ELECTRICAL SYMBOLS LIST

LIGHTING

	LIGHTING FIXTURE, HALF SHADED FIXTURE OR "EM" INDICATES EMERGENCY FIXTURES WITH INTEGRAL BATTERY PACK FOR EMERGENCY SERVICE, U.O.N.
A 2 a	LUMINAIRE TYPE : INDICATE BY UPPERCASE LETTER SEE LIGHTING FIXTURE 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.
	RECESSED
	SAME AS ABOVE, EXCEPT WALLWASHER.
	STRIP LIGHTING FIXTURE AND OUTLET BOX.
	CEILING/WALL MOUNTED EXIT SIGN WITH DIRECTIONAL ARROWS AS INDICATED. SHADED AREA DENOTES FACE(S).
	EMERGENCY BATTERY UNIT

SWITCHES AND CONTROLS

$a	20A SPST TOGGLE SWITCH U.O.N. "a" DENOTES LIGHTING FIXTURE CONTROLLED.
$3 a	20A 3–WAY TOGGLE SWITCH U.N.O. "a" DENOTES LIGHTING FIXTURE CONTROLLED
$4 a	20A 4–WAY TOGGLE SWITCH U.N.O. "a" DENOTES LIGHTING FIXTURE CONTROLLED
$D a	WALL BOX DIMMER SWITCH, LUTRON MAESTRO SERIES. "a" DENOTES LIGHTING FIXTURE CONTROLLED.
OS	WALL OCCUPANCY SENSOR, NUMBER INDICATES TYPE; SEE OCCUPANCY SENSOR SCHEDULE.

WIRING SYSTEMS

3 UP–	POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 1#12 ⌀, 1#12 N. & 1#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.
3 5 UP–	POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 ⌀, 2#12 N. & 2#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.
3 5 7 UP–	POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 3#12 ⌀, 3#12 N. & 3#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.
	CONDUIT TURNING UP, SEE FLOOR PLANS FOR CONDITIONS.
	CONDUIT TUIRNING DOWN, SEE FLOOR PLANS FOR CONDITION.
	CONDUIT AND WIRE TO BUILDING GROUND.
	CABLE TRAY, WIDTH AND MOUNTING AS NOTED.
	UNDERGROUND
	EXISTING
	NEW

DRAWING LIST

POWER AND TELECOMMUNICATION

J	JUNCTION BOX WITH BLANK COVER PLATE, CEILING MOUNTED..
	DUPLEX CONVENIENCE RECEPTACLE.
GFI	DUPLEX GFI RECEPTACLE
CL	DUPLEX CONVENIENCE RECEPTACLE – 20A–1P, 125V, NEMA 5–20R MOUNTED FLUSH IN CELING.
	SIMPLEX RECEPTACLE, NEMA 6–15R
IG	DUPLEX ISOLATED GROUND RECEPTACLE
	DATA OUTLET – (1) PORT U.N.O, TEL / DATA OUTLET TO BE PROVIDED WITH 1" CONDUIT U.O.N. TO H.C. AND TERMINATED WITH 90 DEGREE ELBOW AND BUSHING. TEL / DATA OUTLET PLATE SHALL BE PROVIDED WITH 1 1/4" DIAMETER GROMMETED OPENING.

MOTORS AND CONTROLS

M	AC INDOOR UNIT MOTOR AS NOTED WITH LIQUID TIGHT FLEXIBLE CONNECTION WITH JUNCTION BOX AND MOTOR SWITCH.
M WP	AC OUTDOOR UNIT MOTOR AS NOTED WITH CONTROLLER AND DISCONNECT SWITCH WITH WEATHER PROOF.
	NON FUSED DISCONNECT SWITCH AMPERAGE, AND NUMBER OF POLES AS NOTED.
A	30A/240V NON FUSED DISCONNECT SWITCH
B	60A/240V NON FUSED DISCONNECT SWITCH
MD	MOTORIZED DAMPER.

POWER DISTRIBUTION

	MAJOR ELECTRICAL COMPONENT OR DEVICE. VOLTAGE AND AMPERAGE AS NOTED.
	BRANCH PANELBOARD, 208Y/120V–SURFACE OR FLUSH MOUNTED PANEL, SIZE AS NOTED.
	BRANCH PANELBOARD, 277Y/480V–SURFACE OR FLUSH MOUNTED PANEL, SIZE AS NOTED.
200 200	FUSED DISCONNECT SWITCH AND FUSE AMPERAGE AS INDICATED. TOP NUMBER DENOTES SWITCH SIZE AND BOTTOM NUMBER DENOTES FUSE.

ELECTRICAL ABBREVIATIONS

A	AMPERES	EA	EACH
A/C, AC	AIR CONDITIONING UNIT	EC	EMPTY CONDUIT/ ELECTRICAL CONTRACTOR
AF	AMPERE FRAME/AMP FUSE	EF	EXHAUST FAN
AFF	ABOVE FINISHED FLOOR	EM	EMERGENCY
AS	AMP SWITCH	EMT	ELECTRICAL METALLIC TUBING
AIC	AMPS INTERRUPTING CAPACITY	EQUIP	EQUIPMENT
AT	AMP TRIP	ETR	EXISTING TO REMAIN
ATS	AUTOMATIC TRANSFER SWITCH	FA	FIRE ALARM
AWG	AMERICAN WIRE GAUGE	FDR	FEEDER
C	CONDUIT	FIXT	FIXTURE
CU	COPPER	G	GROUND
DISC	DISCONNECT	GFI	GROUND FAULT INTERRUPTER
KCMIL	ONE THOUSAND CIRCULAR MILS	HP	HORSEPOWER
KV	KILOVOLT	HWH	HOW WATER HEATER
KVA	KILOVOLT–AMPERES	HZ	HERTZ
KW	KILOWATTS	IC	INTERRUPTING CAPACITY
MLO	MAIN LUGS ONLY	PP	POWER PANEL
N	NEUTRAL	RE	RELOCATED EXISTING
NIC	NOT IN CONTRACT	SW	SWITCH
NTS	NOT TO SCALE	TXF	TOILET EXHAUST FAN
P	POLES	UON	UNLESS OTHERWISE NOTED
PNL	PANEL	V	VOLT/VOLTAGE
W	WIRE	VA	VOLT AMPERE
E	EXISTING	WH	WATER HEATER
		RCP	RE CIRCULATING PUMP

APPLICABLE ELECTRICAL CODES

NFPA 70, NATIONAL ELECTRICAL CODE (NEC), 2023 EDITION 527 CMR 12, MA ELECTRICAL CODE AMENDMENTS (MEC), 2023 EDITION

CONCRETE CORING NOTES

PRIOR TO DRILLING OR CORING THROUGH EXISTING STRUCTURES THE CONTRACTOR SHALL DETERMINE THE LOCATION OF EMBEDDED REINFORCING BARS OR OTHER ITEMS BY NON–DESTRUCTIVE METHODS. THE CONTRACTOR SHALL SUBMIT A COMPREHENSIVE CORING / DRILLING REPORT SHOWING ALL EXISTING PENETRATIONS TO REMAIN, ALL PENETRATIONS TO BE PATCHED, AND PROPOSED NEW PENETRATION DIMENSIONED TO IDENTIFIABLE BUILDING ELEMENTS. EACH PLAN IS TO BE ACCOMPANIED BY THE TEST RESULTS OF AN X–RAY /RADAR (OR OTHER ACCEPTABLE METHOD OF DETECTING AND IDENTIFYING OBSCURED INFRASTRUCTURE). THE REPORT ALONG WITH CERTIFICATION OF THE ENGINEER OF RECORD THAT THERE ARE NO POTENTIAL NEGATIVE IMPACTS TO THE BUILDING STRUCTURE AND OR INFRASTRUCTURE. THE EOR IS TO SUPPLY DETAILS OF ALL STRUCTURAL FLOOR HOLE PATCHING, EXISTING UTILITIES AND STRUCTURAL ELEMENTS SHOULD BE IDENTIFIED ON AN OVERLAY TO THE CORING PLAN

NOTE :– ELECTRICAL CONTRACTOR TO ENSURE ALL ELECTRICAL INSTALLATION SHALL COMPLY WITH 2023 EDITION OF MPA GUIDE TO TENANT CONSTRUCTION, SECTION 6.4.

GENERAL NOTES

(APPLY TO ALL "E" DRAWINGS)

1. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE CURRENT VERSION OF THE NATIONAL ELECTRIC CODE(NEC) WITH AMENDMENTS, 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 PROVIDED 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 CANCEALED 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 CONCEAL ED 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. NOT IN USED. 4
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 LOACTIONS 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.

ELECTRICAL SPECIFICATIONS

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 PULLBOX 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 MASSACHUSETTS ELECTRICAL CODE AS AMENDMENT WITH 2020 NATIONAL ELECTRICAL CODE (NEC), 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 FLORIDA 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 11 IN. X 17 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 11 IN. X 17 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) PANELBOARDS/LOADCENTER (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. 7810F. 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 A ND 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, 5–¾" 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.

ELECTRICAL SPECIFICATIONS (CONT.)

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 PANELBOARDS SHALL BE A MINIMUM OF 30" WIDE AND 10" DEEP.

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

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).

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 #B2414 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 B 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 FISHWIRES.

B. EQUIPMENT SHALL CONFORM TO REQUIREMENTS OF TELEPHONE COMPANY.

C. OUTLETS SHALL BE:

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

D. PROVIDE FISHWIRES, 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. PANELBOARDS:

A. PANELBOARDS 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 PANELBOARD SHALL BE A MINIMUM OF 30" WIDE AND 10" DEEP.

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

H. FURNISH ALL PANELBOARDS 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 PANELBOARDS 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 PANELBOARD, 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 PANELBOARDS SHALL BE USED TO ACHIEVE REQUIRED SHORT CIRCUIT RATINGS.

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

COMMERCIAL KITCHEN EQUIPMENT SCHEDULE

TAG	DESCRIPTION	VOLTAGE (V)	PHASE (1/3)	LOAD (A)	SETS	NEMA	BRANCH CIRCUIT
2	Rice Cooker	115	1	11.31	2	5-20	2#12 W/#12 G IN 3/4"C
3	Sota Oven	208	1	30	1	6-30	2#10 W/#10 G IN 3/4"C
4	Griddle 30"	208	1	18.75	1	6-20	2#12 W/#12 G IN 3/4"C
5	Refrigerated 2 drawer table	115	1	5	1	5-15	2#12 W/#12 G IN 3/4"C
6	Countertop Burner	208	1	21.7	1	J-BOX	2#10 W/#10 G IN 3/4"C
7	Electric Fryer	480	3	17	1	J-BOX	3#10 W/#10 G IN 3/4"C
10	Dishwasher	208	1	22	1	6-30	2#10 W/#10 G IN 3/4"C
14	Worktop Double Door Freezer	115	1	9.8	1	5-15	2#12 W/#12 G IN 3/4"C
15	Prep Table Fridge	115	1	2.4	1	5-15	2#12 W/#12 G IN 3/4"C
16	Double Door Upright Freezer	115	1	10.7	1	5-15	2#12 W/#12 G IN 3/4"C
17	Single Door Freezer	115	1	8.28	1	5-15	2#12 W/#12 G IN 3/4"C
21	Toast POS Register	115	1	1	1	5-15	2#12 W/#12 G IN 3/4"C
22	Pager System	115	1	1	1	5-15	2#12 W/#12 G IN 3/4"C
24	Microwave	208	1	14.4	1	6-20	2#12 W/#12 G IN 3/4"C
26	Backbar Cooler 2 Door	115	1	2.1	1	5-15	2#12 W/#12 G IN 3/4"C
27	UC 1 Door Fridge	115	1	1.1	1	5-15	2#12 W/#12 G IN 3/4"C
28	Ice Machine	115	1	6	1	5-15	2#12 W/#12 G IN 3/4"C
29	Coffee Brewer	115	1	14	1	5-15	2#12 W/#12 G IN 3/4"C
30	HOT Display Cases	208	1	7	1	6-20	2#12 W/#12 G IN 3/4"C
31	Cold Display Cases	208	1	8	1	6-20	2#12 W/#12 G IN 3/4"C
32	Meet Toast Printer	115	1	1	1	5-15	2#12 W/#12 G IN 3/4"C
33	Kegerator	115	1	3	1	5-15	2#12 W/#12 G IN 3/4"C
34	Sushi Display Countertop	115	1	13	2	5-20	2#12 W/#12 G IN 3/4"C
35	2 Dr FREEZER Make Station	115	1	3.2	1	5-15	2#12 W/#12 G IN 3/4"C
36	2 Dr Refrigerator Make Station	115	1	3.2	1	5-15	2#12 W/#12 G IN 3/4"C
42	Samsung 50" TV	115	1	3.2	1	5-15	2#12 W/#12 G IN 3/4"C
43	Grab-n-Go Display Case	115	1	14	1	5-15	2#12 W/#12 G IN 3/4"C
53	Soup Warmer	115	1	2.7	4	5-15	2#12 W/#12 G IN 3/4"C

ELECTRICAL GENERAL NOTES:

A. VERIFY MOUNTING HEIGHTS OF ALL RECEPTACLES WITH EQUIPMENT SUPPLIED PRIOR TO INSTALLATION.

B. E.C. TO PROVIDE CORD & PLUG CONNECTIONS FOR EQUIPMENT AS REQUIRED.

C. 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, ALL GROUND-FAULT CIRCUIT-INTERRUPTERS SHALL BE INSTALLED IN A READILY ACCESSIBLE LOCATION IN ACCORDANCE WITH NEC 210.8.

D. ALL CIRCUITS FOR P.O.S. (POINT OF SALE) EQUIPMENT SHALL BE CONNECTED TO THE SAME PHASE OF POWER IN THE PANEL. ALL BRANCH CIRCUIT BREAKERS SUPPLYING P.O.S. EQUIPMENT SHALL HAVE LOCKING HANDLES DEVICES.

E. EACH RECEPTACLE TYPE (LOCKING OR STRAIGHT BLADE) SHALL MATCH THAT OF THE EQUIPMENT FURNISHED.

F. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR CONFIRMING ALL VOLTAGE REQUIREMENTS ON ALL EQUIPMENTS.

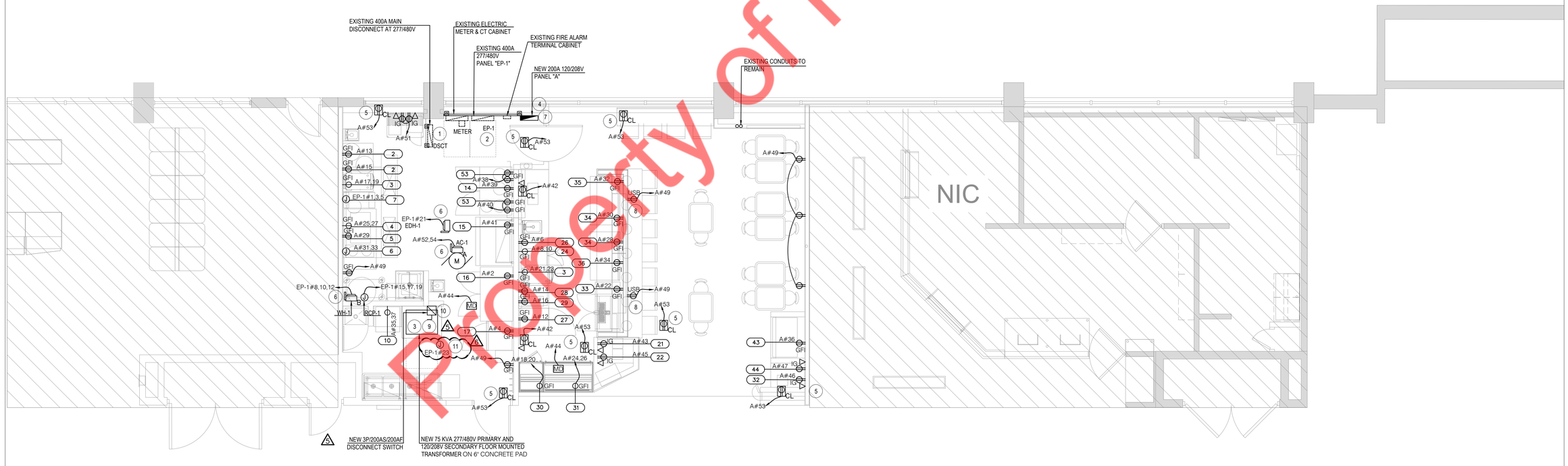
G. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH PLUMBING AND HVAC CONTRACTORS FOR ANY ADDITIONAL EQUIPMENT NEEDING POWER.

H. ALL 15A AND 20A, 125V AND 250V NONLOCKING-TYPE RECEPTACLES IN THE AREAS SPECIFIED PER NEC 406.12 SHALL BE LISTED TAMPER-RESISTANT RECEPTACLES.

I. RECEPTACLES THAT ARE WIRED USING MC CABLE SHALL BE INSTALLED AS DETAILED IN SECTION 6.4.1.K AND 6.4.1.L OF THE 2023 EDITION OF THE GUIDE TO TENANT CONSTRUCTION. RECEPTACLE OUTLETS SHALL NOT BE DAISY-CHAINED.

ELECTRICAL POWER KEYED WORK NOTES:

1. EXISTING 400A, 277/480V, 3-PHASE, 4-WIRE EXISTING ELECTRICAL METER. EXISTING CT CABINET AND EXISTING SERVICE DISCONNECT SWITCH FOR THE PROJECT SPACE SHALL REMAIN. E.C TO VERIFY THE OPERABLE CONDITION OF EXISTING EQUIPMENT IN FIELD AND REPLACE IF INOPERABLE. BASE BID ACCORDINGLY.
2. EXISTING 400A, 277/480V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "EP-1" SHALL REMAIN FOR THE PROJECT SPACE. E.C TO VERIFY THE OPERABLE CONDITION OF EXISTING PANEL "EP-1" IN FIELD AND REPLACE IF INOPERABLE. BASE BID ACCORDINGLY.
3. NEW 75 KVA 480V PRIMARY AND 120/208V WYE SECONDARY FLOOR MOUNTED TRANSFORMER. E.C. SHALL COORDINATE WITH ARCHITECT/ OWNER FOR EXACT LOCATION IN FIELD.
4. NEW 200A, 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "A". E.C SHALL COORDINATE WITH ARCHITECT/ OWNER FOR EXACT LOCATION IN FIELD.
5. E.C. TO FIELD VERIFY THE EXACT LOCATION OF SECURITY CAMERA AND PROVIDE THE ELECTRICAL CONNECTION AS PER MANUFACTURER REQUIREMENTS.
6. E.C. TO COORDINATE THE EXACT LOCATION AND ELECTRICAL REQUIREMENT OF MECHANICAL EQUIPMENTS WITH MECHANICAL CONTRACTOR. PROVIDE THE ELECTRICAL CONNECTION AS PER MECHANICAL EQUIPMENTS REQUIREMENT IN FIELD.
7. E.C. TO EXTEND THE CHANNEL SUPPORT AS REQUIRED TO MOUNT THE PANEL "A" IN FIELD. BASE BID ACCORDINGLY.
8. PROVIDE THE DUPLEX RECEPTACLES WITH USB PORTS UNDER THE BAR COUNTER. E.C. TO COORDINATE EXACT LOCATION WITH ARCHITECT / OWNER.
9. TRANSFORMER SHALL BE WEATHER PROOF TO PROTECT FROM WATER, EXTERNAL PHYSICAL DAMAGE AND SHOCK HAZARD.
10. NEW 3P/200AS/200AF DISCONNECT SWITCH ABOVE THE TRANSFORMER. EXACT LOCATION TO BE COORDINATED WITH FIELD CONDITIONS.
11. EC TO PROVIDE POWER TO HEAT TRACE. COORDINATE EXACT LOCATION & REQUIREMENTS WITH HEAT TRACE MANUFACTURER AND OWNER PRIOR TO BID.



1 Electrical Power Plan
1/4" = 1'-0"

LIGHTING PLAN GENERAL NOTES:

A. CONTRACTOR IS ADVISED THAT ADJUSTMENTS TO EMERGENCY AND EXIT LIGHT FIXTURE LOCATIONS/QUANTITIES MAY BE REQUIRED BY AHJ UPON FINAL INSPECTION.

B. ALL NIGHT LIGHT, EMERGENCY AND EXIT LIGHT FIXTURES SHALL BE CONNECTED AHEAD OF SWITCHED LIGHTING CIRCUIT.

C. EMERGENCY AND NORMAL LIGHTING MARKED WITH "NL" SUBSCRIPT SHALL OPERATE CONTINUOUSLY. PROVIDE PROVIDE UNSWITCHED CONSTANT HOT TO EMERGENCY BALLAST.

D. EMERGENCY LIGHTING NOT MARKED WITH "NL" SUBSCRIPT SHALL OPERATE UNDER CONTROL OF LIGHTING SWITCH AS INDICATED. PROVIDE UNSWITCHED CONSTANT HOT TO EMERGENCY BALLAST AND SWITCHED HOT TO NORMAL BALLAST.

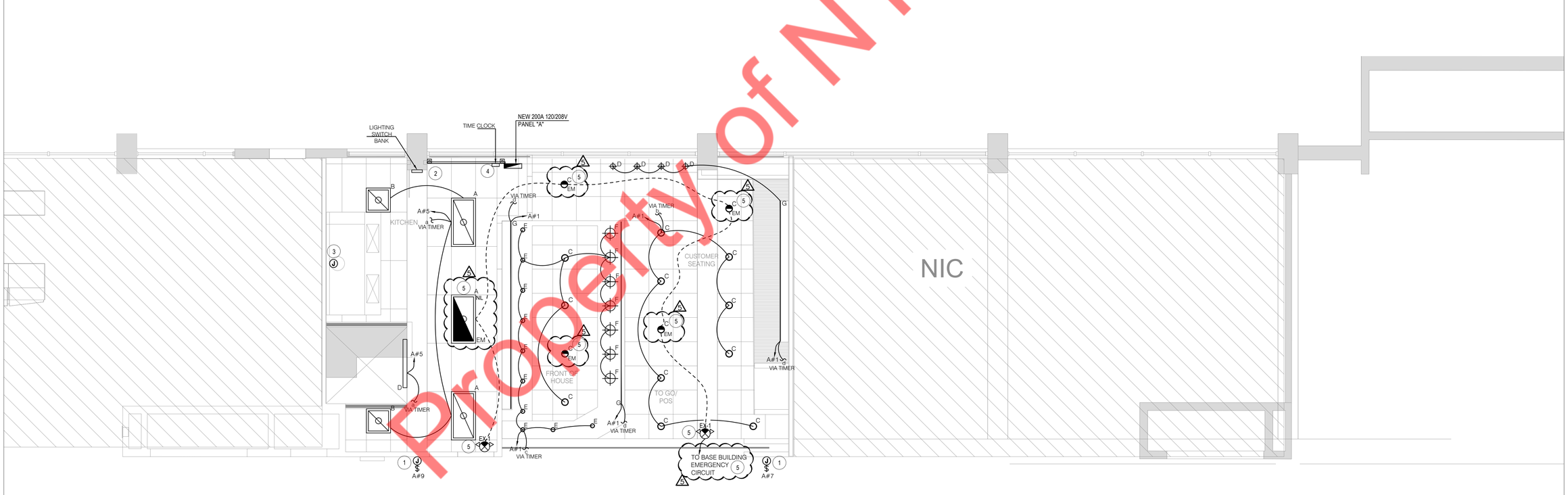
E. CONTRACTOR TO FIELD VERIFY CEILING TYPE AND PROVIDE PROPER MOUNTING HARDWARE.

F. ALL FIXTURES SUPPLIED WITH LAMPS.

G. LIGHTING FIXTURES THAT ARE WIRED USING MC CABLE SHALL BE INSTALLED AS DETAILED IN SECTION 6.4.1.K AND 6.4.1.L OF THE 2023 EDITION OF THE GUIDE TO TENANT CONSTRUCTION. LIGHT FIXTURES SHALL NOT BE DAISY-CHAINED.

ELECTRICAL LIGHTING KEYED WORK NOTES:

1. PROVIDE WEATHERPROOF JUNCTION BOX AND TOGGLE TYPE 20A-1P DISCONNECT SWITCH IN AN ACCESSIBLE LOCATION FOR SIGNAGE. COORDINATE EXACT REQUIREMENTS WITH SIGN CONTRACTOR. VERIFY LOCATION PRIOR TO ROUGH-IN.
2. LOCATION OF LIGHTING SWITCH BANK. REFER TO SWITCH BANK ELEVATION ON SHEET E5.0 FOR ADDITIONAL INFORMATION.
3. JUNCTION BOX ON HOOD FOR CONNECTION TO PRE-WIRED HOOD LIGHTS. CONNECT TO KITCHEN LIGHTING CIRCUIT.
4. LOCATION OF TIME CLOCK. E.C. TO COORDINATE WITH ARCHITECT FOR EXACT LOCATION IN FIELD.
5. CONNECT ALL EMERGENCY EGRESS (EM) AND EXIT LIGHTS TO THE EMERGENCY CIRCUIT OF THE BASE BUILDING POWER. E.C. TO COORDINATE WITH OWNER/BASE BUILDING REPRESENTATIVE FOR LOCATING EMERGENCY LIGHTING CIRCUIT IN FIELD.



1 Electrical Lighting Plan
1/4" = 1'-0"

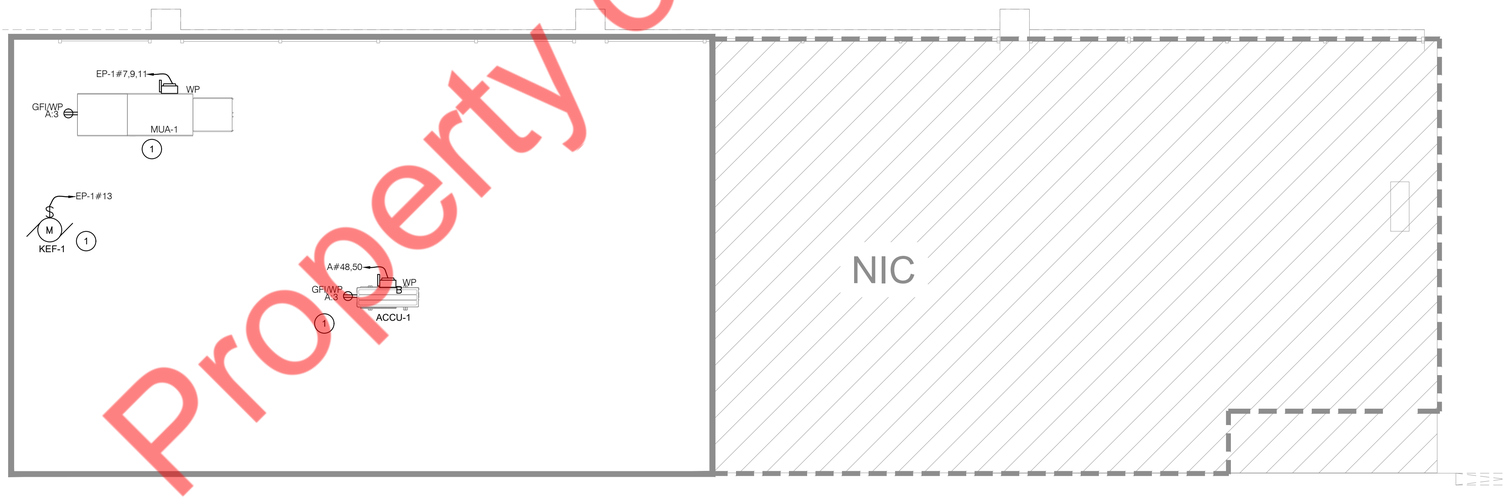
Gucci Term C

ROOF POWER PLAN GENERAL NOTES:

1 ALL ELECTRICAL CONDUIT AND WIRING FOR POWER AND CONTROL OF HVAC UNITS SHALL BE THROUGH PRE-MANUFACTURED PITCH POCKETS. COORDINATE LOCATION OF PITCH POCKETS AND ROUTING OF ELECTRICAL CONDUITS WITH MECHANICAL CONTRACTOR.

ROOF POWER PLAN KEYED WORK NOTES:

(1) E.C. TO COORDINATE THE EXACT LOCATION AND ELECTRICAL REQUIREMENT OF MECHANICAL EQUIPMENTS WITH MECHANICAL CONTRACTOR. PROVIDE THE ELECTRICAL CONNECTION AS PER MECHANICAL EQUIPMENTS REQUIREMENT IN FIELD.



1 Roof Power Plan
1/4" = 1'-0"

Gochi Term C

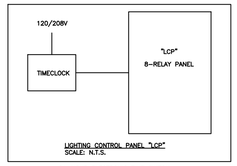
FIXTURE TAG	TYPE	MANUFACTURER	DESCRIPTION	QUANTITY	MODEL	LAMP	VOLTS	WATTS
A	RECESSED 2 X 4	LSI INDUSTRIES LLC	LED PANEL LIGHT 2X4	3	TBD	LED	120-277	45W
B	RECESSED 2 X 2	LSI INDUSTRIES LLC	LED PANEL LIGHT 2X2	2	TBD	LED	120-277	29W
C	6" RECESSED DOWNLIGHT (LED)	CON-TEC	6" INCADESCENT HOUSING & TRIM	15	RL38 + CTR1902-WHT	LED	120-277	17W
D	PENDENT LIGHT	VERNE MACHINE AGE PENDENT	TBB	4	TBD	LED	120	17W
E	4" RECESSED DOWNLIGHT (LED)	TBD	TBD	10	TBD	LED	120	17W
F	PENDENT LIGHT	dac LIGHTING	PENDENT LIGHT	7	d5010	LED	120	8W
G	LED STRIP LIGHT	FLEXFIRELEDs	RGB 150 LED STRIP LIGHT	50 FEET	TBD	LED	120	2.2W/FT
EM	EMERGENCY LIGHT	TBD	TBD	4	TBD	LED	120	6W
EX-1	EXIT LIGHT	TBD	TBD	2	TBD	LED	120	3W

LUMINAIRE SCHEDULE GENERAL NOTES:

1. VERIFY ALL LUMINAIRE COLORS, TRIMS, LENGTHS, ETC. WITH THE ARCHITECT PRIOR TO PLACING FINAL PURCHASE ORDERS. SUBMISSION PF SHOP DRAWINGS WILL BE INTERPRETED AS HAVING BEEN COORDINATED WITH THE ARCHITECTURAL DRAWINGS .
2. PROVIDE ALL LENGTHS, FEEDS, ACCESSORIES, CONNECTORS, WIRING, POWER SUPPLIES, DRIVERS ETC. FOR A COMPLETE INSTALLATION. THE E.C. SHALL VERIFY THE COMPLETE BILL OF MATERIAL WITH MANUFACTURER'S REPRESENTATIVE AND ENSURE ALL EQUIPMENT ARE INCLUDED IN BID PRICE. COORDINATE INSTALLATION WITH ARCHITECTURAL DETAILS.
3. VERIFY FINAL LUMINAIRE LOCATIONS WITH OTHER CEILING MOUNTED EQUIPMENTS SUCH AS DIFFUSER WITH ARCHITECTURAL REFLECTED CEILING PLANS.
4. VERIFY EXACT MOUNTING HEIGHT AND LOCATIONS OF ALL WALL MOUNTED LUMINAIRE WITH ARCHITECTURAL PLANS AND ELEVATIONS PRIOR TO ROUGH-IN
5. ANY PROPOSED ALTERNATE LUMINAIRES SHALL BE APPROVED BY THE ARCHITECT PRIOR TO FINAL BID PRICING.
6. SHOULD THE CONTRACTOR PROPOSE TO FURNISH MATERIALS, EQUIPMENT AND DEVICES OTHER THAN THOSE SPECIFIED AND LISTED, THE CONTRACTOR SHALL SUBMIT A WRITTEN REQUEST FOR SUBSTITUTIONS, TO THE ENGINEERS AT LEAST TEN (10) BUSINESS DAYS PRIOR TO BID OPENING. THE REQUEST SHALL BE AN ALTERNATE TO THE ORIGINAL BID AND SHALL INCLUDE A COMPLETE SPECIFICATIONS CUTSHEET SUBMITTAL AS OUTLINED IN THE SPECIFICATIONS, COMPLETE WITH DESCRIPTIVE (MANUFACTURER, BRAND NAME, CATALOG NUMBER, ETC.) AND TECHNICAL DATA FOR ALL ITEMS. INDICATE ANY ADDITIONS OR DEDUCTIONS TO THE CONTRACT PRICE WITH THE SUBSTITUTION SUBMITTAL AND ON THE BID FORM.

1 LIGHT FIXTURE SCHEDULE
N.T.S

LCP SCHEDULE				
RELAY #	ZONE TAG	CONTROL TYPE	CIRCUIT #	DESCRIPTION
1	a	TIMER	B:5	COOKING, PREPARATION
2	b	TIMER	B:1	SEATING AREA
3	c	TIMER	B:1	FOH AREA
4	d	TIMER	B:3	LED STRIP LIGHTING

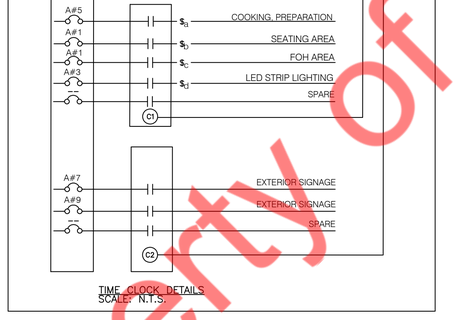


LIGHTING CONTROL PANEL "LCP"
SCALE: N.T.S.

24-HOUR ELECTRONIC TIME SWITCH:

NOTES:

1. ITERMATIC TIMER BOX SHALL BE LOCATED AS CLOSE TO PANELBOARD AS PRACTICAL. PROVIDE WIRING FROM LOW VOLTAGE SWITCH TO RELAY CABINET REQUIRED FOR EACH RELAY AS REQUIRED.
2. PROGRAM LIGHTING SCHEDULE AND HOURS OF OPERATION WITH OWNER.
3. PROVIDE LOW VOLTAGE OVERRIDE SWITCH AS INDICATED ON DRAWINGS. LOW-VOLTAGE OVERRIDE SWITCH CONTROLS SHALL INITIATE AN OVERRIDE OF A MAXIMUM TIME OF NO MORE THAN TWO (2) HOURS.
4. PROVIDE TWO (2) HOUR TRAINING ON PROGRAMMING OF SYSTEM & SYSTEM OPERATION.
5. SYSTEM SHALL BE TESTED AND COMMISSIONED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS.



TIME CLOCK DETAILS
SCALE: N.T.S.

2 LIGHTING CONTROL DETAILS
N.T.S

PANEL:	A (NEW)				5					MOUNTING:	SURFACE
208Y/120	VOLTS,	3	PHASE,	4	WIRE	NEW KAIC RATING	22 KAIC			PANEL LOCATION:	BOH
MAIN CB:	200A	MLO:	NA	BUS:	225A	MIN,				FED FROM:	75KVA TRANSFORMER
NOTE:											

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	20	LIGHTING - CUSTOMER SEATING & FOH	L	0.65	2#12, #12G, 3/4"C	1.88			2#12, #12G, 3/4"C	1.23	E	16_DOUBLE DOOR UPRIGHT FREEZER	20	2
3	20	ROOF RECEPTACLES	R	0.36	2#12, #12G, 3/4"C		1.31		2#12, #12G, 3/4"C	0.95	E	17_SINGLE DOOR FREEZER	20	4
5	20	LIGHTING - KITCHEN	L	0.24	2#12, #12G, 3/4"C			0.48	2#12, #12G, 3/4"C	0.24	E	26_BACKBAR COOLER 2 DOOR	20	6
7	20	SIGNAGE	L	0.50	2#12, #12G, 3/4"C	2.00			2#12, #12G, 3/4"C	1.50	E	24_MICROWAVE	2P-20A	8
9	20	SIGNAGE	L	0.50	2#12, #12G, 3/4"C		2.00			1.50	E			10
11	20	TIME CLOCK	O	0.50	2#12, #12G, 3/4"C			0.63	2#12, #12G, 3/4"C	0.13	E	27_UNDERCOUNTER SINGLE DOOR FRIDGE	20	12
13	20	2_RICE COOKER	E	1.30	2#12, #12G, 3/4"C	1.99			2#12, #12G, 3/4"C	0.69	E	28_ICE MACHINE	20	14
15	20	2_RICE COOKER	E	1.30	2#12, #12G, 3/4"C		2.91		2#12, #12G, 3/4"C	1.61	E	29_COFFER BREWER	20	16
17	2P-30A	3_SOTA OVEN	E	3.12	2#10, #10G, 3/4"C			3.85	2#12, #12G, 3/4"C	0.73	E	30_HOT DISPLAY CASE	2P-20A	18
19			E	3.12		3.85				0.73	E			20
21	2P-30A	3_SOTA OVEN	E	3.12	2#10, #10G, 3/4"C		3.47		2#12, #12G, 3/4"C	0.35	E	33_KEGERATOR	20	22
23			E	3.12				3.95		0.83	E	31_COLD DISPLAY CASE	2P-20A	24
25	2P-20A	4_GRIDDLE 30"	E	1.95	2#12, #12G, 3/4"C	2.78				0.83	E			26
27			E	1.95			3.45		2#12, #12G, 3/4"C	1.50	E	34_SUSHI DISPLAY COUNTER TOP	20	28
29	20	5_REFRIGERATED TABLE	E	0.58	2#12, #12G, 3/4"C			2.07	2#12, #12G, 3/4"C	1.50	E	34_SUSHI DISPLAY COUNTER TOP	20	30
31	2P-30A	6_COUNTER TOP BURNER	E	2.26	2#10, #10G, 3/4"C	3.75			2#12, #12G, 3/4"C	0.37	E	35_2 DOOR FREEZER MAKE STATION	20	32
33			E	2.26			2.62		2#12, #12G, 3/4"C	0.37	E	36_2 DOOR REFRIGERATOR MAKE STATION	20	34
35	2P-30A	10_DISHWASHER	E	2.29	2#10, #10G, 3/4"C			3.90	2#12, #12G, 3/4"C	1.61	E	43_GRAB-N-GO DISPLAY CASE	20	36
37			E	2.29		2.91			2#12, #12G, 3/4"C	0.62	E	53_SOUP WARMER	20	38
39	20	14_WORKTOP DOUBLE DOOR REFRIGERATOR	E	1.13	2#12, #12G, 3/4"C		1.75		2#12, #12G, 3/4"C	0.62	E	53_SOUP WARMER	20	40
41	20	15_PREP TABLE FRIDGE	E	0.28	2#12, #12G, 3/4"C			0.64	2#12, #12G, 3/4"C	0.36	R	CEILING MOUNT RECEPTACLE FOR TV MONITOR	20	42
43	20	21_TOAST PRINTER	R	0.18	2#12, #12G, 3/4"C	0.28			2#12, #12G, 3/4"C	0.10	M	MOTORISED DAMPER	20	44
45	20	22_PAGER TEC	R	0.18	2#12, #12G, 3/4"C		0.36		2#12, #12G, 3/4"C	0.18	R	32_TOAST PRINTER	20	46
47	20	44_ SAMSUNG TV 50"	R	0.18	2#12, #12G, 3/4"C			3.92	2#8, #10G, 3/4"C	3.74	H	ACCU-1	2P-50A	48
49	20	GENERAL RECEPTACLES	R	0.54	2#12, #12G, 3/4"C	4.28				3.74	H			50
51	20	13_MANAGER DESK	R	0.36	2#12, #12G, 3/4"C		0.82		2#12, #12G, 3/4"C	0.46	H	AC-1	2P-20A	52
53	20	CEILING MOUNT RECEPTACLES FOR SECURITY CAMERA	R	1.26	2#12, #12G, 3/4"C			1.72		0.46	H			54
				TOTAL CONNECTED LOAD (KVA)		23.72	18.68	21.15						

PANEL:	EP-1 (EXISTING)				5					MOUNTING:	SURFACE
480Y/277	VOLTS,	3	PHASE,	4	WIRE	NEW KAIC RATING	22 KAIC			PANEL LOCATION:	BOH
MAIN CB:	400A	MLO:		BUS:	400A	MIN,				FED FROM:	EXISTING ELECTRICAL SERVICE
NOTE:											

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	3P-30A	7_ELECTRIC FRYER	E	4.71	3#10, #10G, 3/4"C	21.15			3#1, #6G, 1 1/4"C	16.44	O	PANEL A (NEW) (VIA 75KVA TRANSFORMER)	3P-125A	2
3			E	4.71			21.15			16.44	O			4
5			E	4.71				21.15		16.44	O			6
7	3P-60A	MUA-1	H	14.58	3#8, #10G, 3/4"C	22.58			3#8, #10G, 3/4"C	8.00	H	WH-1	3P-40A	8
9			H	14.58			22.58			8.00	H			10
11			H	14.58				22.58		8.00	H			12
13	20	KEF-1	M	1.44	2#12, #12G, 3/4"C	1.44						SPACE		14
15	3P-20A	RCP-1	M	0.90	3#12, #12G, 3/4"C		0.90					SPACE		16
17			M	0.90				0.90				SPACE		18
19			M	0.90		0.90						SPACE		20
21	20	KDN-1	H	3.99	2#12, #12G, 3/4"C		3.99					SPACE		22
23	20	HEAT TRACE	O	0.50	2#12, #12G, 3/4"C			0.50				SPACE		24
25		SPACE				0.00						SPACE		26
27		SPACE					0.00					SPACE		28
29		SPACE						0.00				SPACE		30
31		SPACE				0.00						SPACE		32
33		SPACE					0.00					SPACE		34
35		SPACE						0.00				SPACE		36
37		SPACE				0.00						SPACE		38
39		SPACE					0.00					SPACE		40
41		SPACE						0.00				SPACE		42
				TOTAL CONNECTED LOAD (KVA)		46.07	48.62	45.13						

6

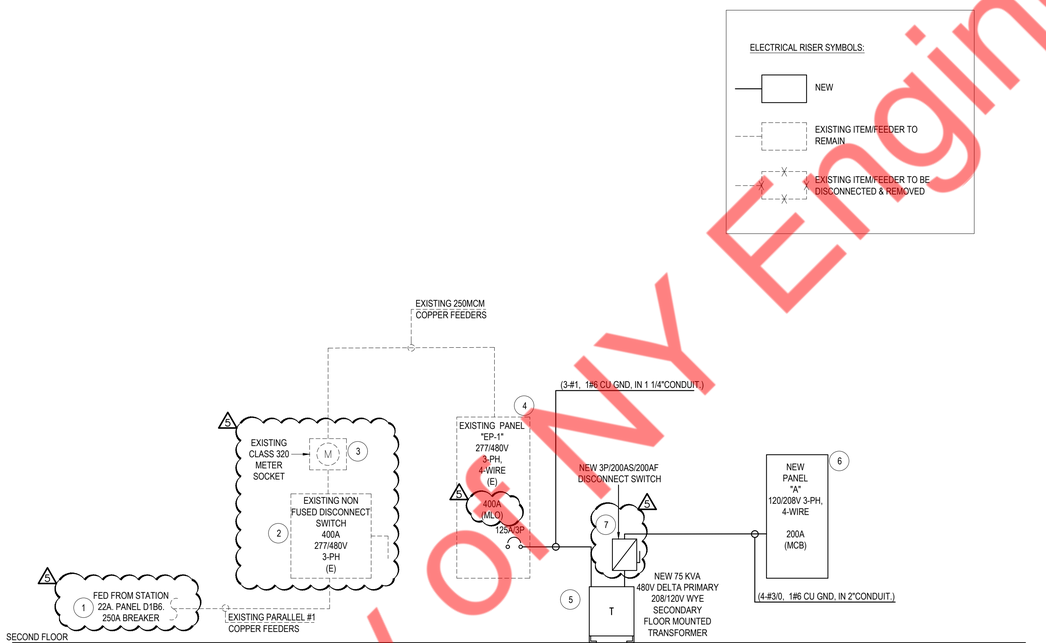
ELECTRICAL LOAD CALCULATION SUMMARY		
	EP-1 (EXISTING)	PANEL A (NEW)
TOTAL CONNECTED LOAD(KVA)	139.32	62.42
TOTAL DEMAND LOAD(KVA)	134.37	49.32
TOTAL CONNECTED CURRENT(AMPS)	167.78	173.47
TOTAL DEMAND CURRENT(AMPS)	161.82	137.05

5

RISER DIAGRAM GENERAL NOTES

1. ALL CIRCUITING SHOWN IS FOR REFERENCE PURPOSE ONLY. E.C. SHALL VERIFY CIRCUITING OF THE EXISTING DEVICES IN FIELD AND INFORM ENGINEER FOR ANY DISCREPANCIES.
2. ELECTRICAL CONTRACTOR TO VERIFY THE EXACT PANEL SIZES AND INCOMING FEEDER SIZE.

1 ELECTRICAL PANEL SCHEDULE
N.T.S



1 Electrical Riser Diagram
N.T.S.

GENERAL NOTES:

1. E.C. SHALL VERIFY INCOMING SERVICE AMPERAGE, WIRE SIZING AND DISTRIBUTION IN COORDINATION WITH OWNER/ARCHITECT IN FIELD.
2. RISER DIAGRAM IS FOR REFERENCE PURPOSE ONLY. E.C. SHALL VERIFY EXACT POWER DISTRIBUTION IN FIELD AND INFORM ENGINEER ON RECORD FOR ANY DISCREPANCY.
3. ELECTRICAL CONTRACTOR TO COORDINATE FAULT CURRENT (Isc) RATING WITH UTILITY COMPANY AND AHJ PRIOR TO COMMENCING ANY WORK.

ELECTRICAL RISER KEYED WORK NOTES:

1. EXISTING FED FROM STATION 22A. PANEL D1B6.250A BREAKER TO EXISTING NON FUSED DISCONNECT SWITCH 400A, 277/480V 3-PH SHALL REMAIN. E.C. TO COORDINATE WITH OWNER/ARCHITECT FOR EXACT POWER DISTRIBUTION IN FIELD. E.C. SHALL FIELD VERIFY OPERABLE CONDITION OF INCOMING FEEDER AND REPLACE IF INOPERABLE. BASE BID ACCORDINGLY.
2. EXISTING NON FUSED DISCONNECT SWITCH 400A, 277/480V 3-PH FOR THE PROJECT SPACE SHALL REMAIN. E.C TO VERIFY THE OPERABLE CONDITION OF EXISTING EQUIPMENT IN FIELD AND REPLACE IF INOPERABLE. BASE BID ACCORDINGLY.
3. EXISTING CLASS 320 METER SOCKET FOR THE PROJECT SPACE SHALL REMAIN. E.C TO VERIFY THE OPERABLE CONDITION OF EXISTING EQUIPMENT IN FIELD AND REPLACE IF INOPERABLE. BASE BID ACCORDINGLY.
4. EXISTING 400A, 277/480V, 3-PHASE, 4-WIRE, MLO ELECTRICAL PANEL "EP-1" SHALL REMAIN.E.C TO VERIFY THE OPERABLE CONDITION OF EXISTING PANEL "EP-1" IN FIELD AND REPLACE IF INOPERABLE. BASE BID ACCORDINGLY.
5. NEW 75 KVA, 480V DELTA PRIMARY AND 120/208V WYE SECONDARY FLOOR MOUNTED TRANSFORMER. E.C SHALL COORDINATE WITH ARCHITECT/ OWNER FOR EXACT LOCATION IN FIELD.
6. NEW 200A, 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "A". E.C SHALL COORDINATE WITH ARCHITECT/ OWNER FOR EXACT LOCATION IN FIELD.
7. NEW 3P/200AS/200AF DISCONNECT SWITCH ABOVE THE TRANSFORMER. EXACT LOCATION TO BE COORDINATED WITH FIELD CONDITIONS.

PLUMBING SYMBOLS LEGEND

— — — —	VENT PIPING
— - — - —	COLD WATER PIPING
—— - - ——	HOT WATER PIPING
—— - - ——	HOT WATER RETURN PIPING
- · - · - · -	FILTERED WATER PIPING
—— - SAN · ——	UNGD. SANITARY PIPING
——	ABOVE GROUND SANITARY PIPING
—— ⊃○	P-TRAP
—— ○	PIPE UP
—— ⊃	PIPE DROP
—— ‖	PLUGGED OUTLET/CLEANOUT
▥	FLOOR SINK
▨	FLOOR DRAIN
◔	POINT OF NEW CONNECTION
◑	POINT OF DISCONNECTION
⋈	ISOLATION VALVE
⊂⊃	BACKFLOW PREVENTER
CO	CLEANOUT
CODP	CLEAN OUT DECK PLATE
CW	COLD WATER
HW	HOT WATER
HWR	HOT WATER RETURN
SAN	SANITARY
V	VENT
W	WASTE
LAV	LAVATORY
WC	WATER CLOSET
TYP.	TYPICAL
DN	DOWN
AFF	ABOVE FINISH FLOOR
FD	FLOOR DRAIN
SQ. FT.	SQUARE FEET
BFP	BACK FLOW PREVENTER
KS	KITCHEN SINK
WH	HOT WATER HEATER
RCP	HOT WATER RE-CIRCULATION PUMP

PIPING:

SOIL, WASTE AND VENT PIPING
SOIL, WASTE AND VENT PIPING 10" AND SMALLER SHALL BE SERVICE WEIGHT, HUBLESS, CAST IRON PIPE AND FITTINGS WITH NEOPRENE GASKET AND STAINLESS STEEL SHIELD AND CLAMP. PROVIDE HUB & SPIGOT, SERVICE WEIGHT CAST-IRON SOIL PIPE AND FITTINGS BELOW GRADE WHERE REQUIRED BY LOCAL CODES. THE VENT PIPING FROM THE FIXTURE DISCHARGING THE WASTE SHALL EXTEND TO A POINT 6 INCHES ABOVE THE FLOOD RIM OF THE FIXTURE, AND THEN SHALL RE-TRANSITION TO CAST IRON OR COPPER MATERIAL AS USED THROUGHOUT THE REST OF THE COMMERCIAL BUILDING. ALL HORIZONTAL RUNS SHALL DRAIN AT A GRADE 1/4" PER FOOT WHERE POSSIBLE BUT IN NO CASE LESS THAN 1/8" PER FOOT. COORDINATE WITH LOCAL AUTHORITIES FOR DRAINAGE REQUIREMENTS FOR EQUIPMENT DESIGNATED WITH INDIRECT WASTE TO FLOOR DRAINS. PROVIDE PIPED DRAIN TO SANITARY IF REQUIRED BY LOCAL JURISDICTION. NO PVC SCHEDULE 40 PIPE AND FITTINGS MAY BE USED FOR THE TOILET FIXTURES AND OTHER PLUMBING CONNECTIONS IN THE BUILDING.

DOMESTIC WATER PIPING
DOMESTIC WATER PIPING 2-1/2" AND SMALLER SHALL BE COPPER TUBE WITH WROUGHT COPPER SWEAT FITTINGS JOINED WITH NON-LEAD, NON-ANTIMONY SOLDER. PROVIDE TYPE "L" COPPER TUBE ABOVE GRADE AND TYPE "K" BELOW GRADE.

CONDENSATE DRAINAGE PIPING
THE PLUMBING CONTRACTOR SHALL PROVIDE CONDENSATE DRAINS FOR AIR HANDLING UNITS AND POTBELLYS EQUIPMENT (REFER TO SCHEDULE). CONDENSATE DRAINAGE PIPING SHALL BE TYPE "M" COPPER TUBING WITH WROUGHT COPPER SWEAT FITTINGS JOINED WITH 50/50 SOLDER.

HANGERS & SUPPORTS THE PLUMBING CONTRACTOR SHALL FURNISH ALL PIPE SUPPORTS REQUIRED FOR EQUIPMENT AND MATERIAL. ALL HORIZONTAL RUNS OF PIPING SHALL BE SUPPORTED BY PIPE HANGERS INSTALLED AS REQUIRED BY LOCAL CODES ADDITIONAL SUPPORTS SHALL BE PROVIDED WHERE REQUIRED TO PREVENT SAGGING. HANGERS AND PIPE ATTACHMENTS TO BE FACTORY FABRICATED WITH GALVANIZED COATINGS; NONMETALLIC COATED FOR HANGERS IN DIRECT CONTACT WITH COPPER TUBING.

CONNECTIONS
INSTALL UNIONS ADJACENT TO EACH VALVE AND AT FINAL CONNECTION TO EACH PIECE OF EQUIPMENT. INSTALL DIELECTRIC COUPLINGS TO CONNECT PIPING MATERIALS OF DISSIMILAR METALS. SCREW JOINT STEEL PIPING UP TO AND INCLUDING 1-1/2". WELD PIPING USE NON-LEAD, NON-ANTIMONY SOLDER FOR SOLDERING DOMESTIC WATER COPPER PIPE.

CLEANOUTS
PROVIDE J.R. SMITH OR EQUIVALENT FLOOR AND WALL CLEANOUTS AS INDICATED ON THE DRAWINGS OR WHERE REQUIRED BY CODE IN ALL SOIL, WASTE, AND DRAIN LINES. IN AREAS WITH CERAMIC TILE OR CARPETED FLOORING, PROVIDE CLEANOUTS WITH SQUARE, ADJUSTABLE, NICKEL BRONZE TOP. IN AREAS WITH RESILIENT FLOORING, PROVIDE CLEANOUTS WITH SQUARE, ADJUSTABLE, NICKEL BRONZE TOP WITH TILE RECESS. CLEANOUTS SHALL BE SAME SIZE AS PIPE EXCEPT THAT CLEANOUTS LARGER THAN 4" WILL NOT BE REQUIRED. WHERE CLEANOUTS OCCUR IN WALLS OF FINISHED AREAS, THEY SHALL BE CONCEALED BEHIND CHROME PLATED ACCESS COVERS.

PIPING (CONTINUED):

INSTALLATION
INSTALL EXPOSED PIPING FREE OF SAGS AND BENDS. PROVIDE BRACKET STANDOFFS FROM MOUNTING SURFACES SUFFICIENT TO ALLOW 1" CLEANING SPACE AROUND ALL PIPING, INCLUDING ANY ADDED PIPING INSULATION. INSTALL FITTINGS FOR CHANGES IN DIRECTION AND BRANCH CONNECTIONS. INSTALL SLEEVES FOR PIPES PASSING THROUGH CONCRETE AND MASONRY WALLS, GYPSUM BOARD PARTITIONS, CONCRETE FLOOR AND ROOF SLABS. SEAL PIPE PENETRATIONS THROUGH RATED CONSTRUCTION WITH FIRESTOPPING SEALANT MATERIAL. UNDERGROUND WATER AND SEWER LINES SHALL BE LAID IN SEPARATE TRENCHES WITH A MINIMUM HORIZONTAL SPACING AS REQUIRED BY CODE, EXCAVATED TO THE PROPER DEPTH AND GRADED TO PRODUCE THE REQUIRED FALL.

TESTING
ALL PIPES SHALL BE TESTED BY AN APPROVED METHOD BEFORE THEY ARE BACKFILLED OR CONCEALED. AFTER TESTING IS COMPLETE, THE PLUMBING CONTRACTOR SHALL DISINFECT THE POTABLE WATER SYSTEM AS REQUIRED BY LOCAL AUTHORITY. TEST WATER PURITY ACCORDING TO LOCAL REQUIREMENTS AND SUBMIT CERTIFIED TEST RESULTS TO ENGINEER FOR REVIEW AND APPROVAL.

PIPING INSULATION:

WATER PIPING
PROVIDE THERMAL INSULATION ON ALL HOT TEMPERED & COLD WATER, AND HORIZONTAL WASTE PIPING IN CEILING SPACES, AND ON ALL COLD WATER PIPING IN CASEWORK AND BAR AREAS. USE SELF-SEALING CLOSED CELL FOAM OR JACKETED FIBERGLASS INSULATION WITH MANUFACTURE APPROVED ADHESIVES, SEALERS, AND COATINGS. ALL MATERIALS USED SHALL NOT EXCEED 25 FOR FLAME SPREAD, 50 FOR FUEL CONTRIBUTED, OR 50 FOR SMOKE DEVELOPED. UNLESS OTHERWISE REQUIRED BY THE LOCAL AUTHORITY OR ENERGY CODES, THE MINIMUM INSULATION LEVELS SHALL BE AS FOLLOWS:

PIPE SIZE	INSULATION THICKNESS
LESS THAN OR EQUAL TO 1½"	1"
2" DIA. OR GREATER	1½"

(INSULATION VALUE = k VALUE NOT EXCEEDING 2.027 BTU PER INCH/h*ft *f

SAFETY COVERS
INSTALL SPECIFIED NO-SCALD SAFETY COVERS WITH INSULATED FOAM LINER AND TAMPER PROOF STRAP AT ALL EXPOSED PIPING.

ICE BIN DRAIN
INSULATE ICE BIN COPPER DRAIN LINES WITH 1/2" THICK, SELF-SEALING, SECTIONAL, CLOSED CELL FOAM.

HVAC PIPING
INSULATE REFRIGERANT SUCTION PIPING AND COOLING COIL CONDENSATE PIPING ¾" THICK, SELF SEALING, CLOSED CELL FOAM. INSULATE HVAC HOT AND WITH CHILLED WATER PIPING SYSTEMS AND LOW PRESSURE STEAM AND CONDENSATE PIPING WITH ½" THICK, HEAVY DUTY, SELF SEALING, JACKETED FIBERGLASS.
RAIN CONDUCTORS INSULATE RAIN WATER CONDUCTORS WHICH PASS THROUGH OCCUPIED AREAS WITH ½" THICK ARMACELL LAP SEAL INSULATION WITH "MICROBAN" A ANTIMICROBIAL PROTECTION THAT MEETS ASHRAE REGULATONS.

PIPING VALVES:

GENERAL
PLUMBING CONTRACTOR TO PROVIDE VALVES WHERE INDICATED ON PLANS AND AS NECESSARY FOR PROPER SYSTEM OPERATION AND COMPONENT ISOLATION. INSTALL VALVES FOR EACH FIXTURE AND ITEM OF EQUIPMENT. PROVIDE BRAIDED STAINLESS STEEL HOSE (UNLESS OTHERWISE NOTED) BETWEEN VALVE AND EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS. LOCATE SHUT-OFF VALVES ADJACENT TO EQUIPMENT FOR EASY ACCESS SUCH THAT VALVES CAN BE REACHED WITHOUT MOVING EQUIPMENT.
VALVES
PROVIDE VALVES FOR WORKING PRESSURE IN WATER PIPING OF 125 PSI OR GREATER. UNLESS NOTED OTHERWISE VALVES SHALL BE AS FOLLOWS:

VALVE TYPE	MANUFACTURER	MODEL NO.
CHECK VALVE (UP TO 2")	NIBCO	#S-22
FULL PORT BALL VALVE (UP TO 3")	NIBCO	#S-FP-600
GATE VALVE (UP TO 3")	NIBCO	#S-113
TEMP. AND PRESSURE RELIEF VALVE	WILKINS	#TP1100A
WATER HAMMER ARRESTOR	WILKINS	#1250
BACKFLOW PREVENTER (WHOLE-HOUSE)	WILKINS	#950XLU
BACKFLOW PREVENTER (SINGLE DEVICE)	WILKINS	#700
VACUUM RELIEF VALVE	WILKINS	#35VCH
PRESSURE REDUCING VALVE	WILKINS	#500YSBR
TRAP SEAL PRIMER	JAY R. SMITH	#2699-1

SUPPLY
IF WATER PRESSURE SUPPLIED TO STORE IS GREATER THAN AND 65 PSI. THEN PROVIDE A PRESSURE REGULATOR TO MAIN SUPPLY TO MAINTAIN WATER PRESSURE. PROVIDE BACKFLOW PREVENTION ON WATER SERVICE IF REQUIRED BY LOCAL CODES.

PLUMBING DRAWING LIST:

CONSTRUCTION AND BIDDING NOTES:

1. THE INTENT OF THE SPECIFICATION AND THE DRAWINGS IS TO PROVIDE A COMPLETE AND FULLY OPERATIONAL PLUMBING SYSTEM. THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIAL AND EQUIPMENT RELATED TO THE INSTALLATION OF THE PLUMBING WORK.
2. THE CONTRACTOR SHALL THOROUGHLY EXAMINE ALL AREAS WHERE FIXTURES, EQUIPMENT, AND PIPING WILL BE INSTALLED AND WILL REPORT ANY CONDITION THAT, IN HIS OPINION, PREVENTS THE PROPER INSTALLATION OF THE PLUMBING WORK.
3. EQUIPMENT AND MATERIALS SHALL CONFORM WITH APPROPRIATE PROVISIONS OF ASME, ASTM, UL, NEMA, ANSI, ASHRAE, NFPA, AS APPLICABLE TO EACH INDIVIDUAL UNIT OR ASSEMBLY.
4. CODES ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH ALL APPLICABLE STATE AND LOCAL CODES AND ORDINANCES. IN CASE OF CONFLICT BETWEEN THE DRAWINGS/SPECIFICATIONS AND THE CODES AND ORDINANCES, THE HIGHEST STANDARD SHALL APPLY. THE CONTRACTOR SHALL SATISFY CODE REQUIREMENTS AS A MINIMUM STANDARD WITHOUT ANY EXTRA COST TO GACHI.
5. THE CONTRACTOR SHALL PROCURE AND PAY FOR ALL PERMITS, FEES AND INSPECTIONS NECESSARY TO COMPLETE THE PLUMBING WORK.
6. THE CONTRACTOR SHALL UNCONDITIONALLY WARRANT ALL WORK TO BE FREE OF DEFECTS IN MATERIAL AND WORKMANSHIP FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF FINAL ACCEPTANCE BY POTBELLY AND WILL REPAIR OR REPLACE ANY DEFECTIVE WORK PROMPTLY AND WITHOUT CHARGE AND RESTORE ANY OTHER EXISTING WORK DAMAGED IN THE COURSE OF REPAIRING DEFECTIVE MATERIALS AND WORKMANSHIP.
7. THIS CONTRACTOR SHALL OBTAIN A COPY OF THE WORK LETTER FROM THE PSW CONSTRUCTION MANAGER PRIOR TO SUBMISSION OF THE BID. THIS CONTRACTOR SHALL SUBMIT SAID WORKLETTER AS EVIDENCE OF HAVING REVIEWED CONTRACTORS RESPONSIBILITIES WITHIN SCOPE OF WORK. ANY DISCREPANCIES BETWEEN THE WORKLETTER AND THE DESIGN DOCUMENTS MUST BE BROUGHT TO THE ATTENTION OF THE PSW CONSTRUCTION MANAGER, BEFORE BID DUE DATE.
8. PROVIDE AND INSTALL ALL "P" TRAPS, MANIFOLDS, DRAIN LINES, SHUT-OFFS, GREASE TRAPS & BACKFLOW PREVENTORS AS REQUIRED BY EQUIPMENT AND/OR LOCAL CODES. ALL KITCHEN, DINING ROOM AND BAR AREA WASTES ARE TO BE OPEN SITE IN FLOOR, UNLESS OTHERWISE SPECIFIED.
9. IF WATER PRESSURE AT EQUIPMENT AREA EXCEEDS 40 P.S.I. FLOW PRESSURE, INSTALL A PRESSURE REDUCING VALVE ON BOTH THE MAIN HOT AND COLD WATER SUPPLY LINES.
10. LOCATE AND FURNISH ALL AREA FLOOR DRAINS UNLESS OTHERWISE SPECIFIED.
11. PROVIDE AND SIZE ANY SOFTENING AND FILTERING EQUIPMENT THAT MAY BE REQUIRED UNLESS OTHERWISE SPECIFIED.
12. DETERMINE SIZE OF GAS SUPPLY LINE REQUIRED FOR ALL GAS EQUIPMENT INCLUDING FOOD SERVICE EQUIPMENT.
13. PLUMBER TO PROVIDE AND INSTALL BACKFLOW PREVENTORS ON ALL EQUIPMENT AS REQUIRED BY LOCAL CODE.
14. SEE EQUIPMENT SCHEDULE FOR LISTING OF ALL EQUIPMENT WITH APPROPRIATE SPECIFICATIONS. SCHEDULE WILL INCLUDE ALL RESPONSIBILITIES FOR PROVIDING AND INSTALLING EQUIPMENT.
15. THESE PLANS ARE FOR INFORMATION ONLY. INFORMATION ON THIS SHEET IS TO BE REVIEWED BY THE OWNER AND INCORPORATED INTO THE BUILDINGS' MECHANICAL PLANS IN ACCORDANCE WITH LOCAL CODES. THE ENTIRE INSTALLATION SHALL CONFORM WITH THE LATEST EDITION OF THE LOCAL AND STATE PLUMBING CODE IN ADDITION TO LANDLORD REQUIREMENTS AND SPECIFICATIONS.
16. THE OWNER SHOULD SUBMIT THESE PLANS TO LOCAL BUILDING, HEALTH AND FIRE DEPARTMENT OFFICIALS FOR APPROVAL.
17. CONTRACTORS TO MAKE USE OF ANY CONNECTIONS ALREADY INSTALLED IN EXISTING BUILDING WHENEVER POSSIBLE.
18. CONTRACTORS TO PROVIDE AND INSTALL WALL BACKING FOR WALL SHELVES. WALL MOUNTED HANDSINKS, WALL MOUNTED COOKING EQUIPMENT, ETC. VERIFY THESE LOCATION WITH OWNER.
19. FLOOR DRAINS AND/OR FLOOR SINKS SHOWN ARE RECOMMENDED LOCATIONS, MECHANICAL ENGINEER TO VERIFY CODE REQUIREMENTS.

ENERGY CONSERVATION NOTES:

1. AS PER 2018 INTERNATIONAL ENERGY CONSERVATION CODE C404.4, PIPING FROM A WATER HEATER TO THE TERMINATION OF HEATED WATER FIXTURE SUPPLY PIPE SHALL BE INSULATED IN ACCORDANCE WITH TABLE OF MINIMUM PIPE INSULATION THICKNESS.

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
141-200	0.25-0.29	125	1.5	1.5	2	2	2
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

2. HOT WATER SYSTEM PIPING IS DESIGNED AS PER MAXIMUM ALLOWED PIPE LENGTH METHOD AS PER 2018 INTERNATIONAL ENERGY CONSERVATION CODE C404.5. THE HOT WATER VOLUME FROM THE NEAREST SOURCE OF HEATED WATER TO THE TERMINATION OF THE FIXTURE SUPPLY PIPE SHALL BE AS PER MAXIMUM PIPING LENGTH TABLE.
3. AS PER 2018 INTERNATIONAL ENERGY CONSERVATION CODE, AUTOMATIC CONTROLS SHALL BE INSTALLED THAT LIMITS THE OPERATION OF A RE-CIRCULATING PUMP AND THE SYSTEM RETURN PIPE SHALL BE A DEDICATED RETURN PIPE OR A COLD WATER SUPPLY PIPE.
4. AS PER 2018 INTERNATIONAL ENERGY CONSERVATION CODE C404.7, 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).
5. AS PER 2018 INTERNATIONAL ENERGY CONSERVATION CODE C404.3, WATER HEATING EQUIPMENT NOT SUPPLIED WITH INTEGRAL HEAT TRAPS AND SERVING NON RE-CIRCULATING SYSTEM SHALL BE PROVIDED WITH HEAT TRAPS ON SUPPLY AND DISCHARGE PIPING ASSOCIATED WITH EQUIPMENT.

BUILDING DEPARTMENT NOTES:

1. ALL PLUMBING SYSTEMS (SANITARY, WASTE, VENT WATER DISTRIBUTION PIPING SYSTEMS) AND ASSOCIATED EQUIPMENT SHALL BE INSTALLED, OPERATED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF 248 CMR UNIFORM STATE PLUMBING CODE
2. INSTALLATION OF UNDERGROUND PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 248 CMR 10.05 AND 10.06
3. PROTECTION OF PIPING AND PLUMBING SYSTEM COMPONENTS AS PER 248 CMR 10.05, SECTION 8.
4. TRENCHING, EXCAVATION AND BACKFILL AS PER 248 CMR 10.05, SECTION 5.
5. RODENT PROOFING AS PER PER 248 CMR 10.05, SECTION 8.
6. MATERIALS USED IN PLUMBING SYSTEMS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF PER 248 CMR 10.06
7. EQUIPMENT CONNECTIONS AND JOINING OF PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF PER 248 CMR 10.07
8. DEEP SEAL TRAPS FOR FLOOR DRAINS SHALL BE PROVIDED AS PER SECTION 10.08, AND CLEAN-OUTS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF PER 248 CMR 10.08
9. DRAINAGE PIPE CLEANOUTS AS PER 248 CMR 10.08
10. VERTICAL AND HORIZONTAL PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH THE REQUIREMENTS PER 248 CMR 10.11
11. WATER SUPPLY SYSTEMS SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS PER 248 CMR 10.14
12. THE SANITARY DRAINAGE SYSTEM SHALL BE SIZED AND INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS PER 248 CMR 10.15
13. VENT PIPING FOR THE SANITARY DRAINAGE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS PER 248 CMR 10.16

GREASE INTERCEPTOR SIZING
PER 248 CMR SECTION 10.09 TABLE 1

Length X Width X Depth/231 = Gallons X .75 Fill Factor / Drain Period (1min) X Number of Compartments = Size of Grease Interceptor (GPM)
(per PDI guidelines)

FIXTURE DESCRIPTION	LENGTH	WIDTH	HEIGHT	GALLONS	FLOW RATE (GPM)
3 COMPARTMENT SINK	16	20	14	58	43.64

TABLE TO CALCULATE DRAINAGE FIXTURE UNITS

PLUMING FIXTURE	DRAINAGE FIXTURE UNITS	NUMBER OF FIXTURES	TOTAL DRAINAGE FIXTURE UNITS
HAND SINKS	2	3	6
FLOOR SINKS	5	4	20
MOP SINK	4	1	4
FLOOR DRAIN	5	1	5
TOTAL DRAINAGE UNITS = 35 (4" SANITARY)			35

NOTE:

NO PVC SCHEDULE 40 PIPE AND FITTINGS MAY BE USED FOR THE TOILET FIXTURES AND OTHER PLUMBING CONNECTIONS IN THE BUILDING.

THE VENT PIPING FROM THE FIXTURE DISCHARGING THE WASTE SHALL EXTEND TO A POINT 6 INCHES ABOVE THE FLOOD RIM OF THE FIXTURE, AND THEN SHALL RE-TRANSITION TO CAST IRON OR COPPER MATERIAL AS USED THROUGHOUT THE REST OF THE COMMERCIAL BUILDING

ALL PLUMBING SHALL COMPLY WITH 248 CMR PLUMBING CODE

WATER HEATER DRAIN PAN TO BE 1" MINIMUM SIZE

THE PIPING MATERIAL TO BE USED, ITS SIZE AND SLOPE AT WHICH IT IS INSTALLED SHALL MEET THE REQUIREMENTS OF 248 MCR 10.00.

NOTE:

PROVIDE HEAT TRACE AND 1" OF INSULATION FOR ALL NEW RAIN LEADERS KITCHEN WASTE AND SANITARY PIPING SHOWN ON THIS PLAN. ADDITIONAL HEAT TRACE AND INSULATION SHALL BE PROVIDED ON TRAP PRIMERS- CONTRACTORS TO DETERMINE FINAL ROUTING IN FIELD. HEAT TRACE SHALL BE EQUAL TO RAYCHEM MODEL 5XL2CR. PROVIDE WITH NECESSARY CONTROL MODULE AND CONTACTS FOR BAS CONNECTION. A STATUS INDICATOR SHALL BE LOCATED IN THE BACK OF HOUSE AREA AVOVE - COORDINATE FINAL LOCATION WITH OWNER.

PIPE ROUTING SHOWN IS DIAGRAMMATIC. PC TO COORDINATE ROUTING OF ALL NEW WASTE, VENT, KITCHEN WASTE, AND TRAP PRIMER PIPING WITH FIELD CONDITIONS.

TABLE 1
DISTANCE OF FIXTURE TRAP FROM VENT

INCHES	DISTANCE TRAP TO VENT, FEET
1½	5'
2	6'
3	8'
4	10'
SLOPE NOT TO EXCEED ¼-INCH PER FOOT	

PLUMBING GENERAL NOTES:

A. REFER TO SCHEDULES, DETAILS AND RISER DIAGRAMS FOR MORE INFORMATION ON SIZING OF PIPING TO EQUIPMENT.

B. FIELD VERIFY ALL CONDITIONS PRIOR TO BIDDING AND START OF WORK.

C. VERIFY LOCAL PLUMBING AND HEALTH DEPT. DRAIN REQUIREMENTS FOR THE 3-COMPARTMENT SINK, PREP SINK, AND SHAKE SINK.

D. P.C. TO VERIFY LOCATIONS OF SODA EQUIPMENT WITH VENDOR AND/OR OWNER. ADJUST PLUMBING LOCATIONS AS NECESSARY.

E. G.C. TO PROVIDE ACCESS FOR SODA LINES IF NECESSARY. COORDINATE WITH VENDOR AND/OR OWNER.

FIELD VERIFY ALL CONDITIONS

DESIGN DRAWINGS ARE SCHEMATIC. THIS CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING OR AWARD OF CONTRACT TO INSPECT EXISTING FIELD CONDITIONS. THIS CONTRACT SHALL INCLUDE ALL LABOR AND MATERIALS NECESSARY FOR FIELD MODIFICATIONS DUE TO EXISTING CONDITIONS.

THE CONTRACTOR SHALL CONTACT THE ARCHITECT, ENGINEER OR OWNER PRIOR TO BIDDING FOR INTERPRETATIONS AND CLARIFICATIONS OF THE DESIGN AND INCLUDE IN HIS BID ALL COSTS TO MEET THE DESIGN INTENT. CLARIFICATIONS MADE BY THE ARCHITECT, ENGINEER OR OWNER AFTER BIDDING WILL BE FINAL AND SHALL BE IMPLEMENTED AT CONTRACTORS COST.

BIDDING CONTRACTORS SHALL HAVE A WORKING KNOWLEDGE OF LOCAL CODES AND ORDINANCES AND SHALL INCLUDE IN THEIR BIDS THE COSTS FOR ALL WORK INSTALLED IN STRICT ACCORDANCE WITH GOVERNING CODES, THE PLANS AND SPECIFICATIONS NOT WITHSTANDING. THE CONTRACTOR SHALL ALERT ARCHITECT, ENGINEER OR OWNER OF ANY APPARENT DISCREPANCIES BETWEEN GOVERNING CODES AND DESIGN INTENT.

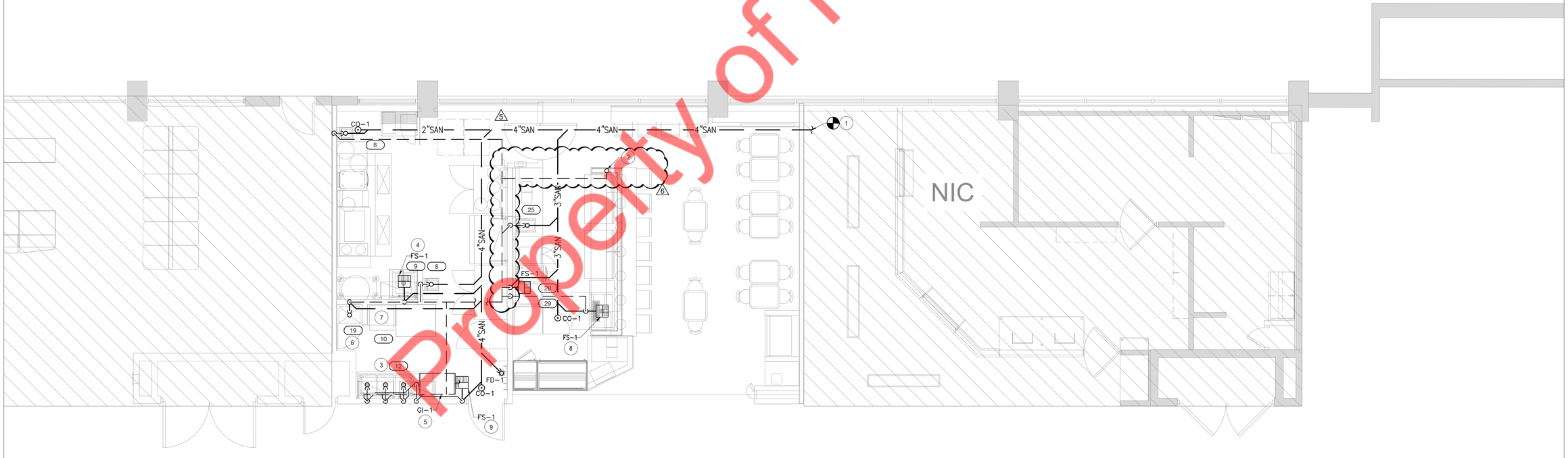
NOTE:

THE LOCATION OF THE GREASE TRAP AS SHOWN IS FOR COORDINATION PURPOSES ONLY. THE CONTRACTOR SHALL FIELD VERIFY ALL SITE CONDITIONS DURING THE BIDDING PHASE OF THIS PROJECT AND ASSIGN ALL APPLICABLE COST.

SANITARY DESIGN IS DIAGRAMATTIC. IT IS THE PLUMBING CONTRACTORS RESPONSIBILITY TO LOCATE AND DETERMINE THE EXACT POINT OF CONNECTION TO EXISTING SEWER SERVING THE BUILDING. PLUMBING CONTRACTOR SHALL VERIFY THESE CONDITIONS PRIOR TO BIDDING AND CONSTRUCTION. CONTRACTOR SHALL HEAT TRACE ALL PIPING AND ASSOCIATED EQUIPMENT IN UNCONDITIONED PARKING GARAGE CEILING SPACE UNLESS IT IS DETERMINED THAT OWNER IS PROVIDING THERMAL PROTECTION TO THE PLUMBING SYSTEMS.

KEYNOTES:

1. CONNECT NEW 4" SANITARY PIPING TO EXISTING 4" SANITARY PIPING. CONTRACTOR TO FIELD VERIFY EXACT SIZE, LOCATION AND INVERT ON SITE.
2. CONNECT NEW 3" VENT PIPING TO NEW VENT THROUGH ROOF. CONTRACTOR TO COORDINATE EXACT LOCATION WITH ARCHITECT.
3. 3 COMPARTMENT SINK TO BE DIRECTLY CONNECTED TO THE GREASE INTERCEPTOR.
4. INDIRECT WASTE WITH 2" GAP FROM PREP SINK TO FLOOR SINK. COMPARTMENT SPECIFIACLLY DESIGNATED FOR PRODUCE PREPARATION, PROVIDE LAMINATED SIGN WITH 2 INCH LETTER HEIGHT STATING "THIS COMPARTMENT ONLY IS DESIGNATED FOR PRODUCE PREPARATION".
5. NEW SCHIER GB2 50 GPM 20 GALLON ABOVE GRADE GREASE INTERCEPTOR ON FLOOR BELOW 3 COMPARTMENT SINK. CONTRACTOR TO FIELD VERIFY EXACT LOCATION AND INVERT ELEVATION PRIOR TO ANY WORK.
6. WATER HEATER - T&P RELIEF VALVE TO BE INDIRECTLY DRAINED AT MOP SINK, PROVIDE AIR GAP.
7. ROUTE INDIRECT WASTE FROM DISHWASHER TO MOP SINK.
8. ROUTE INDIRECT WASTE FROM BEER DISPENSER TO FLOOR SINK WITH APPROVED AIR GAP.
9. ROUTE INDIRECT WASTE FROM GREASE TRAP TO FLOOR SINK WITH APPROVED AIR GAP.



1 Sanitary and Vent Plan
1/4" = 1'-0"

Gochi Term C

TABLE TO CALCULATE WATER FIXTURE UNITS

PLUMING FIXTURE	WATER FIXTURE UNITS	NUMBER OF FIXTURES	TOTAL WATER FIXTURE UNITS
HAND SINKS	1	3	3
MOP SINK	2	1	2
PREP SINK	2	1	2
DISHWASHER	6	1	6
3-COMPARTMENT SINK	6	1	6
COFFEE BREWER	1	1	1
ICE MACHINE	1	1	1
TOTAL WATER FIXTURE UNITS			21
DEMAND FACTOR (AS PER TABLE-2)			0.7
TOTAL WATER FIXTURE UNITS			14.7
WATER PIPE SIZE=1"			

TABLE 3
CAPACITY VALUES FOR SERVICE, MAINS, RISERS AND/OR BRANCHES

NOMINAL PIPE OR TUBING SIZES (INCHES)	CAPACITY VALUE
D	1
½	1.1 TO 4
¾	4.1 TO 9
1	9.1 TO 16.5
1¼	16.6 TO 28
1½	28.1 TO 55
2	55.1 TO 107.5
2½	107.6 TO 182.5
3	182.6 TO 287.5
3½	287.6 TO 425
4	425.1 TO 700
5	700.1 TO 1100
6	1100.1 TO 1300

BACK FLOW PREVENTER ASSEMBLY REQUIREMENTS

TYPE OF EQUIP. ON SYSTEM	METHOD OF CROSS CONNECTION CONTROL	MANUFACTURE AND MODEL NUMBER	REMARKS
ICE MACHINE	REDUCED PRESSURE ZONE ASSEMBLY	WATTS LF-009-QT-S	STAINLESS STEEL BODY WITH QUARTER TURN VALVE BRONZE STRAINER.
DIPPERWELL COFFEE BREWER	DOUBLE CHECK VALVE ASSEMBLY	WATTS 9D-LF ASSE 1022/1024 CERT.	STAINLESS STEEL BODY WITH QUARTER TURN VALVE BRONZE STRAINER.
WATER SERVICE CHEMICAL FEEDS	REDUCED PRESSURE ZONE ASSEMBLY	WATTS LF-919-QT	LEAD FREE CAST COPPER WITH QUATER TURN

1. CONTRACTOR SHALL PROVIDE INDIVIDUAL BACKFLOW PREVENTERS FOR EACH PIECE OF EQUIPMENT.
2. EACH BACKFLOW PREVENTER MUST HAVE TESTING PORTS.
3. BRONZE BODIED BACKFLOW PREVENTERS ARE PERMISSABLE IF ALLOWED BY LOCAL CODES.

NOTE:

ENSURE THAT ALL THE BACKFLOW PROTECTION IS INSTALLED PROPERLY ON ALL SPECIALTY PLUMBING APPLIANCES AND FIXTURES SUCH AS DRINK MACHINES AND ICE MACHINES WITH PROPER LEVEL OF BACKFLOW PROTECTION.

COORDINATE RELOCATION OF PLUMBING VENT TERMINALS WITH BASE BUILDING DOCUMENTS. MAINTAIN A MINIMUM OF 25'-0" SEPARATION FROM AIR INTAKES ABOVE AS REQUIRED BY 248 CMT.

CHLORINATION NOTE:

PLUMBING CONTRACTOR TO PROVIDE CHLORINATION SAMPLING AT (4) LOCATIONS PER PLUMBING INSPECTOR. 3 SAMPLES SHALL BE TESTED FROM AT EACH SAMPLING LOCATION. SAMPLING PROCEDURE: ONE SAMPLE SHALL BE TAKEN IMMEDIATELY FOLLOWING THE INTRODUCTION OF CHLORINATING AGENT; ONE SAMPLE SHALL BE TAKEN 24 HOURS AFTER CHLORINATING AGENT HAS BEEN ALLOWED TO REMAIN IN THE PIPING SYSTEM; ONE SAMPLE SHALL BE TAKEN AFTER CHLORINATING AGENT HAS BEEN FLUSHED FROM SYSTEM. CONTRACTOR SHALL BE RESPONSIBLE FOR INCLUDING ALL SAMPLING COSTS, INCLUDING ANY RE-TESTING DUE TO FAILURE.

NOTE:

ALL PLUMBING SHALL COMPLY WITH 248 CMR PLUMBING CODE

FIELD VERIFY ALL CONDITIONS

DESIGN DRAWINGS ARE SCHEMATIC. THIS CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING OR AWARD OF CONTRACT TO INSPECT EXISTING FIELD CONDITIONS. THIS CONTRACT SHALL INCLUDE ALL LABOR AND MATERIALS NECESSARY FOR FIELD MODIFICATIONS DUE TO EXISTING CONDITIONS.

THE CONTRACTOR SHALL CONTACT THE ARCHITECT, ENGINEER OR OWNER PRIOR TO BIDDING FOR INTERPRETATIONS AND CLARIFICATIONS OF THE DESIGN AND INCLUDE IN HIS BID ALL COSTS TO MEET THE DESIGN INTENT. CLARIFICATIONS MADE BY THE ARCHITECT, ENGINEER OR OWNER AFTER BIDDING WILL BE FINAL AND SHALL BE IMPLEMENTED AT CONTRACTORS COST.

BIDDING CONTRACTORS SHALL HAVE A WORKING KNOWLEDGE OF LOCAL CODES AND ORDINANCES AND SHALL INCLUDE IN THEIR BIDS THE COSTS FOR ALL WORK INSTALLED IN STRICT ACCORDANCE WITH GOVERNING CODES, THE PLANS AND SPECIFICATIONS NOT WITHSTANDING. THE CONTRACTOR SHALL ALERT ARCHITECT, ENGINEER OR OWNER OF ANY APPARENT DISCREPANCIES BETWEEN GOVERNING CODES AND DESIGN INTENT.

GENERAL NOTES

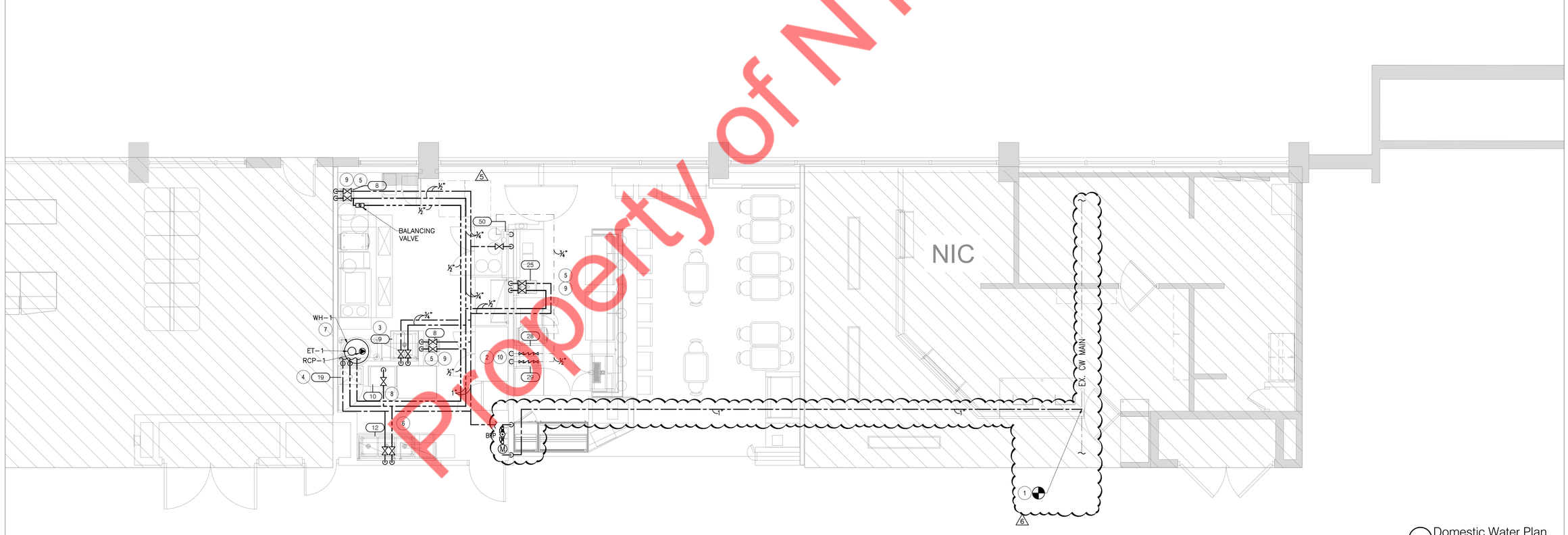
A. REFER TO SCHEDULES, DETAILS AND RISER DIAGRAMS FOR MORE INFORMATION ON SIZING OF PIPING TO EQUIPMENT.

B. FIELD VERIFY ALL CONDITIONS PRIOR TO BIDDING AND START OF WORK.

C. CONTRACTOR TO REMOVE FINS ON THE FIN TUBE HEAT BEHIND THE FISH GRAPHIC AND INSULATE THE PIPING.

KEYNOTES:

1. CONNECT NEW 1" WATER PIPING TO EXISTING MAIN WATER PIPING. CONTRACTOR TO FIELD VERIFY EXACT SIZE AND LOCATION OF EXISTING WATER SERVICE. PROVIDE NEW BACKFLOW PREVENTER AND NEW WATER METER. WATER METER SHALL BE A BADGER, GRADUATED IN CUBIC FEET, AND LOCATED IN AN ACCESSIBLE AREA BELOW THE CEILING. METER SHALL CONTAIN AN ITRON MODEL #100W-R ENCODER RECEIVER TRANSMITTER (ERT). ERT SHALL NOT BE CONCEALED AND SERIAL NUMBER SHALL BE VISIBLE FROM FLOOR AFTER INSTALLATION. CONTACT MASSPORT UTILITIES, 617-568-3605.
2. PROVIDE BACKFLOW PREVENTER ON ALL FILTERED WATER SUPPLY LINES TO EQUIPMENT.
3. 3/4" CW AND HW SUPPLY DOWN IN WALL TO PREP SINK.
4. 3/4" CW AND HW SUPPLY DOWN IN WALL TO MOP SINK.
5. 1/2" CW AND HW SUPPLY DOWN IN WALL TO HAND SINK.
6. 3/4" CW AND HW SUPPLY DOWN IN WALL TO 3-COMP SINK.
7. WATER HEATER MOUNTED ON PLATFORM ABOVE MOP SINK.
8. 1/2" HW SUPPLY DOWN IN WALL TO DISHWASHER.
9. PROVIDE TEMPERATURE MIXING VALVE, SET AT 110°F, ON ALL HANDSINKS.
10. PROVIDE SECONDARY BACKFLOW PREVENTER AS PER THE BACKFLOW PREVENTER ASSEMBLY REQUIREMENTS.



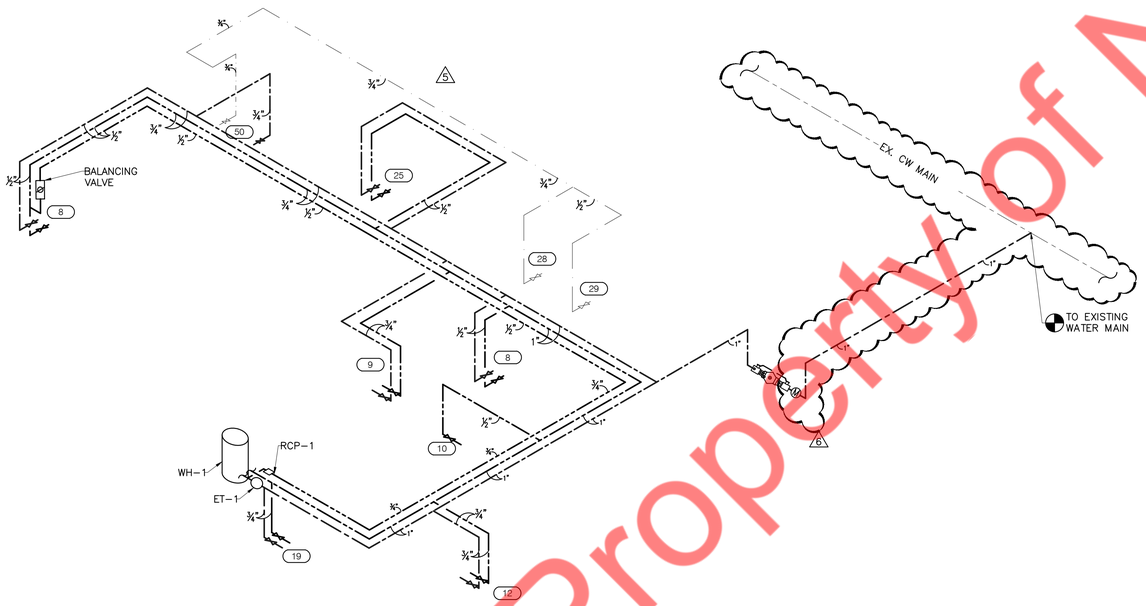
1 Domestic Water Plan
1/4"=1'-0"

PLUMBING SCHEDULE

ITEM #	DESCRIPTION	MANUFACTURER	MODEL #	COUNT	INSTALL	VOLTS	WATTS	AMP	PLUG	HW. SUPPLY	CW. SUPPLY	FW. SUPPLY	WASTE	VENT	PSW SPEC REQD	COMMENTS
12	THREE COMPARTMENT SINK	ADVANCE TABCO	FC-3-1620	1	GC					3/4"	3/4"		(3) 2"	(3) 1½"		DIRECT CONNECTION TO GREASE INTERCEPTOR. CONTRACTOR TO COORDINATE FINAL MODEL WITH KITCHEN CONSULTANT.
9	STAINLESS STEEL WORKTABLE W/ SINK - PREP TABLE	EAGLE GROUP	414 SERIES COVED CORNER	1	GC					3/4"	3/4"		1-1/2"			PROVIDE FLOOR SINK W/ INDIRECT WASTE CONNECTION. CONTRACTOR TO COORDINATE FINAL MODEL WITH KITCHEN CONSULTANT.
19	MOP SINK W/ FAUCET	ADVANCE TABCO	9-OP-28	1	GC					3/4"	3/4"		3"	2"		VACUUM BREAKER
10	DISHWASHER	CMA DISHMACHINES	UC65e 3M	1	GC					1/2"						INDIRECT WASTE TO MOP SINK
8	HAND SINK	REGENCY	600HS12SP	2	GC					1/2"	1/2"		1-1/2"	1-1/2"		INTEGRATED FAUCET. PROVIDE TEMPERING VALVE
25	HAND SINK RECESSED AT COUNTER	EAGLE GROUP	HSAD-10-F	1	VD					1/2"	1/2"					PROVIDE TEMPERING VALVE
29	COFFEE BREWER	BUNN	ICB 36600	1	VD	120	1700	14	5-15P			3/8"				AUTOMATIC, PLUMBED UNIT
28	ICE MACHINE	MANITOWOC	UYF-0140A	1	VD		115/60/1	5	5-15P			3/8"				
11	GREASE TRAP	SCHIER	GB2 50 GPM 20 GALLON ABOVE GRADE GREASE TRAP	1	GC											CONTRACTOR TO PROVIDE FLOW CONTROL VALVE IF REQUIRED.
FS-1	FLOOR SINK	SIOUX MANUFACTURING	861-23X W/ HALF GRATE 861-52i	2	GC								3"	2"		
FD-1	FLOOR DRAIN	SIOUX MANUFACTURING	842-3-P-NQ	1	GC								3"	2"		PROVIDE DEEP SEAL TRAPS, ADD VEGETABLE OR MINERAL OIL TO TRAP

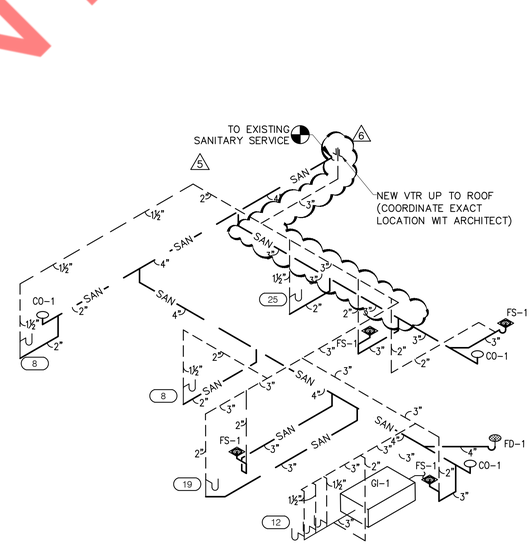
PLUMBING EQUIPMENT SCHEDULE

ITEM #	DESCRIPTION	MANUFACTURER	MODEL #	COUNT	INSTALL	VOLTS	WATTS	AMP	PLUG	HW. SUPPLY	CW. SUPPLY	FW. SUPPLY	WASTE	VENT	PSW SPEC REQD	COMMENTS
WH-1	ELECTRIC WATER HEATER	BRADFORD WHITE OR EQUAL	CEHD50(A)(kW)3*CF	1	GC	480	24000	28.9								PROVIDES 99 GPH AT 100°F RISE, 45 GALLON CAPACITY, 3 PHASE 480V SUPPLY, DIMENSIONS: 24" DIA, 52.625" HEIGHT.
RCP-1	RE-CIRCULATION PUMP	GRUNDFOS	UP 15-18 BUC5	1	GC	460/60/3	270	0.33								2 GPM CAPACITY, 10FT TOTAL HEAD, 0.2736 MOTOR HP.
ET-1	EXPANSION TANK	AMTROL	ST-8	1	GC											3.2 GALLON TANK CAPACITY, DIMENSIONS: 15" HEIGHT, 9" DIA. WEIGHT: 7 LBS



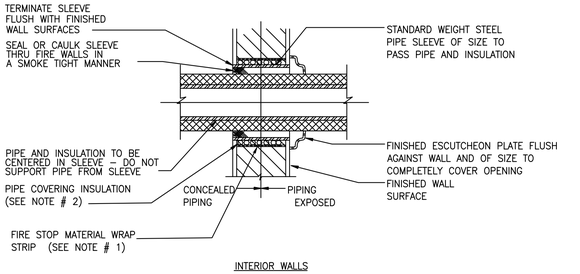
WATER RISER DIAGRAM

NO SCALE

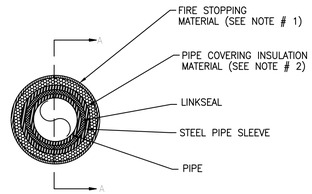


SANITARY RISER DIAGRAM

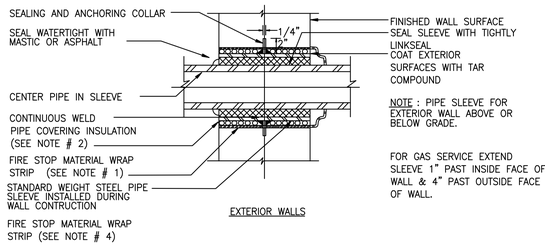
NO SCALE



INTERIOR WALLS



PIPE SLEEVE VIEW



EXTERIOR WALLS

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

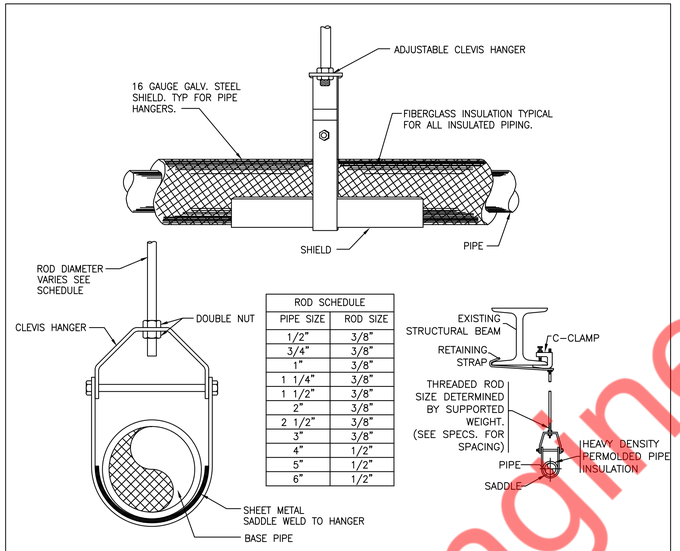
FOR GAS SERVICE EXTEND SLEEVE 1" PAST INSIDE FACE OF WALL & 4" PAST OUTSIDE FACE OF WALL.

PIPE SLEEVE THRU WALL SECTION

NOTES:

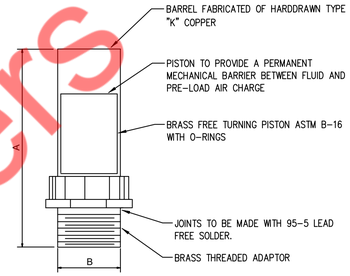
1. FIRESTOP MATERIAL WRAP STRIP SHALL BE ¼" THICK INTUMESCENT ELASTOMERIC MATERIAL FACED ON ONE SIDE WITH ALUMINUM FOIL SUPPLIED IN 2 IN. WIDE STRIPS AND WRAP AROUND THE PIPE AS PER UL MATERIAL LISTED3M COMPANY FS–195+ OR FILL CAVITY WITH CAULK OR SEALANT MIN. ¼" DIA. CONTINUOUS BEAD APPLIED TO THE WRAP 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 / P–4.00 PIPE SLEEVE THRU WALL SECTION N.T.S



ROD SCHEDULE	
PIPE SIZE	ROD SIZE
1/2"	3/8"
3/4"	3/8"
1"	3/8"
1 1/4"	3/8"
1 1/2"	3/8"
2"	3/8"
2 1/2"	3/8"
3"	3/8"
4"	1/2"
5"	1/2"
6"	1/2"

2 / P–4.00 HANGER DETAIL N.T.S



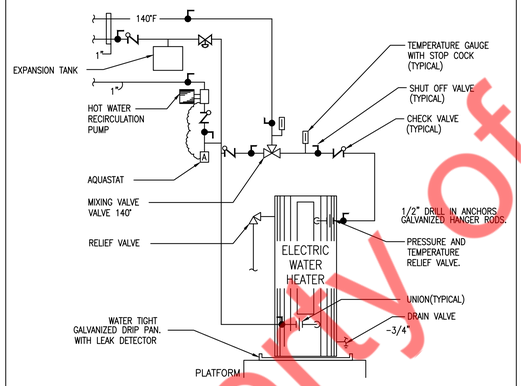
PIPE SIZE	P.D.I. SYMBOL	FIXTURE UNIT RATINGS	A SIZE	B SIZE
1/2"	A	1 – 11	5"	1/2"
3/4"	B	12 – 32	5"	3/4"
1"	C	33 – 60	7"	1"
1–1/4"	D	61 – 113	7"	1–1/4"
1–1/2"	E	114 – 154	9"	1–1/2"
2"	F	155 – 330	9"	2"

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 / P–4.00 WATER HAMMER ARRESTOR DETAILS N.T.S

COMMENTS:
1. LOCATE GREASE INTERCEPTOR UNDER SINK AS NECESSARY ALLOWING EASY ACCESS TO THE REMOVABLE COVER FOR PERIODIC CLEANING.
2. ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST TO SUIT FIELD CONDITIONS OR MEET LOCAL CODE REQUIREMENTS. HUBLESS CAST IRON PIPE, FITTINGS AND CONNECTORS ALL AROUND SINK AND TRAP. CONNECT GREASE TRAP FROM CENTER COMPARTMENT.
3. COORDINATE INDIVIDUAL BAY DRAINAGE , AIR GAP WITH LOCAL CODE REQUIREMENTS.

4 / P–4.00 3 COMPARTMENT SINK DETAILS N.T.S



5 / P–4.00 HOT WATER HEATER INSTALLATION DETAIL N.T.S

CONCEALED VALVES AND FITTINGS

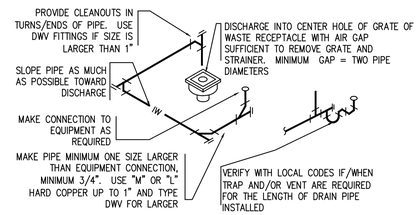
* WRAP WITH 1–INCH THICK, 1–POUND DENSITY TO REQUIRED PIPE INSULATION THICKNESS
* SECURE WITH WIRE OR TAPE.
* VAPOR SEAL COLD WATER, CHILLED WATER AND STORM WATER PIPING.

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.

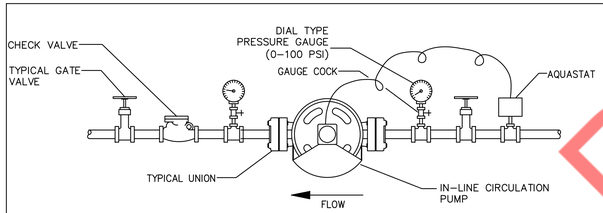
INSULATION OF PIPING, VALVES AND FITTINGS FOR EXPOSED AND CONCEALED LOCATIONS

6 / P–4.00 N.T.S



ROUTE PIPE INCONSPICUOUSLY AND UNOBTRUSIVELY. HANG PIPE AS REQUIRED. DO NOT INSULATE INDIRECT DRAIN PIPE WHEN INSTALLED EXPOSED IN FOOD SERVICE FACILITY. REFER TO LOCAL CODES FOR FURTHER INFORMATION.

8 / P–4.00 INDIRECT WASTE DETAILS N.T.S



7 / P–4.00 INLINE RECIRCULATING PUMP DETAIL N.T.S

SPRINKLER GENERAL NOTES

1. ALL SPRINKLER WORK SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF N.F.P.A.-13, 2013 AND ALL LOCAL AUTHORITIES.
2. ALL SPRINKLER WORK SHALL COMPLY WITH BUILDING STANDARDS AND REQUIREMENTS.
3. ALL SPRINKLER HEADS SHALL BE INSTALLED AT CENTER OF TILE IF CEILING IS PROVIDED.
4. GENERAL CONTRACTOR SHALL COORDINATE FINAL FURNITURE/EQUIPMENT HEIGHT ELEVATIONS AND LOCATIONS WITH SPRINKLER INSTALLATION. ENGINEER SHALL BE NOTIFIED WHEN FURNITURE/EQUIPMENT IS LESS THAN 18" TO UNDERSIDE OF CEILING.
5. THE SPRINKLER SYSTEMS ARE TO BE HYDROSTATIC TESTED FOR A (1) HOUR MINIMUM AT 200 PSI. PRESSURE AND ARE TO BE WITNESSED BY AUTHORIZED BUILDING PERSONNEL. COORDINATE ALL TESTING WITH BUILDING MANAGER.
6. PIPES SIZES SHOWN ARE BASED ON DESIGN PIPING LAYOUTS ONLY. ACTUAL PIPE SIZES SHALL BE DETERMINED BY CONTRACTORS HYDRAULIC CALCULATIONS BASED ON HIS INSTALLATION DRAWINGS. CONTRACTOR SHALL ALLOW FOR THIS AND INCLUDE THIS IN HIS CONTRACT PRICE.
7. DRAWING INDICATES SPRINKLER SYSTEM DESIGN ONLY. CONTRACTOR RESPONSIBLE FOR OFFSETS, DROPS AND RISES FOR COORDINATION WITH OTHER TRADES.
8. G.C. SHALL BE RESPONSIBLE FOR ALL FINAL TESTS AND INSPECTIONS OF COMPLETED WORK REQUIRED BY THE BUILDING MANAGEMENT PRIOR TO OCCUPANCY OF SPACE.
9. ALL SPRINKLER WORK SHALL BE TESTED AND MADE OPERATIONAL PRIOR TO CARPET AND FURNITURE INSTALLATION. G.C. SHALL REPAIR AND/OR REPLACE ALL FINISHES DAMAGED BY DEFECTIVE SPRINKLER WORK AT HIS EXPENSE.
10. ALL BURNING, CUTTING, SOLDERING AND WELDING SHALL BE COORDINATED WITH BUILDING FIRE SYSTEMS WITH BUILDING MANAGEMENT, AS REQUIRED.
11. G.C. SHALL BE RESPONSIBLE FOR OBTAINING PERMITS AND APPROVALS REQUIRED BY BUILDING INSPECTOR AND FIRE MARSHALL IN CONJUNCTION WITH CHANGES TO EXISTING SPRINKLER SYSTEM.
12. REFER TO ENGINEERING DRAWINGS FOR SPRINKLER HEADS, LIGHT SENSORS AND FIRE DETECTION DEVICES.
13. ALL WORK TO BE DONE DURING THE HOURS DESIGNATED BY OWNER.
14. UPON COMPLETION OF ALL SPRINKLER WORK, CONTRACTOR SHALL TEST AND INSPECT ENTIRE SPRINKLER SYSTEM. ENTIRE SYSTEM SHALL BE FULLY OPERATIONAL AND APPROVED IN COMPLIANCE WITH ALL AHJ.
15. UPON SUCCESSFUL COMPLETION OF ALL TESTING, CONTRACTOR SHALL PRIME AND PAINT ALL EXPOSED SPRINKLER PIPING. COLOR AND FINISH SHALL BE AS PER ARCHITECT.
16. CONTRACTOR SHALL INCLUDE IN HIS BID THE COST TO PROVIDE (5) FIVE ADDITIONAL SPRINKLERS INSTALLED. EXACT LOCATIONS OF THESE SPRINKLER HEADS SHALL BE DETERMINED IN FIELD.
17. FOR SPRINKLER WORK DONE IN ACCORDANCE WITH THE REQUIREMENTS OF N.F.P.A.-13, 2013 HYDROSTATIC TESTS IN ACCORDANCE WITH REFERENCE STANDARD NFPA 13-2013, AS MODIFIED FOR COMMONWEALTH OF MASSACHUSETTS, ARE NECESSARY.
18. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES AND SHALL INSTALL NEW WORK TO CLEAR DUCTWORK AND LIGHTING FIXTURES.
19. ALL SPRINKLER WORK SHALL COMPLY WITH BUILDING STANDARDS AND REQUIREMENTS.
20. DRAWING INDICATES SPRINKLER SYSTEM DESIGN ONLY. CONTRACTOR RESPONSIBLE FOR OFFSETS, DROPS AND RISES FOR COORDINATION WITH OTHER TRADES.
21. PIPES SIZES SHOWN ARE BASED ON SCHEDULE OF PIPE SIZE PIPING LAYOUTS ONLY. ACTUAL PIPE SIZES SHALL BE DETERMINED BY CONTRACTORS HYDRAULIC CALCULATIONS BASED ON HIS INSTALLATION DRAWINGS. CONTRACTOR SHALL ALLOW FOR THIS AND INCLUDE THIS IN HIS CONTRACT PRICE.
22. PROVIDE AUXILIARY DRAINS AT TRAPPED SECTIONS OF PIPING AS REQUIRED BY NFPA.
23. GENERAL CONTRACTOR SHALL COORDINATE FINAL FURNITURE/ EQUIPMENT HEIGHT ELEVATIONS AND LOCATIONS WITH SPRINKLER INSTALLATION. ENGINEER SHALL BE NOTIFIED WHEN FURNITURE/EQUIPMENT IS LESS THAN 18" TO UNDERSIDE OF CEILING PRIOR TO INSTALLATION.
24. COMPOSITE DRAWINGS

    CONTRACTOR SHALL BE GIVEN A SEPIA TRANSPARENCIES TO IMPOSE THEIR WORK FOR A COORDINATED ALLOCATION OF SPACE. PROCEDURE SHALL INCLUDE HVAC CONTRACTOR TO INDICATE DUCT WORK, PIPING, STRUCTURAL AND ARCHITECTURAL DETAILS. SEPIAS SHALL BE GIVEN TO PLUMBING, SPRINKLER AND ELECTRICAL TRADES WHO WILL DRAW HIS WORK ON DRAWINGS. HVAC CONTRACTORS SHALL HOLD A COORDINATION MEETING WITH ALL CONTRACTORS TO ELIMINATE INTERFERENCE OR CONFLICTS IN INSTALLING WORK. IF UNABLE TO EACH AGREEMENT ISSUE, ARCHITECT SHALL MAKE BINDING DECISION.

25. CONTRACTOR SHALL COORDINATE SPRINKLER MAIN AND BRANCHES WITH NEW CONSTRUCTION TO AVOID CONFLICTS WITH CEILING HEIGHTS, DUCTWORK, LIGHTING FIXTURES, BEAMS. CONTRACTOR TO ADJUST PIPING ACCORDINGLY TO ACCOMMODATE NEW CONSTRUCTION.
26. WET SPRINKLER SYSTEM SUBJECTED TO FREEZING SHOULD COMPLY WITH CMR 780 MASSACHUSETTS STATE BUILDING CODE, 9TH EDITION AMENDED TO 2015 INTERNATIONAL BUILDING CODE, SECTION 903.

BUILDING DEPARTMENT SPRINKLER NOTES

1. THE INSTALLATION, COMPONENTS, SIZING, SPACING, CLEARANCES, POSITION AND TYPE OF SYSTEMS SHALL CONFORM TO THE CMR 780 MASSACHUSETTS STATE BUILDING CODE, 9TH EDITION AMENDED TO 2015 INTERNATIONAL BUILDING CODE, SECTION 903.
2. ONLY APPROVED MATERIALS SHALL BE USED AS PER 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05.
3. DIRECT CONNECTION OF SPRINKLERS TO THE PUBLIC WATER SYSTEM SHALL CONFORM TO 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05.
4. SPRINKLER SHALL BE PROTECTED AGAINST FREEZING AND INJURY AS PER 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05.
5. INSPECTION AND TESTS OF SPRINKLERS SHALL BE CONDUCTED AS SEC. 901.5 AND 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE, SECTION 1.05.
6. THE OCCUPANCY OF THE AREAS TO BE SPRINKLER IN ACCORDANCE WITH 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05, CHAPTER 4.
7. WATER SUPPLY TEST PIPES AND GAUGES SHALL BE PROVIDED AS PER 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05.
8. PIPING, FITTINGS, SPECIFICATIONS, PIPE SCHEDULES, SYSTEM TEST PIPES, PROTECTION AGAINST CORROSION, DAMAGE, VALVES, HANGERS, SPRINKLERS GUARDS AND SHIELDS SHALL BE AS PER 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05.
9. STOCK OF EXTRA SPRINKLERS WILL BE FURNISHED AS PER 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05. (REQUIRED FOR EACH TEMPERATURE RATING).
10. SPRINKLER ALARM SHALL BE IN ACCORDANCE WITH 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05.
11. SPACING, LOCATION AND POSITION OF SPRINKLER WILL BE AS PER 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05.
12. ALL BLIND SPACES EXCEEDING 6" IN WIDTH OR DEPTH WHICH CONTAIN COMBUSTIBLE MATERIAL WILL BE SPRINKLERED.
13. ALL PIPE PASSING THROUGH WALLS WILL COMPLY WITH SECTION BC711.2
14. THERE IS NO HIGH PILED STORAGE AS DEFINED IN 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05.
15. THIS APPLICATION IS NOT FILED AS A RESULT OF ACTION BY THE FIRE COMMISSIONER AS AUTHORIZED BY BS & A TO MODIFY THE CERTIFICATE OF OCCUPANCY NOR IS SUCH ACTION PENDING.
16. ALL VALVES SHALL BE IDENTIFIED AS REQUIRED BY 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05.
17. DRAINAGE SHALL CONFORM TO 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05.
18. A ONE PIECE REDUCING FITTING OF GOOD DESIGN SHOULD BE USED WHEREVER A CHANGE IS MADE IN THE SIZE OF PIPE, AS PER 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05.
19. ALL VALVES ON CONNECTIONS TO WATER SUPPLIES TO SPRINKLER SHALL BE APPROVED O.S. & Y. OR APPROVED INDICATOR TYPE.
20. DRAIN VALVES AND TEST VALVES SHALL BE APPROVED TYPE AS PER 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05.
21. HANGERS SHOULD BE SUPPORTED BY WROUGHT IRON U TYPE OR APPROVED ADJUSTABLE HANGERS. HANGERS SHALL BE OF THE TYPE APPROVED FOR USE WITH THE PIPE OR TUBE INVOLVED, AS PER CHAPTER 9.
22. PROVISIONS SHOULD BE MADE TO FACILITATE FLUSHING SYSTEM PIPING BY PROVIDING FLUSHING CONNECTIONS CONSISTING OF A CAPPED NIPPLE 4" LONG ON END OF A CROSS MAIN AS PER 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05.
23. SPRINKLER SHALL BE AN APPROVED TYPE AS PER 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05.
24. TEMPERATURE RATING SHALL COMPLY WITH 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05.
25. 18" MINIMUM CLEARANCE TO BELOW SPRINKLER DEFLECTOR AS PER 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05.
26. SPACING AND LOCATION OF SPRINKLERS SHALL COMPLY WITH 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05.
27. SPRINKLER SYSTEM COMPLIES WITH 13-2013 AS MODIFIED BY 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05.
28. SOURCES OF WATER SUPPLY FOR SPRINKLER SYSTEMS AS PER 527 CMR 1.00 MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE SECTION 1.05.
29. PIPE SCHEDULE SYSTEMS SHALL BE IN ACCORDANCE WITH CHAPTER 9, SECTION 903.3.
30. HYDRAULICALLY DESIGNED SYSTEMS SHALL BE IN ACCORDANCE WITH CHAPTER 9 SECTION 903.3.
31. MINIMUM BRANCH PIPE SIZE TO BE ONE INCH (1").
32. THIS APPLICATION IS MADE ONLY FOR WORK INDICATED ON THE SPECIFICATION SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON OR TO BE CONSIDERED AS EITHER BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES.

SPRINKLER DEMOLITION NOTES

1. PROVIDE ALL LABOR, APPARATUS, ETC, FOR THE REMOVAL OF ALL EXISTING SPRINKLER HEADS, PIPING, HANGERS, ETC. EXCEPT AS INDICATED.
2. MAINTAIN CONTINUOUS OPERATION OF EXISTING RISERS SO AS NOT TO INCONVENIENCE OTHER BUILDING TENANTS.
3. SPRINKLER CONTRACTOR SHALL VISIT THE PREMISES PRIOR TO SUBMITTING ITS PROPOSAL AND EXAMINE THE AREAS EFFECTED BY THIS WORK. HE IS TO BECOME FAMILIAR WITH EXISTING CONDITIONS AND WITH POSSIBLE DIFFICULTIES THAT MAY ATTEND THE EXECUTION OF THIS WORK.
4. PERFORM THIS WORK SIMULTANEOUSLY WITH THAT OF OTHER TRADES SO AS NOT TO DELAY OVERALL PROGRESS OF WORK.
5. OWNER'S OCCUPANCY REGULATIONS MAY REQUIRED THAT CERTAIN PORTIONS OF WORK BE DONE AFTER REGULAR WORKING HOURS. COORDINATE WITH BUILDING MANAGEMENT. COST OF OVERTIME IS TO BE INCLUDED IN THE CONTRACTOR'S PROPOSAL.
6. REMOVE ALL DEMOLITION MATERIALS FROM PROJECT SITE, EXCEPT ITEMS DESIGNATED BY ARCHITECT/OWNER TO REMAIN OWNER'S PROPERTY AND BE STORED.
7. NO DEAD ENDS SHALL BE LEFT ON PIPING.
8. EXISTING EXPOSED PIPING NOT BEING REUSED, AND NOT SPECIFICALLY NOTED OR SHOWN ON DRAWING TO BE ABANDONED SHALL BE COMPLETELY REMOVED.
9. THE EXISTING SYSTEM SHALL BE LEFT IN PERFECT WORKING ORDER AT COMPLETION OF NEW WORK.
10. NO REMOVED EXISTING PIPING SHALL BE REUSED.
11. DO NOT USE ANY PART OF THE BUILDING AS A SHOP EXCEPT PARTS DESIGNATED FOR SUCH PURPOSES.
12. ALL SPRINKLER WORK SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF N.F.P.A. - 13 AND ALL LOCAL AUTHORITIES.
13. CONTRACTOR SHALL FIELD VERIFY EXACT ELEVATION, LOCATION AND PIPE SIZES OF EXISTING SPRINKLER HEADS AND PIPING BEFORE INSTALLATION OF NEW WORK.
14. ALL SPRINKLER WORK SHALL COMPLY WITH BUILDING STANDARDS AND REQUIREMENTS.
15. A FIRE WATCH GUARD WITH A CERTIFICATE OF FITNESS SHALL BE MAINTAINED DURING SHUT DOWNS.
16. DRAWING INDICATES SPRINKLER SYSTEM DESIGN ONLY. CONTRACTOR IS RESPONSIBLE FOR OFFSETS, DROPS AND RISES FOR COORDINATION WITH OTHER TRADES.
17. PIPE SIZE TO BE MINIMUM OF ONE INCH (1").
18. ALL WORK TO BE DONE DURING THE HOURS DESIGNATED BY OWNER.
19. CONTRACTORS SHALL TAKE SPECIAL CARE TO DEMOLISH ONLY THAT WORK WHICH IS REQUIRED TO BE DEMOLISHED AND NOT TO DISTURB ANY WORK WHICH IS TO REMAIN. IF IN THE COURSE OF THE DEMOLITION, THE CONTRACTOR DESTROYS OR DISTURBS ANY WORK WHICH IS TO REMAIN, THEN HE SHALL, AT HIS OWN EXPENSE, REPAIR OR REPLACE SUCH WORK AS NECESSARY.
20. EXISTING PIPING SERVING ADJACENT AREAS NOT IN AREA OF WORK SHALL REMAIN ACTIVE AND WITHOUT DISTURBANCE
21. AFTER REMOVAL OF CEILINGS, CONSTRUCTION MANAGER SHALL INSPECT THE SITE WITH BUILDING REPRESENTATIVES TO IDENTIFY BASE BUILDING MEP INFRASTRUCTURE ITEMS WHICH ARE TO REMAIN. ALL SUCH ITEMS ARE TO BE CLEARLY TAGGED "TO REMAIN" AND TO BE PROTECTED DURING DEMOLITION, IN A MANNER SATISFACTORY TO BUILDING MANAGEMENT.

SPRINKLER DRAWING LIST

SPACING BETWEEN SPRINKLER HEADS

SPRINKLER HEAD SPACING SHALL NOT EXCEED 15 FEET.

NOTE: MAXIMUM DISTANCE BETWEEN SPRINKLER HEADS & WALLS IS ½ THE DISTANCE BETWEEN HEADS.

PROTECTION AREA OF SPRINKLER HEADS

ORDINARY HAZARD : 130 SQ. FT.

DESIGN CRITERIA SUMMARY:

HYDRAULIC CALCULATIONS FOR RESTAURANT SERVING AREA BASED ON THE FOLLOWING:

OCCUPANCY: ORDINARY I
MINIMUM DESIGN DENSITY: 0.19 GPM/SQ. FT.
DESIGN AREA OF APPLICATION: 1500 SQ. FT.

GENERAL NOTES:

1. FOR SPRINKLER WORK ONLY.
2. ALL SPRINKLER HEADS MEET DESIGN CRITERIA PER COVERAGE.

SPRINKLER LEGEND

- EX.SP — EXISTING SPRINKLER PIPING TO REMAIN
- SP — NEW SPRINKLER PIPING
- (N) NEW CONCEALED SPRINKLER HEAD
- (N) NEW UPRIGHT SPRINKLER HEAD
- EXISTING PLUGGED SPRINKLER ELBOW
- SPRINKLER CAPPED OUTLET
- SPRINKLER PIPING POINT OF CONNECTION
- SPRINKLER PIPING POINT OF DISCONNECTION
- PIPE THRU RATED WALL
- EXISTING SPRINKLER VALVE
- EXISTING DRAIN VALVE
- XXXXXX EXISTING SPRINKLER PIPING TO BE REMOVED

MASSACHUSETTS THREE TIER PROCESS

THIS PROJECT SHALL BE DESIGNED AND CONSTRUCTED UNDER THE THREE TIER SYSTEM, PER THE MASSACHUSETTS BUILDING CODE, 780 CMR, CHAPTER 9.

A. TIER ONE, CONSTRUCTION DOCUMENTS

1. PRIOR TO ISSUANCE OF A BUILDING PERMIT, CONSTRUCTION DOCUMENTS FOR THE FIRE PROTECTION SYSTEM MUST BE SUBMITTED AND A BUILDING PERMIT OBTAINED PRIOR TO THE INSTALLATION OF FIRE PROTECTION SYSTEMS OR MODIFICATIONS, ALTERATIONS, ADDITIONS OR DELETIONS TO AN EXISTING FIRE PROTECTION SYSTEM.
2. THE CONSTRUCTION DOCUMENTS SHALL CONTAIN CONFORM TO ALL REQUIREMENTS LISTED IN THE BUILDING CODE.

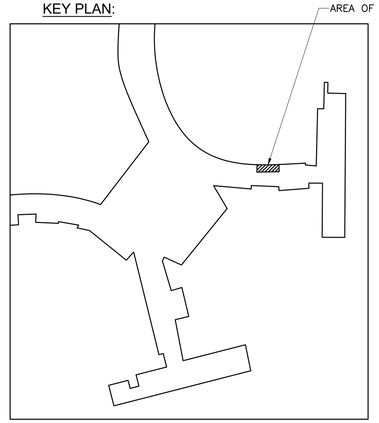
B. TIER TWO, SHOP DRAWINGS

1. PRIOR TO INSTALLATION OF FIRE PROTECTION SYSTEMS, SHOP DRAWINGS AND HYDRAULIC CALCULATIONS SHALL BE PREPARED BY THE CONTRACTOR.
2. DRAWINGS AND HYDRAULIC CALCULATIONS SHALL CONFORM TO ALL REQUIREMENTS LISTED IN THE BUILDING CODE. THE SHOP DRAWINGS AND HYDRAULIC CALCULATIONS SHALL THEN BE SUBMITTED TO THE ENGINEER OF RECORD. WHEN THE ENGINEER OF RECORD IS SATISFIED WITH THE DRAWINGS AND HYDRAULIC CALCULATIONS, THEY WILL BE SEALED.
3. THE CONTRACTOR SHALL THEN SUBMIT DRAWINGS AND HYDRAULIC CALCULATIONS TO THE BUILDING OFFICIAL AND FIRE OFFICIAL, AND OBTAIN APPROVAL.

C. TIER THREE, RECORD DRAWINGS

1. AS BUILT PLANS SHALL BE PROVIDED TO THE BUILDING OWNER FOR ALL FIRE PROTECTION AND LIFE SAFETY SYSTEMS THAT ARE SEALED AS REVIEWED AND APPROVED BY THE ENGINEER OF RECORD, PERFORMING CONSTRUCTION CONTROL.
2. SHOP DRAWINGS SHALL BE MODIFIED AS NECESSARY, WITH ANY FIELD CHANGES IDENTIFIED BY CLOUDS ON THE DRAWINGS.
3. WHEN THE ENGINEER OF RECORD IS SATISFIED WITH THE DRAWINGS AND HYDRAULIC CALCULATIONS, THEY WILL BE SEALED. THESE COMPLETED DOCUMENTS WILL THEN BE INCORPORATED INTO THE OPERATION & MAINTENANCE MANUALS, AND DELIVERED TO THE OWNER.

KEY PLAN:



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LOGAN INTERNATIONAL AIRPORT
BOSTON, MA 02128

PLOT PLAN
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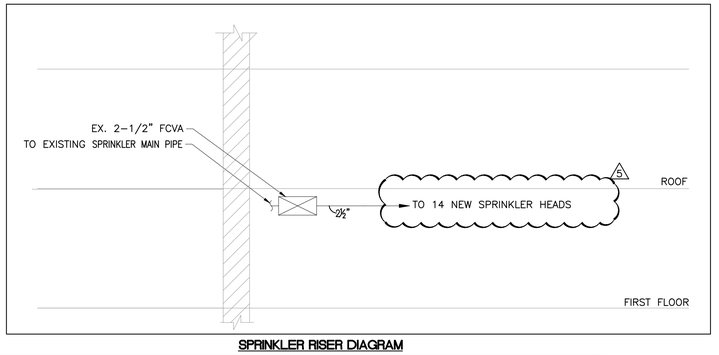


SPRINKLER RISER DIAGRAM

SPRINKLER SCHEDULE

SYMBOL	NAME	COVERAGE	AREA	METAL	TEMPERATURE (°F)	K-FACTOR	NPT	MFG	MODEL#	APPROVALS
●	CONCEALED	STANDARD	LH/OH AREAS WITH CEILING	BRASS	155	5.6	½"	TYCO	SERIES RF-II TY3531	UL
⊙	UPRIGHT	STANDARD	LH/OH OPEN AREAS	BRASS	155	5.6	1½"	TYCO	SERIES TY-FRL TY3121	UL

NOTE: 1. COORDINATE ALL SPRINKLER COLOR FINISHES WITH ARCHITECT.
2. ALL SPRINKLER SHOULD BE MEA APPROVED

SPRINKLER SPECIFICATIONS

PART 1 - GENERAL

1.01 REQUIREMENTS

A. THE SPRINKLER CONTRACTOR SHALL BE A LICENSED, AUTHORIZED INSTALLER OF SPRINKLER SYSTEMS AND SHALL HAVE HAD A MINIMUM OF FIVE YEARS EXPERIENCE IN THE INSTALLATION OF SPRINKLER SYSTEMS IN THE STATE OF MASSACHUSETTS.

B. BEFORE SUBMITTING HIS BID, THE SPRINKLER CONTRACTOR SHALL VISIT THE SITE AND SHALL FULLY FAMILIARIZE HIMSELF WITH, AND BECOME FAMILIAR WITH THE DIFFICULTIES THAT WILL ATTEND THE EXECUTION OF THIS WORK. CONTRACTOR SHALL PERFORM THIS PRIOR TO SUBMITTING HIS PROPOSAL. 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.

C. UPON REVIEW OF THE DRAWINGS AND SPECIFICATIONS, PRIOR TO SUBMITTING HIS PROPOSAL, THE SPRINKLER CONTRACTOR SHALL INFORM ARCHITECT AND/OR ENGINEER OF ANY DISCREPANCIES OR REQUEST CLARIFICATION IN WRITING, IF NECESSARY, CONCERNING THE INTENT OF THE PLANS AND SPECIFICATIONS TO PROVIDE A COMPLETE SPRINKLER SYSTEM INSTALLATION. LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT OF MATERIALS SHOULD SUCH PROCEDURE NOT BE FOLLOWED.

D. THE SCHEDULING OF THE SPRINKLER WORK SHALL BE COORDINATED WITH BUILDING MANAGEMENT, WITH OTHER CONTRACTORS AND WITH THE ENGINEER.

E. NECESSARY SHUT-DOWNS OF BASE BUILDING SPRINKLER SYSTEM MUST BE COORDINATED WITH BUILDING MANAGEMENT. SHUT-DOWNS OF BASE BUILDING SYSTEMS SHALL TAKE PLACE AFTER OR BEFORE NORMAL BUSINESS HOURS AND SHALL BE CONSIDERED OVERTIME WORK. THE CONTRACTOR MUST GIVE BUILDING MANAGEMENT AND LOCAL FIRE DEPARTMENT 48 HOURS NOTICE PRIOR TO SHUT-DOWN OF SPRINKLER, OR OTHER SYSTEMS.

1.02 WORK INCLUDED

A. WORK SHALL INCLUDE ALL SPRINKLER WORK FURNISHED AND INSTALLED AS INDICATED ON THE PLANS AND AS SPECIFIED HEREIN.

1. ALL WORK SHALL COMPLY WITH REQUIREMENTS OF THE LOCAL BUILDING CODE, N.F.P.A. STANDARD 13, MASSACHUSETTS FIRE DEPARTMENT AND OWNERS INSURANCE RATING ORGANIZATION.

2. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL LOCATION OF WORK. SCALED DIMENSIONS SHALL NOT BE USED. ANY DIMENSIONS NOT SHOWN SHALL BE OBTAINED FROM FIELD MEASUREMENTS.

3. PROVIDE COMPUTER GENERATED HYDRAULIC CALCULATIONS IN ACCORDANCE WITH MASSACHUSETTS BUILDING DEPARTMENT AND NFPA STANDARDS.

1.03 SHOP DRAWINGS AND SUBMITTALS

A. THE CONTRACTOR SHALL SUBMIT, FOR APPROVAL, FULLY COORDINATED SHOP DRAWINGS, CAPACITY, DATA, AND CATALOG CUTS OF THE FOLLOWING:

1. PIPE AND FITTINGS
2. VALVES
3. HANGERS AND SUPPORTS
4. SPRINKLER PIPING LAYOUT
5. TESTS
6. SPRINKLER HEADS
7. HYDRAULIC CALCULATIONS

A. THE SPRINKLER SYSTEM SHALL BE HYDRAULICALLY DESIGNED. CONTRACTOR SHALL SUBMIT CALCULATIONS WITH SHOP DRAWINGS. CALCULATIONS SHALL BE PERFORMED IN ACCORDANCE WITH REQUIREMENTS OF NFPA #13, AND MASSACHUSETTS BUILDING CODE.

1.04 BUILDING DEPARTMENT FILING, PERMITS AND CERTIFICATES

A. THE SPRINKLER CONTRACTOR SHALL FILE ALL REQUIRED DRAWINGS AND HYDRAULIC CALCULATIONS WITH THE BUILDING DEPARTMENT AND BE RESPONSIBLE FOR OBTAINING FINAL APPROVAL.

B. ARRANGE FOR INSPECTION AND TESTS OF ANY AND ALL PARTS OF THE WORK AS REQUIRED BY AUTHORITIES HAVING JURISDICTION AND PAY ALL CHARGES FOR SAME.

1.05 INSPECTION AND TESTING

A. THE SPRINKLER SYSTEM SHALL BE INSPECTED AND TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL BUILDING CODE FIRE DEPARTMENT INSPECTOR.

B. THE SPRINKLER SYSTEM SHALL BE SUBJECTED TO A HYDROSTATIC PRESSURE TEST FOR A PERIOD OF TWO HOURS AT A PRESSURE OF AT LEAST 200 PSIG OR 50 PSI IN EXCESS OF THE MAXIMUM PRESSURE TO BE MAINTAINED WHEN THE MAXIMUM PRESSURE IN THE SYSTEM IS IN EXCESS OF 150 PSI AS PER NFPA.

C. THE BUILDING DEPARTMENT SHALL BE NOTIFIED THAT THE SYSTEM IS READY FOR REINSPECTION AND TESTING. THE BUILDING DEPARTMENT INSPECTOR SHALL WITNESS THE TEST. FINAL APPROVAL OF THE SPRINKLER SYSTEM SHALL BE OBTAINED FROM BUILDING DEPARTMENT, AND FIRE DEPARTMENT.

PART 2 - MATERIALS

2.01 GENERAL

A. THE SPRINKLER SYSTEM SHALL BE COMPLETE WITH ALL PIPE, FITTINGS, VALVES, DRAINAGE SYSTEM AND VALVES, HANGERS AND SUPPORTS. ALSO, MISCELLANEOUS WORK ITEMS, SUCH AS, SIGNS AS REQUIRED, VALVE TAGS, ETC., AND ALL OTHER RELATED EQUIPMENT, APPARATUS AND MATERIAL ITEMS NECESSARY FOR COMPLETE, APPROVED TYPE SYSTEM, READY FOR FUTURE EXTENSION.

B. ALL PIPE, FITTINGS, HANGERS, SUPPORTS, SPRINKLER HEADS, ETC., SHALL CONFORM TO THE MASSACHUSETTS BUILDING CODE AND NATIONAL FIRE PROTECTION ASSOCIATION'S REQUIREMENTS AS TO TYPES OF MATERIALS, ARRANGEMENT, SIZES AND INSTALLATION. PIPING PENETRATING FIRE RATED PARTITIONS SHALL HAVE OPENING SEALED WITH U.L. APPROVED FIREPROOF SEALANT.

2.02 SPRINKLER PIPING

A. ALL SPRINKLER PIPING SHALL BE SCHEDULE 40, IN ACCORDANCE WITH NFPA 13. PIPE SHALL BE UL/FM APPROVED.

B. AS PER NFPA 13 PIPE OR TUBE USED IN SPRINKLER SYSTEMS SHALL BE OF THE MATERIALS SPECIFIED IN NFPA-13

C. AS PER NFPA 13, FITTINGS USED IN SPRINKLER SYSTEMS SHALL BE OF THE MATERIALS LISTED IN NFPA-13 OR FITTING SHALL BE UL/FM APPROVED.

2.03 CUTTING AND PATCHING

DO ALL CUTTING AND CORE DRILLING NECESSARY FOR THE INSTALLATION OF SPRINKLER WORK. ACCURATELY LAYOUT WORK FOR WHICH CUTTING IS REQUIRED. PATCH AND RESTORE ANY DAMAGE WORK TO LIKE NEW CONDITION.

2.04 CUTTING AND PATCHING

1. DO ALL CUTTING AND CORE DRILLING NECESSARY FOR THE INSTALLATION OF SPRINKLER WORK. ACCURATELY LAYOUT WORK FOR WHICH CUTTING IS REQUIRED. PATCH AND RESTORE ANY DAMAGE WORK TO LIKE NEW CONDITION.

2. FOR REPLACEMENT OF THE WORK REMOVED, MATCH EXISTING IN NATURE, CONSTRUCTION AND FINISH.

3. MAINTAIN THE PREMISES FREE FROM ACCUMULATION OF WASTE MATERIAL OR RUBBISH COVERED BY THE WORK. REMOVE ALL SURPLUS MATERIALS, TOOLS ETC. AND LEAVE PREMISES CLEAN.

2.05 FIRE STOPPING

INSTALLATION SHALL BE IN STRICT ACCORDANCE WITH THE MANUFACTURERS PUBLISHED DIRECTIONS AND PER FIRE TESTED DESIGNS THAT HAVE BEEN ACCEPTED BY THE APPROPRIATE CODE AUTHORITY HAVING JURISDICTION.

2.06 PHASING

PHASING SHALL BE COORDINATED BETWEEN THE SPRINKLER CONTRACTOR AND GENERAL CONTRACTOR. SPRINKLER INSTALLATION SHALL BE PHASED IN A MANNER WHICH WILL ALLOW FULL OCCUPANCY OF THE EXISTING FACILITY WHILE THE INSTALLATION IS IN PROGRESS.

2.06 ALTERNATES/SUBSTITUTIONS

CONTRACTOR SHALL STATE IN THEIR PROPOSAL ANY CONTRACTOR PROPOSED SUBSTITUTIONS OF THE MATERIALS OR METHODS OF INSTALLATION FROM THAT SPECIFIED. THESE ALTERATIONS SHALL BE LISTED ON THE PROPOSAL AS CONTRACTOR ALTERNATIVE.

2.07 LEAK DAMAGE

THE SPRINKLER CONTRACTOR SHALL BE RESPONSIBLE DURING THE INSTALLATION AND TESTING PERIODS OF THE SPRINKLER SYSTEM FOR ANY LOSS OR DAMAGE TO THE WORK OF OTHERS, TO THE BUILDING, IT'S CONTENTS ETC. CAUSED BY LEAKS IN THE EQUIPMENT. BY UNPLUGGED OR DISCONNECTED PIPES, FITTINGS ETC. OR BY OVERFLOW, AND SHALL PAY FOR THE NECESSARY REPLACEMENTS OR REPAIRS TO THE WORK OF OTHERS, DAMAGED BY SUCH LEAKAGE.

2.08 INSERTS, HANGERS, ETC.

A. ALL SPRINKLER PIPING SHALL BE SUBSTANTIALLY SUPPORTED AND SHALL COMPLY WITH THE STANDARDS FOR THE NATIONAL FIRE PROTECTION ASSOCIATION FOR THE INSTALLATION OF SPRINKLER SYSTEMS AND AS REQUIRED BY THE MASSACHUSETTS BUILDING CODE.

B. HANGERS AND THEIR COMPONENTS SHALL BE FERROUS. HANGERS SHALL BE ADJUSTABLE FLAT IRON TYPE OF CLEVIS TYPE.

C. SPRINKLER PIPING OR HANGERS SHALL NOT BE USED TO SUPPORT NON-SYSTEM COMPONENTS.

D. SPRINKLER PIPING SHALL BE SUBSTANTIALLY SUPPORTED FROM THE BUILDING STRUCTURE WHICH MUST SUPPORT THE ADDED LOAD OF THE WATER-FILLED PIPE PLUS A MINIMUM OF 250 LBS. APPLIED AT THE POINT OF HANGING. CONTRACTOR SHALL SUBMIT DETAIL OF SUPPORT FOR REVIEW AND APPROVAL.

E. SPRINKLER PIPING SHALL BE SUPPORTED INDEPENDENTLY OF THE CEILING SHEATHING.

F. WHEN SPRINKLER PIPING IS INSTALLED BELOW DUCTWORK, PIPING SHALL BE SUBSTANTIALLY SUPPORTED FROM THE BUILDING STRUCTURE, NOT FROM THE DUCTWORK.

G. MAXIMUM DISTANCE BETWEEN HANGERS SHALL NOT EXCEED 12 FT. FOR 1 AND 1-1/4" SIZES NOR 15' FOR SIZES 1-1/2" AND LARGER.

H. EXPANSION SHIELDS FOR SUPPORTING PIPES UNDER CONCRETE CONSTRUCTION MAYBE USED IN A HORIZONTAL POSITION IN THE SIDES OF BEAMS. IN CONCRETE HAVING GRAVEL OR CRUSHED STONE AGGREGATE, EXPANSION SHIELDS MAY BE USED IN THE VERTICAL POSITION TO SUPPORT PIPES 4" OR LESS IN DIAMETER.

2.09 ESCUTCHEONS

PROVIDE ESCUTCHEONS ON ALL EXPOSED PIPING PASSING THROUGH WALLS, PARTITIONS, FLOORS AND CEILINGS. ESCUTCHEON SHALL BE HELD IN PLACE BY INTERNAL TENSION OR SET SCREW.

2.10 AS-BUILT DRAWINGS

PREPARE AND SUBMIT "AS BUILT" DRAWINGS AT THE COMPLETION OF THE PROJECT.

2.11 SPRINKLER HEADS

A. SPRINKLERS SHALL BE RATED FOR ORDINARY TEMPERATURES (135/165 DEG. F) EXCEPT AS REQUIRED NEAR HEATERS OR LOCATIONS WHERE ELEVATED TEMPERATURES MAY NORMALLY BE EXPECTED OR AS OTHERWISE INDICATED ON THE CONTRACT DRAWINGS.

B. SPRINKLER HEADS SHALL BE BY TYCO SPRINKLER CO., INC. MANUFACTURE OR APPROVED EQUAL. UL AND FM APPROVED, AS FOLLOWS:

1. CABINET SHALL BE CONSTRUCTED OF 22 GAUGE STEEL WITH PRIME COAT AND MANUFACTURER'S BAKED ENAMEL FINISH IN COLOR SELECTED BY THE ARCHITECT.

2. SPRINKLER HEADS IN FINISHED CEILINGS WITH CONCEALED PIPING SHALL BE AUTOMATIC TYCO MODEL TY3531.

2.12 PRESSURE GAUGE

A. ASHCROFT SERIES 1079, OR APPROVED OTHER, 4-1/2" DIAMETER, 0-200 P.S.I. RANGE, 20 P.S.I. INTERVALS.

PART 3 - EXECUTION

3.01 GUARANTEE

A. GUARANTEE FOR A PERIOD OF ONE (1) YEAR FORM THE DATE OF ACCEPTANCE BY THE OWNER, ALL MATERIALS, APPARATUS AND WORKMANSHIP WHETHER FURNISHED BY HIMSELF OR BY HIS SUBCONTRACTORS AND HE SHALL REPLACE OR REPAIR IN A MANNER APPROVED BY THE ARCHITECTS, WITHOUT COST TO THE OWNER, ANY PART OR PARTS OF THE WORK WHICH MAY PROVE DEFECTIVE OR UNSATISFACTORY WITH IN THE PERIOD OF THE GUARANTEE.

3.02 INSTALLATION

A. PIPING

1. INSTALL PIPING AS SHOWN ON THE CONTRACT DRAWINGS AND STRAIGHT AND DIRECT AS POSSIBLE, FORMING RIGHT ANGLES OR PARALLEL LINES WITH BUILDING WALLS, NEATLY SPACED, WITH RISERS PLUMB AND TRUE.

2. SPRINKLER PIPING SHALL BE INSTALLED SO THAT THE SYSTEM CAN BE DRAINED.

3. PIPE SHALL BE REMOVED BY REAMING.

4. BEFORE INSTALLING PIPE, THOROUGHLY CLEAN THE INSIDE FREE OF CUTTING AND FOREIGN MATTER. CUT ALL PIPE SQUARE AND SMOOTH AND MAKE UP ALL JOINTS TO REQUIRED LIMITS.

B. PIPE JOINTS

1. THREADED JOINTS SHALL BE MADE UP OF TIGHT USING PIPE JOINT TEFLON COMPOUND OR TAPE, APPLIED ON THE MALE THREADS ONLY.

GENERAL NOTES:

1. CONTRACTOR TO FIELD VERIFY TO INSTALL ALL SPRINKLER HEADS TO BE MAX. 12" FROM CEILING.
2. ALL NEW SPRINKLER HEADS LOCATION TO BE COORDINATED WITH LIGHTING AND DIFFUSERS TO AVOID CONFLICT.
3. ALL SPRINKLER HEADS & PIPING TO BE COORDINATED WITH EXISTING & NEW SERVICES.
4. ANY WORK SHOWN ON THE DRAWINGS AND NOT PARTICULARLY DESCRIBED IN THE SPECIFICATIONS OR DETAILS, OR ANY WORK WHICH MAY BE DEEMED NECESSARY TO COMPLETE THE CONTRACT SHALL BE PROVIDED BY THE CONTRACTOR AS PART OF THIS CONTRACT.
5. FOR PURPOSES OF CLEARNESS AND LEGIBILITY, SPRINKLER DRAWINGS ARE ESSENTIALLY DIAGRAMMATIC AND SIZE AND LOCATION OF EQUIPMENT ARE DRAWN TO SCALE WHEREVER POSSIBLE. THE DRAWINGS INDICATE SIZE, CONNECTION POINTS, AND ROUTED OF PIPES. IT IS NOT INTENDED, HOWEVER, THAT ALL OFFSETS, RISES AND DROPS ARE SHOWN. PROVIDE PIPING AS REQUIRED TO FIT STRUCTURE, AVOID OBSTRUCTIONS, AND RETAIN CLEARANCES, HEADROOM OPENINGS AND PASSAGEWAYS. ALL SPRINKLER PIPING AT CEILING SHALL BE ROUTED TIGHT TO EXISTING SLAB AS REQUIRED.
6. CONTRACTOR TO FIELD VERIFY FEASIBILITY OF SLAB PENETRATION IF REQUIRED AS PER STRUCTURAL REQUIREMENT.
7. ALL SPRINKLER HEADS & PIPING TO BE COORDINATED WITH EXISTING & NEW SERVICES.
8. CONTRACTOR TO FIELD VERIFY EXACT LOCATION AND SIZE OF EXISTING SYSTEM AND RELOCATE HEADS WHEREVER SHOWN.
9. ALL PENDANT SPRINKLERS MUST BE SPACED AS FOLLOWS -
   1. MAXIMUM 7.5' FROM WALL
   2. MAXIMUM DISTANCE BETWEEN 2 SPRINKLER HEADS IS 15'.
   3. MINIMUM DISTANCE BETWEEN 2 SPRINKLER HEADS IS 6'.
   4. COVERAGE AREA PER SPRINKLER SHALL BE MAX. 130 SQ FT.
10. ALL SPRINKLER HEADS MEET DESIGN CRITERIA PER COVERAGE.
11. AUXILIARY DRAIN SHALL BE PROVIDED AT THE TRAPPED SECTIONS.
12. ALL EXISTING SPRINKLER SYSTEM AT THIS FLOOR TO BE DEMOLISHED UNLESS OTHERWISE NOTED.
13. FOR SPRINKLER WORK ONLY.

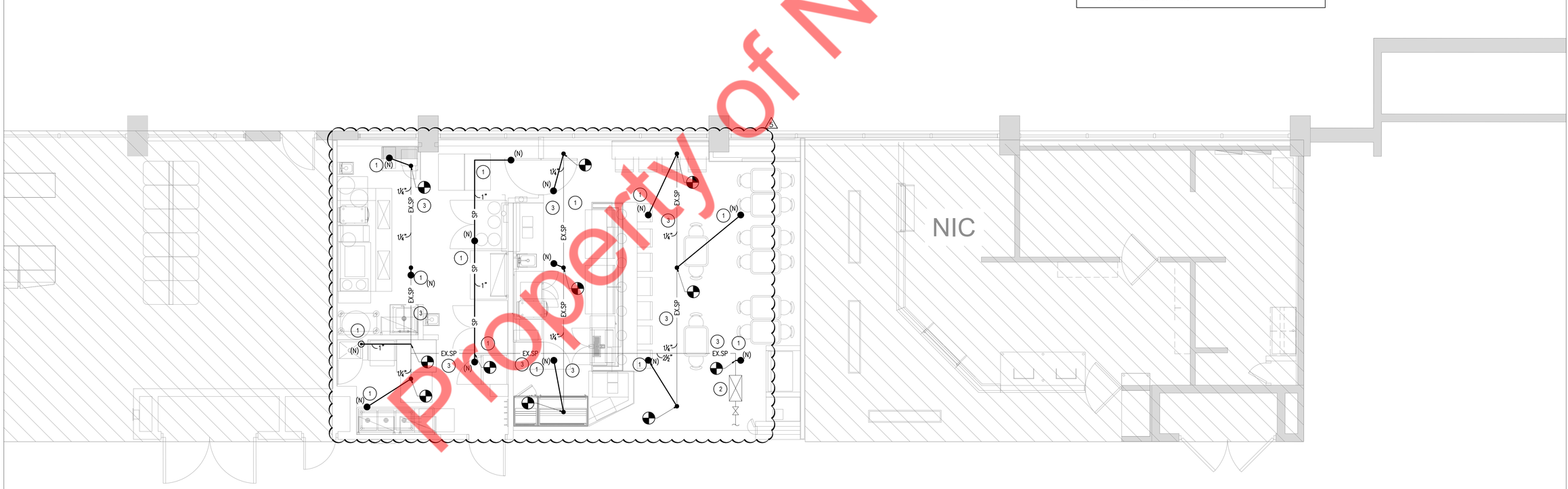
SPRINKLER KEYNOTES

1. ALL BRANCH TAKE-OFF FOR EACH SPRINKLER TO BE MIN. 1"
2. EXISTING 2-1/2" FLOW CONTROL VALVE ASSSEMBLY.
3. EXISTING SPRINKLER PIPING TO REMAIN. CONTRACTOR TO FIELD VERIFY EXACT ROUTING AND SIZING ON FIELD.

SPRINKLERS FOR MEZZANINE FLOOR	
NEW CONCEALED HEADS	13
NEW UPRIGHT HEADS	01
TOTAL	14

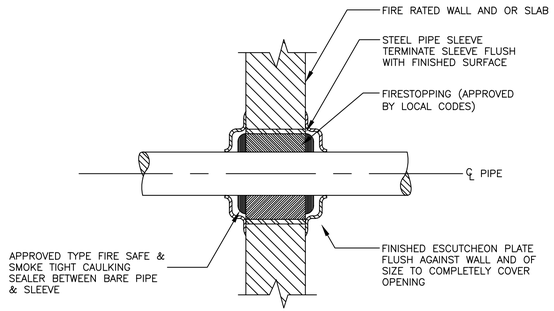
HAZARD CLASSIFICATION AND DESIGN DENSITY:

AREA : STORAGE AREA, BACK OF HOUSE, KITCHEN AREA, SALES AREA
OCCUPANCY: ORDINARY HAZARD
MINIMUM DESIGN DENSITY: 0.19 GPM/SQ. FT.

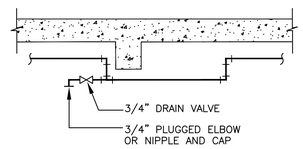


1 Sprinkler Floor Plan
1/4" = 1'-0"

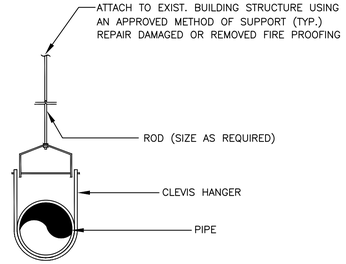
Gochi Term C



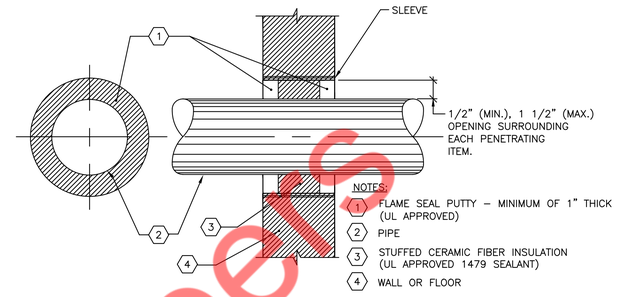
1 / SP-3.00 PIPE THRU RATED WALL TYPICAL DETAIL
N.T.S



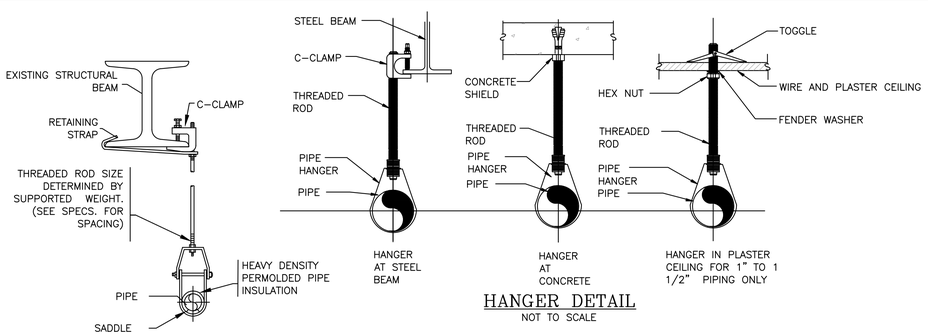
2 / SP-3.00 TYPICAL DRAIN CONNECTION FOR TRAPPED LINES ON WET PIPE SPRINKLER SYSTEMS
N.T.S



3 / SP-3.00 HANGER DETAILS TYPICAL
N.T.S



4 / SP-3.00 FIRE STOPPING DETAIL FOR FIRE/SMOKE RATED WALL/FLOOR OPENINGS
N.T.S

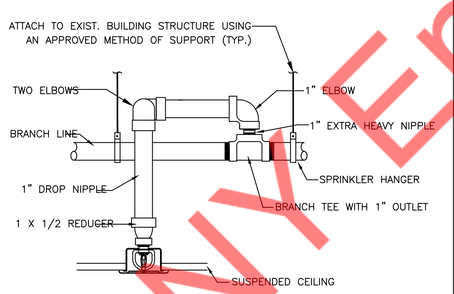


HANGER DETAIL
NOT TO SCALE

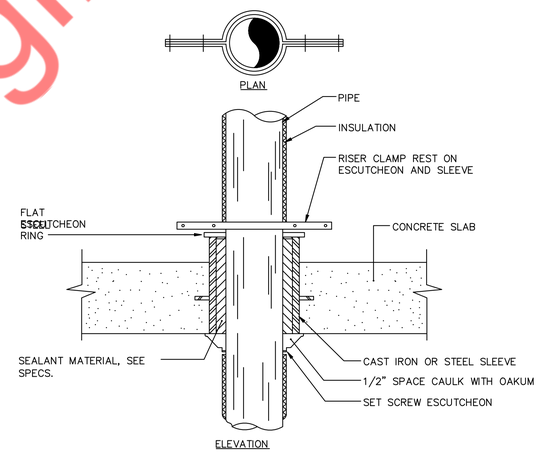
ROD SCHEDULE

PIPE SIZE	ROD SIZE	SPACING	PIPE SIZE	ROD SIZE	SPACING
1"	3/8"	5'-8'	2 1/2"	1/2"	10'-12'
1 1/4"	3/8"	6'-10'	3"	1/2"	10'-12'
1 1/2"	3/8"	8'-10'			
2"	3/8"	10'-12'			

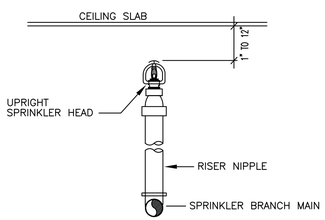
5 / SP-3.00 TYPICAL HANGER DETAIL AND ROD SCHEDULE
N.T.S



6 / SP-3.00 SPRINKLER HEAD IN SUSPENDED CEILING DETAIL
N.T.S



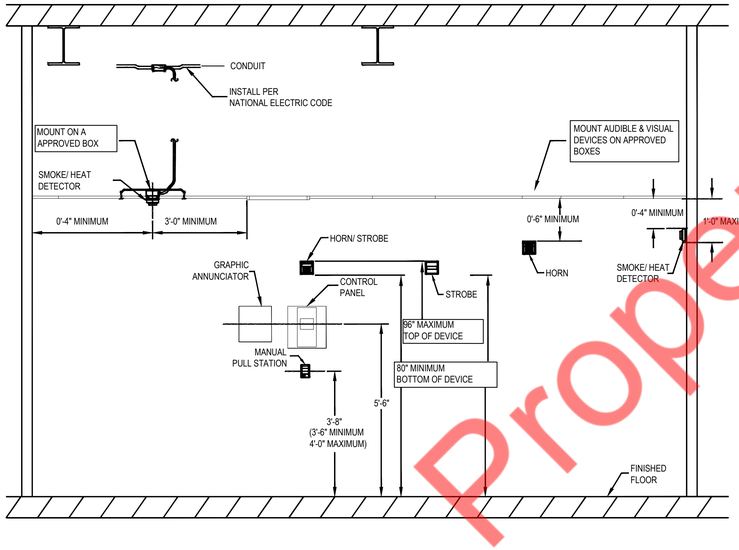
7 / SP-3.00 SPRINKLER RISER CLAMP DETAIL
N.T.S



8 / SP-3.00 SPRINKLER HEAD DETAIL UPRIGHT
N.T.S

PROJECT DATA															
PROJECT DESCRIPTION		BUILDING OCCUPANCY				PROJECT DESCRIPTION						FIRE ALARM SYSTEM FEATURES	
	NEW BUILDING	X	ASSEMBLY GROUP A (A1,A2,A3,A4 AND A5)		RESIDENTIAL GROUP R (R1,R2 AND R3)	2ND	PROJECT SPACE LEVEL		ATRIUM		STAIR PRESSURIZATION		NON-VOICE EVACUATION
	FIRE ALARM SYSTEM UPGRADE		BUSINESS GROUP B		STORAGE GROUP S (S1 AND S2)				FIRE DEPARTMENT ACCESS		POST FIRE SMOKE PURGE	X	VOICE EVACUATION
	LIFE SAFETY SYSTEM UPGRADE		EDUCATIONAL GROUP E		UTILITY AND MISCELLANEOUS GROUP U			X	FULLY SPRINKLERED		GENERATOR		PARTIAL/SELECTIVE EVACUATION
X	RENOVATION		FACTORY INDUSTRIAL GROUP F (F1 AND F2)		OTHER:				PARTIALLY SPRINKLERED		FIRE PUMP		GENERAL EVACUATION
	EMERGENCY REPAIR		HIGH-HAZARD GROUP H (H1,H2,H3,H4 AND H5)						NON-SPRINKLERED		OTHER:		DIGITAL ALARM COMMUNICATOR
	TENANT ADDITION		INSTITUTIONAL GROUP I (I1,I2 AND I3)						PRE-ACTION SPRINKLER		OTHER:		PRE-SIGNAL SYSTEM
	OTHER:		MERCANTILE GROUP M										FIRE FIGHTER'S TELEPHONE SYSTEM

SYSTEM INPUTS / INITIATING DEVICES	SYSTEM OUTPUTS / INDICATING/CONTROLLED DEVICES	CONTROL UNIT ANNUNCIATION					NOTIFICATION							
		ACTIVATE COMMON ALARM SIGNAL INDICATOR ON LCD OF FIRE ALARM CONTROL PANEL & OUTLYING ANNUNCIATORS	ACTIVATE COMMON SUPERVISORY SIGNAL INDICATOR ON LCD OF FIRE ALARM CONTROL PANEL & OUTLYING ANNUNCIATORS.	ACTIVATE COMMON TROUBLE SIGNAL INDICATOR ON LCD OF FIRE ALARM CONTROL PANEL & OUTLYING ANNUNCIATORS.	SOUND INTERNAL BUZZER AT FIRE ALARM CONTROL PANEL & OUTLYING ANNUNCIATORS.	TEXT MESSAGE DISPLAY DEVICE TYPE & LOCATION OF THE ACTIVATING DEVICES ON LCD OF FIRE ALARM CONTROL PANEL & OUTLYING ANNUNCIATORS.	ACTIVATE EVACUATION SIGNAL THROUGH SPEAKER AND FLASH THE STROBES THROUGHOUT THE BUILDING.	TRANSMIT "MANUAL" ALARM SIGNAL TO FIRE DEPARTMENT VIA AN APPROVED CENTRAL STATION MONITORING COMPANY.	TRANSMIT "SMOKE/HEAT" ALARM SIGNAL TO FIRE DEPARTMENT VIA AN APPROVED CENTRAL STATION MONITORING COMPANY.	TRANSMIT "WATERFLOW" ALARM SIGNAL TO FIRE DEPARTMENT VIA AN APPROVED CENTRAL STATION MONITORING COMPANY.	TRANSMIT "SUPERVISORY" ALARM SIGNAL TO FIRE DEPARTMENT VIA AN APPROVED CENTRAL STATION MONITORING COMPANY.	TRANSMIT "TROUBLE" ALARM SIGNAL TO FIRE DEPARTMENT VIA AN APPROVED CENTRAL STATION MONITORING COMPANY.	TRANSMIT "TROUBLE" ALARM SIGNAL TO BASE BUILDING FIRE ALARM CONTROL PANEL.		
		A	B	C	D	E	F	G	H	I	J	K	L	
1	MANUAL PULL STATION	●			●	●	●	●						1
2	TENANT FACP												●	2
3	AREA SMOKE DETECTOR	●			●	●	●		●					3
4	SPRINKLER CONTROL VALVE/TAMPER SWITCH		●		●	●					●			4
5	ALARM ACTIVATION OF OTHER SUBSYSTEM	●			●	●	●		●					5
6	FIRE ALARM AC POWER FAILURE			●	●	●						●		6
7	FIRE ALARM SYSTEM LOW BATTERY			●	●	●						●		7
8	OPEN CIRCUIT			●	●	●						●		8
9	GROUND CIRCUIT			●	●	●						●		9
10	NOTIFICATION APPLIANCE CIRCUIT SHORT			●	●	●						●		10
11	HEAT DETECTOR	●			●	●	●		●					11



TYPICAL DEVICE MOUNTING DETAIL
N.T.S

FIRE ALARM NOTES:

1. ALL EQUIPMENT AND WIRING INDICATED ON THESE PLANS IS NEW (U.O.N.).
2. PROVIDE WIRING AS REQUIRED BETWEEN ALL DEVICES AND EQUIPMENT AS REQUIRED TO PERFORM FIRE ALARM SYSTEM FUNCTIONS.
3. WIRING FOR FIRE ALARM DEVICES IN FINISHED SPACES WITHOUT HUNG CEILING SHALL BE INSTALLED IN EMT CONDUIT.
4. ALL STROBES AND HORN/STROBES SHALL BE FLUSH WALL MOUNTED FINISH BY ARCHITECT, APPROVED FOR USE IN AUTHORITY HAVING JURISDICTION (AHJ).
5. FOR WALL MOUNTED F.A. DEVICES PROVIDE 3/4" CONDUIT TERMINATED IN NEAREST ACCESSIBLE CEILING.
6. WIRING FOR FIRE ALARM DEVICES IN UNFINISHED SPACES SHALL BE INSTALLED IN RGS CONDUIT UP TO 8'-0" AFF AND THEN IN EMT CONDUIT ABOVE 8'-0" AFF.
7. CONTRACTOR SHALL VERIFY ALL WIRING WITH FIRE ALARM VENDOR AND OBTAIN WIRING DIAGRAMS BEFORE PROCEEDING WITH THE START OF ANY WORK.
8. ALL WIRING SHALL BE IN ACCORDANCE WITH THE AHJ.
9. PROVIDE ALL REQUIRED EXPANSION PANELS, PC BOARDS, POWER SUPPLIES, BATTERIES, FUSE CUTOUTS AND BRANCH CIRCUITS, ETC, FOR A COMPLETE AND OPERATIONAL FIRE ALARM SYSTEM.
10. STROBES AND HORNS SHALL BE WIRED ON ALTERNATING A-B CIRCUITING IN ALL AREAS, AS INDICATED ON THE RISER DIAGRAM.
11. FIRE ALARM DEVICES SHOULD BE COMPATIBLE AND CONNECTED WITH BASE BUILDING FACP.
12. CONTRACTOR SHALL PERFORM ALL LOCAL BUILDING DEPT. FILINGS AND OBTAIN ALL APPROVALS. CONTRACTOR SHALL OBTAIN ALL REQUIRED SIGNED & SEALED LOCAL BUILDING DEPT. FORMS AND ALL REQUIRED SETS OF DRAWINGS FROM ENGINEER OF RECORD AND BUILDING DEPT. EXPEDITOR.
13. UPON COMPLETION OF INSTALLATION THE SYSTEM SHALL BE 100% PRE-TESTED BY THE FIRE ALARM VENDOR AND THE LICENSED ELECTRICAL CONTRACTOR PRIOR TO LOCAL FIRE DEPARTMENT INSPECTION.

ABBREVIATIONS	
AFF	ABOVE FINISHED FLOOR
C	CONDUIT
E	EXISTING
EL	EXISTING TO BE LOWERED
ELV	ELEVATOR LOBBY
EMT	ELECTRIC METALLIC TUBING
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FDS	FUSED DISCONNECT SWITCH
G	GROUND
N	NEW
NE	NEW TO REPLACE EXISTING
NTS	NOT TO SCALE
R	REMOVE
RE	RELOCATED EXISTING
RGS	RIGID GALVANIZED STEEL
RP	RELOCATED POSITION
UON	UNLESS OTHERWISE NOTED
W	WIRE

SYMBOL	DESCRIPTION
(S) 75	FIRE ALARM STROBE AND SPEAKER, NUMERICAL INDICATES CANDELA RATING
F	FIRE ALARM MANUAL PULL STATION, WALL MOUNTED (48" AFF)
(S)	CEILING MOUNTED AREA SMOKE DETECTOR
(H)	CEILING MOUNTED HEAT DETECTOR
MM	MONITOR MODULE
TS	TEMPER SWITCH
WF	WATER FLOW SWITCH
FSS	FIRE SUPPRESSION SYSTEM
FACP	FIRE ALARM CONTROL PANEL / FIRE ALARM TERMINAL CABINET

E.C TO COORDINATE WITH COORDINATE WITH MPA- FIRE ALARM VENDOR. JCI FIRE PROTECTION;
STEVE RAKOPOULOS
(steven.rakopoulos@jci.comsteven.rakopoulos@jci.com)

1

DIVISION 16 - FIRE ALARM

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. WORK UNDER THIS SECTION INCLUDES, BUT IS NOT NECESSARILY LIMITED TO, FURNISHING AND INSTALLING THE FOLLOWING:

1. FIRE ALARM PANEL, WIRING AND DEVICES

B. ALL WORK SHALL BE COMPLETE AND ITEMS, EQUIPMENT, ETC., SHALL BE ELECTRICALLY CONNECTED FOR PROPER AND CORRECT OPERATION.

C. ALL WORK UNDER THIS CONTRACT SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE FOLLOWING CODES AND STANDARDS IN SO FAR AS THEY APPLY:

1. NATIONAL ELECTRICAL CODE
2. NFPA 72
3. UNDERWRITER'S LABORATORIES, INC., STANDARDS AND APPROVED LISTINGS.
4. ELECTRICAL TESTING LABORATORIES STANDARDS.
5. MASSACHUSETTS BUILDING CODE, LATEST EDITION AND REVISIONS.
6. ALL LOCAL CODES AND ORDINANCES.

D. THE FIRE ALARM CONTRACTOR SHALL BE LICENSED IN THE LOCAL STATE AND HAVE ALL LICENSES REQUIRED FOR THE WORK.

E. OBTAIN ALL PERMITS, LICENSES, INSPECTIONS, ETC. REQUIRED FOR THE WORK AND PAY FOR THE SAME. FURNISH FINAL CERTIFICATE OF INSPECTION AND APPROVAL FROM THE ELECTRICAL INSPECTOR HAVING JURISDICTION PRIOR TO ACCEPTANCE OF THE WORK.

F. ALL WORK SHALL BE DONE BY SKILLED MECHANICS AND SHALL PRESENT A NEAT, TRIM, WORKMANLIKE CONDITION WHEN COMPLETED.

1.2 INTENT

A. THE INTENT OF THESE SPECIFICATIONS AND ACCOMPANYING DRAWINGS IS TO CONVEY AS REASONABLY AS POSSIBLE THE REQUIREMENTS FOR A COMPLETE JOB READY FOR THE BUILDING TO OPERATE. THE FIRE ALARM CONTRACTOR SHALL TAKE THIS INTO CONSIDERATION AND INCLUDE IN HIS BASE BID ALLOWANCE FOR CONTINGENCIES AS WILL ALLOW HIM TO PROVIDE MINOR PIECES OF EQUIPMENT AND LABOR NOT SPECIFICALLY INDICATED BUT REQUIRED FOR THE JOB TO OPERATE PROPERLY, AT NO ADDITIONAL COST TO THE OWNER.

1.3 COORDINATION

A. COORDINATE WORK WITH OTHER CONTRACTORS. NOTIFY ARCHITECT OF APPARENT CONFLICT EARLY TO EXPEDITE CONSTRUCTION. IF STRUCTURAL DAMAGE APPEARS IMMINENT, STOP WORK AND NOTIFY ARCHITECT FOR A DECISION BEFORE RESUMING OPERATIONS.

B. LOCATIONS SHOWN ARE APPROXIMATE. THE DRAWINGS DO NOT GIVE EXACT DETAILS AS TO ELEVATIONS AND LOCATIONS OF VARIOUS PIPES, FITTINGS, DUCTS, CONDUITS, ETC., AND DO NOT SHOW ALL OFFSETS AND OTHER INSTALLATION DETAILS WHICH MAY BE REQUIRED. COORDINATE ALL LOCATIONS WITH ARCHITECT BEFORE ANY ROUGH-IN.

1.4 SHOP DRAWINGS

A. PROVIDE COMPLETE SHOP DRAWINGS AS PER MA STATE BUILDING CODE SECTION 907.1 TO THE LOCAL FIRE MARSHAL INCLUDING:

1. FLOOR PLAN WITH ROOM NAMES
2. LOCATION OF ALL FA DEVICES
3. LOCATION OF PANELS
4. POWER CONNECTIONS
5. BATTERY CALCULATIONS
6. CONDUCTOR TYPES AND SIZES
7. VOLTAGE DROP CALCULATIONS
8. EQUIPMENT CUT-SHEETS, MODEL, NUMBERS, ETC.

PART 2 - PRODUCTS AND MATERIALS

2.1 GENERAL

A. ALL MATERIAL SHOULD BE NEW AND SHALL BEAR THE MANUFACTURER'S NAME TRADE, AND UL LABEL WHERE SUCH STANDARD HAS BEEN ESTABLISHED FOR THE PARTICULAR MATERIAL. MATERIALS SHALL BE STANDARD PRODUCTS OF MANUFACTURER'S REGULARLY ENGAGED IN MANUFACTURER OF THE REQUIRED TYPE OF EQUIPMENT AND THE MANUFACTURER'S LATEST APPROVED DESIGN.

1. BOXES INSTALLED IN CONCEALED LOCATIONS SHALL BE SET FLUSH WITH THE FINISHED SURFACES.
2. PROVIDE RATED BOXES ON ALL FIRE BARRIERS AND WALLS INSTALLED PER CODE.

PART 3 - EXECUTION

3.1 FIRE ALARM SYSTEM EQUIPMENT

A. PROVIDE A COMPLETE OPERABLE FIRE ALARM SYSTEM AS SHOWN ON THE DRAWINGS AND AS REQUIRED BY STATE AND LOCAL CODES.
B. ALL FIRE ALARM SYSTEM CABLES SHALL BE INSTALLED IN CONDUIT. SIZE AS REQUIRED BY THE EQUIPMENT SUPPLIER. PROVIDE A SUBMITTAL OF ALL DEVICES AND A RISER DIAGRAM FOR APPROVAL BEFORE INSTALLATION OF ANY EQUIPMENT.

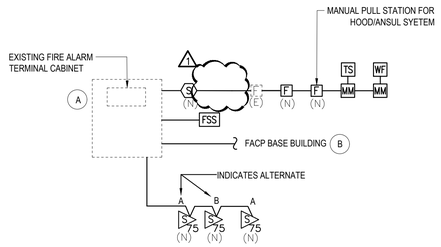
3.2 CLEAN UP

A. DURING CONSTRUCTION, KEEP THE SITE CLEAN OF DEBRIS. UPON COMPLETION, AND BEFORE FINAL INSPECTION, CLEAN UP THE PREMISES TO REMOVE ALL EVIDENCE OF WORK. IN ADDITION UPON COMPLETION OF CONSTRUCTION LEAVE EQUIPMENT CLEAN.

3.3 GUARANTEE

A. GUARANTEE ALL MATERIALS AND LABOR INCLUDED IN THE FIRE ALARM WORK FOR A PERIOD OF ON YEAR FROM DATE OF FINAL ACCEPTANCE BY THE OWNER. ANY PART OR PARTS OF THE WORK OR EQUIPMENT WHICH PROVE TO BR DEFECTIVE DURING THE GUARANTEE PERIOD SHALL BE REPLACED AT NO ADDITIONAL COST TO THE OWNER.

FIRE ALARM DRAWING LIST	
FA–1.00	FIRE ALARM LEGEND AND GENERAL NOTES
FA–2.00	FIRE ALARM CONSTRUCTION PLAN & RISER DIAGRAM



FLOOR LEVEL

2 Fire Alarm Riser Diagram
N.T.S.

FIRE ALARM RISER KEYED WORK NOTES:

A. EXISTING FIRE ALARM TERMINAL CABINET SHALL REMAIN. E.C. TO FIELD VERIFY THE EXISTING CONNECTION TO THE EXISTING FIRE ALARM TERMINAL CABINET FROM MAIN FIRE ALARM CONTROL PANEL OF THE BUILDING. REPLACE IF FOUND IN OPERABLE AND BASE BID ACCORDINGLY.

1 B. E.C TO COORDINATE WITH COORDINATE WITH MPA- FIRE ALARM VENDOR. JCI FIRE PROTECTION;
STEVE RAKOPOULOS
(steven.rakopoulos@jci.comsteven.rakopoulos@jci.com)

FIRE ALARM RISER GENERAL NOTES:

1. ALL COMPONENTS REQUIRED TO MAKE SYSTEM WORKABLE SHALL BE INCLUDED IN BID PRICE.
2. EACH FA RELAY SHALL HAVE MINIMUM OF THREE SETS OF 2 CONTACT 10A RATED @ 120V (TYPICAL).
3. COORDINATE WIRING DIAGRAM WITH FIRE ALARM VENDOR SHOP DRAWINGS. FOR STROBES MAXIMUM CURRENT PER ZONE SHALL NOT EXCEED 1.5A. ZONES FOR STROBES & STROBE/HORNS AS PER FIRE ALARM VENDOR SHOP DRAWINGS (TYPICAL).
4. ALL FIRE ALARM WIRING SHALL BE INSTALLED IN CONDUIT WHERE REQUIRED BY AHJ.
5. THIS RISER DIAGRAM IS A SCHEMATIC REPRESENTATION OF THE FIRE ALARM SYSTEM. ALL WIRING SHALL BE AS PER APPROVED MANUFACTURER SHOP DRAWINGS.
6. EACH FIRE ALARM INDICATING DEVICES CIRCUIT TO HAVE A MAXIMUM OF 14 DEVICES PER CIRCUIT. CONTRACTOR TO SUPPLY REQUIRING NUMBER OF INDICATING CIRCUIT TO PROVIDE REDUNDANT CIRCUITING (A,B) SCHEME.
7. ALL FIRE ALARM CONDUITS SHALL BE MINIMUM ¾".
8. ALL WATER FLOW AND TAMPER SWITCH DEVICES SHALL BE CONNECTED TO FIRE ALARM TERMINAL CABINET. COORDINATE EXACT LOCATION AND QUANTITIES WITH FIRE PROTECTION CONTRACTOR.
9. ALL THE NEW DEVICES SHALL BE COMPATIBLE WITH THE EXISTING FIRE ALARM TERMINAL CABINET. BASE BID ACCORDINGLY.

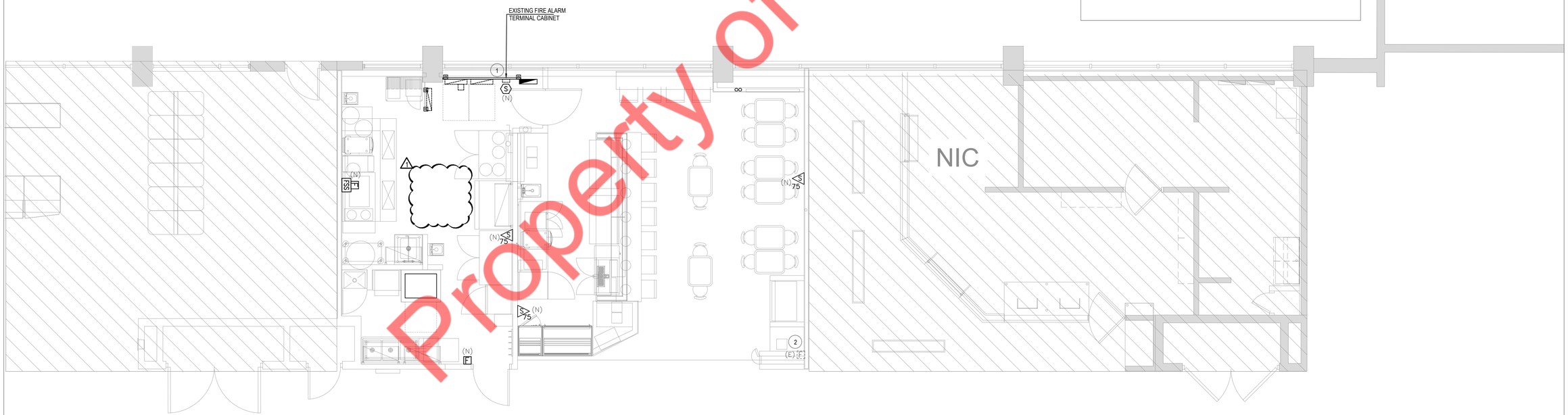
FIRE ALARM PLAN GENERAL NOTES:

1. E.C TO COORDINATE INSTALLATION OF FA DEVICES WITH HVAC EQUIPMENT LOCATIONS IN FIELD .

FIRE ALARM PLAN KEYED WORK NOTES:

1 EXISTING FIRE ALARM TERMINAL CABINET SHALL REMAIN. E.C. TO FIELD VERIFY THE EXISTING CONNECTION TO THE EXISTING FIRE ALARM TERMINAL CABINET FROM MAIN FIRE ALARM CONTROL PANEL OF THE BUILDING. REPLACE IF FOUND IN OPERABLE AND BASE BID ACCORDINGLY.

2 CONTRACTOR TO COORDINATE WITH ARCHITECT/OWNER FOR EXACT LOCATION OF EXISTING FIRE ALARM DEVICES. REPLACE IF FOUND INOPERABLE AND BASE BID ACCORDINGLY.



1 Fire Alarm Construction Plan
1/4" = 1'-0"

Gschl Term C