

PLUMBING GENERAL NOTES:

- 1. GENERAL NOTES, SYMBOLS LIST AND DETAILS ARE APPLICABLE TO ALL DRAWINGS MARKED P.
- 2. DRAWINGS ARE DIAGRAMMATIC: DETERMINE LOCATIONS OF SYSTEMS AND COMPONENTS IN FIELD.
- 3. ALL PLUMBING WORK SHALL BE IN ACCORDANCE WITH THE PRESIDING PLUMBING CODE AND ALL APPLICABLE LOCAL CODES.
- 4. IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO COORDINATE WORK WITH THAT OF ALL OTHER TRADES, INCLUDING (BUT NOT LIMITED TO), ELECTRICAL, HVAC, AND GENERAL ARCHITECTURE.
- 5. ANY INTERFERENCE SHALL BE BROUGHT TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND THE OWNER'S REPRESENTATIVE, AND RESOLVED PRIOR TO THE INSTALLATION OF THE WORK INVOLVED.
- 6. NO WORK SHALL BE INSTALLED IN VIOLATION OF ANY GOVERNING CODES.
- 7. ALL PRODUCT INSTALLATION SHALL ADHERE TO THE MANUFACTURERS' RECOMMENDATIONS.

- PROVIDE SHUTOFF VALVES WHERE INDICATED ON DRAWINGS. ALL VALVES SHALL BE ACCESSIBLE.
- 9. PROVIDE INFORMATION AND HARDWARE AS NECESSARY TO COORDINATE
- 10. VERIFY EXACT SIZES, LOCATIONS, INVERTS AND ELEVATIONS PRIOR TO RUNNING ANY PIPING.
- 11. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS OF ALL FIXTURES AND EQUIPMENT.
- 12. ALL PIPING THAT PENETRATES FLOORS OR FIRE RATED WALLS SHALL BE FIRE STOPPED W/ HILTI CAULKING PER MANUFACTURERS RECOMMENDATIONS.
- 13. DEMOLITION WORK SHALL BE PERFORMED BY THE GENERAL CONTRACTOR. COORDINATE, WITH THE GENERAL CONTRACTOR, ANY WORK WHICH MAY REQUIRE DISCONNECTION OR TEMPORARY CAPPING OF A SYSTEM WHICH SHALL REMAIN OPERATIONAL.
- 14. BEFORE SUBMITTING BID, VISIT AND CAREFULLY EXAMINE SITE TO IDENTIFY EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT WORK OF THIS SECTION. NO EXTRA PAYMENT WILL BE ALLOWED FOR ADDITIONAL WORK CAUSED BY UNFAMILIARITY WITH SITE CONDITIONS THAT ARE VISIBLE OR READILY CONSTRUED BY EXPERIENCED OBSERVER. SITE VISIT IS PARTICULARLY IMPORTANT BECAUSE THIS IS RENOVATION WORK.
- 15. BEFORE STARTING WORK IVISIT SITE AND EXAMINE CONDITIONS UNDER WHICH WORK MUST BE PERFORMED INCLUDING PREPARATORY WORK DONE UNDER OTHER SECTIONS OR CONTRACTS OR BY OWNER. REPORT CONDITIONS THAT MIGHT AFFECT WORK ADVERSELY IN WRITING THROUGH CONTRACTOR TO ARCHITECT. DO NOT PROCEED WITH WORK UNTIL DEFECTS HAVE BEEN CORRECTED AND CONDITIONS ARE SATISFACTORY. COMMENCEMENT OF WORK SHALL BE CONSTRUED AS COMPLETE ACCEPTANCE OF EXISTING CONDITIONS AND PREPARATORY WORK.

DRAWING NOTES:

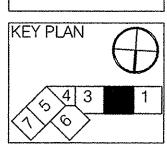
- 1. EQUIPMENT SUPPLIED BY OWNER. ALL FINAL CONNECTIONS AND DISTRIBUTION PIPING SHALL BE PROVIDED BY THE PLUMBING CONTRACTOR.
- 2. PLUMBING CONTRACTOR SHALL SET TEMPERATURE LIMIT STOPS AT HAND SINKS
- 3. HOT WATER SUPPLIED TO TENANT AT 115"
- 4. PLUMBING CONTRACTOR SHALL RUN WATER PIPING BELOW COUNTER AS INDICATED TO FEED EQUIPMENT.
- 5. SEE KITCHEN EQUIPMENT AND ARCHITECTURAL DRAWINGS FOR COUNTER SECTIONS AND MEASURED LOCATIONS OF ROUGH-IN BELOW COUNTERS.
- 6. RUN INDIRECT WASTE FROM EQUIPMENT BELOW COUNTER TO EXISTING FLOOR
- 7. RUN PIPING BELOW COUNTER TIGHT TO BACK WALL AS NEATLY AS POSSIBLE TO PREVENT INTERFERENCE WITH NORMAL OPERATION OF STORE.
- 8. DOMESTIC WATER PIPING MATERIAL SHALL MATCH EXISTING, PIPING AFTER FILTER
- SHALL BE AS REQUIRED BY FILTER MANUFACTURER.
- 9. WASTE AND VENT PIPING SHALL BE DWV COPPER, PVC OR

PLUMBING	LEGEN	1D
AAAA AAAA AAAA AAAAA AAAAA AAAAA AAAAA AAAA	ETR	LIGHT LINE INDICATES EXISTING PIPING TO REMAIN.
- 	RE	REMOVE EXISTING PIPING
— 	C&C	CUT & CAP
	CW	COLD WATER
FW	FW	FILTERD WATER
	HW	HOT WATER
	CONT	CONTINUATION
	UP	PIPE RISE OR UP
 ə	DN	PIPE DROP OR DOWN
	TEE	PIPE TEE
		CAPPED PIPE
	ETR	EXISTING TO REMAIN
	ETBR	EXISTING TO BE REMOVED
	TYP	TYPICAL
	GC	GENERAL CONTRACTOR
	PC	PLUMBING CONTRACTOR
	HVAC	HVAC CONTRACTOR

PERMIT 9/8/11

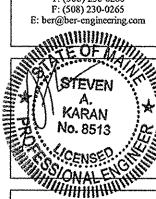


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HMS Host 6905 Rockledge Drive Bethesda, MD 20817 T: (240) 694-4746 F: (240) 694-4643 C: (240) 274-6417 E: scott.reimink@hmshost.com

Building Engineering 66 Main Street North Easton, MA 02356 T: (508) 230-0260 F: (508) 230-0265



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Job No.: 11400 Scale: As noted

Issued: 09/08/11

PLUMBING PLANS

PLUMBING SPECIFICATIONS

I GENERAL

- A. General: The work covered consists of furnishing all labor and materials necessary to install, complete and ready for continuous operation, the plumbing systems, apparatus and equipment for the Great American Bagel Consession Space at the Portland International
- B. Shop Drawings: Shop Drawings for all specified fixtures, equipment and apparatus shall be submitted to the Architect for approval.
- C. Codes: All equipment and materials furnished under the Plumbing Sub-Contract and labor and testing performed herein shall be in complete accordance with the Maine State Building, Plumbing Codes, Local Ordinances and Regulations of the City of Portland, National Fire Protection Association and insurance regulations and requirements governing
- D. Permits: Any and all permits required for installation of any material shall be obtained as part of the work of this Specification including all fees or expenses incurred.
- E. Instructions: During the assembly and installation of all plumbing systems, the Owner's operating personnel shall be instructed regarding its operation and maintenance. A two (2) hour instruction period shall be provided after completion of project. Operation and maintenance manuals shall be required.
- F. Guarantee: All materials and equipment furnished and installed under this Specification shall be guaranteed in writing for one (1) year from the date of acceptance of the building by the Owner.
- G. Record Drawings: The Plumbing Subcontractor shall maintain at the job, at all times, a complete and separate set of blackline prints of the Plumbing Drawings of his trade on which he shall mark clearly, neatly, accurately, and promptly as the work progresses. Two CADD disks, AutoCADD 2004 or compatible system as well as reproducible As-Builts shall be furnished by the Plumbing Subcontractor at the job completion.
- H. Inspection: All work shall be subject to the inspection of the Owner, the Architect and such other inspectors having jurisdiction. A properly executed certificate of inspection shall be provided.
- I. Examination of Site: The Plumbing Subcontractor, before submitting prices or beginning work, shall thoroughly examine the site and Contract Documents. No claim for extra compensation will be recognized if difficulties which an examination of site conditions and Contract Documents prior to executing Contract would have revealed.
- J. Coordination: Coordinate all work installed under this Specification with that of all other trades.
- K. Protection of Property: Protect all new and existing work before, during and after
- L. Disinfection: All domestic water systems shall be disinfected in accordance with the local Public Health and Plumbing Code requirements.
- M. Tests: The Plumbing Subcontractor shall perform all tests at the completion of the work, and the results furnished to the Owner and Architect in writing.
- N. Certificates of Approval: Upon completion of all work, the Plumbing Subcontractor shall furnish, in duplicate, certificates of inspections from all inspectors and authorities having jurisdiction, notarized letters from the manufacturers stating that authorized factory engineers have inspected and tested the installation of their respective systems and found same to be in perfect operating condition.
- O. Contract Drawings: The Contract Drawings are diagrammatic and indicate only the general arrangements of work. It is not the intent of these Drawings to show every pipe, rise, drop, elbow, etc. Any additional work not shown and required to install the plumbing systems shall be included as part of this Contract.
- P. Removal Work: Particular care shall be taken to avoid creating hazards on the site or causing disruption of service in the building. All existing equipment to be removed shall be done in a neat and workmanlike manner. All existing equipment to be turned over to the Owner shall be presented to the Owner in good condition at a location designated by the Owner. All other equipment shall be removed from the premises. Remove all abandoned piping and equipment not built into building construction. Where ceiling or walls are removed, all abandoned piping shall be removed and ends of live services capped. Abandoned elements built into walls or located above existing inaccessible ceilings shall remain and ends capped and marked abandoned.
- Q. Continuity of Services: Services shall be maintained in all areas which will be occupied during the construction period. When an interruption of service becomes necessary, such shall be made only upon consent of the Owner at a time outside normal working hours as he shall designate. Refer to the overall scheduling of the work of the project. Schedule work to conform to this schedule and install work to not delay nor interfere with the progress of the project.
- R. Seismic Restraints: Installation of Plumbing equipment, accessories and components shall be in accordance with the Seismic Requirements identified in the Maine State Building

- A. The work of this Section consists of all labor, materials and equipment required to provide all Plumbing work complete, in place, as shown on the Drawings, specified herein and as necessary for a proper installation. B. The extent of the Plumbing work shall include, but not be limited to the following:
- 1. Alterations, additions and/or removal of existing plumbing systems and fixtures within the renovated area in order to conform to new space requirements. 2. Installation of toilet room accessories.
- 3. Core Drilling. 4. Insulation of all existing cold water, hot water, hot water recirculation and conductors systems piping, valves and fittings made bare as a result of asbestos abatement. When connecting to existing insulated systems provide new insulation for three feet on either side of the new connection.
- 5. Furnishing of Access Panels.

- The following equipment items and work shall be the responsibility of others: . Cutting and Patching
- 2. Flashing and Caulking
- 3. Finish Painting 4. Heating, Ventilating and Air Conditioning
- 5. Fire Protection Electrical Power and Wiring
- Furnishing of Toilet Room Accessories 8. Installation of Access Panels
- 9. Food Service Equipment
- IV MATERIALS A. Pipe and Fittinas
- 1. Type A: (Potable and Non-potable Water)
- Type K hard drawn copper tubing with wrought copper sweat fittings joined with approved 95/5 lead free tin antimony solder.
- 2. Type B: (Potable and Non-potable Water)
- Type L hard drawn copper tubing with wrought copper sweat fittings joined with approved 95/5 lead free tin antimony solder.
- 3. Type C: (Sanitary, Waste and Vent, Storm)
- No hub cast iron soil pipe and fittings joined with approved stainless steel mechanical couplings with neoprene gaskets.
- 4. Type D: (Waste and Vent smaller than 2*)
- Type DWV hard drawn seamless copper tubing with wrought copper drainage fittings joined with 95/5 lead free tin antimony solder.
- 5. Type F: (Vents)
- Schedule 40 galvanized steel pipe with galvanized cast iron drainage fittings joined with threaded connections.
- 6. Pipe and fittings shall be in accordance with the following:
- a. Cold Water Type A or B b. Hot Water Supply and Recirculation Type A or B
- c. Sanitary Waste and Vent Type C or F
- d. Waste and Vent Smaller than 2" Type D e. Indirect Waste Piping 1 1/2" and smaller Type D

- 1. All domestic cold and hot water supply and recirculation pipe, fittings and valves shall be insulated with heavy density rigid fiberglass with a vapor barrier and all purpose jacket with self-sealing lap joint. Valves and fittings shall be insulated with Zeston Hi-Lo insulation and covered with 25/50 rated PVC covers secured with vapor retarder mastic.
- 2. Insulation thickness shall be as follows:
- Hot Water Supply up to 4" = 1"
- C. Pipe Sleeves, Hangers and Supports
- 1. All piping shall be properly supported from the building structure in accordance with Local Codes and manufacturer's recommendations. Hangers for insulated piping shall be oversized and furnished with a sheetmetal insulation shield to allow the insulation to pass through uncut.
- D. Valves
- 1. All shut off valves on cold water, hot water, and hot water recirculation piping from ¾ inch up to and including 2 inch shall be Apollo Series 77-200, solder end, bronze body ball valve, chrome-plated bronze ball, 600 psi WOG, full port ball valve.
- 2. All shut off valves on cold water, hot water and hot water recirculation piping 1/2 inch, shall be Apollo Series 70-200, solder end, bronze body ball valve, chrome-plated bronze ball, 600 psi WOG.
- 3. All check valves on cold water, hot water and hot water recirculation piping three inches and less in size shall be Nibco Figure No. S-413-W, solder end, bronze body swing check, bronze disc, 200 psi WOG.
- 4. All drain valves shall be ½ inch Apollo Model 78—103 with Watts No. 8A hose connection vacuum breaker, cap with chain of length as required.

I. Plumbing Fixtures

In general, all plumbing fixtures shall have chrome-plated faucets, stops and traps. All supply stop valves shall be brass body and stem and have threaded or sweat solder inlet. Provide wall escutcheons. Fixtures and trim shall be supplied by the kichen equipment contractor and installed by the plumbing contractor.

1. All lavatory or "handwashing sink" controls, where applicable, shall be adjusted by installing Plumber prior to the final inspection. Controls shall be set to deliver water at a maximum temperature of 110 degrees F, were faucet temperatures can not be set at faucet, provide powers point of-use mixing valve.

1. Cleanouts shall be iron body with heavy brass plug and raised nut, same size as pipe for piping up to four inches and not less than four inches in size for piping larger than four inches and closed gas tight. End cleanouts on polypropylene piping shall be Fuseal fitting cleanout adapter with threaded plug.

L. Water Hammer Arrestors (Shock Absorbers)

1. Maintenance-free water hammer arrestors shall be furnished and installed in accessible locations at all locations in the water systems where quick acting valves are installed as well as wherever hammer may occur.

2. Water hammer arrestors shall be similar to the following Jay R. Smith model numbers. Sizing and placement shall be in accordance with PDI Standard PDI-WH-201 and the manufacturer's recommendations.

ре	Fixture	Unit	Ratings	Model

SA-A	1-11	Jay	R.	Smith	5005
SA-B	12-32			Smith	
SA-C	33-60	Jay	R.	Smith	5020



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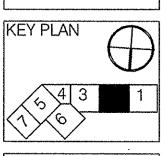
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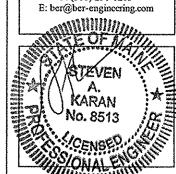
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6905 Rockledge Drive Bethesda, MD 20817 T: (240) 694-4746

Building Engineering 66 Main Street T: (508) 230-0260 F: (508) 230-0265



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Job No.: 11400

Scale: No Scale

Issued: 09/08/11

PLUMBING SPECIFICATIONS

LEGEND

* MOUNTING HEIGHTS SHALL BE AS INDICATED UNLESS SHOWN OTHERWISE ON ELECTRICAL DRAWINGS OR ARCHITECTURAL ELEVATIONS * ALL SYMBOLS MAY NOT BE SHOWN ON PLANS

RACEWAYS AND WIRING

SINGLE PHASE HOMERUN TO PANELBOARD. "PP" DENOTES PANEL, "1" DENOTES CIRCUIT NUMBER, [(1) 20 AMP, 1 POLE CIRCUIT] MINIMUM 2#12 & 1#12G IN 3/4°C UNLESS INDICATED OTHERWISE.

NOTES:

1. GREEN GROUND CONDUCTOR NOT INDICATED BUT SHALL BE INCLUDED IN EACH RACEWAY. SIZE SHALL BE #12AWG UNLESS INDICATED OTHERWISE.

LIGHTING FIXTURES

TRACK MOUNTED PENDANT LIGHTING, LENGTH OF TRACK AND QUANTITY OF FIXTURES AS SHOWN ON FLOOR PLANS. "LT1" DENOTES FIXTURE TYPE, "29" DENOTES CIRCUIT NUMBER, "b" DENOTES SWITCH CONTROL,

WALL MOUNTED LIGHTING. "LT2" DENOTES FIXTURE TYPE, "29" DENOTES CIRCUIT NUMBER, "a" DENOTES SWITCH CONTROL,

EMERGENCY BATTERY UNIT (MATCH BASE BUILDING STANDARD)

WALL MOUNTED ILLUMINATED EXIT SIGN - SHADING INDICATES FACE PLATE (MATCH BASE BUILDING STANDARD)

TOGGLE SWITCHES (MOUNTED 48" AFF)

SINGLE POLE TOGGLE SWITCH. "a" DENOTES FIXTURE CONTROL

RECEPTACLES (MOUNTED 18" AFF OR AS INDICATED ON ARCHITECTURAL PLANS)

DUPLEX RECEPTACLE, "2" DENOTES CIRCUIT NUMBER,

DUPLEX RECEPTACLE MOUNTED 6" ABOVE COUNTER TOP OR AS INDICATED ON ARCHITECTURAL PLANS

SPECIAL PURPOSE RECEPTACLE. SEE POWER PLANS FOR EXACT TYPES USED

TELECOMMUNICATIONS (MOUNTED 18" AFF)

TELEPHONE OUTLET

COMPUTER SYSTEM OUTLET

COMBINATION TELEPHONE/COMPUTER SYSTEM OUTLET

E.C. SHALL PROVIDE A DOUBLE GANG BACK BOX WITH SINGLE GANG REDUCER, 3/4" CONDUIT AND PULLSTRING STUBBED OUT ABOVE ACCESSIBLE CEILING OR AS DIRECTED BY AIRPORT PERSONNEL.

POWER DISTRIBUTION EQUIPMENT

PANELBOARD, SURFACE MOUNTED

JUNCTION BOX, SIZED PER NEC

FIRE ALARM SYSTEM

MANUAL PULL STATION MOUNTED 48" AFF

AUDIO/VISUAL ALARM MOUNTED 80" AFF.

PHOTOELECTRIC SMOKE DETECTOR

REMOTE ALARM INDICATOR

MISCELLANEOUS

JUNCTION BOX WITH FLEXIBLE CONNECTION TO EQUIPMENT

CABLE TELEVISION OUTLET, WALL MOUNTED. COORDINATE MOUNTING HEIGHT WITH ARCHITECT

TIMECLOCK

ABOVE FINISHED FLOOR

C/B

MAIN LUGS ONLY

NOT TO SCALE

TELEPHONE

VOLT

ABBREVIATIONS

AMPERES

AMPERE INTERRUPTING CAPACITY AMERICAN WIRE GAUGE

CONDUIT

CIRCUIT BREAKER

ELECTRICAL CONTRACTOR EXISTING TO BE DEMOLISHED

EXISTING TO REMAIN

GENERAL CONTRACTOR GROUND FAULT INTERRUPTER

KCMIL ONE THOUSAND CIRCULAR MILS KILOVOLT-AMPERES

KILOWATTS MAIN CIRCUIT BREAKER

NORMALLY CLOSED

NATIONAL ELECTRICAL CODE

NORMALLY OPEN

WATT

(1J) 50" MONITOR ON ADJUSTABLE MOUNT-OPEN TO ABOVE r(6) 22"x44" MENUS Provide timečlock — EQUAL TO INTERMATIC #ET1105C FOR CONTROL OF TENANT SIGN. EXIT SIGN SHALL -MATCH BASE BUILDING STANDARD, WIRE TO BASE BUILDING EXIT SIGN CIRCUIT. EMERGENCY LIGHT -SHALL MATCH BASE BUILDING STANDARD. WIRE TO TENANT 84"Wx19"H LIGHTING CIRCUIT AHEAD OF ALL LOCAL DIMENSIONAL SIGN CONNECTION SWITCHING. [93-1/2" A.F.F.]--TO SIGN VIA TIMECLOCK LIGHTING PLAN

		LIGHTING FIXTURE	SCHEDU				<u> </u>
TYPE	DESCRIPTION	MANUFACTURER & CATALOG NUMBER	NUMBER	LAM TYPE	REMARKS		
LT1	TRACK MOUNTED PENDANT LIGHTING	TECH LIGHTING VINO PENDANT	1	50W HALOGEN	120	50	COORDINATE FINISH AND MOUNTING OPTIONS WITH TENANT
LT2	WALL MOUNTED MENU BOARD LIGHTING	TECH LIGHTING WALL ARCHIE	1	50W HALOGEN	120	50	COORDINATE FINISH AND MOUNTING OPTIONS WITH TENANT

BRANCH CIRCUIT WIRING NOTES:

- 1. WIRING IS SHOWN ON DRAWINGS ONLY FOR SPECIFIC ROUTES OR SPECIAL CONDITIONS.
- 2. WIRING AND CONDUIT SHALL BE REQUIRED BETWEEN ALL OUTLETS INDICATED WITH CIRCUIT NUMBERS AND PANEL DESIGNATIONS.
- 3. ALL SWITCH CONTROLS SHALL BE PROVIDED WITH WIRING AND CONDUIT AS REQUIRED.
- THE INTENT OF THESE DOCUMENTS THAT A COMPLETE BRANCH CIRCUIT WIRING SYSTEM BE INSTALLED. 5. A GREEN GROUNDING CONDUCTOR SHALL BE RUN WITH ALL CIRCUITS. VERIFY

CONDUIT SIZE TO ENSURE IT CAN ACCOMMODATE ALL PHASE, NEUTRAL AND

4. ALTHOUGH ALL BRANCH CIRCUIT WIRING AND CONDUIT IS NOT SHOWN, IT IS

GROUND CONDUCTORS. 6. ALL 15A AND 20A, 125V RECEPTACLES IN NON-DWELLING TYPE KITCHENS MUST BE GFCI PROTECTED PER NEC ARTICLE 210.8(B)(2).

EMERGENCY -

LIGHTING UNIT

VISUAL DEVICE

PULL STATION

LIGHT SWITCH-

RECEPTACLE -

FIRE ALARM AUDIO/ -

8'-6" OR LOWER

1. INSTALL DEVICES ON ONE COMMON VERTICAL CENTERLINE.
2. INSTALL DEVICES AT THIS HEIGHT WHEREVER APPLICABLE.

DETAIL OF TYPICAL DEVICE MOUNTING HEIGHTS

LIGHTING FIXTURE NOTES:

- 1. PROVIDE ACCESSORIES AND MOUNTING HARDWARE FOR ALL FIXTURES.
- 2. COLORS SHALL BE AS SELECTED BY ARCHITECT.
- 3. COORDINATE EXACT LOCATION WITH ARCHITECT PRIOR TO ROUGH-IN. 4. ALL COMPACT FLUORESCENT BALLASTS SHALL BE ELECTRONIC TYPE.
- 5. ALL FLUORESCENT LAMPS SHALL BE 3500°K.

CEILING

PROVIDE PENDANT MTD.

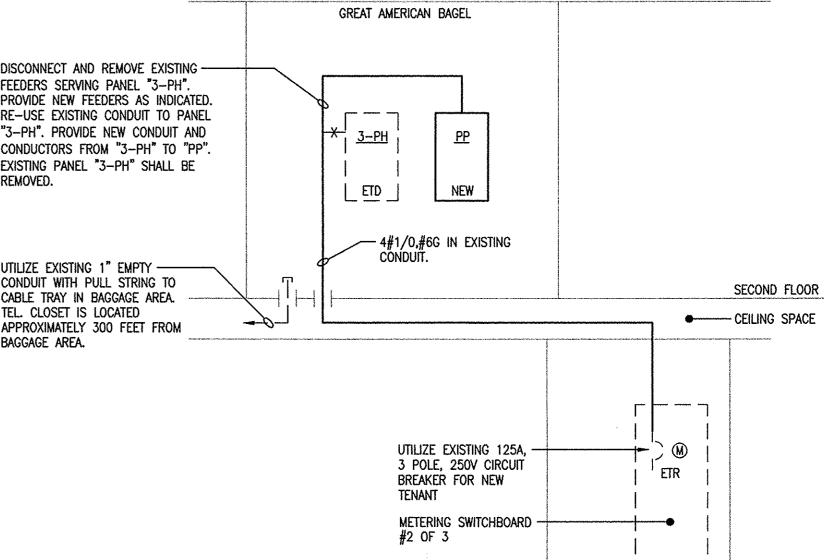
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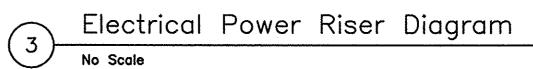
OR 6" ABOVE COUNTER TOP

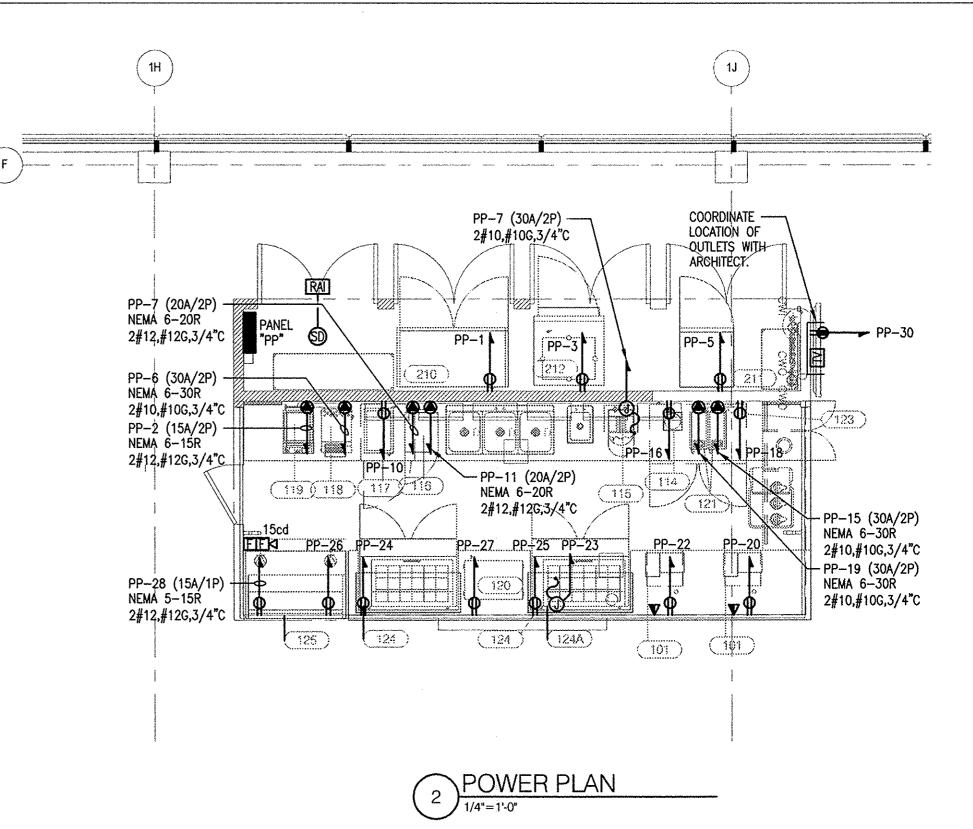
WHERE HUNG CEILING

EXCEEDS 8'-6" AFF

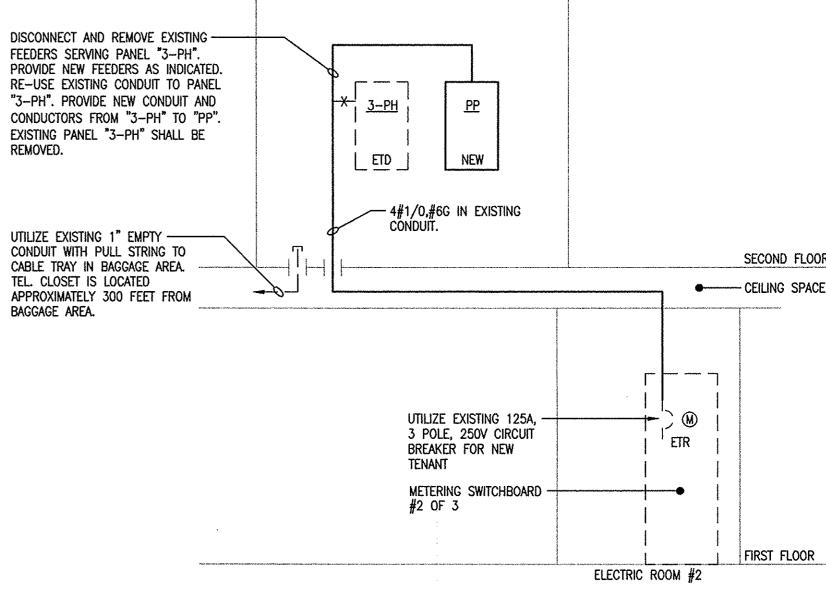
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MAINS MLO: MAIN LUGS ONLY MCB: MAIN CKT. BKR.	BRANCH D				
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1 1 21		I	:		
PP 120/208 3 4 200 200 125 2 1 2	4	4			
3			_		
* INCLUDES SPACES					







	PANELBOARD SCHEDULE																			
NOIL	S	E	8	MLO: M MCB: N	MAINS AIN LUG MAIN CKT OVERCU	S ONLY BKR.	LES		BR	ANC	H (EV	ICES	3		POLES	VTING RFACE LUSH	BUS	ADDITIONAL	
PANEL DESIGNATION	VOLTS	PHASE	WIRES	BUS	OVERCU DEV	IRRENT ICE	1 .		BF	REAL	KER	AN	APS			TOTAL	\$ 3 C	GROUND	BRANCH C.B.'S	REMARKS
님				SIZE	FRAME AMPS	TRIP AMPS	BKR	15	20/2	25 3	30 4	10 5	50 6	0 7	M	¥ *	S: S:	SR.	O.D. 3	
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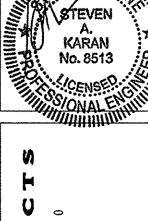
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KEY PLAN



Building Engineering Resources, Inc. 66 Main Street North Easton, MA 02356 T: (508) 230-0260 F: (508) 230-0265 E: ber@ber-engineering.com



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Job No.: 11400 Scale: As noted

Issued: 09/08/11 ELECTRICAL

PLANS

ELECTRICAL SPECIFICATIONS PART 1 - GENERAL

GENERAL REQUIREMENTS

- A. THESE SPECIFICATIONS AND DRAWINGS ARE INTENDED TO SERVE JOINTLY AS A BASIS UPON WHICH THE CONTRACTOR SHALL SUBMIT A PRICE FOR MATERIAL AND LABOR PROVISIONS.
- B. IT IS NOT INTENDED THAT THE PLANS OR SPECIFICATION SHOW OR STATE EVERY DETAILED REQUIREMENT OF THE WORK, BUT RATHER THAT THEY FURNISH ADEQUATE INFORMATION FOR AN EXPERIENCED. CONTRACTOR TO PROVIDE A COMPLETELY ACCEPTABLE INSTALLATION THE GENERAL CONDITIONS FORM A PART OF THESE SPECIFICATIONS WHETHER ATTACHED HERETO OR NOT, SHALL BE CAREFULLY EXAMINED BEFORE SUBMITTING A PROPOSAL. WHERE GENERAL CONDITIONS CLAUSES ARE REPEATED IN THIS SECTION IT SHALL BE LINDERSTOOD AS CALLING SPECIAL ATTENTION TO THEM, OR AS A FURTHER QUALIFICATION, AND SHALL NOT BE ASSUMED AS OMITTING ANY OTHER CLAUSES. NO GENERAL CONDITIONS REFERRING TO THE WORK INCLUDED HEREIN SHALL BE CONSIDERED AS WAIVED UNLESS SPECIFICALLY STATED HEREIN.
- C. BEFORE SUBMITTING PROPOSAL, EXAMINE ALL PLANS RELATING TO THIS WORK, VERIFY ALL GOVERNING CONDITIONS AT THE SITE, BECOME FULLY INFORMED AS TO THE EXTENT AND CHARACTER OF THE WORK REQUIRED AND ITS RELATION TO THE WORK OF OTHER TRADES. SUBMISSION OF A COST PROPOSAL (BID) WILL BE JUDGED AS EVIDENCE THAT THE SITE EXAMINATION HAS BEEN MADE. NO CONSIDERATION WILL BE GRANTED FOR ANY ALLEGED MISUNDERSTANDING OF THE MATERIALS TO BE FURNISHED FOR WORK TO BE DONE IT BEING UNDERSTOOD THAT THE SUBMISSION OF A PROPOSAL IS AN AGREEMENT TO ALL CONDITIONS REFERRED TO HEREIN OR INDICATED ON THE PLANS.
- D. PROPOSAL MUST INCLUDE EVERYTHING REQUIRED TO PROVIDE A COMPLETE INSTALLATION AS CONTEMPLATED IN A SPECIFICATIONS AND PLANS. WHETHER SPECIFICALLY SHOWN OR SPECIFIED OR NOT. INCLUDED ARE LABOR, MATERIALS, EQUIPMENT, LIGHTS, TOOLS, SCAFFOLDING, ETC. NECESSARY TO COMPLETE INSTALLATION OF EVERYTHING DESCRIBED, SHOWN OR REASONABLY IMPLIED.
- E. ANY DISCREPANCIES BETWEEN THESE SPECIFICATIONS AND THE ACCOMPANYING PLANS, OR THESE SPECIFICATIONS AND PLANS AND THE SPECIFICATIONS OF OTHER TRADES, SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT PRIOR TO THE SUBMISSION OF THE BID. FAILURE TO COMPLY WITH THE ABOVE SHALL ALLOW THE ARCHITECT TO MAKE A FINAL AND BINDING DECISION AT A LATER DATE AND NO ALLOWANCE WILL BE GIVEN IF THE MORE EXPENSIVE OF THE ITEM IN QUESTION IS SELECTED.
- F. THE WORK CALLED FOR IN THESE PLANS AND SPECIFICATIONS SHALL BE COORDINATED WITH THE STRUCTURE, WORK OF ALL RELATED TRADES, AND SHALL BE SO ARRANGED THAT THERE WILL BE NO DELAY IN THE PROPER INSTALLATION AND COMPLETION OF ANY PART OF EACH RESPECTIVE WORK, WHEREIN IT MAY BE INTERRELATED WITH THIS CONTRACT ALL WORK CAN PROCEED IN ITS NATURAL SEQUENCE WITHOUT UNNECESSARY DELAY. THE CONTRACTOR IS RESPONSIBLE FOR ANY ADDITIONAL COST AND DELAYS IN THE WORK RESULTING FROM SUBSTITUTION UNDER THIS DIVISION: INCLUDING, BUT NOT LIMITED TO ANY CHANGES, INDECISION, INSTALLATION OR THE WORK OF OTHER
- G. ELECTRICAL DRAWINGS ARE DIAGRAMMATIC (EXCEPT WHERE DIMENSIONED) AND INDICATE THE GENERAL ARRANGEMENT OF SYSTEM AND WORK, FOLLOW ARCHITECTURAL, STRUCTURAL, AND MANUFACTURER'S SHOP DRAWINGS FOR GREATER ACCURACY. CONSULT ENGINEER IN CASE OF DOUBT OR CONFLICT, UNLESS, NOTED, FIXED DIMENSIONS ARE BASED ON THE PRODUCT OF ONE MANUFACTURER, VERIFY DIMENSIONS WITH THE SHOP DRAWINGS OF THE MATERIAL ACTUALLY APPROVED OR PURCHASED.
- H. EXACT LOCATION OF ALL EQUIPMENT, PANELS, PULL BOXES, FEEDERS, FIXTURES. ETC.. SHALL BE APPROVED BY THE ARCHITECT, AND OWNER PRIOR TO THE INSTALLATION OF THE SAME.
- CONTRACTOR SHALL FURNISH ALL NECESSARY OUTLETS, SUPPORTS, FITTINGS, AND ACCESSORIES TO FULFILL APPLICABLE CODES, REGULATIONS. AND THE BEST PRACTICES OF THE TRADE FOR INSTALLATION OF ALL ELECTRICAL WORK.
- J. EXPOSED CONDUITS CAN BE INSTALLED BUT IN NO CASE SHALL BE INSTALLED LESS THAN NINE FEET ABOVE THE FINISHED FLOOR OR AS NOTED. CONDUITS INSTALLED IN THE AREA WHERE HUNG CEILING OR OTHER FURRED SPACES ARE INDICATED SHALL BE INSTALLED CONCEALED, SHOULD ANY WORK REQUIRE SUBSEQUENT MODIFICATION OR RELOCATION TO AVOID INTERFERENCE OR CONFLICTS WITH OTHER WORK, SUCH CHANGES SHALL BE MADE WITHOUT ADDITIONAL COST TO
- K. ANY NECESSARY ELECTRICAL SERVICE INTERRUPTIONS SHALL BE AT A TIME CONVENIENT TO THE BUILDING OWNER.
- L. ALL PENETRATIONS THROUGH SLABS AND FIRE RATED PARTITIONS SHALL BE FIRE STOPPED USING APPROVED METHOD TO MAINTAIN THE FIRE RESISTANCE RATING.
- M. THE E.C. SHALL CALL FOR A FINAL PUNCH-LIST WHEN ALL ELECTRICAL WORK IS COMPLETE. IN THE EVENT REPRESENTATIVES OF THIS OFFICE ARRIVE AT THE SITE AND DEEM WORK IS NOT SUFFICIENTLY COMPLETE, NO REVIEW/PUNCH-LIST WILL OCCUR. THE E.C. WILL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH RESCHEDULING THE PUNCH-LIST.
- WITHOUT INTENDING TO LIMIT AND/OR RESTRICT THE SCOPE OF WORK REQUIRED AND SOLELY FOR THE CONVENIENCE OF THE CONTRACTOR, THE WORK OF THIS DIVISION SHALL, IN GENERAL COMPRISE THE FOLLOWING:
- 1. INSTALLATION OF NEW ELECTRICAL PANEL.
- 2. FURNISHING AND INSTALLING NEW LIGHTING FIXTURES AND LAMPS.
- 3. FURNISHING AND INSTALLING NEW FEEDERS, CONDUITS, BRANCH CIRCUIT WIRING, ETC.
- 4. FURNISHING AND INSTALLING NEW RACEWAYS, OUTLET BOXES, WIRING AND CONNECTIONS FOR LIGHTING FIXTURES, SWITCHES, AND
- 5. PROVIDE CONNECTIONS TO ALL ELECTRICAL EQUIPMENT FURNISHED BY OTHER TRADES OR BY THE OWNER.
- 6. POWER WIRING FOR ALL MOTORS, INCLUDING INSTALLING ALL
- REQUIRED DISCONNECT SWITCHES AND MOUNTING OF STARTERS. 7. FURNISHING AND INSTALLING ALL TELEPHONE/DATA SYSTEM CONDUITS,
- SLEEVES AND BOXES. 8. TEMPORARY LIGHT AND POWER.
- GROUNDING.
- 10. CUTTING, CHANNELING, AND PATCHING.
- 11. FIRE ALARM SYSTEM MODIFICATIONS.
- 12. REMOVAL OF ELECTRICAL SYSTEM AS REQUIRED AND AS INDICATED ON

WORK NOT INCLUDED

- A. FURNISHING MOTORS, MOTOR STARTER AND CONTROL DEVICES CONNECTED TO EQUIPMENT FURNISHED UNDER OTHER DIVISIONS OF THE SPECIFICATIONS, HOWEVER, FLECTRICAL CONTRACTOR WILL ERECT AND WIRE SAME, FURNISH AUXILIARY MOTOR DISCONNECTS AS REQUIRED BY DRAWINGS OR CODE.
- B. FINISH PAINTING.
- C. TELEPHONE/DATA WIRING AND DEVICES.

CODES, PERMITS, AND INSPECTIONS

- ELECTRICAL WORK SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS OF THE STATE ELECTRICAL CODE, LOCAL ORDINANCES, AND OTHER AUTHORITIES EXERCISING JURISDICTION OVER ALL ELECTRICAL CONSTRUCTION WORK AND THE PROJECT.
- NOTHING CONTAINED IN THESE SPECIFICATIONS OR PLANS SHALL BE SO CONSTRUED AS TO CONFLICT WITH ANY LOCAL, MUNICIPAL, AND NATIONAL BOARD OF THE FIRE UNDERWRITERS REGULATIONS GOVERNING THE INSTALLATION OF WORK SPECIFIED HEREIN. ALL SUCH LAWS, ORDINANCES, AND REGULATIONS, WHERE THEY APPLY TO THIS WORK, ARE HEREBY INCORPORATED INTO AND MADE A PART OF THE SPECIFICATIONS. ALL SUCH REQUIREMENTS SHALL BE SATISFIED AT NO ADDITIONAL EXPENSE TO THE OWNER.
- C. ALL REQUIRED PERMITS AND INSPECTION CERTIFICATES SHALL BE OBTAINED, PAID FOR, AND MADE AVAILABLE AT THE COMPLETION OF THE WORK.

GUARANTEES AND CERTIFICATIONS

- A. ALL WORK SHALL BE GUARANTEED TO BE FREE FROM DEFECTS DEFECTIVE MATERIALS OR WORKMANSHIP, AS WELL AS DAMAGE TO THE WORK OF ANY/ALL TRADES RESULTING FROM THE SAME, SHALL BE REPLACED OR REPAIRED AS DIRECTED FOR DURATION OF ONE YEAR, FROM THE DATE OF ACCEPTANCE.
- B. THE DATE OF ACCEPTANCE SHALL BE THE DATE OF THE FINAL PAYMENT FOR THE WORK OR THE DATE OF A FORMAL NOTICE OF ACCEPTANCE, WHATEVER IS EARLIER.
- C. NON-DURABLE ITEMS, SUCH AS ELECTRIC LAMPS, SHALL BE REPLACED UP TO THE DATE OF ACCEPTANCE, SUCH THAT THEY SHALL HAVE HAD NO MORE THAN 100 HOURS USE PRIOR TO

SHOP DRAWINGS AND EQUIPMENT SUBMISSIONS

- PRIOR TO PURCHASING ANY EQUIPMENT OR MATERIAL, A LIST OF THEIR MANUFACTURERS SHALL BE SUBMITTED FOR APPROVAL.
- PRIOR TO ASSEMBLING OR INSTALLING THE WORK, CATALOG INFORMATION AND FACTORY ASSEMBLY DRAWINGS, AS REQUIRED FOR A COMPLETE EXPLANATION AND DESCRIPTION OF ALL FIXTURES, DEVICES, DEVICES AND ITEMS OF EQUIPMENT, SHALL BE SUBMITTED FOR APPROVAL.
- C. FIELD INSTALLATION DRAWINGS AS REQUIRED TO EXPLAIN FULLY ALL PROCEDURES INVOLVED IN ERECTING, MOUNTING AND CONNECTING ALL ITEMS OF EQUIPMENT.
- D. NO EQUIPMENT SHALL BE FABRICATED, DELIVERED, ERECTED, OR RECONNECTED THAN FROM DRAWINGS APPROVED BY THE ENGINEER. SHOP DRAWING IN THE NUMBER DIRECTED SHALL BE SUBMITTED FOR THE FOLLOWING:

5. PANEL BOARDS AND CIRCUIT

- LIGHTING FIXTURES.
- 2. WIRING DEVICES AND PLATES. FIRE ALARM
- CONDUIT, BOXES, AND FITTINGS. 4. WIRE AND CABLE
- E. IT SHALL BE UNDERSTOOD THAT APPROVAL OF DRAWINGS WILL NOT BIND THE ENGINEER OR THE OWNER TO THE FINAL ACCEPTANCE OF SUCH EQUIPMENT AS THE COMPLETED INSTALLATION AND TEST OF EQUIPMENT AS A WHOLE MUST BE PROVIDED AND GUARANTEED HEREIN AS SPECIFIED.
- UPON REQUEST BY ARCHITECT OR OWNER, SUBMIT FOR APPROVAL ONE SAMPLE OF EACH OF THE FOLLOWING:
- EACH TYPE OF LIGHTING FIXTURE. EACH TYPE OF WIRING DEVICE. EACH TYPE OF WIRING DEVICE PLATE.

AS-BUILT DRAWINGS

- A. THE CONTRACTOR SHALL, WITHIN 15 DAYS OF THE COMPLETION OF THE PROJECT AND PRIOR TO REQUESTING FINAL PAYMENT, SUBMIT AS-BUILT DRAWINGS OF THE ACTUAL INSTALLATION OF THE ELECTRICAL WORK. THREE (3) PAPER SETS OF DRAWINGS, SAME SCALE AS THE DESIGN SET UNLESS OTHERWISE INDICATED IN THE SPECIFICATIONS, AND THREE (3) CD DISKS WITH AUTOCAD 2007 OR LATER VERSIONS OF THE AS-BUILTS ARE REQUIRED FOR SUBMISSION TO THE ARCHITECT ENGINEER.
- <u>TESTS</u>
- BEFORE AN APPLICATION FOR THE FINAL ACCEPTANCE OF THE WORK WILL BE CONSIDERED, ALL TESTS DEEMED NECESSARY BY THE ARCHITECT TO SHOW PROPER EXECUTION OF THE WORK SHALL HAVE BEEN PERFORMED AND COMPLETED IN THE PRESENCE OF AN ARCHITECT'S REPRESENTATIVE. SCHEDULE OF ALL TESTING PROCEDURES SHALL BE ARRANGED TO SUIT THE CONVENIENCE OF THE ARCHITECT.
- ANY DEFECTS OR DEFICIENCIES DISCOVERED IN ANY OF THE ELECTRICAL WORK SHALL BE CORRECTED.

IDENTIFICATION

- ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL TYPEWRITTEN DIRECTORIES BEHIND TRANSPARENT PLASTIC COVERS IN METAL FRAMES, IN ALL NEW AND EXISTING PANELS INDICATING TYPE AND LOCATION OF LOAD BEING SERVED BY INDIVIDUAL CIRCUIT BREAKERS.
- B. ALL PARTS OF EQUIPMENT, SUCH AS PANELS, JUNCTION BOXES, SAFETY SWITCHES, MOTOR STARTER, CIRCUIT BREAKERS, CONDUCTORS AND SIMILAR ITEMS SHALL BE IDENTIFIED BY NAME, AT SUPPLY END, "LOAD SUPPLIED", AND AT LOAD END "LOAD SUPPLIED FROM".

PART 2 - PRODUCTS

- A. ALL EQUIPMENT AND MATERIALS FOR PERMANENT INSTALLATION SHALL BE THE PRODUCTS OF RECOGNIZED MANUFACTURERS AND
- B. NEW EQUIPMENT AND MATERIALS SHALL:

EQUIPMENT AND MATERIALS

- WHERE NORMALLY SUBJECTED TO UNDERWRITER'S LABORATORY INC. LISTING OR LABELING SERVICES, BE SO LISTED OR LABELED.
- 2. BE WITHOUT BLEMISH OR DEFECT.
- 3. NOT TO BE USED FOR TEMPORARY LIGHT AND POWER PURPOSES WITHOUT ARCHITECT'S AUTHORIZATION.
- 4. BE IN ACCORDANCE WITH THE LATEST APPLICABLE N.E.M.A. STANDARD
- 5. BE APPROVED BY BUILDING MANAGER OR OWNER. C. FOR ITEMS WHICH ARE TO BE INSTALLED BUT NOT PURCHASED AS PART OF THE ELECTRICAL WORK, THE ELECTRICAL WORK
- SHALL INCLUDE: THE COORDINATION OF THEIR DELIVERY.
- 2. THEIR FIELD MAKE-UP AND INTERNAL WIRING AS MAY BE NECESSARY FOR THEIR OPERATION.

D. ELECTRICAL RACEWAY AND SUPPORTING SYSTEMS SHALL B FURNISHED AND INSTALLED COMPLETE, WITH ALL MATERIALS, FITTINGS, CONNECTIONS AND ACCESSORIES NECESSARY TO PROVIDE IN EACH INSTANCE A COMPLETE OPERATING INSTALLATION, AS DESCRIBED HEREIN, AS INDICATED ON THE DRAWINGS, AND/OR

AS APPROVED BY THE BUILDING MANAGER OR OWNER.

E. THE DRAWINGS ARE DIAGRAMMATIC AND GENERALLY INDICATIVE OF THE WORK TO BE INSTALLED, BUT DO NOT SHOW ALL BENDS, FITTINGS. AND BOXES WHICH MAY BE REQUIRED. THE CONTRACTOR SHALL CAREFULLY INVESTIGATE THE JOB CONDITIONS INCLUDING STRUCTURAL AND FINISH CONDITIONS AFFECTING ALL HIS WORK AND ARRANGE THE SAME ACCORDINGLY, FURNISHING SUCH FITTINGS, BOXES AND SIMILAR ITEMS AS MAY BE REQUIRED TO MEET SUCH CONDITIONS.

WIRING MATERIALS

- A. WIRE AND CABLE SHALL BE COPPER, RATED FOR 600 VOLTS, TYPE THHN FOR BRANCH CIRCUITS AND XHHW FOR FEEDERS.
- B. WIRE #10 AWG AND SMALLER SHALL BE SOLID, WIRE #8 AWG AND LARGER SHALL BE STRANDED.
- C. WIRING SHALL BE CONSISTENTLY COLOR CODED THROUGHOUT. FOR 120/208 VOLT SYSTEMS, UTILIZE RED, BLUE, BLACK FOR LINE (PHASE) CONDUCTORS AND WHITE FOR NEUTRAL CONDUCTOR, SWITCH LEG SHALL BE SEPARATELY IDENTIFIED, GROUND CONDUCTOR SHALL BE GREEN.
- D. MINIMUM SIZE: 1. LIGHTING AND POWER: #12 AWG, UNLESS OTHERWISE
- 2. CONTROL: #14 AWG.
- 120 VOLT CIRCUITS OVER 100 FEET IN LENGTH FROM THE POINT OF SUPPLY TO THE FIRST OUTLET SHALL BE #10
- E. SPLICES IN BRANCH CIRCUIT WORK SHALL BE MADE BY MEANS OF TYPE 'R' "SCOTCHLOCK" ELECTRICAL TYPE.
- F. ELECTRICAL INSULATION TAPE SHALL BE VINYL PLASTIC TYPE WITH

PRESSURE ADHESIVE "SCOTCH" ELECTRICAL TYPE.

- G. BRANCH CIRCUITRY NUMBERS INDICATED ON THE DRAWINGS ON MULTI-CIRCUIT HOMERUNS ARE FOR IDENTIFICATION OF DEVICES OR EQUIPMENT THEY ARE CONNECTED TO AND DO NOT NECESSARILY REFER TO PANELBOARD CIRCUIT NUMBERS. ASSIGNMENT OF BRANCH CIRCUIT NUMBERS SHALL BE PART OF THIS WORK AND INDICATED ON PANEL DIRECTORIES, BRANCH CIRCUITS SHALL BE CONNECTED TO CIRCUITS ON PANELBOARDS SO AS TO SECURE A REASONABLE BALANCE ON THE THREE PHASES. WHERE MORE THAN ONE CIRCUIT WITH A COMMON NEUTRAL IS INSTALLED IN THE SAME CONDUIT, EACH PHASE WIRE SHALL BE CONNECTED TO A DIFFERENT LEG OF THE SYSTEM.
- H. ALL CONDUCTORS SHALL BE COLOR CODED THROUGHOUT AND NUMBERED AND TAGGED AT EACH JUNCTION BOX, PULL BOX, PANEL, AND DEVICE WITH SUITABLE FIREPROOF TAGS OR ADHESIVE IDENTIFICATION BANDS.

CONDUITS AND RACEWAYS

- A. LIQUID TIGHT FLEXIBLE, GALVANIZED STEEL CONDUIT WITH CONTINUOUS COPPER BONDING CONDUCTOR, SHALL BE USED FOR CONNECTIONS TO MOTORS AND AT OTHER LOCATIONS WHERE VIBRATION MOVEMENT IS ENCOUNTERED.
- B. UNLESS OTHERWISE INDICATED OR SPECIFIED ALL WIRING SHALL BE INSTALLED CONCEALED IN CEILINGS, WALLS, SLABS, PIPE CHASES AND FURRED SPACES WHENEVER POSSIBLE.
- C. CONDUIT AND FITTINGS SHALL CONFORM TO LATEST ACCEPTABLE STATE CODE AND ALL OTHER CODES HAVING JURISDICTION.
- D. CONDUIT SHALL BE 3/4" TRADE SIZE MINIMUM, UNLESS OTHERWISE INDICATED OR SPECIFIED.
- E. ALL CONDUITS WHICH ARE TO REMAIN EMPTY FOR FUTURE INTRODUCTION OF CONDUCTORS SHALL BE PROVIDED WITH A PULL LINE WITH IDENTIFICATION BAND AT BOTH ENDS.
- F. STEEL JACKETED METAL CLAD CABLE CAN BE USED FOR LIGHTING AND APPLIANCE BRANCH CIRCUITRY IN VOIDS OF CEILING AND PARTITIONS, PROVIDED THAT THIS TYPE OF WIRING IS ACCEPTABLE TO THE LOCAL BUILDING OFFICIAL OR HIS REPRESENTATIVE.
- G. RIGID GALVANIZED STEEL (RGS) CONDUIT SHALL CONFORM TO UL 6. FITTINGS SHALL BE THREADED.

H. INTERMEDIATE METALLIC CONDUIT (IMC) SHALL CONFORM TO UL

1242. FITTINGS SHALL BE THREADED.

- 1. ELECTRICAL METALLIC TUBING (EMT) SHALL CONFORM TO UL 797.
- FITTINGS SHALL BE GLAND AND RING COMPRESSION TYPE. J. FLEXIBLE METALLIC CONDUIT SHALL CONFORM TO UL1. LIQUIDTIGHT
- FLEXIBLE METAL CONDUIT SHALL CONFORM TO UL 360. K. ALL CONDUIT FITTINGS AND CONNECTORS SHALL BE STEEL WITH INSULATED THROATS. DIE-FORMED ZINC FITTINGS ARE NOT ACCEPTABLE. BUSHINGS SHALL BE PROVIDED AT ALL CONDUIT TERMINATIONS. BUSHINGS LARGER THAN 1" SHALL BE GROUNDING TYPE. PVC BUSHINGS MAY BE UTILIZED ONLY FOR 3/4" BRANCH

JUNCTION BOXES

A. JUNCTION BOX AND PULL BOXES SHALL BE PROVIDED WHERE INDICATED OR SPECIFIED AND WHERE NECESSARY TO FACILITATE THE INSTALLATION OF EQUIPMENT OR WIRING.

CIRCUIT CONDUITS TERMINATING AT PANELBOARDS.

B. ALL BOXES SHALL BE SIZED IN ACCORDANCE WITH NATIONAL ELECTRIC CODE.

OUTLET BOXES 2.05

- A. OUTLET, PULL AND JUNCTION BOXES SHALL BE FABRICATED FROM STEEL AND CONFORM TO UL 50, UL 514, AND NEMA OS1. BOXES FOR INTERIOR LOCATIONS SHALL BE CODE GAUGE, GALVANIZED SHEET STEEL.
- B. BOXES SHALL CONTAIN SUITABLE KNOCKOUTS. BARRIERS SHALL BE FURNISHED AS REQUIRED BY CODE.
- C. BOXES SHALL BE SIZED AS REQUIRED BY CODE FOR NUMBER AND GAUGE OF CONDUCTORS THEREIN, EXCEPT WHERE NOTED TO BE LARGER, THE MINIMUM BOX SIZE SHALL BE 4" SQUARE BE 1 1/2" DEEP. COVERS GREATER THAN 50LBS. SHALL BE DMIDED INTO MULTIPLE SECTIONS.
- D. WHERE REQUIRED AND APPROVED BY THE ENGINEER, EXTRA DEEP OR EXTRA SHALLOW OUTLET BOXES SHALL BE USED TO FACILITATE THE INSTALLATION OF THE CONDUIT SYSTEM.

FASTENINGS, SUPPORTS, AND HANGERS

- A. ALL PARTS OF THE ELECTRICAL INSTALLATION SHALL BE ADEQUATELY SUPPORTED FROM THE BUILDING CONSTRUCTION USING APPROVED CLAMP SCREWS WITH THE INSERTS OF EXPANSION ANCHORS, EXPANSION BOLTS AND TOGGLE BOLTS. "II NO CASE SHALL THE HUNG CEILING MEMBERS OR WIRES BE USED TO SUPPORT CONDUIT".
- B. ALL FASTENING, SUPPORTS, CLAMPS, ANCHORS, AND SIMILAR ITEMS SHALL BE OF TYPE SUITABLE FOR THE PURPOSE.

WIRING DEVICES

- A ALL DEVICES SHALL BE SPECIFICATION GRADE, U.L. APPROVED.
- B. SINGLE POLE SWITCH, 20 AMP, 120/277 VOLTS. HUBBELL CAT#
- C. RECEPTACLE, 20 AMP, 2 POLE, 3 WIRE DUPLEX, 125 VOLT, GROUND TYPE. HUBBELL CAT# 5362 OR APPROVED EQUAL.
- D. COLOR AND TYPE OF ALL DEVICE PLATES SHALL BE APPROVED BY ARCHITECT PRIOR TO PURCHASE/INSTALLATION.

GROUNDING

- A. ALL ENCLOSURES AND NON CURRENT CARRYING METALLIC PARTS OF ELECTRICAL EQUIPMENT, RACEWAY SYSTEMS AND EQUIPMENT GROUND BUSES SHALL BE EFFECTIVELY GROUNDED TO THE BUILDING GROUNDING SYSTEMS THROUGH THE SYSTEM GROUND CONDUCTORS. METALLIC CONDUITS AND OTHER RACEWAYS AND ENCLOSURES FOR CONDUCTORS SHALL BE METALLIC ALLOY JOINED TOGETHER INTO A CONTINUOUS ELECTRICAL CONDUCTOR, AS TO PROVIDE EFFECTIVE ELECTRICAL CONTINUITY.
- B. GROUND CONTINUITY SHALL BE MAINTAINED THROUGHOUT.

<u>LIGHTING FIXTURES</u>

PURCHASE.

- A. ALL LIGHTING FIXTURES SHALL COMPLY WITH THE STATE ELECTRIC CODE AND SHALL BE U.L. APPROVED.
- B. ALL LIGHTING FIXTURES SHALL BE APPROVED PRIOR TO
- C. ALL LIGHTING FIXTURES SHALL BE FURNISHED AND INSTALLED COMPLETE WITH NECESSARY COMPONENTS, ACCESSORIES, AND LAMPS OF CORRECT TYPE AND RATING AS INDICATED ON ELECTRICAL DRAWINGS.
- D. FIXTURES SHALL BE CAREFULLY SUPPORTED AND ALIGNED WITH NECESSARY HANGERS, SUPPORTING MEMBERS, AND FRAMES FOR PROPER INSTALLATION, ALL AS REQUIRED AND AS APPROVED.
- E. ALL FIXTURES SHALL BE PROPERLY WIRED AND CONNECTED TO Branch circuits, tested and left ready for operation.
- F. FOR TYPE, MAKE, AND QUANTITIES OF LIGHTING FIXTURES
- G. FIXTURES AND/OR FIXTURE OUTLET BOXES SHALL BE PROVIDED WITH HANGERS TO ADEQUATELY SUPPORT THE COMPLETE WEIGHT OF THE FIXTURE. PROVIDE SUPPLEMENTAL SUPPORTS PER ALL

REQUIRED, SEE ELECTRICAL DRAWINGS AND SPECIFICATIONS.

H. ALL FLUORESCENT LIGHTING FIXTURES SHALL HAVE ENERGY SAVING LAMPS AND SOLID STATE ELECTRONIC ENERGY SAVING

LOCAL AND STATE CODES.

CLASS "P" BALLASTS.

- EXIT LIGHTS SHALL BE WIRED ON A SEPARATE CIRCUIT. PROVIDE CIRCUIT BREAKER WITH LOCKING TYPE HANDLE. 2.10 TELEPHONE SYSTEM
- A. PROVIDE EMPTY CONDUIT WITH PULL LINE 3/4" MINIMUM AT EACH TEL/DATA OUTLET LOCATION. EXTEND IT UP TO 12" ABOVE HUNG CEILING AND TERMINATE WITH PLASTIC BUSHING.

B. ALL TELEPHONE/DATA WIRING, JACKS, COVERPLATES, PUNCH DOWN

BLOCKS, ETC., ARE FURNISHED AND INSTALLED BY OWNER'S PRIVATE VENDOR.

PANEL BOARDS A. PANEL BOARDS SHALL CONSIST OF FACTORY COMPLETED DEADFRONT ASSEMBLIES OF BACK PANS, MAIN BUSSES, OVER CURRENT AND SWITCHING UNITS, SHEET METAL CABINETS AND TRIMS. THEY SHALL BE SO DESIGNED THAT SWITCHING AND OVER CURRENT DEVICES CAN BE REPLACED WITHOUT DISTURBING ADJACENT UNITS AND WITHOUT REMOVING THE MAIN BUS CONNECTORS, SO THAT CIRCUITS MAY BE CHANGED WITHOUT

MACHINING, DRILLING, OR TAPPING.

- B. BUS BARS FOR THEIR MAINS SHALL BE OF COPPER HAVING CURRENT CAPACITIES AS INDICATED AND SIZED FOR SUCH CAPACITIES IN ACCORDANCE WITH UNDERWRITER LABORATORY STANDARDS. UNLESS OTHERWISE NOTED, FULL SIZE NEUTRAL BARS SHALL BE INCLUDED. BUS BAR TAPS FOR PANELS WITH SINGLE POLE BRANCHES SHALL BE ARRANGED FOR SEQUENCE PHASING OF THE BRANCH CIRCUIT DEVICES. BUSSING SHALL BE BRACED THROUGHOUT TO CONFORM TO INDUSTRY STANDARD PRACTICE GOVERNING SHORT CIRCUIT STRESSES IN PANELBOARDS. PHASE
- BUSSING SHALL BE FULL HEIGHT WITHOUT REDUCTION. C. A GROUND BUS SHALL BE PROVIDED FOR EACH PANEL. EACH GROUND BUS SHALL BE OF THE SAME MATERIAL AS THE PHASE AND NEUTRAL BUSES.
- D. PANEL BOARDS SHALL COMPLY WITH THE FOLLOWING INDUSTRY
- STANDARDS: UL STANDARDS

ON THE DRAWINGS.

- a. PANEL BOARDS UL67 b. CABINET & BOXES - UL50
- 2. NEMA STANDARD PB1 E. CIRCUIT BREAKERS FOR PANEL OR INDIVIDUAL MOUNTING SHALL BE MOLDED CASE TYPE, QUICK-MAKE, QUICK-BREAK, OR MANUAL OR AUTOMATIC OPERATION.
- F. AMPERE RATING AND NUMBER OF POLES SHALL BE AS INDICATED
- G. BREAKERS SHALL BE TYPE AS MANUFACTURED BY SQUARE D OR APPROVED EQUAL. MINIMUM CIRCUIT BREAKER INTERRUPTING CAPACITY SHALL BE 10,000 SYM RMS AMPERES.

2.12 FIRE ALARM EXISTING EQUIPMENT

- A. THE EXISTING FACILITY IS EQUIPPED WITH A FIRE ALARM SYSTEM WHICH IS TO BE EXPANDED IN THE WORK AREA. ALL NEW EQUIPMENT SHALL BE OF THE SAME MANUFACTURER AS OF THE EXISTING SYSTEM, INCLUDING PULL STATIONS. SMOKE DETECTORS, DUCT SMOKE DETECTORS, AND AUDIBLE/VISUAL SIGNALS, ETC. ALL NEW VISUAL APPLIANCES SHALL BE
- B. IT SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO REVIEW THE SCOPE OF WORK AND PROPOSED EQUIPMENT WITH THE SUPERINTENDENT OF FIRE ALARMS FOR THE CITY PRIOR TO PURCHASE AND INSTALLATION. THE E.C. SHALL ALSO NOTIFY THE LOCAL FIRE DEPARTMENT AND THE OWNER AT LEAST 48 HOURS IN ADVANCE OF ANY MODIFICATIONS. POSSIBLE DISRUPTION TO, OR ASSOCIATED WORK ON THE EXISTING FIRE ALARM SYSTEM.
- C. THE EXISTING FIRE ALARM SYSTEM SHALL BE REPROGRAMMED AS REQUIRED TO INDICATE THE RENOVATED AREAS, REVIEW ZONING WITH THE OWNER'S REPRESENTATIVE AND LOCAL FIRE MARSHALL. THE E.C. SHALL BE
- RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THIS WORK. D. THE E.C. SHALL BE RESPONSIBLE FOR ALL POWER SUPPLIES REQUIRED DUE
- TO THE NEW DEVICES/APPLIANCES PROVIDED UNDER THIS CONTRACT. E. THE E.C. SHALL FURNISH BATTERY CALCULATIONS WHICH INCORPORATE ALL
- EXISTING EQUIPMENT IN ADDITION TO ALL NEW APPLIANCES/DEVICES. F. PROVIDE ALL FIRE ALARM WIRING IN ACCORDANCE WITH MANUFACTURER'S
- G. ALL FIRE ALARM WIRING SHALL BE INSTALLED IN CONDUIT. ALL CONDUIT SHALL HAVE A RED STRIPE PAINTED EVERY 10'-0". ALL JUNCTION BOXES AND COVERS SHALL BE PAINTED RED. FIRE ALARM RATED "MC" CABLE MAY BE USED WHERE RUN CONCEALED IF ACCEPTABLE TO THE LOCAL FIRE

2.13 <u>FIRESTOPPING</u>, <u>SMOKEPROOFING</u> <u>AND WATERPROOFING</u>

- A. PROVIDE FIRESTOP OR SMOKESTOP BETWEEN SLEEVES AND CONDUIT MANUFACTURED BY BIO FIRE SHIELD, INC., OR DOW CORNING CORP. AS
- DOW CORNING SILICONE RTV FOAM. DOW CORNING 96-081 RTV SILICONE ADHESIVE SEALANT.
- MINERAL FIBER BOARD, MATTING AND PUTTY. B. PROVIDE WATERPROOFING OF ALL MATERIALS WHICH PENETRATE A FLOOR, EXTERIOR WALL SLAB OR ROOF. ALL SLEEVES SHALL EXTEND A MINIMUM OF 3 INCHES ABOVE FLOOR OR ROOF.

PART 3 - EXECUTION

3.01 <u>DEMOLITION AND REMOVAL WORK</u>

MANAGER OR OWNER.

RECOMMENDATIONS.

- A. REMOVE ALL ELECTRICAL EQUIPMENT, WIRING AND OTHER ELECTRICAL WORK AS REQUIRED. DISCONNECT LOAD AND LINE END OF CONDUCTORS FEEDING DEVICES WHICH ARE TO BE REMOVED OR ABANDONED, REMOVE CONDUCTORS NO LONGER IN USE, CUT BACK TO FLOOR, WALL, OR CEILING AND PLUG BOTH ENDS OF CONCEALED CONDUITS MADE ORSOLETE BY THIS ALTERATION REMOVE EXPOSED OR ABANDONED CIRCUITS AND OUTLETS. REMOVE MATERIAL AND EQUIPMENT AND DISPOSE OF AS DIRECTED.
- B. WHEREVER IT IS REQUIRED TO DISCONNECT OR REMOVE ANY PART OF AN EXISTING CIRCUIT, IMMEDIATELY RECONNECT THAT CIRCUIT OR REESTABLISH SERVICE IN THE REMAINING PORTION OF THE CIRCUIT.
- C. THE WORK SHALL ALSO INCLUDE THE REMOVAL OF MATERIALS AS DIRECTED. PRIOR TO REMOVING EQUIPMENT AND MATERIAL FROM PROJECT SITE, THE BUILDING MANAGER OR OWNER WILL INSPECT AND ADVISE WHICH ITEMS WILL BE STORED.

D. WHERE EXISTING RECEPTACLES AND/OR SWITCHES ARE LOCATED IN COLUMNS

TO CORRESPOND IN MATERIAL, QUALITY, SHAPE, AND FINISH WITH THAT OR

AND/OR EXTERIOR WALLS, AND ARE NOT TO BE REUSED, REMOVE

- RECEPTACLE AND CAP OUTLET BOX, RECEPTACLES SHOWN ON PARTITIONS TO BE REMOVED SHALL HAVE ALL WIRING AND CONDUIT REMOVED AS WELL WHERE PRESENT WORK IS DAMAGED IN THE EXECUTION OF THIS CONTRACT, OR WHERE OPENINGS ARE LEFT DUE TO THE REMOVAL OF CONDUITS. EQUIPMENT, OR APPARATUS, THE SAME SHALL BE REPAIRED OR CLOSED UP
- SHOULD ANY DAMAGE DUE TO THE EXECUTION OF THIS CONTRACT OCCUR TO THE FURNITURE, FIXTURES, OR ANY OTHER EQUIPMENT OR APPARATUS, SUCH DAMAGES SHALL BE PROPERLY REPAIRED WITH THE SUPPLY OF NEW ARTICLES AND MADE GOOD WITHOUT EXTRA CHARGE.

G. WHERE REMOVAL OF EXISTING ELECTRICAL EQUIPMENT WILL RESULT IN

OUTAGES IN AREA NOT TO BE DEMOLISHED, THIS CONTRACTOR SHALL

COORDINATE IN ADVANCE AND OBTAIN THE APPROVAL OF THE BUILDING

SIMILAR AND ADJOINING WORK, UNLESS OTHERWISE CALLED FOR.

SYNCHRONIZED WITH EXISTING APPLIANCES.



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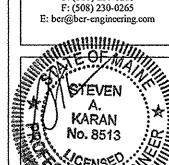
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HMS Host 6905 Rockledge Drive Bethesda, MD 20817 T: (240) 694-4746 F: (240) 694-4643 C: (240) 274-6417 E: scott.reimink@hmshost

Building Engineering Resources, Inc. 66 Main Street North Easton, MA 02356 T: (508) 230-0260 F: (508) 230-0265



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Scale: No Scale Issued: 09/08/11

ELECTRICAL

SPECIFICATIONS

Job No.: 11400