* ALL SYMBOLS MAY NOT BE SHOWN ON PLANS

RACEWAYS AND WIRING

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

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

LIGHTING FIXTURES

ROUND PENDANT MOUNTED LIGHTING FIXTURE

WALL MOUNTED ACCENT LIGHTING FIXTURE

TRACK MOUNTED PENDANT LIGHTING FIXTURE

LIGHTING CONTROL DEVICES

SINGLE POLE TOGGLE SWITCH

RECEPTACLES (MOUNTED 18" AFF OR AS INDICATED ON ARCHITECTURAL

DUPLEX 5-201PLANSEPTACLE, "2" DENOTES CIRCUIT NUMBER, "GFI" DENOTES GROUND FAULT CIRCUIT INTERRUPTER TYPE DEVICE

DOUBLE DUPLEX 5-20R RECEPTACLE

SPECIAL PURPOSE RECEPTACLE, "L6-30" DENOTES TYPE, SEE POWER PLANS FOR

EXACT TYPES USED SINGLE 5—20R RECEPTACLE

POWER DISTRIBUTION EQUIPMENT

PANELBOARD, SURFACE MOUNTED

JUNCTION BOX, SIZED PER NEC

MISCELLANEOUS

JUNCTION BOX WITH FLEXIBLE CONNECTION TO EQUIPMENT

EXHAUST FAN

TIME CLOCK

ABBREVIATIONS

AMPERES

ABOVE FINISHED FLOOR

AMPERE INTERRUPTING CAPACITY

AMERICAN WIRE GAUGE

CONDUIT

C/B CIRCUIT BREAKER

ELECTRICAL CONTRACTOR

EXISTING TO BE DEMOLISHED

ETR EXISTING TO REMAIN

EXISTING TO BE RELOCATED ETRL

GROUND

GENERAL CONTRACTOR

GFI GROUND FAULT INTERRUPTER

KILOWATTS KW

MAIN CIRCUIT BREAKER

MLO MAIN LUGS ONLY NATIONAL ELECTRICAL CODE

NOT TO SCALE NTS

POLE

POLYVINYL CHLORIDE

NEW LOCATION OF RELOCATED DEVICE

VOLT

VERIFY IN FIELD

WATT

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 UNDERSTOOD 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.

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.

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. 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.

SCOPE OF WORK

A. 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. FURNISHING AND INSTALLING NEW LIGHTING FIXTURES LAMPS.

2. FURNISHING AND INSTALLING NEW FEEDERS, CONDUITS, BRANCH CIRCUIT WIRING, ETC.

3. FURNISHING AND INSTALLING NEW RACEWAYS, OUTLET BOXES, WIRING AND CONNECTIONS FOR LIGHTING FIXTURES, SWITCHES, AND RECEPTACLES.

4. PROVIDE CONNECTIONS TO ALL ELECTRICAL EQUIPMENT FURNISHED BY OTHER TRADES OR BY THE OWNER.

5. POWER WIRING FOR ALL MOTORS, INCLUDING INSTALLING ALL

REQUIRED DISCONNECT SWITCHES AND MOUNTING OF STARTERS. 6. TEMPORARY LIGHT AND POWER.

GROUNDING.

8. CUTTING, CHANNELING, AND PATCHING.

9. REMOVAL OF ELECTRICAL SYSTEM AS REQUIRED AND AS INDICATED ON PLANS.

WORK NOT INCLUDED

A. FURNISHING MOTORS, MOTOR STARTER AND CONTROL DEVICES CONNECTED TO EQUIPMENT FURNISHED UNDER OTHER DIVISIONS OF THE SPECIFICATIONS. HOWEVER, ELECTRICAL 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

A. 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.

B. 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.

D. COORDINATE ALL SERVICE WORK WITH THE LOCAL UTILITY COMPANIES. ALL WORK INCLUDING BUT NOT LIMITED TO, PRIMARY ELECTRIC DUCT BANKS, TRANSFORMER PADS, MANHOLES/ PULL BOXES, METERING, PROTECTION BOLLARDS AND TELEPHONE/CABLE TV SERVICE DUCT BANKS SHALL BE PROVIDED IN ACCORDANCE WITH THE LATEST REQUIREMENTS OF THE LOCAL UTILITY COMPANIES.

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 THIS

1.06 SHOP DRAWINGS AND EQUIPMENT SUBMISSIONS

DATE.

A. PRIOR TO PURCHASING ANY EQUIPMENT OR MATERIAL, A LIST OF THEIR MANUFACTURERS SHALL BE SUBMITTED FOR APPROVAL.

B. 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:

1. WIRING DEVICES AND 4. SAFETY SWITCHES AND MOTOR PLATES. STARTERS

2. CONDUIT, BOXES, AND FITTINGS.

3. 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.

1.07 <u>SAMPLES</u>

A. 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.

1.08 AS-BUILT DRAWINGS

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.

1.09

A. 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.

B. ANY DEFECTS OR DEFICIENCIES DISCOVERED IN ANY OF THE ELECTRICAL WORK SHALL BE CORRECTED.

1.10 <u>IDENTIFICATION</u>

A. 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

EQUIPMENT AND MATERIALS

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

B. NEW EQUIPMENT AND MATERIALS SHALL:

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.

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

1. 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 BE 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.

<u>WIRING MATERIALS</u>

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

D. MINIMUM SIZE:

1. LIGHTING AND POWER: #12 AWG, UNLESS OTHERWISE

2. CONTROL: #14 AWG.

INDICATED.

CONDUCTOR SHALL BE GREEN.

3. 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 2.03 . 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.

. 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.

6. FITTINGS SHALL BE THREADED.

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

H. INTERMEDIATE METALLIC CONDUIT (IMC) SHALL CONFORM TO UL 1242. FITTINGS SHALL BE THREADED.

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.

ELECTRICAL METALLIC TUBING (EMT) SHALL CONFORM TO UL 797.

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 CIRCUIT CONDUITS TERMINATING AT PANELBOARDS.

JUNCTION BOXES

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

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

OUTLET BOXES 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 DIVIDED 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

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. "IN 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.

<u>WIRING DEVICES</u>

A. ALL DEVICES SHALL BE SPECIFICATION GRADE, U.L. APPROVED.

B. SINGLE POLE SWITCH, 20 AMP, 120/277 VOLTS. HUBBELL OR APPROVED EQUAL.

C. RECEPTACLE, 20 AMP, 2 POLE, 3 WIRE DUPLEX, 125 VOLT, GROUND TYPE. HUBBELL OR APPROVED EQUAL.

D. COLOR AND TYPE OF ALL DEVICE PLATES SHALL BE APPROVED BY ARCHITECT PRIOR TO PURCHASE/INSTALLATION.

2.08 <u>GROUNDING</u>

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.

FIRESTOPPING, SMOKEPROOFING AND WATERPROOFING

A. PROVIDE FIRESTOP OR SMOKESTOP BETWEEN SLEEVES AND CONDUIT MANUFACTURED BY BIO FIRE SHIELD, INC., OR DOW CORNING CORP. AS FOLLOWS:

DOW CORNING 96-081 RTV SILICONE ADHESIVE SEALANT. 3. 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

1. DOW CORNING SILICONE RTV FOAM.

FLOOR OR ROOF.

<u>PART 3 – EXECUTION</u> 3.01 <u>DEMOLITION AND REMOVAL WORK</u>

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 OBSOLETE 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 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 E. 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 TO CORRESPOND IN MATERIAL, QUALITY, SHAPE, AND

F. 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.

UNLESS OTHERWISE CALLED FOR.

FINISH WITH THAT OR SIMILAR AND ADJOINING WORK,

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 MANAGER OR OWNER.

Item

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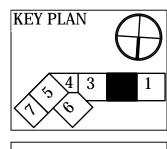
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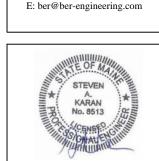
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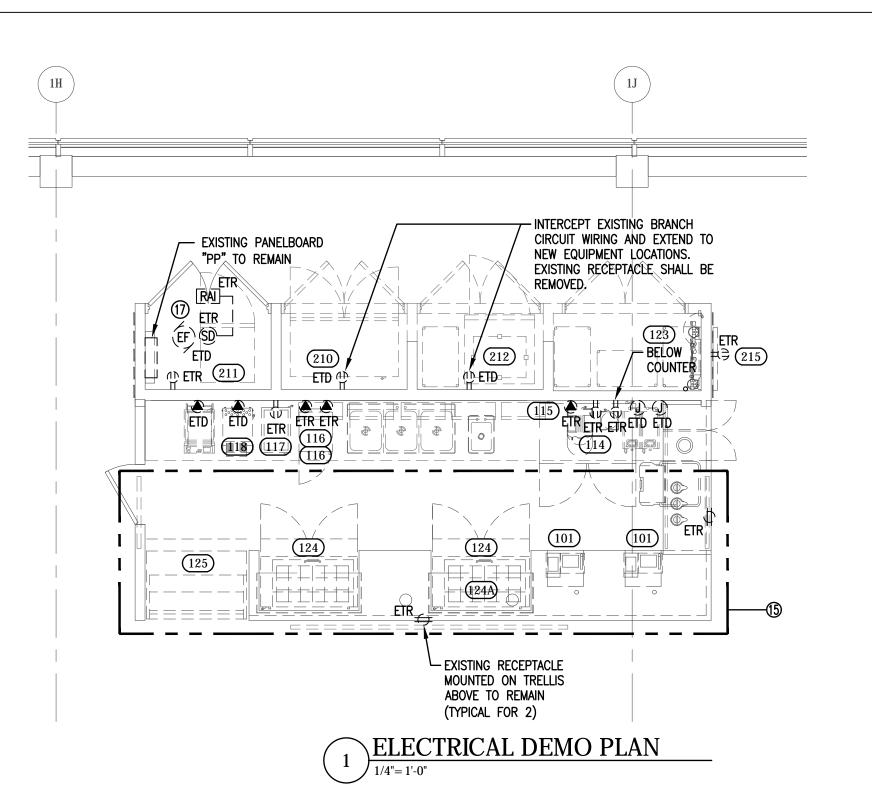
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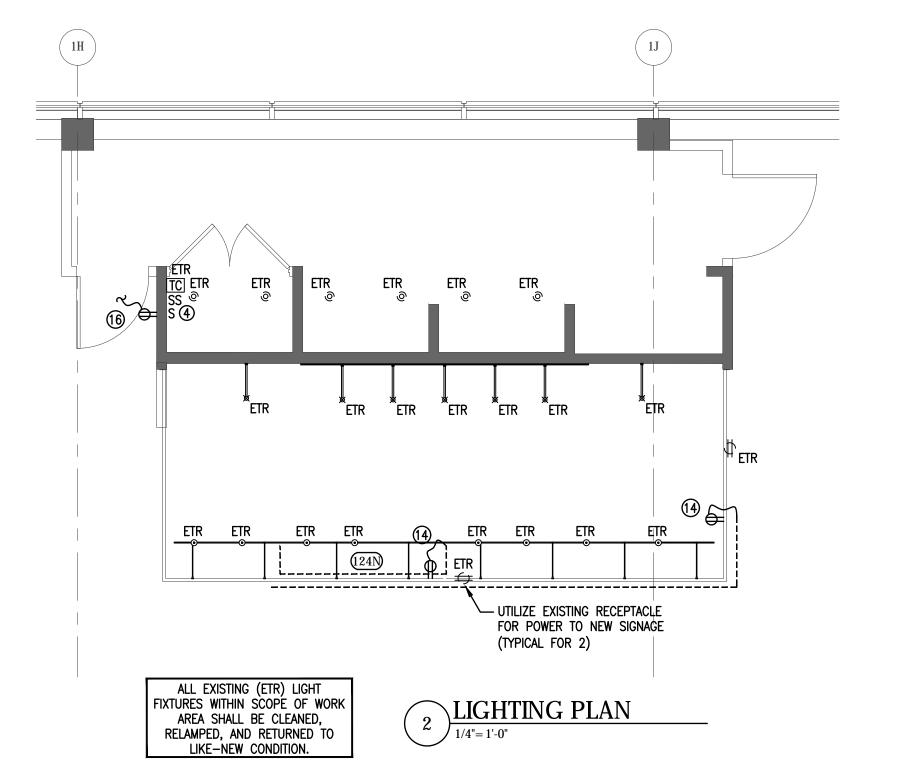
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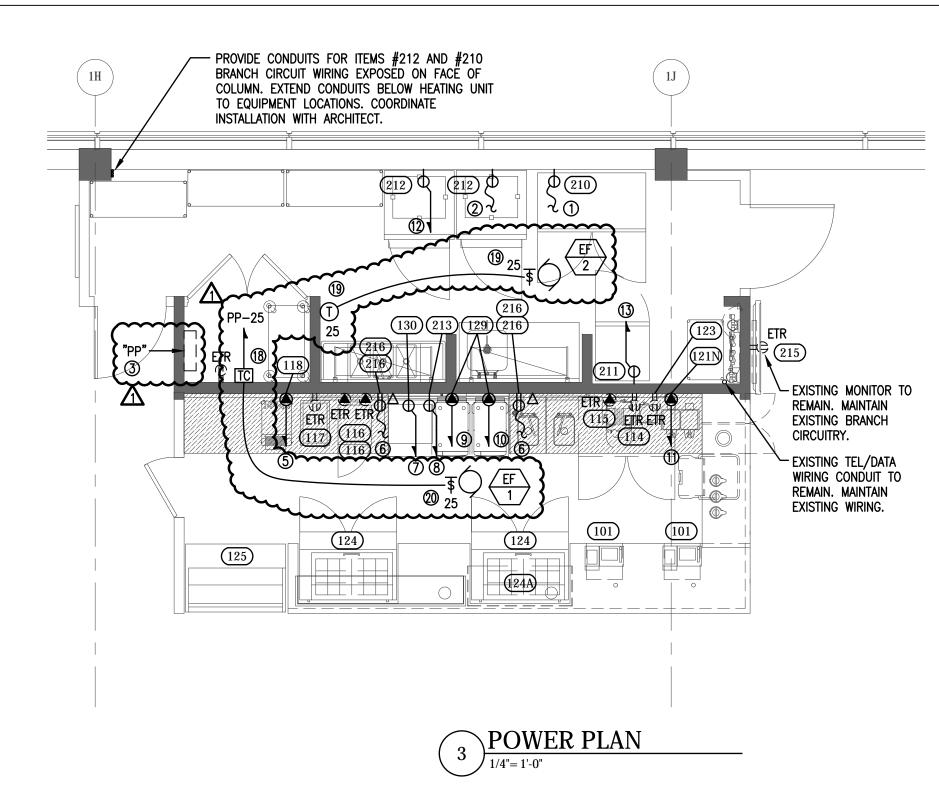
ELECTRICAL LEGEND AND SPECIFICATIONS

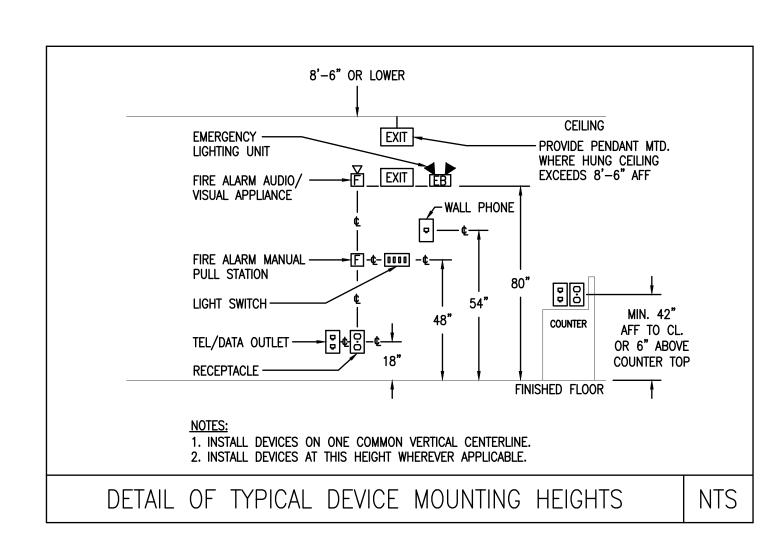
Host PWM GAB Renovation

North Easton, MA 02356 T: (508) 230-0260

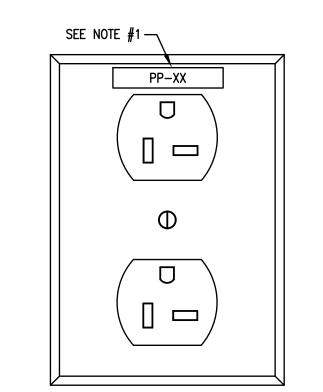








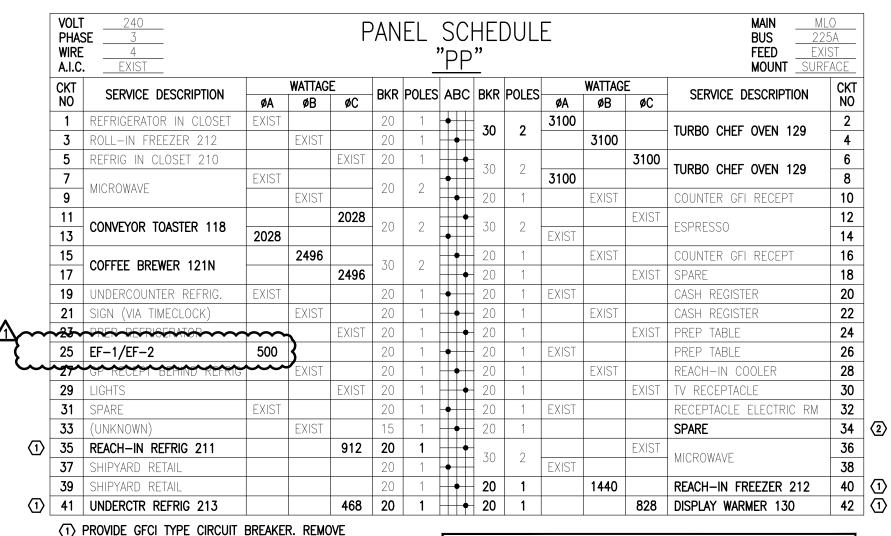
ΕQ	UI	PMENT SCHEDULE				
TEM NO		EQUIPMENT CATEGORY	VOLTS/ PHASE	NEMA RECEPTACLE	NOTES	ELECTRICAL
101	2	POS			EXIST	
114	1	BLENDER			EXIST	
115	1	ESPRESSO			EXIST	
116	2	MICROWAVE OVEN			EXIST - DOUBLE STACKED	
117	1	COOKER/WARMER			EXIST	
18	1	CONVEYOR TOASTER	208/1	6-20R		
21N	1	1.5 GALLON COFFEE BREWER	120/208/1	L14-30R		48
23	1	UNDERCOUNTER REFRIGERATOR			EXIST	12
124	2	REFRIGERATOR, SANDWICH/SALAD PREP			EXIST	12
24A	1	SHELF, SANDWICH/SALAD PREP			EXIST	
124N	1	SNEEZE GUARD W/ LED LIGHT TAPE	120/1	5-20R		
125	1	50" SELF SERVE REFR. (with NIGHT GATE & LOCK)			EXIST	
		EVAPORATOR PAN			EXIST	
29	2	MICROWAVE CONVECTION OVEN	208/1	6-30R		48
30	1	HORIZONTAL DISPLAY WARMER	120/1	5-20R		48
210	1	REACH-IN REFRIGERATOR	120/1	5-20R	EXIST	12
211	1	REACH-IN REFRIGERATOR	120/1	5-20R	EXIST	1:
212	2	ROLL-IN FREEZER	120/1	5-20R	1 EXIST, 1 NEW	12
213	1	UNDERCOUNTER REFRIGERATOR	120/1	5-20R		12
215	1	50" MONITOR			EXIST	
216	4	49" MEDIA PLAYER	120/1	5-20R	COORD MTG HT W/ ARCHITECT	Т



TYPICAL RECEPTACLE LABELING DETAIL

DETAIL NOTE:

1. ELECTRICAL CONTRACTOR SHALL PROVIDE TYPED LABEL ON EACH RECEPTACLE (INCLUDING SPECIAL NEMA RECEPTACLES) WITH PTOUCH MACHINE OR SIMILAR TO INDICATE PANEL NAME AND CIRCUIT NUMBER. FOR SPECIAL NEMA RECEPTACLES, INDICATE PANEL AND CIRCUIT NUMBER AS PP-X/X, PP-X/X/X,



EXISTING CIRCUIT BREAKER (IF APPLICABLE). REFER TO KEYED NOTES FOR ADDITIONAL REQUIREMENTS.

② EXISTING CIRCUIT BREAKER. LABEL AS "SPARE"

ALL CIRCUITS AND CIRCUIT BREAKERS INDICATED "OUT OF FUNCTION" DENOTE EXISTING CIRCUITS/BREAKERS THAT ARE TO REMAIN. ALL CIRCUITS AND CIRCUIT BREAKERS INDICATED "IN FUNCTION" DENOTE NEW CIRCUITS/BREAKERS TO BE PROVIDED BY THE E.C. E.C. SHALL PROVIDE A NEW TYPED PANELBOARD DIRECTORY UPDATED TO REFLECT ACTUAL LOADS SERVED.

PANEL SCHEDULE NOTE:

DRAWING E200 KEYED NOTES:

- 1 EXISTING BRANCH CIRCUITRY EXTENDED FROM FORMER LOCATION OF ITEM #210. PROVIDE NEW RECEPTACLE AS INDICATED. EXISTING CIRCUIT BREAKER WITHIN PANEL "PP" SHALL BE REMOVED AND REPLACED WITH NEW GFCI TYPE CIRCUIT
- 2 EXISTING BRANCH CIRCUITRY EXTENDED FROM FORMER LOCATION OF ITEM #212. PROVIDE NEW RECEPTACLE AS INDICATED. EXISTING CIRCUIT BREAKER WITHIN PANEL "PP" SHALL BE REMOVED AND REPLACED WITH NEW GFCI TYPE CIRCUIT BREAKER.
- ③ EXISTING PANELBOARD "PP" TO REMAIN.
- (4) EXISTING TIMECLOCK AND TOGGLE SWITCHES TO REMAIN.
- CIRCUIT #PP-11/13. UTILIZE EXISTING 20A/2P CIRCUIT BREAKER. PROVIDE 2#12,#12G,3/4"C AND NEMA 6-20R RECEPTACLE.
- ⑥ ITEM #216 (QTY 4): PROVIDE CONNECTION TO EXISTING TV RECEPTACLE BRANCH CIRCUIT.
- ⑦ ITEM #130: CIRCUIT #PP-42. PROVIDE NEW 20A/1P GFCI TYPE CIRCUIT BREAKER.
- (8) ITEM #213: CIRCUIT #PP-41. PROVIDE NEW 20A/1P GFCI TYPE CIRCUIT BREAKER.
- ③ ITEM #129: CIRCUIT #PP-2/4. PROVIDE NEW 30A/2P CIRCUIT BREAKER. PROVIDE 2#10,#10G,3/4"C AND NEMA 6-30R RECEPTACLE.
- ① ITEM #129: CIRCUIT #PP-6/8. UTILIZE EXISTING 30A/2P CIRCUIT BREAKER. PROVIDE 2#10,#10G,3/4"C AND NEMA 6-30R RECEPTACLE.
- ① ITEM #121N: CIRCUIT #PP-15/17. UTILIZE EXISTING 30A/2P CIRCUIT BREAKER. PROVIDE 3#10,#10G,3/4"C AND NEMA L14-30R RECEPTACLE.
- (12) ITEM #212: CIRCUIT #PP-40. PROVIDE NEW 20A/1P GFCI TYPE CIRCUIT BREAKER.
- (13) ITEM #211: CIRCUIT #PP-35. REMOVE EXISTING 20A/1P CIRCUIT BREAKER AND PROVIDE NEW 20A/1P GFCI TYPE CIRCUIT BREAKER.
- (14) PROVIDE LED TAPE LIGHT AS MANUFACTURED BY COMMERCIAL ELECTRIC #1001-798-987. REFER TO ARCHITECTURAL ELEVATIONS FOR MOUNTING LOCATIONS. COORDINATE MOUNTING METHOD WITH ARCHITECT PRIOR TO INSTALLATION. PROVIDE SWITCHED RECEPTACLE BELOW COUNTER AND CONNECT TO EXISTING LIGHTING BRANCH CIRCUIT.
- (5) UNLESS NOTED OTHERWISE, ALL EXISTING ELECTRICAL DEVICES LOCATED WITHIN FRONT LINE MILLWORK SHALL REMAIN. E.C. SHALL DISCONNECT AND REMOVE EXISTING DEVICES AS REQUIRED TO ACCOMMODATE INSTALLATION OF NEW MILLWORK. EXISTING WIRING SHALL BE MADE SAFE AND MAINTAINED FOR RECONNECTION AFTER MILLWORK REPLACEMENT.
- (6) LOCATE RECEPTACLE TO SERVE RELOCATED SIGNAGE. PROVIDE CONNECTION TO EXISTING SIGNAGE BRANCH CIRCUIT. CONFIRM MOUNTING HEIGHT WITH ARCHITECT PRIOR TO INSTALLATION.
- (7) EXISTING EXHAUST FAN TO BE REMOVED. REMOVE EXISTING THERMOSTAT AND ALL ASSOCIATED BRANCH CIRCUIT WIRING, CONDUIT, AND CONTROL WIRING.

18 PROVIDE NEW TIMECLOCK EQUAL TO INTERMATIC

#T101R.

- 1. ALL 125V, SINGLE PHASE, 15A AND 20A RECEPTACLES WITHIN SERVING AREA AND BACK-OF-HOUSE SHALL HAVE GROUND FAULT 19 PROVIDE BRANCH CIRCUIT AS INDICATED. CIRCUIT CIRCUIT INTERRUPTER PROTECTION PER NEC THROUGH LINE-VOLTAGE THERMOSTAT PROVIDED ARTICLE 210.8(B).
- BY HVAC CONTRACTOR. . COLOR AND TYPE OF ALL DEVICES AND DEVICE 20 PROVIDE BRANCH CIRCUIT AS INDICATED. CIRCUIT PLATES SHALL BE APPROVED BY ARCHITECT THROUGH TIMECLOCK. PRIOR TO PURCHASE/INSTALLATION.
 - 3. E.C. SHALL FURNISH AND INSTALL ALL RECEPTACLES, CAPS, AND CORDS AS REQUIRED FOR FOOD SERVICE EQUIPMENT. CAPS AND CORDS ARE TO BE INSTALLED ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS AND COMPLY WITH ALL APPLICABLE CODES.

POWER PLAN GENERAL NOTES:

- 4. E.C. SHALL PROVIDE CONNECTIONS DIRECTLY TO MANUFACTURER'S INSTRUCTIONS. ELECTRICAL CONNECTIONS SHALL COMPLY WITH ALL APPLICABLE CODES.
- 5. E.C. SHALL COORDINATE ALL FINAL POWER LOCATIONS AND MOUNTING HEIGHTS FOR KITCHEN EQUIPMENT WITH ARCHITECT PRIOR TO INSTALLATION.
- 6. ELECTRICAL, COMMUNICATIONS, DATA, SECURITY, AND/OR FIRE SAFETY WIRING/SYSTEMS SHALL NOT BE INTERRUPTED WITHOUT NOTIFICATION AND COORDINATION WITH THE AUTHORITY HAVING JURISDICTION AND WRITTEN APPROVAL FROM SAID AUTHORITY.
- MAINTAIN EXISTING BRANCH CIRCUIT WIRING TO ALL DEVICES INDICATED AS EXISTING TO REMAIN ("ETR").
- 8. CIRCUIT NUMBERS INDICATED REPRESENT DESIGN INTENT ONLY. E.C. SHALL UTILIZE EXISTING BRANCH CIRCUITS MADE AVAILABLE BY DEMOLITION FOR CONNECTION OF NEW DEVICES AND APPLIANCES. PROVIDE NEW CIRCUIT BREAKERS AS INDICATED.

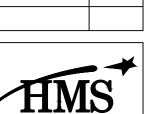
BRANCH CIRCUIT WIRING NOTES:

- WIRING IS SHOWN ON DRAWINGS ONLY FOR SPECIFIC ROUTES OR SPECIAL CONDITIONS.
- 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.
- 4. ALTHOUGH ALL BRANCH CIRCUIT WIRING AND CONDUIT IS NOT SHOWN, IT IS 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 GROUND CONDUCTORS.

Bid 032117 Permit 032417 Exhaust Fans | 053017

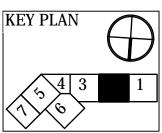
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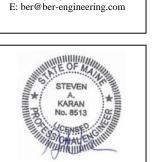


a B eric



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



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> Job #: 16414 Scale: As noted

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Issued: 032117

ELECTRICAL **PLANS**