ELECTRICAL SYMBOLS LIST

LIGHTING

	LIGHTING FIXTURE AND OUTLET BOX. HALF SHADED FIXTURE OR "EM" INDICATES FIXTURES WITH INTEGRAL BATTERY PACK FOR EMERGENCY SERVICE, U.O.N.
A 2 a	LUMINAIRE TYPE : INDICATE BY LIPPERCASE LETTER SEE LIGHTING EXTURE SCHEDULE. CIRCUIT NUMBER : INDICATED BY NUMBER SWITCHING INDICATED BY LOWER CASE LETTERS.
EM	DENOTES LUMINAIRE ON EMERGENCY CIRCUIT.
NL	DENOTES FIXTURES DESIGNATED AS NIGHTLIGHT, WIRED TO 24 HOURS UNSWITCHED CIRCUIT.
	CEILING/WALL MOUNTED SELF POWERED EXIT LIGHT FIXTURE WITH DIRECTIONALARROWS AS INDICATED. SHADED AREA DENOTES FACE(S). ISOLITE ELITE SERIES LED EXIT SIGN

SWITCHES AND CONTROLS

$a	20A SPST TOGGLE SWITCH U.O.N. "a" DENOTES LIGHTING FIXTURE/SWITCHED RECEPTACLE CONTROLLED.
$OS	WALL OCCUPANCY SENSOR, NUMBER INDICATES TYPE.
TC/LC	TIME CLOCK / LIGHTING CONTACTOR

ELECTRICAL DRAWING LIST

E001	ELECTRICAL SYMBOLS, ABBREVIATIONS & GENERAL NOTES
E002	ELECTRICAL SPECIFICATIONS (1 OF 2)
E003	ELECTRICAL SPECIFICATIONS (2 OF 2)
E100	ELECTRICAL LIGHTING PLAN
E200	ELECTRICAL POWER FLOOR & ROOF PLAN
E300	ELECTRICAL SITE PLAN
E600	ELECTRICAL PANEL SCHEDULES AND RISER DIAGRAM
E700	ELECTRICAL DETAILS

POWER AND TELECOMMUNICATION

J	JUNCTION BOX WITH BLANK COVER PLATE, CEILING MOUNTED..
	DUPLEX CONVENIENCE RECEPTACLE, +12" AFF OR AS NOTED.
	DEDICATED DUPLEX RECEPTACLE
	DOUBLE DUPLEX RECEPTACLE - 20A-1P, 125V, NEMA 5-20R.
	TELEPHONE/DATA OUTLET, 4"SQUARE OUTLET BOX WITH SINGLE GANG COLLAR AND BLANK PLATE. RUN (2) COMPOSITE CABLES FROM EACH OUTLET TO NID BOX.
	DATA OUTLET WITH CAT 5 CABLE - (1) PORT UNO, +18" AFF, UNO TEL / DATA OUTLET TO BE RUN (2) COMPOSITE CABLES FROM EACH OUTLET TO NID BOX/PATCH PANEL

MOTORS AND CONTROLS

	NON FUSED DISCONNECT SWITCH
M	AC INDOOR UNIT MOTOR AS NOTED WITH LIQUID TIGHT FLEXIBLE CONNECTION WITH JUNCTION BOX AND MOTOR SWITCH.

ANNOTATION

+24"	INDICATES MOUNTING HEIGHT, CENTER LINE TO FINISHED FLOOR.
X	KEYED NOTE REFERENCE

POWER DISTRIBUTION

	POWER PANELBOARD, 208Y/120V-SURFACE MOUNTED.

ELECTRICAL ABBREVIATIONS

A	AMPERES	PNL	PANEL
A/C, AC	AIR CONDITIONING UNIT	PP	POWER PANEL
AF	AMPERE FRAME/AMP FUSE	PWR	POWER
AFF	ABOVE FINISHED FLOOR	Ø	PHASE
AS	AMP SWITCH	R	REMOVE
AIC	AMPS INTERRUPTING CAPACITY	RE	RELOCATED EXISTING
AT	AMP TRIP	REC	RECEPTACLE
ATS	AUTOMATIC TRANSFER SWITCH	REF	REFRIGERATOR
AUTO	AUTOMATIC	RGS	RIGID GALVANIZED STEEL
AWG	AMERICAN WIRE GAUGE	RH	RANGE HOOD
C	CONDUIT	RR	REMOVE & RELOCATE
C/B,CB	CIRCUIT BREAKER	SECT	SECTION
CKT	CIRCUIT	SPDT	SINGLE POLE DOUBLE THROW
CLG	CEILING	SPST	SINGLE POLE SINGLE THROW
COMM	COMMUNICATION	SPEC	SPECIFICATION
CT	CURRENT TRANSFORMER	SW	SWITCH
CU	COPPER	SWBD	SWITCHBOARD
DIA	DIAMETER	SYM	SYMMETRICAL
DISC	DISCONNECT	SYS	SYSTEMS
DN	DOWN	TELE	TELEPHONE
DP	DISTRIBUTION PANEL	TEMP	TEMPERATURE
DR	DRYER	TXF	TOILET EXHAUST FAN
DWG	DRAWING	TYP	TYPICAL
DW	DISHWASHER	UON	UNLESS OTHERWISE NOTED
E	EXISTING	V	VOLT/VOLTAGE
EA	EACH	VA	VOLT AMPERE
EM	EMERGENCY	W	WATT
EMT	ELECTRICAL METALLIC TUBING	WP	WEATHER PROOF
EQUIP	EQUIPMENT	WA	WASHER
ER	EXISTING TO BE RELOCATED		
FA	FIRE ALARM		
FL	FLOOR		
G	GROUND		
GFI	GROUND FAULT INTERRUPTER		
GP	GENERAL PURPOSE		
HP	HORSEPOWER		
HWH	HOW WATER HEATER		
HZ	HERTZ		
IC	INTERRUPTING CAPACITY		
JB	JUNCTION BOX		
KCMIL	ONE THOUSAND CIRCULAR MILS		
KV	KILOVOLT		
KVA	KILOVOLT-AMPERES		
KW	KILOWATTS		
LTG	LIGHTING		
MAX	MAXIMUM		
MC	MOTOR CONTROLLER		
MCB	MAIN CIRCUIT BREAKER		
MLO	MAIN LUGS ONLY		
MTD	MOUNTED		
MTS	MANUAL TRANSFER SWITCH		
MW	MICROWAVE		
N	NEUTRAL		
NIC	NOT IN CONTRACT		
NTS	NOT TO SCALE		

GENERAL NOTES

1. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE CURRENT VERSION OF THE LOCAL ELECTRICAL CODE, 2023 NEC, LOCAL JURISDICTION REQUIREMENTS, AND ALL GOVERNING LOCAL CODES, LAWS, AND REGULATIONS.
2. CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH ALL EXISTING CONDITIONS THAT MAY AFFECT THE WORK. NO ADDITIONAL COMPENSATION WILL BE CONSIDERED FOR FAILURE TO DO SO.
3. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS, TEST REPORTS, AND CERTIFICATIONS FOR TEMPORARY AND FINAL CERTIFICATE OF OCCUPANCY.
4. FIRE STOP ALL PENETRATIONS OF FIRE RATED CONSTRUCTION IN A CODE APPROVED MANNER IN ORDER TO MAINTAIN FIRE RATING. ALL PENETRATIONS SHALL BE SLEEVED AND SEALED WATERTIGHT.
5. SECURE ALL SUPPORTS TO BUILDING STRUCTURE UTILIZING TOGGLE BOLTS (HOLLOW MASONRY), EXPANSION SHIELDS OR INSERTS (CONCRETE AND BRICK), MACHINE SCREWS (METAL), BEAM CLAMPS (FRAMEWORK), WOOD SCREWS (WOOD) OR PAN THRU STRAPS (METAL DECK). NAILS, RAWL PLUGS AND WOOD PLUGS ARE NOT PERMITTED. WHERE REQUIRED BY STRUCTURE, PROVIDE THRU BOLTS AND FISH PLATES. SUPPORT HORIZONTAL RUNS OF METALLIC RACEWAYS NOT MORE THAN 10 FT APART. SUPPORT RACEWAY RISERS AT EACH FLOOR LEVEL. RUN EXPOSED RACEWAYS PARALLEL WITH OR AT RIGHT ANGLES TO WALLS.
6. LEAVE WIRES WITH SUFFICIENT SLACK TO PERMIT MAKING FINAL CONNECTIONS. RACEWAYS OVER 10 FT LONG IN WHICH WIRING IS NOT INSTALLED: FURNISH FISH WIRE.
7. VERIFY LOCATIONS OF OUTLETS AND SWITCHES IN FINISHED ROOMS WITH ARCHITECTURAL DRAWINGS OF INTERIOR DETAILS AND FINISH. IN CENTERING OUTLETS AND LOCATING BOXES AND OUTLETS, ALLOW FOR OVERHEAD PIPES, DUCTS AND MECHANICAL EQUIPMENT, EQUIPMENT, VARIATIONS IN FIREPROOFING AND PLASTERING, WINDOW AND DOOR TRIM, PANELING, HUNG CEILINGS AND THE LIKE. CORRECT ANY INACCURACY RESULTING FROM FAILURE TO DO SO WITHOUT EXPENSE TO OWNER.
8. CONTRACTOR SHALL PROVIDE A WARRANTY ON ALL MATERIALS, EQUIPMENT, AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE.
9. ALL UNUSED MATERIALS AND DEBRIS SHALL BE LEGALLY REMOVED AND DISPOSED OF AWAY FROM THE PREMISES ON A DAILY BASIS.
10. CONTRACTOR SHALL PATCH, PAINT, AND RESTORE EXISTING SURFACES DAMAGED DURING THE COURSE OF THIS CONSTRUCTION TO PRE-EXISTING CONDITIONS OR BETTER.
11. MINIMUM SIZE OF CONDUIT SHALL BE ¾", AND TYPE SHALL BE ELECTRICAL METALLIC TUBING (EMT), UNLESS OTHERWISE NOTED. PROVIDE NYLON DRAG LINE AND CONDUIT CAP FOR ALL EMPTY CONDUITS.
12. CONNECT CONDUIT TO MOTOR CONDUIT TERMINAL BOXES WITH FLEXIBLE CONDUIT (MINIMUM 18 IN. LENGTH AND 50% SLACK). DO NOT TERMINATE IN OR FASTEN RACEWAYS TO MOTOR FOUNDATION.
13. PULL AND JUNCTION BOXES WHERE INDICATED ON THE DRAWINGS, SHALL BE CONSIDERED SHOWN AT THEIR APPROXIMATE LOCATION. THE CONTRACTOR SHALL LOCATE THEM AS FIELD CONDITIONS DICTATE. ADDITIONAL PULL AND JUNCTION BOXES NOT SHOWN ON DRAWINGS SHALL BE PROVDED WHERE REQUIRED BY APPLICABLE CODE PROVISIONS OR WHERE CALLED FOR BY FIELD CONDITIONS. PULL AND JUNCTION BOXES SHALL BE SURFACE TYPE IN UNFINISHED AREAS AND INSTALLED CONCEALED IN FINISHED AREAS, AND ALL COVERS TO PULL & JUNCTION BOXES SHALL BE READILY ACCESSIBLE.
14. SUPPORT PANEL, JUNCTION AND PULLBOXES INDEPENDENTLY TO BUILDING STRUCTURE WITH NO WEIGHT BEARING ON RACEWAYS.
15. FOR EXACT LOCATION AND MOUNTING HEIGHT OF LIGHTING FIXTURES AND SWITCH/RECEPTACLE OUTLETS, REFER TO ARCHITECTURAL REFLECTED CEILING AND POWER PLANS.
16. ALL ELECTRICAL ACCESSORIES AND EQUIPMENT INSTALLED OUTSIDE OR EXPOSED TO WEATHER SHALL HAVE NEMA 3R ENCLOSURES AND SHALL BE TIGHTLY GASKETED FOR A COMPLETE RAINTIGHT INSTALLATION. ALL BUILDING EXTERIOR MOUNTED RECEPTACLES SHALL BE GFCI RATED AND MOUNTED IN WEATHERPROOF ENCLOSURE.
17. ALL ACCESS PANEL LOCATIONS SHALL BE REVIEWED BY ARCHITECT PRIOR TO INSTALLATION.
18. ELECTRICAL CONTRACTOR SHALL COORDINATE THE LOCATION AND INSTALLATION OF NEW WORK WITH THE GENERAL CONTRACTOR AND OTHER ASSOCIATED TRADES IN A TIMELY MANNER. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING ALL DIMENSIONS AND CONDITIONS PRIOR TO CONSTRUCTION. REFER TO ALL GENERAL, MECHANICAL, AND ELECTRICAL, DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT.
19. ALL CONDUITS AND EQUIPMENT TO BE CONCEALED IN FINISHED SPACES UNLESS OTHERWISE NOTED. CONDUITS SHALL BE ENCASED IN THE CONCRETE FLOOR SLAB.
20. ALL EQUIPMENT AND MATERIALS INSTALLED IN PLENUM CEILINGS SHALL BE APPROVED FOR THAT APPLICATION.
21. OUTLET BOXES AND JUNCTION BOXES ON OPPOSITE SIDES OF FIRE-RATED WALLS SHALL BE SEPARATED BY A HORIZONTAL DISTANCE OF NOT LESS THAN 24 INCHES, UNLESS FIRE-RATED BOXES OR PUTTY PADS ARE UTILIZED.
22. COORDINATE ALL FLOOR PENETRATIONS WITH THE STRUCTURAL AND ARCHITECTURAL DRAWINGS. CONFIRM PENETRATION LOCATIONS WITH THE ENGINEER AND OWNER BEFORE INSTALLATION.
23. COORDINATE THE MOUNTING HEIGHT AND LOCATION OF RACEWAYS, COMMUNICATIONS OUTLETS, AND RECEPTACLES WITH THE ARCHITECTURAL CASEWORK DRAWINGS AND DETAILS. COORDINATE LOCATIONS OF LIGHT FIXTURES, SWITCHES, AND RELATED DEVICES WITH THE ARCHITECTURAL DRAWINGS AND DETAILS.
24. REFER TO ARCHITECTURAL PLANS FOR FINAL LOCATIONS OF ALL LUMINARIES AND SWITCHES, AND FOR ALL FINISHED CEILING HEIGHTS.
25. REFER TO ARCHITECTURAL PLANS FOR FINAL LOCATIONS OF ALL ELECTRICAL DEVICES, AND FOR FINAL CEILING AND WALL HEIGHTS AND LAYOUTS.
26. LIGHTING FIXTURES PROVIDED WITH EMERGENCY BATTERY PACKS AND INDICATED WITH SWITCH CONTROL SHALL BE WIRED WITH BATTERY CHARGING/SENSING CIRCUIT WIRED AHEAD OF SWITCH CONTROL.
27. NUMBER(S) SHOWN AT RECEPTACLES, JUNCTION BOXES AND EQUIPMENT INDICATES CIRCUIT NUMBERS IN PANELBOARD. PROVIDE WIRE AND CONDUIT TO INTERCONNECT EQUIPMENT AND DEVICES WITH SAME CIRCUIT NUMBERS AND RUN TO PANELBOARD.

DATE	ISSUED FOR:
04-17-25	ISSUE FOR REVIEW
05-14-25	ISSUE FOR PERMIT

Earth Burger

ELECTRICAL SYMBOLS, ABBREVIATIONS AND GENERAL NOTES

E001

1. GENERAL:

A. THE "GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION," AIA DOCUMENT A201, LATEST EDITION, AND THESE SPECIFICATIONS AS APPLICABLE ARE PART OF THIS CONTRACT.

B. DRAWING ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK. CONDUIT ROUTING IS SHOWN DIAGRAMMATICALLY AND DOES NOT SHOW ALL OFFSETS, DROPS AND RISES OF RUNS. THE CONTRACTOR SHALL ALLOW IN HIS PRICE FOR ROUTING OF CONDUIT TO AVOID OBSTRUCTIONS, COORDINATION WITH EXISTING SERVICES, INCLUDING THOSE OF OTHER TRADES, IS REQUIRED, MAINTAIN HEADROOM AND SPACE CONDITIONS.

C. BIDDERS, BEFORE SUBMITTING PROPOSALS, SHALL VISIT AND CAREFULLY EXAMINE THE AREA AFFECTED BY THIS WORK TO FAMILIARIZE THEMSELVES WITH THE EXISTING CONDITIONS AND THE DIFFICULTIES THAT WILL ATTEND THE EXECUTION OF THIS WORK. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE, AND LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT, OR MATERIALS, REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN EXAMINATION BEEN MADE.

D. INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR, MINOR DEVIATIONS FROM DRAWING MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES WHICH INVOLVE EXTRA COST SHALL NOT BE MADE WITHOUT APPROVAL.

E. REMOVAL AND RELOCATION OF CERTAIN EXISTING WORK MAY BE NECESSARY FOR THE PERFORMANCE OF THE GENERAL WORK. ALL EXISTING CONDITIONS CANNOT BE COMPLETELY DETAILED ON THE DRAWINGS. THE CONTRACTOR SHALL SURVEY THE SITE AND INCLUDE ALL CHANGES AND CHARGES IN MAKING UP THE WORK PROPOSAL.

F. CONNECTIONS TO EXISTING WORK: INSTALL NEW WORK AND CONNECT TO EXISTING WORK WITH MINIMUM INTERFERENCE TO EXISTING FACILITIES. TEMPORARY SHUTDOWNS OF EXISTING SERVICES SHALL BE PERFORMED AT NO ADDITIONAL CHARGES. AT TIMES NOT TO INTERFERE WITH NORMAL OPERATION OF EXISTING FACILITIES AND ONLY WITH WRITTEN CONSENT OF OWNER. ALARM AND EMERGENCY SYSTEMS SHALL NOT BE INTERRUPTED. MAINTAIN CONTINUOUS OPERATION OF EXISTING FACILITIES AS REQUIRED WITH NECESSARY TEMPORARY CONNECTIONS BETWEEN NEW AND EXISTING WORK. CONNECT NEW WORK TO EXISTING WORK IN NEAT AND ACCEPTABLE MANNER. RESTORE EXISTING DISTURBED WORK TO ORIGINAL CONDITION, INCLUDING MAINTENANCE OF WIRING CONTINUITY AS REQUIRED.

G. DISCONNECT, REMOVE AND/OR RELOCATE EXISTING MATERIAL, EQUIPMENT AND OTHER WORK AS NOTED OR REQUIRED FOR PROPER INSTALLATION OF NEW WORK.

H. THE CONTRACTOR SHALL KEEP ALL EQUIPMENT AND MATERIALS, AND ALL PARTS OF THE BUILDING EXTERIOR SPACES AND ADJACENT STREETS, SIDEWALKS AND PAVEMENTS, FREE FROM MATERIAL AND DEBRIS RESULTING FROM THE EXECUTION OF THIS WORK. EXCESS MATERIALS WILL NOT BE PERMITTED TO ACCUMULATE EITHER ON THE INTERIOR OR THE EXTERIOR.

I. SEAL OPENINGS THROUGH PARTITIONS, WALLS AND FLOORS WITH MINERAL WOOL OR OTHER NONCOMBUSTIBLE MATERIAL, UNLESS OTHERWISE NOTED.

J. PROVIDE ALL NECESSARY FLASHING AND COUNTER FLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THE BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF CONDUIT AND EQUIPMENT, PROVIDE EQUIPMENT CURBS AS REQUIRED.

K. ALL EXISTING MATERIAL, EQUIPMENT AND CONSTRUCTION DEBRIS TO BE REMOVED UNDER THIS CONTRACT SHALL BECOME THE PROPERTY OF THE CONTRACTOR WITH THE EXCEPTION OF SPECIFIC EQUIPMENT AND APPARATUS REQUESTED BY THE BUILDING REPRESENTATIVE, ARCHITECT OR AS NOTED TO BE RELOCATED ON THE DRAWINGS. REMOVED EQUIPMENT SHALL BE PROPERLY DISPOSED OF BY THIS CONTRACTOR.

L. THE CONTRACTOR'S PROPOSAL FOR ALL WORK SHALL BE PREDICATED ON THE PERFORMANCE OF THE WORK DURING REGULAR WORKING HOURS. WHEN SO DIRECTED, HOWEVER, THE CONTRACTOR SHALL INSTALL WORK DURING OVERTIME HOURS AND THE ADDITIONAL COST TO BE CHARGED THEREFORE SHALL BE ONLY THE "PREMIUM" PORTION OF THE WAGES PAID.

M. UNLESS OTHERWISE SPECIFICALLY NOTED OR SPECIFIED, INCLUDE ALL CUTTING AND PATCHING OF EXISTING FLOORS, WALLS, PARTITIONS AND OTHER MATERIALS IN THE EXISTING BUILDING. THE CONTRACTOR SHALL RESTORE THESE AREAS TO ORIGINAL CONDITION.

N. ALL MATERIAL AND EQUIPMENT SHALL BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.

O. INSURANCE: PROVIDE IN ACCORDANCE WITH OWNER/BUILDING REQUIREMENTS AND SHALL INCLUDE A HOLD HARMLESS CLAUSE FOR OWNER AND ENGINEER.

P. THE FINAL ACCEPTANCE SHALL BE MADE AFTER THE CONTRACTOR HAS ADJUSTED HIS EQUIPMENT, TESTED THE VARIOUS SYSTEMS, DEMONSTRATED THAT IT FULFILLS THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS AND HAS FURNISHED ALL THE REQUIRED CERTIFICATED OF INSPECTION AND APPROVAL.

2. GENERAL PROVISIONS FOR ELECTRICAL WORK:

A. DEFINITIONS:

1) "PROVIDE": TO FURNISH, INSTALL AND CONNECT UP COMPLETE AND READY FOR SAFE AND REGULAR OPERATION THE PARTICULAR WORK REFERRED TO UNLESS SPECIFICALLY OTHERWISE NOTED.

2) "INSTALL": TO ERECT, MOUNT AND CONNECT COMPLETE WITH RELATED ACCESSORIES.

3) "FURNISH" OR "SUPPLY": TO PURCHASE, PROCURE, ACQUIRE. AND DELIVER COMPLETE WITH RELATED ACCESSORIES.

4) "WORK": LABOR, MATERIALS, EQUIPMENT, APPARATUS, CONTROLS, ACCESSORIES AND OTHER ITEMS REQUIRED FOR PROPER AND COMPLETE INSTALLATION.

5) "WIRING": RACEWAY. FITTINGS, WIRE, BOXES, AND RELATED ITEMS.

6) "CONCEALED": EMBEDDED IN MASONRY OR OTHER CONSTRUCTION, INSTALLED IN FURRED SPACES, WITHIN DOUBLE PARTITIONS OR HUNG CEILINGS, IN TRENCHES, IN CRAWL SPACES, OR IN ENCLOSURES.

7) "EXPOSED": NOT INSTALLED UNDERGROUND OR "CONCEALED" AS DEFINED ABOVE.

8) "SIMILAR" OR "EQUAL": EQUAL IN MATERIALS, WEIGHT, SIZE, DESIGN AND EFFICIENCY OF SPECIFIED PRODUCT.

B. TEMPORARY LIGHT AND POWER: PROVIDE TEMPORARY LIGHT AND POWER SYSTEMS AT EARLIEST POSSIBLE DATE WITHIN THE CONSTRUCTION AREAS FOR THE REQUIREMENTS OF ALL TRADES AS HEREIN DESCRIBED. EXTEND SYSTEMS TO NEW CONSTRUCTION AS SOON AS PHYSICALLY POSSIBLE. MAINTAIN SYSTEM DURING WORKING HOURS. PROVIDE ALL REQUIRED MAINTENANCE, INCLUDING LAMPS AND SOCKETS.

C. QUALITY ASSURANCE

1) QUALITY OF MATERIALS: ALL EQUIPMENT SHALL BE NEW SPECIFICATION GRADE, FREE FROM DEFECTS AND LISTED BY APPROVED TESTING AGENCY AND BEARING THEIR LABEL MATERIALS AND EQUIPMENT OF SIMILAR APPLICATION SHALL BE OF SAME MANUFACTURER, EXCEPT AS NOTED.

2) GUARANTEE: ALL MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED AS DEFINED IN PARAGRAPH 2.C.

3) CURRENT CHARACTERISTICS:

a. SERVICE: 120/208 VOLT, 3 PHASE, 4 WIRE, 60 HERTZ WITH GROUNDED NEUTRAL.

b. DISTRIBUTION: 120/208 VOLT, 3 PHASE, 4 WIRE, 60 HERTZ WITH GROUNDED NEUTRAL.

4) HEIGHTS OF OUTLETS:

a. FROM FINISHED FLOOR TO CENTERLINE OF OUTLETS FOR:

- RECEPTACLES AND TELEPHONES: 1 FT-6 IN.
- WALL SWITCHES: 4 FT-0 IN.
- WALL FIXTURES: 7 FT-0 IN.
- MOTOR CONTROLLERS: 5 FT-0 IN.
- CLOCKS: 7 FT 6 IN

b. EXCEPTIONS: AT JUNCTION OF DIFFERENT WALL FINISH MATERIALS, ON MOLDING OR BREAK IN WALL SURFACE, IN VIOLATION OF CODE, OR AS NOTED OR DIRECTED.

D. PRODUCT DELIVERY, STORAGE AND HANDLING

1) MOVING OF EQUIPMENT: WHERE NECESSARY, SHIP IN CARTED SECTIONS OF SIZE TO PERMIT PASSING THROUGH AVAILABLE SPACES.

2) ACCESSIBILITY: FOR OPERATION, MAINTENANCE AND REPAIR, MINOR DEVIATIONS SHALL BE PERMITTED. CHANGES OF MAGNITUDE OR INVOLVING EXTRA COST ARE NOT PERMISSIBLE WITHOUT REVIEW. GROUP CONCEALED ELECTRICAL EQUIPMENT REQUIRING ACCESS WITH EQUIPMENT FREELY ACCESSIBLE THROUGH ACCESS DOORS.

E. MATERIALS

1) NAMEPLATES: PROVIDE BLACK LAMICOID SHEET WITH 3/4 IN. WHITE LETTERING, FASTENED WITH EPOXY CEMENT FOR EACH DISCONNECT SWITCH, CIRCUIT BREAKER, PANEL, CABINET, TRANSFORMER, ENCLOSURE, MOTOR CONTROLLER AND THE LIKE. NAMEPLATES SHALL DESCRIBE THE NAME AND NUMBER OF EACH COMPONENT.

2) CABLE TAGS: TAG EACH CONDUCTOR PASSING THROUGH SPLICE OR PULL BOX WITH A WHITE LINEN TAG, INDICATING POINT OF ORIGIN AND TERMINATION OF THE CIRCUIT.

3) INSERTS AND SUPPORTS:

a. INSERTS: STEEL, SLOTTED TYPE, FACTORY PAINTED.

- SINGLE ROD: SIMILAR TO GRINNELL FIG, 281.
- MULTI-ROD: SIMILAR TO FEE AND MASON SERIES 9000 WITH END CAPS AND CLOSURE STRIPS.
- CLIP FORM NAILS FLUSH WITH INSERTS.
- MAXIMUM LOADING 75 PERCENT OF RATING.

b. SUPPORTS FROM BUILDING CONSTRUCTION: INSERTS, BEAM CLAMPS, STEEL FISHPLATES (IN CONCRETE FILL ONLY), CANTILEVER BRACKETS OR OTHER MEANS. SUBMIT FOR REVIEW.

c. GROUPED LINES AND SERVICES: TRAPEZE HANGERS OF BOLTED ANGLES OR CHANNELS.

d. WHERE BUILDING CONSTRUCTION IS INADEQUATE: PROVIDE ADDITIONAL FRAMING. SUBMIT FOR REVIEW.

F. PAINT SHALL BE THE BEST GRADE FOR ITS PURPOSE. DELIVER IN ORIGINAL SEALED CONTAINERS AND APPLY IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. COLORS SHALL BE AS SELECTED BY ARCHITECT OR ENGINEER. UTILIZE GALVANIZED IRON PRIMER ON PANEL AND PULL BOXES, AFTER FABRICATION. UTILIZE HOT DIPPED GALVANIZED OR DIPPED IN ZINC BASED PRIMER FOR: OUTLET BOXES, JUNCTION BOXES, CONDUIT HANGERS, RODS, INSERTS AND SUPPORTS. ZINC BASED PRIMER WITH FINISH TO MATCH SURROUNDINGS SHALL BE USED FOR MARRED SURFACES OF STEEL EQUIPMENT AND RACEWAYS. A FIELD-APPLIED ZINC BASED PRIME COAT SHALL BE UTILIZED FOR STEEL OR IRONWORK.

G. BRUSH AND CLEAN WORK PRIOR TO CONCEALING, PAINTING AND ACCEPTANCE. PAINTED EXPOSED WORK SOILED OR DAMAGED; CLEAN AND REPAIR TO MATCH ADJOINING WORK BEFORE FINAL ACCEPTANCE. REMOVE DEBRIS FROM INSIDE AND OUTSIDE OF MATERIAL AND EQUIPMENT.

H. FINAL LOCATIONS AND MOUNTING ORIENTATIONS OF ALL SWITCHES, RECEPTACLES AND LIGHT FIXTURES SHALL BE VERIFIED WITH ARCHITECT.

I. ALL ACCESS DOOR LOCATIONS SHALL BE REVIEWED BY ARCHITECT PRIOR TO INSTALLATION.

3. SCOPE OF WORK:

A. SCOPE OF WORK SHALL CONSIST OF PROVIDING LABOR, MATERIALS, EQUIPMENT, SERVICES AND FEES NECESSARY FOR COMPLETE AND SAFE INSTALLATION IN CONFORMING WITH THE LATEST NATIONAL ELECTRICAL CODE (NEC) WITH AMENDMENTS, AND ALL OTHER APPLICABLE INDUSTRY, NATIONAL AND LOCAL CODES AND AUTHORITIES HAVING JURISDICTION, AS INDICATED ON DRAWINGS AND HEREIN SPECIFIED.

B. ALL DRAWINGS, PLANS, DETAILS, SPECIFICATIONS AND SPECIFICATION ADDENDA ARE MADE PART OF THIS CONTRACT AND SHALL APPLY TO ALL WORK UNDER THE CONTRACT UNLESS OTHERWISE AMENDED, MODIFIED, SUPPLIED OR SPECIFIED HEREIN.

C. THE CONTRACTOR SHALL FURNISH A WRITTEN GUARANTEE TO REPLACE OR REPAIR PROMPTLY AND ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED FOR ANY WORKMANSHIP AND EQUIPMENT IN WHICH DEFECTS DEVELOP WITHIN ONE YEAR FROM THE DATE OF FINAL CERTIFICATE FOR PAYMENT AND/OR FROM DATE OR ACTUAL USE OF EQUIPMENT OR OCCUPANCY OF SPACES BY OWNER INCLUDED UNDER THE VARIOUS PARTS OF THE WORK, WHICHEVER DATE IS EARLIER, THIS WORK SHALL BE DONE AS DIRECTED BY THE OWNER. THIS GUARANTEE SHALL ALSO PROVIDED THAT WHERE DEFECTS OCCUR, THE CONTRACTOR WILL ASSUME RESPONSIBILITY OF OTHER TRADES AFFECTED BY DEFECTS, REPAIRS OR REPLACEMENTS IN EQUIPMENT SUPPLIED BY THE CONTRACTOR

D. THE CONTRACTOR SHALL GIVE NECESSARY NOTICE, FILE DRAWINGS AND SPECIFICATIONS WITH ALL DEPARTMENTS HAVING JURISDICTION, WORK AND PAY ALL FEES THEREFORE. THE CONTRACTOR SHALL ARRANGE FOR INSPECTION AND TESTS OF ANY OR ALL PARTS OF THE WORK IF SO REQUIRED BY AUTHORITIES AND PAY ALL CHARGES FOR SAME. THE CONTRACTOR SHALL PAY ALL COSTS FOR, AND FURNISH TO THE OWNER BEFORE FINAL BILLING, ALL CERTIFICATES NECESSARY AS EVIDENCE THAT THE WORK INSTALLED CONFORMS WITH ALL REGULATIONS WHERE THEY APPLY TO THIS WORK.

E. CONTRACTOR SHALL PERFORM ALL CONTROLLED INSPECTIONS IN ACCORDANCE WITH THE STATE BUILDING CODE. SECURE ALL REQUIRED PERMITS AND APPROVALS AND TRANSMIT SAME TO OWNER. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FEES.

F. AREAS WITH NO ELECTRICAL WORK SHALL REMAIN AS IS. CONTRACTOR SHALL MAINTAIN CONTINUITY OF ALL ELECTRICAL SYSTEMS TO ALL AREAS NOT COVERED BY THIS RENOVATION AND SHALL PROVIDE 48 HOUR NOTICE TO LANDLORD OF ANY PLANNED POWER INTERRUPTIONS OR SIGNAL SYSTEM OUTAGES.

4. SHOP DRAWINGS

A. PRIOR TO THE INSTALLATION OF ANY WORK AND PROCUREMENT OF EQUIPMENT, CONTRACTOR SHALL PROVIDE COMPLETE SETS OF COORDINATED SHOP DRAWINGS OF ALL NEW AND EXISTING EQUIPMENT, INDICATING CAPACITY, DIMENSIONS AND SEQUENCE OF OPERATION FOR WRITTEN APPROVAL BY THE ARCHITECT AND ENGINEER.

B. INDICATE ON EACH SHOP DRAWINGS SUBMITTED:

1) PROJECT NAME AND LOCATION

2) NAME OF ARCHITECT AND ENGINEER

3) ITEM IDENTIFICATION

4) APPROVAL STAMP OF PRIME CONTRACTOR

C. SUBMISSIONS:

1) SUBMISSIONS 30 IN. X 42 IN. OR SMALLER: IF THE SUBMISSION IS A CATALOG CUT, THEN THE CONTRACTOR SHALL SUBMIT ONE ORIGINAL AND TWO COPIES. OTHERWISE, HE SHALL SUBMIT THREE COPIES, THE ARCHITECT WILL FORWARD THE ORIGINAL AND ONE COPY (TWO COPIES WHEN NO ORIGINAL IS RECEIVED) TO THE ENGINEER. ALL CATALOG CUTS SHALL BE COMPLETE.

2) SUBMISSIONS LARGER THAN 30 IN. X 42 IN.: SUBMIT TWO PRINTS AND ONE PAPER SEPIA TO THE ARCHITECT. THE ARCHITECT WILL FORWARD ONE PRINT AND THE PAPER SEPIA TO THE ENGINEER.

D. SUBMIT SHOP DRAWINGS FOR THE FOLLOWING:

1) SAFETY/DISCONNECT SWITCHES

2) FUSES

3) CIRCUIT BREAKERS

4) PANEL BOARDS/LOAD CENTER (INCLUDING DIMENSIONS, SCHEDULES, AND CATALOG CUTS).

5) RACEWAYS

6) WIRE AND CABLE

7) WALL SWITCHES

8) INSERTION RECEPTACLES

9) MOMENTARY CONTACT SWITCHES

10) TIME SWITCHES

11) LIGHTING FIXTURES.

E. ASSIST AND PROVIDE ALL NECESSARY INFORMATION, DIAGRAMS, SKETCHES, ETC. TO THE HVAC CONTRACTOR, FOR THE PREPARATION OF COORDINATED SHOP DRAWINGS INDICATING ROUTING OF FEEDERS, CONTROL CONDUITS, RECESSED FIXTURES AND ADJACENT NEARBY PIPING AND DUCTWORK WHERE APPLICABLE, CERTIFIED BY ALL TRADES THAT COORDINATION HAS BEEN ESTABLISHED. SUBMIT FOUR(4) BOOKBOUND OPERATING AND SERVICE MANUALS WHICH SHALL INCLUDE COPIES OF ALL SHOP DRAWING. PROVIDE SHOP DRAWINGS FOR PANELS, FIXTURES, WIRING DEVICES, CONDUIT, CABLE, DISCONNECT SWITCH, RELAYS, CONTRACTORS, AND OTHER SYSTEMS AS DIRECTED BY THE ENGINEER.

5. AS-BUILT DRAWINGS AND EQUIPMENT OPERATIONAL INSTRUCTIONS

A. UPON COMPLETION AND ACCEPTANCE OF WORK, CONTRACTOR SHALL FURNISH WRITTEN INSTRUCTIONS AND EQUIPMENT MANUALS AND DEMONSTRATE TO THE OWNER THE PROPER OPERATION AND MAINTENANCE OF ALL EQUIPMENT AND APPARATUS FURNISHED UNDER THIS CONTRACT.

B. THESE INSTRUCTIONS SHALL BE TYPED ON 8-1/2 IN. X 11 IN. PAPER AND BOUND IN THREE RING BINDERS WITH CLEAR ACETATE COVERS. CONTRACTOR SHALL GIVE THREE COPIES OF THE INSTRUCTIONS TO THE OWNER AND ONE COPY TO THE ENGINEER.

C. THE INSTRUCTION BOOKLET SHALL BEAR THE NAME, ADDRESS AND TELEPHONE NUMBER OF THE PROJECT, ARCHITECT AND ENGINEER.

D. REPRODUCIBLE "AS-BUILT" DRAWINGS SHALL BE PROVIDED INDICATING THE AS INSTALLED CONDITIONS OF THE WORK. "AS-BUILT" DRAWINGS SHALL BE PROVIDED TO THE ARCHITECT AFTER COMPLETION OF THE INSTALLATION.

6. LOW-VOLTAGE DISTRIBUTION EQUIPMENT:

A. PROVIDE COMPLETE EQUIPMENT INCLUDING: SWITCHES, FUSES, CIRCUIT BREAKERS, PANELS AND TRANSFORMERS.

B. ALL EQUIPMENT SHALL CONFORM TO NEMA, ANSI AND IEEE STANDARDS.

C. DISCONNECT SWITCHES SHALL BE FUSED OR NONFUSED AS NOTED. VOLTAGE SHALL BE AS REQUIRED. SWITCHES SHALL BE HEAVY DUTY, EXCEPT AS NOTED, AND HORSEPOWER RATED FOR MOTOR LOADS. TOGGLE TYPE SWITCHES SHALL BE NONFUSED, LOAD BREAK, HAVING MAXIMUM RATINGS OF 20 AMP AT 600 VOLTS AND 30 AMP AT 240 VOLTS. TWO-POLE SWITCHES SHALL BE SIMILAR TO HART AND HEGEMAN NO. 6808F. THREE-POLE SWITCHES SHALL BE SIMILAR TO HART AND HEGEMAN NO. 7810C. KNIFE-BLADE TYPE SWITCHES SHALL BE LOAD BREAK, QUICK-MAKE-QUICK-BREAK, UL CLASS R UP TO 600 AMP. MAXIMUM RATING EXCEPT AS NOTED SHALL BE 800 AMP. ARC QUENCHERS SHALL BE PROVIDED. SWITCHES SHALL BE SIMILAR TO GENERAL ELECTRIC QMR. ALL SWITCH ENCLOSURES SHALL BE DEAD FRONT, NEMA TYPE 1, EXCEPT AS NOTED.

7. FUSES:

A. CIRCUITS 0 TO 600 AMPERES SHALL BE PROTECTED BY FUSES SIMILAR TO CURRENT LIMITING BUSSMAN LOW-PEAK DUAL-ELEMENT TIME-DELAY LPN-RK (AMP)SP (250V) /LPS-RK (AMP)SP (600V) OR LPJ (AMP)SP (600V) (UL CLASS RK1 OR CLASS J), AND BE LISTED BY UL WITH AN INTERRUPTING RATING OF 300,000 AMPERES RMS SYMMETRICAL.

B. MOTOR CIRCUITS - ALL INDIVIDUAL MOTOR CIRCUITS WITH FULL LOAD AMPERE RATINGS (FLA) OF 480 AMPERES OR LESS SHALL BE PROTECTED BY FUSES SIMILAR TO CURRENT LIMITING BUSSMANN LOW-PEAK DUAL-ELEMENT TIME-DELAY LPN-RK (AMP)SP (250V) /LPS-RK (AMP)SP (600V) OR LPJ (AMP)SP (600V) (UL CLASS RK1 OR CLASS J), AND BE LISTED BY UL WITH AN INTERRUPTING RATING OF 300,000 AMPERES RMS SYMMETRICAL.

C. ALL FUSES SHALL BE PROVIDED BY SAME MANUFACTURER.

D. PROVIDE 1 SPACE MATCHING FUSE FOR EACH SET OF 3.

E. CIRCUIT BREAKERS: MOLDED CASE BREAKERS SHALL BE THERMAL- MAGNETIC, QUICK-MAKE-QUICK-BREAK, BOLT-ON TYPE, MANUALLY OPERATED WITH INSULATED TRIP-FREE HANDLE. MULTI-POLE TYPE BREAKERS SHALL CONTAIN INTERNAL TRIP BAR. TERMINALS SHALL BE SUITABLE FOR COPPER OR ALUMINUM CABLE. FURNISH AUXILIARY DEVICES WHERE REQUIRED FOR SHUNT-TRIPPING, OPEN AND CLOSE MOTOR OPERATOR AND ALARM INDICATION. ENCLOSURES SHALL BE DEAD FRONT, NEMA TYPE 1, EXCEPT AS NOTED. FRAMES, IC AND INTERCHANGEABLE TRIPS SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED:

1) 120 VOLTS, 100-AMP FRAME: 10,000 AMPS, 1 POLE.

2) 120/240 VOLTS, 225-AMP FRAME: 22,000 AMPS MINIMUM

8. DISTRIBUTION PANELBOARDS, CIRCUIT BREAKER TYPE:

A. THREE PHASE, 4 OR 5 WIRE, COPPER BUS BARS, WITH 2, 3, OR 4 WIRE BRANCHES, AS NOTED. CAPACITY OF PANEL AND CIRCUITS, AS NOTED BELOW. PANELBOARD TO HAVE GROUND BUS SAME SIZE AS PHASE BUSES.

B. CABINETS: CODE GAUGE GALVANIZED SHEET STEEL PRIMED AND PAINTED WITH TRIM AND DOOR, TYPE AS NOTED, LAP AND RIVET CORNERS OR FORM AS APPROVED.

C. TRIM: ONE PIECE FULL FINISH PRIMED AND PAINTED SHEET STEEL. TRIM SHALL BE MOUNTED WITH A CONTINUOUS PIANO HINGE CONFIGURED IN SUCH A MANNER THAT IT SHALL BE POSSIBLE TO GAIN FULL ACCESS TO CIRCUIT BREAKERS AND WIRING GUTTERS WITHOUT REMOVING THE TRIM. PROVIDE A MULTI-PIN CYLINDER LOCK (YALE, CORBIN OR EQUAL) TO LATCH THE TRIM. KEYS SHALL BE MILLED.

D. HARDWARE: MULTI-PIN, CYLINDER LOCKS WITH MILLED KEYS. ALL PANELS SHALL BE KEYED ALIKE. DOOR OVER 48" HIGH SHALL BE EQUIPPED WITH A CHROME PLATED VAULT HANDLE, BUILT-IN LOCK AND 3-POINT CATCH FASTENING DOOR AT TOP, BOTTOM AND CENTER.

E. HINGES: CONCEALED, CONTINUOUS PIANO HINGE AS DESCRIBED ABOVE.

F. DIRECTORY HOLDER: MEAL FRAME WITH NONBREAKABLE TRANSPARENT COVER AND DIRECTORY CARD. ENTRIES TO BE TYPEWRITTEN BY ELECTRICAL CONTRACTOR. PROVIDE AN ENGRAVED LAMINATED NAMEPLATE ADJACENT TO EACH BRANCH BREAKER. MOUNT WITH SELF TAPPING MACHINE SCREWS.

G. FURNISH MULTI-CABLE LUGS WHERE REQUIRED. DOUBLE LUGGING NOT PERMITTED. SECURE LUGS TO BUS BY STUD BOLTS.

H. PANELBOARD CONSTRUCTION FOR BOLTED TYPE BREAKERS. MINIMUM SHORT CIRCUIT RATING 25,000 AMPERES, RMS SYMMETRICAL FOR ALL 120/208V APPLICATIONS. INDIVIDUAL CIRCUIT BREAKERS SHALL HAVE MINIMUM 100A FRAME, TRIPS SIZED AS SHOW ON THE PLANS

I. MINIMUM GUTTER SPACES: PANELS WITH 225 AMPERE MAINS, 5-½" MINIMUM, 400 AMPERES AND OVER, MINIMUM GUTTERS 8". FOR PANELS WITH THROUGH FEEDERS, INCREASE GUTTER WIDTH BY 2" MINIMUM AND PROVIDE A SHEET STEEL BARRIER BETWEEN THE PANEL GUTTER AND THE THROUGH FEEDER PORTION OF THE BACK BOX. BRANCH CIRCUIT BREAKERS SHALL BE MECHANICALLY INTERLOCKED WHEN SHOWN ON DRAWINGS.

J. DISTRIBUTION AND SUB-DISTRIBUTION PANELBOARDS SHALL BE A MINIMUM OF 30" WIDE AND 10" DEEP.

K. PANELBOARD SHALL HAVE MAIN CIRCUIT BREAKER OR MAIN LUGS AS INDICATED ON THE DRAWINGS. QUANTITY, POLES AND TRIP RATINGS OF BRANCH CIRCUIT BREAKERS TO BE AS INDICATED ON DRAWINGS.

L. PANELBOARD SHALL HAVE ENGRAVED WHITE CORE, BLACK LAMACOID NAMEPLATE SCREWED ONTO PANE TRIM WITH DESIGNATION LISTED (PANELBOARD NAME, VOLTAGE, RATING OR MAINS IN AMPS).

9. DISTRIBUTION PANELBOARDS, SWITCH AND FUSE:

A. THREE PHASE, 3 OR 4 WIRE WITH COPPER BUS BARS. ALL THROUGH BUS SHALL BE INSULATED.

B. NEMA CLASS 1 CONSTRUCTION TO ACCOMMODATE FUSIBLE, INDIVIDUALLY ENCLOSED SWITCHES, FRONT REMOVABLE, SWITCH AND DOOR INTERLOCKS. COVERS TO BE PAD-LOCKABLE.

C. PANELBOARD SHALL BE CONSTRUCTED OF CODE-GAUGE STEEL, GRAY FINISH OVER RUST INHIBITOR, FOR SURFACE MOUNTING. BOX AND PANEL FRAME SHALL BE FLANGED AND REINFORCED FOR RIGID SUPPORT OF INTERIOR AND ACCURATE ALIGNMENT OF INTERIOR WITH FRONT. TRIMS TO BE FASTENED TO BACK BOX WITH SCREWS.

D. ALL BRANCH SWITCHES SHALL HAVE INDIVIDUAL ENGRAVED LAMICOID NAMEPLATES (BLACK WITH WHITE CORE).

E. DISTRIBUTION PANELBOARD CONSTRUCTION MINIMUM SHORT CIRCUIT RATING 25,000 AMPERES, REMS SYMMETRICAL FOR ALL 120/208V APPLICATIONS. APPLICATIONS.

F. DISCONNECTS

1) DISCONNECT SWITCHES SHALL CONFORM TO NEMA AND UL STANDARDS, AND SHALL BE HORSEPOWER RATED.

2) SWITCHING MECHANISM SHALL BE QUICK-MAKE, QUICK-BREAK, SINGLE THROW WITH EXTERNAL OPERATING HANDLE MECHANICALLY INTERLOCKED WITH ENCLOSURE COVER TO PROVIDE ACCESS TO INTERIOR WHEN DISCONNECT IS IN OFF POSITION ONLY. PROVIDE MEANS TO LOCK OPERATING HANDLE IN THE OPEN AND CLOSED POSITION. DESIGNATE ON THE ENCLOSURE THE OPEN AND CLOSED POSITION OF THE OPERATING HANDLE.

3) SWITCHES SHALL BE OF THE DOUBLE STATIONARY CONTACT TYPE.

4) SWITCHES SHALL BE EQUIPPED WITH REJECTION TYPE FUSE HOLDERS, FUSIBLE AS SHOWN ON THE DRAWINGS; PROVIDE COMPLETE WITH FUSES AS SCHEDULED.

G. INSTALLATION

1) DISTRIBUTION PANELBOARD SHALL BE MOUNTED TO STRUCTURAL STEEL CHANNEL (KINDORF) WHICH SHALL BE BOLTED TO THE WALL USING EXPANSION ANCHORS FOR LARGE PANELS.

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04-17-25	ISSUE FOR REVIEW
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ELECTRICAL SPECIFICATIONS (1 OF 2)

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H. IDENTIFICATION

1) PROVIDE NAMEPLATE AT EACH SWITCH IDENTIFYING THE LOAD SERVED.

2) NAMEPLATES SHALL BE MOUNTED ON THE FRONT COVER SECURED WITH SELF-TAPPING SCREWS OR NUTS AND BOLTS. NAMEPLATES SHALL BE LAMINATED PHENOLIC, BLACK WITH A MINIMUM OF ¼" HIGH WHITE LETTERING.

I. DISTRIBUTION AND SUB-DISTRIBUTION PANEL BOARDS SHALL BE A MINIMUM OF 30" WIDE AND 10" DEEP.

J. POWER PANEL BOARDS SHALL BE SIMILAR TO GENERAL ELECTRIC TYPE "OMR", AS MANUFACTURED BY ATLAS SWITCH COMPANY, ELECTRIC SWITCHBOARD COMPANY OR APPROVED EQUAL.

K. PANEL BOARD SHALL HAVE MAIN CIRCUIT BREAKER OR MAIN LUGS AS INDICATED ON THE DRAWINGS. QUANTITY, POLES AND TRIP RATINGS OF BRANCH CIRCUIT BREAKERS TO BE AS INDICATED ON DRAWINGS.

L. PANEL BOARD SHALL HAVE ENGRAVED WHITE CORE, BLACK LAMACOID NAMEPLATE SCREWED ONTO PANE TRIM WITH DESIGNATION LISTED (PANEL BOARD NAME, VOLTAGE, RATING OR MAINS IN AMPS).

M. MATERIALS

1) RACEWAYS:

a. RIGID STEEL CONDUIT: FULL-WEIGHT PIPE, GALVANIZED, THREADED.

b. ELECTROMETALLIC TUBING (EMT): THIN WALL PIPE, GALVANIZED, THREADLESS.

c. FLEXIBLE STEEL CONDUIT: CONTINUOUS SINGLE STRIP, GALVANIZED.

d. WIREWAYS: WIRE SHALL BE AS NOTED, MINIMUM NO. 16 GAUGE STEEL WITH GROUND CONTINUITY. FINISH SHALL BE BAKED ENAMEL. COVERS SHALL BE SCREW-ON.

e. SURFACE METAL RACEWAY: SIZE AS NOTED. BASE 0.04 IN., COVER 0.25 IN. MATERIAL SHALL BE STEEL. FINISH SHALL BE BAKED ENAMEL. COVERS SHALL BE SCREW-ON.

2) FITTINGS AND ACCESSORIES:

a. RIGID STEEL: NONSPLIT, THREADED, STEEL OR MALLEABLE IRON. ZINC DIE CAST NOT PERMITTED.

b. ELECTROMETALLIC TUBING: COMPRESSION TYPE. GALVANIZED RIGID STEEL ELBOWS, 2 IN. OR LARGER.

c. FLEXIBLE METALLIC CONDUIT: ANGLE WEDGE TYPE WITH INSULATED THROAT.

d. BUSHINGS: METALLIC INSULATED TYPE.

3) BOXES:

a. OUTLET BOXES: EXCEPT AS OTHERWISE REQUIRED BY CONSTRUCTION, DEVICES OR WIRING, BOXES SHALL BE STAMPED STEEL, 4 IN. SQUARE OR OCTAGON FOR FIXTURES. BOXES ABOVE CEILING SHALL BE 1-1/2 IN. DEEP. BOXES IN CEILING OR SLAB SHALL BE 3 IN. DEEP. BOXES IN WALL FOR FIXTURES SHALL BE 2-3/4 IN. DEEP. BOXES IN WALL FOR RECEPTACLES AND SWITCHES SHALL BE 1-1/2 IN. DEEP. FURNISH WITH RAISED COVERS AND FIXTURE STUDS WHERE REQUIRED. WITHOUT FIXTURE OR DEVICE: FURNISH BLANK COVER. OFFSET BACK-TO-BACK OUTLETS WITH MINIMUM 6 IN. SEPARATION.

b. JUNCTION AND PULL BOXES: GALVANIZED SHEET STEEL WITH SCREW-ON COVERS, EXCEPT AS NOTED. FURNISH WITH INSULATED SUPPORTS FOR CABLES. LOCATIONS SHALL BE AS NOTED OR REQUIRED AND ACCESSIBLE. PROVIDE BARRIERS IN NEW AND RENOVATED BOXES BETWEEN 120/208 VOLT AND 265/460 VOLT WIRING AND BETWEEN EMERGENCY AND NORMAL WIRING. FLOOR BOXES SHALL BE SUITABLE FOR CONDUIT AND DEVICES NOTED. RAISED OUTLETS SHALL BE HUBBELL #B2414 SERIES WITH ABOVE FLOOR FITTING. TELEPHONE: BUSHED HOLE. POWER: DUPLEX RECEPTACLE OR OTHER AS NOTED. INCREASE SIZE TO SUIT AS NECESSARY. FLUSH OUTLETS SHALL BE HUBBELL #B214 SERIES WITH FLUSH FLOOR FITTING FOR TELEPHONE AND FLUSH DUAL FLAP COVER WITH DUPLEX RECEPTACLE FOR POWER AS NOTED. INCREASE SIZE TO SUIT AS NECESSARY.

N. PROVIDE RACEWAYS ONLY AS HEREIN SPECIFIED, EXCEPT AS NOTED. RACEWAYS SHALL BE RUN CONCEALED, EXCEPT AS NOTED.

PROVIDE RACEWAY SUPPORT UTILIZING CEILING TRAPEZE, STRAP HANGERS, OR WALL BRACKETS. PROVIDE U-BOLTS AT EACH FLOOR LEVEL OF RISER RACEWAYS AND CONNECTED TO ACCEPTABLE SUPPORTS. PROVIDE RISER CLAMPS AT EACH FLOOR LEVEL OF RISER RACEWAYS AND RESTING ON SLAB. FOR THROUGH-THE-FLOOR SYSTEMS, UTILIZE AN ASSEMBLY SIMILAR TO HUBBELL FIRE RATED POKE-THROUGH-FLOOR BOX SYSTEM. FOR ABOVE FLOOR FITTINGS TELEPHONE SHALL BE BUSHED HOLE AND POWER SHALL BE DUPLEX RECEPTACLE OR OTHER AS NOTED. PROVIDE SEPARATION BARRIER BETWEEN POWER AND TELEPHONE COMPARTMENTS. PROVIDE JUNCTION BOX ON UNDERSIDE OF FLOOR. PACK FITTING TO RESTORE FIRE RATING OF FLOOR.

SECURE ALL RACEWAYS TO SUPPORTS WITH PIPE STRAPS OR U-BOLTS. SPACING OF SUPPORTS SHALL BE A MINIMUM OF 10 FT ON CENTER FOR METALLIC RACEWAY AND AS REQUIRED FOR NONMETALLIC RACEWAY. SPACING SHALL BE 5 FT ON CENTER FOR WIREWAYS AND PER CODE AND AS NOTED FOR OTHERS. MOUNT SUPPORTS TO STRUCTURE MASONRY WITH TOGGLE BOLTS ON HOLLOW MASONRY, EXPANSION SHIELDS OR INSERTS IN CONCRETE AND BRICK, MACHINE SCREWS ON METAL, BEAM CLAMPS ON FRAMEWORK, WOOD SCREWS ON WOOD, AND PAN THROUGH STRAPS IN METAL DECK. NAILS, RAWL PLUGS OR WOOD PLUGS SHALL NOT BE PERMITTED. WHERE REQUIRED BY STRUCTURE, FURNISH THROUGH BOLTS AND FISHPLATES.

EXPOSED RACEWAYS SHALL BE RUN PARALLEL WITH OR AT RIGHT ANGLES TO WALLS. PROVIDE CLEARANCE WITH WATER, STEAM OR OTHER PIPING (MINIMUM 3 IN. SEPARATION FROM STEAM AND HOT WATER PIPES, EXCEPT 1 IN. FROM PIPE COVER AT CROSSINGS AND 18 IN. FOR PARALLEL RUNS). FOR HUNG CEILING OUTLETS, RUN IN HUNG CEILING AND CONNECT TO CEILING SUPPORT CHANNELS. IN MASONRY AND POURED CONCRETE, RUN VERTICALLY ONLY.

MAINTAIN GROUNDING CONTINUITY OF INTERRUPTED METALLIC RACEWAYS WITH GROUND CONDUCTOR, AND IN FLEXIBLE CONDUIT FOR FEEDERS AND MOTOR TERMINAL CONNECTIONS.

EMPTY RACEWAYS OVER 10 FT LONG: PROVIDE FISH OR PULL WIRE, GALVANIZED OR NYLON ROPE.

RIGID STEEL CONDUIT SHALL BE PERMITTED FOR FEEDERS AND BRANCH CIRCUITS. PAINT MALE THREADS OF FIELD-THREADED CONDUIT WITH GRAPHITE-BASE PIPE COMPOUND AND BUTT CONDUIT ENDS. TOUCH UP MARRED SURFACES AND FIELD-CUT THREADS, CRC-COLD GALVANIZED. EMT SHALL BE PERMITTED FOR BRANCH CIRCUITS ONLY, IN DRY LOCATIONS, DRY WALLS, HUNG CEILINGS, HOLLOW BLOCK WALLS AND FURRED SPACES. EMT SHALL NOT BE PERMITTED IN RAISED FLOORS.

FLEXIBLE STEEL CONDUIT SHALL BE UTILIZED FOR SHORT CONNECTIONS WHERE RIGID CONDUIT IS IMPRACTICAL, FROM OUTLET BOX TO RECESSED LIGHTING FIXTURE: PROVIDE MINIMUM 4 FT AND MAXIMUM 6 FT LENGTHS, FOR FINAL CONNECTION TO MOTOR TERMINAL BOX, TRANSFORMER AND OTHER VIBRATING EQUIPMENT: PROVIDE WITH POLYVINYL SHEATHING AND GROUND CONDUCTOR. MINIMUM LENGTH: 18 IN. WITH SLACK. CONNECT GROUND CONDUCTOR TO ENCLOSURE OR RACEWAY AT EACH END. FOR EXPANSION JOINT CROSSINGS, CROSS AT RIGHT ANGLES AND ANCHOR ENDS.

CUT CONDUIT ENDS SQUARE. REAM SMOOTH. PAINT MALE THREADS OF FIELD THREADED RACEWAYS WITH GRAPHITE BASE PIPE COMPOUND. DRAW UP TIGHT WITH RACEWAY COUPLING.

ALL COUPLINGS SHALL BE COMPRESSION TYPE. NO SET SCREW FITTINGS.

EXPANSION FITTINGS SHALL BE INSTALLED AT RIGHT ANGLES WITH CLIP JOINT CENTERED IN EXPANSION JOINT. PROVIDE A LENGTH OF RUN IN ACCORDANCE MANUFACTURER'S RECOMMENDATIONS. PRESET FITTINGS SHALL ALLOW FOR TEMPERATURE VARIATION.

RACEWAYS PASSING THROUGH FIRE-RATED CONSTRUCTION: SEAL OPENING WITH FIRE SEALANT.

O. PROVIDE CABLE SUPPORTS IN ACCORDANCE WITH NATIONAL ELECTRIC CODE ARTICLE 300.19. CABLE SUPPORTS SHALL UTILIZE A ONE-PIECE PLUG WITH POZI-GRIP WEDGING PLUG AS MANUFACTURED BY OZ-GEDNEY. TYPE SF SHALL BE USED FOR ARMORED CABLE.

INSTALL CABLE SUPPORTS AT THE TOP OF A VERTICAL RISE AND PROVIDE INTERMEDIATE ADDITIONAL SUPPORTS AS REQUIRED TO LIMIT SUPPORTED CONDUCTOR LENGTHS TO NOT GREATER THAN THOSE SPECIFIED IN TABLE 300.19(A).

P. ERECT WALL AND SWITCH OUTLETS IN ADVANCE OF FURRING AND FIREPROOFING. OUTLET BOXES SHALL BE SET SQUARE AND TRUE WITH BUILDING FINISH. SECURE TO BUILDING STRUCTURE BY ADJUSTABLE STRAP IRON OR GROUT IN WITH MASONRY. VERIFY OUTLET LOCATIONS IN FINISHED SPACES WITH ARCHITECTURAL DRAWINGS OF INTERIOR DETAILS AND FINISHES. PROVIDE BARRIERS BETWEEN SWITCHES CONNECTED TO DIFFERENT PHASES FOR VOLTAGES EXCEEDING 150 VOLTS TO GROUND.

Q. PANEL, JUNCTION AND PULL BOXES SHALL BE LOCATED CLEAR OF OTHER TRADES. CONCEAL JUNCTION AND PULL BOXES IN FINISHED SPACES. WHERE NECESSARY, REROUTE RACEWAYS OR MAKE OTHER ARRANGEMENTS FOR CONCEALMENT. BOXES SHALL BE ACCESSIBLE. SUPPORT BOXES FROM BUILDING STRUCTURE, INDEPENDENT OF CONDUIT. PROVIDE FLOOR-TO-CEILING CHANNELS FOR MOUNTING ON DRYWALL AND LIGHTWEIGHT CONSTRUCTION. OUTLET BOXES FOR FIXTURES RECESSED IN HUNG CEILINGS SHALL BE ACCESSIBLE THROUGH OPENING CREATED BY REMOVAL OF FIXTURE. SECURE TO BLACK IRON SUPPORT. MOTOR TERMINAL BOXES: COORDINATE WITH MOTOR BRANCH CIRCUIT CONDUIT AND WIRING; ADD BOX VOLUME WHERE REQUIRED.

R. FIRE SEALANTS: PROVIDE FOR RACEWAYS AND WIRE PASSING THROUGH FLOOR SLOTS, SLEEVES OR OPENINGS IN FIRE-PARTITIONS ROOMS.

S. PERFORM CONTINUITY TESTS OF RESISTANCE OF FEEDER CONDUITS FROM SERVICE TO POINT OF FINAL DISTRIBUTION USING 1 CONDUCTOR RETURN. MAXIMUM RESISTANCE SHALL BE 25 OHMS.

10. WIRE AND CABLE:

A. PROVIDE WIRE AND CABLE COMPLETE WITH ACCESSORIES. SIZE REFERENCE SHALL BE AWG EXCEPT AS NOTED.

B. CONDUCTORS SHALL BE COPPER, ASTM STANDARD SOLID (NO. 10 AND SMALLER) OR STRANDED (NO. 8 AND LARGER). GENERAL USE CABLING SHALL BE NO. 12 MINIMUM. AT 120 VOLTS AND OVER 100 FT CIRCUIT LENGTH PROVIDE NO. 10 MINIMUM. AT 265 VOLTS AND OVER 200 FT CIRCUIT LENGTH PROVIDE NO. 10 MINIMUM.

C. CONTROL AND ALARM CABLING, EXCEPT AS NOTED, SHALL BE NO. 14 MINIMUM. AT 120 VOLTS AND OVER 200 FT CIRCUIT LENGTH PROVIDE NO. 12 MINIMUM. OTHER VOLTAGES AND PHASES: ADJUST CABLE SIZING AS REQUIRED TO MAINTAIN VOLTAGE DROP. INCREASE RACEWAY SIZES FOR LARGER WIRE AS REQUIRED.

D. INSULATION SHALL BE RUBBER AND THERMOPLASTIC MEETING ASTM AND IPCEA STANDARDS. TYPE THW OR THWN SHALL BE UTILIZED FOR FEEDERS AND BRANCH CIRCUITS EXCEPT AS NOTED. TYPE SFF-2 SHALL BE UTILIZED FOR BRANCH CIRCUITS LOCATED IN WIRING CHANNELS OF CONTINUOUS FLUORESCENT FIXTURES AND IN AMBIENT TEMPERATURES OVER 90 DEG C. FOR UNGROUNDED ISOLATED BRANCH CIRCUITS PROVIDE CROSS-LINKED POLYETHYLENE INSULATION (TYPE XHHW).

E. ARMORED CABLE (BX) SHALL BE UTILIZED FOR BRANCH CIRCUITS IN DRY HOLLOW LOCATIONS, HUNG CEILINGS, AND BLOCK WALLS. WHEN USED IN LIEU OF WIRING IN CONDUIT, STATE IN PROPOSAL THAT PRICE IS BASED UPON THE USE OF HOSPITAL GRADE 'BX'.

F. COLOR CODING SHALL BE AS FOLLOWS:

120/208 VOLT SYSTEM:	277/480 VOLT SYSTEM:
BLACK FOR A PHASE	BROWN FOR A PHASE
RED FOR B PHASE	ORANGE FOR C PHASE
BLUE FOR C PHASE	YELLOW FOR C PHASE

1) NEUTRAL WIRE SHALL UTILIZE WHITE OUTER COVERING THROUGHOUT. EQUIPMENT GROUND WIRE SHALL UTILIZE GREEN OUTER COVERING THROUGHOUT.

WHERE COLOR-CODED CABLE IS NOT AVAILABLE, CERTIFY IN WRITING AND REQUEST PERMISSION TO OVERLAP CONDUCTORS WITH 6 IN. OF COLOR TAPING IN ACCESSIBLE LOCATIONS.

G. PROVIDE FLAMEPROOF LINEN OR FIBER TAGS IN ACCESSIBLE LOCATIONS. FOR FEEDERS INDICATE FEEDER NUMBER, SIZE, PHASE AND POINTS OF ORIGIN AND TERMINATIONS. FOR CONTROL AND ALARM WIRING INDICATE TYPE (CONTROL OR ALARM), SIZE OF WIRE, AND POINTS OF ORIGIN AND TERMINATIONS.

H. TERMINATIONS, SPLICES AND TAPS UNDER 600 VOLTS: COPPER CONDUCTORS NO. 10 AND SMALLER SHALL UTILIZE COMPRESSION-TYPE OF TWIST-ON SPRING-LOADED CONNECTORS AND CLEAR NYLON-INSULATED COVERING. COPPER CONDUCTORS NO. 8 AND LARGER SHALL UTILIZE MECHANICAL BOLTED PRESSURE OR HYDRAULIC COMPRESSION TYPE USING MANUFACTURER'S RECOMMENDED TOOLING. CABLE LUGS AND CONNECTORS SHALL UTILIZE COMPRESSION TYPE OF SAME METAL AS CONDUCTOR. PROVIDE TO MATCH CABLE, WITH MARKING INDICATING SIZE AND TYPE. COPPER LUG CONNECTIONS TO BUS BARS: USE ANTISEIZE COMPOUND ON TANG.

I. NOT MORE THAN 3 LIGHTING OR CONVENIENCE OUTLET CIRCUITS SHALL BE INSTALLED IN ONE CONDUIT UNLESS OTHERWISE INDICATED. PULL NO THERMOPLASTIC WIRES AT TEMPERATURES LOWER THAN 32 DEG F. PROVIDE SEPARATE RACEWAYS FOR CONDUCTORS OF 120/208 AND 265/460 VOLT SYSTEMS, EXCEPT 460 VOLT MOTOR BRANCH CIRCUIT WIRING AND RELATED 120 VOLT CONTROL WIRING. THERMOPLASTIC WIRES SHALL NOT BE INSTALLED IN COMPUTER AREA RAISED FLOORS.

J. LEAVE WIRES WITH SUFFICIENT SLACK TO PERMIT MAKING FINAL CONNECTIONS.

K. PERFORM CONTINUITY AND INSULATION TESTS. MEGGER TEST 100 PERCENT OF FEEDERS, 10 PERCENT OF BRANCH CIRCUITS AND ALL MOTOR BRANCH CIRCUITS OVER 25 HP.

PERFORM TESTS PRIOR TO CONNECTING EQUIPMENT AND IN PRESENCE OF AUTHORIZED REPRESENTATIVES. SUBMIT WRITTEN REPORT OF RESULTS. CORRECT OR REPLACE CABLE TESTING BELOW MANUFACTURER'S STANDARDS.

11. WIRING DEVICES:

A. WIRING DEVICES SHALL BE SPECIFICATION GRADE UNLESS OTHERWISE SPECIFIED. ALL DEVICES SHALL BE FLUSH MOUNTED, UNLESS OTHERWISE NOTED. PROVIDE COMPLETE MATERIAL AND ACCESSORIES AS NOTED.

B. LOCAL WALL SWITCHES SHALL BE ROCKER TYPE, QUIET OPERATING, RATED 20 AMP, 120/277 VOLT, AC, SIMILAR TO LEVITON DECORA SERIES A5621 (SINGLE POLE), A5623 (3-WAY) AND A5624 (4-WAY).

C. STRAIGHT BLADE RECEPTACLES SHALL BE COMMERCIAL SPECIFICATION GRADE DUPLEX CONVENIENCE 125 VOLTS, 2 POLE, 3 WIRE, U GROUND SLOT, DECORA SERIES BY LEVITON. GROUNDED, EXCEPT AS NOTED.

1) SINGLE GANG, RECESSED, DUPLEX RECEPTACLE: TAMPER RESISTANT, 2-POLE, 3-WIRE GROUNDING, 15A, 125V, NEMA 5-20R; LEVITON 689 SERIES (COLOR AS SPECIFIED BY ARCHITECT).
2) USB CHARGER/ DUPLEX TAMPER-RESISTANT RECEPTACLE: TAMPER RESISTANT,

D. DEVICE PLATES: SEE ARCHITECT FOR TYPE. FOR RECEPTACLES WITH OTHER THAN 120 VOLT, INSCRIBED VOLTAGE AVAILABLE.

E. COLORS: COORDINATE COLORS WITH ARCHITECT.

F. MOUNTING ORIENTATION OF RECEPTACLES (HORIZONTAL OR VERTICAL): COORDINATE WITH ARCHITECT.

12. LIGHTING FIXTURES:

A. FIXTURES TO BE AS SPECIFIED BY ARCHITECT AND SHALL BE COMPLETELY FACTORY ASSEMBLED, WIRED AND EQUIPPED WITH ALL NECESSARY SOCKETS, BALLASTS, SUPPORTING HARDWARE AND ACCESSORIES. REFER TO DRAWINGS FOR INDIVIDUAL FIXTURE DESCRIPTIONS.

B. FIXTURE CATALOG NUMBERS USED TO ILLUSTRATE EQUIPMENT TYPE DO NOT NECESSARILY DENOTE REQUIRED MOUNTING EQUIPMENT OR ACCESSORIES. PROVIDE ACCESSORIES TO SUIT.

C. LED DRIVERS SHALL BE ELECTRONIC TYPE, LABELED AS COMPLIANT WITH RADIO FREQUENCY INTERFERENCE (RFI) REQUIREMENTS OF FCC TITLE 47, PART 15 AND COMPLY WITH NEMA SSL 1 "ELECTRONIC DRIVERS FOR LED DEVICES, ARRAYS OR SYSTEMS". LED DRIVERS SHALL HAVE A SOUND RATING OF "A", HAVE A MINIMUM EFFICIENCY OF 85% AND BE RATED FOR A THD OF LESS THAN 20% AT ALL INPUT VOLTAGES.

D. CONTINUOUS ROW, TWO LAMP STRIP FIXTURES SHALL BE STAGGERED TYPE.

E. EXIT SIGNS SHALL BE PRECISION DIE-CAST ALUMINUM HOUSING WITH LASER-FORMED ACRYLIC LEGEND. EXIT SIGNS SHALL COMPLY WITH UL 924 AND BE MEA APPROVED FOR USE IN FLORIDA. AC POWERED WITH BATTERY OF 90 MINUTES RUN TIME. PROVIDE WITH INTEGRAL AUTOMATIC CHARGER IN A SELF CONTAINED POWER PACK. LED INDICATOR WITH PUSH TO TEST SWITCH.

13. TELEPHONE CONDUIT SYSTEM:

A. PROVIDE COMPLETE SYSTEM OF: RACEWAYS AND ACCESSORIES, OUTLET BOXES, SLEEVES AND FISH WIRES.

B. EQUIPMENT SHALL CONFORM TO REQUIREMENTS OF TELEPHONE COMPANY.

C. OUTLETS SHALL BE:

1) WALL: 4 IN. SQUARE WITH BUSHED COVER PLATE.

D. PROVIDE FISH WIRES, IN RACEWAYS OVER 10 FT LONG.

E. CONDUIT SHALL BE 3/4 IN. MINIMUM. FURNISH EMPTY CONDUIT FROM OUTLET BOX TO BUSHED END THRU WALL 6" BELOW THE PLASTER CEILING.

F. FACE RACEWAYS IN ROOMS SHALL HUBBELL HBL500, HBL750 OR HBL2000 SERIES OR AS ACCEPTABLE.

14. GROUNDING AND BONDING:

A. EXTEND EXISTING SYSTEM GROUND TO INCLUDE ALL THE ELECTRICAL EQUIPMENT IN THE SCOPE OF WORK.

B. WHERE FLEXIBLE METALLIC CONDUIT IS USED AN INTERNAL BONDING CONDUCTOR SHALL BE INSTALLED.

C. IN ADDITION, FURNISH A SEPARATE INSULATED GREEN EQUIPMENT GROUND CONDUCTOR WHERE INDICATED ON DRAWINGS AND FOR THE FOLLOWING BRANCH CIRCUITS:
1) CIRCUITS SERVING ANY ISOLATED GROUND RECEPTACLES. TERMINATE GROUND DIRECTLY AT AN EQUIPMENT GROUNDING CONDUCTOR TERMINAL OF THE SOURCE AT THE SOURCE , OR AS OTHER WISE NOTED ON DRAWINGS.

2) CIRCUITS SERVING ANY DUPLEX OR SIMPLEX COMPUTER RECEPTACLES

3) ANY CIRCUIT SERVED VIA AN ISOLATION TRANSFORMER OR COMPUTER POWER DISTRIBUTION UNIT.

15. PANEL BOARDS:

A. PANEL BOARDS SHALL BE OF THE DEAD FRONT TYPE MANUFACTURED IN CODE GAUGE AND SIZE BOXES FOR MOUNTING AS INDICATED ON PLANS COMPLETE WITH TRIM, DOORS AND LOCKS. ALL LOCKS SHALL BE KEYED ALIKE.

B. CIRCUIT BREAKERS SHALL BE OF THE BOLT-ON THERMAL MAGNETIC MOLDED CASE TYPE, AND SHALL HAVE THE TRIP RATINGS AND NUMBER OF POLES SHOWN IN SCHEDULES ON THE CONTRACT DRAWINGS. FOR BLANK (SPACE) COMPARTMENTS, PROVIDE FULL RATED BUS. MINIMUM GUTTER SPACES SHALL BE 5-3/4", SIDES, TOP AND BOTTOM. INCREASE FOR THROUGH FEEDERS. PROVIDE 25% COPPER GROUND BUS AND 100% COPPER NEUTRAL BUS AND INCREASE NEUTRAL BUS INDICATED.

C. LOCKING TABS SHALL BE PROVIDED ON ALL CIRCUIT BREAKERS SERVING EMERGENCY LIGHTING, FIRE ALARM SYSTEM, SECURITY SYSTEMS AND OTHER EMERGENCY OR CRITICAL EQUIPMENT AND AS NOTED ON THE CONTRACT DRAWINGS. A TOTAL OF 5 SPARE LOCKING TABS SHALL BE FURNISHED TO THE OWNER.

D. BUSES SHALL BE HARD DRAWN COPPER OF 98 PERCENT CONDUCTIVITY AND SHALL HAVE CROSS SECTIONAL AREAS LARGE ENOUGH TO LIMIT THE TEMPERATURE RISE, WHEN CARRYING FULL LOAD, TO 35 DEGREES C. ABOVE AN AMBIENT INSIDE THE ENCLOSURE OF 55 DEGREES C. AS DEFINED IN IEEE STANDARD RULES. MAIN BUS CAPACITY SHALL BE AS SHOWN ON THE CONTRACT DRAWINGS.

E. ENCLOSURES SHALL BE SURFACE OR FLUSH AS INDICATED. TRIMS SHALL BE SECURED TO PANEL WITH MACHINE SCREWS. COVERS SHALL BE HINGED DOOR-IN-DOOR CONSTRUCTION WITH CYLINDER LOCKS AND CATCHES. LOCKS MUST BE COMPATIBLE WITH BUILDING STANDARD KEY SYSTEM AND WHEN NONE EXISTS, THEY SHALL BE SIMILAR TO A YALE NO. 911 KEY.

F. DISTRIBUTION AND SUB-DISTRIBUTION PANEL BOARD SHALL BE A MINIMUM OF 30" WIDE AND 10" DEEP.

G. ALL STANDARD PANEL BOARDS SHALL BE A MINIMUM OF 20" WIDE AND 5 3/4" DEEP.

H. FURNISH ALL PANEL BOARDS WITH FEED-THRU LUGS UNLESS OTHERWISE INDICATED ON THE DRAWINGS.

I. THE CIRCUIT DIRECTORY SHALL BE TYPEWRITTEN AND PROVIDED INSIDE EACH PANEL DOOR TO INDICATE EQUIPMENT AND/OR AREA SERVED. DIRECTORY HOLDER SHALL BE METAL FRAME WITH CLEAR PLASTIC, TRANSPARENT COVER. THE TYPEWRITTEN LIST INDICATING CIRCUIT NUMBERS, OUTLETS SUPPLIED AND THEIR LOCATIONS SHALL BE PROVIDED.

J. TIE-BARS SHALL NOT BE USED TO CREATE MULTI-POLE CIRCUITS. MAXIMUM 42 CIRCUITS ALLOWED.

K. ONLY ONE WIRE SHALL BE INSTALLED UNDER EACH CIRCUIT BREAKER LUG.

L. SHORT CIRCUIT RATING OF PANEL BOARDS SHALL NOT BE LESS THAN AS INDICATED ON THE CONTRACT DRAWINGS OR SPECIFIED HEREIN. WHERE NOT INDICATED OR SPECIFIED THE MINIMUM SHORT CIRCUIT RATING SHALL BE EQUAL TO THE INTERRUPTING CAPACITY OF THE LOWEST RATED CIRCUIT BREAKER IN THE PANEL BOARD, BUT IN NO CASE LESS THAN 10,000 AMPERES R.M.S. SYMMETRICAL FOR 208Y/120 VOLT SYSTEM AND 14,000 AMPERES R.M.S. SYMMETRICAL FOR 480Y/277 VOLT SYSTEM. SERIES RATED PANEL BOARDS SHALL BE USED TO ACHIEVE REQUIRED SHORT CIRCUIT RATINGS.

M. FOR ALL EXISTING PANEL BOARDS, CONTRACTOR SHALL PROVIDE NEW CIRCUIT BREAKERS TO REPLACE EXISTING AS REQUIRED AS INDICATED ON DRAWINGS.

16. INTERCOM CONDUIT SYSTEM:

A. PROVIDE COMPLETE SYSTEM OF: RACEWAYS AND ACCESSORIES, OUTLET BOXES, SLEEVES AND FISH WIRES.

B. EQUIPMENT SHALL CONFORM TO REQUIREMENTS OF INTERCOM MANUFACTURER.

C. OUTLETS SHALL BE:

1) WALL: 4 IN. SQUARE WITH SINGLE GANG COVER PLATE.

D. PROVIDE FISH WIRES, IN RACEWAYS OVER 10 FT LONG.

E. CONDUIT SHALL BE 3/4 IN. MINIMUM. FURNISH EMPTY CONDUIT FROM EACH APARTMENT TO MAIN INTERCOM CONTROLLER AT ENTRANCE.

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ELECTRICAL SPECIFICATIONS (2 OF 2)

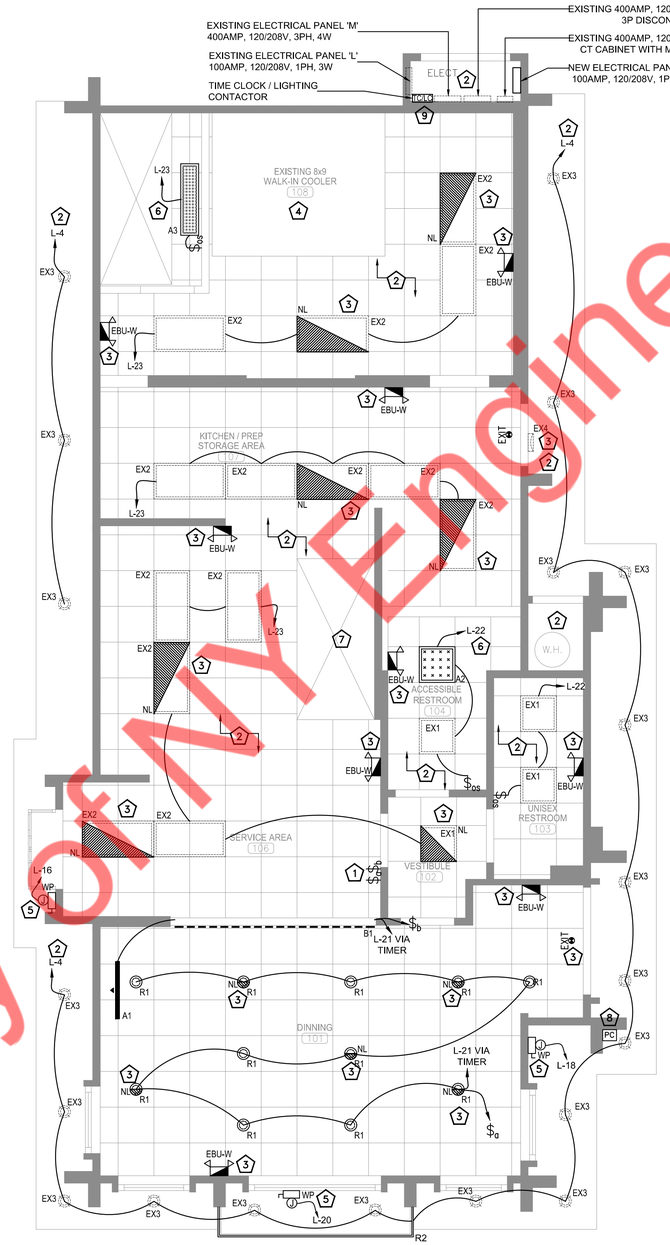
E003

LIGHTING FIXTURE SCHEDULE

TYPE	SYMBOL	DESCRIPTION	REMARKS	FIXTURE WATTAGE
A1		MAKE: TEMPO C6R STYLE: RIGID LED LINEAR LIGHTING MODEL: LED 870 LUMENS/FT 4000K 83 CRI ACCESSORY:	WALL WASH LIGHT FIXTURE, ACCENT WALL	10W/FT.
A2		MAKE: LEDALITE SILK SPACE 2 X 2 4222D1STL8ADS7 STYLE: 2x2 FLAT RECESSED MODEL: LED 4000 LUMENS/4000K 82 CRI ACCESSORY:	–	36.9W
A3		MAKE: LEDALITE SILK SPACE 1 X 4 STYLE: 2x4 FLAT RECESSED MODEL: LED 4000 LUMENS/4000K 82 CRI ACCESSORY:	–	35W
B1		MAKE: Q TRAN HIGH EFFICIENCY STYLE: STATIC WHITE MODEL: LED 779 LUMENS/FT 4000K 97 CRI ACCESSORY:	TAPE STRIP TATIC WHITE, UNDER COUNTER LIP SURFACE IN A CHANNEL	6W/FT. WITH POWER SUPPLY DRIVER
R1		MAKE: ALPHABET STYLE: NU4" ROUND DOWNLIGHT MODEL: XICATO LED LUMENS 4000K 83 CRI ACCESSORY:	4" RECESSED DOWNLIGHT BLACK FINISH	12W EM 90 MIN. BATTERY
R2		MAKE: TEMPO ARCHITECTURE SLOTLINE PRO STYLE: DIRECT VIEW LED MODEL: 4120 KITS 4000K 80+ CRI ACCESSORY:	GREEN LINE GREEN, EXTERIOR LIGHT ON SURFACE MOUNT	4W/FT. WITH 60W POWER SUPPLY DRIVER
E	EXIT	MAKE: EXITRONIX STYLE: COMBO LED EXIT SIGN W/LIGHT HEADS MODEL: VLED-U-WH-EL90	EXIT SIGN	3W
EBU-W		MAKE: EXITRONIX STYLE: 2-HEAD EMERGENCY BATTERY PACK MODEL: EBU-W-LED-51-52	EMERGENCY BUG EYE	3W
EX1		-	EXISTING 2X2 RECESSED LIGHT	
EX2		-	EXISTING 2X4 RECESSED LIGHT	
EX3		-	EXISTING EXTERIOR RECESSED LIGHT	
EX4		-	EXISTING WALL PACK	

1 LIGHTING FIXTURE SCHEDULE

SCALE: NTS



2 ELECTRICAL LIGHTING PLAN

SCALE: ¼"=1'-0"

1. DIMMER SWITCHE BANK. COORDINATE EXACT LOCATION WITH ARCHITECT/OWNER. DIMMER SWITCHES SHALL BE RATED FOR TOTAL LOAD OF SWITCHED CIRCUIT AND LAMP TYPE AS REQUIRED. DIMMERS SHALL BE PROVIDED WITH AN ON/OFF SWITCH.
2. EXISTING LIGHTING AND IT'S CONTROLS & CIRCUITING TO REMAIN. ELECTRICAL CONTRACTOR TO FIELD VERIFY THE OPERABLE CONDITION. PROVIDE NEW IF FOUND INOPERABLE. BASE BID ACCORDINGLY.
3. WIRE ALL EMERGENCY, EXIT AND NIGHT LIGHT TO NEAREST LIGHTING CIRCUIT AHEAD OF ALL CONTROL & SWITCHING FOR CONTINUOUS OPERATIONS.
4. EXISTING LIGHTING FIXTURES,ITS CONTROL FOR WALK-IN BOX SHALL REMAIN. ELECTRICAL CONTRACTOR TO FIELD VERIFY THE OPERABLE CONDITION WITH WALK-IN BOX MANUFACTURER. PROVIDE NEW IF FOUND INOPERABLE. BASE BID ACCORDINGLY.
5. ELECTRICAL CONTRACTOR SHALL PROVIDE JUNCTION BOX WITH TOGGLE DISCONNECT SWITCH AS PER NEC FOR THE EXTERIOR BUILDING SIGNAGE. INSTALL THE JUNCTION BOX WITHIN THE BUILDING. COORDINATE WITH THE SIGN VENDOR ON THE QUANTITY AND LOCATION OF THE REQUIRED JUNCTION BOXES. THE CONTRACTOR SHALL PROPERLY SIZE THE JUNCTION BOX BASED ON THE QUANTITY OF CONNECTIONS REQUIRED. VERIFY LOCATION WITH ARCHITECTURAL DRAWINGS AND SIGN VENDOR PRIOR TO INSTALLING. ALL SIGNS SHALL BE CONTROLLED VIA TIME CLOCK/EXTERNAL MOUNTED PHOTOCELL.
6. CONNECT NEW LIGHTING FIXTURE WITH THE EXISTING FIXTURES. EXISTING CONTROLS AND CIRCUITRY TO REMAIN. IF FOUND INOPERABLE PROVIDE CONTROL VIA TIME CLOCK/EXTERNAL MOUNTED PHOTO CELL. VERIFY QUANTITY AND LOCATION WITH ARCHITECTURAL DRAWINGS.
7. EXISTING HOOD LIGHTS SHALL REMAIN. E.C. SHALL VERIFY THE OPERABLE CONDITION OF THE HOOD CONTROL PANEL. COORDINATE WITH HOOD MANUFACTURER IF FOUND INOPERABLE. E.C. TO PROVIDE POWER FOR HOOD CONTROL PANEL.
8. EXTERIOR MOUNTED PHOTOCELL. COORDINATE EXACT LOCATION OF PHOTOCELL WITH ARCHITECT / OWNER.
9. CONTRACTOR TO FIELD VERIFY IF ANY EXISTING TIME CLOCK IN OPERABLE CONDITION AVAILABLE FOR THE SPACE. IF FOUND INOPERABLE. PROVIDE NEW TIME CLOCK & CONTACTOR AS SHOWN.

3 LIGHTING PLAN KEY NOTES (#)

1. REFER TO DRAWING E001 FOR ELECTRICAL GENERAL NOTES, SYMBOL LIST & ABBREVIATIONS. E002 & E003 FOR ELECTRICAL SPECIFICATIONS.
2. E.C. SHALL COORDINATE WITH ARCHITECT/ARCHITECTURE DRAWINGS FOR LIGHT FIXTURE DESCRIPTION, HEIGHTS AND LOCATION PRIOR TO ROUGH-IN.
3. E.C. TO COORDINATE WITH ARCHITECT/OWNER FOR EXACT LIGHTING CONTROL AND DIMMING REQUIREMENTS FOR ALL THE LIGHTING FIXTURES.
4. E.C. SHALL PROVIDE ADDITIONAL LIGHTING CONTROLS AS PER AHJ REQUIREMENTS IF ANY TO COMPLETE THE PERMIT REQUIREMENTS.
5. E.C. SHALL ADJUST ALL EGRESS AND EXIT SIGNS QUANTITIES AND LOCATIONS TO MEET THE AHJ REQUIREMENTS.
6. E.C. SHALL ENSURE ALL THE LIGHTING CONTROL SHALL MEET THE IECC 2021 REQUIREMENT AND LOCAL AHJ REQUIREMENTS

4 LIGHTING PLAN GENERAL NOTES

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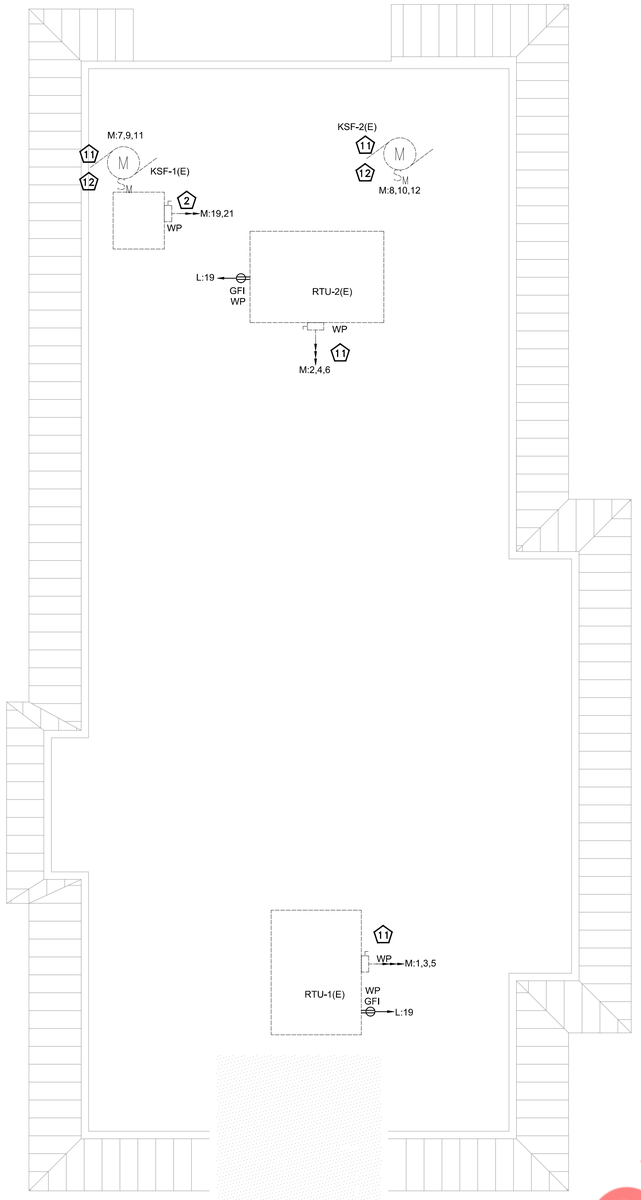
ELECTRICAL LIGHTING PLAN

E100



1 POWER ROOF PLAN SCALE: ¼"=1'-0"

2 POWER FLOOR PLAN SCALE: ¼"=1'-0"

3 POWER PLAN KEY NOTES (#)

1. ALL RECEPTACLES IN KITCHEN AREA SHALL BE "GFI" IN ACCORDANCE WITH NEC ARTICLE 210.8(B). PROVIDE GFI RATED BREAKER AT PANEL FOR KITCHEN EQUIPMENT.
2. E.C. TO PROVIDE TAMPER RESISTANT RECEPTACLES FOR DINING AREA.
3. SEE ARCHITECTURAL ELEVATIONS FOR PLACEMENT OF DEVICES.
4. COORDINATE EXACT LOCATION OF HVAC EQUIPMENTS ON ABOVE CEILING WITH MECHANICAL CONTRACTOR.
5. E.C. SHALL COORDINATE DISCONNECT AND FUSE REQUIREMENT FOR MECHANICAL UNIT WITH MECHANICAL CONTRACTOR AND EQUIPMENT MANUFACTURER FOR FINAL SELECTION PRIOR TO ROUGH-IN. E.C. COORDINATE LOCATION OF DISCONNECT SWITCH WITH MANUFACTURER AND MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN. LOCATE AS REQUIRED TO MAINTAIN NEC CLEARANCES.
6. E.C. SHALL VERIFY THE EXACT ELECTRICAL REQUIREMENT INCLUDING RECEPTACLE, CIRCUIT BREAKER AND CABLES FOR ALL THE KITCHEN EQUIPMENTS IN FIELD AND ACCORDINGLY PROVIDE THE ELECTRICAL CONNECTION FOR ALL KITCHEN EQUIPMENTS AS REQUIRED.
7. REFER TO ARCHITECTURE DRAWINGS FOR KITCHEN EQUIPMENT SCHEDULE. E.C. SHALL VERIFY AND PROVIDE THE EXACT ELECTRICAL REQUIREMENT INCLUDING RECEPTACLE, PLUG, CORD, CIRCUIT BREAKER AND CABLES FOR ALL THE KITCHEN/MECHANICAL EQUIPMENTS IN COORDINATION WITH EQUIPMENT SUPPLIER/MANUFACTURER IN FIELD. BASE BID ACCORDINGLY.

4 POWER PLAN GENERAL NOTES

1. EXISTING GAS WATER HEATER SHALL REMAIN. E.C SHALL VERIFY EXACT LOCATION, ELECTRICAL CONNECTION AND OPERABLE OCNDITION OF ELECTRICAL CONNECTION REQUIREMENT IN FIELD. IF INOPERABLE PROVIDE NEW ELECTRICAL CONNECTION BY COORDINATING WITH PLUMBING CONTRACTOR/WATER HEATER SUPPLIER/MANUFACTURER.
2. 30A/2P CIRCUIT FOR EXISTING WALK-IN COOLER CONDENSER. E.C SHALL VERIFY EXACT LOCATION AND ELECTRICAL REQUIREMENT WITH EQUIPMENT MANUFACTURER IN FIELD.
3. E.C. TO VERIFY THE EXACT LOCATION AND ELECTRICAL CONNECTION AND POWER REQUIREMENTS OF EXISTING WALK IN COOLER IN FIELD AND ACCORDINGLY PROVIDE THE ELECTRICAL CONNECTION FOR WALK IN COOLER. BASE BID ACCORDINGLY.
4. 20A/2P EXISTING CIRCUIT FOR EXISTING WALK-IN COOLER EVAPORATOR. E.C SHALL COORDINATE EXACT LOCATION AND ELECTRICAL REQUIREMENT WITH EQUIPMENT MANUFACTURER IN FIELD.
5. POWER FOR AUTOMATIC FAUCET SENSOR. E.C. TO COORDINATE EXACT POWER REQUIREMENT WITH ARCHITECT/OWNER PRIOR TO INSTALLATION.
6. EXISTING 400A, 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL 'M' FOR THE SPACE SHALL REMAIN. E.C. SHALL COORDINATE EXACT LOCATION, RATING, VOLTAGE, PHASE, DISTRIBUTION AND OPERABLE CONDITION WITH IN FIELD. PROVIDE NEW IF FOUND INOPERABLE OR INSUFFICIENT. BASE BID ACCORDINGLY.
7. EXISTING 100A (MLO), 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL 'L' FOR THE SPACE SHALL REMAIN. E.C. SHALL COORDINATE EXACT LOCATION, RATING, VOLTAGE, PHASE, DISTRIBUTION AND OPERABLE CONDITION WITH IN FIELD. PROVIDE NEW IF FOUND INOPERABLE OR INSUFFICIENT. BASE BID ACCORDINGLY.
8. NEW100A, 120/208V, 3-PHASE, 4-WIRE MLO ELECTRICAL PANEL 'P' FOR THE SPACE. E.C. SHALL COORDINATE EXACT LOCATION WITH IN FIELD.
9. E.C. SHALL MAINTAIN CLEARANCE FOR ELECTRICAL PANELS PER 110.26 (A) (1).
10. EXISTING SHOW SHOW WINDOW RECEPTACLES TO REMAIN. REUSE EXISTING CIRCUIT IF FOUND INOPERABLE. E.C TO INSTALL SHOW WINDOW RECEPTACLES AS PER NEC 210.62.
11. EXISTING MECHANICAL EQUIPMENTS WITH ELECTRICAL CONNECTION SHALL REMAIN. E.C. TO VERIFY EXACT LOCATION AND ELECTRICAL CONNECTION AS PER MECHANICAL EQUIPMENTS REQUIREMENTS IN FIELD. IF FOUND INOPERABLE PROVIDE NEW CONNECTION. BASE BID ACCORDINGLY.
12. EXISTING EXHAUST FAN WITH ELECTRICAL CONNECTION SHALL REMAIN. E.C. TO VERIFY EXACT LOCATION AND ELECTRICAL CONNECTION AND IT'S CONTROL AS PER MECHANICAL EQUIPMENTS REQUIREMENTS IN FIELD. IF FOUND INOPERABLE PROVIDE NEW CONNECTION. BASE BID ACCORDINGLY.
13. ELECTRICAL CONTRACTOR SHALL VERIFY EXACT POWER REQUIREMENTS WITH THE OWNER/ARCHITECT/MANUFACTURER FOR ALL NEW EQUIPMENTS PRIOR TO ROUGH-IN. PROVIDE THE OUTLET AS PER EQUIPMENT CUTSHEET. BASE BID ACCORDINGLY.
14. ELECTRICAL CONTRACTOR TO FIELD VERIFY THE EXACT LOCATION & OPERABLE CONDITION OF EXISTING GENERAL RECEPTACLES AND EQUIPMENT RECEPTACLES. REUSE EXISTING CIRCUIT. PROVIDE NEW IF FOUND INOPERABLE. BASE BID ACCORDINGLY.
15. EXISTING PLUMBING EQUIPMENTS WITH ELECTRICAL CONNECTION SHALL REMAIN. E.C. TO VERIFY EXACT LOCATION AND ELECTRICAL CONNECTION AS PER PLUMBING EQUIPMENTS REQUIREMENTS IN FIELD. IF FOUND INOPERABLE PROVIDE NEW CONNECTION. BASE BID ACCORDINGLY.

5 KITCHEN EQUIPMENT SCHEDULE

EQUIPMENT SCHEDULE

EQUIPMENT TAG (#)	EQUIPMENT NAME	LOAD AMPS	LOAD WATTS	LOAD HP	VOLTS	POLE	CONNECTION TYPE (DIRECT/PLUG)	REMARK
BLUE LINE EQUIPMENTS								
4	SOFT SERVICE MACHINE	29	6032	2	208	1	PLUG	
8	EXISTING SODA BEVERAGE SYSTEM	-	-	-	-	-	-	-
10	EXISTING COLD BEVERAGE DISPENSER	TBD	TBD	TBD	TBD	TBD	TBD	
13	REACH-IN UNDERCOUNTER FREEZER	3.6	414	0.33	115	1	PLUG	NEMA 5-15P
15	WARMING STATION (FRENCH FRY WARMER)	14.2	2773	-	120/208	1	PLUG	NEMA L14-20P
16	FRYER FILTER, MOBILE	1.7	200	0.33	120	1	PLUG	NEMA 5-15P
23	2 DOOR REACH-IN FREEZER	9.6	1104		115	1	PLUG	NEMA 5-15P
28	CONVECTION OVEN (COOKIE OVEN)	14	1700	-	120	1	PLUG	NEMA 5-15P
30	NUGGET ICE MAKER	16	1840	-	115	1	PLUG	
31	EXISTING UNDER COUNTER REFRIGERATOR	TBD	TBD	TBD	TBD	TBD	TBD	NEMA 5-15P
44/38	HEATED HOLDING/ WARMING BIN	13.3	1600	-	120	1	PLUG	NEMA 5-15P
40	MEGA TOP SANDWICH/SALAD PREPERATION REFRIGERATOR	3	345	-	115	1	PLUG	NEMA 5-15P
EQUIPMENT BY OTHERS								
25	WALK IN COOLER CONDENSING UNIT WITH COMPRESSOR	19	3952	0.5	208	1	DIRECT	MHMD005AB
	WALK IN COOLER EVAPORATOR	0.8	92	-	115	1	DIRECT	E1MD0048A-TA2

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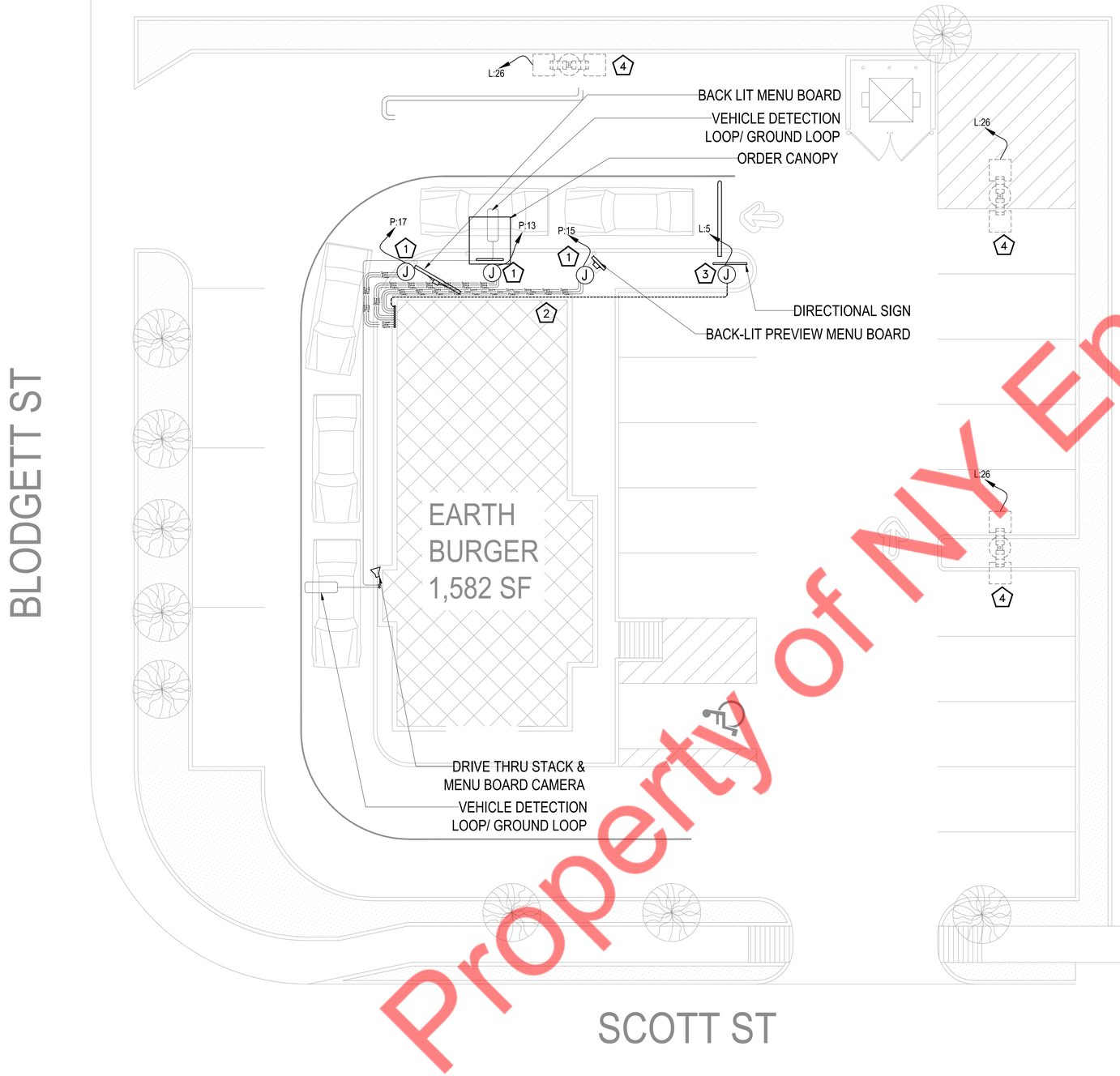
ELECTRICAL POWER FLOOR & ROOF PLAN

E200



1. E.C. TO COORDINATE WITH ARCHITECT/OWNER FOR EXACT LOCATION OF MENU BOARD, SPEAKER POST/ORDER CANOPY AND PREVIEW BOARD IN FIELD.
2. E.C. TO VERIFY FINAL LOCATION OF OUTDOOR MENU BOARD, SPEAKER POST/ORDER CANOPY AND PREVIEW BOARD CONDUITS TO AVOID ELECTRICAL SERVICE NOT ILLUSTRATED FOR CLARITY.
3. CONTRACTOR SHALL COORDINATE WITH ARCHITECT/OWNER FOR THE EXACT LOCATION OF DIRECTIONAL SIGNAGE IN FIELD. DIRECTIONAL SIGNAGE SHALL BE CONTROLLED VIA PHOTO CELL/TIME CLOCK. E.C SHALL COORDINATE WITH ARCHITECT/OWNER FOR EXACT LIGHTING CONTROL DETAILS.
4. EXISTING PARKING LIGHTING AND SITE LIGHTING SHALL REMAIN. PARKING LIGHTING AND SITE LIGHTING SHALL BE CONTROLLED VIA PHOTO CELL/TIME CLOCK. E.C SHALL COORDINATE WITH ARCHITECT/OWNER FOR EXACT LIGHTING CONTROL DETAILS.

4 SITE PLAN KEY NOTES

1. ALL UNDERGROUND CONDUIT SHALL BE PVC. PROVIDE GALVANIZED STEEL SLEEVE WHEN PASSING THROUGH THE FOUNDATION WALL, CONCRETE FLOOR. EXTEND CONDUIT 6" ABOVE THE FINISHED FLOOR AND PROVIDED WITH PROTECTIVE GROMMET.
2. ALL CONDUIT SHALL BURIED AT LEAST 18" BELOW FINISHED GRADE.
3. ALL INSTALLED CONDUIT SHALL BE PROVIDED WITH A PULL STRING.
4. LOOP PLACEMENT IS DEFINED IN TERMS OF WHERE THE VEHICLE ENGINE BLOCK WOULD BE OVER THE LOOP IF THE CENTER OF THE DRIVER'S SIDE WINDOW IS AT THE SERVICE POINT. THE GOAL IS TO ENSURE THERE IS ONLY ROOM FOR ONE VEHICLE BEHIND THE PREVIOUS LOOP AND THE MERGE POINT; THIS IS HOW SEQUENCING IS POSSIBLE.
5. REFER TO CIVIL DRAWINGS FOR FURTHER INFORMATION AND PROPER LOCATION OF SITE LIGHTING, DIRECTIONAL SIGNS AND MENU SYSTEM SIGNS.
6. ALL LOOP CONDUITS SHALL ROUTE BACK TO DRIVE THRU TIMER MONITOR ADJACENT TO DRIVE THRU WINDOW.

3 SITE PLAN GENERAL NOTES

- POWER CONDUIT - UNDERGROUND CONDUIT DEDICATED FOR POWER WIRING 120 VOLTS MINIMUM. CONDUIT SIZE SHALL BE A MINIMUM OF 1" UNLESS OTHERWISE INDICATED.
- DATA CONDUIT - UNDERGROUND CONDUIT DEDICATED FOR LOW VOLTAGE DATA COMMUNICATION WIRING. CONDUIT SIZE SHALL BE A MINIMUM OF 1" UNLESS OTHERWISE INDICATED.
- VOICE CONDUIT - UNDERGROUND CONDUIT DEDICATED FOR LOW VOLTAGE VOICE DATA COMMUNICATION WIRING. CONDUIT SIZE SHALL BE A MINIMUM OF 1" UNLESS OTHERWISE INDICATED.
- SPARE CONDUIT - UNDERGROUND CONDUIT INSTALL AS A SPARE OR FOR FUTURE USE. MAY BE USED FOR POWER OR DATA, NOT BOTH. CONDUIT SIZE SHALL BE A MINIMUM OF 1" UNLESS OTHERWISE INDICATED.
- LOOP CONDUIT - UNDERGROUND CONDUIT DEDICATED FOR LOW VOLTAGE VEHICLE DETECTION LOOP COMMUNICATION WIRING. CONDUIT SIZE SHALL BE A MINIMUM OF 1" UNLESS OTHERWISE INDICATED.
- POWER CONDUIT - UNDERGROUND CONDUIT DEDICATED FOR ALL MISCELLANEOUS POWER FEEDERS AND BRANCH CIRCUITS. 120 VOLTS MINIMUM. CONDUIT SIZE SHALL BE AS INDICATED.

2 SITE PLAN LEGEND

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ELECTRICAL SITE PLAN

E300

1 ELECTRICAL SITE PLAN

SCALE: 1/8"=1'-0"

PANEL: M (EXISTING) (1) — **MOUNTING:** SURFACE

208Y/120 VOLTS, **3** PHASE, **4** WIRE — **PANEL LOCATION:** ELECTRICAL ROOM

MAIN CB: NA — **MLO:** 400A — **BUS:** EXISTING MIN, — **FED FROM:** EXISTING ELECTRICAL SERVICE

NOTE: L : LIGHTING, R : RECEPTACLES, H : HVAC, M : MOTOR , C:REFRIGERATION, E:KITCHEN/EQUIPMENTS, O : OTHER/MISCILLANEOUS (TYPICAL)

CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER PHASE (KVA) A	B	C	MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
1			H	5.88		11.77				5.88	H			2
3	3P-60	EXISTING AC UNIT	H	5.88	3#6, #10G, 3/4"C		11.77		3#6, #10G, 3/4"C	5.88	H	EXISTING AC UNIT	3P-60	4
5			H	5.88				11.77		5.88	H			6
7			M	1.90		3.80				1.90	M			8
9	3P-20	EXISTING KSF-1	M	1.90	3#12, #12G, 3/4"C		3.80		3#12, #12G, 3/4"C	1.90	M	EXISTING KSF-2	3P-20	10
11			M	1.90				3.80		1.90	M			12
13	20	EXISTING AIR CURTAIN	M	1.00	2#12, #12G, 3/4"C	2.20			2#12, #12G, 3/4"C	1.20	E	EXISTING ANSUL HOOD SYSTEM	20	14
15	2P-30	4_SOFT SERVE SHAKE MACHINE	E	2.50	3#10, #10G, 3/4"C		2.50					SPACE		16
17			E	2.50				9.11	3#4, #8G, 1"C	6.62	O	NEW PANEL 'P'	2P-80	18
19	2P-30	EXISTING WALK IN COOLER CONDENSER	C	1.98	2#10, #10G, 3/4"C	8.59				6.62	O			20
21			C	1.98			3.57		2#12, #12G, 3/4"C	1.60	E	44_HEATED HOLDING BIN	20	22
23	20	SPARE						1.50	2#12, #12G, 3/4"C	1.50	R	EXISTING HAND DRYER	20	24
25	20	10_EXISTING COLD BEVERAGE DISPENSER	E	1.00	2#12, #12G, 3/4"C	2.50			2#12, #12G, 3/4"C	1.50	R	HAND DRYER	20	26
27	20	EXTERIOR RECEPTACLES	R	0.72	2#12, #12G, 3/4"C		1.08		2#12, #12G, 3/4"C	0.36	R	RESTROOM RECEPTECLE	20	28
29	20	EXISTING GENERAL RECEPTACLES	R	1.26	2#12, #12G, 3/4"C			3.76	3#10, #10G, 3/4"C	2.50	E	4_SOFT SERVE SHAKE MACHINE	2P-30	30
31	20	SERVICE AREA RECEPTACLES	R	0.36	2#12, #12G, 3/4"C	2.86				2.50	E			32
33	20	EXIST DOOR HEAT COOLER	H	1.20	2#12, #12G, 3/4"C		2.90		2#12, #12G, 3/4"C	1.70	E	28_CONVECTION/COOKIE OVEN	20	34
35	20	EXIST GAS SOLENOID VALVE	O	1.20	2#12, #12G, 3/4"C			11.35	3#1, #6G, 1 1/4"C	10.15	O	EXISTING PANEL 'L'	2P-125	36
37	20	EXIST GAS SOLENOID VALVE	O	1.20	2#12, #12G, 3/4"C	11.35				10.15	O			38
39	2P-20	EXISTING WALK IN COOLER EVAPORATOR	C	1.66	2#10, #10G, 3/4"C		1.86		2#12, #12G, 3/4"C	0.20	E	16_POT FRYER	20	40
41			C	1.66				2.86	2#12, #12G, 3/4"C	1.20	H	EXISTING GWH BLOWER	20	42
		TOTAL CONNECTED LOAD (KVA)				**43.07**	**27.48**	**44.16**						

LOAD CLASSIFICATION		CONNECTED LOAD (KVA)	DEMAND FACTOR	DEMAND LOAD (KVA)
LIGHTING	L	0.000	125%	0.00
RECEPTACLE	R	5.700	100%	5.70
HVAC	H	37.705	100%	37.71
MOTOR	M	12.400	100%	12.40
REFRIGERATION	C	7.280	100%	7.28
KITCHEN/EQUIPMENTS	E	15.680	65%	10.19
OTHER/MISCILLANEOUS	O	35.947	100%	35.95

PANEL TOTAL LOAD	
TOTAL CONNECTED LOAD	114.71 KVA
TOTAL DEMAND LOAD	109.22 KVA
TOTAL CONNECTED CURRENT	318.42 AMP
TOTAL DEMAND CURRENT	303.18 AMP

PANEL: L (EXISTING) (1) — **MOUNTING:** SURFACE

120/208 VOLTS, **1** PHASE, **3** WIRE — **PANEL LOCATION:** ELECTRICAL ROOM

MAIN CB: — **MLO:** 100A — **BUS:** EXISITING MIN, — **FED FROM:** PANEL 'M'

CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER PHASE (KVA) A	B	MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
1	20	EXISTING POS	R	0.36	2#12, #12G, 3/4"C	1.56		2#12, #12G, 3/4"C	1.20	E	8_EXISTING SODA BEVERAGE SYSTEM	20	2
3	20	EXISTING WATER HEATER	O	0.20	2#12, #12G, 3/4"C		1.00	2#12, #12G, 3/4"C	0.80	L	EXISTING OUTDOOR LIGHTING	20	4
5	20	DIRECTIONAL SIGN	L	0.50	2#12, #12G, 3/4"C	1.50		2#12, #12G, 3/4"C	1.00	E	31_EXISTING UNDERCOUNTER REFRIGERATOR	20	6
7	20	SHOW WINDOW RECEPTACLES	L	1.60	2#12, #12G, 3/4"C		1.80	2#12, #12G, 3/4"C	0.20	L	EXISTING HOOD LIGHTS	20	8
9	20	SHOW WINDOW RECEPTACLES	L	1.50	2#12, #12G, 3/4"C	1.50					SPARE	20	10
11	20	SHOW WINDOW RECEPTACLES	L	1.60	2#12, #12G, 3/4"C		1.60				SPARE	20	12
13	20	TIME CLOCK	R	0.20	2#12, #12G, 3/4"C	1.30		2#12, #12G, 3/4"C	1.10	C	23_EXISTING 2 DOOR REACH-IN FREEZER	20	14
15	20	SPARE					1.50	2#12, #12G, 3/4"C	1.50	L	EXTERIOR SIGN	20	16
17	20	EXISTING GENERAL RECEPTACLES	R	0.90	2#12, #12G, 3/4"C	2.40		2#12, #12G, 3/4"C	1.50	L	EXTERIOR SIGN	20	18
19	20	ROOF RECEPTACLE	R	0.36	2#12, #12G, 3/4"C		1.86	2#12, #12G, 3/4"C	1.50	L	EXTERIOR SIGN	20	20
21	20	DINING AREA LIGHTS	L	0.30	2#12, #12G, 3/4"C	0.45		2#12, #12G, 3/4"C	0.15	L	EXISTING RESTROOM LIGHTS	20	22
23	20	EXISTING LIGHTS	L	0.80	2#12, #12G, 3/4"C		0.80				SPARE	20	24
25	20	SPARE				0.50		2#12, #12G, 3/4"C	0.50	L	EXISTING PARKING LOT LIGHTS	20	26
27	20	SPARE					0.00				SPARE	20	28
29	20	SPARE				0.20		2#12, #12G, 3/4"C	0.20	R	EXISTING MENU BOARD	20	30
		TOTAL CONNECTED LOAD (KVA)				**9.41**	**8.56**						

NOTE: **L**-LIGHITNG , **R**-RECEPTACLE , **SA**-SMALL APPLIANCE , **LA** -LAUNDRY , **F**-FIXED IN APPLIANCE , **WH**-WATER HEATER, **D**- CLOTH DRYER, **K**-COOKING , **HC**- HVAC COOLING, **HH**-HVAC HEATING , **M**-MOTOR, **O**- OTHER/MISCILLANEOUS

LOAD CLASSIFICATION		CONNECTED LOAD (KVA)	DEMAND FACTOR	DEMAND LOAD (KVA)
LIGHTING	L	12.448	125%	15.56
RECEPTACLE	R	2.020	100%	2.02
HVAC	H	0.000	100%	0.00
MOTOR	M	0.000	100%	0.00
REFRIGERATION	C	1.100	100%	1.10
KITCHEN/EQUIPMENTS	E	2.200	65%	1.43
OTHER/MISCILLANEOUS	O	0.200	100%	0.20

PANEL TOTAL LOAD	
TOTAL CONNECTED LOAD	17.97 KVA
TOTAL DEMAND LOAD	20.31 KVA
TOTAL CONNECTED CURRENT	86.38 AMP
TOTAL DEMAND CURRENT	97.64 AMP

PANEL: P (NEW) — **MOUNTING:** SURFACE

120/208 VOLTS, **1** PHASE, **3** WIRE — **PANEL LOCATION:** ELECTRICAL ROOM

MAIN CB: — **MLO:** 100A — **BUS:** NEW MIN, — **FED FROM:** PANEL 'M'

CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER PHASE (KVA) A	B	MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
1	20	D/T POS COUNTER	R	0.36	2#12, #12G, 3/4"C	0.46		2#12, #12G, 3/4"C	0.10	E	RANGE/GRIDDLE	20	2
3	20	MONITOR	R	0.36	2#12, #12G, 3/4"C		1.44	2#12, #12G, 3/4"C	1.08	R	DINING RECEPTACLES	20	4
5	20	40_REFRIGERATED SANDWICH UNIT	C	0.35	2#12, #12G, 3/4"C	1.45		2#12, #12G, 3/4"C	1.10	C	23_2 DOOR REACH-IN FREEZER	20	6
7	20	25_WALK IN COOLER EVAPORATOR	C	0.09	2#12, #12G, 3/4"C		1.69	2#12, #12G, 3/4"C	1.60	E	38_TILTED HEATED HOLDING BIN	20	8
9	20	16_POT FRYER	E	0.20	2#12, #12G, 3/4"C	2.00		2#12, #12G, 3/4"C	1.80	E	30_NUGGET ICE MAKER	20	10
11	20	J.B. FOR D/T WINDOW	O	0.50	2#12, #12G, 3/4"C		0.94	2#12, #12G, 3/4"C	0.44	C	13_REACH-IN UNDERCOUNTER FREEZER	20	12
13	20	ORDER CANOPY	O	1.00	2#12, #12G, 3/4"C	2.38		3#12, #12G, 3/4"C	1.38	E	15_FRENCH FRY WARMER	2P-20	14
15	20	PREVIEW BOARD	O	0.50	2#12, #12G, 3/4"C		1.88		1.38	E			16
17	20	DIGITAL MENU BOARD	R	1.00	2#12, #12G, 3/4"C	1.00					SPARE	20	18
		TOTAL CONNECTED LOAD (KVA)				**7.29**	**5.95**						

NOTE: **L**-LIGHITNG , **R**-RECEPTACLE , **SA**-SMALL APPLIANCE , **LA** -LAUNDRY , **F**-FIXED IN APPLIANCE , **WH**-WATER HEATER, **D**- CLOTH DRYER, **K**-COOKING , **HC**- HVAC COOLING, **HH**-HVAC HEATING , **M**-MOTOR, **O**- OTHER/MISCILLANEOUS

LOAD CLASSIFICATION		CONNECTED LOAD (KVA)	DEMAND FACTOR	DEMAND LOAD (KVA)
LIGHTING	L	0.000	125%	0.00
RECEPTACLE	R	2.800	100%	2.80
HVAC	H	0.000	100%	0.00
MOTOR	M	0.000	100%	0.00
REFRIGERATION	C	1.981	100%	1.98
KITCHEN/EQUIPMENTS	E	6.456	100%	6.46
OTHER/MISCILLANEOUS	O	2.000	100%	2.00

PANEL TOTAL LOAD	
TOTAL CONNECTED LOAD	13.24 KVA
TOTAL DEMAND LOAD	13.24 KVA
TOTAL CONNECTED CURRENT	63.64 AMP
TOTAL DEMAND CURRENT	63.64 AMP

ELECTRICAL LOAD SUMMARY

DESCRIPTION	CONNECTED KVA	VOLT	PHASE	DEMAND FACTOR	DEMAND KVA
LIGHTING	12.4	120	1	1.25	15.6
RECEPTACLES	10.5	120	1	>10kW=10+[0.5*(kW-10)]	10.5
HVAC	37.7	208	3	1.00	37.7
MOTOR	12.4	120	1	1.00	12.4
KITCHEN EQUIPMENTS	24.3	208	3	0.65	15.8
REFRIGERATION	10.4	208	3	1.00	10.4
OTHERS/MISCILLANEOUS	4.6	208	1	1.00	4.6
TOTAL	112.4				107.0

NOTES:

*** USE GREATER VALUE OF THE TWO CATEGORIES.**

**** 125% OF THE LARGEST MOTOR OR COMPRESSOR IN SYSTEM APPLIED ONLY ON ONE UNIT.**

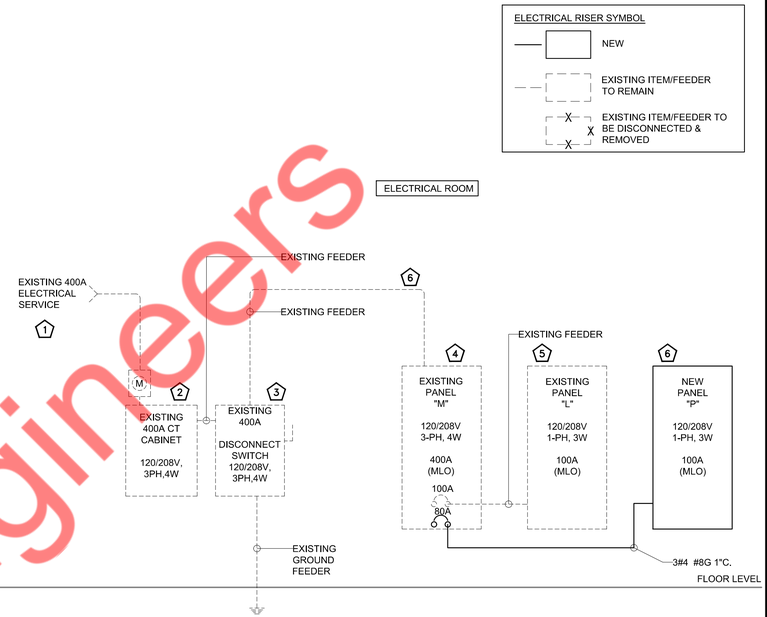
***** N.E.C. ARTICLE 220-12 REQUIREMENT (200 VA PER FOOT OF SHOW WINDOW)**

MINUS ACTUAL SHOW WINDOW LIGHTING kVA.

N.E.C. DEMAND kVA x 1,000 / **SYSTEM VOLTAGE x 1.732** = **MINIMUM FEEDER AMPERAGE**

107.0 / 208 x 1000 = 106,964 / x 1.732 = 360 — 296.9 AMPS — USE (EXISTING) 400AMP SERVICE.

1 ELECTRICAL PANEL SCHEDULE — SCALE: NTS



RISER DIAGRAM KEYED WORK NOTES: (#)

1. EXISTING, 400A 120/208V, 3-PHASE, 4-WIRE ELECTRICAL SERVICE SHALL REMAIN FOR THE PROJECT SPACE. E.C. SHALL VERIFY EXACT RATING VOLTAGE, AMPERAGE, PHASE, OPERABLE CONDITION AND LOCATION OF SERVICE IN FIELD. REPORT TO ENGINEER ON RECORD FOR ANY DISCREPACIES. PROVIDE NEW IF FOUND IN-OPERABLE OR INSUFICIENT. BASE BID ACCORDINGLY.
2. EXISTING 400A, 120/208V, 3-PHASE, 4-WIRE ELECTRICAL METER & CT CABINET SHALL REMAIN FOR THE PROJECT SPACE. E.C. SHALL VERIFY THE EXACT APMERAGE, VOLTAGE, PHASE, OPERABLE CONDITION AND LOCATION OF PANEL IN FIELD. REPORT TO ENGINEER ON RECORD FOR ANY DISCREPACIES. PROVIDE NEW IF FOUND IN-OPERABLE OR INSUFICIENT. BASE BID ACCORDINGLY.
3. EXISTING 400A, 120/208V, 3-PHASE, 4-WIRE DISCONNECT SWITCH SHALL REMAIN FOR THE PROJECT SPACE. E.C. SHALL VERIFY THE EXACT APMERAGE, VOLTAGE, PHASE, OPERABLE CONDITION AND LOCATION OF PANEL IN FIELD. REPORT TO ENGINEER ON RECORD FOR ANY DISCREPACIES. PROVIDE NEW IF FOUND IN-OPERABLE OR INSUFICIENT. BASE BID ACCORDINGLY.
4. EXISTING 400A, 120/208V, 3-PHASE 4-WIRE ELECTRICAL PANEL "M" FOR THE PROJECT SPACE SHALL REMAIN. E.C. SHALL VERIFY THE EXACT APMERAGE, VOLTAGE, PHASE, OPERABLE CONDITION AND LOCATION OF PANEL IN FIELD. REPORT TO ENGINEER ON RECORD FOR ANY DISCREPACIES. PROVIDE NEW IF FOUND IN-OPERABLE OR INSUFICIENT. BASE BID ACCORDINGLY.
5. EXISTING 100A, MLO, 120/208V, 1-PHASE 3-WIRE ELECTRICAL PANEL "L" FOR THE PROJECT SPACE SHALL REMAIN. E.C. SHALL VERIFY THE EXACT APMERAGE, VOLTAGE, PHASE, OPERABLE CONDITION AND LOCATION OF PANEL IN FIELD. REPORT TO ENGINEER ON RECORD FOR ANY DISCREPACIES. PROVIDE NEW IF FOUND IN-OPERABLE OR INSUFICIENT. BASE BID ACCORDINGLY.
6. NEW 100A, MLO, 120/208V, 1-PHASE 3-WIRE ELECTRICAL PANEL "P" FOR THE PROJECT SPACE. E.C. SHALL VERIFY THE EXACT LOCATION OF PANEL IN FIELD.

RISER DIAGRAM GENERAL NOTES:

1. ABOVE RISER DIAGRAM IS FOR REFERENCE PURPOSES ONLY. E.C. SHALL VERIFY EXACT POWER DISTRIBUTION IN FIELD AND INFORM ENGINEER ON RECORD FOR ANY DISCREPANCY.
2. E.C. SHALL VERIFY INCOMING SERVICE AMPERAGE, WIRE SIZING AND DISTRIBUTION.
3. ELECTRICAL CONTRACTOR TO COORDINATE FAULT CURRENT (Isc) RATING WITH UTILITY COMPANY AND AHJ PRIOR TO COMMENCING ANY WORK.
4. E.C. SHALL VERIFY THE EXACT POWER DISTRIBUTION & INCOMING CONNECTION TO ALL PANELS IN FIELD. INFORM ENGINEER FOR ANY DISCREPANCY FOUND.
5. E.C. SHALL COORDINATE WITH UTILITY COMPANY/OWNER FOR EXACT ELECTRICAL SERVICE EQUIPMENT REQUIREMENTS AND DETAILS OF INSTALLATION IN FIELD AND ACCORDINGLY CONSIDER UTILITY APPROVED SERVICE EQUIPMENTS IN FIELD. BASE BID ACCORDINGLY.

2 ELECTRICAL RISER DIAGRAM — SCALE: NTS

PANEL BOARD KEY NOTES: (#)

1. E.C. SHALL FIELD VERIFY EXACT LOCATION, RATING, VOLTAGE, PHASE, DISTRIBUTION, BRANCH BREAKER RATING, CIRCUIT DIRECTORY AND OPERABLE CONDITION OF EXISTING PANEL. PROVIDE NEW IF FOUND INOPERABLE OR INSUFFICIENT. INFORM ENGINEER IN CASE ANY DISCREPANCY PRIOR TO BID. E.C. SHALL PROVIDE NEW BRANCH BREAKER AS PER LOAD SCHEDULE IN PLACE OF EXISTING IN CASE EXISTING BRANCH BREAKER FOUND INOPERABLE OR INSUFFICIENT WITHOUT ANY ADDITIONAL COST. BASE BID ACCORDINGLY.

PANEL BOARD GENERAL NOTES:

1. ALL CIRCUITING SHOWN IS FOR REFERENCE PURPOSE ONLY. E.C. SHALL VERIFY EXACT BREAKER, CABLE, ELECTRICAL LOAD AND CONDUIT REQUIREMENTS/SIZES/RATINGS WITH EQUIPMENT/APPLIANCES/MECHANICAL EQUIPMENT SUPPLIER/MANUFACTURER IN COORDINATION WITH ARCHITECT/OWNER IN FIELD. E.C. SHALL PROVIDE THE CIRCUIT BREAKER, CABLE AND ALL REQUIRED ACCESSORIES/DEVICE IN ORDER TO RUN ALL THE STORE EQUIPMENTS/APPLIANCES/DEVICES IN FIELD. BASE BID ACCORDINGLY.
2. REFER TO ARCHITECTURE DRAWINGS FOR KITCHEN EQUIPMENT SCHEDULE. INFORM ENGINEER FOR ANY DISCREPANCIES PRIOR TO BID. BASE BID ACCORDINGLY.
3. ELECTRICAL CONTRACTOR TO VERIFY THE EXACT PANEL SIZES AND INCOMING FEEDER SIZE IN FIELD.
4. ALL 125-VOLT THROUGH 250-VOLT RECEPTACLES SUPPLIED BY SINGLE-PHASE BRANCH CIRCUITS RATED 150 VOLTS OR LESS TO GROUND, 50 AMPERES OR LESS, AND ALL RECEPTACLES SUPPLIED BY THREE-PHASE BRANCH CIRCUITS RATED 150 VOLTS OR LESS TO GROUND, 100 AMPERES OR LESS, INSTALLED IN THE LOCATIONS SPECIFIED IN 210.8(B) SHALL BE WITH GFCI PROTECTION.
5. E.C. SHALL VERIFY THE BREAKER AND CABLE RATING WITH EQUIPMENT SUPPLIER/OWNER AND ACCORDINGLY UPDATE THE BREAKER RATING AND CABLE SIZE IN FIELD.

DATE	ISSUED FOR:
04-17-25	ISSUE FOR REVIEW
05-14-25	ISSUE FOR PERMIT

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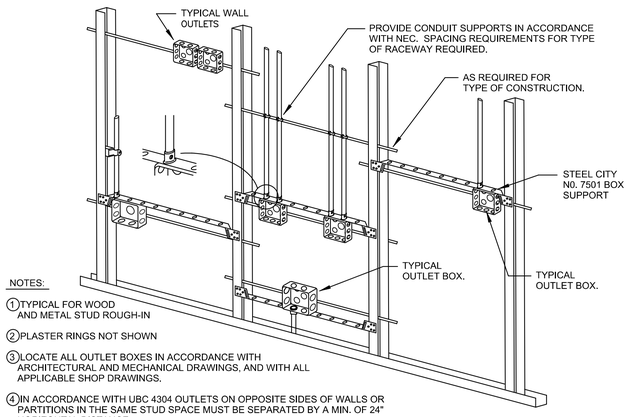
ELECTRICAL PANEL SCHEDULE & RISER DIAGRAM

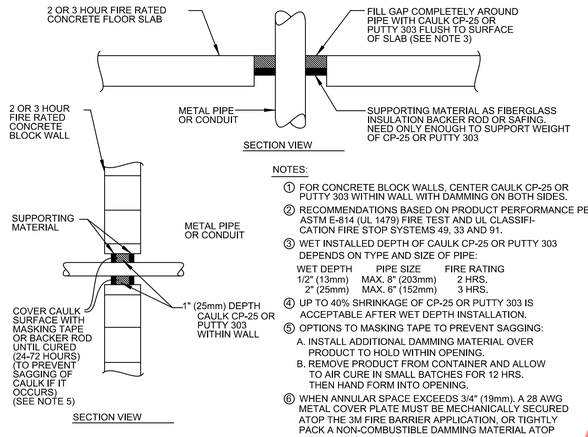
E600



NOTES:

1. TYPICAL FOR WOOD AND METAL STUD ROUGH-IN
2. PLASTER RINGS NOT SHOWN
3. LOCATE ALL OUTLET BOXES IN ACCORDANCE WITH ARCHITECTURAL AND MECHANICAL DRAWINGS, AND WITH ALL APPLICABLE SHOP DRAWINGS.
4. IN ACCORDANCE WITH UBC 4304 OUTLETS ON OPPOSITE SIDES OF WALLS OR PARTITIONS IN THE SAME STUD SPACE MUST BE SEPARATED BY A MIN. OF 24" HORIZONTAL DISTANCE.

1 E700 DETAIL TYPICAL ROUGH-IN REQUIREMENTS
N.T.S



NOTES:

1. FOR CONCRETE BLOCK WALLS, CENTER CAULK CP-25 OR PUTTY 303 WITHIN WALL WITH DAMMING ON BOTH SIDES.
2. RECOMMENDATIONS BASED ON PRODUCT PERFORMANCE PER ASTM E-814 (UL 1479) FIRE TEST AND UL CLASSIFICATION FIRE STOP SYSTEMS 49, 33 AND 91.
3. WET INSTALLED DEPTH OF CAULK CP-25 OR PUTTY 303 DEPENDS ON TYPE AND SIZE OF PIPE:

WET DEPTH	PIPE SIZE	FIRE RATING
1/2" (13mm)	MAX. 8" (203mm)	2 HRS.
2" (25mm)	MAX. 6" (152mm)	3 HRS.

4. UP TO 40% SHRINKAGE OF CP-25 OR PUTTY 303 IS ACCEPTABLE AFTER WET DEPTH INSTALLATION.
5. OPTIONS TO MASKING TAPE TO PREVENT SAGGING:
   A. INSTALL ADDITIONAL DAMMING MATERIAL OVER PRODUCT TO HOLD WITHIN OPENING.
   B. REMOVE PRODUCT FROM CONTAINER AND ALLOW TO AIR CURE IN SMALL BATCHES FOR 12 HRS. THEN HAND FORM INTO OPENING.
6. WHEN ANNULAR SPACE EXCEEDS 3/4" (19mm), A 28 AWG METAL COVER PLATE MUST BE MECHANICALLY SECURED ATOP THE 3M FIRE BARRIER APPLICATION, OR TIGHTLY PACK A NON-COMBUSTIBLE DAMMING MATERIAL ATOP INSTALLED CAULK OR PUTTY.

2 E700 FIRE STOP DETAIL
N.T.S

MANUAL MODE OPERATION:

1. PUSHBUTTON PRESS IS REQUIRED TO TURN LOAD ON.
2. LOAD TURNS OFF WHEN SENSOR TIMES OUT OR BY PRESSING PUSH BUTTON.
3. IF DAYLIGHT SENSOR IS ENABLED AND LIGHT LEVEL IS ABOVE SETPOINT, LOAD WILL NOT TURN ON.

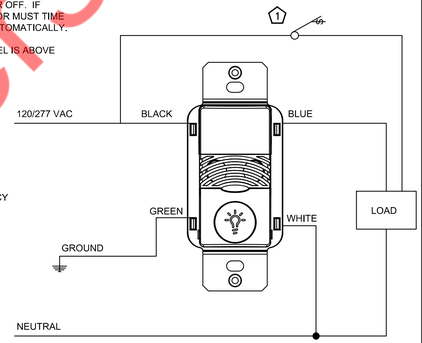
AUTOMATIC MODE OPERATION:

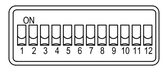
1. WHEN SENSOR ACTIVATES LOAD TURNS ON.
2. PUSHBUTTON CAN BE USED TO TURN LOAD ON OR OFF. IF PUSHBUTTON IS USED TO TURN LOAD OFF, SENSOR MUST TIME OUT FIRST, BEFORE LOAD CAN TURN BACK ON AUTOMATICALLY.
3. IF DAYLIGHT SENSOR IS ENABLED AND LIGHT LEVEL IS ABOVE SETPOINT, LOAD WILL NOT TURN ON.

SENSOR TYPES INCLUDE:

ONW-D-1001-MV-N

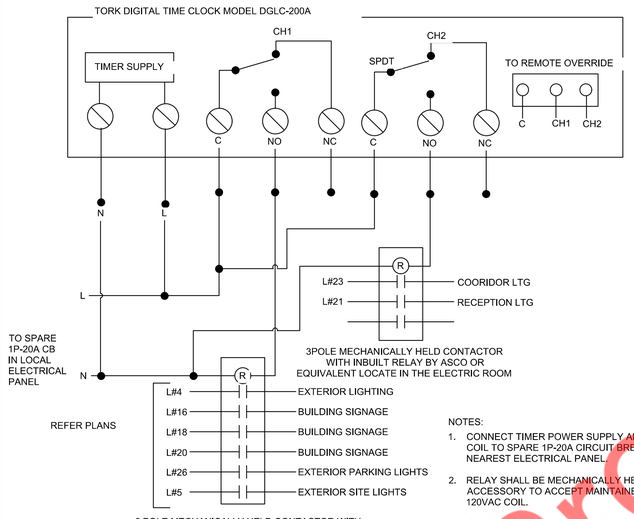
① PROVIDE SENSING CONDUCTOR TAPPED AHEAD OF ANY SWITCHES WHERE SWITCH SERVES EMERGENCY FIXTURES.





(ONW-D-1001-MV-N SENSORS)
ON (UP) = MANUAL ON
OFF (DOWN) = AUTO ON

3 E700 CONNECTION OCCUPANCY/VACANCY-SINGLE LEVEL WIRING DIAGRAM-LINE VOLTAGE WALL SWITCH SENSOR(NEUTRAL)
N.T.S



NOTES:

1. CONNECT TIMER POWER SUPPLY AND RELAY COIL TO SPARE 1P-20A CIRCUIT BREAKER IN NEAREST ELECTRICAL PANEL.
2. RELAY SHALL BE MECHANICALLY HELD WITH ACCESSORY TO ACCEPT MAINTAINED ON INPUT, 120VAC COIL.
3. E.C. TO COORDINATE WITH MECHANICAL CONTRACTOR FOR THE EXACT CONTROL OF EXHAUST FAN WITH TIME CLOCK.
4. ABOVE DIAGRAM IS FOR REFERENCE ONLY. FOR EXACT ARRANGEMENT E.C. SHALL COORDINATE WITH EQUIPMENT SUPPLIER/MANUFACTURER OF TIME CLOCK ON FIELD.

4 E700 AUTOMATIC LIGHTING CONTROL DETAILS
N.T.S

DATE	ISSUED FOR:
04-17-25	ISSUE FOR REVIEW
05-14-25	ISSUE FOR PERMIT

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ELECTRICAL DETAILS

E700

PLUMBING SYMBOLS LIST

- SANITARY PIPING
- VENT PIPING
- COLD WATER PIPING
- HOT WATER PIPING
- EXISTING COLD WATER PIPING
- EXISTING HOT WATER PIPING
- HOT WATER RETURN PIPING
- SAN - UNGD. SANITARY PIPING
- GSAN UNGD. GRESASE WASTE PIPING
- EX.SAN EXISTING UNGD. SANITARY PIPING
- EX.GW EXISTING UNGD. GREASE PIPING
- G GAS PIPING
- G EXISTING GAS PIPING
- P-TRAP
- PIPE UP
- PIPE DROP
- PLUGGED OUTLET/CLEANOUT
- SHUT-OFF VALVE
- CHECK VALVE
- BACK FLOW PREVENTER
- SLEEVE
- GAS PLUG VALVE
- BALANCING VALVE
- PRESSURE RELIEF VALVE
- POINT OF NEW CONNECTION
- POINT OF DISCONNECTION

PLUMBING ABBREVIATIONS

FCO	FLOOR CLEAN OUT
CW	COLD WATER
HW	HOT WATER
HWR	HOT WATER RETURN
FW	FILTER WATER
SAN	SANITARY
V	VENT
LAV	LAVATORY
WC	WATER CLOSET
TYP.	TYPICAL
DN	DOWN
EXIST.	EXISTING
G	GAS
AFF	ABOVE FINISH FLOOR
FD	FLOOR DRAIN
SQ. FT.	SQUARE FEET
BFP	BACK FLOW PREVENTER
WH	HOT WATER HEATER
ET	EXPANSION TANK
RCP	RE-CIRCULATION PUMP
FFD	FUNNEL DRAIN
GSAN	GREASE SANITARY
3CS	3 COMPARTMENT SINK
HS	HAND SINK

PLUMBING DRAWING LIST

PLUMBING SPECIFICATIONS:

1. BASIC PLUMBING REQUIREMENTS, MATERIALS AND METHODS

1.01 SCOPE

A. PROVIDE ALL MATERIAL, TOOLS, SUPERVISION AND LABOR INCLUDING ALL MISCELLANEOUS AND INCIDENTAL ITEMS REQUIRED FOR COMPLETE AND OPERABLE PLUMBING INSTALLATIONS AS SHOWN OR DESCRIBED ON THE DRAWINGS AND IN THESE SPECIFICATIONS.

B. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING AND NEW CONDITIONS AND MATERIALS WITHIN THE CONSTRUCTION AREA. ANY DAMAGE CAUSED BY THE CONTRACTOR SHALL BE REPAIRED TO THE OWNER'S SATISFACTION.

C. OBTAIN ALL PERMITS, PAY ALL PERMIT FEES AND SCHEDULE ALL REQUIRED INSPECTIONS. COPIES OF ALL PERMITS AND INSPECTION CERTIFICATES SHALL BE FORWARDED TO THE OWNER FOR RECORD.

D. THE GENERAL CONDITIONS OF THE CONTRACT AND ALL DIVISION 1 REQUIREMENTS APPLY TO THE WORK OF THIS SECTION.

E. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING BID TO DETERMINE CONDITIONS AND THE EXTENT OF THE WORK. BY COMMENCING WORK, THE CONTRACTOR ACKNOWLEDGES HIS CONFIRMATION OF ALL CONDITIONS AS ACCEPTABLE WITH REFERENCE TO HIS CONTRACT, SCOPE OF WORK AND BID PRICE SUCH THAT NO ADDITIONAL COMPENSATION SHALL BE FORTHCOMING FOR UNFORESEEN EXISTING CONDITIONS.

F. IN ALL AREAS SUBJECT TO FREEZING CONDITIONS, THE CONTRACTOR SHALL PROVIDE FREEZE PROTECTION FOR ALL DOMESTIC WATER PIPING INSTALLED UNDER HIS CONTRACT.

G. ALL ELECTRICAL REQUIREMENTS SHALL BE COORDINATED WITH THE CONTRACTOR FOR ELECTRICAL WORK. THIS CONTRACTOR IS RESPONSIBLE FOR ALL LOW VOLTAGE WIRING FOR EQUIPMENT INSTALLED UNDER HIS CONTRACT. THE CONTRACTOR FOR ELECTRICAL WORK IS RESPONSIBLE FOR LINE VOLTAGE POWER WIRING ONLY.

H. COLOR AND FINISH SELECTIONS FOR ALL MATERIALS, INCLUDING PAINTING OF PIPING, SHALL BE AS DIRECTED AND/OR APPROVED BY THE ARCHITECT.

I. MINOR DETAILS NOT SHOWN OR SPECIFIED, BUT NECESSARY FOR THE PROPER AND ACCEPTABLE CONSTRUCTION, INSTALLATION OR OPERATION OF ANY PART OF THE WORK AS DETERMINED BY THE ENGINEER SHALL BE INCLUDED AS IF SPECIFIED OR INDICATED ON THE DRAWINGS.

J. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIREMENTS FOR THE INSTALLATION, CONNECTION, EXTENSION OR MODIFICATION TO ALL UTILITY SERVICES WITH RESPECTIVE PROVIDERS INCLUDING PAYMENT OF ALL ASSOCIATED FEES.

K. THE CONTRACTOR IS RESPONSIBLE FOR ALL PAINTING ASSOCIATED WITH CUTTING AND PATCHING. ALL PAINTING IN AREAS WITH COMPLETE FINISH RENOVATIONS SHALL BE PROVIDED BY THE GENERAL CONTRACTOR.

1.02 SUBMITTALS

A. SUBMITTAL REQUIREMENTS SHALL BE COORDINATED WITH THE ARCHITECT AND AUTHORITIES HAVING JURISDICTION. UNLESS OTHERWISE DIRECTED, CONTRACTOR SHALL PROVIDE SUBMITTALS AS LISTED BELOW.

1. PIPE AND FITTINGS
2. VALVES
3. HANGERS AND SUPPORTS
4. PLUMBING PIPING LAYOUT
5. TESTS
6. PLUMBING FIXTURES
7. WATER HEATERS & ACCESSORIES
8. FLOOR DRAINS
9. MIXING VALVES
10. BACKFLOW PREVENTER
11. ALL SCHEDULED PLUMBING EQUIPMENT
12. GREASE INTERCEPTOR

B. SUBMITTALS FROM SUPPLIERS OR MANUFACTURERS WHICH DO NOT BEAR THE STAMP OF THE SUBMITTING CONTRACTOR INDICATING THAT THE CONTRACTOR HAS REVIEWED THE SUBMITTAL FOR CONFORMANCE WITH THE PROJECT REQUIREMENTS WILL BE RETURNED REJECTED.

C. THE ENGINEER'S REVIEW OF SUBMITTALS IS A COURTESY WHICH DOES NOT RELIEVE THE CONTRACTOR FROM CONFORMING WITH THE CONSTRUCTION DOCUMENTS, REGARDLESS OF THE ACTION INDICATED BY THE SHOP DRAWINGS STAMP.

D. REVIEW OF SHOP DRAWINGS BY THE ENGINEER SHALL BE LIMITED TO THE INITIAL REVIEW, AND A SECOND REVIEW OF ANY REQUIRED RESUBMITTED DATA. IF THE ENGINEER IS REQUIRED TO REVIEW SHOP DRAWINGS FOR A THIRD (OR MORE) SUBMISSION OF THE SAME ITEM, THE CONTRACTOR SHALL BE LIABLE FOR COMPENSATING THE ENGINEER FOR THESE SUBSEQUENT REVIEWS AS PER THE ENGINEER'S CURRENT HOURLY RATE SCHEDULE.

E. SUBMIT PROOF OF APPROVAL AND/OR CONFIRMATION OF SATISFACTORY TEST RESULTS TO THE OWNER AND THE ARCHITECT.

F. SUBMIT TO THE OWNER'S MAINTENANCE PERSONNEL OPERATION AND MAINTENANCE DATA FOR ALL SYSTEM COMPONENTS, SERVICING REQUIREMENTS, INSPECTION DATA, REPLACEMENT PART NUMBERS AND AVAILABILITY AND CONTACT INFORMATION FOR SERVICE/SUPPLY COMPANY.

G. FOR ALL BELOW GRADE PIPING WHERE ACTUAL INSTALLATION DEVIATES FROM CONSTRUCTION DRAWINGS, THE CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS INDICATING BELOW GRADE PIPE LOCATIONS DIMENSIONED TO NEAREST COLUMN LINES.

H. RECORD AS-BUILT DRAWINGS SHALL BE SUPPLIED TO THE OWNER/TENANT AFTER COMPLETION OF THE WORK SHOWING ANY ALTERATIONS, ADDITIONS AND/OR DELETIONS TO THE SYSTEM(S) INSTALLED.

1.03 SUBSTITUTIONS

A. ALL EQUIPMENT SHALL BE PRODUCTS OF THE SPECIFIED MANUFACTURER OR MANUFACTURERS. ALL BIDS SHALL BE BASED ON THE SPECIFIED MANUFACTURER OR MANUFACTURER'S EQUIPMENT. FOR SUBSTITUTIONS OF OTHER MANUFACTURER'S EQUIPMENT TO BE CONSIDERED, THE SUBSTITUTION MUST BE INDICATED PRIOR TO BIDDING WITH THE REASON FOR THE PROPOSED SUBSTITUTION IDENTIFIED, AND THE PROPOSED CREDIT TO THE OWNER INDICATED. THE ENGINEER SHALL DETERMINE THE ACCEPTABILITY OF ANY PROPOSED SUBSTITUTIONS.

B. THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR COORDINATING THE WORK OF OTHER TRADES WHICH MAY BE AFFECTED BY SUBSTITUTIONS, INCLUDING ALL RELATED COSTS.

1.04 DEFINITIONS

A. FURNISH: TO PURCHASE, PROCURE, ACQUIRE AND DELIVER, COMPLETE WITH RELATED ACCESSORIES.

B. INSTALL: TO ERECT, MOUNT AND CONNECT, COMPLETE WITH RELATED ACCESSORIES.

C. PROVIDE: TO FURNISH AND INSTALL.

D. PLUMBING CONTRACTOR, THE CONTRACTOR, THIS CONTRACTOR: THE CONTRACTOR FOR PLUMBING WORK WHICH IS SPECIFIED HEREIN AND SHOWN ON THESE DRAWINGS.

E. REFER TO THE NATIONAL STANDARD PLUMBING CODE FOR ADDITIONAL DEFINITIONS.

1.05 DRAWINGS

A. THE DRAWINGS ARE DIAGRAMMATIC AND ARE INTENDED TO ILLUSTRATE THE GENERAL ARRANGEMENT AND ROUTING OF PIPING AND GENERAL LOCATIONS OF EQUIPMENT. PRECISE LOCATIONS OF EQUIPMENT, RISERS AND STACKS, AND ROUTING AND ELEVATION OF ALL PIPING SYSTEMS SHALL BE COORDINATED IN THE FIELD WITH THE ARCHITECT, ARCHITECTURAL DRAWINGS, THE WORK OF OTHER TRADES, EXISTING AND NEW BUILDING CONDITIONS AND/OR THE PREFERENCES OF THE OWNER/TENANT AS CONSTRUCTION PROCEEDS. ALL PIPING SHALL BE INSTALLED CONCEALED IN FINISHED SPACES, UNLESS NOTED OTHERWISE.

B. PROVIDE ALL NECESSARY INCIDENTAL MATERIALS AND ACCESSORIES REQUIRED TO MAKE THE WORK COMPLETE IN ALL RESPECTS, EVEN IF NOT PARTICULARLY SHOWN OR SPECIFIED.

C. REFER TO PLUMBING EQUIPMENT/FIXTURE SCHEDULE ON THE DRAWINGS FOR ALL FIXTURE AND EQUIPMENT SPECIFICATIONS.

D. REFER TO FIXTURE CONNECTION SIZE SCHEDULE FOR ALL FIXTURE ROUGHING SIZE REQUIREMENTS.

E. VERIFY ALL INDICATED CONDITIONS BEFORE STARTING WORK AND REPORT ANY DISCREPANCIES. THE DRAWINGS REFLECT CONDITIONS WHICH CAN BE REASONABLY INTERPRETED FROM THE EXISTING VISIBLE CONDITIONS OR FROM DRAWINGS AND INFORMATION FURNISHED BY THE OWNER.

F. LOCATE ALL FIXTURES AND EQUIPMENT AS PER THE FINAL ARCHITECTURAL DRAWINGS.

1.06 PRODUCTS

A. SANITARY AND VENT PIPING:

1. ABOVE GRADE PIPING SHALL BE HUBLESS CAST IRON PIPE WITH STAINLESS STEEL COUPLINGS AND ELASTOMERIC GASKETS WITH A MINIMUM 4 BANDS PER COUPLING.
2. SLOPE OF DRAINAGE SYSTEM SHALL BE 1/8" PER FOOT OF RUN FOR PIPE OVER 3" (I.D.) AND 1/4" PER FOOT OF RUN FOR PIPE 3" AND SMALLER (I.D.). VENT PIPING SHALL BE PITCHED TO DRAIN.
3. ALL CAST IRON SOIL PIPE AND FITTINGS SHALL BE MARKED WITH THE COLLECTIVE TRADEMARK OF THE CAST IRON SOIL PIPE INSTITUTE (CISPI) AND BE LISTED BY NSF INTERNATIONAL.
4. PVC PIPING IS PROHIBITED FOR USE WITHIN PLENUMS.

B. DOMESTIC WATER PIPING:

1. ABOVE GRADE WATER PIPING SHALL BE TYPE 'L' HARD-DRAWN COPPER TUBE.
2. FITTINGS IN DOMESTIC WATER PIPING SHALL BE WROUGHT COPPER OR CAST BRASS.
3. JOINTS SHALL BE MADE WITH LEAD-FREE SOLDER.
4. THE ENTIRE DOMESTIC WATER DISTRIBUTION SYSTEM SHALL BE INSULATED INCLUDING ALL VALVES, FITTINGS, ETC.
5. COMPLY WITH NSF 61 FOR MATERIALS FOR WATER-SERVICE PIPING AND SPECIALTIES FOR DOMESTIC WATER.
6. ALL DOMESTIC WATER PIPING ABOVE GRADE SHALL BE INSULATED WITH FIRE-RETARDANT, FACTORY-APPLIED JACKET. PROVIDE COLD WATER PIPING WITH FACTORY-APPLIED VAPOR BARRIER. INSULATION REQUIREMENT SHOULD COMPLY WITH 2021 INTERNATIONAL ENERGY CONSERVATION CODE, SECTION C403.12.3 REFER BELOW TABLE.

MINIMUM PIPE INSULATION THICKNESS							
FLUID OPERATING TEMPERATURE RANGE AND USAGE (°F)	INSULATION CONDUCTIVITY		NOMINAL PIPE OR TUBE SIZE (INCHES)				
	CONDUCTIVITY BTU· IN./ (H· FT2· °F)	MEAN RATING TEMPERATURE, °F	<1	1 to < 1½	1½ to < 4	4 to < 8	>8
105-140	0.21-0.28	100	1.0	1.0	1.5	1.5	1.5
40-60	0.21-0.27	75	0.5	0.5	1.0	1.0	1.0

7. WATER DISTRIBUTION SYSTEM AS PER 2021 INTERNATIONAL ENERGY CONSERVATION CODE, C404.7, HAVING ONE OR MORE RECIRCULATION PUMPS THAT PUMP WATER FROM A HEATED-WATER SUPPLY PIPE BACK TO THE HEATED-WATER SOURCE THROUGH A COLD-WATER SUPPLY PIPE SHALL BE A DEMAND RECIRCULATION WATER SYSTEM. PUMPS SHALL HAVE CONTROLS THAT COMPLY WITH BOTH OF THE FOLLOWING:
   a. THE CONTROL SHALL START THE PUMP UPON RECEIVING A SIGNAL FROM THE ACTION OF A USER OF A FIXTURE OR APPLIANCE, SENSING THE PRESENCE OF A USER OF A FIXTURE OR SENSING THE FLOW OF HOT OR TEMPERED WATER TO A FIXTURE FITTING OR APPLIANCE.
   b. THE CONTROL SHALL LIMIT THE TEMPERATURE OF THE WATER ENTERING THE COLD-WATER PIPING TO 104°F (40°C).
8. AS PER 2021 INTERNATIONAL ENERGY CONSERVATION CODE C404.6.1 HEATED-WATER CIRCULATION SYSTEMS SHALL BE PROVIDED WITH A CIRCULATION PUMP. THE SYSTEM RETURN PIPE SHALL BE A DEDICATED RETURN PIPE OR A COLD WATER SUPPLY PIPE. CONTROLS FOR CIRCULATING HOT WATER SYSTEM PUMPS SHALL START THE PUMP BASED ON THE IDENTIFICATION OF A DEMAND FOR HOT WATER WITHIN THE OCCUPANCY. THE CONTROLS SHALL AUTOMATICALLY TURN OFF THE PUMP WHEN THE WATER IN THE CIRCULATION LOOP IS AT THE DESIRED TEMPERATURE AND WHEN THERE IS NO DEMAND FOR HOT WATER.
9. HW SYSTEM PIPING IS DESIGNED AS PER MAXIMUM ALLOWED PIPE LENGTH METHOD AS PER 2021 INTERNATIONAL ENERGY CONSERVATION CODE , C404.5.1. THE HOT WATER PIPE LENGTH FROM THE NEAREST SOURCE OF HEATED WATER TO THE TERMINATION OF THE FIXTURE SUPPLY PIPE SHALL BE AS PER FOLLOWING TABLE.

NOMINAL PIPE SIZE (INCHES)	MAXIMUM PIPING LENGTH (FEET)	
	PUBLIC LAV	OTHER FIXTURES
½"	2'	43'
¾"	0.5'	21'
1"	0.5'	13'
1¼"	0.5'	8'
1½"	0.5'	6'
2" OR LARGER	0.5'	4'

10. SEAL ALL JOINTS BETWEEN SEGMENTS OF INSULATION.

11. PROVIDE SHIELDS BETWEEN HANGERS AND INSULATION.

C. MIXING VALVES

1. VALVE BODY SHALL BE MADE OF CAST BRASS. THE INTERNAL COMPONENTS SHALL BE MADE OF BRASS OR STAINLESS STEEL.
2. TYPES A, C & D VALVES: VALVE SHUTS OFF IN FULL COLD POSITION AND MUST PASS THROUGH COLD RANGE BEFORE DELIVERING WARM, AND/OR HOT WATER. TEMPERATURE LIMIT SET AT 105°F MAXIMUM DELIVERY TEMPERATURE. IF ONE SUPPLY SHOULD FAIL, THE OTHER WILL AUTOMATICALLY AND INSTANTLY SHUT DOWN. DELIVERY CAPACITY IS 5GPM @ 45 PSIG DIFFERENTIAL.
3. TYPES OF VALVES: TYPE A- THERMOSTATICALLY OPERATED BY MEANS OF BI-METALLIC STRIP, OR EXPANSION BELLOWS; TYPE B- SINGLE HANDLE MECHANICAL MIXER, OR INDIVIDUAL HOT AND COLD CONTROL VALVES; TYPE C- PRESSURE BALANCING SHOWER VALVE/PISTON OPERATED MIXING VALVE; TYPE D- BALANCED PRESSURE OPERATION, WITH INTEGRAL DIAL THERMOMETER INDICATING DELIVERED WATER TEMPERATURE.
4. EACH ELEMENT SHALL BE CONTROLLED BY AN INDIVIDUALLY MOUNTED THERMOSTAT AND HIGH TEMPERATURE CUT-OFF SWITCH. ALL INTERNAL CIRCUITS SHALL BE FUSED. THE OUTER JACKET SHALL BE OF BAKED ENAMEL FINISH AND SHALL BE PROVIDED WITH FULL SIZE CONTROL COMPARTMENT FOR PERFORMANCE OF SERVICE AND MAINTENANCE THROUGH HINGED FRONT PANEL AND SHALL ENCLOSE THE TANK WITH FOAM INSULATION. ELECTRICAL JUNCTION BOX WITH HEAVY DUTY TERMINAL BLOCK SHALL BE PROVIDED. THE DRAIN VALVE SHALL BE LOCATED IN THE FRONT FOR EASE OF SERVICING.

D. GAS PIPING:

1. ALL GAS PIPING WORK SHALL COMPLY WITH HOUSTON LP GAS CODE 2020, LOCAL UTILITY GAS REQUIREMENTS AND NFPA 58, 2020
2. FURNISH AND INSTALL ALL NECESSARY GAS PIPING TO ALL EQUIPMENT REQUIRING GAS SUPPLY INCLUDING RECONNECTION TO EXISTING ACTIVE GAS BURNING EQUIPMENT
3. PROVIDE A LUBRICATED GAS VALVE AT ALL CONNECTIONS TO EQUIPMENT.
4. ALL GAS PIPING AND INSTALLATION SHALL BE IN ACCORDANCE WITH RULES AND REGULATIONS OF LOCAL UTILITY GAS COMPANY AND OTHER AUTHORITIES HAVING JURISDICTION.
5. PROVIDE ADEQUATE SUPPORT FOR ALL PIPING.
6. GAS PIPING SHALL BE BLACK STEEL SCHEDULE 40 THREADED PIPE CONFORMING TO ANSI B36-20.
7. FITTINGS SHALL BE MALLEABLE IRON.
8. VALVES SHALL BE NORDSTROM IRON PLUG VALVES FIG. 142.
9. PIPING UNDERGROUND BENEATH BUILDING SHALL COMPLY WITH HOUSTON LP GAS CODE 2020.

E. HANGERS AND SUPPORTS:

1. HANGERS SHALL BE STANDARD STEEL, MALLEABLE OR WROUGHT IRON, AS MANUFACTURED BY GRINNELL OR APPROVED EQUAL, SUITABLE FOR THE TYPE OF CONSTRUCTION. PIPING SHALL NOT BE HUNG FROM OTHER PIPE.
2. SECTIONS OF INDIVIDUAL PIPE RUNS SHALL BE SUPPORTED BY CLEVIS HANGERS.
3. ALL EQUIPMENT SHALL BE PROVIDED WITH APPROVED SUPPORTS.
4. PROVIDE SEISMIC RESTRAINTS IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES AND STANDARDS AND THE REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.
5. UNLESS OTHERWISE INDICATED OR REQUIRED BY AUTHORITIES HAVING JURISDICTION, THE FOLLOWING SHALL BE PROVIDED WITH SEISMIC RESTRAINTS AS REQUIRED BY THE BOCA NATIONAL BUILDING CODE, SECTION 1610.6.4: ALL EQUIPMENT AND MACHINERY, ALL NEW PIPING 2-1/2" AND LARGER (1-1/4" AND LARGER INBOILERMECHANICAL ROOMS) WITH HANGERS GREATER THAN 12" IN LENGTH FROM THE TOP OF PIPE TO THE STRUCTURE.
6. SUPPORTS SHALL BE PROVIDED IN STRICT ACCORDANCE WITH THE RECOMMENDATIONS OF THE PIPING MANUFACTURER.

F. VALVES:

1. PROVIDE GATE VALVES, BUTTERFLY OR BALL VALVES FOR SHUT-OFF DUTY ON MAIN AND BRANCH SUPPLY LINES. FOR ALL PIPE RUNS 2" AND SMALLER, PROVIDE BALL FOR ALL PIPE RUNS LARGER THAN 2" AND SMALLER THAN 4", PROVIDE GATE VALVES. PIPING 4" AND LARGER, PROVIDE BUTTERFLY VALVES FOR SHUT-OFF DUTY.
2. ALL FIXTURES WITH THE EXCEPTION O FLUSHOMETER-EQUIPPED WATER CLOSETS AND URINALS SHALL HAVE STOP VALVES TO CONTROL SUPPLY TO THE FIXTURE. WHERE SUPPLIES ARE EXPOSED PROVIDE CHROME-PLATED STOPS WITH CHROME-PLATED ESCUTCHEONS ON PIPING PENETRATIONS.
3. ALL PLUMBING FIXTURES AND EQUIPMENT TO HAVE SHUT-OFF VALVES ON SUPPLY LINES.
4. ALL BRANCH LINES TO HAVE SHUT-OFF VALVES.
5. ALL VALVES SHALL BE ACCESSIBLE. PROVIDE ACCESS DOORS WHERE REQUIRED FOR VALVE ACCESS.
6. PROVIDE GLOBE VALVES FOR THROTTLING/BALANCING OF THE HOT WATER CIRCULATING SYSTEM.

DATE	ISSUED FOR:
04-17-25	ISSUE FOR REVIEW
05-14-25	ISSUE FOR PERMIT

EarthBurger

PLUMBING SYMBOLS, ABBREVIATIONS, NOTES AND SPECIFICATIONS

P001

G. SLEEVES AND ESCUTCHEONS:

1. SLEEVES THROUGH STRUCTURAL CONCRETE MEMBERS AND SLEEVES FOR WALLS BELOW GRADE AND FLOORS ON GRADE SHALL BE STANDARD WEIGHT GALVANIZED SCHEDULE 40 STEEL PIPE. SLEEVES THROUGH OTHER THAN STRUCTURAL COMPONENTS OF THE BUILDING SHALL BE 20 GAGE GALVANIZED SHEET METAL WITH LOCK SEAM JOINTS. USG THERMAFIBER SAFING INSULATION SHALL BE INSTALLED BETWEEN PIPE AND SLEEVE.

2. PIPE ESCUTCHEON PLATES SHALL BE INSTALLED WHERE EXPOSED PIPING PASSES THROUGH WALLS, CEILINGS, AND FLOORS AND SHALL BE MINIMUM 20 GAGE STEEL. PROVIDE CHROME PLATED ESCUTCHEON PLATES IN FINISHED AREAS.

H. DRAINAGE ACCESSORIES

1. GENERAL:

a. INSTALL THE WORK OF THIS SECTION IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS, UNLESS OTHERWISE SPECIFIED.

b. SECURE EXTERNAL COMPONENTS IN PLACE WITH VANDAL RESISTANT FASTENERS OR DEVICES WHICH CANNOT BE REMOVED WITHOUT SPECIAL TOOLS.

2. DEVICES:

a. CLEANOUT & CLEANOUT PLUG

- THREADED PIPE FITTING OR CAST IRON FERRULE WITH GAS TIGHT CLEANOUT PLUG
- PLUG SHOULD BE CAST BRASS OR BRONZE, WITH THREADED END, AND RAISED OR COUNTERSUNK HEAD.
- LUBRICATE THREADS OF CLEANOUT PLUG WITH ANTI-SEIZE LUBRICANT BEFORE FINAL INSTALLATION.

b. CLEANOUT WALL PLATE

- IT SHOULD BE ROUND, STAINLESS STEEL OR POLISHED CHROME PLATED BRONZE COVER PLATE WITH STAINLESS STEEL VANDAL RESISTANT FASTENER TO SECURE TO CLEANOUT PLUG.

c. CLEANOUT DECK PLATE

- IT SHOULD BE STANDARD DUTY FLOOR CLEANOUT FITTING WITH COATED CAST IRON BODY; ROUND, POLISHED NICKEL BRONZE SCORIATED TOP SECURED TO CLEANOUT PLUG WITH STAINLESS STEEL VANDAL RESISTANT FASTENER; THREADED HEIGHT ADJUSTMENT, CAST IRON HEAD, GAS TIGHT CLEANOUT PLUG, AND CONNECTION TO MATCH PIPING OPTION SELECTED.

I. INSTALL PIPING TO CONSERVE BUILDING SPACE. DO NOT INTERFERE WITH USE OF BUILDING SPACE AND THE WORK OF OTHER TRADES. ALL PIPING RUN IN CEILING SHALL BE INSTALLED TIGHT TO THE STRUCTURE ABOVE.

J. VERIFY EXACT LOCATIONS OF ALL EXISTING UTILITIES.

INSTALL PIPING TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE, JOINTS OR CONNECTED EQUIPMENT. PROVIDE PIPE ANCHORS, GUIDES AND EXPANSION JOINTS OR LOOPS IN ALL HOT WATER AND HOT WATER CIRCULATING MAIN SUPPLY PIPING AND SEGMENTS OF SUCH PIPE THAT EXCEED 30'-0" IN LENGTH.

K. IN ALL AREAS WITH FINISHED SURFACES, SYSTEM PIPING AND COMPONENTS SHALL BE CONCEALED ABOVE OR WITHIN FINISHED SURFACES.

L. INSTALL VALVES WITH STEMS UPRIGHT OR HORIZONTAL. REMOVE PROTECTIVE COATINGS PRIOR TO INSTALLATION.

M. REDUCTIONS IN PIPE SIZES SHALL BE MADE WITH ONE-PIECE REDUCING FITTINGS. BUSHINGS ARE NOT ACCEPTABLE, USE FLANGED FITTINGS AT THE BASE OF RISERS.

N. VENT PENETRATIONS THROUGH THE ROOF SHALL BE FLASHED.

O. IF WATER PRESSURE EXCEEDS 80 PSI, A WATER PRESSURE REDUCING VALVE SHALL BE INSTALLED IN WATER PIPING AT CONNECTION TO MAIN.

P. PROVIDE DIELECTRIC FITTINGS BETWEEN DISSIMILAR METALS.

Q. PIPE BACKFLOW PREVENTER DRAINS TO FLOOR DRAIN OR OTHER APPROVED INDIRECT WASTE SOURCE.

R. PROVIDE ACCESS DOORS/PANELS FOR SERVICE AND ACCESS TO ALL VALVES AND OTHER SYSTEM COMPONENTS ENCLOSED IN WALLS AND CEILINGS. ACCESS DOORS SHALL BE FURNISHED BY THIS CONTRACTOR, INSTALLED BY THE GENERAL CONTRACTOR.

S. ALL FIXTURES REQUIRING VACUUM BREAKERS SHALL BE EQUIPPED WITH INTEGRAL VACUUM BREAKERS.

T. ANY PENETRATIONS THROUGH FIRE RATED PARTITIONS, FLOORS, OR CEILINGS SHALL BE STEEL SLEEVED AND SEALED WITH 3M BRAND UL RATED FIRE BARRIER CAULK OR APPROVED EQUAL.

U. WHEN THE WATER PIPING SYSTEM IS COMPLETE, THOROUGHLY FLUSH ALL DIRT, SEDIMENT, SOLDER, ETC., OUT OF THE SYSTEM, REMOVING ALL STRAINERS, VALVE STEM SEATS, ETC., REQUIRED TO ACCOMPLISH THE FLUSHING.

V. AT ALL INDIRECT WASTE DRAINS, MAINTAIN AIR GAP AS REQUIRED BY CODE.

W. CONNECT GAS PIPING TO ALL GAS-FIRED EQUIPMENT WITH GAS COCK, DIRT LEG AND UNION.

X. FOR ALL GAS-FIRED EQUIPMENT, VERIFY INPUT RATING AND PRESSURE REQUIREMENTS, PROVIDE GAS PRESSURE REGULATORS VENTED TO THE BUILDING EXTERIOR ON GAS SUPPLY TO ALL EQUIPMENT REQUIRING LOWER THAN LINE GAS PRESSURE.

Y. ALL PIPING INSTALLED ON THE ROOF SHALL BE SUPPORTED BY "PILLOW BLOCK" PIPE STANDS AS MANUFACTURED BY MIRO INDUSTRIES, OR APPROVED EQUAL, WOOD PIPE SUPPORTS SHALL NOT BE ACCEPTABLE. PROVIDE TRAFFIC/WALK PADS BELOW ALL PIPE STANDS.

Z. INSTALL SLEEVES FOR ALL PIPES WHICH PASS THROUGH WALLS, FLOORS, AND CEILINGS. WHERE PIPES ARE TO BE INSULATED, THE SLEEVE SHALL BE LARGE ENOUGH TO ACCOMMODATE INSULATION. SLEEVES SHALL BE FLUSH WITH FINISHED SURFACES AT BOTH ENDS. ON FINISHED SURFACES IN EXPOSED AREAS PROVIDE ESCUTCHEONS COMPATIBLE WITH FINISH.

AA. PROVIDE WATER HAMMER ARRESTERS ON SUPPLY PIPING TO ALL FLUSHOMETER VALVES AND QUICK-CLOSING VALVES.

AB. UNLESS OTHERWISE INDICATED, TRAPS SEALS AT ALL FLOOR DRAINS SHALL BE MAINTAINED BY AN APPROVED TRAP PRIMING DEVICE.

AC. MAINTAIN ALL REQUIRED AND RECOMMENDED CLEARANCES FOR ALL PLUMBING SYSTEM COMPONENTS AND EQUIPMENT.

AD. MAINTAIN MINIMUM 10'-0" CLEARANCE BETWEEN ALL PLUMBING V.T.R.S AND ALL OUTDOOR AIR INTAKES. OFFSET VENT STACKS AND STACK VENTS IF AND AS REQUIRED BELOW ROOF TO MAINTAIN SUCH CLEARANCE WHETHER OR NOT SUCH OFFSET IS INDICATED ON THE DRAWINGS. PROVIDE ALL REQUIRED SEISMIC SUPPORTS.

2. INSTALLATION

2.01 GENERAL

A. ALL WORK WHICH REQUIRES DISRUPTION OF THE ROOFING SHALL BE DONE BY A CONTRACTOR CERTIFIED BY THE ROOFING MANUFACTURER AS REQUIRED TO MAINTAIN ANY EXISTING ROOF WARRANTIES.

B. EXTERIOR INSTALLATIONS TO BE WEATHER PROOF IN ALL RESPECTS.

C. EXTERIOR MATERIALS AND EQUIPMENT SHALL BE PAINTED TO PREVENT CORROSION, COLOR PER ARCHITECT.

D. COORDINATE THE PLUMBING WORK WITH ALL OTHER AFFECTED WORK AND THE CONSTRUCTION SCHEDULE.

E. REAM PIPE AND TUBE ENDS. REMOVE BURRS. BEVEL PLAIN AND FERROUS END PIPE.

F. REMOVE SCALE AND FOREIGN MATERIAL, FROM INSIDE AND OUTSIDE, BEFORE ASSEMBLY.

G. PREPARE PIPING CONNECTIONS TO EQUIPMENT WITH FLANGES AND UNIONS.

H. COORDINATION WITH THE WORK OF OTHER TRADES IS REQUIRED. PROVIDE OFFSETS IN PIPING SYSTEMS OR MINOR DEVIATIONS TO THE INDICATED PIPE ROUTING IN ORDER TO COORDINATE THE PLUMBING WORK WITH THE WORK OF ALL OTHER TRADES AND THE GENERAL BUILDING CONDITIONS.

I. NO DOMESTIC WATER PIPING SHALL BE INSTALLED IN UNHEATED SPACES.

J. PRIOR TO DISCONNECTING AND CONNECTING NEW WORK TO EXISTING SYSTEMS, THE PLUMBING CONTRACTOR SHALL NOTIFY THE PROPERTY MANAGER AND OFFER A PROPOSED SCHEDULE OF WORK. ESB WILL AUTHORIZE CONNECTIONS AND COORDINATE NECESSARY SHUT DOWNS AND DRAIN DOWNS AS REQUIRED. SHUT DOWNS AND DRAIN DOWNS MAY BE PERFORMED BY THE PLUMBING CONTRACTOR ONLY AFTER RECEIVING ESB AUTHORIZATION, AND SHOULD BE PERFORMED UNDER SUPERVISION OF ESB PERSONNEL. THREE (3) DAYS ADVANCE NOTICE TO THE PROPERTY MANAGER IS REQUIRED.

K. THE PLUMBING CONTRACTOR IS ADVISED THAT DUE TO THE NATURE OF THE OPERATIONS AND TENANT REQUIREMENTS, CONNECTIONS TO EXISTING SYSTEMS MAY HAVE TO BE MADE AFTER REGULAR WORKING HOURS. THE PROPERTY MANAGER WILL ADVISE THE PLUMBING CONTRACTOR OF THE TIME CONSTRAINTS UPON RECEIPT AND APPROVAL OF THE PLUMBING CONTRACTOR'S REQUEST FOR SHUT DOWN AND CONNECTION TO EXISTING SYSTEMS.

L. WHEN CONNECTING TO EXISTING STACKS AND RISERS, PROVISION IS TO BE MADE FOR FUTURE CONNECTIONS BY PROVIDING CAPPED AND VALVED OUTLETS ON DOMESTIC WATER RISERS AND PLUGGED OUTLETS ON THE SANITARY AND VENT STACKS.

2.02 ABOVE GRADE

A. INSTALL PLUMBING PIPING IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES TO ENSURE THAT PIPING COMPLIES WITH REQUIREMENTS AND SERVES INTENDED PURPOSES.

B. ROUTE PIPING IN AN ORDERLY MANNER, PLUMB AND PARALLEL TO BUILDING STRUCTURE. MAINTAIN GRADIENT. SLOPE PIPING AND ARRANGE SYSTEMS TO DRAIN. IN DOMESTIC WATER SYSTEMS, PROVIDE DRAIN VALVES AT MAIN SHUT-OFF VALVES AND ALL LOW POINTS IN PIPING.

C. USE EXISTING CONNECTIONS AT MAINS WHERE AVAILABLE FOR NEW BRANCH PIPING. LOCATE ALL RISERS AND PIPING BEFORE CONSTRUCTION COMMENCES AND TAKE CARE NOT TO DAMAGE SAME. ANY DAMAGE OCCURRING TO THE EXISTING PIPING WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

2.03 INSULATION

COVER ALL HOT WATER AND HOT WATER RECIRCULATION PIPE WITH 1" THICK FOR PIPE SIZE UP TO 1¼" AND 1½" THICK FOR PIPE SIZE 1½" AND GREATER WITH MANVILLE MICRO-LOK AP-T PLUS FIBERGLASS INSULATION. COVER ALL COLD WATER PIPE WITH ½" THICK FOR PIPE SIZE UP TO 1½" AND 1" THICK FOR PIPE SIZE 1¼" AND GREATER WITH 1" MANVILLE MICRO-LOK AP-T PLUS FIBERGLASS INSULATION. FITTINGS AND VALVES SHALL BE INSULATED WITH MANVILLE ZESTON 2000 PVC INSULAT-ED FITTING COVERS. INSTALL ALL INSULATION AS PER MANUFACTURERS RECOMMENDATIONS. ALL INSULATION MATERIAL SHALL COMPLY WITH THE INTERNATIONAL BUILDING CODE REQUIREMENT OF A FLAME SPREAD RATING NOT TO EXCEED 25 AND A SMOKE DEVELOPED RATING NOT TO EXCEED 50. ALL PIPE INSULATION SHALL COMPLY WITH 2018 INTERNATIONAL ENERGY CONSERVATION CODE.

3. TESTING

A. AT THE COMPLETION OF THE PLUMBING WORK, COMPLETELY TEST THE ENTIRE INSTALLATION OF ALL SYSTEMS FOR PROPER OPERATION AND COMPLIANCE WITH APPLICABLE CODES AND LOCAL REQUIREMENTS. CORRECT ALL DEFICIENCIES FOUND.

B. TESTING OF THE INSTALLED SYSTEMS SHALL BE MADE BY THE CONTRACTOR IN THE PRESENCE OF A REPRESENTATIVE OF THE OWNER.

C. THE CONTRACTOR SHALL NOT COVER UP OR PERMANENTLY CONCEAL PIPING, DEVICES OR ANY PORTION OF NEWLY CONSTRUCTED PLUMBING SYSTEM(S) UNTIL SUCH SYSTEM, OR PORTION OF THE SYSTEM, HAS BEEN TESTED IN THE PRESENCE OF A REPRESENTATIVE OF THE OWNER AND INSPECTED BY THE LOCAL INSPECTOR AND APPROVED IN WRITING, EXCEPT PIPING PASSING THROUGH FLOORS, WALLS, PARTITIONS, OR BEAMS, FOR DISTANCES EQUAL TO THE THICKNESS OF SUCH FLOOR, WALL, PARTITION OR BEAM.

D. THIS CONTRACTOR SHALL NOTIFY THE VARIOUS DEPARTMENTS, BUREAUS AND INDIVIDUALS AT LEAST TWO WEEKS IN ADVANCE OF THE TIME THAT THE TESTS ARE TO BE CONDUCTED.

E. ALL DEFECTIVE PARTS SHALL BE REPLACED OR CORRECTED BY THIS CONTRACTOR AND AN EXTRA TEST OR TESTS SHALL BE MADE UNTIL THE OPERATION IS SATISFACTORY. ALL ARRANGEMENTS AND EXPENSES NECESSARY TO CONDUCT ALL TESTS REQUIRED BY THESE SPECIFICATIONS AND THE VARIOUS AGENCIES HAVING JURISDICTION OVER THE WORK INSTALLED UNDER THIS CONTRACT SHALL BE MADE BY THIS CONTRACTOR. NO EXTRA COMPENSATION WILL BE ALLOWED FOR THESE TESTS, THE COST THEREOF BEING INCLUDED IN THE LUMP SUM BID FOR THIS CONTRACT.

F. WHERE ANY EVIDENCE OF STOPPAGE IS FOUND IN PIPING OR EQUIPMENT, THIS CONTRACTOR SHALL DISCONNECT, CLEAN, REPAIR AND RECONNECT ALL OBSTRUCTED PIPING OR EQUIPMENT AND SHALL ALSO PAY FOR ALL NECESSARY CUTTING AND REPAIRS TO ADJOINING WORK.

G. WHERE ANY EVIDENCE OF STOPPAGE IS FOUND IN PIPING OR EQUIPMENT, THIS CONTRACTOR SHALL DISCONNECT, CLEAN, REPAIR AND RECONNECT ALL OBSTRUCTED PIPING OR EQUIPMENT AND SHALL ALSO PAY FOR ALL NECESSARY CUTTING AND REPAIRS TO ADJOINING WORK.

H. ALL PIPING AND EQUIPMENT SHALL BE THOROUGHLY CLEANED INSIDE AND OUT, OF DIRT, CUTTINGS, OILS AND OTHER FOREIGN SUBSTANCES AND SHALL BE LEFT CLEAN.

I. ALL REQUIRED TESTS SHALL BE WITNESSED BY LOCAL AUTHORITIES AND THE OWNER'S REPRESENTATIVE.

J. ALL EQUIPMENT WILL BE FACTORY TESTED.

K. CONTRACTOR SHALL IDENTIFY TO THE OWNER'S REPRESENTATIVE ANY LEAKS OR DAMAGE THAT OCCURS AS A RESULT OF SYSTEM TESTING. CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO LIMIT ANY POTENTIAL DAMAGE. CORRECTIVE ACTION REQUIRED AS A RESULT OF TESTING SHALL BE PERFORMED IMMEDIATELY AND AT THE CONTRACTOR'S EXPENSE.

L. REPORT IN WRITING TO AUTHORITIES HAVING JURISDICTION, THE ARCHITECT AND THE OWNER THE RESULTS OF ALL TESTING.

M. TESTING REQUIREMENTS

a. TEST ALL DOMESTIC WATER PIPING HYDROSTATICALLY TO 125 PSIG.
b. HYDROSTATIC TEST PRESSURES SHALL REMAIN CONSTANT WITH NO VARIATION FOR 120 MINUTES.
c. TESTS SHALL BE WITNESSED BY THE BUILDING ENGINEER.
d. THE PLUMBING CONTRACTOR WILL BE HELD RESPONSIBLE FOR ALL DAMAGE DUE TO TEST FAILURES AND LEAKAGE IN THE TEST AREA AND ADJACENT TENANT OR ESB SPACES.

N. REFILL ENTIRE POTABLE HOT AND COLD WATER SUPPLY SYSTEM WITH CHLORINE SOLUTION (HTH OLIN CHEMICAL CORP.) AT A STRENGTH TO MEET STANDARDS OF THE DEPARTMENT OF HEALTH, AND FOR A PERIOD OF RETENTION AS STIPULATED.

O. THOROUGHLY FLUSH PIPING SYSTEM WITH FRESH WATER IMMEDIATELY PRIOR TO FINAL ACCEPTANCE.

4. WARRANTY

EQUIPMENT, MATERIALS AND WORKMANSHIP FURNISHED UNDER THIS CONTRACT SHALL BE GUARANTEED BY THE CONTRACTOR FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE OF THE WORK BY THE OWNER. THE CONTRACTOR SHALL KEEP THE WORK IN GOOD REPAIR FOR ONE YEAR AFTER THE DATE OF FINAL APPROVAL. THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, PROMPTLY CORRECT AND REPAIR ANY AND ALL BREAKS, FAILURES OR WEAR DUE TO FAULTY MATERIALS, WORKMANSHIP OR EQUIPMENT. ALL SETTLEMENTS OF SURFACES THAT MAY OCCUR WITHIN THAT PERIOD SHALL ALSO BE PROMPTLY REPAIRED.

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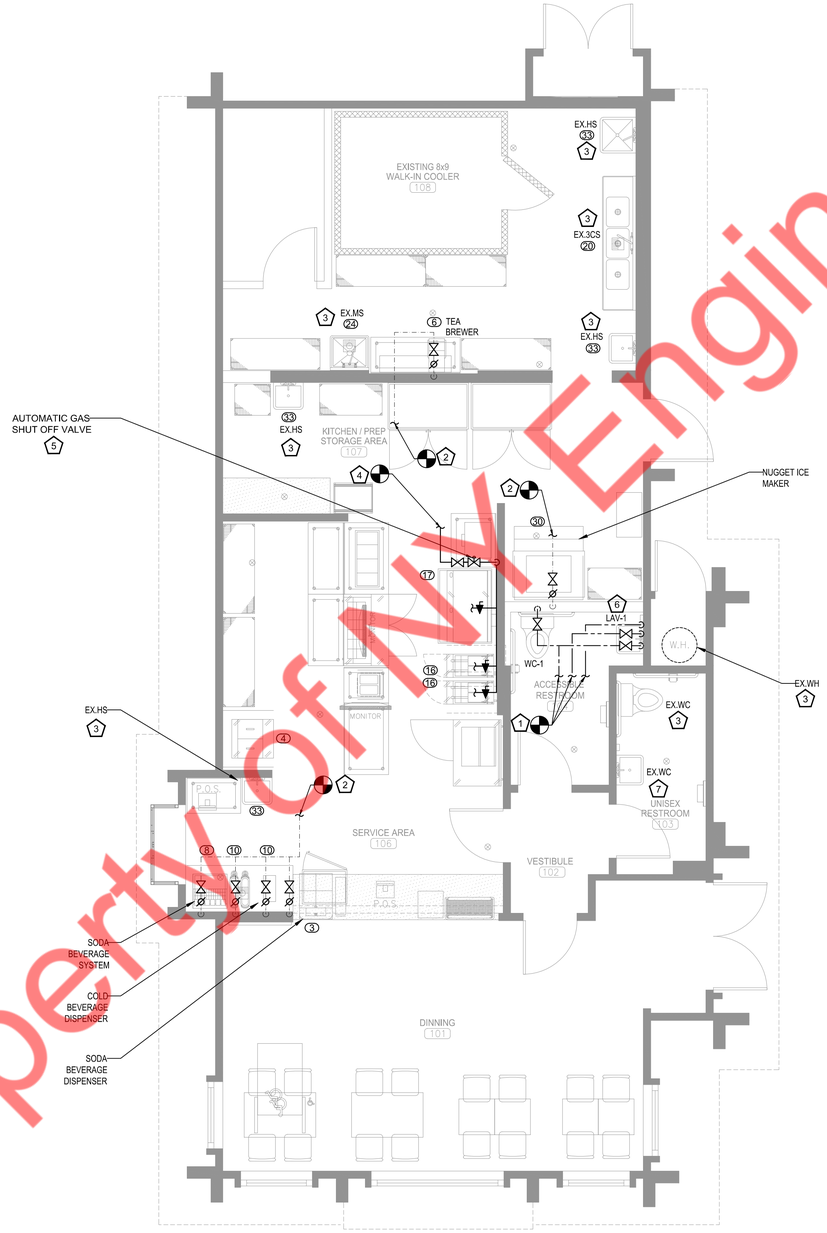
PLUMBING SPECIFICATIONS

P002



GENERAL NOTES:

1. CW/HW PIPING TO BE PROVIDED WITH INSULATION AS PER 2021 INTERNATIONAL ENERGY CONSERVATION NOTES(WITH HOUSTON AMENDMENTS)
2. PROVIDE BRANCH PRV IF PRESSURE EXCEEDS 80 PSI.
3. CONTRACTOR TO FIELD VERIFY FEASIBILITY OF SLAB PENETRATION AS PER STRUCTURAL REQUIREMENT.
4. PROVIDE ACCESS PANELS FOR WATER HAMMER ARRESTOR, CLEANOUTS & SHUT-OFF VALVES AS REQUIRED.
5. REFER RISER DIAGRAMS FOR ALL PIPE SIZES.
6. WATER HEATER DRAIN SPILLS TO THE FLOOR DRAIN.

WATER AND GAS KEYED NOTES:

1. EXTEND AND CONNECT NEW 1/2" CW/HW/HWR LINES TO EXISTING WATER NETWORK. CONTRACTOR TO FIELD VERIFY EXACT SIZE, ROUTING & LOCATION CONDITION OF EXISTING WATER NETWORK AND CONNECT ACCORDINGLY.
2. EXTEND AND CONNECT NEW 1/2" / 3/4" FW LINE TO EXISTING FILTER WATER NETWORK. CONTRACTOR TO FIELD VERIFY EXACT, SIZE, ROUTING & CONDITION OF EXISTING FILTER WATER NETWORK AND REPLACE IF REQUIRED
3. EXISTING PLUMBING FIXTURE AND PIPING TO REMAIN. VERIFY THE CONDITION OF EXISTING PIPING, REPLACE IF REQUIRED.
4. EXTEND AND CONNECT NEW 1-1/4" GAS LINE TO EXISTING MAIN LINE. CONTRACTOR TO FIELD VERIFY AND COORDINATE LOCATION, SIZE AND PRESSURE OF EXISTING GAS METER AND SERVICE, UPGRADE IF REQUIRED. VERIFY AND PROVIDE GAS PRESSURE REGULATOR ON EACH EQUIPMENT IF REQUIRED.
5. EMERGENCY SHUT-OFF: PROVIDED GAS AUTOMATIC EMERGENCY SHUT-OFF VALVE CONTROLLED BY HOOD FIRE SUPPRESSION SYSTEM. VERIFY LOCATION PRIOR TO INSTALLATION. COORDINATE INSTALLATION WITH ELECTRICAL AND MECHANICAL CONTRACTORS. MOUNT BELOW CEILING IN ACCESSIBLE LOCATION.
6. PROVIDE APPROVED ASSE 1070 THERMOSTATIC MIXING VALVE SET TO 110°F AT LAVATORY AND HAND SINKS.
7. EXISTING PLUMBING FIXTURE TO BE REPLACED WITH NEW IN THE EXISTING LOCATIONS AND CONNECT TO EXISTING CW, HW ROUGH-IN. ADJUST ROUGH-IN AS NEEDED AND VERIFY IN FIELD. CONDITION OF EXISTING PIPING AND REPLACE IF PIPES ARE NOT IN GOOD CONDITION

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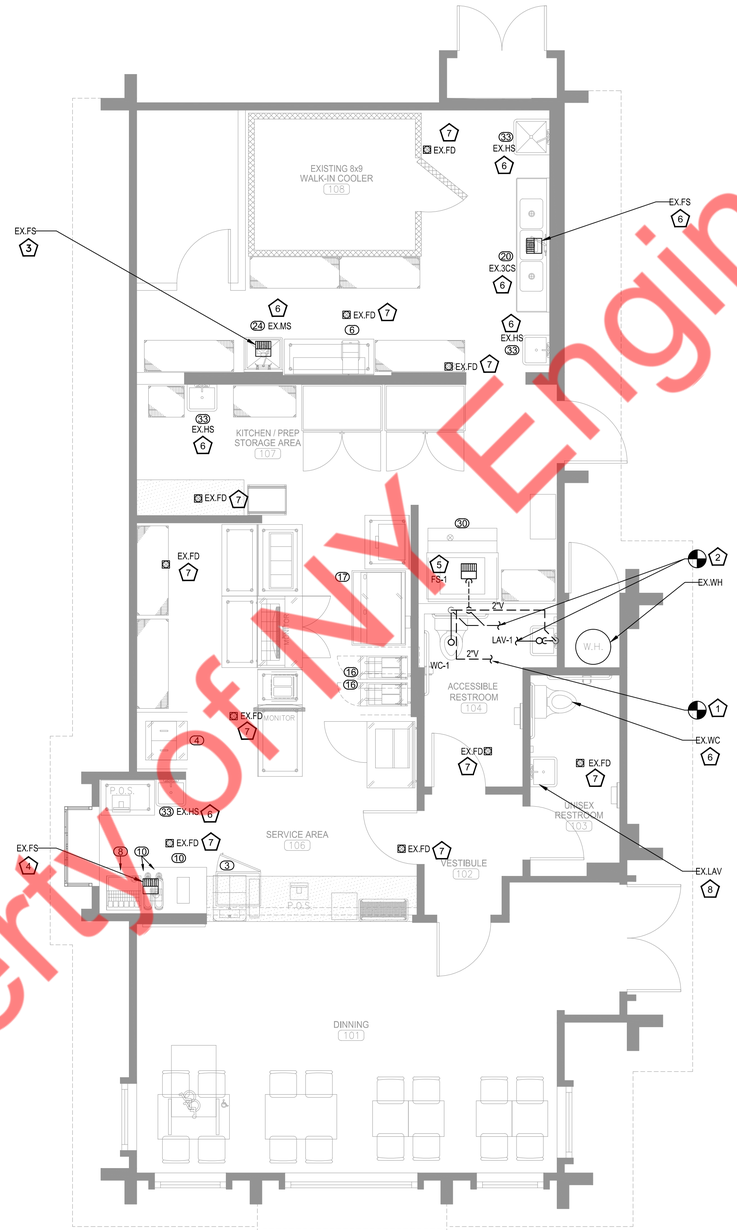
PLUMBING WATER SUPPLY AND GAS FLOOR PLAN

P101

2 WATER SUPPLY AND GAS FLOOR PLAN

SCALE: ¼"=1'-0"

1 WATER & GAS NOTES



GENERAL NOTES:

1. CONTRACTOR TO FIELD VERIFY FEASIBILITY OF SLAB PENETRATION AS PER STRUCTURAL REQUIREMENT.
2. REFER RISER DIAGRAMS FOR ALL PIPE SIZES.
3. PROVIDE TRAP PRIMER FOR FLOOR DRAINS

SANITARY KEYED NOTES:

1. EXTEND AND CONNECT NEW 2" VENT PIPING TO EXISTING VENT LINE IN SPACE. CONTRACTOR TO FIELD VERIFY EXACT SIZE AND LOCATION OF VENT PIPE ON SITE.
2. EXTEND AND CONNECT NEW 2"/3"/4" SANITARY PIPING TO EXISTING SANITARY PIPE. CONTRACTOR TO FIELD VERIFY EXACT SIZE, LOCATION, DIRECTION OF FLOW AND INVERT LEVEL OF EXISTING SANITARY LINE ON SITE PRIOR TO CONNECT. REPLACE THE EXISTING PIPES IF NOT IN GOOD CONDITION.
3. ROUTE INDIRECT WASTE FROM TEA BREWER TO EXISTING FLOOR SINK (EX.FS) WITH APPROVED AIR GAP. CONTRACTOR TO FIELD VERIFY THE CONDITION OF EXISTING FLOOR SINK AND PIPE REPLACE IF REQUIRED.
4. ROUTE INDIRECT WASTE FROM COLD BEVERAGE DISPENSER AND SODA BEVERAGE SYSTEM TO EXISTING FLOOR SINK (EX.FS) WITH APPROVED AIR GAP. CONTRACTOR TO FIELD VERIFY THE CONDITION OF EXISTING FLOOR SINK AND PIPE REPLACE IF REQUIRED.
5. ROUTE INDIRECT WASTE FROM NUGGET ICE MAKER TO FLOOR SINK (FS-1) WITH APPROVED AIR GAP.
6. EXISTING PLUMBING FIXTURE WITH EXISTING SANITARY AND VENT TO REMAIN. CONTRACTOR TO VERIFY THE CONDITION OF EXISTING PIPING AND REPLACE IF NOT IN GOOD CONDITION.
7. EXISTING FLOOR DRAIN TO REMAIN. REPLACE IF ITS NOT IN GOOD CONDITION
8. REPLACED EXISTING PLUMBING FIXTURE WITH NEW IN THE EXISTING LOCATIONS AND CONNECT TO EXISTING SANITARY AND VENT ROUGH-IN. ADJUST ROUGH-IN AS NEEDED AND VERIFY IN FIELD, CONDITION OF EXISTING PIPING AND REPLACE IF PIPES ARE NOT IN GOOD CONDITION.

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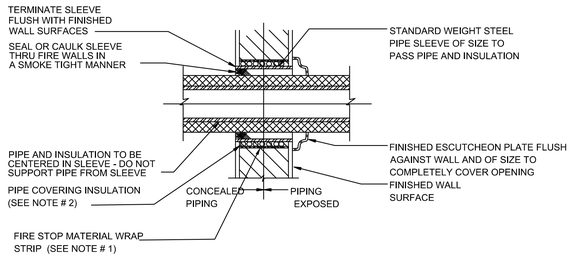
PLUMBING
SANITARY AND VENT
FLOOR PLAN

P102

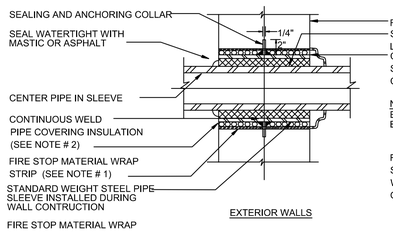
2 SANITARY AND VENT FLOOR PLAN

SCALE: ¼"=1'-0"

1 SANITARY & VENT NOTES



INTERIOR WALLS

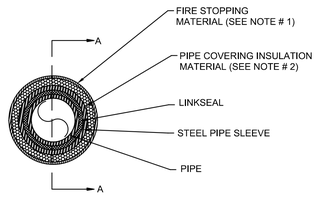


EXTERIOR WALLS

FINISHED WALL SURFACE
SEAL SLEEVE WITH TIGHTLY
LINKSEAL
COAT EXTERIOR SURFACES WITH TAR COMPOUND

NOTE: PIPE SLEEVE FOR EXTERIOR WALL ABOVE OR BELOW GRADE.

FOR GAS SERVICE EXTEND SLEEVE 1" PAST INSIDE FACE OF WALL & 4" PAST OUTSIDE FACE OF WALL.



PIPE SLEEVE VIEW

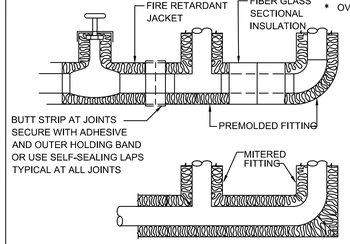
NOTES:

1. FIRESTOP MATERIAL WRAP STRIP SHALL BE ¼" THICK INTUMESCENT ELASTOMERIC MATERIAL FACED ON ONE SIDE WITH ALUMINUM FOIL SUPPLIED IN 2 IN. WIDE STRIPS AND WRAP AROUND THE PIPE AS PER UL MATERIAL LISTED3M COMPANY FS-195+ OR FILL CAVITY WITH CAULK OR SEALANT MIN. ¼" DIA. CONTINUOUS BEAD APPLIED TO THE WRAP STRIP/WALL INTERFACE AND TO THE EXPOSED OF THE WRAP STRIP LAYER APPROX. 3/4" FROM WALL SURFACE. AS PER UL LISTED 3M COMPANY CP25WB+, IC 15WB+, FIRE DAM 150+CAULK.
2. PIPE COVERING INSULATION SHALL BE 2" THICK HOLLOW CYLINDRICAL HEAVY DENSITY GLASS FIBER UNITS JACKETED ON THE OUTSIDE WITH AN ALL SERVICE JACKETED. AS PER UL CLASSIFICATION AND MARKING WITH A FLAME SPREAD INDEX OF 25 OR LESS AND A SMOKE DEVELOPED INDEX OF 50 OR LESS MAY BE USED.

1 P301 — PIPE SLEEVE THRU WALL SECTION
N.T.S

CONCEALED VALVES AND FITTINGS

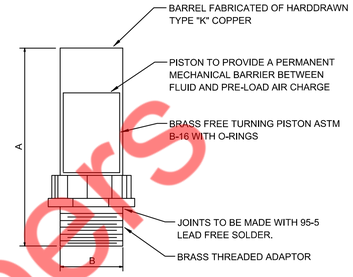
* WRAP WITH 1-INCH THICK, 1-POUND DENSITY TO REQUIRED PIPE INSULATION THICKNESS
* SECURE WITH WIRE OR TAPE.
* VAPOR SEAL COLD WATER, CHILLED WATER AND STORM WATER PIPING.



CONCEALED VALVES AND FITTINGS

* PREMOLDED FIBER GLASS OR RADIAL MITERED PIPE INSULATION
* SKIM COAT OF INSULATION CEMENT
* COAT OF MASTIC
* WRAP WITH FIBER GLASS REINFORCING CLOTH.
* FINISH COAT OF MASTIC
* OVERLAP 2-INCHES ON PIPE INSULATION.

2 P301 — INSULATION OF PIPING, VALVES AND FITTINGS FOR EXPOSED AND CONCEALED LOCATIONS
N.T.S



PIPE SIZE	P.D.I. SYMBOL	FIXTURE UNIT RATINGS	A SIZE	B SIZE
1/2"	A	1 - 11	5"	1/2"
3/4"	B	12 - 32	5"	3/4"
1"	C	33 - 60	7"	1"
1-1/4"	D	61 - 113	7"	1-1/4"
1-1/2"	E	114 - 154	9"	1-1/2"
2"	F	155 - 330	9"	2"

NOTE: LOCATE ONE FOR EACH BANK OF FLUSHOMETER
FIXTURES AT LAST FIXTURE PROVIDE A STAINLESS STEEL
ACCESS DOOR FOR EACH SUFFICIENT IN SIZE TO ALLOW
REPLACEMENT OF ARRESTOR AT A FUTURE DATE.

3 P301 — WATER HAMMER ARRESTOR DETAILS
N.T.S

4 P301 — FLOOR SINK DETAIL
N.T.S

5 P301 — MIXING VALVE DETAILS
N.T.S

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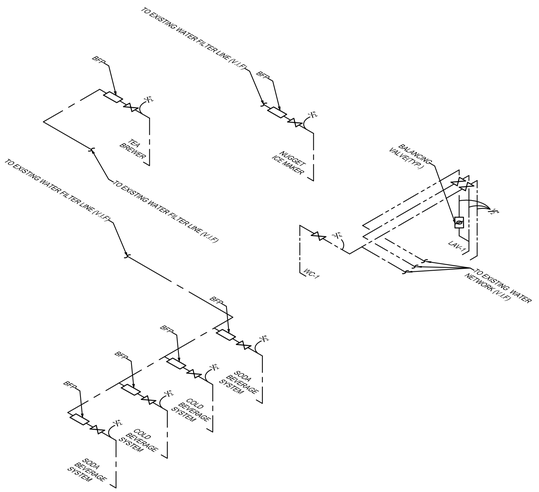
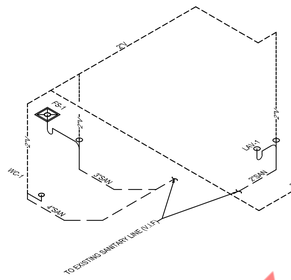
PLUMBING DETAILS
P301



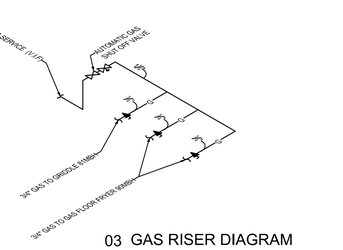
01 WATER RISER DIAGRAM

NO SCALE



02 SANITARY RISER DIAGRAM

NO SCALE



03 GAS RISER DIAGRAM

NO SCALE

NATURAL GAS PIPING SYSTEM
PROVIDE A COMPLETE GAS PIPING SYSTEM TO SERVE GAS EQUIPMENT FURNISHED BY OTHERS, AS NOTED ON THE DRAWINGS. PROVIDE EITHER THREADED STEEL OR MALLEABLE IRON PIPE WITH MALLEABLE FITTINGS OR WELDED STEEL. PROVIDE ALL UNIONS, SHUT-OFF VALVES AND DIRT LEGS REQUIRED BY NFPA-54 AND GOVERNING LOCAL CODES AND AT EACH GAS APPLIANCE CONNECTION. PROVIDE ALL TESTS, METERS, INSPECTIONS, HANGERS AND EQUIPMENT CONNECTIONS REQUIRED FOR A COMPLETE AND OPERATING SYSTEM.

NOTES:

1. GAS PIPING TO BE SCHEDULE 40 STEEL PIPE W/125 CAST IRON SCREWD FITTINGS
2. GAS SYSTEM TO BE INSTALLED BY QUALIFIED LICENSED CONTRACTOR.
3. VERIFY ALL EQUIPMENT BTUS'S PRIOR TO INSTALLATION. ADJUST PIPE SIZE ACCORDING HOUSTON LP GAS CODE 2020.
4. ALL GAS EQUIPMENT SHALL BE PROVIDED WITH PRESSURE REGULATOR TO OPERATE EQUIPMENT SATISFACTORILY.

GAS LOAD SUMMARY

EQUIPMENT	QTY	MBH LOAD
GRIDDLE	1	81
GAS FLOOR FRYER	2	180
TOTAL LOAD		261

GAS PIPE SIZING PER HOUSTON LP GAS CODE 2020.

GAS INLET PRESSURE- LESS THAN 2 PSI.

PRESSURE DROP- 0.5 PSI

SPECIFIC GRAVITY- 0.60

EQUIVALENT LENGTH OF PIPE = 100 FT

PLUMBING FIXTURE SCHEDULE

LEGEND	PLUMBING FIXTURE	CONNECTION SIZE - INCHES						REMARKS
		TRAP	SOIL/WASTE	VENT	COLD WATER	HOT WATER	THERMOSTATIC MIXING VALVE	
WC-1	WATER CLOSET	-	4"	2"	¾"	-	-	FLUSH TANK
LAV-1	LAVATORY	2"	2"	2"	½"	½"	PROVIDE	P-TRAP
FD-1	FLOOR DRAIN	3"	3"	2"	-	-	-	P-TRAP
FS-1	FLOOR SINK	3"	3"	2"	-	-	-	P-TRAP
NOTE: CONTRACTOR TO COORDINATE WITH ARCHITECTURAL DRAWINGS FOR ALL PLUMBING FIXTURES SPECIFICATIONS AND MOUNTING HEIGHT INSTALLATION.								

KITCHEN EQUIPMENT SCHEDULE

TAG	LEGEND	CONNECTION SIZE - INCHES		
		FILTER WATER (INCH)	INDIRECT WASTE (INCH)	VENT (INCH)
03	SODA BEVERAGE SYSTEM	1/2 "	EX.	EX.
06	TEA BREWER	1/2 "	EX.	EX.
08	SODA BEVERAGE SYSTEM	1/2 "	EX.	EX.
10	COLD BEVERAGE SYSTEM	1/2 "	EX.	EX.
30	NUGGET ICE MAKER	1/2 "	3"	2"

THERMOSTATIC MIXING VALVE SCHEDULE

ITEM	SERVING	SERVICE	CAPACITY RANGE (GPM)		TEMP. RANGE (°F)		MANUFACTURER & MODEL NO.	REMARKS
			MIN.	MAX.	MIN.	MAX.		
MIXING VALVE	HAND SINK, LAVATORY	HOT WATER	0.5	20	120	200	WATTS MODEL LFMMV1	-LEAD FREE VAST COPPER SILICON ALLOY BODY -ASSE 1070 LISTED -CSA APPROVED

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PLUMBING ISOMETRIC RISERS AND SCHEDULES

P201