

HVAC EQUIPMENT SCHEDULE									
UNIT NUMBER	EQUIPMENT DESCRIPTION	HP	KVA	ĸw	AMPS	VOLTS/Ø	(See Note 1 DISC SW	) (See Note 2) STARTER	(See Note 3) BRANCH CIRCUIT**
B I	HOT WATER BOILER	_	-	10	_	240/1	60/2	_	(2)#6 CU, (1)#10 CU. GND.
	HOT WATER BOILER	_	-	15	_	240/1	100/2	_	(2)#2 CU, (1)#8 CU. GND.
	MAKE UP AIR UNIT	FRAC.	_	5	-	240/1	30/2	_	(2)#10 CU, (1)#10 CU. GND.
	ELECTRIC WATER HEATER	_	_	5.5	_	240/1	30/2	_	(2)#10 CU, (1)#10 CU. GND.

NOTES

1. NEMA 3R WHERE OUTSIDE. PROVIDE FUSING PER HVAC EQUIPMENT MANUFACTURER'S RECOMMENDATIONS. 2. ALL MOTOR STARTERS LOCATED OUTDOORS SHALL BE PROVIDED WITH TEMPERATURE COMPENSATED

ELECTRONIC OVERLOADS IN LIEU OF BIMETALLIC OVERLOAD ELEMENTS.

3. ALL CONDUCTORS FEEDING HVAC EQUIPMENT SHALL BE COPPER WITH INSULATION RATED FOR 90 DEGREES C.

4. WIRE SIZE INDICATED BASED UPON TABLE 310.15(B)(16) NOT DE-RATED. ALL CONDUCTORS SERVING OUTDOOR EQUIPMENT AND/OR ROUTED OUTDOORS, SHALL BE DE-RATED FOR 117 - 122'F (NEC TABLE 310.15(B)(2)(A). IN ADDITION, CONDUCTORS ON ROOF SHALL BE FURTHER DE-RATED PER NEC TABLE 310.15(B)(3)(C).

	ELECTRICAL SYMBOLS (RESIDENTIAL)					
₽	DUPLEX CONVENIENCE OUTLET MOUNTED AT +15" TO BOTTOM OR AS NOTED 'WP' DENOTES IN-USE WEATHERPROOF COVER.					
<b>⊕</b>	DOUBLE DUPLEX (FOURPLEX) RECEPTACLE MOUNTED AT +15" TO BOTTOM OR AS NOTED.					
€	DUPLEX CONVENIENCE OUTLET MOUNTED ABOVE COUNTER. MOUNTING HEIGHT AS NOTED.					
€	50 AMP RECEPTACLE. RECESS MOUNTED. 120/240V, 4W					
₽	HALF SWITCHED DUPLEX RECEPTACLE AT +15" TO BOTTOM OR AS NOTED.					
🖨 USB	DUPLEX USB PORT					
Фн	DUPLEX MOUNTED HORIZONTALLY					
$\mathbf{\Phi}$	FLUSH FLOOR DUPLEX CONVENIENCE OUTLET - LEW ELECTRIC 812-DFB.					
C	CHIME					
S	SMOKE DETECTOR - SINGLE STATION 120V. WITH BATTERY, INTERCONNECTED.					
Ø	CARBON MONOXIDE DETECTOR - SINGLE STATION 120V. WITH BATTERY, INTERCONNECTED.					
Ø	CEILING MOUNTED OCCUPANCY SENSOR.					
Ψ	TV OUTLET 52" A.F.F. OR AS NOTED.					
	TELE/DATA OUTLET					
	FLUSH FLOOR TELE/DATA OUTLET					
0	J–BOX FLUSH MOUNTED FOR CEILING FAN. J–BOX SHALL BE U.L. LISTED FOR CEILING FAN APPLICATION AND SHALL BE INSTALLED PER N.E.C. 370–23, 370–27(c) AND 422–18.					
	PANELBOARD – MOUNT AT +6'-6" TO TOP OR AS NOTED.					
Ò	MOTOR – SIZE AS INDICATED ON DRAWINGS.					
Ъ	DISCONNECT SWITCH — SIZE AND FUSES AS PER MANUFACTURER'S RECOMMENDATIONS (WEATHERPROOF WHERE OUTSIDE).					
\$	SINGLE POLE SWITCH MOUNTED AT +48" OR AS NOTED. SEE GENERAL NOTE #8 THIS SHEET.					
<b>\$</b> D	DIMMER SWITCH RATED FOR LOAD.					
<b>\$</b> 3	3-WAY SWITCH AT +48" OR AS NOTED.					
EF	EXHAUST FAN - 150 WATT, 120V. UNLESS NOTED OTHERWISE.					
GCFI	GROUND FAULT CIRCUIT INTERRUPTER (REFER TO GENERAL RESIDENTIAL NOTES).					
AFCI	ARC FAULT CIRCUIT INTERRUPTER (REFER TO GENERAL RESIDENTIAL NOTES).					
┣━━━━	4'-0" SURFACE MOUNTED LIGHTING FIXTURE					
· –	2'-0" SURFACE MOUNTED LIGHTING FIXTURE					
•	O RECESSED WALL WASHER					
	X RECESSED SHOWER LIGHT					
	WALL SCONCE					

## NOTES:

- ALL INTERIOR UNIT LIGHTING SHALL BE ON WALL DIMMERS, UNLESS CONTROLLED BY OCCUPANCY SENSOR OR JAMB SWITCHES.
- 2. 'LUTRON' DECORA STYLE PLATES & SWITCHES & DEVICES, WHITE PLASTIC - MATTE, NOT GLOSSY FINISH.

## ELECTRICAL SPECIFICATIONS (RESIDENTIAL)

PART 1 GENERAL

- 1.1 SCOPE OF WORK A. Provide trenching and backfill in accordance with power and telephone company reauirements.
- B. Verify with power and telephone companies the location of equipment, trench and conduit routing, termination locations, method of termination, pad size and other required information. Obtain drawing, specifications and instructions for all work.
- C. Pay utility company charges, including design and customer contribution charges. D. All materials shall be new, in good conditions and the product of an established and recognized manufacturer.
- E. All trade work shall be by skilled mechanics in accordance with best trade practice and shall include all item of fabrication, instruction or installation as regularly furnished or required for installation. When completed, all work shall be functional, durably built and installed and shall present a neat workmanlike appearance. F. Comply with the latest edition of the national electric code, state or city electric codes
- and the requirements of the telephone and power companies. Where conflicts occur, the more stringent requirement or the code enforced by the authority having jurisdiction shall apply. G. Plan and install work so as to conform to structure, avoid obstructions, preserve
- headroom and keep openings and passageways clear. Consult architect immediately if conflicts occur. H. Protect material during storage and handling and subsequent to installation from damage.
- I. Provide temporary power and distribution for installation and testing operations. J. In general, the work shall consist of, but is not limited to, the following: 1. Panels, conduit, wiring, devices, etc., For all outlets and equipment. 2. Electrical service as indicated on the drawings.
- 3. Lighting fixtures with lamps: refer to fixture schedule. 4. Excavation and backfill.
- 1.2 QUALITY
- A. Codes and Standards: All work in this section will comply with the regulations of the State, County and their serving Power Company. All materials used shall have a UL label when normally available. National Electrical Code applies. B. Drawings: The drawings are generally diagrammatic. Coordinate the work so each
- piece of equipment will be installed as to function properly.

PART 2 PRODUCTS

- 2.1 BUILDING SERVICE A. Indicated on the drawings. Power Company charges included in base bid. Verify routing with the Power Company
- 2.2 SERVICE ENTRANCE EQUIPMENT
- A. As indicated on the drawings, conforming to the requirements of the power company, national and local electrical codes. Shop drawings shall be submitted to the Owner and the Power Company for approval. 2.3 PANELBOARD
- A. Building Branch Panels Shall Be Load Center Type; Circuit Breaker Shall Be Of The Quick-Make, Quick-Break, Thermal Magnetic Trip Ambient Compensated Interchangeable Type. Provide Panels With Doors. Tie Bars To Form Two Pole Breaker Sand Tandem Breakers Will Not Be Accepted. Panels Shall Be Type Indicated On The Drawings.
- 2.4 RACEWAYS
- A. Electrical Metallic Tubing: Used as permitted by codes.
- B. Galvanized Steel: Used as permitted by code and protected from corrosion. C. Liquidtight Flex Conduit: Used for outdoor motor and equipment connections shall be
- sunlight resistant listed. D. Non Metallic Conduit: UL labeled, Schedule 40 "PVC" conduit may be used for underground feeders and branch circuits where under slabs or protected by a 3 inch concrete envelope. Rigid steel sweep elbows shall be used for all bends on conduit
- sizes larger than one inch. 2.5 WIRE
- A. Conductors: Annealed copper wire. Wire No. 8 and larger shall be stranded. B. Insulation: Type THWN/THHN.
- C. Sizes: No wire smaller than No. 12 shall be installed, unless noted otherwise or per manufacturer's recommendations
- D. Non-metallic sheathed cable (NM Cable) with ground wire is acceptable for branch circuiting if approved by local authority. E. Aluminum Conductors: Permitted only for panel feeders where shown on plans.
- 2.6 OUTLET BOXES
- A. Provide each switch, light, receptacle, or their outlet throughout the building, and each pull and junction box, with outlet box manufactured by Steel City, Bowers, or RACO. Galvanized steel knockout type with approved plaster ring in masonry, or octagon box with plaster ring for ceiling outlet, and set flush with the finished surface. Non-metallic device boxers may be used if type "NM" cable is utilized. B. Junction and Pull Boxes: Provide with screw covers located in an accessible location.
- C. Interior Single Pole Switches: Lutron "Decora" Series or equal color selected by
- Owner D. Interior Dimmer Switches: Lutron "Decora" Series or equal - (Low voltage where needed).
- E. Weatherproof Outlets: Hubbell No. 5205 plate with 5252 outlets.
- F. Duplex Receptacles: "Lutron", "Lumea" Series.
- 2.7 SECURITY SYSTEM
- A. Furnished by allowance, contractor installed. B. Install in accordance with manufacturer's written instruction. PART 3 EXECUTION

- 3.1 WORKMANSHIP A. Conduit: In accordance with Tables 1 and 4 of the NEC, of such size and so installed that conductors may be drawn in without injury or excessive strain. B. Concealment: Conceal all conduit.
- C. Support and Joints: Firmly secure all conduit not embedded in concrete by approved pipe clamps, hangers, etc. Treat joints of galvanized conduit with approved joint compound.
- D. Grounding: Ground all panelboard cabinets, equipment and enclosure and the complete conduit system in accordance with pertinent sections of Article 250 of the NEC. Bond all electrically operated equipment to the grounding system. Provide a mechanical bonding conductor in all raceways or cable assemblies sized in accordance with NEC 250-95.
- shall be Mineralacc or type approved by wiring manufacturer. wattage. Verify ceiling construction for all recessed fixtures prior to ordering. Install all fixtures at locations shown. Provide fixtures with I.C. rating in insulated ceiling areas. G. Connections to Equipment: Make all power wiring connections for equipment furnished under other sections of these specifications, including necessary wiring for all air handlers, compressors, pumps, etc. Make connections to motors with flexible liquid-
- E. Wiring: Do not draw wiring into conduit until conduit system is complete; lubricant F. Fixtures: Provide fixtures as indicated on schedule with lamps of required type and tight conduit. Obtain required information from other trades and rough-in to meet
- requirements of equipment. H. Verify nameplate ratings of all equipment and recommendations for breaker sizes prior
- to installation. Provide disconnect switches and fuses at equipment where indicated. I. Coordinate all aspects of the mechanical systems with the mechanical contractor prior to
- installation. Coordinate control requirements, provide relays, starters, etc., when not furnished with equipment.

## GENERAL RESIDENTIAL NOTES:

- ALL RECEPTACLES IN THE FOLLOWING AREAS SHALL BE GFCI PROTECTED: KITCHEN COUNTERS, BATHROOMS, WET BAR SINKS, GARAGES, AND OUTDOORS PER NEC 210-8(a).
- PROVIDE A MINIMUM OF TWO 20 AMP SMALL APPLIANCE BRANCH CIRCUITS FOR RECEPTACLES IN THE KITCHEN PER NEC210-11(c)(1). THESE CIRCUITS SHALL HAVE NO OTHER OUTLETS PER NEC 210-52(b)(2).
- RECEPTACLES SERVING KITCHEN COUNTER SPACES MUST BE SPACED SO NO POINT OF A COUNTER IS FURTHER THAN 24" FROM A RECEPTACLE. ISLANDS AND PENINSULAR COUNTERS MAY HAVE NO POINT FURTHER THAN 4' FROM A RECEPTACLE. NEC210-52(c). A RECEPTACLE SHALL BE INSTALLED AT EACH WALL COUNTER SPACE THAT IS 12" OR MORE IN WIDTH PER NEC 210-52(c)(1). MOUNT HORIZONTAL AS PER ARCHITECTURAL DETAIL.
- A DEDICATED 20 AMP BRANCH CIRCUIT SHALL BE PROVIDED FOR ALL THE BATHROOMS PER NEC 210-11(c) (3). PROVIDE A WALL MOUNTED RECEPTACLE OUTLET WITHIN 36" OF THE BATHROOM OR POWDER ROOM LAVATORY PER NEC 210-52(d). MOUNT HORIZONTAL AT +42" AFF.
- ALL BRANCH CIRCUITS SUPPLYING RECEPTACLES IN ROOMS IDENTIFIED BY NEC 210–12(B) OUTLETS SHALL BE ARC-FAULT CIRCUIT INTERRUPTER (AFCI) PROTECTED.
- PROVIDE A DEDICATED 20 AMPERE BRANCH CIRCUIT TO THE LAUNDRY PER NEC 210-11(c)(2).
- ELECTRIC RANGES AND CLOTHES DRYERS SHALL BE SUPPLIED BY 4-WIRE GROUNDING TYPE CORD & PLUG ASSEMBLY PER NEC 250-134 & 138. RANGE & DRYER ENCLOSURES SHALL NOT BE GROUNDED BY CONNECTION TO THE GROUNDED CIRCUIT CONDUCTOR.
- REFER TO ARCHITECTURAL RESIDENTIAL UNIT PLANS DRAWINGS FOR EXACT LOCATIONS OF ALL LIGHT FIXTURES, CEILING FANS, AND FLOOR OUTLETS.
- THE ELECTRICAL CONTRACTOR & PLUMBING CONTRACTOR SHALL COORDINATE THE EXACT LOCATION OF SHOWER DRAINS AND SHOWER CAN LIGHTS PRIOR TO ROUGH-IN OF THE DRAINS.
- 10. ALL CONDUIT INSIDE MECHANICAL ROOMS SHALL BE ROUTED CONCEALED IN WALLS. COORDINATE LOCATIONS OF HEAT PUMP DISCONNECT SWITCH WITH HVAC CONTRACTOR PRIOR TO ROUGH-IN.
- REFER TO ARCHITECTURAL RCP DIMENSIONED PLANS FOR ALL SMOKE/CARBON MONOXIDE DETECTOR LOCATIONS.
- 12. IN ALL AREAS SPECIFIED IN NEC 210.52, ALL 15-AMPERE AND 20-AMPERE RECEPTACLES SHALL BE LISTED TAMPER RESISTANT RECEPTACLES AS REQUIRED BY NEC 406.11.
- 13. ALL RECEPTACLES LOCATED OUTDOORS SHALL BE LISTED AS "WEATHER-RESISTANT" AND SHALL BE INSTALLED IN A WEATHER-PROOF ENCLOSURE. WEATHER-PROOF ENCLOSURE SHALL BE LISTED FOR USE IN WET LOCATIONS PER NEC ART. 406.9(B).

## GENERAL NOTES

- ALL CONDUIT SHALL BE CONCEALED.
- 2. ALL LIGHTING FIXTURE & OUTLET BOXES SHALL BE RECESSED. ALL BRANCH CIRCUITING CAST INTO SLAB SHALL BE SCHEDULE 40
- PVC OR PVC COATED MC CABLE.



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