

UNIT "A1"						
						KW
SQUARE FOOTAGE	1228	SF	X	3	W/SF	3.7
KITCHEN/LAUNDRY	3		X	1.5	W	4.5
RANGES	8000	W				8.0
DRYERS	5000	W				5.0
DISPOSALS	800	W				0.8
DISHWASHERS	1200	W				1.2
WATER HEATERS	4500	W				4.5
SUBTOTAL						27.7 KW
DEMAND FACTOR						
1st 10 KW	100	%				10.0 KW
Remainder	40	%				7.1 KW
HVAC	65	%	11600	W		7.6 KW
Total						24.7 KW
N.E.C. TABLE 220-32						
AMPS AT 240 V, 1 PHASE						103.0 AMPS

UNIT "A1(END)"						
						KW
SQUARE FOOTAGE	1228	SF	X	3	W/SF	3.7
KITCHEN/LAUNDRY	3		X	1.5	W	4.5
RANGES	8000	W				8.0
DRYERS	5000	W				5.0
DISPOSALS	800	W				0.8
DISHWASHERS	1200	W				1.2
WATER HEATERS	4500	W				4.5
SUBTOTAL						27.7 KW
DEMAND FACTOR						
1st 10 KW	100	%				10.0 KW
Remainder	40	%				7.1 KW
HVAC	65	%	12200	W		8.0 KW
Total						25.1 KW
N.E.C. TABLE 220-32						
AMPS AT 240 V, 1 PHASE						104.6 AMPS

UNIT "A2"						
						KW
SQUARE FOOTAGE	1178	SF	X	3	W/SF	3.5
KITCHEN/LAUNDRY	3		X	1.5	W	4.5
RANGES	8000	W				8.0
DRYERS	5000	W				5.0
DISPOSALS	800	W				0.8
DISHWASHERS	1200	W				1.2
WATER HEATERS	4500	W				4.5
SUBTOTAL						27.5 KW
DEMAND FACTOR						
1st 10 KW	100	%				10.0 KW
Remainder	40	%				7.0 KW
HVAC	65	%	11600	W		7.6 KW
Total						24.6 KW
N.E.C. TABLE 220-32						
AMPS AT 240 V, 1 PHASE						102.5 AMPS

UNIT "B1"						
						KW
SQUARE FOOTAGE	1363	SF	X	3	W/SF	4.1
KITCHEN/LAUNDRY	3		X	1.5	W	4.5
RANGES	8000	W				8.0
DRYERS	5000	W				5.0
DISPOSALS	800	W				0.8
DISHWASHERS	1200	W				1.2
WATER HEATERS	4500	W				4.5
SUBTOTAL						28.1 KW
DEMAND FACTOR						
1st 10 KW	100	%				10.0 KW
Remainder	40	%				7.2 KW
HVAC	65	%	12200	W		8.0 KW
Total						25.2 KW
N.E.C. TABLE 220-32						
AMPS AT 240 V, 1 PHASE						105.0 AMPS

METER CENTER "1A - 20A"						
Total Number of Units Served This Distribution Center =						5
						KW
SQUARE FOOTAGE	6360	SF	X	3	W/SF	19.1
KITCHEN/LAUNDRY	4500	W	X	5		22.5
RANGES	8000	W	X	5		40.0
MICROWAVE	1500	W	X	5		7.5
DRYERS	5000	W	X	5		25.0
DISPOSALS	800	W	X	5		4.0
DISHWASHERS	1200	W	X	5		6.0
WATER HEATERS	4500	W	X	5		22.5
HVAC	100	%	W			60.0
SUBTOTAL						206.6 KW
DEMAND FACTOR						
N.E.C. TABLE 220-32	45	%				93.0 KW
H.P.	100	%	6300	W		8.3 KW
Total						99.3 KW
N.E.C. TABLE 220-32						
AMPS AT 240 V, 1 PHASE						413.7 AMPS

METER CENTER "1B - 20B"						
Total Number of Units Served This Distribution Center =						5
						KW
SQUARE FOOTAGE	6360	SF	X	3	W/SF	19.1
KITCHEN/LAUNDRY	4500	W	X	5		22.5
RANGES	8000	W	X	5		40.0
MICROWAVE	1500	W	X	5		7.5
DRYERS	5000	W	X	5		25.0
DISPOSALS	800	W	X	5		4.0
DISHWASHERS	1200	W	X	5		6.0
WATER HEATERS	4500	W	X	5		22.5
HVAC	100	%	W			60.0
SUBTOTAL						206.6 KW
DEMAND FACTOR						
N.E.C. TABLE 220-32	45	%				93.0 KW
H.P.	100	%	W			8.3 KW
Total						93.0 KW
N.E.C. TABLE 220-32						
AMPS AT 240 V, 1 PHASE						387.4 AMPS

ELECTRICAL SPECIFICATIONS

- I. SCOPE

INSTALL ALL ELECTRICAL WORK COVERED BY THE BELOW SPECIFICATIONS AND APPROVED DRAWINGS. PROVIDE ALL MATERIAL, LABOR, TRANSPORTATION, TOOLS, SUPERVISION, ETC., NECESSARY TO COMPLETE THE TOTAL ELECTRICAL JOB. ALL ITEMS NOT SPECIFICALLY MENTIONED HEREIN WHICH ARE OBVIOUSLY NECESSARY TO MAKE A COMPLETE WORKING INSTALLATION SHALL BE PROVIDED BY THE CONTRACTOR, INCLUDING ANY NECESSARY FIELD ENGINEERING AND/OR DETAIL DRAWINGS REQUIRED. DRAWINGS SHALL BE SUBMITTED FOR APPROVAL AS PROVIDED FOR IN "SHOP DRAWINGS".
- II. CODES AND FEES

ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE, N.F.P.A. #70, NATIONAL ELECTRICAL SAFETY CODE, ANSI-C-2 AND ALL LOCAL AND STATE CODES AND REGULATIONS. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS AND INSPECTIONS REQUIRED BY THE BUILDING AND SAFETY CODES AND ORDINANCES, AND THE RULES AND REGULATIONS OF ANY LEGAL BODY HAVING JURISDICTION.
- III. WORKMANSHIP

ALL WORK SHALL BE NEATLY, ORDERLY AND SECURELY INSTALLED WITH CONDUITS, PANELS, BOXES, SWITCHES, ETC., PERPENDICULAR AND/OR PARALLEL WITH THE PRINCIPAL STRUCTURAL MEMBERS, AND SHALL BE LEFT IN PROPER WORKING ORDER. THE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENT OF ELECTRICAL EQUIPMENT. COORDINATE DEVICE LOCATIONS WITH DOOR SWINGS, CABINETS, COUNTERS, ETC., AS INDICATED ON THE ARCHITECTURAL DRAWINGS. DO NOT SCALE ELECTRICAL PLANS. OBTAIN DIMENSIONS FOR LAYOUT OF EQUIPMENT FROM ARCHITECTURAL PLANS UNLESS INDICATED ON ELECTRICAL PLANS.
- IV. SUBSTITUTIONS

ALL COST INCURRED BY THE ACCEPTANCE OF SUBSTITUTIONS SHALL BE BORNE BY THE CONTRACTOR. PROOF FOR THE EQUALITY OF SUBSTITUTIONS SHALL BE BY THE CONTRACTOR.
- V. U.L. APPROVAL

ALL ELECTRICAL ITEMS COVERED BY THIS SPECIFICATION SHALL BE U.L. LABELED AND LISTED FOR THEIR SPECIFIC USE.
- VI. ELECTRICAL SERVICE
 - A. ELECTRICAL SERVICE SHALL BE AS INDICATED ON THE DRAWINGS. SERVICE SHALL ORIGINATE AS SHOWN ON THE DRAWINGS.
 - B. SERVICE CONNECTIONS AT SERVICE POINT SHALL BE MADE BY THE LOCAL UTILITY COMPANY. THE ELECTRICAL CONTRACTOR SHALL PAY ALL COST REQUIRED BY THE LOCAL UTILITY COMPANY PROVIDING SERVICES INDICATED. ELECTRICAL CONTRACTOR SHALL COORDINATE METERING, TRANSFORMER PAD, CONNECTION POINTS AND GROUNDINGS WITH UTILITY COMPANY.
 - C. THE MAIN DISCONNECT AND PANEL SHALL BE LABELED FOR SERVICE ENTRANCE EQUIPMENT.
- VII. TEST
 - A. UPON COMPLETION OF THE WORK, A TEST OF THE INDIVIDUAL SYSTEMS INCLUDING ALL FEEDERS, BRANCHES, OUTLETS, LIGHTING, MOTORS APPARATUS AND APPLIANCES, TO ASSURE OPERATION IN COMPLIANCE WITH THESE SPECIFICATIONS AND THE DRAWINGS. A LETTER WITH ALL PERTINENT TEST DATA SHALL BE SUBMITTED TO THE ARCHITECT AT LEAST (5) FIVE DAYS PRIOR TO COMPLETION OF PROJECT.
 - B. CONTRACTOR SHALL PROVIDE ALL INSTRUMENTS, LABOR AND MATERIALS FOR ANY ESSENTIAL INTERMEDIATE AND FINAL TESTS TO PROVIDE COMPLIANCE WITH THESE SPECIFICATIONS.
- VIII. GUARANTEE

WORK SHALL BE GUARANTEED FOR A ONE (1) YEAR PERIOD.
- IX. SPECIFICATIONS
 - A. GROUNDING
 1. SHALL COMPLY WITH ARTICLE #250 OF THE NATIONAL ELECTRICAL CODE AND ALL STATE AND LOCAL CODES AND REQUIREMENTS OF THE UTILITY COMPANY PROVIDING SERVICE AND SHALL BE PROVIDED AS PER THESE SPECIFICATIONS AND THE DRAWINGS.
 2. THE BUILDING ELECTRICAL SYSTEMS SHALL BE SOLIDLY GROUND SUPPLEMENTED WITH EQUIPMENT CONDUCTORS. ALL NON-CURRENT CARRYING PARTS OF THE ELECTRICAL SYSTEM, I.E., RACEWAYS, EQUIPMENT ENCLOSURES, FRAMES, JUNCTION AND OUTLET BOXES AND OTHER CONDUCTIVE ITEMS IN CLOSE PROXIMITY WITH ELECTRICAL CIRCUITS, SHALL BE GROUND TO PROVIDE A LOW IMPEDANCE PATH FOR POTENTIAL GROUND FAULTS.
 3. BRANCH CIRCUIT EQUIPMENT GROUNDING CONDUCTORS ARE NOT SHOWN ON THE DRAWINGS, HOWEVER, AN EQUIPMENT GROUNDING CONDUCTOR SHALL BE INSTALLED IN ALL RACEWAYS AND CABLES.
 - B. RACEWAYS (WHERE REQUIRED)
 1. ALL RACEWAYS (UNLESS NOTED HEREIN) SHALL BE ELECTRICAL METALLIC TUBING (EMT) AND SHALL BE FERROUS GALVANIZED CONDUIT AND SHALL COMPLY WITH ARTICLE #348 OF THE NATIONAL ELECTRICAL CODE OR BE INTERMEDIATE METAL CONDUIT (IMC) AND SHALL BE FERROUS GALVANIZED CONDUIT AND SHALL COMPLY WITH ARTICLE #345 OF THE NATIONAL ELECTRICAL CODE OR BE RIGID STEEL CONDUIT AND SHALL COMPLY WITH ARTICLE #346 OF THE NATIONAL ELECTRICAL CODE.
 2. FLEXIBLE METAL CONDUIT SHALL BE USED FROM JUNCTION BOXES TO CORRESPONDING RECESSED LIGHTING FIXTURES AND SHALL COMPLY WITH ARTICLE #350 OF THE NATIONAL ELECTRICAL CODE.
 3. LIQUID-TIGHT FLEXIBLE METAL OR NON-METALLIC CONDUIT SHALL BE USED FROM OUTDOOR EXPOSED CONNECTIONS TO GROUND OR ROOF MOUNTED EQUIPMENT AND COMPLY WITH ARTICLE #351 OF THE NATIONAL ELECTRICAL CODE.
 4. RIGID NONMETALLIC CONDUIT SHALL BE PVC SCHEDULE 40 AND SHALL COMPLY WITH ARTICLE #347 OF THE NATIONAL ELECTRICAL CODE. RIGID NON-METALLIC CONDUIT MAY BE USED FOR SERVICE ENTRANCE, IF ALLOWED BY LOCAL CODE AUTHORITY AND INSTALLED PER THE NATIONAL ELECTRICAL CODE.
 5. ALL RACEWAYS SHALL BE INSTALLED CONCEALED EXCEPT IN UNFINISHED SPACES OR WHERE INDICATED.
- C. CONDUCTORS
 1. ALL CONDUCTORS SHALL HAVE 600 VOLT TYPE, 90°C, THIN/THIN INSULATION EXCEPT WHERE NOTED ON THE DRAWINGS.
 2. ALL BRANCH CIRCUITS SHALL BE MINIMUM OF #14 AWG SOLID COPPER EXCEPT FOR MOTOR LEADS, WHICH SHALL BE A MINIMUM OF #12 AWG STRANDED COPPER, UNLESS OTHERWISE NOTED ON DRAWINGS.
 3. ALL BRANCH CIRCUIT AND FEEDER CONDUCTORS, NO. 8 AWG AND SMALLER, SHALL BE COLOR CODED AS FOLLOWS:
120/240 VOLT SYSTEM
PHASE A - BLACK
PHASE B - RED
NEUTRAL - WHITE
GROUND - GREEN
 4. ALL BRANCH CIRCUIT CONDUCTORS SHALL BE CONNECTED AS INDICATED ON THE DRAWINGS.
ALL CABLES SHALL HAVE A GROUND WIRE AND SHALL COMPLY WITH ARTICLE #250 OF THE NATIONAL ELECTRICAL CODE.
 5. ALL FEEDER AND BRANCH CIRCUIT CONDUCTORS NO. 6 AWG AND LARGER SHALL BE PHASE IDENTIFIED IN EACH ACCESSIBLE ENCLOSURE BY ONE INCH WIDE PLASTIC TAPE ATTACHED TO CONDUCTORS IN A READILY VISIBLE LOCATION. TAPE COLORS SHALL MATCH COLOR CODE REQUIREMENTS SPECIFIED HEREIN.
 6. CONNECTIONS BETWEEN FIXTURE JUNCTION BOX AND FIXTURE SHALL BE MADE WITH NO. 16 AWG SILICONE RUBBER INSULATED STRANDED FIXTURE WIRE, TYPE SFF - 2 (1507C.) OR NO. 16 AWG THERMOPLASTIC, NYLON JACKETED STRANDED FIXTURE WIRE, TYPE THN (90°C.) COLOR CODE AS SPECIFIED HEREIN SHALL NOT BE REQUIRED FOR FIXTURE WIRE; HOWEVER, NEUTRAL AND GROUND CONDUCTOR SHALL BE IDENTIFIED DISTINCTLY FROM PHASE CONDUCTORS AS PER THE ABOVE SPECIFICATIONS.
 7. SPLICES IN CONDUCTORS SHALL BE MADE ONLY WITHIN JUNCTION BOXES, WIRING TROUGHS, AND OTHER ENCLOSURES AS PERMITTED BY THE NATIONAL ELECTRICAL CODE. DO NOT SPLICE CONDUCTORS IN PANELBOARDS, SAFETY SWITCHES, OR MOTOR CONTROL ENCLOSURES. SPLICES IN CONDUCTORS NO. 10 AWG OR SMALLER SHALL BE MADE WITH SKOTCHLOK INSULATED SPRING CONNECTORS, IDEAL WRAPPING INSULATED CAPS, SPLICES IN CONDUCTORS NO. 8 AWG AND LARGER SHALL BE MADE WITH SPLIT BOLT CONNECTORS TAPED WITH NO. 8B PLASTIC ELECTRICAL TAPE UNLESS SPLICES ARE SPECIFICALLY INDICATED TO BE MADE WITH CRIMPING SLEEVE APPLIED TO CONDUCTORS WITH HYDRAULICALLY OPERATED CRIMPING TOOL.
- D. JUNCTION BOXES

ALL JUNCTION BOXES SHALL BE CONSTRUCTED OF PLASTIC AND COMPLY WITH ARTICLE #370 OF THE NATIONAL ELECTRICAL CODE, FOR THE NUMBER, SIZE AND POSITION OF CONDUITS ENTERING THE BOX, SIZE OF BOX AND MAXIMUM NUMBER OF CONDUCTORS IN A BOX.
- E. LOAD CENTERS / PANELBOARDS
 1. SHALL BE SPECIFIED ON THE DRAWINGS.
 2. SHALL BE PLUG-ON CIRCUIT BREAKER TYPE WITH A MAIN BREAKER OR MAIN LUGS ONLY AS NOTED ON DRAWINGS. ALL SHALL HAVE U.L. APPROVED INTERRUPTING CAPACITY AS INDICATED ON DRAWINGS RMS SYN. AT VOLTAGE INDICATED ON DRAWINGS. ALL BUSSING SHALL BE ALUMINUM.
 3. SIDE AND GUTTERS SHALL HAVE MINIMUM CODE CLEARANCES. DEPTH SHALL BE 3/4" MINIMUM.
 4. APPROVED MANUFACTURERS ARE: SQUARE D, CUTLER-HAMMER, ITE, CHALLENGER, WESTINGHOUSE AND GENERAL ELECTRIC.
 5. DIRECTORIES AND PANELBOARD DESIGNATION PLATES SHALL BE PROVIDED BY THE CONTRACTOR FOR ALL PANELBOARDS.
- F. LIGHTING FIXTURES
 1. UNLESS INDICATED ON DRAWINGS, BALLASTS PROVIDED WITH FIXTURES SHALL BE ETL-CBM APPROVED, HIGH POWER FACTOR, WITH U.L. LABEL. ALL BALLASTS FOR RAPID START LAMPS SHALL BE PREMIUM CLASS P. BALLASTS SHALL BE FOR THE VOLTAGE OF THE CIRCUIT TO WHICH CONNECTED. BALLASTS SHALL BE PROVIDED FOR ALL FLUORESCENT AND HIGH INTENSITY DISCHARGE LAMPS. EACH BALLAST SHALL BE PROTECTED BY AN INTERNAL FAST BLOWING FUSE. CONTRACTOR TO PROVIDE PROPER FUSES.
 2. LAMPS SHALL BE PROVIDED FOR ALL FIXTURES IN ACCORDANCE WITH FIXTURE SCHEDULE.
- G. WIRING DEVICES
 1. RECEPTACLES AND WALL SWITCHES SHALL BE OF THE TYPE AND SIZE INDICATED BY LEVITON (OR EQUAL).
 - a. ALL SWITCHES SHALL BE 15 & 20 AMP 120 VOLT SPECIFICATION GRADE WITH IVORY HANDLES UNLESS OTHERWISE NOTED. NUMBER OF POLES SHALL BE AS INDICATED ON DRAWINGS.
 - b. DUPLEX OUTLETS SHALL BE 15 & 20 AMP 125 VOLT A.C. 3-WIRE SPECIFICATION GRADE STRAIGHT BLADE WITH IVORY FACE, UNLESS OTHERWISE NOTED ON DRAWINGS.
 2. DEVICE PLATES SHALL BE IVORY COLORED AND SHALL BE PLASTIC (UNLESS OTHERWISE NOTED ON DRAWINGS).
- H. DISCONNECT SWITCHES
 1. DISCONNECT SWITCHES SHALL BE A MINIMUM OF 30 AMP, 250 VOLT RATED, HEAVY DUTY TYPE, 3 POLE WITH SOLID NEUTRAL, UNLESS OTHERWISE NOTED.
 2. LOCK-OFF BREAKERS MAY BE USED IN LIEU OF DISCONNECTS WHERE ALLOWED BY LOCAL CODE OFFICIALS.
- I. MULTI-CONDUCTOR CABLES
 1. TYPE NM/SER SHALL BE ALLOWED UNLESS PROHIBITED BY CODE OR LOCAL AUTHORITY.

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