

CHEMICAL

SHEET INDEX

- SCOPE OF WORK:

1. INSTALL 3 PHASE 120/208V, 100A, 24 CIRCUITS PANEL-RP1 TO EXISTING PANEL -1LP.
2. INSTALL BRANCH CIRCUITS TO PANEL-RP1.

ELECTRICAL NOTES

- ## STANDARD ABBREVIATIONS

AMP	AMPERE	DND	DRAWING	KV	KILOVOLT	PT	POTENTIAL TRANSFORMER
AFI	ABOVE FINISHED FLOOR	DND	ELECTRICAL CONTRACTOR	KVA	KILOVOLT AMPERE	PP	POWER PANEL
AFS	ABOVE FINISHED SURFACE	EL	ELEVATION	KWH	KILOWATT HOUR	PRR	POWER
AFI	ARC FLASH INTERRUPTER	ELEG	ELECTRICAL	KCP	KILO-CALOR. PANEL	RECEP	RECEPTACLE
AFI	ARC FLASH CIRCUIT INTERRUPTER	EL	ELEVATION	LIP	LOAD INTERRUPTER SWITCH	REV	REVISION
AS/MS/MT/ME/ET/AL	AS/MECHANICAL	EXIST (6)	EXISTING	LIS	LOAD INTERRUPTER SWITCH	SH	SHIELDED CABLE
ATS	AUTOMATIC TRANSFER SWITCH	EXIST (6)	EXISTING	LIP	LIGHTING PANEL	SP	SPACE
ANG	AMERICAN NINE GAUGE	FA	FIRE ALARM	LIG	LIGHTING	SS	SURGE SUPPRESSION
BRK	BREAKER	FBO	FURNISHED BY OTHER	MA	MAIN	SWRS	SWITCHBOARD
C	CENT	FDR	FEEDER	MCC	MOTOR CONTROL CENTER	SWRS	SWITCHBOARD
CB	CIRCUIT BREAKER	FIXT	FIXTURE	MCS	MOLDED CASE SWITCH	SYM	SYMMETRICAL
CTV	CLOSED CIRCUIT TELEVISION	FL	FLOOR	MOP	MAIN DISTRIBUTION PANEL	TEL	TELEPHONE
CT	CIRCUIT	G	GROUND	MN	MINIMUM	TYP	TYPICAL
CL	CENTER LINE	G.C.	GENERAL CONTRACTOR	MSB	MAIN SWITCHBOARD	UG	UNDERGROUND
CLB	CLUB	GEN	GENERATOR	MSB	MAIN SWITCHBOARD	U/L	UNLESS OTHERWISE NOTED
CNTL	CONTROL	GRND	GROUND FAULT CIRCUIT INTERRUPTER	HTS	HOT/MAIN TRANSFER SWITCH	V	VOLT OR VOLTAGE
CP	CONTROL POWER TRANSFORMER	HO	HOT	NA	NON-AUTOMATIC	VA	VOLT AMPERE
CT	CURRENT TRANSFORMER	HO	HOT	NC	NORMALLY CLOSED	VFD	VARIABLE FREQUENCY DRIVE
CU	COPPER	HI	HIGH INTENSITY DISCHARGE	NEG	NEGATIVE	W	WATTS
D	DEHOLISH	HO	HOT	NO	NORMALLY OPEN	WHM	WATT HOUR MEETER
DA	DIAMETER	IC	INTERLOCKING CAPACITY	NTS	NOT TO SCALE	WH	WEATHERPROOF
DISC	DISCONNECT	IO	INPUT / OUTPUT	P	POLE	WH	WEATHER
DN	DOWN	JB	JUNCTION BOX	PH	PHASE	WH	WEATHER
DP	DISTRIBUTION PANEL BOARD			PNL	PANEL	XPR	TRANSFORMER

SYMBOL LEGEND

ELECTRICAL EQUIPMENT

TYPICAL FOR ALL RECEPTACLES, OUTLETS, JUNCTION BOXES AND EQUIPMENT: NUMBER DENOTES PANEL CIRCUIT NUMBER.

	ARC FAULT CIRCUIT INTERRUPTER
	GROUND FAULT INTERRUPTER
	SURGE SUPPRESSION TYPE
	ISOLATED GROUND TYPE
	WEATHERPROOF
	DUPLEX RECEPTACLE
	SWITCHED DUPLEX RECEPTACLE - ONE OUTLET SWITCHED LOWER GAGE LETTERS DENOTES SWITCH CONTROL
	DOUBLE DUPLEX RECEPTACLE
	SINGLE RECEPTACLE
	SPECIAL RECEPTACLE AMPERE AND VOLTAGE RATING AS INDICATED ON DRAWING
	SURFACE RACEWAY WITH RECEPTABLES, AS INDICATED ON DRAWINGS
	DOUBLE DUPLEX RECEPTACLE - FLOOR MOUNTED
	DUPLEX RECEPTACLE - FLOOR MOUNTED
	SPECIAL RECEPTACLE - FLOOR MOUNTED
	CEILING MOUNTED DUPLEX RECEPTACLE
	FLOOR JUNCTION BOX
	WALL MOUNTED JUNCTION BOX
	JUNCTION BOX, SIZE AND MOUNT AS REQUIRED
	ELECTRICAL OR TELEPHONE MANHOLE
	ELECTRICAL OR TELEPHONE HANDHOLE
	TERMINAL BLOCK, SIZE IN ACCORDANCE WITH NEG. REQUIREMENTS AND TO ACCOMMODATE ALL TERMINAL BLOCKS.
	SURFACE BOX, SIZE IN ACCORDANCE WITH NEG. REQUIREMENTS.
	PULL BOX, SIZE IN ACCORDANCE WITH NEG. REQUIREMENTS.
	RECESSED PANELBOARD LETTERS & NUMERALS INDICATE EQUIPMENT TAG
	RECESSED PANELBOARD LETTERS & NUMERALS INDICATE EQUIPMENT TAG
	ELECTRICAL PANEL LETTERS AND NUMBERS INDICATE PANELBOARD IDENTIFICATION TAG SEE PANEL SCHEDULE FOR DETAILS.
	HOMENER CIRCUITS TO PANELBOARD. NUMBER OF HOMERS INDICATES NUMBER OF CIRCUIT BREAKERS. 1 PH 120V
	FEEDER TAG WITH CONDUIT AND WIRE SIZE AND DATA
	INDICATES NEW OR EXISTING EQUIPMENT/CONDUIT
	INDICATES CONCEALED NEW OR EXISTING EQUIPMENT/CONDUIT
	INDICATES EXISTING EQUIPMENT/CONDUIT TO BE DISPOSED AND/OR REMOVED
	BUS BAR
	FLEXIBLE CONNECTION
	CONDUIT TURNING UP
	CONDUIT TURNING DOWN
	CAPPED CONDUIT
	CABLE TRAY (LADDER STYLE) NUMBER INDICATED IN INCHES
	BUS DUCT
	HAND OFF AUTOMATIC SWITCH
	CONTROL
	RELEASING STATION
	INDICATING LIGHT STATION
DATA & TELEPHONE	
	DATA SYSTEM SYSTEM OUTLET BOX, WITH 3/4" CONDUIT SUB UP ABOVE HANG CEILING WITH DRAG LINE AND BUSHED ENDS
	TELEPHONE SYSTEM OUTLET BOX, WITH 3/4" CONDUIT SUB UP ABOVE HANG CEILING WITH DRAG LINE AND BUSHED ENDS
	COMBINATION TELEPHONE/DATA BOX WITH 1" CONDUIT SUB UP ABOVE HANG CEILING WITH DRAG LINE AND BUSHED ENDS
	DATA OUTLET BOX - FLOOR MOUNTED
	TELE OUTLET BOX - FLOOR MOUNTED
	COMBINATION TELEPHONE/DATA OUTLET FLOOR MOUNTED
	TELEPHONE POKE THRU
	DATA POKE THRU
	TELEPHONE / DATA POKE THRU
	TELEPHONE/DATA TERMINAL BOARD. 3/4" x 4" x 6" IS 750000 FASTENED TO THE WALL WITH 3/4" CHANNEL.

LIGHTING

TYPICAL FOR ALL LIGHTING FIXTURES:

1. CAPITAL LETTER DENOTES FIXTURE TYPE.
2. SEE LIGHTING FIXTURE SCHEDULE FOR DESCRIPTION, TYPE, AND DETAILS.
3. NUMBER DENOTES BRANCH CIRCUIT NUMBER AT RESPECTIVE LIGHTING PANELBOARD. LOWER CASE LETTER DENOTES SWITCHED CIRCUIT.

TYPICAL LIGHTING FIXTURE	
	SINGLE POLE SWITCH
	DOUBLE POLE SWITCH
	THREE-WAY SWITCH
	FOUR-WAY SWITCH
	SINGLE POLE KEY SWITCH
	THREE WAY KEY SWITCH
	SINGLE POLE SWITCH WITH PILOT LIGHT
	DIMMING SWITCH
	OCCUPANCY SENSOR TYPE SWITCH
	THREE WAY DIMMING SWITCH
	MANUAL MOTOR TOGGLE TYPE STARTER WITH INTEGRAL THERMAL OVERLOAD HEATER
	EMERGENCY LIGHTING
	EMERGENCY LIGHTING WITH EXIT SIGN
	EXIT SIGN
	MOTION SENSOR
	PHOTOCELL
	OCCUPANCY SENSOR
	TIME CLOCK
	LIGHTING CONTACTOR. NUMBER INDICATES CONTACTOR IDENTIFICATION TAG. SEE CONTACTOR SCHEDULE FOR NUMBER OF POLES AND DETAILS.
	GENERATOR REMOTE ANNUNCIATOR
	PADDLE FAN
GENERATION & GROUNDING	
	LOCK FOR RESPECTIVE KEY CAPTIVE IN LOCK
	LOCK FOR RESPECTIVE KEY INTERLOCK
	ELECTRON METERING DEVICE
	AMMETER
	AMMETER WITH METER SWITCH
	VOLTMETER
	VOLTMETER WITH METER SWITCH
	WITHOUT METER
	UTILITY COMPANY METER AND METER PAN AS REQUIRED
	FUSE
	SURGE PROTECTOR DEVICE
	HARMONIC FILTER
	POWER FACTOR CORRECTION CAPACITOR
	LINE REACTOR
	RESISTOR
	GENERATOR
	MEDIUM VOLTAGE CABLE STRESS CONNECTION
	600 VOLT CABLE LIMITER CONNECTION
	LIGHTNING ARRESTER. NUMBER IN PARENTHESIS INDICATES QUANTITY.
	GROUNDING WYE CONNECTION
	UNGROUNDING WYE CONNECTION
	OPEN DELTA CONNECTION
	DELTA CONNECTION
	NODE
	WIRE TERMINAL
	GROUND TEST ELECTRODE
	GROUND ROD
	UNDERGROUND GROUND SYSTEM BARE CABLE. SIZE AS NOTED OR INDICATED.
	BUILDING GROUND SYSTEM BARE CABLE. SIZE AS NOTED OR INDICATED.
	GROUND GRID CABLE CONNECTION
	GROUND CONNECTION

DISTRIBUTION EQUIPMENT

FOR ALL DISTRIBUTION EQUIPMENT.

GFP	-	GROUND FAULT PROTECTION
ST	-	SHUNT TRIP
LSIG	-	LONG TIME, SHORT TIME INSTANTANEOUS AND GROUND FAULT PROTECTION FUNCTIONS
100%	-	100% RATED EQUIPMENT.

E ELECTRIC OPERATED DEVICE

ET ELECTRIC TRIP TYPE DEVICE

CIRCUIT BREAKER

THERMAL MAGNETIC CIRCUIT BREAKER TOP NUMBER DENOTES TRIP AMPERE RATING BOTTOM NUMBER DENOTES FRAME SIZE AMPERE RATING #P - DENOTES NUMBER OF POLES

CIRCUIT BREAKER WITH ELECTRIC TRIP PROGRAM-AMP TOP NUMBER INDICATES FRAME SIZE SIZE BOTTOM NUMBER INDICATES SENSOR RATING. #P - DENOTES NUMBER OF POLES

DRAW-OUT TYPE THERMAL MAGNETIC CIRCUIT BREAKER TOP NUMBER DENOTES TRIP AMPERE RATING BOTTOM NUMBER DENOTES FRAME SIZE AMP RATING #P - DENOTES NUMBER OF POLES

MEDIUM VOLTAGE DRAW-OUT CIRCUIT BREAKER TOP NUMBER DENOTES TRIP AMPERE RATING BOTTOM NUMBER DENOTES FRAME SIZE AMP RATING #P - DENOTES NUMBER OF POLES

DRAW-OUT MCC PIVOT CIRCUIT BREAKER COMBINATION STARTER TOP NUMBER DENOTES TRIP SIZE AMPERE RATING MCP DENOTES MOTOR CIRCUIT PROTECTOR SIZE
#M - DENOTES NEMA STARTER SIZE
#P - DENOTES NUMBER OF POLES

DRAW-OUT FUSED SWITCH TOP NUMBER DENOTES SWITCH AMPERE RATINGS BOTTOM NUMBER DENOTES FUSE AMPERE RATINGS
#P - DENOTES NUMBER OF POLES

FUSED MEDIUM VOLTAGE DRAW-OUT STARTER TOP NUMBER DENOTES FUSE AMPERE RATING #M - DENOTES NEMA STARTER SIZE
#P - DENOTES NUMBER OF POLES

UNFUSED DISCONNECT SWITCH NUMBER DENOTES SWITCH AMPERE RATING
#P - DENOTES NUMBER OF POLES

FUSED DISCONNECT SWITCH TOP OR FIRST NUMBER DENOTES SWITCH AMPERE RATINGS BOTTOM SECOND NUMBER DENOTES AMPERE FUSE RATING
#P - DENOTES NUMBER OF POLES

MEDIUM VOLTAGE UNFUSED LOAD INTERRUPTER SWITCH NUMBER DENOTES SWITCH AMPERE RATING
#P - DENOTES NUMBER OF POLES

MEDIUM VOLTAGE FUSED LOAD INTERRUPTER SWITCH TOP NUMBER DENOTES SWITCH AMPERE RATINGS BOTTOM NUMBER DENOTES FUSE AMPERE RATING #P - DENOTES NUMBER OF POLES

MAGNETIC MOTOR STARTER WITH THERMAL OVERLOADS

MAGNETIC MOTOR STARTER CONTACTOR
#M - DENOTES NEMA STARTER SIZE

COMBINATION MAGNETIC MOTOR STARTER WITH DISCONNECT SWITCH
#M - DENOTES NEMA STARTER SIZE

CURRENT TRANSFORMER (CT) PRIMARY AND SECONDARY CURRENT RATINGS NUMBER IN PARENTHESIS INDICATES QUANTITY

POTENTIAL TRANSFORMER WITH PRIMARY AND SECONDARY FUSES

ENCLOSED CIRCUIT BREAKER TOP OR FIRST NUMBER DENOTES SWITCH AMPERE RATING BOTTOM OR SECOND NUMBER DENOTES FUSE AMPERE RATING #P - DENOTES NUMBER OF POLES

ENCLOSED CIRCUIT BREAKER/COMBINATION FVNR STARTER TOP NUMBER DENOTES MOTOR CIRCUIT PROTECTOR CONTINUOUS AMPERE RATING #M DENOTES NEMA STARTER SIZE.
#P - DENOTES NUMBER OF POLES

ENCLOSED CT CABINET

RELAY, FUNCTION (#) DENOTE ANSI DEVICE FUNCTION NUMBER

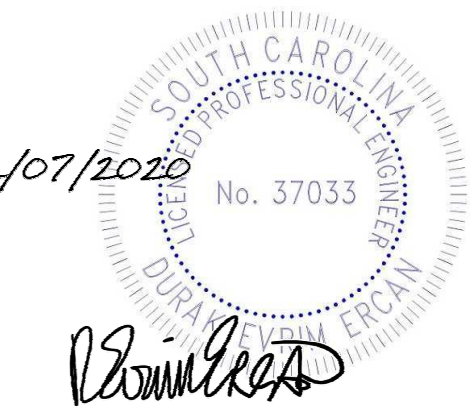
AUTOMATIC TRANSFER SWITCH

AUTOMATIC TRANSFER SWITCH WITH BYPASS ISOLATION

TRANSFORMER SIZE AS NOTED WITH PRIMARY AND SECONDARY VOLTAGE AS INDICATED

PACKAGED EQUIPMENT WITH DISCONNECT SWITCH AND MOTOR STARTER

PROFESSIONAL ENGINEERING

SEAL & SIGNATURE

NO ALTERATION PERMITTED
EXCEPT AS PROVIDED UNDER
DIRECTION OF A LICENSED
PROFESSIONAL ENGINEER.

Digitally signed by Durak
Evrin Ercan
DN: c=US, st=New Jersey,
l=Montclair, o=Durak
Evrin Ercan, cn=Durak
Evrin Ercan,
email=info@AmperEngine
ering.com
Date: 2020.12.07 12:24:43
-05'00'

REV	DATE	DESCRIPTION
0	12/04/2020	ISSUED FOR PERMIT APPLICATION

CLIENT:

PROJECT:

CHEMICAL

ADDRESS

AKE RD.
SPARTANBURG, SC
29301

ISSUE DATE:

PROJECT NUMBER:

AE# 124

SCALE:

NONE

DESIGNED BY

DESIGNED BY

DEF

DEF

DRAWING TITLE:

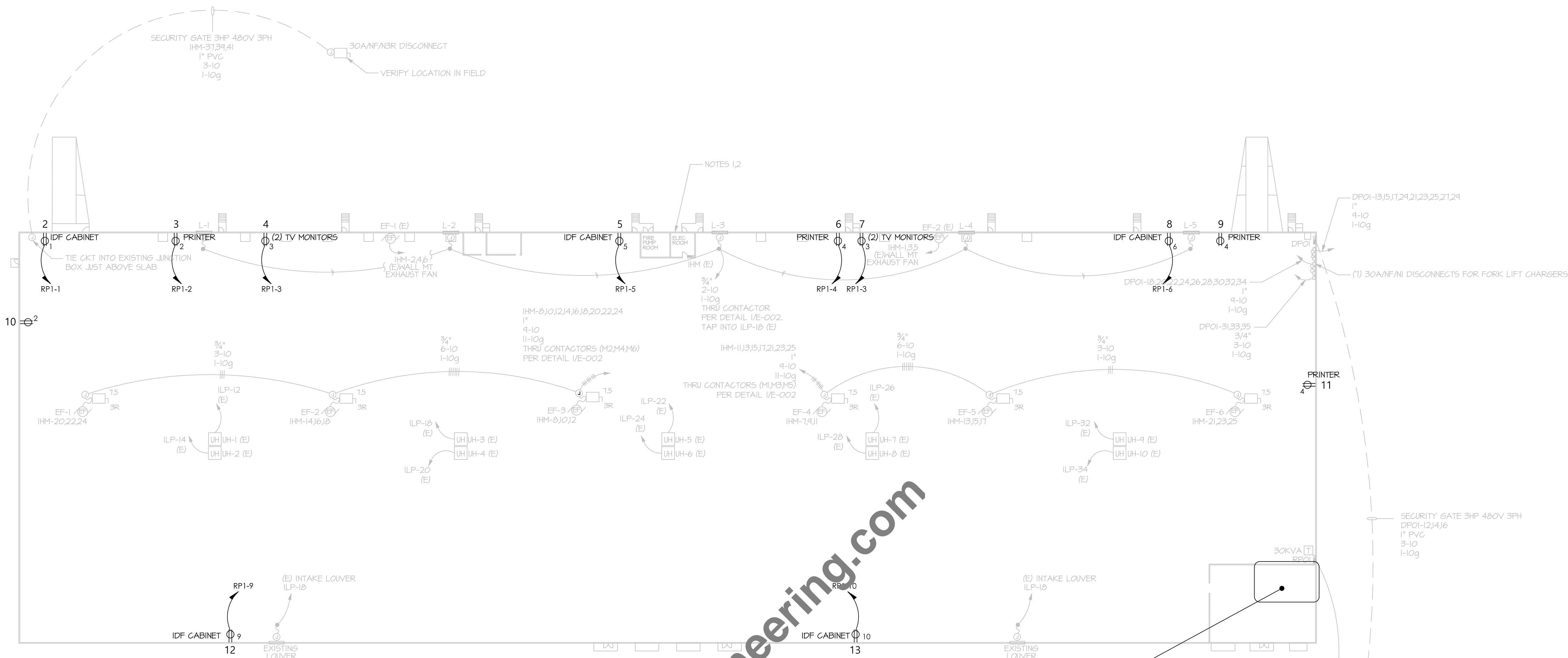
ELECTRICAL COVER SHEET, GENERAL NOTES AND SYMBOL LEGEND

DRAWING NO:

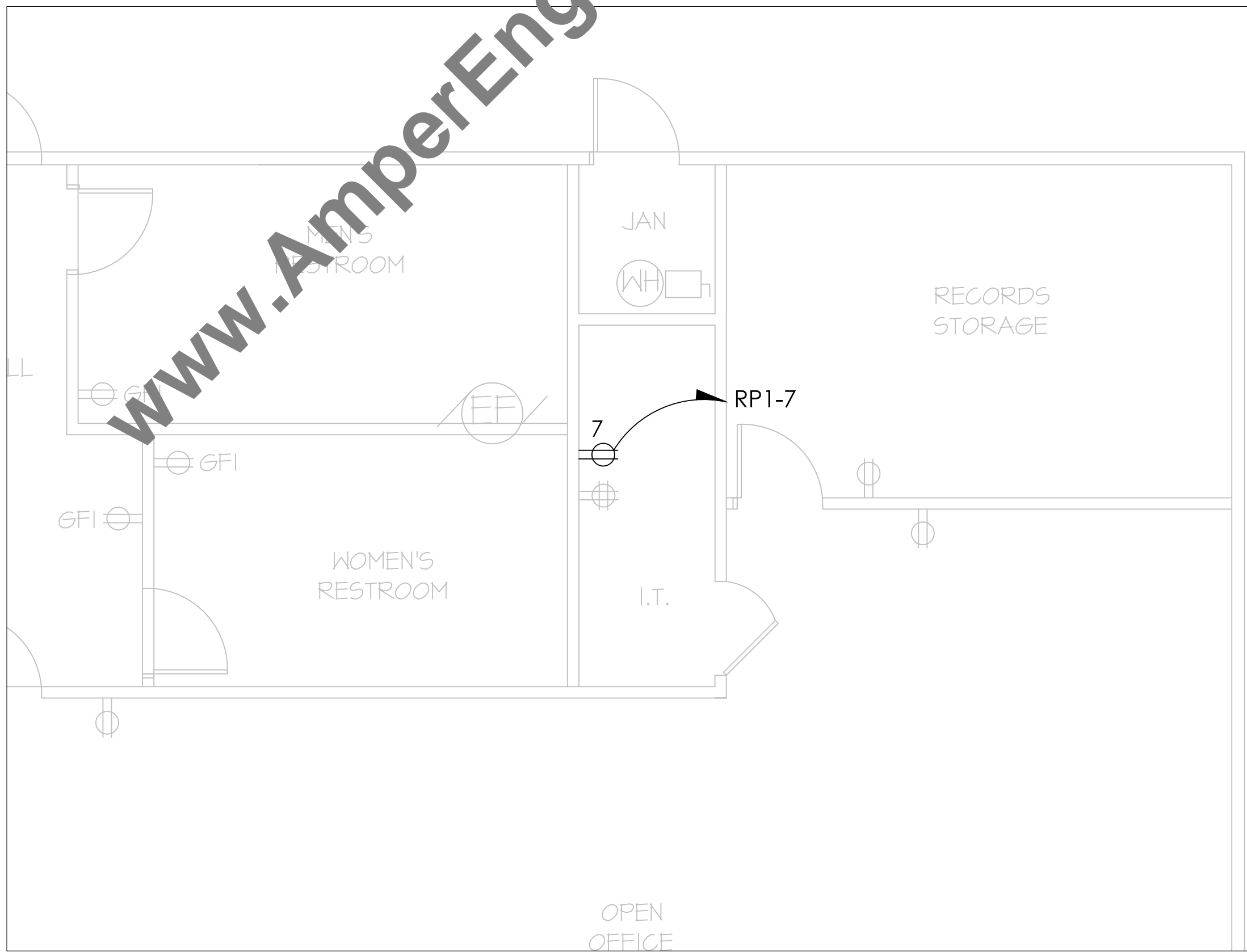
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REVISION:

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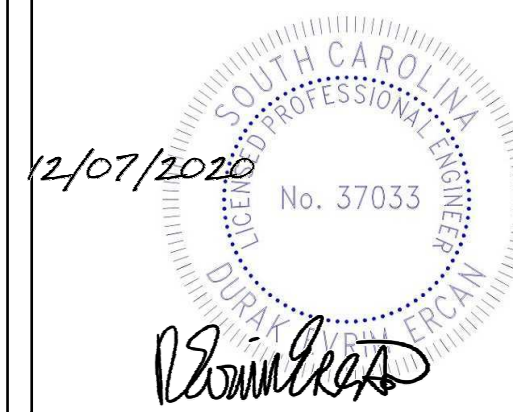
WAREHOUSE POWER PLAN



PARTIAL FRONT OFFICE POWER PLAN

- NOTES:
- EXISTING HEATING AND VENTILATION AND CONTROLS TO REMAIN IN PLACE.
 - ADD 24X24X8" BOX W/6-DEFINITE PURPOSE 480V 4P CONTACTORS TO CONTROL NEW EXHAUST FANS AND LOUVERS. ALL NEW EXHAUST FANS AND LOUVERS TO BE GROUP START. FANS AND LOUVERS TO ROUTE THROUGH CONTACTOR TO EXISTING IHM(FANS) AND IHL(LOUVERS) PANELS RESPECTIVELY USING DETAIL I/E-002.
 - IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH ALL TRADES FOR THE EXACT LOCATION OF NEW WIRING DEVICES AND EQUIPMENT THAT REQUIRE ELECTRICAL CONNECTIONS AND PROVIDE ALIGNMENT OF DEVICES.
 - ALL NEW RECEPTACLES WILL BE INSTALLED AT LOCATIONS AS REQUIRED BY THE LATEST VERSION OF NEC, STATE AND LOCAL CODES.
 - ELECTRICAL CONTRACTOR TO PROVIDE FIRE CAULKING WHERE PENETRATIONS ARE MADE FOR INSTALLING THE ELECTRICAL EQUIPMENT.

SEAL & SIGNATURE:



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PROFESSIONAL ENGINEER.

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CLIENT:

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**AKE RD.
SPARTANBURG, SC
29301**

ISSUE DATE:

12/04/2020

PROJECT NUMBER:

AE# 1241

SCALE:

NONE

DESIGNED BY:

DEE

DRAWN BY:

DEE

CHECKED BY:

DEE

DRAWING TITLE:

**WAREHOUSE & PARTIAL
FRONT OFFICE
POWER PLAN**

DRAWING NO:

E2

REVISION:

0

