 6" OR SLOT FIXTURE W/ DESIGNATION		COMBINATION STARTER AND DISCONNECT VARIABLE FREQUENCY DRIVE (VFD), COMBINATION	_	WORK; FAILURE TO DO SO WIL
	LINEAR STRIP FIXTURE W/ DESIGNATION		VFD AND DISCONNECT	5.	ALL MATERIAL SHALL BE NEW FACILITY.
A	RECESSED DOWNLIGHT FIXTURE W/ DESIGNATION	\bigcirc	MOTOR	6.	WIRE TERMINATION PROVISI OTHER ELECTRICAL APPARATU
A 	SURFACE DOWNLIGHT FIXTURE W/ DESIGNATION		PUSHBUTTON - SINGLE, MUSHROOM HEAD		MANUFACTURER'S INSTRUCTI
A	PENDANT FIXTURE W/ DESIGNATION WALL WASH FIXTURE W/ DESIGNATION, DIRECTION		METER - PLAN VIEW, ONE-LINE DIAGRAM	7.	FURNISH ALL MATERIAL, LAR ELECTRICAL SYSTEM CONSIST USED, IT SHALL MEAN, "FURN
	INDICATED BY TRIANGLE WALL MOUNT LINEAR FLUORESCENT FIXTURE W/		METER BANK	8.	INSTALLATIONS FOUND NOT (
	DESIGNATION		UNISTRUT RACK	q	COMPLY AT NO ADDITIONAL C ELECTRICAL CONTRACTOR S
♀ А	WALL MOUNT FIXTURE W/ DESIGNATION		LIGHTING CONTROLS	5.	PROTECTION OF WORK, THE LOSS.
\sum	SPOTLIGHT	\bigcirc \lor	OCCUPANCY SENSOR, VACANCY SENSOR - CEILING MOUNTED	10.	FIELD-COORDINATE LOCATIO
8 P	CEILING W/ FACE INDICATED; WALL W/ FACE, EMERGENCY HEADS, AND DIRECTIONAL ARROWS (INSTALL FACES AND ARROWS AS INDICATED)	0 H VH	OCCUPANCY SENSOR, VACANCY SENSOR - MOUNTED HIGH ON WALL		EQUIPMENT FROM OTHER T TRADES AND GENERAL CON OTHERS PRIOR TO ROUGH-IN AFFECTING THIS TRADE.
	EMERGENCY BATTERY FIXTURE	PC	PHOTOELECTRIC CELL	11.	ALL WIRING SHALL BE IN CO ALUMINUM CONDUCTORS W
	CEILING FAN POLE LIGHT (ARM MOUNT, POST-TOP MOUNT)	LC TC	LIGHTING CONTACTOR TIMECLOCK	12.	FEEDER CONDUCTORS, BRAN
	BOLLARD FIXTURE		LIGHTING CONTROL PANEL	12	NOTED OTHERWISE. WIRING DEVICES THAT OCCL
Φ	SINGLE 20A RECEPTACLE AT 18" UNLESS NOTED	DZ	DAYLIGHT ZONE SENSOR		NOTED OTHERWISE.
ф	20A DUPLEX RECEPTACLE AT 18" UNLESS NOTED	\$	LIGHT SWITCH AT 48" UNLESS NOTED		ELECTRICAL DISTRIBUTION EC
•	20A GFI DUPLEX RECEPTACLE AT 18" UNLESS NOTED	D	DIMMER SWITCH AT 48" UNLESS NOTED		EACH PHASE AS BALANCED AS
⊕	DOUBLE 20A DUPLEX RECEPTACLE AT 18" UNLESS	\$	LOW-VOLTAGE SMART LIGHT SWITCH AT 48" UNLESS	16.	ELECTRICAL CONTRACTOR S SUBMISSION REQUIREMENTS
ď.	NOTED 20A DUPLEX RECEPTACLE 6" ABOVE COUNTER UNLESS		NOTED		REQUIREMENTS, ADJUSTMEN OF SERVICE PERSONNEL, SOU
	NOTED 20A DUPLEX RECEPTACLE SPECIAL MOUNT (FLOOR,			17.	BEFORE BEGINNING EXCAVA
	CEILING)	3	3-WAY SWITCH		SHALL THEN PROCEED WITH ARE TO REMAIN BE DAMAGE
⊕ ^{IG}	20A ISOLATED GROUND RECEPTACLE	4	4-WAY SWITCH SINGLE POLE CEILING FAN & LIGHT SWITCH WITH	18.	EACH AND EVERY LINE ENCOU
● WP	20A RECEPTACLE WITH WEATHERPROOF "EXTRA DUTY" COVER AND WEATHER-RESISTANT GFCI RECEPTACLE	F	3-SPEED FAN CONTROL TO ALLOW CONTROL OF FAN INDEPENDENT OF LIGHT KIT		COMPANIES TO ENSURE MINI
مور	COMBINATION DUAL USB WITH DUPLEX RECEPTACLE	К	KEY-OPERATED SWITCH	19.	FOR EACH EQUIPMENT CON JUNCTION BOX REQUIRED TO
	SPECIAL RECEPTACLE (RATING NOTED)	М	MOTOR-RATED SWITCH	20.	NO SINGLE CONDUIT SHALL OTHERWISE AND PROPERLY D
VV	COMBINATION TELEPHONE/DATA (TELE-DATA) OUTLET (18" ON WALL, 6" ABOVE COUNTER)	0	OCCUPANCY SENSOR SWITCH	21.	WHERE FIXTURES CONTAININ TIMECLOCK/LIGHTING CONT LIGHTS SHOWN ON A SWITCH
\mathbf{V}	COMBINATION TELEPHONE/DATA (TELE-DATA) OUTLET SPECIAL MOUNT (FLOOR, CLG)	Р	SWITCH WITH PILOT LIGHT	22.	LIGHT SWITCHES SHOWN IN WALL SWITCHES SHOWN IN
\checkmark	TELEPHONE OUTLET, DATA OUTLET	R	RED EMERGENCY BRANCH SWITCH		OCCUPANCY SENSOR CONTRO
φ	TELEVISION CABLE CONNECTION AT 58" A.F.F. UNLESS OTHERWISE NOTED.	т	TIMER SWITCH	23.	LAMPS THAT HAVE BEEN US ENDS, SHALL BE REPLACED B
CR _V FOB	LOW-VOLTAGE OR DATA OUTLET INTENDED FOR SPECIFIC PURPOSE (CARD READER, FOB SECURITY DEVICE SHOWN)	v	VACANCY SENSOR SWITCH (AUTO OFF, MANUAL ON)	24.	BE NEW AT TIME OF FINAL IN DOCUMENTS CERTIFYING TH CRITERIA OF IECC SECTION C4
J D	J-BOX (CEILING/WALL, FLOOR)	а	LOWER CASE LETTER AT FIXTURES AND SWITCHES (a, b, ETC.) INDICATES SWITCHING CONTROL.	25.	DATE OF RECEIPT OF THE CER REVIEW ARCHITECTURAL, STR
	SECURITY CAMERA		FIRE ALARM SYSTEM		BID. INSTALL ALL MATERIALS IN
<u> </u>	SPEAKER - CEILING MOUNTED, WALL MOUNTED	FACP	FIRE ALARM CONTROL PANEL		DEVIATIONS SHALL BE BROUG
	WIFI OUTLET - CEILING MOUNTED	FAAP	FIRE ALARM ANNUNCIATOR PANEL		PROTECT ALL SIMPLEX RECEP PROTECT ALL RECEPTACLES
	CONDUIT RUN EXPOSED OR CONCEALED	F	MANUAL PULL STATION DOUBLE ACTION		ACCESSIBLE" (PER THE NEC) V
	CONDUIT RUN BELOW FLOOR OR GRADE	ă ă	GENERAL ALARM COMBINATION HORN/STROBE (AUDIO/VISUAL) (WALL, CLG)	29.	VERIFY EXACT LOCATIONS (SYSTEMS PRIOR TO TRENCH
	ITEM TO BE REMOVED		FIRE ALARM STROBE (VISUAL DEVICE) (WALL, CLG)		SERVICE FEEDERS (CONDUI PATCHING, CONCRETE/PAVIN
· · · · ·	SWITCHLEG	2	SMOKE/IONIZATION DETECTOR		MATCH EXISTING. CONTRACT REQUIREMENTS.
· · · · · · · · · · · · · · · · · · ·	MECHANICAL EQUIPMENT MOUNTED ABOVE CEILING CIRCUIT HOMERUN, #12, THWN/THHN & QTY AS	() ()	HEAT DETECTOR DUCT DETECTOR	30.	FOR EACH TELEPHONE, DATA BOX AND 3/4" CONDUIT (UN ACCESSIBLE CEILING. FOR CO
Allica	REQ'D, W/ GND, 3/4"C., UNLESS NOTED CIRCUIT HOMERUN CONTAINING 3 HOTS, NEUTRAL,		COMBINATION SMOKE / CARBON MONOXIDE		NOTED OTHERWISE). TERMIN SHALL BE ENCLOSED IN COND
	GROUND, AND ISOLATED GROUND	? C	DETECTOR	31.	FIELD LOCATE FIXTURES IN LIGHTING OR EQUIPMENT AC
		B	BEAM DETECTOR	32.	SEE PLUMBING AND MECHAI
	CONDUIT OR CIRCUIT BREAK/CONTINUATION (DIAGRAMMATIC ONLY)	FS	SPRINKLER SYSTEM FLOW SWITCH	33	ELECTRICAL LOAD REQUIREM
- 0	GROUND	TS	SPRINKLER SYSTEM TAMPER SWITCH	55.	CONSTRUCTION POWER.

NOTE NOT ALL ABBREVIATIONS AND SYMBOLS ON THIS SHEET ARE APPLICABLE TO THIS PROJECT.

RICAL GENERAL NOTES

HESE DRAWING NOTES ACCOMPANY THE PUBLISHED CONSTRUCTION DOCUMENT SPECIFICATION BOOK PROJECT MANUAL).

XISTENCE AND LOCATION OF DEVICES, FIXTURES, EQUIPMENT, CIRCUITING, ETC. THAT ARE SHOWN TO BE XISTING WAS TAKEN FROM EXISTING DRAWINGS AND/OR VISUAL INSPECTION AND SHOULD BE VERIFIED N FIELD PRIOR TO ANY PRICING OR WORK.

COORDINATE LOCATION AND MOUNTING HEIGHT OF ALL LIGHTING FIXTURES WITH ARCHITECTURAL RAWINGS, REFLECTED CEILING PLANS, AND ELEVATIONS.

LECTRICAL CONTRACTOR SHALL VISIT SITE AND SHALL BECOME FAMILIAR WITH SITE CONDITIONS AND VERIFY DIMENSIONS AND WORK TO BE INSTALLED PRIOR TO SUBMITTING A BID: BY SUBMITTING A BID, CONTRACTOR CERTIFIES FAMILIARITY WITH EXISTING JOBSITE CONDITIONS PRIOR TO COMMENCEMENT OF VORK; FAILURE TO DO SO WILL NOT BE CAUSE FOR EXTRA WORK COMPENSATION.

ALL MATERIAL SHALL BE NEW AND SHALL BE LISTED OR LABELED BY U.L. OR OTHER RECOGNIZED TESTING

/IRE TERMINATION PROVISIONS FOR PANELBOARDS, CIRCUIT BREAKERS, SAFETY SWITCHES, AND ALL THER ELECTRICAL APPARATUS SHALL BE LISTED AS SUITABLE FOR AT LEAST 75°C. (CU/AL) OR AS NOTED IN ANUFACTURER'S INSTRUCTIONS, WHICHEVER IS GREATER.

URNISH ALL MATERIAL, LABOR, EQUIPMENT AND PERMITS TO PROVIDE A COMPLETE, OPERATIONAL LECTRICAL SYSTEM CONSISTENT WITH THE INTENT OF THE DRAWINGS. WHERE THE WORD "PROVIDE" IS ISED, IT SHALL MEAN, "FURNISH AND INSTALL COMPLETE AND READY FOR USE".

NSTALLATIONS FOUND NOT COMPLYING WITH SPECIFIED WORKMANSHIP PRACTICES SHALL BE REVISED TO COMPLY AT NO ADDITIONAL COST TO THE OWNER.

LECTRICAL CONTRACTOR SHALL PERFORM WORK IN A SAFE MANNER AND MAINTAIN ADEQUATE ROTECTION OF WORK, THE OWNER'S PROPERTY AND ALL PERSONS ON SITE FROM INJURY, DAMAGE OR

IELD-COORDINATE LOCATION OF PANELS. CONDUITS AND DEVICES WITH STRUCTURAL MEMBERS AND QUIPMENT FROM OTHER TRADES. CAREFULLY COORDINATE INSTALLATION SCHEDULES WITH OTHER RADES AND GENERAL CONTRACTOR. VERIFY EXACT LOCATION OF EQUIPMENT TO BE FURNISHED BY THERS PRIOR TO ROUGH-IN. COORDINATE LOCATION AND INSTALLATION OF OWNER-FURNISHED ITEMS FFECTING THIS TRADE.

LL WIRING SHALL BE IN CONDUIT. ALL WIRING SHALL BE #12 AWG MINIMUM COPPER CONDUCTORS. LUMINUM CONDUCTORS WILL NOT BE ALLOWED.

EEDER CONDUCTORS, BRANCH WIRING, PANEL BUSS AND GROUND BUSS SHALL BE COPPER, UNLESS IOTED OTHERWISE.

/IRING DEVICES THAT OCCUR TOGETHER SHALL BE GANGED UNDER A COMMON WALL PLATE, UNLESS IOTED OTHERWISE.

LECTRICAL DISTRIBUTION EQUIPMENT SHALL BE GENERAL ELECTRIC, EATON, SQUARE D OR SIEMENS.

LECTRICAL CONTRACTOR SHALL ASSIGN CIRCUITS IN FIELD ON ALL PANELBOARDS TO MAKE LOADS ON ACH PHASE AS BALANCED AS POSSIBLE.

LECTRICAL CONTRACTOR SHALL ASSEMBLE AND PROVIDE TO THE OWNER AS PART OF CLOSE-OUT UBMISSION REQUIREMENTS, ORGANIZED BINDER WITH TECHNICAL DATA, CUT SHEETS, MAINTENANCE EQUIREMENTS, ADJUSTMENT PROCEDURES, TEST REPORTS, APPROVALS, WARRANTIES, PHONE NUMBERS SERVICE PERSONNEL, SOURCES OF REPLACEMENT PARTS AND OTHER PERTINENT INFORMATION.

EFORE BEGINNING EXCAVATIONS OR DEMOLITION OF ANY NATURE WHATSOEVER, CONTRACTOR SHALL OCATE ALL SERVICES AND UTILITIES OCCURRING WITHIN THE BOUNDS OF THE PROJECT. THE CONTRACTOR HALL THEN PROCEED WITH CAUTION IN THEIR WORK SO THAT NO UTILITY OR LINE SERVING AREAS THAT RE TO REMAIN BE DAMAGED WITH A RESULTANT LOSS OF SERVICE. VERIFY THE SOURCE AND SERVICE OF ACH AND EVERY LINE ENCOUNTERED AND RECORD SERVICE, SIZE AND LOCATION ON RECORD DRAWINGS.

COORDINATE EACH AND EVERY INTERRUPTION OF SERVICES AND UTILITIES WITH THE OWNER AND UTILITY COMPANIES TO ENSURE MINIMUM SHUT-DOWN TIMES ARE ACCEPTABLE.

OR EACH EQUIPMENT CONNECTION SHOWN, PROVIDE THE DEVICE, OUTLET, DISCONNECT SWITCH, OR JNCTION BOX REQUIRED TO CONNECT THE EQUIPMENT.

O SINGLE CONDUIT SHALL CONTAIN MORE THAN 6 CURRENT CARRYING CONDUCTORS, UNLESS NOTED THERWISE AND PROPERLY DERATED.

/HERE FIXTURES CONTAINING BATTERY PACKS ARE SWITCHED (BY TOGGLE SWITCH, OCCUPANCY SENSOR, IMECLOCK/LIGHTING CONTROL PANEL, ETC.), SUPPLY TO BATTERY PACKS SHALL BE UNSWITCHED. EXIT GHTS SHOWN ON A SWITCHED CIRCUIT SHALL BE POWERED BY AN UNSWITCHED LINE ON THAT CIRCUIT.

GHT SWITCHES SHOWN IN ROOM CONTROL ALL LIGHTS IN THAT ROOM UNLESS NOTED OTHERWISE. VALL SWITCHES SHOWN IN ROOMS WITH CEILING OCCUPANCY SENSOR SWITCHES SHALL OVERRIDE CCUPANCY SENSOR CONTROL.

AMPS THAT HAVE BEEN USED FOR MORE THAN 1/3 OF THEIR RATED LIFE OR THAT HAVE BLACKENED NDS, SHALL BE REPLACED BY NEW LAMPS JUST BEFORE FINAL INSPECTION. INCANDESCENT LAMPS SHALL NEW AT TIME OF FINAL INSPECTION.

OCUMENTS CERTIFYING THAT THE INSTALLED LIGHTING CONTROLS MEET DOCUMENTED PERFORMANCE RITERIA OF IECC SECTION C405 SHALL BE PROVIDED TO THE BUILDING OWNER WITHIN 90 DAYS FROM THE ATE OF RECEIPT OF THE CERTIFICATE OF OCCUPANCY PER IECC C408.3.2.

EVIEW ARCHITECTURAL, STRUCTURAL, CIVIL, MECHANICAL, PLUMBING, AND OTHER DRAWINGS PRIOR TO

NSTALL ALL MATERIALS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. ANY EVIATIONS SHALL BE BROUGHT TO THE ARCHITECT/ENGINEER'S ATTENTION PRIOR TO INSTALLATION.

ROTECT ALL SIMPLEX RECEPTACLES SHOWN TO BE GFCI-PROTECTED WITH GFCI-TYPE CIRCUIT BREAKERS. ROTECT ALL RECEPTACLES SHOWN AS GFCI-PROTECTED IN LOCATIONS THAT ARE NOT "READILY CCESSIBLE" (PER THE NEC) WITH GFCI-TYPE CIRCUIT BREAKERS IN LIEU OF GFCI-TYPE RECEPTACLE.

(ERIFY EXACT LOCATIONS OF EXISTING AND NEW UNDERGROUND UTILITIES, PIPING, AND RACEWAY YSTEMS PRIOR TO TRENCHING. PROVIDE NECESSARY TRENCHING, BACKFILL, EXCAVATION, SUPPORTS, ERVICE FEEDERS (CONDUIT AND/OR WIRE), PULLBOXES, TRANSFORMER PADS, SAWCUTTING AND ATCHING, CONCRETE/PAVING, ETC. REQUIRED. BACKFILL TRENCHES TO 90% COMPACTION AND PATCH TO ATCH EXISTING. CONTRACTOR SHALL OBTAIN AND VERIFY EXACT UTILITY COMPANY DRAWINGS AND EQUIREMENTS.

OR EACH TELEPHONE, DATA, SYSTEMS CLOCK, FIRE ALARM DEVICE, AND T.V. OUTLET, PROVIDE OUTLET OX AND 3/4" CONDUIT (UNLESS NOTED OTHERWISE) WITH PULL STRING ROUTED UP IN WALL TO ABOVE CCESSIBLE CEILING. FOR COMBINATION DEVICES (I.E. TELEPHONE/DATA) PROVIDE 1" CONDUIT (UNLESS IOTED OTHERWISE). TERMINATE WITH PLASTIC BUSHING. ALL EXPOSED CABLES, REGARDLESS OF HEIGHT, HALL BE ENCLOSED IN CONDUIT.

ELD LOCATE FIXTURES IN MECHANICAL/ELECTRICAL ROOMS SO EQUIPMENT DOES NOT OBSTRUCT GHTING OR EQUIPMENT ACCESS. COORDINATE WITH MECHANICAL AND OTHER TRADES AS NEEDED. EE PLUMBING AND MECHANICAL DRAWINGS FOR ALL DIVISION 22 AND 23 EQUIPMENT LOCATIONS AND

LECTRICAL CONTRACTOR TO PROVIDE MEANS (REQUEST AND INSTALLATION OF) TEMPORARY CONSTRUCTION POWER.

TBPE Firm 114		CONSULTANTS ve, Suite B-103 9 512.338.1101
×	SHARON S. BICKF 77390 STONAL ENGLISH	ORD 2-23-24
	LCRA DSC Stores Bldg Upgrades 3505 MONTOPOLIS, AUSTIN TX 78744	
No.	ISSUE	DATE
1	100% IFC	02/23/2024
	r No: 23046.MS.AU	
P.M.: LC QA/QC E	BY: SB DAT	WN BY: WU E: 02/23/2024
SHEET T EL	ITLE: ECTRICAL GENERAL	NOTES
SHEET N	IUMBER:	
	E00	0

DIVISION 26 - ELECTRICAL

DIVISION 26 - ELECTRICAL	C. DO NOT EXCAVATE NEAR WALLS, COLUMNS, STRUCTURAL SUPPORTS, OR PITS WITHOUT APPROVAL BY STRUCTURAL ENGINEER AND ARCHITECT.	PART 2 - GENERAL ELECTRICAL REQUIREMENTS 2.1 REGULATORY REQUIREMENTS FOR ELECTRICAL	H. GROUNDING INS (i) THE METH
PART 1 - GENERAL REQUIREMENTS	D. ANY MATERIAL EXCAVATED THAT IS NOT USED FOR BACKFILLING MUST BE REMOVED FROM THE SITE BY THE CONTRACTOR AT CONTRACTOR'S EXPENSE. UNUSED	A. CODES AND ORDINANCES: PERFORM ALL WORK IN ACCORDANCE WITH THE NATIONAL	SHALL BE STALL BE STALL BE STALL BE STALL BE STALL BE STALL STAL
1.1 SCOPE	EXCAVATED MATERIAL REMOVED FROM SITE IS THE RESPONSIBILITY OF CONTRACTOR	ELECTRICAL CODE (NEC), LATEST ADOPTED LOCAL CODES, AND ALL CURRENT SUPPLEMENTS THERETO.	WITH GREI
A. THE WORK HEREIN CONSISTS OF THE CONTRACTOR PROVIDING LABOR, MATERIALS, PRODUCTS, AND PERFORMING ALL OPERATIONS REQUIRED FOR THE COMPLETE	AND MUST BE DISPOSED OF IN A MANNER ACCEPTABLE TO THE ARCHITECT. 1.6 SERVICEABILITY	B. INCLUDE TEMPORARY ELECTRICAL POWER AND LIGHTING TO SATISFY OCCUPATIONAL	BE INSTALL (ii) RUN A GR
OPERATING INSTALLATION OF ALL SYSTEMS IN ACCORDANCE WITH SPECIFICATIONS, APPLICABLE DRAWINGS, TERMS, CONDITIONS OF THE CONTRACT, AND ALL	A. FURNISH ALL PRODUCTS TO PROVIDE THE PROPER ORIENTATION OF SERVICEABLE	SAFETY AND HEALTH ACT (OSHA) REQUIREMENTS. 2.2 COORDINATION OF ELECTRICAL WORK	(II) KON A GR
APPLICABLE CODES AND ORDINANCES GOVERNING THE INSTALLATION OF THE	COMPONENTS TO ACCESS SPACE PROVIDED.	A. THE WIRING LAYOUTS ARE SCHEMATIC AND ARE NOT NECESSARILY INTENDED TO	(iii) EQUIPMEN SUBFEEDEF
VARIOUS SYSTEMS HEREIN. ALL WORK SHALL BE FULLY CORRELATED WITH THE WORK OF OTHER CRAFTS.	B. REPLACE OR RELOCATE ALL PRODUCTS INCORRECTLY ORDERED OR INSTALLED TO PROVIDE PROPER SERVICEABILITY.	SHOW THE EXACT LOCATION OF RACEWAYS, OUTLETS, ETC. THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL PLANS AND DETAILS FOR DIMENSIONS AND SHALL	(iv) GROUND (
B. DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY, EACH TO THE OTHER; WHAT	C. ACCESS PANELS/DOORS:	REFER TO THE ARCHITECTURAL PLANS AND DETAILS OF BUILDING CONSTRUCTION.	SPLICES TH THROUGH
IS SHOWN ON ONE IS AS BINDING AS IF CALLED FOR IN BOTH. C. SHOULD THE DRAWINGS DISAGREE IN THEMSELVES, OR WITH THE SPECIFICATIONS,	 AT A MINIMUM, PROVIDE ACCESS PANELS WHERE REQUIRED BY CODE AND FOR MAINTENANCE OR SERVICE. 	B. INCLUDE POWER FOR ANY EQUIPMENT AS SHOWN ON THE DRAWINGS.	CONDUIT A
THE BETTER QUALITY OR GREATER QUANTITY OF WORK OR MATERIALS SHALL BE USED.	(ii) FOR EACH ROOM, CONTRACTOR SHALL COORDINATE ALL ACCESS PANEL	2.3 ELECTRICAL RECORD AS-BUILT DRAWINGS A. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR MARKING UP A CLEAR SET OF	CONDUIT S SHALL BE T
D. INTENT: THE DRAWINGS ARE DIAGRAMMATIC AND SHOW GENERAL ARRANGEMENTS	LOCATIONS TO MINIMIZE THE NUMBER OF ACCESS PANELS. COORDINATE ALL ACCESS PANELS WITH ARCHITECT. ARCHITECT SHALL APPROVE TYPE, SIZE,	AS-BUILT ELECTRICAL DRAWINGS AS THE WORK PROGRESSES TO SHOW THE DEVIATIONS FROM THE SEALED CONSTRUCTION ELECTRICAL DRAWINGS.	SO AS TO E
AND THE EXTENT OF THE WORK. THE DRAWINGS DO NOT SHOW, IN MINUTE DETAIL, ALL FEATURES OF THE INSTALLATION. FOLLOW THE DRAWINGS AS CLOSELY AS	COLOR, AND LOCATION PRIOR TO INSTALLATION.	B. CONTRACTOR SHALL KEEP THE MARKED-UP AS-BUILT DRAWINGS ON SITE UNTIL	(v) ASSURE EI BONDING J
ACTUAL CONSTRUCTION WILL PERMIT. ALL MATERIAL AND LABOR NECESSARY TO	(iii) UNLESS OTHERWISE NOTED, ACCESS PANELS SHALL BE FLANGED STAINLESS STEEL CONSTRUCTION, WITH CONTINUOUS HINGE AND WITH QUARTER TURN	COMPLETION OF THE PROJECT.	(vi) AN INSULA
COMPLETE THE WORK IN ACCORDANCE WITH THE INTENT OF THE SPECIFICATIONS AND DRAWINGS SHALL BE FURNISHED BY THE CONTRACTOR WITHOUT ADDITIONAL	SCREW LOCK, INSTALLED FLUSH WITH ADJACENT SURFACES AND PAINTED TO MATCH, SIZED AND LOCATED FOR EASY ACCESS TO AND REPLACEMENT OF	C. GENERAL CONTRACTOR SHALL TURN OVER A DIGITAL COPY AND PHYSICAL COPY OF THE RECORD AS-BUILT DRAWINGS TO THE OWNER UPON COMPLETION OF THE	TUBING. (vii) THE GROU
CHARGE. THE JOB SHALL BE BID AND INSTALLED COMPLETE AND CONSISTENT IN EVERY REQUEST.	EQUIPMENT, AND NOT LESS THAN 24" X 24".	PROJECT.	(5) OHMS.
E. EACH CONTRACTOR SHALL STUDY THE CONTRACT DOCUMENTS TO DETERMINE THE	1.7 BASIC METHODS	PART 3 - BASIC ELECTRICAL MATERIALS AND METHODS	I. INSTALL WIRE M BOXES, OUTLET
EXTENT OF WORK PROVIDED UNDER THIS CONTRACT, AS WELL AS TO ASCERTAIN THE DIFFICULTY TO BE ENCOUNTERED IN PERFORMING THE WORK ON THE DRAWINGS	A. ALL WORK SHALL BE EXECUTED IN A WORKMANLIKE MANNER AND SHALL PRESENT A NEAT AND ORGANIZED APPEARANCE WHEN COMPLETED. PERFORM ALL WORK WITH	3.1 REGULATORY REQUIREMENTS	(i) USE BRANG
AND OUTLINED HEREINAFTER, AND IN MAKING CONNECTIONS TO EXISTING UTILITIES, INSTALLING NEW EQUIPMENT AND SYSTEMS AND COORDINATING THE WORK WITH	HIGHEST REGARD TO SAFETY. B. ALL EQUIPMENT AND MATERIALS FURNISHED AND INSTALLED BY CONTRACTOR SHALL	A. CONFORM TO REQUIREMENTS OF ANSI / NFPA 70.	CIRCUITS. (ii) USE CON
THE OTHER TRADES.	BE NEW, MANUFACTURED, FREE FROM DEFECTS, OF THE QUALITY SPECIFIED, AND	 B. FURNISH PRODUCTS LISTED BY UL. 3.2 COORDINATION 	INTERCON
F. EXAMINATION OF SITE: THE CONTRACTOR SHALL THOROUGHLY EXAMINE SITE AND SATISFY THEMSELVES AS TO THE CONDITIONS UNDER WHICH THE WORK IS TO BE	CERTIFIED TO COMPLY WITH THE PLANS AND SPECIFICATIONS. MANUFACTURERS SHALL BE AS SPECIFIED HEREIN, OR BY ADDENDA.	A. OBTAIN AND REVIEW SHOP DRAWINGS, PRODUCT DATA, AND MANUFACTURER'S	
PERFORMED. THE CONTRACTOR SHALL VERIFY, AT THE SITE, ALL MEASUREMENTS AFFECTING THEIR WORK AND SHALL BE RESPONSIBLE FOR THE CORRECTNESS OF	C. UNLESS OTHERWISE INDICATED, ALL EQUIPMENT AND MATERIALS SHALL BE	INSTRUCTIONS FOR EQUIPMENT FURNISHED UNDER OTHER SECTIONS TO DETERMINE CONNECTION LOCATIONS AND REQUIREMENTS.	PART 5 - RACEWAYS 5.1 PRODUCT REQUIREME
SAME. NO EXTRA COMPENSATION WILL BE ALLOWED TO THE CONTRACTOR FOR	COMMERCIAL GRADE. ALL MATERIALS SHALL HAVE THE UL LABEL. D. ALL WORK SHALL BE COMPLETED TO PROVIDE A COMPLETE AND OPERABLE SYSTEM	B. SEQUENCE ROUGH-IN OF ELECTRICAL CONNECTIONS TO COORDINATE WITH	A. ALL WIRING SHA
EXPENSES DUE TO THEIR NEGLECT TO EXAMINE OR FAILURE TO DISCOVER CONDITIONS WHICH AFFECT THEIR WORK. NO EXTRA COMPENSATION WILL BE	THAT IS TIDY IN APPEARANCE, EFFICIENT IN DESIGN, AND QUIET IN DESIGN.	INSTALLATION AND START-UP OF EQUIPMENT FURNISHED UNDER OTHER SECTIONS.	B. NO "ROMEX" OR
ALLOWED ON ACCOUNT OF DIFFERENCES BETWEEN ACTUAL DIMENSIONS AND THOSE INDICATED ON THE DRAWINGS.	UNCHARACTERISTIC EQUIPMENT RATTLING, SQUEALING, SQUEAKING, OR NOISE GENERATION BY EQUIPMENT IS NOT ACCEPTABLE.	PART 4 - GROUNDING	C. USE ONLY SPECIF (i) ABOVE GR
G. SHOULD ANY DISCREPANCIES OCCUR WITHIN THE CONTRACT DOCUMENTS DURING	E. CONTRACTOR SHALL STORE AND PROTECT ALL EQUIPMENT BEING RELOCATED.	4.1 GENERAL	METALLIC
THE BIDDING PHASE, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER OF SUCH DISCREPANCIES FOR CLARIFICATION PRIOR TO PROCEEDING WITH THE WORK.	CONTRACTOR SHALL REPLACE ALL DAMAGED EQUIPMENT AT CONTRACTOR'S EXPENSE.	A. THE ELECTRICAL SERVICE NEUTRAL, THE IDENTIFIED NEUTRAL OF THE INTERIOR WIRING SYSTEM AND ALL INTERIOR RACEWAYS AND EQUIPMENT SHALL BE	PERMITTEL a. WET
CLARIFICATIONS ISSUED AFTER THE CONTRACT IS AWARDED ARE TO BE	F. UPON DELIVERY TO SITE, ALL EQUIPMENT AND MATERIAL MUST BE STORED AND PROTECTED FROM DAMAGE. STORAGE SHALL PROTECT EQUIPMENT AND MATERIALS	GROUNDED TO THE GROUND BUS IN THE SERVICE DISCONNECTING MEANS. THE SERVICE DISCONNECTING MEANS SHALL BE GROUNDED TO A MINIMUM OF ONE (1)	זודדוק
INCORPORATED BY THE CONTRACTOR AT NO ADDITIONAL COSTS. H. SHOULD THE CONTRACTOR FIND, AT ANY TIME, DURING THE PROGRESS OF THE	FROM DAMAGE DUE TO DIRT, WATER, SUN, DEBRIS, PHYSICAL DAMAGE, VANDALISM,	GROUNDING ELECTRODE AND ALL AVAILABLE GROUNDING ELECTRODES SHALL BE	b. LOCA
WORK, THAT IN THEIR JUDGEMENT, EXISTING CONDITIONS MAKE DESIRABLE A	AND ANY OTHER DAMAGE. ANY EQUIPMENT DAMAGED DURING CONSTRUCTION SHALL BE REPLACED AT CONTRACTOR'S EXPENSE.	BONDED TOGETHER. CONTRACTOR SHALL VERIFY THE GROUNDING PATH IS CONTINUOUS AND UNINTERRUPTED BY DIELECTRIC DEVICES AND ANY OTHER DEVICE	c. HAZA d. DRY
MODIFICATION IN REQUIREMENTS COVERING ANY PARTICULAR ITEM OR ITEMS, THEY SHALL REPORT SUCH ITEMS PROMPTLY TO THE PROJECT MANAGER FOR	G. DURING CONSTRUCTION, CONTRACTOR SHALL KEEP SITE CLEAN OF DEBRIS. PRIOR TO	CAPABLE OF INTERFERING WITH THE GROUNDING PATH.	SUBJ
COORDINATION.	COMPLETION OF WORK, ALL CONSTRUCTION WASTE MATERIALS SHALL BE REMOVED FROM THE SITE.	B. THE NEUTRAL POINTS OF ALL SECONDARY WINDINGS OF THE TRANSFORMERS SHALL BE GROUNDED TO THE NEAREST POINT ALLOWED BY THE NEC AND THE LOCAL	e. POOL CONE
 THE COMPLETION OF WORK SHALL BE AS DESCRIBED IN BOTH THE DRAWINGS, SPECIFICATIONS, ADDENDUMS, AND ALL OTHER APPLICABLE CONTRACT DOCUMENTS. 	H. ANY EXISTING PROPERTY THAT WAS DAMAGED AS A RESULT OF WORK PERFORMED	ELECTRIC UTILITY COMPANY REQUIREMENTS.	f. DRY I
J. CONTRACTOR SHALL PROVIDE THE REQUIRED NUMBER OF SKILLED WORKERS,	SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE DAMAGED PROPERTY'S OWNER AND AHJ.	C. METAL RACEWAYS, METAL ENCLOSURES OF ELECTRICAL DEVICES, LIGHTING FIXTURES, MOTOR FRAMES, PANELS, CABLE SUPPORTS, TRANSFORMER NEUTRALS, ETC. AND	NOT S (ii) UNDERGRO
TRAINED, AND EXPERIENCED IN THEIR TRADE AND WHO ARE FAMILIAR WITH THE SPECIFICATIONS AND MEANS AND METHODS FOR PERFORMING THE WORK AS	I. ALL MISCELLANEOUS STEEL REQUIRED TO ENSURE PROPER INSTALLATION AND AS SHOWN ON DETAILS FOR EQUIPMENT AND COMPONENTS IN THIS PACKAGE SHALL BE	NON-CURRENT CARRYING METALLIC PARTS OF ALL EQUIPMENT SHALL BE SECURELY GROUNDED THROUGH THE EQUIPMENT GROUNDING CONDUCTOR.	AND RIGID
SHOWN ON THE PLANS AND SPECIFICATIONS. K. ITEMS NOT SPECIFICALLY SHOWN ON PLANS OR SPECIFICATIONS WHICH ARE	FURNISHED AND INSTALLED BY THIS CONTRACTOR.	4.2 GROUNDING MATERIALS	NOTED OTH a. INSTA
ESSENTIAL FOR THE PROPER INSTALLATION AND OPERATION OF THE NEW SYSTEMS	J. FOR ALL EQUIPMENT, PROVIDE IDENTIFICATION TAGS MADE OF EMBOSSED ACRYLIC WITH MINIMUM 1" HIGH LETTERING. TAGS SHALL MATCH THE TAGS/MARKS	A. GROUND ROD: COPPER 3/4" DIAMETER X 10' LENGTH (UNLESS NOTED OTHERWISE).	b. INSTA
ARE INCLUDED IN THE SCOPE OF WORK AND SHALL BE PROVIDED BY THE CONTRACTORS AT NO ADDITIONAL COSTS TO THE OWNER.	INDICATED ON THE DRAWINGS AND SCHEDULE AND LETTERING SHALL BE OF	B. MECHANICAL CONNECTORS: BRONZE. 4.3 GROUNDING INSTALLATION	CONE
1.2 REGULATORY REQUIREMENTS	CONTRASTING COLOR TO TAG (E.G., BLACK AND WHITE, ETC). K. INSTALL ALL EQUIPMENT, MATERIALS, ETC IN ACCORDANCE WITH MANUFACTURER'S	A. INSTALL PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.	c. INSTA d. INSLA
A. CODES AND ORDINANCES: PERFORM ALL WORK IN ACCORDANCE WITH ALL STATE AND LOCAL CODES AND ORDINANCES, INCLUDING THE AMERICANS WITH DISABILITIES	RECOMMENDATIONS AND INSTRUCTIONS.	B. INSTALL GROUND ELECTRODES AT LOCATIONS AS PER LOCAL ELECTRIC UTILITY	e. EXPO
ACT (ADA) (LATEST EDITION), THE CURRENT EDITION OF THE NATIONAL FIRE	L. INSTALL HANGERS, SUPPORTS, CLAMPS, AND ATTACHMENTS AS PER INDUSTRY STANDARDS TO PROPERLY SUPPORT ALL COMPONENTS. SECURELY FASTEN ALL WORK	COMPANY REQUIREMENTS AND PER NEC. INSTALL ADDITIONAL ROD ELECTRODES AS REQUIRED TO MEET REGULATORY REQUIREMENTS.	RAIN ⁻ f. PROV
PROTECTION ASSOCIATION (NFPA), UNDERWRITERS LABORATORIES, INC. (UL), OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), AMERICAN NATIONAL	DIRECTLY TO THE STRUCTURE TO PREVENT A HAZARD TO HUMAN LIFE AND LIMB, AND	C. PROVIDE GROUNDING ELECTRODE CONDUCTOR AND CONNECT TO REINFORCING	SWEE
STANDARDS INSTITUTE (ANSI), AMERICAN STANDARD OF TESTING MATERIALS (ASTM), THE LATEST ADOPTED BUILDING CODE AND ALL CURRENT SUPPLEMENTS THERETO,	TO PREVENT DAMAGE TO PRODUCTS OF CONSTRUCTION UNDER ALL CONDITIONS OF OPERATION.	STEEL IN FOUNDATION FOOTING. D. PROVIDE BONDING TO MEET REGULATORY REQUIREMENTS.	(iii) USE FLEXIB
AND ANY OTHER AUTHORITIES HAVING JURISDICTION (AHJ) OVER THE WORK.	M. EQUIPMENT SUPPORTS SHALL BE WELDED, SHOP OR FIELD-FABRICATED EQUIPMENT	E. MAKE ELECTRICAL CONNECTIONS TO UTILIZATION EQUIPMENT IN ACCORDANCE WITH	a. RECES b. MOTO
B. PERMITS AND FEES: PROCURE AND PAY FOR ALL PERMITS, LICENSES, FEES AND CHARGES, AND GIVE ALL NOTICES NECESSARY, AND OBTAIN FINAL INSPECTION AND	SUPPORT MADE FROM STRUCTURAL CARBON-STEEL SHAPES. N. CUT MATERIALS ACCURATELY FROM MEASUREMENTS TAKEN ON THE JOB SITE.	EQUIPMENT MANUFACTURER'S INSTRUCTIONS. (i) VERIFY THAT WIRING AND OUTLET ROUGH-IN WORK IS COMPLETE AND THAT	c. TRAN
APPROVAL FROM THE INSPECTION DEPARTMENT HAVING JURISDICTION.	O. DO NOT SPRING OR BEND MATERIALS OR COMPONENTS TO FIT CONDITIONS OR MAKE	UTILIZATION EQUIPMENT IS READY FOR ELECTRICAL CONNECTION, WIRING, AND	d. AT BL
C. IN CASE OF CONFLICT BETWEEN THE CONTRACT DOCUMENTS AND REQUIREMENTS OF ANY CODE OR AHJ, THE MOST STRINGENT REQUIREMENTS OF THE AFOREMENTIONED	UP JOINTS. 1.8 SUBMITTALS	ENERGIZATION. (ii) MAKE WIRING CONNECTIONS IN CONTROL PANEL OR IN WIRING	e. AT W
SHALL GOVERN.	A. SUBMITTALS SHALL BE COMPLETE FOR SYSTEM(S) INVOLVED. PROVIDE SUBMITTALS	COMPARTMENT OF PRE-WIRED EQUIPMENT. PROVIDE INTERCONNECTING	(iv) ALL CONDU D. SIZE RACEWAYS
D. SHOULD THE CONTRACTOR PERFORM ANY WORK THAT DOES NOT COMPLY WITH THE REQUIREMENTS OF THE APPLICABLE BUILDING CODES, STATE LAWS, LOCAL	FOR ALL EQUIPMENT, MATERIALS, SUPPORTS, AND APPURTENANCES.	WIRING WHERE INDICATED ON DRAWINGS OR BY MANUFACTURER. (iii) INSTALL AND CONNECT DISCONNECT SWITCHES, CONTROLLERS, CONTROL	(i) MINIMUM
ORDINANCES, AND INDUSTRY STANDARDS, CONTRACTOR SHALL BEAR ALL COSTS ARISING IN CORRECTING THE DEFICIENCIES, AS APPROVED BY THE ARCHITECT.	B. PROVIDE PRODUCT DATA FOR MANUFACTURED EQUIPMENT FOR REVIEW. INCLUDE CATALOG PERFORMANCE RATINGS, CONSTRUCTION, PHYSICAL DIMENSIONS AND	STATIONS, AND CONTROL DEVICES AS INDICATED.	(ii) MINIMUM
1.3 COORDINATION OF WORK	CLEARANCE REQUIREMENTS. C. IF A SUBSTITUTE IS SUBMITTED FOR APPROVAL, CONTRACTOR MUST PROVIDE	(iv) MAKE CONDUIT CONNECTIONS TO EQUIPMENT USING FLEXIBLE CONDUIT. USE LIQUID-TIGHT FLEXIBLE CONDUIT IN DAMP OR WET LOCATIONS.	
A. EACH CONTRACTOR SHALL COMPARE THEIR RESPECTIVE DRAWINGS AND	IDENTIFICATION OF IMPACT OF THE CHANGE UPON OTHER DISCIPLINES. THE BURDEN	(v) INSTALL PRE-FABRICATED CORD SET WHERE CONNECTION WITH ATTACHMENT	5.2 CONDUITS AND FITTIN A. CONDUITS
SPECIFICATIONS WITH THOSE OF OTHER TRADES. ALL WORK SHALL BE INSTALLED IN COOPERATION WITH OTHER TRADES INSTALLING INTERRELATED WORK. BEFORE	OF PROOF THAT THE PROPOSED SOLUTION WILL BE AN EQUIVALENT SOLUTION IS UPON THE CONTRACTOR. THE SUBSTITUTION MUST BE APPROVED BY OWNER AND	PLUG IS INDICATED OR SPECIFIED, OR USE ATTACHMENT PLUG WITH SUITABLE STRAIN-RELIEF CLAMPS.	(i) METAL COI
INSTALLATION, ALL TRADES SHALL MAKE PROPER PROVISIONS TO AVOID INTERFERENCES (THIS MAY REQUIRE THE DEVELOPMENT OF MULTI-TRADE	ENGINEER BEFORE THE SUBSTITUTION MAY BE MADE.	(vi) PROVIDE SUITABLE STRAIN-RELIEF CLAMPS FOR CORD CONNECTIONS TO OUTLET	TRIANGLE, (ii) FLEXIBLE C
COORDINATION DRAWINGS BY THE CONTRACTOR). ALL ITEMS REQUIRING MAINTENANCE OR SERVICE ACCESS MUST BE PROVIDED ADEQUATE SPACE.	D. WHERE EQUIPMENT OF THE ACCEPTABLE MANUFACTURERS REQUIRES DIFFERENT ARRANGEMENT OR CONNECTIONS FROM WHAT IS SCHEDULED, IT SHALL BE THE	BOXES AND EQUIPMENT CONNECTION BOXES. F. INSTALL SUPPORT SYSTEMS SIZED AND FASTENED TO ACCOMMODATE WEIGHT OF	(iii) FLEXIBLE C
B. TIMING OF INSTALLATION SHALL BE COORDINATED ACROSS TRADES TO ALLOW	RESPONSIBILITY OF THE CONTRACTOR TO INSTALL THE EQUIPMENT TO OPERATE PROPERLY AND IN HARMONY WITH THE ORIGINAL INTENT OF THE DRAWINGS AND	EQUIPMENT AND CONDUIT, INCLUDING WIRING, WHICH THEY CARRY.	(iv) PLASTIC CC
PROPER INSTALLATION OF ALL EQUIPMENT AND COMPONENTS ACROSS DISCIPLINES.	SPECIFICATIONS. CONTRACTOR SHALL MAKE ALL NECESSARY CHANGES IN ALL AFFECTED RELATED WORK PROVIDED UNDER OTHER SECTIONS INCLUDING LOCATION	 FASTEN HANGER RODS, CONDUIT CLAMPS, AND OUTLET AND JUNCTION BOXES TO BUILDING STRUCTURE USING BEAM CLAMPS. 	(v) MC TYPE MEETING /
C. CONTRACTOR SHALL COORDINATE THE LOCATION OF THEIR SYSTEMS SO THAT ALL ELECTRICAL COMPONENTS COMPLY WITH LATEST CODE REQUIREMENTS FOR	OF ROUGH-IN CONNECTIONS BY OTHER TRADES, CONDUIT SUPPORTS, INSULATION,	(ii) USE TOGGLE BOLTS OR HOLLOW WALL FASTENERS IN HOLLOW MASONRY,	SYSTEMS, I
CLEARANCES, ETC. D. EXACT ROUTING AND LOCATION OF SYSTEMS SHALL BE DETERMINED PRIOR TO	ETC. ALL CHANGES SHALL BE MADE AT NO INCREASE IN THE CONTRACT AMOUNT OR ADDITIONAL COST TO THE OTHER TRADES AND/OR OWNER.	PLASTER, OR GYPSUM BOARD PARTITIONS AND WALLS; EXPANSION ANCHORS OR PRESET INSERTS IN SOLID MASONRY WALLS; SELF-DRILLING ANCHORS OR	EQUIVALEN B. CONDUIT FITTIN
FABRICATION OR INSTALLATION. LOCATIONS OF ANY AND ALL COMPONENTS AND	1.9 COMPLETION	EXPANSION ANCHOR ON CONCRETE SURFACES; SHEET METAL SCREWS IN SHEET	(i) METAL FIT
EQUIPMENT SHALL BE ADJUSTED IF NEEDED TO ACCOMMODATE THE WORK WITH INTERFERENCES ANTICIPATED AND ENCOUNTERED.	A. UPON COMPLETION OF ALL INSTALLATIONS, CONTRACTOR SHALL DEMONSTRATE TO THE OWNER'S SATISFACTION THAT THE SYSTEMS HAVE BEEN INSTALLED IN A	METAL STUDS; AND WOOD SCREWS IN WOOD CONSTRUCTION. (iii) DO NOT FASTEN SUPPORTS TO PIPING, CEILING SUPPORT WIRES, DUCTWORK,	SHALL NOT (ii) PLASTIC FIT
E. PRIOR TO BID, CONTRACTOR SHALL VERIFY AND COORDINATE ALL REQUIRED	SATISFACTORY MANNER IN ACCORDANCE WITH THE PLANS AND APPLICABLE CODES.	MECHANICAL EQUIPMENT, OR CONDUIT.	(II) PLASTIC FII 5.3 WIREWAY AND AUXILI
CONNECTIONS AND/OR RELOCATIONS OF UTILITIES WITH UTILITY COMPANIES. PERFORM SUCH WORK IN ACCORDANCE WITH UTILITY COMPANY REGULATIONS.	B. UPON COMPLETION OF INSTALLATION OF NEW EQUIPMENT, CONTRACTOR SHALL FACILITATE STARTUP AND TESTING AS PER THE MANUFACTURERS WRITTEN	(iv) DO NOT DRILL STRUCTURAL STEEL MEMBERS.(v) FABRICATE SUPPORTS FROM STRUCTURAL STEEL OR STEEL CHANNEL.	A. WIREWAY: RAIN
CONTRACTOR SHALL PAY ALL APPLICABLE FEES AND COSTS, INCLUDING THOSE FOR ANY EXTENSIONS, RELOCATIONS AND/OR CONNECTIONS.	INSTRUCTIONS AND CHECKLIST.	(v) FABRICATE SUPPORTS FROM STRUCTURAL STEEL OR STEEL CHANNEL. (vi) INSTALL FREE-STANDING ELECTRICAL EQUIPMENT ON CONCRETE PADS.	(i) SIZE: AS PE
F. CONTRACTOR SHALL VERIFY LOCATIONS OF ALL ABOVE GROUND, BELOW GROUND	C. WARRANTEE: UNLESS OTHERWISE RESTRICTED ELSEWHERE IN THE CONTRACT DOCUMENTS, ALL EQUIPMENT AND WORK SHALL BE GUARANTEED FOR A PERIOD OF	(vii) INSTALL SURFACE-MOUNTED CABINETS AND PANELBOARDS WITH MINIMUM OF	(ii) COVER: SCI
AND MARKED UTILITIES.	TWELVE (12) MONTHS FROM SUBSTANTIAL COMPLETION DATE. ANY DEFECTS IN EQUIPMENT OR WORKMANSHIP SHALL BE PROMPTLY REPAIRED OR REPLACED BY THE	FOUR (4) ANCHORS. (viii) PROVIDE STEEL CHANNEL SUPPORTS TO STAND CABINETS 1" OFF WALL IN WET	(iii) FITTINGS: SCREWS.
1.4 CUTTING AND PATCHING A. STRUCTURAL SUPPORTS AND MEMBERS MAY NOT BE CUT OR MODIFIED WITHOUT	CONTRACTOR WITHOUT ADDITIONAL EXPENSE TO THE OWNER. THE GUARANTEE	LOCATIONS.	(iv) FINISH: RU
PRIOR APPROVAL FROM ARCHITECT AND STRUCTURAL ENGINEER.	PERIOD OF ANY PART OF THE REPAIRED ITEM SHALL BE EXTENDED FOR A PERIOD OF TWELVE (12) MONTHS FROM THE DATE OF SUCH REPAIR OR REPLACEMENT.	(ix) BRIDGE STUDS TOP AND BOTTOM WITH CHANNELS TO SUPPORT FLUSH-MOUNTED CABINETS AND PANELBOARDS IN STUD WALLS.	B. BUSSED WIREWA (i) SIZE: AS PE
B. DO NOT CUT OR MODIFY WALLS, FLOORS, CEILINGS, OR SURFACES WITHOUT PRIOR APPROVAL FROM ARCHITECT.	1.10 CLOSE-OUT DOCUMENTS	G. IDENTIFY ELECTRICAL DISTRIBUTION AND CONTROL EQUIPMENT, AND LOADS SERVED,	(i) SIZE. AS PE
C. ALL CUTTING, REPAIRING AND REQUIRED STRUCTURAL REINFORCING FOR	A. ALL CLOSE-OUT DOCUMENTS SHALL BE SUBMITTED BY THE CONTRACTOR TO THE A/E TEAM FOR APPROVAL.	TO MEET REGULATORY REQUIREMENTS AND AS SCHEDULED.	(iii) CONNECTO
INSTALLATION OF THIS WORK SHALL BE DONE IN CONFORMANCE WITH ARCHITECT'S DIRECTIONS AND ANY DAMAGE CAUSED BY CUTTING SHALL BE REPAIRED EQUAL TO	B. ONCE APPROVED BY A/E TEAM, CONTRACTOR SHALL PROVIDE DIGITAL COPY AND	 (i) DEGREASE AND CLEAN SURFACES TO RECEIVE NAMEPLATES AND TAPE LABELS. (ii) SECURE NAMEPLATES TO EQUIPMENT FRONTS WITH EDGES PARALLEL TO 	
ORIGINAL CONDITIONS. UNLESS OTHERWISE NOTED, PATCHING OF WALLS, FLOORS,	PHYSICAL COPY OF THE OPERATION, INSTALLATION AND MAINTENANCE MANUALS TO OWNER.	EQUIPMENT LINES USING SCREWS OR RIVETS FOR INTERIOR EQUIPMENT AND	(v) FINISH: RU 5.4 ELECTRICAL BOXES
CEILING, AND SURFACES SHALL MATCH CONSTRUCTION, MATERIAL, FINISH, AND COLOR OF ADJOINING AREAS.	C. OPERATIONS AND MAINTENANCE (O&M) MANUALS: AFTER SUBSTANTIAL	USING SELF-ADHESIVE NAMEPLATES FOR EXTERIOR OR WET LOCATION EQUIPMENT. SECURE NAMEPLATE TO INSIDE FACE OF RECESSED PANELBOARD	A. BOXES
1.5 EXCAVATION AND BACKFILLING	COMPLETION, CONTRACTOR SHALL SUBMIT TO THE OWNER THE O&M MANUALS FOR ALL EQUIPMENT AND PRODUCTS (DIGITAL COPY AND PHYSICAL COPY).	DOORS IN FINISHED LOCATIONS.	(i) SHEET MET
A. EXCAVATE BY HAND AND WITH CAUTION TO LOCATE ALL UTILITIES IN THE BOUNDS OF THE AREA TO BE EXCAVATED PRIOR TO MACHINE EXCAVATING. PROCEED WITH	D. AS-BUILT DRAWINGS AND A COMPLETE PARTS LIST FOR ALL INSTALLED EQUIPMENT	(iii) USE NAMEPLATES WITH 1/8" LETTERING TO IDENTIFY INDIVIDUAL SWITCHES AND CIRCUIT BREAKERS, WALL SWITCHES, RECEPTACLE CIRCUITS, AND LOADS	B. FLOOR BOXES FC C. HINGED COVER
SAFETY AND CAUTION SO THAT NO UTILITY IS DAMAGED OR INTERRUPTED.	SHALL BE PROVIDED TO OWNER.	SERVED. (iv) USE NAMEDIATES WITH $1/4$ " LETTERS TO IDENTIFY DISTRIBUTION AND CONTROL	MANUFACTUREF
B. TRENCHES SHALL BE SIZED WITH SUFFICIENT WIDTH TO ALLOW SAFE INSTALLATION OF PIPING AND EQUIPMENT. SECURE, BRACE, OR GRADE TRENCHES TO PREVENT		(iv) USE NAMEPLATES WITH 1/4" LETTERS TO IDENTIFY DISTRIBUTION AND CONTROL EQUIPMENT.	HELD CLOSED BY 5.5 EXAMINATION AND PF

SETTLING.

H. GROUNDING INSTALLATION

METHOD OF GROUNDING AND SIZE OF THE GROUNDING CONDUCTORS LL BE SELECTED IN ACCORDANCE WITH THE LATEST PUBLISHED RULES OF NEC AND NFPA 70 ARTICLE 250. AN EQUIPMENT GROUNDING CONDUCTOR H GREEN INSULATION, SIZED IN ACCORDANCE WITH TABLE 250.122, SHALL NSTALLED IN ALL FEEDERS INCLUDING MOTOR FEEDERS.

A GREEN EQUIPMENT GROUND WIRE WITH ALL BRANCH CIRCUIT AND DER CONDUCTORS THROUGHOUT THE BUILDING.

IPMENT GROUNDING LUGS SHALL BE PROVIDED FOR ALL FEEDERS AND FEEDERS AT ALL PULLBOXES AND EQUIPMENT CABINETS.

DUND CABLE SHALL BE CONTINUOUS WHEN POSSIBLE WITHOUT JOINTS OR ICES THROUGHOUT ITS LENGTH. IF BARE GROUND CONDUCTORS ARE RUN ROUGH METALLIC CONDUIT, THEY SHALL BE SECURELY BONDED TO EACH NDUIT AT THE ENTRANCE AND EXIT. ALL CONNECTIONS TO EQUIPMENT FOR NDUIT SHALL BE MADE WITH SOLDERLESS CONNECTORS, AND THE SAME ALL BE THOROUGHLY CLEANED AND BRIGHT BEFORE CONNECTION IS MADE AS TO ENSURE A GOOD METAL CONTACT.

JRE ELECTRICAL CONTINUITY OF METALLIC RACEWAY SYSTEM. PROVIDE DING JUMPERS WHEREVER EXPANSION JOINT OCCURS. NSULATED GREEN GROUND SHALL BE PROVIDED IN ALL FLEXIBLE METALLIC

ING. GROUND RESISTANCE OF THE GROUNDING SYSTEM SHALL NOT EXCEED FIVE DHMS.

WIRE MARKERS ON EACH CONDUCTOR IN PANELBOARD GUTTERS, PULL JTLET AND JUNCTION BOXES, AND AT LOAD CONNECTIONS.

BRANCH CIRCUIT OR FEEDER NUMBER TO IDENTIFY POWER AND LIGHTING CUITS.

CONTROL WIRE NUMBER AS INDICATED ON SCHEMATIC AND RCONNECTION DIAGRAMS TO IDENTIFY CONTROL WIRING.

JIREMENTS

NG SHALL BE IN CONDUIT.

EX" OR ARMORED CABLE WIRING IS PERMITTED.

SPECIFIED RACEWAY IN THE FOLLOWING LOCATIONS:

OVE GROUND: USE RIGID STEEL, METAL CLAD (MC) CABLE, OR ELECTRICAL ALLIC TUBING (EMT). MC CABLE SHALL BE INSTALLED ONLY WHERE MITTED BY CODE AND THE AHJ.

WET LOCATIONS: RIGID STEEL CONDUIT. USE THREADED OR RAINTIGHT FITTINGS FOR METAL CONDUIT.

LOCATIONS SUBJECT TO MECHANICAL DEFORMATION: RIGID STEEL.

HAZARDOUS LOCATIONS: THREADED RIGID STEEL.

DRY INTERIOR LOCATIONS FOR BRANCH CIRCUIT WIRING AND NOT SUBJECT TO MECHANICAL DEFORMATION: EMT OR MC.

POOL EQUIPMENT ROOMS FEEDERS AND BRANCH CIRCUITS: PLASTIC CONDUIT. DRY INTERIOR LOCATIONS FOR OTHER THAN BRANCH CIRCUIT WIRING AND

NOT SUBJECT TO MECHANICAL DEFORMATION: EMT. PERGROUND: USE RIGID STEEL OR PLASTIC CONDUIT WITH RIGID STEEL ELLS

RIGID STEEL CONDUIT/FITTINGS WHEN EMERGING FROM GRADE, UNLESS ED OTHERWISE. INSTALLATIONS WITHIN 5' FROM FOUNDATION WALL: RIGID STEEL.

INSTALLATIONS MORE THAN 5' FROM FOUNDATION WALL: PLASTIC CONDUIT.

INSTALLATIONS IN OR UNDER CONCRETE SLAB: PLASTIC CONDUIT.

IN SLAB ABOVE GRADE: RIGID STEEL OR PLASTIC CONDUIT. EXPOSED OUTDOOR LOCATIONS: RIGID STEEL. USE THREADED OR RAINTIGHT FITTINGS.

PROVIDE ALL UNDERGROUND CONDUIT SIZES 2" AND LARGER WITH LONG SWEEP ELLS (MINIMUM 36" RADIUS).

FLEXIBLE CONDUITS IN THE FOLLOWING APPLICATIONS (MAXIMUM 6'). RECESSED LIGHTING FIXTURES.

MOTOR CONNECTIONS.

TRANSFORMER CONNECTIONS.

AT BUILDING JOINTS.

AT WET LOCATIONS, FLEXIBLE CONDUIT SHALL BE LIQUID-TIGHT TYPE. CONDUIT AND MC CABLE SHALL BE SUPPORTED AS REQUIRED BY THE NEC.

WAYS FOR CONDUCTOR TYPE INSTALLED. IMUM SIZE CONDUIT: 3/4".

IMUM SIZE CONDUIT IN SLABS ABOVE GRADE: 3/4".

IMUM SIZE MC CABLE: 1/2".

FITTINGS

AL CONDUIT AND TUBING: GALVANIZED STEEL, MANUFACTURED BY ALLIED, NGLE, WHEATLAND, PITTSBURG, STEELDUCT, OR APPROVED EQUIVALENT.

(IBLE CONDUIT: STEEL. JID-TIGHT FLEXIBLE CONDUIT: FLEXIBLE CONDUIT WITH PVC JACKET.

TIC CONDUIT AND TUBING: NEMA TC 2; PVC. USE SCHEDULE 40 CONDUIT.

TYPE CABLE: INTERLOCKED STEEL METAL TAPE WITH GROUND WIRE, ETING ANSI / NFPA 70 REQUIREMENTS, MANUFACTURED BY AFC CABLE TEMS, PIRELLI CABLE CORPORATION, SOUTHWIRE COMPANY, OR APPROVED IVALENT. FITTINGS

AL FITTINGS AND CONDUIT BODIES: NEMA FB 1. ALUMINUM FITTINGS LL NOT BE USED.

STIC FITTINGS AND CONDUIT BODIES: NEMA TC 3.

AUXILIARY GUTTERS ': RAINTIGHT TYPE WIREWAY, WITH KNOCKOUTS.

AS PER NEC REQUIREMENTS.

ER: SCREW COVER WITH FULL GASKET.

INGS: LAY-IN TYPE WITH REMOVABLE TOP, BOTTOM, AND SIDE; CAPTIVE EWS.

5H: RUST INHIBITING PRIMER COATING WITH GRAY ENAMEL FINISH. /IREWAY: GENERAL PURPOSE TYPE AUXILIARY GUTTER WITH KNOCKOUTS.

AS PER NEC REQUIREMENTS.

ER: SCREW COVER.

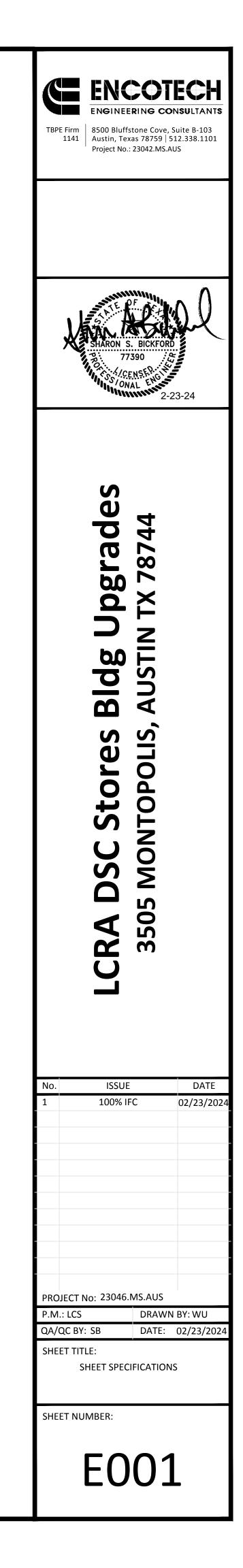
NECTOR: SCREW COVER.

DUCTORS: COPPER BARS SIZED FOR AMPACITY AS REQUIRED.

SH: RUST INHIBITING PRIMER COATING WITH GRAY ENAMEL FINISH.

ET METAL: NEMA OS 1; GALVANIZED STEEL.

B. FLOOR BOXES FOR INSTALLATION IN POURED CONCRETE FLOORS: CAST STEEL.
C. HINGED COVER ENCLOSURES: NEMA 250, TYPE 1, STEEL ENCLOSURE WITH MANUFACTURER'S STANDARD ENAMEL FINISH AND CONTINUOUS HINGE COVER, HELD CLOSED BY FLUSH LATCH OPERABLE BY SCREWDRIVER.
5.5 EXAMINATION AND PREPARATION

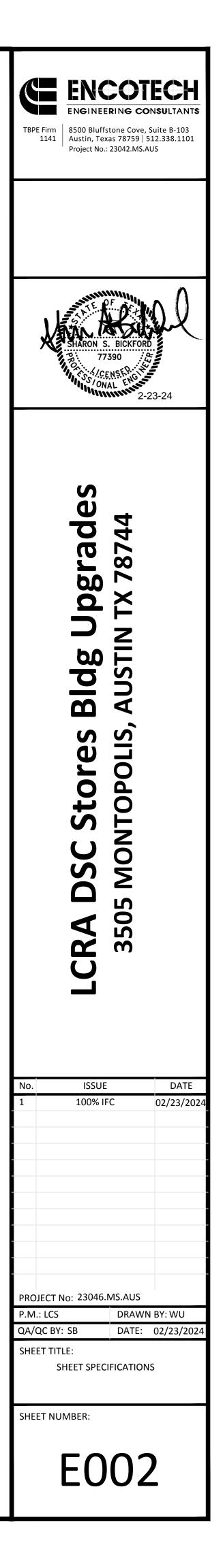


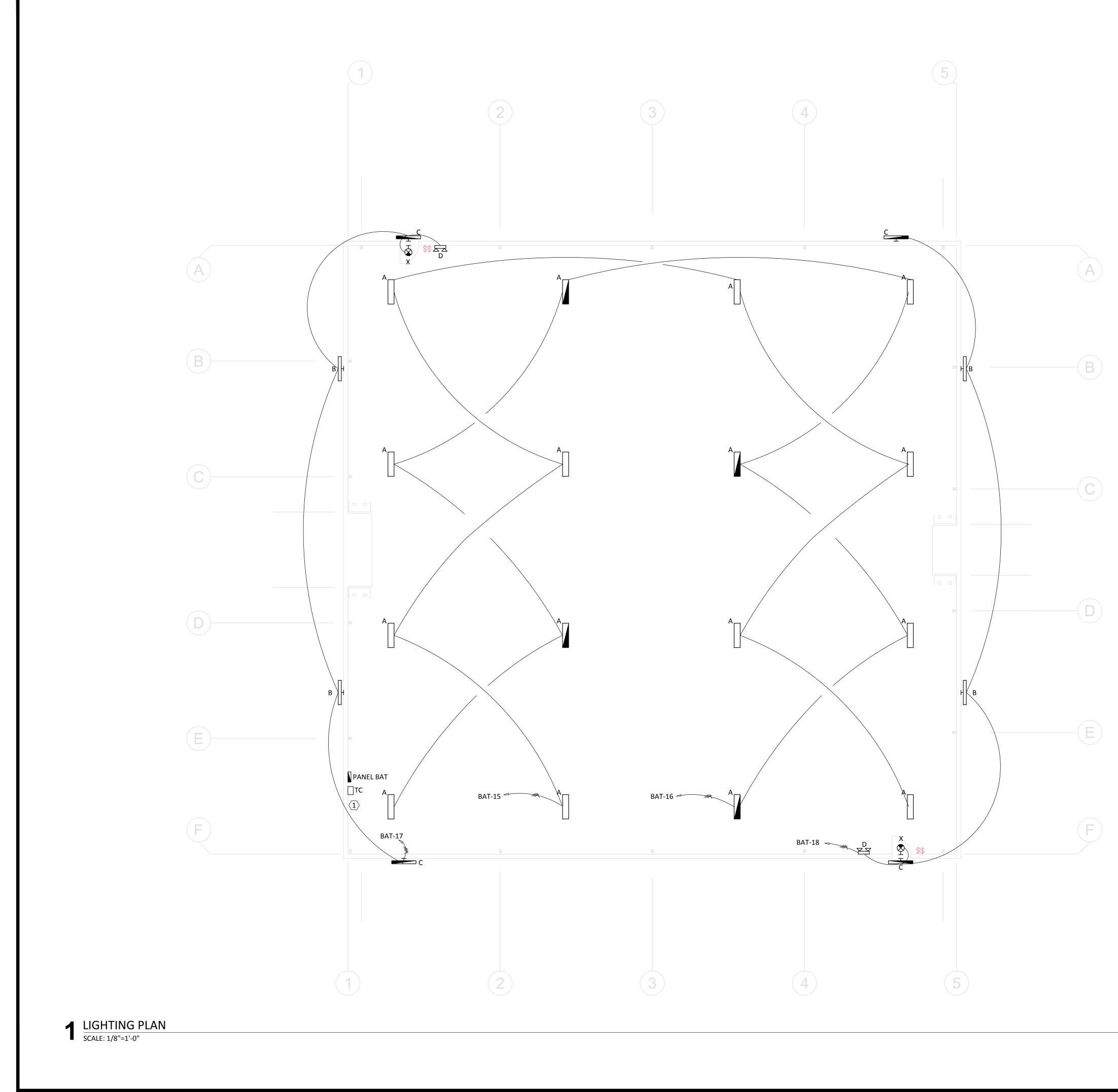
		VERIFY THAT SUPPORTING SURFACES ARE READY TO RECEIVE WORK.		A.	MANUFACTURERS
	В.	ELECTRICAL BOXES ARE SHOWN ON DRAWINGS, IN APPROXIMATE LOCATIONS, UNLESS DIMENSIONED. OBTAIN VERIFICATION FROM ARCHITECT FOR PRIOR TO		B.	(i) TRIANGLE, SOUTHWIRE, OR CABLE BUILDING WIRE
5.6	INST	ROUGH-IN. ALLATION			(i) FEEDERS AND BRANCH CIRCUITS
		ARRANGE CONDUIT TO MAINTAIN HEADROOM AND TO PRESENT NEAT APPEARANCE.			(ii) FEEDERS AND BRANCH CIRCUITS
		COORDINATE WITH ATTIC WALKWAY TO MAINTAIN ACCESS. (i) ALL CONDUIT ROUTINGS, INCLUDING MC CABLE, SHALL BE PARALLEL AND			600 VOLT INSULATION, THHN/TH SMALLER THAN 8 AWG, SOLID CON
		PERPENDICULAR TO ADJACENT PIPING, BUILDING STRUCTURE AND LINES. CONDUITS SHALL BE CONCEALED, WHERE POSSIBLE, UNLESS NOTED OTHERWISE.			(iii) CONTROL CIRCUITS: COPPER, STR
		AESTHETIC APPEARANCE IS VERY IMPORTANT FOR THE WORK OF THIS PROJECT. THE CONTRACTOR WILL BE REQUIRED TO REMOVE AND REPLACE WORK THAT IS		C.	AS REQUIRED BY CONTROLS MANU DWELLING UNIT WIRE
		NOT NEAT AND ACCURATE. UNDERGROUND ROUTINGS, IF ANY, BETWEEN BUILDINGS MAY TAKE MOST DIRECT ROUTE.		•	(i) FEEDERS: COPPER STRANDED
		(ii) MAINTAIN MINIMUM 6" CLEARANCE TO PIPING AND 12" CLEARANCE TO HEAT			THHN/THWN. (ii) BRANCH CIRCUITS: NM CABLE, 600
		SURFACES SUCH AS HEATING APPLIANCES. (iii) MAINTAIN REQUIRED FIRE, ACOUSTIC, AND VAPOR BARRIER RATING WHEN		D.	REMOTE CONTROL AND SIGNAL CABLE
		PENETRATING WALLS, FLOORS, AND CEILINGS. USE NELSON "FLAMESEAL" FIRESTOP PUTTY OR CAULK TO RETAIN THE INTEGRITY OF THE FIRE AND SMOKE PARTITIONS.			 (i) CONTROL CABLE FOR CLASS 1 REM CONDUCTOR, 600 VOLT INSU CONDUCTORS TWISTED TOGET MANUFACTURER AND NEC.
		(iv) ROUTE CONDUIT THROUGH ROOF OPENINGS FOR PIPING AND DUCTWORK WHERE POSSIBLE; OTHERWISE, ROUTE THROUGH ROOF JACK WITH ROOF FLASHING (PITCH POCKET) WITH CAULK TYPE COUNTERFLASHING SLEEVE. INSTALLATION SHALL BE WATERTIGHT.			(ii) CONTROL CABLE FOR CLASS 2 C CIRCUITS: COPPER CONDUCTOR, INDIVIDUAL CONDUCTORS TWISTE
		(v) GROUP IN PARALLEL RUNS WHERE PRACTICAL. USE RACK CONSTRUCTED OF STEEL CHANNEL. MAINTAIN SPACING BETWEEN RACEWAYS OR DERATE CIRCUIT AMPACITIES TO NFPA 70 REQUIREMENTS.		E.	MANUFACTURER AND NEC. CORDS: OIL-RESISTANT THERMOSET IN WITH IDENTIFIED EQUIPMENT GROUND IN DAMP LOCATIONS.
		(vi) USE CONDUIT HANGERS AND CLAMPS; DO NOT FASTEN WITH WIRE OR PERFORATED PIPE STRAPS.	6.5		RING DEVICES AND WALL PLATES (COMME
		(vii) USE CONDUIT BODIES TO MAKE SHARP CHANGES IN DIRECTION.		A.	ALL WALL PLATES SHALL BE NYLON, CO THE SWITCHES AND OUTLETS.
		(viii) TERMINATE CONDUIT STUBS WITH INSULATED BUSHINGS.(ix) USE SUITABLE CAPS TO PROTECT INSTALLED RACEWAY AGAINST ENTRANCE OF		В.	SINGLE POLE SWITCH: HUBBELL MODEL
		DIRT AND MOISTURE.		C.	WALL SWITCH OCCUPANCY/VACANCY WALL SWITCH TYPE, 120/277V, ADJUSTA
		(x) PROVIDE 12 AWG INSULATED CONDUCTOR OR SUITABLE PULL STRING IN EMPTY RACEWAYS, EXCEPT SLEEVES AND NIPPLES.			180-DEGREE FIELD OF VIEW, LEVI EQUIVALENT.
		(xi) IDENTIFY EACH JUNCTION, PULL AND TERMINATION POINT USING PERMANENT METALLIC TAGS OR PERMANENT MARKER. IDENTIFICATION SHALL INDICATE		D.	CEILING MOUNT OCCUPANCY SEN
		INTENDED USE OF CONDUIT, ORIGINATION, AND TERMINATION POINTS OF EACH			SELF-ADJUSTING, ADJUSTABLE TIME DI MODEL OSC05-MOW, OR APPROVED EQ
		INDIVIDUAL CONDUIT. (xii) INSTALL EXPANSION JOINTS WHERE RACEWAY CROSSES BUILDING EXPANSION		E.	DUPLEX CONVENIENCE RECEPTACLE: APPROVED EQUIVALENT.
		JOINTS.		F.	GFCI RECEPTACLE: HUBBELL MODEL GF-
		(xiii) INSTALL PLASTIC CONDUIT AND TUBING IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.		G.	TELEPHONE OUTLET: COORDINATE C SYSTEM.
	В.	INSTALL AUXILIARY GUTTER AND WIREWAY IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.	6.6		MINATION AND PREPARATION
	C.	FINAL CONNECTIONS TO MOTORS AND OTHER VIBRATING EQUIPMENT SHALL BE WITH LIQUID-TIGHT FLEX AND APPROVED FITTINGS. DO NOT SECURE CONDUITS,		А. В.	VERIFY THAT INTERIOR OF BUILDING IS F VERIFY THAT MECHANICAL WORK WHIC
		DISCONNECTS, OR DEVICES TO DUCTWORK OR MECHANICAL EQUIPMENT.			COMPLETED.
	D.	INSTALL ELECTRICAL BOXES AS SHOWN ON THE DRAWINGS, AND AS REQUIRED FOR SPLICES, TAPS, WIRE PULLING, EQUIPMENT CONNECTIONS AND REGULATORY		C.	COMPLETELY AND THOROUGHLY SW. CONDUCTORS.
		REQUIREMENTS.	6.7		TALLATION
		(i) USE CAST OUTLET BOX IN EXTERIOR LOCATIONS EXPOSED TO WEATHER AND WET LOCATIONS.		А. В.	NEATLY TRAIN AND SECURE WIRING INSI USE WIRE PULLING LUBRICANT FOR PULL
		(ii) USE HINGED COVER ENCLOSURE FOR INTERIOR PULL AND JUNCTION BOX LARGER THAN 12" IN ANY DIMENSION.		C.	SUPPORT CABLES ABOVE ACCESSIBLE (CEILING TILES.
		(iii) LOCATE AND INSTALL ELECTRICAL BOXES TO ALLOW ACCESS. PROVIDE ACCESS		D.	MAKE SPLICES, TAPS, AND TERMIN
		PANELS IF REQUIRED. (iv) LOCATE AND INSTALL ELECTRICAL BOXES TO MAINTAIN HEADROOM AND TO		E.	CONDUCTORS WITHOUT PERCEPTIBLE TI PROVIDE DEDICATED NEUTRAL CONDU
		PRESENT NEAT MECHANICAL APPEARANCE.			INDICATED.
		(v) INSTALL PULL BOXES AND JUNCTION BOXES ABOVE ACCESSIBLE CEILINGS OR IN UNFINISHED AREAS.		F. G.	TERMINATE SPARE CONDUCTORS WITH INSTALL WIRING DEVICES IN ACCORDAN
		(vi) PROVIDE KNOCKOUT CLOSURES FOR UNUSED OPENINGS.(vii) ALIGN WALL-MOUNTED OUTLET BOXES FOR SWITCHES, THERMOSTATS, AND			(i) INSTALL WALL SWITCHES 48" ABOV
		SIMILAR DEVICES.			(ii) INSTALL WALL DIMMERS 48" AB INSTRUCTED BY MANUFACTURER.
		(viii) COORDINATE MOUNTING HEIGHTS AND LOCATIONS OF OUTLETS ABOVE COUNTERS, ETC. WITH THE ARCHITECT.			(iii) INSTALL CONVENIENCE RECEPTACI BOTTOM.
		(ix) SPLICES IN EXTERIOR PULLBOXES SHALL BE MADE WATERPROOF USING "SCOTCHCAST" SPLICE KIT OR APPROVED EQUAL. SEAL ENDS OF CONDUITS AND			(iv) INSTALL SPECIFIC PURPOSE RECEPT
		DUCTS WITH "DUCTSEAL" OR APPROVED EQUAL.			(v) INSTALL CORD AND ATTACHMEN PROVISIONS OF GENERAL ELEC
	E.	 USE RECESSED OUTLET BOXES IN FINISHED AREAS AND WHERE INDICATED. (i) SECURE BOXES TO INTERIOR WALL AND PARTITION STUDS, ACCURATELY POSITIONING TO ALLOW FOR SURFACE FINISH THICKNESS. 			CONNECTED LOAD AND RATI PROTECTION.
		(ii) USE STAMPED STEEL STUD BRIDGES FOR FLUSH OUTLETS IN HOLLOW STUD			(vi) INSTALL WALL PLATES FLUSH AND(vii) INSTALL GALVANIZED STEEL PLATE
		WALL, AND ADJUSTABLE STEEL CHANNEL FASTENERS FOR FLUSH CEILING OUTLET BOXES.			UNFINISHED AREAS.
		(iii) DO NOT INSTALL BOXES BACK-TO-BACK IN WALLS. PROVIDE 6" SEPARATION, MINIMUM; EXCEPT PROVIDE 24" SEPARATION, MINIMUM IN ACOUSTIC-RATED WALLS.	·		VICE AND DISTRIBUTION CEPTABLE MANUFACTURERS
	F.	(v) DO NOT DAMAGE INSULATION. INSTALL FLOOR BOXES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.		Α.	SIEMENS, SQUARE D, WESTINGHOU APPROVED EQUIVALENT.
	••	(i) SET BOXES LEVEL AND FLUSH WITH FINISH FLOORING MATERIAL.		В.	IT IS EMPHASIZED THAT THIS ACCEPTA NOT FOR ANY SPECIFIC PIECES OF EQUIP
		(ii) USE CAST FLOOR BOXES FOR INSTALLATIONS IN SLAB ON GRADE.			THE CONTRACTOR FROM MEETING OF
		(iii) INSTALL SERVICE FITTINGS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.			AND SPECIFICATION INTENT, INCLUDIN VISIBLE TO THE GENERAL PUBLIC, NOI
		(iv) DRILL FLOOR OPENING AND INSTALL POKE-THROUGH FITTINGS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.			VERIFYING ALL DIMENSIONS AND OTH PURCHASE.
				C.	IT SHOULD ALSO BE NOTED THAT SU PERFORMANCE DATA, NOISE DAT
		ES AND CABLES			CHARACTERISTICS (AS APPLICABLE),
o.1	-	LITY ASSURANCE PERFORM WORK IN ACCORDANCE WITH NATIONAL ELECTRICAL CONTRACTORS			DEVIATIONS FROM SCHEDULED OR SPE BE CLEARLY LISTED.
6.2	RFGI	ASSOCIATION (NECA) STANDARD OF INSTALLATION. JLATORY REQUIREMENTS	7.2		ELECTRICAL APPARATUS WIRE TERMINATION PROVISIONS FOR
0.2	Α.	CONFORM TO REQUIREMENTS OF NFPA 70.		<i>,</i>	SWITCHES, AND ALL OTHER ELECTRICA FOR AT LEAST 75 DEG C (CU/AL) OR AS
63		FURNISH PRODUCTS LISTED BY UL. NG METHODS			WHICHEVER IS GREATER.
0.5		CONCEALED INTERIOR LOCATIONS: BUILDING WIRE IN RACEWAY.	7.3	BRA A.	NCH CIRCUIT PANELBOARDS AND LOAD CI BRANCH CIRCUIT PANELBOARDS AND LO
	В.	CONCEALED INTERIOR LOCATIONS (RESIDENTIAL): BUILDING WIRE IN RACEWAY FOR FEEDERS. BUILDING WIRE WITHOUT RACEWAY FOR BRANCH CIRCUITS.			TYPE AND SHALL BE RECESS AND/ SCHEDULED. THE PANELBOARDS AND L
		EXPOSED INTERIOR LOCATIONS: BUILDING WIRE IN RACEWAY.			NUMBER OF BOLT-ON (FOR PANELBOAF
		ABOVE ACCESSIBLE CEILINGS: BUILDING WIRE IN RACEWAY. ABOVE ACCESSIBLE CEILINGS (RESIDENTIAL): BUILDING WIRE IN RACEWAY FOR			POLE AND MULTIPLE POLE CIRCUIT BR DRAWINGS AND OF THE AMPERE RATIN
		FEEDERS. BUILDING WIRE WITHOUT RACEWAY FOR BRANCH CIRCUITS.			LISTED AS TYPE HACR FOR BRANCH CIRC OR ICE MAKERS.
		WET OR DAMP INTERIOR LOCATIONS: BUILDING WIRE IN RACEWAY. EXTERIOR LOCATIONS: BUILDING WIRE IN RACEWAYS.		В.	AS INDICATED BY THE SCHEDULES ON CENTERS SHALL HAVE EITHER MAIN LUC
		UNDERGROUND LOCATIONS: BUILDING WIRE IN RACEWAYS.			SHALL BE SIZED AS INDICATED ON THE
	Ι.	USE NO WIRE SMALLER THAN 12 AWG FOR POWER AND LIGHTING CIRCUITS, AND NO SMALLER THAN 14 AWG FOR LINE VOLTAGE CONTROL WIRING. USE MINIMUM 18			THE PANELBOARDS AND LOAD CENT FOUR-WIRE SERVICE OR SINGLE-PHASE
		GAUGE WIRE FOR LOW-VOLTAGE (LESS THAN 30 VAC) CONTROL WIRING. USE 10 AWG			COPPER GROUND BUS BONDED TO TH SIZED TO ACCOMMODATE GROUND SIZ
		CONDUCTOR FOR 20 AMPERE, 120 VOLT BRANCH CIRCUIT HOME RUNS LONGER THAN 50'. VERIFY MINIMUM VOLTAGE DROP PER NEC FINE PRINT NOTES.			CONSTRUCTED IN ACCORDANCE WITH BEAR THE STAMPED APPROVAL OF UL. A
6.4	WIRE	E AND CABLE			EACH PANELBOARD. PROVIDE ISOLATED

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- LE, SOUTHWIRE, OR CABLEC.
- AND BRANCH CIRCUITS LARGER THAN 6 AWG: COPPER, STRANDED CTOR, 600 VOLT INSULATION, THHN/THWN.
- AND BRANCH CIRCUITS 6 AWG AND SMALLER: COPPER CONDUCTOR, LT INSULATION, THHN/THWN. 6 AND 8 AWG, STRANDED CONDUCTOR;
- R THAN 8 AWG, SOLID CONDUCTOR. L CIRCUITS: COPPER, STRANDED CONDUCTOR, 600 VOLT INSULATION, JIRED BY CONTROLS MANUFACTURER AND NEC.
- COPPER STRANDED CONDUCTOR, 600 VOLT INSULATION,
- CIRCUITS: NM CABLE, 600 VOLT INSULATION WITH GROUND WIRE.
- L CABLE FOR CLASS 1 REMOTE CONTROL AND SIGNAL CIRCUITS: COPPER TOR, 600 VOLT INSULATION, RATED 60 DEG C, INDIVIDUAL CTORS TWISTED TOGETHER, OR AS REQUIRED BY CONTROLS
- L CABLE FOR CLASS 2 OR CLASS 3 REMOTE CONTROL AND SIGNAL : COPPER CONDUCTOR, 300 VOLT INSULATION, RATED 60 DEG C, JAL CONDUCTORS TWISTED TOGETHER, OR AS REQUIRED BY CONTROLS
- ESISTANT THERMOSET INSULATED MULTICONDUCTOR FLEXIBLE CORD IED EQUIPMENT GROUNDING CONDUCTOR, SUITABLE FOR HARD USAGE
- ND WALL PLATES (COMMERCIAL GRADE) ATES SHALL BE NYLON, COMMERCIAL GRADE OF THE SAME COLOR AS
- WITCH: HUBBELL MODEL 1221-W (WHITE), OR APPROVED EQUIVALENT. I OCCUPANCY/VACANCY SENSORS: DUAL-RELAY, MULTI-TECHNOLOGY TYPE, 120/277V, ADJUSTABLE TIME DELAY UP TO THIRTY (30) MINUTES, FIELD OF VIEW, LEVITON MODEL OSSMT-MD, OR APPROVED
- DUNT OCCUPANCY SENSORS: MULTI-TECHNOLOGY, 360-DEGREE, NG. ADJUSTABLE TIME DELAY UP TO THIRTY (30) MINUTES, LEVITON
- 5-MOW, OR APPROVED EQUIVALENT. IVENIENCE RECEPTACLE: HUBBELL MODEL 5342-W (WHITE), OR
- CLE: HUBBELL MODEL GF-5362-W (WHITE), OR APPROVED EQUIVALENT. OUTLET: COORDINATE COMPATIBILITY WITH OWNER'S TELEPHONE
- NTERIOR OF BUILDING IS PHYSICALLY PROTECTED FROM WEATHER.
- MECHANICAL WORK WHICH IS LIKELY TO INJURE CONDUCTORS HAS BEEN AND THOROUGHLY SWAB RACEWAY SYSTEM BEFORE INSTALLING
- AND SECURE WIRING INSIDE BOXES, EQUIPMENT, AND PANELBOARDS. LING LUBRICANT FOR PULLING 4 AWG AND LARGER WIRES. BLES ABOVE ACCESSIBLE CEILINGS TO KEEP THEM FROM RESTING ON
- ES, TAPS, AND TERMINATIONS TO CARRY FULL AMPACITY OF
- WITHOUT PERCEPTIBLE TEMPERATURE RISE. ICATED NEUTRAL CONDUCTOR FOR EACH ISOLATED GROUND CIRCUIT
- PARE CONDUCTORS WITH ELECTRICAL TAPE.
- IG DEVICES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- WALL SWITCHES 48" ABOVE FLOOR, OFF POSITION DOWN. WALL DIMMERS 48" ABOVE FLOOR. DERATE GANGED DIMMERS AS
- CTED BY MANUFACTURER. DO NOT USE COMMON NEUTRAL. CONVENIENCE RECEPTACLES 18" ABOVE FLOOR, GROUNDING POLE ON
- SPECIFIC PURPOSE RECEPTACLES AT HEIGHTS SHOWN ON DRAWINGS. CORD AND ATTACHMENT PLUG CAPS ON EQUIPMENT UNDER THE ONS OF GENERAL ELECTRICAL REQUIREMENTS. SIZE CORD FOR CTED LOAD AND RATING OF BRANCH CIRCUIT OVERCURRENT
- WALL PLATES FLUSH AND LEVEL.
- GALVANIZED STEEL PLATES ON OUTLET BOXES AND JUNCTION BOXES IN
- UARE D, WESTINGHOUSE, CHALLENGER, GENERAL ELECTRIC, OR
- IZED THAT THIS ACCEPTANCE IS FOR THE MANUFACTURER ONLY, AND SPECIFIC PIECES OF EQUIPMENT. SUCH ACCEPTANCE DOES NOT RELIEVE CTOR FROM MEETING OR EXCEEDING ALL ELEMENTS OF THE DESIGN ATION INTENT, INCLUDING APPEARANCE FOR THOSE ITEMS IN SPACES HE GENERAL PUBLIC, NOR DOES IT RELIEVE THE CONTRACTOR FROM L DIMENSIONS AND OTHER INSTALLATION REQUIREMENTS PRIOR TO
- ALSO BE NOTED THAT SUBMITTALS MUST CLEARLY ILLUSTRATE ALL CE DATA, NOISE DATA, ACCESSORIES, OPTIONS, ELECTRICAL TICS (AS APPLICABLE), AND OTHER RELATED INFORMATION. ANY ROM SCHEDULED OR SPECIFIED EQUIPMENT OR OPTIONS MUST ALSO
- NATION PROVISIONS FOR PANELBOARDS, CIRCUIT BREAKERS, SAFETY ND ALL OTHER ELECTRICAL APPARATUS SHALL BE LISTED AS SUITABLE 75 DEG C (CU/AL) OR AS NOTED IN MANUFACTURER'S INSTRUCTIONS,
- NELBOARDS AND LOAD CENTERS
- UIT PANELBOARDS AND LOAD CENTERS SHALL BE OF THE DEAD-FRONT HALL BE RECESS AND/OR SURFACE MOUNTED AS SHOWN AND THE PANELBOARDS AND LOAD CENTERS SHALL BE EQUIPPED WITH THE BOLT-ON (FOR PANELBOARDS) OR STAB-IN (FOR LOAD CENTERS) SINGLE ULTIPLE POLE CIRCUIT BREAKERS SHOWN BY THE SCHEDULES ON THE ND OF THE AMPERE RATINGS INDICATED. PROVIDE CIRCUIT BREAKERS UL E HACR FOR BRANCH CIRCUITS SERVING AIR CONDITIONING EQUIPMENT
- BY THE SCHEDULES ON THE DRAWINGS, PANELBOARDS AND LOAD LL HAVE EITHER MAIN LUGS ONLY OR MAIN CIRCUIT BREAKERS. BUSSES D AS INDICATED ON THE SCHEDULES AND SHALL BE MADE OF COPPER. DARDS AND LOAD CENTERS SHALL BE BUSSED FOR THREE-PHASE, ERVICE OR SINGLE-PHASE THREE-WIRE SERVICE AND EQUIPPED WITH UND BUS BONDED TO THE CABINET AND WITH INCOMING LINE LUG OMMODATE GROUND SIZE SHOWN ON THE DRAWINGS. THEY SHALL BE D IN ACCORDANCE WITH THE LATEST RULES OF THE NEC AND SHALL MPED APPROVAL OF UL. AN ENGRAVED MICARTA LABEL SHALL IDENTIFY OARD. PROVIDE ISOLATED GROUND PROVISIONS WHEN REQUIRED.

- C. PANELBOARD, LOAD CENTER AND CIRCUIT BREAKER RATINGS.
- MINIMUM A.I.C. FAULT CURRENT RATING OF PANELBOARDS AND ENCLOSED (i) CIRCUIT BREAKERS, BUSSES, ETC., SHALL BE 22,000 AMPERES, UNLESS OTHERWISE NOTED.
- (ii) MINIMUM A.I.C. FAULT CURRENT RATING OF LOAD CENTERS AND ASSOCIATED CIRCUIT BREAKERS, BUSSES, ETC., SHALL BE 10,000 AMPERES, UNLESS OTHERWISE NOTED.
- D. CABINET DOORS SHALL BE PROVIDED WITH HEAVY NON-SNAP LOCKS WITH KEYS, AND ALL LOCKS SHALL BE KEYED ALIKE. TRIMS AND CABINETS SHALL BE FINISHED WITH TWO (2) COATS OF GRAY LACQUER. A TYPEWRITTEN CIRCUIT DIRECTORY IDENTIFYING ALL BRANCH CIRCUITS OR FEEDERS SHALL BE PROVIDED IN A STEEL FRAME ON THE BACK OF THE DOOR OF EACH CABINET. THE DIRECTORY SHALL HAVE A NEATLY TYPED LIST OF WHAT EACH INDIVIDUAL CIRCUIT BREAKER IS SERVING AND WHAT ROOMS THAT BREAKER IS SERVING. PANELS SHALL BE MOUNTED AT A CONSISTENT HEIGHT THROUGHOUT THE PROJECT WITH TOP OF PANELS NOT EXCEEDING 6'-0" AFF.
- ANY PANELBOARD DERIVING POWER FROM A "K-FACTOR" RATED TRANSFORMER SHALL HAVE A 200 PERCENT RATED NEUTRAL BUS.
- PROVIDE ALL PANELBOARDS AND LOAD CENTERS WITH GROUND BUS SEPARATE FROM NEUTRAL BUS.
- 7.4 SAFETY SWITCHES
 - A. SAFETY SWITCHES SHALL BE UL APPROVED, HEAVY-DUTY, DESIGNED FOR QUICK-MAKE, QUICK-BREAK USE AND EQUIPPED WITH ARC-QUENCHING DEVICES. THE SWITCHES SHALL BE OF THE SIZES INDICATED ON THE DRAWINGS AND WHERE USED TO SERVE MOTORS SHALL BEAR THE HORSEPOWER RATING EQUAL TO OR EXCEEDING THAT OF THE MOTOR WHICH THEY SERVE REGARDLESS OF THE SIZE OR TYPE SPECIFIED ON THE DRAWINGS.
- B. IF THE SWITCHES ARE TO BE MOUNTED WHERE WEATHERPROOF UNITS ARE REQUIRED BY CODE, THEY SHALL BE SO FURNISHED BY THE CONTRACTOR.
- 7.5 FUSES
- A. FURNISH AND INSTALL FUSES IN EACH DEVICE REQUIRING SAME. UNLESS OTHERWISE SPECIFIED FUSES SHALL BE EQUAL TO BUSSMAN DUAL-ELEMENT "FUSETRON" OF THE SIZES SCHEDULED. ALL FUSES AT THE EXTERIOR DISCONNECTS SHALL BE CURRENT-LIMITING TYPE.
- B. PROVIDE THREE (3) SPARE FUSES, INCLUDING CONTROL FUSES, FOR EACH FUSE SIZE USED. STORE FUSES IN A FUSE CABINET.
- 7.6 INSTALLATION
- A. IN ANY SPACE ASSIGNED FOR THE INSTALLATION OF PANELBOARDS, CONTRACTOR SHALL VERIFY DIMENSIONS OF THE EQUIPMENT TO BE INSTALLED. SHOP DRAWING DATA SUBMITTED SHALL INCLUDE A DIMENSIONED DRAWING SHOWING PLACEMENT OF THE EQUIPMENT WITHIN THE ROOM (MAIN ELECTRICAL ROOM ONLY).
- B. WHERE SAFETY SWITCHES ARE SHOWN SERVING ROOF MOUNTED OR PAD MOUNTED MECHANICAL EQUIPMENT, THEY SHALL BE MOUNTED SEPARATELY FROM THE EQUIPMENT ON UNISTRUT WHERE MOUNTING TO THE EQUIPMENT WILL OBSTRUCT AIR FLOW OR MAINTENANCE. PROVIDE DUPLEX OUTLET FOR SERVICING SUCH EQUIPMENT.
- PROVIDE 4"-HIGH CONCRETE EQUIPMENT PADS BENEATH SWITCHBOARDS, TRANSFORMERS, ETC.
- PART 8 LIGHTING
- 8.1 SUBMITTALS
 - A. PRODUCT DATA: PROVIDE PRODUCT DATA FOR EACH LUMINAIRE AND LIGHTING UNIT B. OPERATING AND MAINTENANCE (O&M) INSTRUCTIONS: PROVIDE MAINTENANCE AND
- OPERATING INSTRUCTIONS FOR BATTERY POWERED LIGHTING UNITS.
- 8.2 REGULATORY REQUIREMENTS
- A. CONFORM TO REQUIREMENTS OF ANSI / NFPA 70.
- B. CONFORM TO REQUIREMENTS OF NFPA 101.
- C. FURNISH PRODUCTS LISTED BY UL OR OTHER NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL) TESTING FIRM ACCEPTABLE TO AHJ.
- 8.3 EXAMINATION AND PREPARATION A. EXAMINE ADJACENT SURFACES TO DETERMINE THAT SURFACES ARE READY TO
- RECEIVE WORK. 8.4 INSTALLATION
 - A. INSTALL LUMINAIRES AND ACCESSORIES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
 - PROVIDE PENDANT ACCESSORY TO MOUNT SUSPENDED LUMINAIRES AND EXIT (i)
 - SIGNS AT HEIGHT INDICATED. (ii) INSTALL LAMPS IN LUMINAIRES AND LAMPHOLDERS, UNLESS LAMPS ARE PRE-INSTALLED BY MANUFACTURER.
- 8.5 ADJUSTING AND CLEANING
 - ALIGN LUMINAIRES AND CLEAN LENSES AND DIFFUSERS AT COMPLETION OF WORK.
- B. AIM ADJUSTABLE LUMINAIRES AND LAMPHOLDERS AS INDICATED OR AS DIRECTED.
- C. CLEAN PAINT SPLATTERS, DIRT AND DEBRIS FROM INSTALLED LUMINAIRES.
- D. TOUCH UP LUMINAIRES' FINISH AT COMPLETION OF WORK.
- RE-LAMP LUMINAIRES WHICH HAVE FAILED LAMPS AT COMPLETION OF WORK.



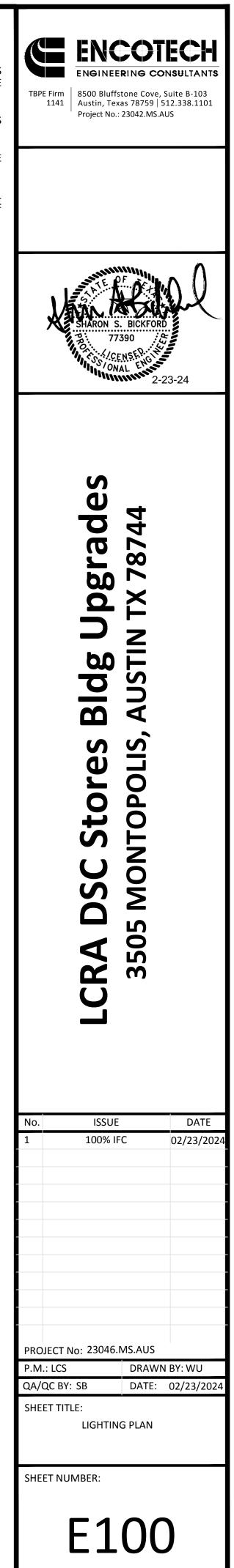


ELECTRICAL GENERAL NOTES

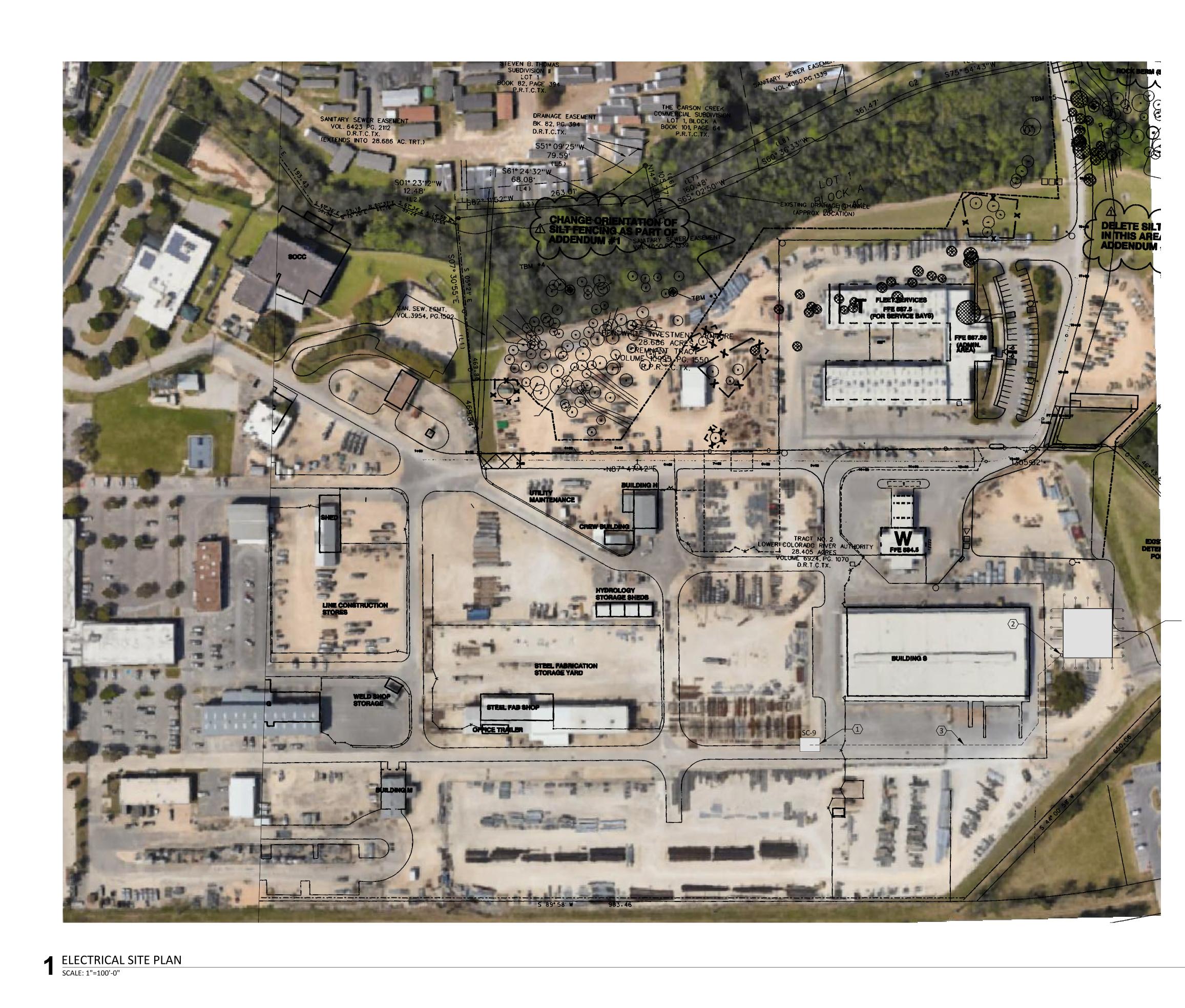
- A. BUILDING PRIMARY USE IS FOR STORAGE AND IS NOT CONDITIONED. STORAGE MATERIALS MAY PRODUCE EXHAUST GASES AND THUS VENTILATION IS REQUIRED AND SHOULD BE MAINTAINED.
- B. BUILDING IS EXPOSED TO STRUCTURE. ROUTE CONDUIT ALONG STRUCTURAL BEAMS AS MUCH AS POSSIBLE.
- C. PROVIDE FLEXIBLE SHOCK RESISTANT CONDUIT AT ALL PENDANT MOUNT LIGHT FIXTURE CONNECTIONS.
- D. ALL FIXTURES DESIGNATED AS "EMERGENCY" SHALL BE EQUIPPED WITH AN INTEGRAL BATTERY BACK UP IN THE EVENT OF POWER FAILURE TO MAINTAIN ILLUMINATED PATH OF EGRESS.

KEYED NOTES

1. PROVIDE DIGITAL TIME CLOCK TORK #DZS400BP, WITH NEMA 3R LOCKING ENCLOSURE.







ELECTRICAL GENERAL NOTES

- A. MATCH EXISTING UTILITY FEEDER SIZE.
- B. FIELD LOCATE EXISTING ELECTRICAL DISTRIBUTION GEAR FOR TIE-IN AND PROTECT FROM DAMAGE DURING CONSTRUCTION. COORDINATE ANY OUTAGES WITH OWNER.
- C. FIELD LOCATE AND IDENTIFY EXISTING UNDERGROUND UTILITIES ON SITE PRIOR TO TRENCHING FOR NEW ELECTRICAL FEEDER, UTILIZING LOCATOR SERVICE.
- D. PROVIDE TEMPORARY TREE PROTECTION FOR THOSE TREES WITHIN THE CONSTRUCTION LIMITS OR OTHERWISE FLAGGED BY THE OWNER TO REQUIRE PROTECTION.
- E. PROVIDE TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES TO PREVENT EROSION AND DISCHARGE OF SOIL-BEARING WATER RUNOFF OR AIRBORNE DUST TO ADJACENT BUILDINGS PER OWNER'S REQUIREMENTS.
- F. IDENTIFY PROPOSED ROUTING OF NEW ELECTRICAL FEEDER UTILIZING TEMPORARY FLAGS OR PAINT.
- G. ONCE ALL EXISTING UTILITIES HAVE BEEN LOCATED, TREE PROTECTION AND EROSION CONTROL MEASURES ARE IN PLACE, AND PROPOSED FEEDER ROUTING IS IDENTIFIED, CONTRACTOR SHALL HOLD PREINSTALLATION CONFERENCE WITH OWNER AND ENGINEER SO THAT PROPOSED ROUTING CAN BE REVIEWED AND ACCEPTED PRIOR TO EXCAVATION.
- H. HAND DIG CONDUIT TRENCHES WHERE TREE ROOTS ARE PRESENT SO AS NOT TO DAMAGE EXISTING ROOT SYSTEM.
- I. COORDINATE MARKING OF OPEN TRENCHES DURING CONSTRUCTION WITH OWNER AND PROVIDE TEMPORARY BARRICADES AS REQUIRED.
- J. CONTRACTOR SHALL NOT OBSTRUCT NORMAL FLOW OF VEHICULAR TRAFFIC ON SITE WITHOUT PERMISSION FROM OWNER.
- K. EXCAVATE TRENCH TO UNIFORM WIDTH AND DEPTH TO PROVIDE CLEARANCE ON EACH SIDE OF CONDUIT. EXCAVATE TRENCH BOTTOMS TO PROVIDE UNIFORM BEARING AND SUPPORT OF CONDUITS. REMOVE PROJECTING ROCKS LARGER THAN 2 INCHES IN DIAMETER FROM TRENCH BEFORE INSTALLING CONDUIT.
- L. PLACE AND COMPACT BACKFILL IN EXCAVATIONS. WHEN EXCAVATED MATERIALS INTENDED FOR BACKFILL INCLUDE UNSATISFACTORY SOIL MATERIALS AND ROCK, REPLACE WITH SATISFACTORY MATERIALS.
- M. PROVIDE CONTINUOUS UNDERGROUND LINE WARNING TAPE IN TRENCH DIRECTLY ABOVE CONDUIT. TAPE SHALL BE RED AND LABELED "CAUTION BURIED ELECTRIC LINE BELOW" WITH PERMANENT INK. TAPE SHALL BE DETECTABLE BY METAL DETECTOR WHEN BURIED UP TO 30 INCHES DEEP.
- N. UNIFORMLY GRADE AREAS TO SMOOTH SURFACE, FREE OF IRREGULAR SURFACE CHANGES, AND MATCHING ADJACENT EXISTING GRADES.

KEYED NOTES

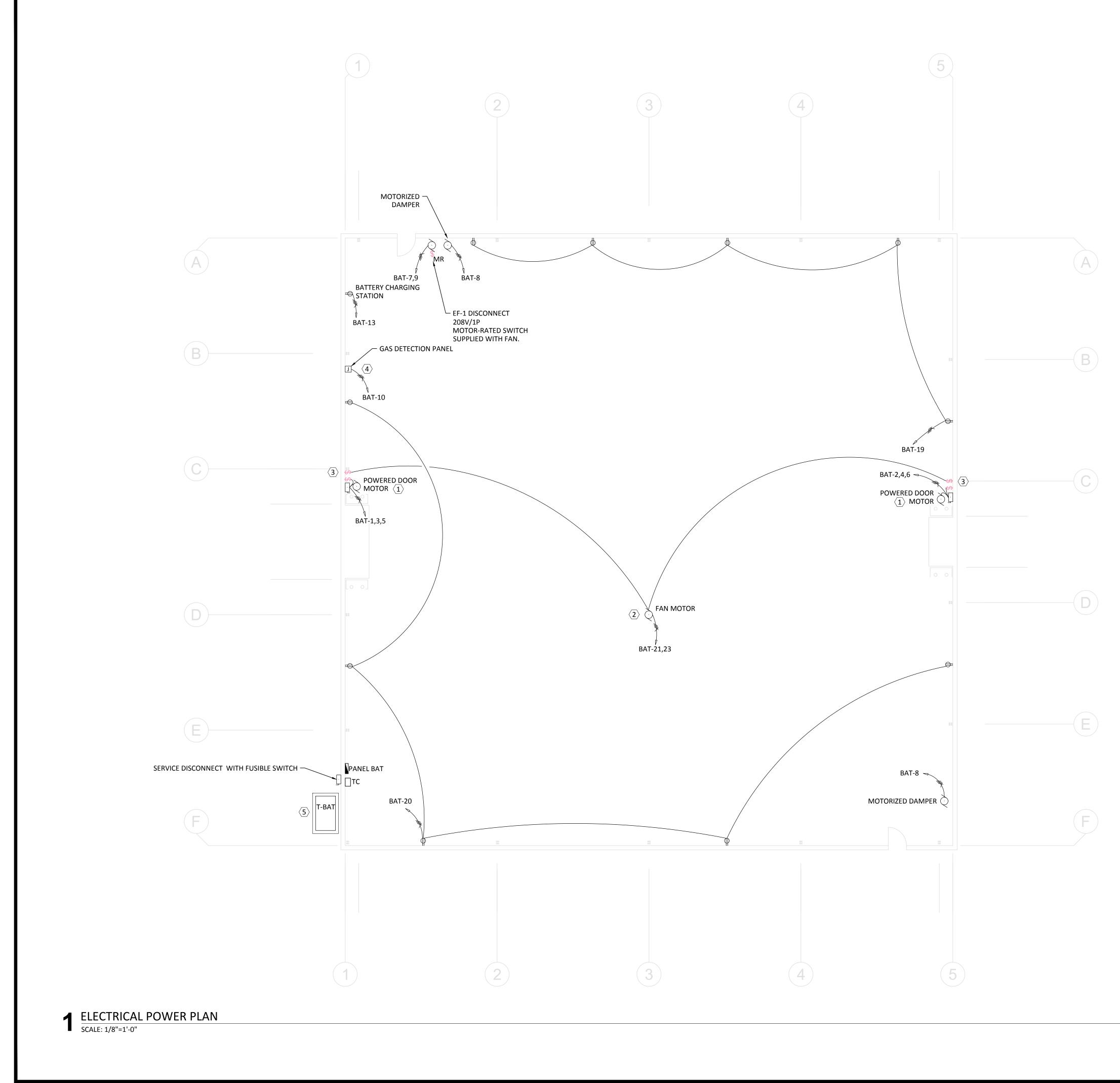
- 1. PROVIDE CONNECTION TO EXISTING GEAR. REFER TO ON-LINE DIAGRAM 1/E500.
- 2. ROUTE FEEDER TO MAIN DISCONNECT SWITCH ON EXTERIOR OF NEW BUILDING. REFER TO ONE-LINE DIAGRAM 1/E500.
- 3. PROVIDE UNDERGROUND FEEDER FROM SC-9 TO NEW BUILDING. REFER TO ONE-LINE DIAGRAM 1/E500.

- NEW DSC STORES BUILDING

TBPE Firm 8500 Bluffstone Cove, 1141 Austin, Texas 78759 Project No.: 23042.MS.A	512.338.1101
SHARON S. BICKFOR 77390 55 /ONAL ENGLA	23-24
LCRA DSC Stores Bldg Upgrades 3505 MONTOPOLIS, AUSTIN TX 78744	
No. ISSUE 1 100% IFC	DATE 02/23/2024
PROJECT No: 23046.MS.AUS P.M.: LCS DRAWN QA/QC BY: SB DATE: SHEET TITLE: ELECTRICAL SITE PLA	
sheet number: E200)

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ELECTRICAL GENERAL NOTES

- A. BUILDING PRIMARY USE IS FOR STORAGE AND IS NOT CONDITIONED. STORAGE MATERIALS MAY PRODUCE EXHAUST GASES AND THUS VENTILATION IS REQUIRED AND SHOULD BE MAINTAINED.
- B. BUILDING IS EXPOSED TO STRUCTURE. ROUTE CONDUIT ALONG STRUCTURAL GIRTS AS MUCH AS POSSIBLE. SIMILAR MOUNTING SHOWN FOR REFERENCE BELLOW (FIGURES 2 & 3).

KEYED NOTES

- 1. POWER FOR MOTORIZED DOORS. CONNECT TO DOOR OPERATOR AND PROVIDE MOTOR RATED SAFETY SWITCH.
- 2. FAN MOUNTED TO EXPOSED STRUCTURE, PROVIDE MANUFACTUER RECOMMENDED MOUNTING EQUIPMENT AND CONTROLS . EXAMPLE PROVIDED IN FIGURE 1.
- 3. PROVIDE VFD CONTROL PAD FOR CEILING FAN.
- DEDICATED CIRCUIT FOR GAS DETECTION EQUIPMENT AND ALARM DEVICES.
 PROVIDE 4 INCH THICK CONCRETE PAD WITH MORE THAN 6 INCH CLEARANCE ON ALL SIDES.



FIGURE 1 - CEILING FAN



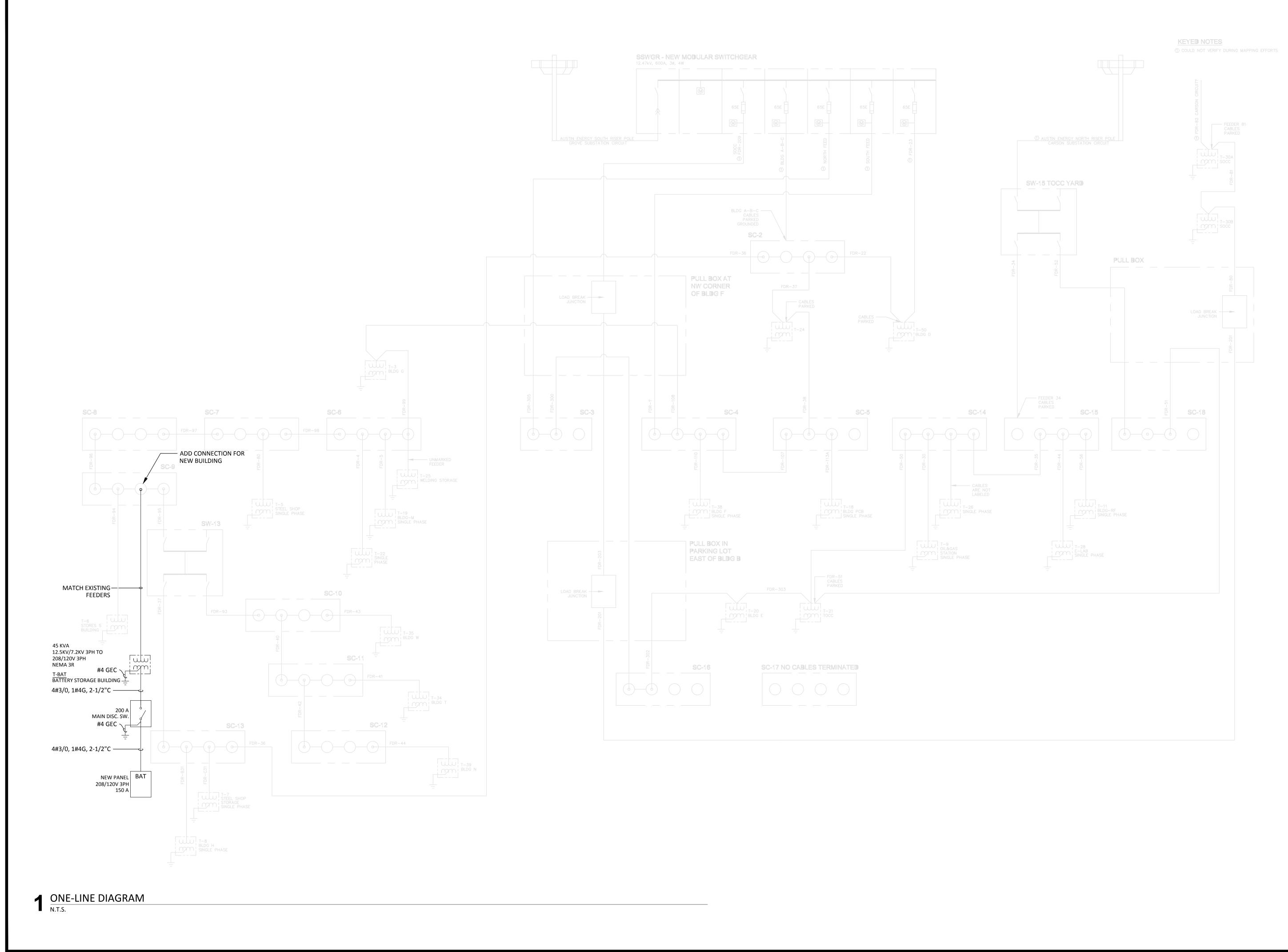
FIGURE 2 - JUNCTION BOX



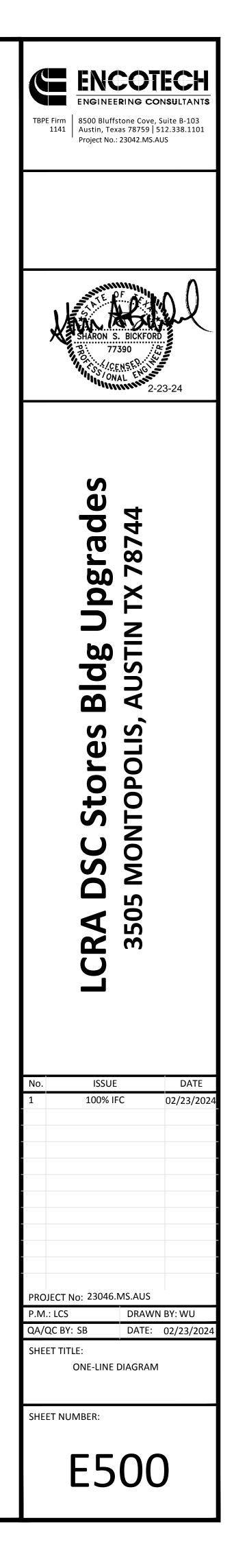
FIGURE 3 - OUTLET BOX



	PE Firm 1141 8500 Bluffstone Austin, Texas 78 Project No.: 2304	G CONSULTANTS Cove, Suite B-103 759 512.338.1101
	LCRA DSC Stores Bldg Upgrades	
No.	ISSUE	DATE
1	100% IFC	02/23/2024
DPC	DJECT No: 23046.MS.A	NUS
P.M	I.: LCS DF	AWN BY: WU ATE: 02/23/2024
SHE	ET TITLE: ELECTRICAL POWI	ER PLAN
SHE	ET NUMBER:	



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ΤΟΤΑΙ ΚΥΑ ΤΟΤΑΙ ΑΜΡS			10.84	-	-	-	12.60					
Т	OTAL AMPS		30 A	-	-	-	35 A					
						LIGH	TING FIX	TURE SO		Ē		
MARK	MANUFACTURER		MODEL		VOLTAGE		LAM	PING		MOUNTING		
			NUDLL			 QTY	WATTAGE	TYPE	TEMP			
	CPHB 36000LM		EF GCL MD M	VOLT GZ10 40H	<120V	10	225144		4000K	PENDANT	HI-BAY P	
A	Lithonia	80CRI CONTROLS	CONTROLS DWH			16	235W	LED	40001	FLINDANT	EMERGEN	
	WPX3 LED 40K MVOLT OPTIONS FINISH		6014		40001/							
В	Lithonia					4	69W	LED	4000K	WALL	EXTERIOR	
		WPX0 LED ALO SWW2 MVOLT PE DDBXD		PEDDBXD	1001				40001		OVERHEA	
С	Lithonia				— 120V	4	13W	LED	4000K	WALL	EMERGEN	
		ELM6L UVOLT LTF	P OPTIONS									
D	Lithonia				120V	4	6W	LED	4000K	WALL	EGRESS L	
		EXBG M6 EI										

TOTAL LOAD PER PHASE	4868	5178	1690		5178 VA / 120 V = 43 A					
1) GFCI 2) AFCI 3) AFCI/GFCI 4) SI	HUNT TRIP	(5) SWD (6	5) HACR (7) LOCKABLE	OPTIONS:	NONE - REFER TO SPECIFICATIONS				
FEEDER OCPD AND CONDUCTOR CALCULATION										
LOAD DESCRIPTION (LOAD IN KVA)	CONNECTED LOAD	DEMAND FACTOR	DEMAND LOAD	LOAD MULTIPLIER	FEEDER LOAD	NOTES				
LIGHTING	4.35	1.00	4.35	1.25	5.44					
RECEPTACLES	1.80	50%>10	1.80	1.00	1.80					
LARGEST MOTOR	1.40	1.00	1.40	1.25	1.75					
OTHER MOTOR(S)	1.64	1.00	1.64	1.00	1.64					
HEATING	0.00	1.00	0.00	1.25	0.00					
CONTINUOUS LOADS	1.30	1.00	1.30	1.25	1.63					
NONCONTINUOUS LOADS	0.35	1.00	0.35	1.00	0.35					
KITCHEN EQUIPMENT QTY = 0	0.00	1.00	0.00	1.00	0.00					
DIVERSIFIED LOAD	0.00	1.00	0.00	0.50	0.00					
ΤΟΤΑΙ Κ٧Α	10.84	-	-	-	12.60					
TOTAL AMPS	30 A	-	-	-	35 A					

-																
	PAN	IELBOARD SCHEDU	JLE			BAT				LOCATION: <u>BATTERY STORAGE</u>						
											C.B. RATING: <u>10 K.A.I.C.</u>			1		
WIRE	V I	VOLTAGE PHASE WIRE			E		MOUNTING		B	JS (A)	LUG	TYPE				
SIZE	Y P	208Y/120V	3	4			SURFACE			150	MCB	NEMA 1	P P	WIRE SIZE		
3125	Ē	USE and/or AREA S	ERVED	C/B POLE	CIR	ØA	LOAD ØB	ØC	CIR	C/B POLE	USE and/o	USE and/or AREA SERVED		3120		
					1	200										
					3	200	200	1	2	a a /a						
		POWERED DOOR N	IOTOR	20/3			200		4	20/3	POWEREL	DOOR MOTOR				
					5			200 200	6							
					7	218]	200		20/1	MOTOR	ZED DAMPERS				
		- EF-1		EF-1		15/2	9	350	218	1	8				┨───┘	
							9		100		10	20/1	GAS DET	ECTION PANEL		
		SPARE		20/1	11			-	12	20/1		SPARE				
		BATTERY CHARGING	STATION	20/1	13	1200 900]		14	20/1		SPARE				
		LIGHTING		20/1	_15		<u>1880</u> 1880		16	20/1	LI	GHTING				
		EXT LIGHTING	6	20/1	17		1000	295 295	18	20/1	EXT	LIGHTING				
		RECEPTACLES	5	20/1	19	900 900]		20	20/1	REC	EPTACLES				
					21	500	700		22	20/1		SPARE				
		FAN MOTOR		20/2	23			700	24	20/1	SPARE					
		TOTAL LOAD PER P	HASE			4868	5178	1690			5178 VA	A / 120 V = 43 A				
(1) GF	① GFCI ② AFCI ③ SHUNT TRIP ⑤ SWD ⑥ HACR ⑦ LOCKABLE OPTIONS: NONE - REFER TO SPECIFICATIONS															

GenerationEncorectionTBPE Firm 11418500 Bluffstone Cove, Suite B-103 Austin, Texas 78759 512.338.1101 Project No.: 23042.MS.AUS
SHARON S. BICKFORD 77390 SHARON S. BICKFORD 77390 S. ONAL ENGLASSING 2-23-24
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E501

	DESCRIPTION	
	HI-BAY PENDANT MOUNTED LED EMERGENCY BATTERY PACK	
	EXTERIOR WALL PACK	
	OVERHEAD LIGHT FOR DOORS EMERGENCY BATTERY PACK	
	EGRESS LIGHTING BUG EYES	
	EXIT SIGN	