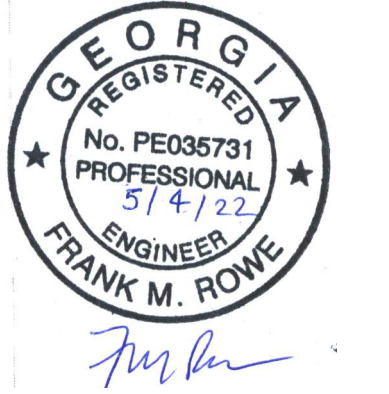




CONSULTANTS:

Issued For CONSTRUCTION 05/04/2022 www.ssoe.com

SEAL ON THIS DOCUMENT AUTHORIZED BY:



PROJECT INFORMATION:

BROWNFIELD MODIFICATIONS

CLIENT INFORMATION:



ASCEND ELEMENTS
ASCEND ELEMENTS
9172 INDUSTRIAL DR NE
COVINGTON, GA
30014

CLIENT PROJECT NO: XXX-XXXX-XX

Revision table with columns: NO., DATE, SUBJECT, REVISION OR ISSUE

SSOE, Inc.
1001 Madison Avenue
Tolletts, GA 30084
T. (419) 255-3830

PROJECT NO: 021-01975-00
PROJECT MANAGER: R. FOX
DESIGNED: D. WOODS
CHECKED: F. ROWE

DRAWING TITLE:
ELECTRICAL TABLES

DRAWING NO:
EA-003

TABLE NOTES

- 1. CAPACITIES BASED ON THHN/THWN, 90°, 600V, INSULATED, COPPER OR ALUMINUM WIRE APPLIED AT 80° TERMINATIONS FOR CIRCUITS RATED 110A AND DOWN AND APPLIED AT 75° TERMINATIONS FOR CIRCUITS RATED ABOVE 110A PER NEC 110.14(C)(1).
- 2. BASED ON WIRE OUTSIDE DIAMETERS AND NON-RIGID METALLIC CONDUIT INSIDE DIAMETERS AS PROVIDED IN THE NEC. REFER TO NEC FOR CONDUIT TYPES MORE RESTRICTIVE THAN NON-RIGID METALLIC CONDUCTOR AND CONDUIT SIZES INDICATED ARE MINIMUM REQUIREMENTS. FOLLOW NEC REQUIREMENTS FOR DERATING AND PROVIDE LARGER CONDUCTORS AND CONDUIT WHERE APPLICABLE.
- 3. BASED ON MOTOR FULL LOAD AMPERES AS PROVIDED BY THE NEC.
- 4. BASED ON MOTOR RUNNING OVERLOAD PROTECTION PROVIDED BY THERMAL OVERLOAD RELAYS.
- 5. MOTOR STARTING TYPE BASED ON 3 PHASE, FULL VOLTAGE NON-REVERSING EXCEPT FOR MOTORS SIZED 75HP OR GREATER WHICH ARE BASED ON 3 PHASE, PART WINDING REDUCED VOLTAGE STARTING.
- 6. TRANSFORMER CIRCUITS BASED ON 480V-208Y/120V, 3 PHASE, 4 WIRE, DRY TYPE. REFER TO CIRCUIT SIZING SCHEDULES ON THIS SHEET FOR PRIMARY/SECONDARY PHASE/NEUTRAL/SUPPLY SIDE BONDING JUMPER CONDUCTOR REQUIREMENTS ASSOCIATED WITH CIRCUIT SIZES NOTED IN THIS TABLE UON.
- 7. CIRCUIT MAXIMUM DISTANCE IS BASED ON NEC CHAPTER 9, TABLE 8 CONDUCTOR PROPERTIES FOR COATED COPPER OR ALUMINUM CONDUCTORS AT 75 DEGREES CELSIUS. REFER TO NEXT LARGER OVERCURRENT DEVICE RATING IN THIS TABLE FOR OVERCURRENT DEVICES WITH RATINGS NOT INDICATED.
- 8. MAXIMUM CIRCUIT LOAD FOR DISTANCE IS BASED ON NEC 220-10.
- 9. REFER TO CIRCUIT SIZING SCHEDULE ON THIS SHEET FOR UPSIZING CONDUIT AND WIRING. EG SHALL BE INCREASED IN SIZE PROPORTIONATELY PER THE NEC. ONLY CONDUCTORS AND CONDUIT SHALL BE INCREASED IN SIZE. OVERCURRENT PROTECTION DEVICE SHALL REMAIN AS SPECIFIED.
- 10. CONDUCTORS SHALL BE STRANDED. COPPER CONDUCTORS ARE REQUIRED FOR CIRCUITS RATED AT 100A AND LESS, AND FOR ALL MECHANICAL EQUIPMENT CIRCUITS. ALUMINUM CONDUCTORS ARE ACCEPTABLE FOR CIRCUITS LARGER THAN 100A, EXCEPT MECHANICAL EQUIPMENT CIRCUITS.
- 11. WHERE OVERCURRENT DEVICE REQUIRED IS NOT LISTED IN TABLE USE CONDUIT AND WIRE REQUIREMENTS LISTED FOR NEXT LARGER LISTED OVERCURRENT DEVICE.
- 12. TABLE IS NOT APPLICABLE FOR SERVICE ENTRANCE FEEDERS. REFER TO ELECTRICAL PLANS AND DIAGRAMS FOR SERVICE ENTRANCE FEEDER REQUIREMENTS.
- 13. REFER TO CIRCUIT SIZING SCHEDULE ON THIS SHEET FOR CONDUIT AND WIRING REQUIREMENTS ASSOCIATED WITH CIRCUIT SIZES NOTED IN THIS TABLE.
- 14. NON-FUSED LOCAL DISCONNECT SWITCH SIZE SHALL HAVE AN AMPERE RATING NO LESS THAN THE CIRCUIT SIZE INDICATED IN THIS TABLE. WHERE THE CIRCUIT SIZE IS NOT INDICATED, THE AMPERE RATING SHALL BE NO LESS THAN THE RATING OF THE PHASE CONDUCTORS PER THE NEC.

COPPER CIRCUIT LENGTH TABLE, 480V 3PH

(NOTES 7.8, 9)

OVERCURRENT DEVICE RATING	MAX. CIRCUIT LOAD (AMPS)	MINIMUM AMPERAGE RATING OF WIRE REQUIRED FOR LENGTH INDICATED																								
		20A	30A	40A	50A	70A	80A	90A	100A	150A	175A	200A	225A	250A	300A	350A	400A	450A	500A	600A	700A	800A	1000A	1200A	1600A	2000A
20A	16	250'	415'	645'	1025'	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30A	24	-	275'	425'	680'	1060'	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40A	32	-	-	320'	510'	800'	1000'	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50A	40	-	-	-	410'	640'	780'	960'	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
70A	56	-	-	-	-	455'	560'	690'	840'	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
80A	64	-	-	-	-	-	490'	600'	735'	950'	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
90A	72	-	-	-	-	-	-	535'	655'	850'	990'	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
100A	80	-	-	-	-	-	-	-	590'	755'	880'	1070'	-	-	-	-	-	-	-	-	-	-	-	-	-	-
150A	120	-	-	-	-	-	-	-	-	505'	588'	710'	840'	-	-	-	-	-	-	-	-	-	-	-	-	-
175A	140	-	-	-	-	-	-	-	-	-	500'	600'	710'	780'	-	-	-	-	-	-	-	-	-	-	-	-
200A	160	-	-	-	-	-	-	-	-	-	-	525'	620'	685'	830'	-	-	-	-	-	-	-	-	-	-	-
225A	180	-	-	-	-	-	-	-	-	-	-	-	550'	605'	750'	885'	-	-	-	-	-	-	-	-	-	-
250A	200	-	-	-	-	-	-	-	-	-	-	-	-	530'	650'	770'	820'	-	-	-	-	-	-	-	-	-
300A	240	-	-	-	-	-	-	-	-	-	-	-	-	-	540'	635'	685'	820'	-	-	-	-	-	-	-	-
350A	280	-	-	-	-	-	-	-	-	-	-	-	-	-	-	545'	585'	705'	765'	-	-	-	-	-	-	-
400A	320	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	510'	615'	670'	815'	-	-	-	-	-	-
450A	360	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	550'	600'	725'	850'	-	-	-	-	-
500A	400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	535'	650'	765'	820'	-	-	-	-
600A	480	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	545'	640'	680'	820'	-	-	-
700A	560	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	550'	580'	750'	875'	-	-
800A	640	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	510'	650'	760'	1020'	-
1000A	800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	525'	610'	815'	1010'
1200A	960	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	510'	680'	850'
1600A	1280	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	510'	680'
2000A	1600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	510'

COPPER FEEDER & BRANCH CIRCUIT SIZING SCHEDULE

(NOTES 1.2, 10.11, 12)

OVERCURRENT DEVICE RATING	SETS PER PHASE	AWG OR KCMIL		CONDUIT SIZE	
		PHASE & NEUTRAL	EG	3 WIRE (3W)	4 WIRE (4W) (3PH & 1N)
20A	1	12	12	3/4"	3/4"
30A	1	10	10	3/4"	3/4"
40A	1	8	10	3/4"	3/4"
50A	1	6	10	3/4"	1"
60A	1	6	10	3/4"	1"
70A	1	4	8	1"	1-1/4"
80A	1	3	8	1-1/4"	1-1/4"
90A	1	2	8	1-1/4"	1-1/4"
100A	1	2	8	1-1/4"	1-1/4"
125A	1	1	6	1-1/2"	1-1/2"
150A	1	1/0	6	1-1/2"	2"
175A	1	2/0	6	2"	2"
200A	1	3/0	6	2"	2"
225A	1	4/0	4	2"	2-1/2"
250A	1	250	4	2-1/2"	2-1/2"
300A	1	350	4	2-1/2"	3"
350A	1	400	3	3"	3"
400A	1	500	3	3"	3-1/2"
450A	2	4/0	2	2"	2-1/2"
500A	2	250	2	2-1/2"	2-1/2"
600A	2	350	1	3"	3"
700A	2	400	1/0	3"	3"
800A	2	500	1/0	3"	3-1/2"
1000A	3	400	2/0	3"	3"
1200A	3	600	3/0	3-1/2"	3-1/2"
1600A	4	600	4/0	3-1/2"	3-1/2"

ALUMINUM CIRCUIT LENGTH TABLE, 480V 3PH

(NOTES 7.8, 9)

OVERCURRENT DEVICE RATING	MAX. CIRCUIT LOAD (AMPS)	CIRCUIT SIZE																								
		20A	30A	40A	50A	70A	80A	90A	100A	150A	175A	200A	225A	250A	300A	350A	400A	450A	500A	600A	700A	800A	1000A	1200A	1600A	
150A	120	-	-	-	-	-	-	-	-	505'	660'	770'	920'	-	-	-	-	-	-	-	-	-	-	-	-	-
175A	140	-	-	-	-	-	-	-	-	-	570'	660'	785'	900'	-	-	-	-	-	-	-	-	-	-	-	-
200A	160	-	-	-	-	-	-	-	-	-	-	580'	685'	785'	1100'	-	-	-	-	-	-	-	-	-	-	-
225A	180	-	-	-	-	-	-	-	-	-	-	-	500'	550'	680'	800'	-	-	-	-	-	-	-	-	-	-
250A	200	-	-	-	-	-	-	-	-	-	-	-	-	495'	615'	720'	800'	-	-	-	-	-	-	-	-	-
300A	240	-	-	-	-	-	-	-	-	-	-	-	-	-	515'	600'	660'	755'	-	-	-	-	-	-	-	-
350A	280	-	-	-	-	-	-	-	-	-	-	-	-	-	-	510'	565'	650'	710'	-	-	-	-	-	-	-
400A	320	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	500'	565'	615'	765'	-	-	-	-	-	-
450A	360	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	500'	550'	680'	750'	-	-	-	-	-
500A	400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	495'	620'	675'	810'	-	-	-	-
600A	480	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	510'	565'	675'	840'	-	-	-
700A	560	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	480'	580'	720'	875'	-	-
800A	640	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	500'	625'	760'	1045'	-
1000A	800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	500'	620'	840'	-
1200A	960	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	510'	700'	-
1600A	1280	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	525'	-

ALUMINUM FEEDER & BRANCH CIRCUIT SIZING SCHEDULE

(NOTES 1.2, 10.11, 12)

OVERCURRENT DEVICE RATING	SETS PER PHASE	AWG OR KCMIL		CONDUIT SIZE	
		PHASE & NEUTRAL	EG	3 WIRE (3W)	4 WIRE (4W) (3PH & 1N)
125A	1	1/0	4	1 1/2"	2"
150A	1	3/0	4	2"	2"
175A	1	4/0	4	2"	3"
200A	1	250	4	2"	3"
225A	1	350	2	3"	3"
250A	1	350	2	3"	3"
300A	1	500	2	3"	3"
350A	1	600	1	3"	4"
400A	2	250	1	3"	3"
450A	2	350	1/0	3"	3"
500A	2	350	1/0	3"	3"
600A	2	500	2/0	3"	3"
700A	2	600	3/0	3"	4"
800A	3	500	3/0	3"	3"
1000A	3	600	4/0	3"	4"
1200A	4	500	250	3"	3"
1600A	5	600	350	3"	4"
2000A	6	600	500	3"	4"

CIRCUIT LENGTH TABLE, 120V 1PH

(NOTES 7.8, 9)

OVERCURRENT DEVICE RATING	MAX. CIRCUIT LOAD (AMPS)	CIRCUIT SIZE				
		20A	30A	40A	50A	70A
20A	4	215'	360'	555'	880'	-
	8	105'	180'	275'	440'	700'
	12	70'	120'	185'	295'	465'
	16	50'	90'	140'	220'	350'
30A	24	-	60'	90'	145'	230'
40A	32	-	-	70'	110'	175'
50A	40	-	-	-	85'	140'
60A	48	-	-	-	-	115'

CIRCUIT LENGTH TABLE, 208V 1PH

(NOTES 7.8, 9)

OVERCURRENT DEVICE RATING	MAX. CIRCUIT LOAD (AMPS)	CIRCUIT SIZE				
		20A	30A	40A	50A	70A
20A	4	375'	625'	965'	-	-
	8	185'	310'	480'	765'	-
	12	125'	205'	320'	510'	810'
	16	90'	155'	240'	380'	605'
30A	24	-	100'	160'	2	