

PART 1 GENERAL

1.1 SUMMARY

1.2PURPOSE

Α.

SECTION 16010 - GENERAL CONDITIONS

The electrical subcontractor is bound by the general and supplementary conditions, and Division

Document Priorities-

- In the case of discrepancies, the construction documents take precedence as follows:
- Change orders Addendum
- Specifications Large scale drawings
- Small scale drawings
- 6. Submittal and equipment reviews 7. Substitution requests.

Specifications take precedence over substitution requests and submittal reviews. Where discrepancies/duplications occur, the more stringent requirements shall be provided.

Products under this contract shall meet minimum specification requirements in detail without exce specifically noted and approved as provided in these specifications. Equipment submitted for rev state on cover sheet any differences from specified product. Equipment substitution or submittal relieve contractor from meeting all requirements of specified item.

Scope of Electrical Work-

Materials and workmanship shall be furnished and installed for complete, tested, and operating e as shown on the drawings and specified herein

Electrical work is to include the electrical service. Complete to the point of connection with the ser changes of or work required by the serving utility, are part of this work and shall be fully included

Work is also to include main distribution panel, feeder system and branch circuit panels. Complete wiring. Light fixtures, wall switches, receptacles and similar items, exterior lighting and wiring, an connection to mechanical equipment, all fire alarm, intercom/emergency call system, phone syste wires, and kitchen equipment as required. Coordinate services with all trades. Coordinate location conduit and other runs with other trades in confined areas such as in the corridor ceilings.

Quality Assurance-

Work is to comply to the governing electrical codes as required and noted on the cover sheet, an with all applicable local codes, rules. and ordinances. All regulations, requirements and charges of company shall be complied with and paid. Materials used are to be listed by locally accepted listi Provide work per industry standards of acceptance and industry practice.

Coordination-

Check all equipment locations and connections on the site for coordination with other divisions ec connections, structure, and the like. Location of electrical equipment shall not impeed reasonable furnishings including artwork. Locate readly accissble and readily used equipment such as switcl walls where shown as to not impeed practicle use of walls for furnishings and artwork.

Test all parts of system at completion of installation. Instruct owners personnel in all aspects of o

Warrantv-

Contractor to provide full warranty on materials and workmanship for a period of one year after fir project.

Trenching and Backfill-

Follow trenching and back fill requirements of local codes and ordinances, and pipe trenching det

PROTECTION OF PENETRATIONS AT FIRE RATED CONSTRUCTION

TeStingoutlets, pipes, panel boxes, etc. Protection to be consistent with type of materials:

1. Metal materials extending minimum 18 each side of surface -- draft seal with one of the follo

a. Listed silicone foam b. Other listed product as approved

2. Other materials including plastic conduits and cables: UL listed fire barrier penetration seal Install according to manufacturers instructions. Listing and approvals:

-ASTM E-119 fire test of building construction and materials. -UL 1479 firestops, tests of through penetrations.

-ASTM E-814 fire tests of through penetration fire stops. -ICBO, BOCA, SBBC, NBC (Nat. Research Bd. REPORT NRB-243). -As required by Arch.

Electrical Devices in Common Wall-Electrical boxes shown in common walls serving adjacent rooms are to be offset from each other

horizontally. Do not mount boxes back to back in any location.

SECTION 16026-Submittals

Provide 5 (five) copies of shop drawings and catalog cuts of materials and equipment listed to arc ordering of equipment. Alternate equipment will be considered for use only with proper Pre-Bid su substitution request form and procedures as given in the general and supplementary conditions. Submittal schedule for product evaluation indicated below. Each item requiring a submittal is give

L Manufacturer's Label

C Manufacturer's Catalog data (cuts) E Technical and Engineering data

S Shop drawings SA Samples

CR Certifications/Qualifications

16100 - Wiring Systems - L

16010 - Firestopping (For Arch. review) - C, E

16140 - Wiring Devices - C, S

16170 - Disconnects - C, S

16195 - Identification - L

16400 - Panels - C, E, ,S

16500 - Lighting - C, E, S

16520 - Timing Switches - C, E, S

16590 - Heaters - C, E, S

16600 - Emergency Generator System - C, E, S, CR (Regardless of Supplier, Contractor shall submit generator/ATS information)

16700 - Low Voltage - C, E, S, CR

4. Tabulation of all calculation quantities and results

- 5. Detailed description of each protective device identifying its type, function, manufacturer, interrupting rating, ampere rating, selected settings, and time-current characteristics.
- System component characteristic curves or short-circuit current ratings identified and/or plotted up to the maximum symmetrical fault current to which the component is exposed. Include the following where applicable:
- a. Medium voltage equipment characteristics
- Low voltage equipment characteristics c. ICEA conductor damage characteristics
- I. Transformer characteristics e. Motor and motor circuit equipment characteristics
- Generator and transfer switch (manual or automatic) characteristics

2. One-line diagram (with available short-circuit current and flash hazard data identified).

a. Available short-circuit currents from all power sources (kVA)

e. Symmetrical and asymmetrical fault current characteristics

- Other system equipment characteristics.
- 7. Time-current curves prepared graphically on full size, log-log forms with title, one-line diagram, and specific system components analyzed

8. Conclusions regarding interrupting rating for overcurrent protective devices, flash hazard analysis, protection of components, selective coordination, and recommendations and requirements on the same.

PART 3 EXECUTION 3.1INSTALLATION/START-UF

- A. The contractor shall install equipment and protective devices in accordance with the approved short-circuit and selective coordination study.
- The contractor shall field mark equipment with flash hazard analysis data as required in accordance with codes and standards.
- The company performing the study shall provide assistance to the installing contractor during start up of electrical C. system and equipment as needed.

ELECTRICAL MOUNTING HEIGHTS

ITEM:	HEIGHT A.F.F. TO CENTER LINE:		
THERMOSTATS	48"		
DOOR HOLDERS	75" TO CENTER		
EMERGENCY CALL	40"		
SPEAKERS & PULL STATIONS	42"		
WALL LIGHTS IN CORRIDORS	80" TO CENTER LINE		
EXTERIOR WALL LIGHTS	96" TO CENTER LINE (U.N.O.)		
OUTLETS (COMMON AREAS)	17"		
OUTLETS (SUITE AREAS)	24"		
LIGHT SWITCH	44"		
COUNTER OUTLETS	44" TO BOTTOM		
STAIR LIGHTS	2" TO BOTTOM, ABOVE TREAD		
ELECTRICAL PANEL	80" TO TOP OF PANEL		
BATHROOM WALL VANITY LIGHT	6'-11" TO CENTER (SEE NOTE #1)		

NOTES: . CENTER OVER CABINET BASE PROVIDE BACKING IF REQUIRED.

2. INFORMATION SHOWN FOR REFERENCE. CONFORM TO ARCH, ADA, AND CODE REQUIREMENTS.

- Α.
 - В. The study shall examine proper protection of emergency electrical system components and utilization equipment such that the equipment has a sufficient short-circuit current rating. If a specific type of overcurrent protective device is required for proper protection of equipment, it shall be noted in the report and reflected in the design of the system.

SHORT CIRCUIT, COMPONENT PROTECTION, FLASH HAZARD ANALYSIS, AND SELECTIVE COORDINATION STUDY

Provide a short-circuit, component protection, flash hazard analysis, and selective coordination study for the emergency

The study shall calculate the available short-circuit current at each point in the emergency electrical distribution system.

The overcurrent protective devices shall have an interrupting rating equal to or greater than the available short-circuit

electrical distribution system from all power sources (normal and emergency) down to the branch circuit overcurrent

- The study shall include a flash hazard analysis for electrical distribution equipment where required per codes and standards. The analysis shall determine the flash protection boundary, incident energy, and required level of personal protective equipment (PPE) for workers at the electrical distribution equipment. The flash protection boundary and incident energy shall be determined based upon a working distance of 18 inches. The electrical distribution equipment shall be field marked with this information in accordance with codes and standards.
- The emergency overcurrent protective devices shall be analyzed for selective coordination. This analysis shall identify D. any potential selective coordination problems up the available short-circuit current. Any areas where the overcurrent protective devices are not selectively coordinated shall be explicitly noted and recommendations shall be made to achieve selective coordination if desired.

1.3REFERENCES

- The study shall be completed in accordance with the latest edition of IEEE Standard 242 Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems.
- The flash hazard analysis shall be completed in accordance with latest editions of NFPA 70E Standard for Electrical Β. Safety Requirements for Employee Workplaces and IEEE Standard 1584 - Guide for Performing Arc-Flash Hazard Calculations

1.4 QUALIFICATIONS

- Α. The company and individual(s) performing the study shall have a minimum 5 years documented experience in power system analysis and completed projects of similar size and scope. The individual(s) performing the study shall be a registered Professional Engineer in the state of the project location.
- The company performing study shall have the capability and experience to provide assistance during system start up. Β.

protective device and equipment per NEC 700.27.

current at the point of application.

1.5 SCHEDULING

- The selection of the company and individual performing the study shall be submitted and approved by the design Α. engineer prior to the start of the study.
- The study shall be completed and submitted prior to the equipment submittals. The study will be reviewed during the equipment submittal and review process. Any changes to the study or equipment will be noted in the returned submittals.
- C. Final approval of both the study and equipment submittals shall be given prior to the release of equipment for manufacturing.

1.6 SUBMITTALS

- The results of the study shall be summarized in report form. Submit 10 copies for review and approval by the design Α. engineer
- The results of the study shall include the following: В.
- Descriptions, purpose, basis, and scope of study.
- Fault current calculations including definition of terms and guide for interpretation of computer printout. Tabulations of protective device and equipment ratings versus calculated short-circuit duties, and commentary regarding same
- 4. Flash hazard analysis report for electrical distribution equipment. 5. Time versus current curves or fuse selectivity ratio analysis, with tabulations of overcurrent protective device settings, and selective coordination analysis and commentary regarding same.
- If power company review and approval is required, the results of the study shall be submitted to the power company tor review and approval. Approved copies from the power company shall be forwarded to the design engineer.

1.7 SUBMITTALS - CLOSEOUT

A. Submit ten copies of the final approved study to the electrical design engineer.

PART 2 PRODUCTS

2.1REQUIREMENTS

- The short circuit and flash hazard analysis study shall be completed with the aid of a computer software program where Α.
- The available short-circuit current, corresponding required interrupting or short-circuit current ratings of components, and В. flash hazard analysis data, shall be calculated based upon the 3-phase bolted short-circuit current and phase to ground/neutral short-circuit current at each of the following (if applicable):
- 1. Utility Service Point.
- Medium voltage switchgear Medium voltage motor controllers

Distribution panelboards.

Branch circuit panelboards

C. The study shall include the following:

Calculations shall identify:

d. X to R ratio

b. Motor fault contribution

Component impedance data

f. Flash hazard analysis data

1. Calculation methods and assumptions.

Motor control centers.

Busway and Busplugs.

Medium/Low-Voltage Unit Substations

Low-voltage switchgear or switchboards.

10. Other significant equipment or utilization equipment.

	SECTION 16100 - Wiring Systems	SECTION 16520 - Time Switches		
I.	Interior Raceway System: Power conductors shall be in EMT or MC cable throughout common areas of the facility, as detailed in NEC Article 518, including corridors, assembly areas, meeting areas and common gathering areas. Provide EMT in unfinished spaces where raceway is not concealed such as in mechanical and electrical rooms as required by	Corridor lights: 24 hour type, PCI LiteKeeper Series. Mount in mechanical room. Exterior lights: 7-day astrological time control. PCI LiteKeeper Series. Provide photo sensor. Mount in me		
	the NEC and local codes. All raceway in finished areas shall be concealed. Where conductors are exposed above a suspended ceiling, provide in a listed metal raceway. NMSC may be used in residential suites meeting the	room.		
	requirements of NEC 334.10 and as permitted by local codes. Fire alarm conductors shall be installed in accordance with NEC Article 760. Provide RMC for interior concrete encased raceway or where EMT is subject to damage.	Include 12 keypad programming and LCD interface.		
	Aluminum conductors may be used in services and feeders 60A and larger. All branch circuit conductors shall be	SECTION 16590 - Baseboard Heaters Baseboard heaters shall be, size and voltage as shown, 250 watt per foot nominal densities, Q-MARK 25		
	copper conductors with type THHN insulation in dry locations only. Provide conductors with type THWN, THW and	Heater and thermostat shall be white in color. Control with wall mount line voltage remote thermostat, typ Heater and thermostat shall be white in color. Heaters shown and connected by Electrical, but sized duri Mechanical Engineer.		
	XHHW in dry damp or wet locations.	M (- U) I		
	Conductors smaller than #12 AWG for branch circuits not permitted.	Wall Heaters- Wall heaters shall be size and voltage as shown with integral thermostat, recessed type. Q-MARK AWH		
eption unless view must clearly review does not	Conductors shall not be less then 12AWG. All other circuits shall be sized as noted or as required by equipment served.	Heater shall be white in color. Unit Heaters- Unit heaters shall be size and voltage as shown. Q-MARK Type MUH. Control with wall-mount line voltage		
	Liquid tight flexible metallic conduit shall be used in short (2 foot nominal) lengths for all equipment which: Vibrates, May need to be moved for servicing, or is exposed to weather.	Type MT-1. Heater shall be white in color. SECTION 16600 - EMERGENCY GENERATOR SYSTEM		
	Outside the building and below grade, wiring may be in schedule-40 PVC conduit with grounding conductor if acceptable by local codes.	Emergency Generator		
electrical systems erving utility. Any	Install exterior circuits underground. Direct buried branch circuit wiring outside the building and below grade my be in type UF moisture resistant cable, not less than 10AWG conductors or as noted. Comply with electrical code as required and noted on cover.	Emergency generator shall be 120/208 volt, 3 Phase, 4 wire WYE Unit, 125 KW nominal output, natural standby engine/generator unit shall be complete with transfer switch, low oil, high temp, over speed, volt and gauges, starting batteries, continuous charging hardware, output circuit protection, water jacket heat weatherproof enclosure. Provide remote annunciator with back-up battery located in office. Unit shall be all accessories as recommended by the manufacturer, and shall be furnished complete with manufacture service. All equipment and installation shall conform to article 445 on the NEC and NFPA 110. Generator seismic certified.		
in the bid price. te branch circuit	Clean and clear-out raceway prior to installation of any conductor/pull string. Provide pull string in empty raceways. Provide listed pulling lubricant/compound for installing conductors in raceway systems.			
id wiring and em, unit phone		Cummins, furnished by owner, installed, connected and tested by electrical contractor.		
ons of wiring		Natural gas consumption: 1,668 cu. ft./hr. (1000 BTU/cu. ft.)		
nd shall comply of the local utility ing agencies.	SECTION 16140 - Wiring Devices Duplex receptacles: 2 blade grounding type, nylon face. 15 Amp, NEMA 5-15R, Leviton Decora 5325, (Residential Grade) in suites. 20 Amp, NEMA 5-20R, Leviton Decora 16352, (Spec. Grade) in Common areas. G.F.C.I. Receptacles: 2 blade grounding type, nylon face, 20A NEMA 5-20R.	Mount on concrete pad in location indicated on site plan. Circuit to transfer switch in mechanical room as riser diagram. Coordinate with mechanical for separate natural gas supply from gas meter. Do not connect stream) automatic shut-off valve. Provide sign at all main gas valves to indicate emergency generator op natural gas supply. Refer to details on drawing. Integral generator breakers shall be coordinated with dis equipment. Breakers shall be by same manufacturer as the panels/switchboard to assure selective coord Provide breaker, include form C auxiliary contact.		
	Tamper resistant receptacles required in all locations in the manager and co-manager suites listed under NEC section	Automatic Transfer Switches- Amps as shown, 120/208 volt 3 pole plus solid neutral. Equipped with manual test button, engine starting mechanically held, automatic return to normal. Provide separate control conductors in separate 1" C fron ATS. Provide two pair, stranded shielded twisted pair cable 24 AWG, Belden 9729. Transfer switches sh manufactured by, and the responsibility of, the generator manufacturer.		
quipment, e placement of hes near ends of	210.52. Switches: Back & side wired 120 / 277v AC Leviton Decora AC quiet rocker switches 20-amp Spec. Grade in public areas, and 15-amp Residential Grade in suites.			
	Dimming Switch: 1500w, 120v, 60hz. Leviton 81500 Series. With slide to off function.	ATS shall include form C auxiliary contacts mounted on mechanically operated switch blade shaft of ATS		
operation.	Other wiring devices not listed here or elsewhere on drawings to be Specification Grade in common areas, Residential Grade in suites, contractor selected, subject to approval.	Boxes and enclosures in the emergency system to be painted red and labeled with phenolic plastic sign Emergency so as to clearly identify components of system. Provide placard required by NEC 700-8(a).		
	Automatic wall switches: Dual technology, conformance with Energy Code. Coverage verified by manufacturer SensorSwitch WSD-PDT-W.			
nal completion of	Ceiling Mounted Occupancy Sensor: Dual Technology, conformance with energy code, coverage verified by manufacturer. Complete system by sensor manufacturer. Sensor Switch CMR-PDT.	SECTION 16700 - Low Voltage Installation Low voltage equipment installation shall maintain fire ratings of wall. Equipment to be mounted on 2x4x boxes. The use of Mud Rings only, is not acceptable. Check with local codes on running low voltage wi into units smoke detectors (120 volt power). Run low voltage separate from 120v and at least 24" from cables in corridors. Do not mount boxes back to back.		
tail on drawings.	Devices (receptacles, switches, time switches) and cover plates shall be white, unless on emergency power, provide red receptacles and cover plate. 302 Stainless steel cover plates required in commercial kitchen.			
c .	Outdoor receptacles and receptacles indicated with "WP" weather proof shall utilize non-metallic in-use type protective weatherproof covers.			
	SECTION 16170 - Disconnects	EMERGENCY POWER SYSTEM Light fixtures with the "E" designation shall be wired to emergency panel. In the event of a power failure,		
iduit, fixtures, Iowing:	Motor and circuit disconnects shall be UL listed. Constructed of not less than NEMA 1 where installed indoor dry locations. Enclosures for outdoor, or wet locations shall be not less than NEMA 3R. NEMA rating as required where installed. Rated at voltage connected not less than 240 Volts. Heavy duty, quick make, quick break. Number of poles, fusing, and ampacity as noted and required by Code. Solid ground, Solid neutral with Al/Cu compression or set-screw lugs. ON/OFF positions shall be clearly marked and lockable in OFF position. Provide interlock with defeater for authorized personnel. Interlock to prevent disconnect from being opened when "ON" or turned ON with cover open.	emergency generator will start and the automatic transfer shall provide emergency power to the emerger distribution system, and the emergency lights, including exit signs.		
	Provide disconnect per Code on all machines, HVAC equipment, water heaters including but not limited to: FSD's, AC units, Condenser units, commercial dishwasher, EF's, etc.			
ling system.				
	SECTION 16195 - Identification			
r a minimum of 24"	Identify components with neatly printed labeled routed phenolic plastic signs, including any pertinent information for the owner. Panel directories to be typewritten on factory issued card, showing circuit number and description of use of each circuit. Permanently attach to inside of panel door.			
chitect prior to	The disconnecting means for each service, feeder or branch circuit originating on a switchboard or panelboard shall be legibly and durably marked to indicate its purpose unless such pupose is clearly evident, per NEC 100.22.			
ubmittal, CSI	SECTION 16400 Bapelo			
en the following	SECTION 16400 - Panels Main panel to be Square D, or equal by Cutler-Hammer, Siemens (ITE), General Electric, or approved. Panel shall be sized, arrangement, and capacity as shown. Verify available fault current with utility. Contractor is responsible for size of equipment within footprint shown. Verify physical equipment size.			
	Provide branch circuit panel board, with equal or greater series AIC rating shown on E2.2a not rated less than 10,000 AIC, with bolt-on circuit breakers with the same AIC rating as the panel board. Square D type NQOD or equal by Cutler-Hammer, General Electric, Siemens or Westinghouse. Load centers are not permitted.			
	Panel shall be lockable and include "door-in-door" type construction.			

See one-line for additional locking requirements.

Determine available fault current from serving electric utility at point of service. Calculate fault current at each panel-board throughout distribution system. Provide equipment with equal or greater series equipment AIC rating. Provide Flash label on switchboards and panelboard, control panels, meter sockets, and motor control centers, per NEC 110.16. Labels from panel equipment manufacturer, Seaton, or approved. Submit fault current from utility in writing clearly shown from utility (such as letter on utility letter-head). Fault currents shown are for reference only based on general conditions.

SECTION 16450 - Grounding

Grounding Electrodes to be installed per the NEC 250.50, 250.52 and 250.53 using any of the types listed as required (A)(1) thru (A)(7). Per the installation requirements in 250.53 if metal underground piping (i.e. copper water piping service) is used as the grounding electrode a supplemental electrode is required (see 250.53 (D)(2)) supplementing with an additional electrode specified in 250.52 (A)(2) thru (A)(7).

SECTION 16500 - Lighting

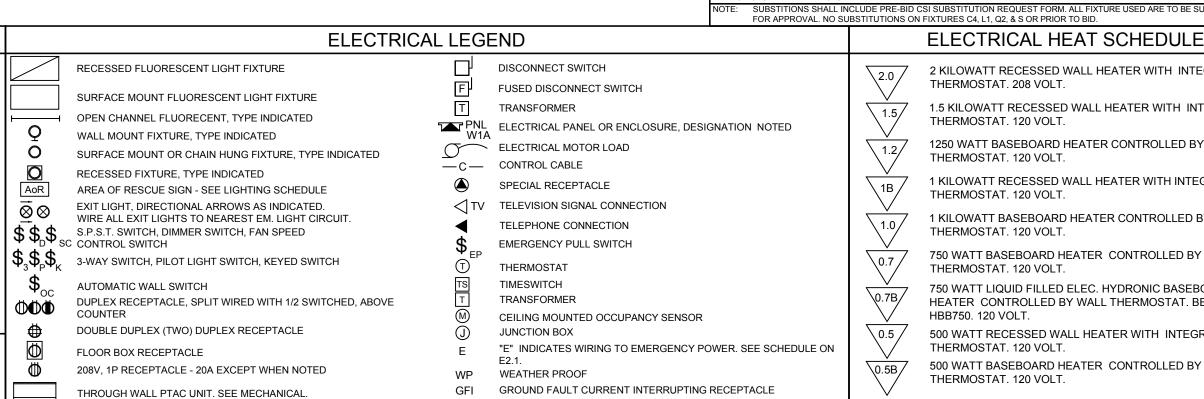
See Lighting Fixture Schedule and notes.

Circuit emergency and exit fixtures (E labeled) to emergency panel. Emergency lights and exit lights are to be switched per plans using Bodine GTD20A, NIN3E 24 or approved UL924 listed emergency lighting relay.

Switch common area lighting where indicated with a maximum of 1440 watts per circuit.

Emergency corridor lighting to be on continuously, unswitched.

Non emergency corridor lighting to be controlled by automatic lighting controller, located in the mechanical room.



CONVENIENCE OUTLET

CTION 16520 - Time Switch Corridor lights: 24 hour type,	nes , PCI LiteKeeper Series. Mount in mechanical room.	DESIG.	16500 - LIGHT FIXTURE	SCHEDULE	LAMPS	
xterior lights: 7-day astrolog	gical time control. PCI LiteKeeper Series. Provide photo sensor. Mount in mechanical	A A A2	2'x4' 2 TUBE FLUORESCENT TROFFER (SUSPENDED) 2'x4' 3 TUBE FLUORESCENT TROFFER (SUSPENDED)	LITHONIA 2GT8-2-32-A12-120-GEB10IS	(2) F028T8 (3) F028T8	
nclude 12 keypad programn	5	~ 2 С	1'x4' 2 TUBE FLUORESCENT SURFACE MOUNT	LITHONIA M-2-32-A12-MVOLT-GEB10IS	(2) F028T8	
	size and voltage as shown, 250 watt per foot nominal densities, Q-MARK 2500 Series.	C3	15-1/2"x53-1/8" 2 TUBE FLUORESCENT SURFACE MOUNT (SURFACE MOUNTED) W/ SOLID WOOD FRAME	LITHONIA 11430-WH-32-120-GEB10IS	(2) F028T8	
	be white in color. Control with wall mount line voltage remote thermostat, type TA1AW. be white in color. Heaters shown and connected by Electrical, but sized during design by	C4 C5	20-7/8"x53-1/8" 4 TUBE FLUORESCENT SURFACE MOUNT (SURFACE MOUNTED) W/ SOLID WOOD FRAME 2'x4' 3 TUBE FLUORESCENT SURFACE MOUNT (SURFACE MOUNTED)	LITHONIA 114-32-WH-32-120-GEB10IS LITHONIA 2M-3-32-A12-MVOLT-1/3-GEB10IS	(4) F028T8 (3) F028T8	
ll Heaters-		D	STEP LIGHT - FLUORESCENT RECESSED WALL MOUNT. PROVIDE WHITE FACEPLATE INDOORS AND BLACK FACEPLATE OUTDOORS.	LITHONIA WSLIF 13DTTE FPL 120 (FPSBL)	(1) 13w DTT	
	nd voltage as shown with integral thermostat, recessed type. Q-MARK AWH 4000 series. r.	D1	LED UNDER CABINET LINEAR DISPLAY LIGHT. 13-1/2" LONG. HARDWIRE INSTALLATION. WARM WHITE LED. PROVIDE REQUIRED TRANSFORMER, ACCESSORIES, WIREWAYS, CONNECTORS, AND MOUNTING TRACK FOR COMPLETE INSTALL.	AMERICAN LIGHTING LCL-12-3000K WITH (LED-DR60-24) DRIVER	LED	E CO H
t Heaters- Init heaters shall he size an	nd voltage as shown. Q-MARK Type MUH. Control with wall-mount line voltage thermostat	D2 F1	STEP LIGHT - INCANDESCENT RECESSED WALL MOUNT 7 WATT, LED LANDSCAPE LIGHT. BLACK FINISH. UL LISTED WET LOCATION. 120 VOLT. 600	HYDREL 4453-A-40I-120-LLV-BL E-CONOLIGHT	(1) 40W T10 LED 7 WATT	01 ecture
ype MT-1. Heater shall be	white in color.	F2	LUMEN OUTPUT. 4100K COLOR TEMP. 38 WATT, LED LANDSCAPE LIGHT. BLACK FINISH. UL LISTED WET LOCATION. SPOT DISTRIBUTION. 120 VOLT. 2000 LUMEN OUTPUT. 4100K COLOR TEMP.	E-GL3L01N2K E-CONOLIGHT E-GL1S03N2K	600 LUMENS LED 38 WATT 2000 LUMENS	Oregon 97301
CTION 16600 - EMERGEN	CY GENERATOR SYSTEM	F3	38 WATT, LED LANDSCAPE LIGHT. BLACK FINISH. UL LISTED WET LOCATION. FLOOD DISTRIBUTION. 120 VOLT. 2000 LUMEN OUTPUT. 4100K COLOR TEMP.	E-CONOLIGHT E-GL1F03N2K	LED 38 WATT 2000 LUMENS	Orego
mergency generator shall b	be 120/208 volt, 3 Phase, 4 wire WYE Unit, 125 KW nominal output, natural gas fired nit shall be complete with transfer switch, low oil, high temp, over speed, voltage controls	G	WALL MOUNT LED DOWNLIGHT. FULL CUTOFF. 9.5"DX8.75"WX4.5"H. DARK BRONZE FINISH. 3,350 LUMENS, 4.000 KELVIN COLOR TEMPERATURE. 120 VOLT.	E-CONOLIGHT E-WP6L03NZ	LED 36 WATTS 3,300 LUMENS	
nd gauges, starting batterie veatherproof enclosure. Pro	es, continuous charging hardware, output circuit protection, water jacket heater and ovide remote annunciator with back-up battery located in office. Unit shall be complete with	G1	WALL MOUNT LED DOWNLIGHT. FULL CUTOFF. 6-3/16"LX4-7/8"WX5-3/16"H. BLACK FINISH. 950 LUMENS, 4.000 KELVIN COLOR TEMPERATURE. 120 VOLT.	E-CONOLIGHT E-S12L014UK	LED 16 WATTS 950 LUMENS	
	nded by the manufacturer, and shall be furnished complete with manufacturers start-up nstallation shall conform to article 445 on the NEC and NFPA 110. Generator shall be	G2	WALL MOUNT LED DOWNLIGHT. FULL CUTOFF. 9.5"DX5.75"WX4"H. DARK BRONZE FINISH. 1,200 LUMENS, 4.000 KELVIN COLOR TEMPERATURE. 120 VOLT.	E-CONOLIGHT E-WW1LZ1NZP	LED 20 WATTS 1,200 LUMENS	
	er, installed, connected and tested by electrical contractor.	G3	WALL MOUNT LED UP/DOWN LIGHT. 6-3/16"LX4-7/8"WX7-3/16"H. BLACK FINISH. 1850 LUMENS, 4.000 KELVIN COLOR TEMPERATURE. 120 VOLT.	E-CONOLIGHT E-S22L034UK	LED 30 WATTS 1,850 LUMENS	
latural gas consumption: 1,	668 cu. ft./hr. (1000 BTU/cu. ft.)	G4	WALL MOUNT LED GOOSENECK WITH STARLIGHT SHROUD. 31-1/2"LX15-1/4"WX25-3/4"H. BLACK FINISH.	E-CONOLIGHT E-DG1L13USK	LED 15 WATTS 1,260 LUMENS	3150 - 0 1090 -
iser diagram. Coordinate wi	cation indicated on site plan. Circuit to transfer switch in mechanical room as shown by ith mechanical for separate natural gas supply from gas meter. Do not connect after (down	G5	1260 LUMENS, 4.000 KELVIN COLOR TEMPERATURE. 120 VOLT. PARKING LOT WALL MOUNT DOWNLIGHT CUT-0FF WITH FORWARD THROW REFLECTOR.	LITHONIA WST-150M-FT-120-SCWA-DDBT	(1) 150W MH	6 6 M
atural gas supply. Refer to	alve. Provide sign at all main gas valves to indicate emergency generator operates from details on drawing. Integral generator breakers shall be coordinated with distribution e by same manufacturer as the panels/switchboard to assure selective coordination.	HL	SUITE BATH - HEAT LAMP AND LIGHT (RECESSED MOUNT). SEE DETAIL 6/E2.2b FOR FIXTURE	BROAN MODEL 163	(1) 14 WATT BR30 CFL, 4100^K W/MED. BASE	203 2
Provide breaker, include for			INSTALLED IN RATED CEILING.		(1) 250 WATT BR40 INFRARED HEAT LAMP	
		J 11	2-1/8"x48" 1 TUBE FLUORESCENT STRIP 4-3/8"x48" 2 TUBE FLUORESCENT STRIP CHANNEL	LITHONIA Z-1-32-MVOLT-GEB10IS	(1) F028T8 (2) F028T8	
omatic Transfer Switches- Amps as shown, 120/208 vo	olt 3 pole plus solid neutral. Equipped with manual test button, engine starting contact	J3	4"x24-3/8"X1-3/8" 1 TUBE FLUORESCENT UNDER CABINET LIGHT WITH SWITCH.	LITHONIA UCB-17-120-SWR	(1) 17W T8	R, I 740
TS. Provide two pair, stran	c return to normal. Provide separate control conductors in separate 1" C from generator to ided shielded twisted pair cable 24 AWG, Belden 9729. Transfer switches shall be	J4	4"x48-3/8"x1-3/8" 1 LAMP FLUORESCENT UNDER CABINET LIGHT WITH SWITCH.	LITHONIA UCB-120-SWR	(1) F028T8)LS()LS(301T 302 7302
	sponsibility of, the generator manufacturer.	к	CHANDELIER OWNER SUPPLIED, PROVIDE J-BOX, WIRE, SWITCHING AND INSTALLATION.		300 WATTS MAX. USE (3) 23 WATT 4100 [^] K	CO 2AC 1 SE, 8 586
loxes and enclosures in the	emergency system to be painted red and labeled with phenolic plastic sign saying	K1 K2	CHANDELIER 23"W, 24"H. BRUSHED NICKEL FINISH. ETCHED OPAL GLASS.	PROGRESS P4082-09 PROGRESS P3608-81	CFL. W/MED. BASE ITEM #4T223 T.C.P., INC. USE (3) 13 WATT 4100^K	AND NTR NTRET STREET STREET SO3)
mergency so as to clearly i	identify components of system. Provide placard required by NEC 700-8(a).				CFL. W/MED. BASE ITEM #4T213 T.C.P., INC.	
CTION 16700 - Low Voltage	e Installation	КЗ	INCANDESCENT CHANDELIER. 36" DIA, 14" HIGH BOWL, 31" OVERALL HEIGHT. OLDE BRONZE FINISH WITH SATIN ETCHED LENS. PROVIDE SWIVEL CANOPY WHERE INSTALLED AT VAULTED CEILING.	KICHLER 3279OZW	USE (5) 23 WATT 4100 [^] K CFL. W/MED. BASE ITEM #4T223 T.C.P., INC.	AL C(CHRIST CHRIST CHRIST CHRIST CHRIST
oxes. The use of Mud Ring	allation shall maintain fire ratings of wall. Equipment to be mounted on 2x4x2 listed s only, is not acceptable. Check with local codes on running low voltage wire directly	K4	INCANDESCENT SEMI-FLUSH 24" DIA, 12" HIGH BOWL. OLDE BRONZE FINISH WITH SATIN ETCHED LENS. PROVIDE SWIVEL CANOPY WHERE INSTALLED AT VAULTED CEILING.	KICHLER 3606OZW	USE (3) 23 WATT 4100 [^] K CFL. W/MED. BASE ITEM	
nto units smoke detectors (1 ables in corridors. Do not m	120 volt power). Run low voltage separate from 120v and at least 24" from service nount boxes back to back.	L1	6-1/4" WIDTH 50-5/8" LENGTH 2-1/4" DEPTH FLUORESCENT SLIM LINE WRAP WITH WHITE	PROGRESS P7189-30STR (PROVIDE	#4T223 T.C.P., INC. (2) F028T8	
ERGENCY POWER SYSTE		M	ACRYLIC DIFFUSER. 120v NPF ELECTRONIC BALLAST. SQUARE 12" HID RECESSED CANOPY LIGHT. 8" RECESSED HID DOWNLIGHT WITH REGRESSED FRESNEL LENS	INSTANT START BALLAST) RUUD LIGHTING MRC0615-1 GOTHAM LGH-50M-8RW-FFL-120	(1) 150w MH (1) 50w MH	D GEL
ight fixtures with the "E" de	signation shall be wired to emergency panel. In the event of a power failure, the	N1	8" RECESSED HID DOWNLIGHT WITH REGRESSED FRESNEL LENS 8" RECESSED HID DOWNLIGHT WITH REGRESSED FRESNEL LENS WITH QUARTZ RESTRIKE SYSTEM	GOTHAM LGH-50M-8RW-FFL-120-QRS	(1) 50w MH (1) 75W QUARTZ RESTRIKE	
	art and the automatic transfer shall provide emergency power to the emergency emergency lights, including exit signs.	0	18"~ INCANDESCENT PENDENT FIXTURE, CHAIN HUNG.	PROGRESS P5095-09	USE (1) 13 WATT 4100 [^] K CFL. W/MED. BASE ITEM #4T213 T.C.P., INC.	Щ
		01	6-1/2"~ INCANDESCENT PENDANT FIXTURE.	PROGRESS P5108-09 MED. BASE LAMPHOLDER - MAX. 100 WATTS	USE (1) 13 WATT 4100 [^] K CFL. W/MED. BASE ITEM	P103
		02	4-3/4"~ FLUORESCENT PENDANT FIXTURE. BRONZE FINISH WITH TOPAZ TORTOISE ART GLASS.	PROGRESS P5150-20EBWB	#4T213 T.C.P., INC. (1) 13 WATT CFL.	
		Р	VAPOR TIGHT 19" DIAMETER SEMI-FLUSH DIRECT CEILING MOUNTED FIXTURE. BRUSHED NICKEL FINISH	(FURNISHED W/ COOLER) PROGRESS P3569-09 MED. BASE	USE (3) 23 WATT 4100^K	
		Q	WITH INVERTED SATIN WHITE GLASS BOWL.	LAMPHOLDER - MAX. 300 WATTS	CFL. W/MED. BASE ITEM #4T223 T.C.P., INC.	
		Q1	DECK/PATIO-10" CEILING-MOUNTED WHITE GLASS & FINISH, UL LISTED WET LOCATION. FROSTED RIBBED GLASS.	VOLUME LIGHTING V8870-6 MED. BASE LAMPHOLDER - MAX. 100 WATTS	USE (1) 13 WATT 4100 [^] K CFL. W/MED. BASE ITEM #4T213 T.C.P., INC.	AN RE
		Q2	SUITE AREAS - 14"~ CEILING MOUNTED, BRUSHED NICKEL HOUSING, WITH ETCHED RIBBED GLASS.	PROGRESS P3689-09 MED. BASE LAMPHOLDER - MAX. 120 WATTS	USE (2) 13 WATT 4100 [^] K CFL. W/MED. BASE ITEM #4T213 T.C.P., INC.	
		Q3	19"~ SEMI-FLUSH DIRECT CEILING MOUNTED FIXTURE. ANTIQUE BRONZE FINISH WITH INVERTED SATIN WHITE GLASS BOWL.	PROGRESS P3484-09 MED. BASE LAMPHOLDER - MAX. 300 WATTS	USE (3) 23 WATT 4100 [^] K CFL. W/MED. BASE ITEM	
		s	SUITE BATH - WALL-MOUNT THREE-LIGHT FIXTURE, BRUSHED NICKEL FINISH.	PROGRESS P3303-09 MED. BASE	#4T223 T.C.P., INC. USE (3) 13 WATT 4100^K	ĕ Z ≩
		S1	FLUORESCENT WALL SCONCE. 16"H x 8"W x 4"D. BRUSHED NICKEL FINISH. ETCHED OPAL	LAMPHOLDER - MAX. 100 WATTS MINKA LAVERY 347-84-PL	CFL. W/MED. BASE ITEM #4T213 T.C.P., INC. (2) 13w G24 LAMPS	Ш ₹
		S2	GLASS. ELECTRONIC BALLAST. FLUORESCENT WALL SCONCEONE-LIGHT ADA WALL SCONCE WITH LIGHT SATIN AMBER GLASS AND ANTIQUE BRONZE FINISH.	PROGRESS P7081-20	(1) 13W DIMMABLE GU-24 LAMP	
		T1		LITHONIA DSX0 LED 40C-700-40K-T3M-MVOLT-SPA-DDBXD POLE: SSS-18-4C-DM19-FGL5A	LED 91 WATTS 9,800 LUMENS	805 H
		T1H	SAME AS T1 EXCEPT WITH HOUSE SIDE SHIELD.	LITHONIA DSX0 LED 40C-700-40K-T3M-MVOLT-SPA-HS-DDBXD POLE: SSS-18-4C-DM19-FGL5A	LED 91 WATTS 9,800 LUMENS	
		T2	SAME AS T1 EXCEPT WITH TYPE 4 MEDIUM DISTRIBUTION.	LITHONIA DSX0 LED 40C-700-40K-T4M-MVOLT-SPA-DDBXD	LED 91 WATTS 9,800 LUMENS	
		T2H	SAME AS T2 EXCEPT WITH HOUSE SIDE SHIELD.	POLE: SSS-18-4C-DM19-FGL5A LITHONIA DSX0 LED 40C-700-40K-T4M-MVOLT-SPA-HS-DDBXD	LED 91 WATTS 9,800 LUMENS	
		Т3	PARKING LOT - LED SHOEBOX WITH TYPE III MEDIUM DISTRIBUTION WITH 12' POLE (SEE SITE PLAN FOR LOCATION) (SEE DETAIL #1/E2.2). WITH POLE MOUNTED RECEPTACLE. DARK	POLE: SSS-18-4C-DM19-FGL5A LITHONIA DSX0 LED 40C-530-40K-T3M-MVOLT-SPA-HS-DDBXD	LED 68 WATTS 7,700 LUMENS	O
			BRONZE FINISH. 7,700 LUMENS, 4,000 KELVIN COLOR TEMPERATURE. WITH HOUSE SIDE SHIELD. 120 VOLT. 6" INCANDESCENT WALLWASH DOWNLIGHT. WITH NARROW FLANGE WHITE TRIM AND OPEN	POLE: SSS-12-4C-DM19-FGL5A LITHONIA 6VI-6W9A-TRW MED. BASE	USE (1) 23 WATT	
			6 INCANDESCENT WALLWASH DOWNLIGHT. WITH NARROW FLANGE WHITE TRIM AND OPEN CLEAR DIFFUSE REFLECTOR.	LITHONIA 601-6009A-TRW MED. BASE LAMPHOLDER - MAX. 100 WATTS	4100^K CFL. W/MED. BASE ITEM #4T223 T.C.P., INC.	エントー
		U1	6" FLUORESCENT DOWNLIGHT. WITH NARROW FLANGE WHITE TRIM AND OPEN CLEAR DIFFUSE REFLECTOR. ELECTRONIC BALLAST.	LITHONIA 6VF-26-42TRT-609A-MVOLT-TRW	(1) 32W TRT	タビル
		U2	8" COMPACT FLUORESCENT DOWNLIGHT FOR FLAT AND SLOPED CEILING. OPEN CLEAR DIFFUSE REFLECTOR.	LITHONIA 8HF-2/32TRT-F803A-120-TRW (PROVIDE "SCA8" TRIM IN SLOPED CEILING	(2) 32W TRT	$O \vdash \Box$
		U3	6" INCANDESCENT DOWNLIGHT. WITH NARROW FLANGE WHITE TRIM AND OPEN CLEAR DIFFUSE REFLECTOR.	AREAS) LITHONIA 6VI-609A-TRW MED. BASE LAMPHOLDER - MAX. 100 WATTS	USE (1) 23 WATT PAR38 CFL, 4100^K	ШЪ́ДШ
1650	00 - LIGHT FIXTURE SCHEDULE NOTES	U4	8" COMPACT FLUORESCENT DOWNLIGHT FOR SLOPED CEILINGS, OPEN CLEAR DIFFUSE		W/MED. BASE ITEM #1P3823 T.C.P., INC. (2) 42W TRT	
LL FLUORESCENT LAN OTES:	IPS TO HAVE A COLOR RATING OF 4100K (NO EXCEPTIONS).		REFLECTOR. 120 VOLT. WITH 20° SLOPED CEILING ADAPTER.	8HF-2/26-42TRT-F803A-MVOLT-SCA8-20D		「小し
1. SOME FIXTURES MAY NOT 2. 'E' DESIGNATION: FIXTURE	BE USED: VERIFY WITH PLANS IS INDICATED WITH AN "E" SHALL BE WIRED SEPARATELY ON EMERGENCY CIRCUITS.	U5	8" RECESSED LENSED METAL HALIDE DOWNLIGHT. ALUMINUM ANODIZED CLEAR DIFFUSE REFLECTOR WITH CLEAR GLASS LENS. WHITE TRIM RING. STEEL MOUNTING FRAME WITH MECHANICAL TRIM RETENTION CLIPS. WITH QUARTZ RESTRIKE SYSTEM. 120 VOLT.	LITHONIA LP8HN-100M-802A-CGL-120/277-QRS	(1) 100W MH (1) 100W QUARTZ RESTRIKE	
	ARANCE BETWEEN INSULATION AND RECESSED FIXTURES - SEE LIGHTING FIXTURE PROTECTION YPICAL OF ALL RECESSED FIXTURES. IRED TO EMERGENCY PANEL.	U6	3" INCANDESCENT DOWNLIGHT. SHALLOW CEILING, 120V LINE VOLTAGE. WITH OPEN NARROW FLANGE OIL-RUBBED BRONZE REFLECTOR/TRIM.	LITHONIA L3 TRIM: 3010RB	(1) 50W PAR20 LAMP	
	RCHITECTURAL APPROVAL. SUBMIT FIXTURE PRIOR TO ORDERING.	U7 U8	SAME AS "U6" EXCEPT PROVIDE CLEAR DIFFUSE REFLECTOR/TRIM. SAME AS "U3" EXCEPT PROVIDE PEWTER REFLECTOR/TRIM.	LITHONIA L3 TRIM: 301A LITHONIA 6VI-609PR	(1) 50 WATT R20 LAMP USE (1) 23 WATT PAR38 CFL, 4100 [^] K W/MED.	
BMITTALS: -PRIOR TO ORDERING LIGHTIN	NG FIXTURES AND ACCESSORIES LISTED ABOVE, PROVIDE SUBMITTAL OF PRODUCT DATA TO	U9 U10	SAME AS "U" EXCEPT PROVIDE PEWTER REFLECTOR/TRIM. SAME AS "U3" EXCEPT PROVIDE WET LOCATION REFLECTOR/TRIM WITH WHITE SPLAY	LITHONIA 6VI-6W9PR LITHONIA 6VI-6LR4 MED, BASE	USE (1) 23 WATT 4100 [^] K CFL. W/MED. BASE USE (1) 23 WATT	
ARCHITECT FOR APPROVAL. -ALL FLUORESCENT FIXTURES TYPE WHERE REQUIRED. -NO PCBS IN ANY BALLASTS.	S TO HAVE ELECTRONIC BALLAST(S). LESS THEN 10% THD. INSTANT START. COLD WEATHER		FRESNEL LENS.	LAMPHOLDER - MAX. 100 WATTS	4100 [^] K CFL. W/MED. BASE ITEM #4T223 T.C.P., INC.	
TE: SUBSTITIONS SHALL INC	CLUDE PRE-BID CSI SUBSTITUTION REQUEST FORM. ALL FIXTURE USED ARE TO BE SUBMITTED BSTITUTIONS ON FIXTURES C4, L1, Q2, & S OR PRIOR TO BID.	V	4' ENCLOSED FLUORESCENT LENSED AND GASKETED FIXTURE. UL LISTED WET LOCATION.	LITHONIA DMW-2-32-120-GEB10IS	(2) F028T8	
	ELECTRICAL HEAT SCHEDULE	w	WALKWAY - LANDSCAPE LIGHT, SATIN BLACK POLYESTER POWDER COATED FINISH OVER DIE CAST ALUMINUM, CLEAR GLASS DIFFUSER (SEE SITE PLAN FOR LOCATION) (SEE DETAIL #7/E2.2)	VISTA 1447-B-CR-13-120	13W PL	
	2.0 2 KILOWATT RECESSED WALL HEATER WITH INTEGRAL THERMOSTAT. 208 VOLT.	W1	LED SIGN LIGHT WITH VISOR. 4.75"D X 7.75"W X 6"H. DARK BRONZE FINISH. 3,000 LUMENS, 4,000 KELVIN COLOR TEMPERATURE. 120 VOLT. (SEE SITE PLAN FOR LOCATION)	E-CONOLIGHT E-CF3L03N2Z	LED 30 WATTS 3,000 LUMENS	DATE
	1.5 KILOWATT RECESSED WALL HEATER WITH INTEGRAL THERMOSTAT, 120 VOLT.	W2 W3	LED FLAG LIGHT. 20° SPOT. 6"D X 10.75"W X 12.25"H. DARK BRONZE FINISH. 6,150 LUMENS, 4,000 KELVIN COLOR TEMPERATURE. 120 VOLT. (SEE SITE PLAN FOR LOCATION) HID BUILDING LIGHT. NARROW PARABOLIC FLOODLIGHT WITH FULL VISOR. (SEE SITE PLAN FOR LOCATION)	E-CONOLIGHT E-HL5S06N2Z LITHONIA TFM-50M-RG-TB-FV-DMB	LED 72 WATTS 6,150 LUMENS (1) 50W MH	8/28/2015
TION NOTED	$\sqrt{12}$ 1250 WATT BASEBOARD HEATER CONTROLLED BY WALL	W4	FOR LOCATION) POLE MOUNTED FLUORESCENT FIXTURE MOUNTED ON 8' POLE. ALUMINUM HOUSING BLACK POWDER COAT FINISH. (SEE SITE PLAN FOR LOCATION) (SEE DETAIL #10/E2.2)	LIGHTWAY TRZP-21-A-1T42-4-B1	(1) 42W	REVISED DATE
		x	EXIT - CEILING MOUNTED - EXIT SIGN 3/4" LETTERS WITH DIRECTION ARROWS AS INDICATED. LETTER COLOR PER LOCAL CODE.		LED	
	THERMOSTAT. 120 VOLT.	AoR Y1	AREA OF RESCUE ASSISTANCE SIGN WITH ACCESS PICTOGRAM AND INTEGRAL BATTERY BACK-UP. 6-1/2" HIGH 5" DIAMETER TUBE CEILING MOUNTED DOWNLIGHT CUT-OFF - BRONZE	LITHONIA LQM-P-W-2-R-120-EL N-SW04 PROGRESS P5774-20	LED (1) 23 WATT R40 CFL,	·
	1 KILOWATT BASEBOARD HEATER CONTROLLED BY WALL THERMOSTAT. 120 VOLT.	Z	ALUMINUM FINISH. WALL MOUNTED INDIRECT H1D (WHITE FINISH)	RUUD LACU410D	4100^K W/MED. BASE (1) 100W MH	·
	750 WATT BASEBOARD HEATER CONTROLLED BY WALL THERMOSTAT. 120 VOLT.	CF-1	52" WHITE CEILING FAN AND WITH LIGHT, 3 SPEED REVERSIBLE, WITH WHITE BLADES WITH BOX LISTED FOR CEILING FAN. MOUNT 9' A.F.F.	PROGRESS FAN: P2501-30W LIGHT: P2612-30	USE (3) 9 WATT 4100^K CFL. W/CANDELABRA BASE	
	750 WATT LIQUID FILLED ELEC. HYDRONIC BASEBOARD HEATER CONTROLLED BY WALL THERMOSTAT. BERKO	CF-2	52" WHITE CEILING FAN AND WITHOUT LIGHT, 3 SPEED REVERSIBLE, WITH WHITE BLADES WITH BOX LISTED FOR CEILING FAN. MOUNT 9' A.F.F.	PROGRESS FAN: P2501-30W	BASE N/A	SHEET
	HBB750. 120 VOLT. 0.5 500 WATT RECESSED WALL HEATER WITH INTEGRAL	CF-3	52" WHITE CEILING FAN AND WITHOUT LIGHT, 3 SPEED REVERSIBLE, WITH WHITE ABS BLADES WITH BOX LISTED FOR CEILING FAN. MOUNT 9' A.F.F. RATED FOR OUTDOORS. UL	PROGRESS FAN: P2502-30W	N/A	E2.1
R. SEE SCHEDULE ON	THERMOSTAT. 120 VOLT. 500 WATT BASEBOARD HEATER CONTROLLED BY WALL		LISTED WET.	l	<u> </u>	
	THERMOSTAT 120 VOLT	1				