ELECTRICAL SYMBOLS LIST

	DESCRIPTION
	POWER AND TELECOMMUNICATION
	CIRCUIT HOMERUN TO PANEL
	SINGLE RECEPTACLE OUTLET - WALL MOUNTED
	DUPLEX RECEPTACLE OUTLET - WALL MOUNTED
AC	ABOVE COUNTER DUPLEX RECEPTACLE OUTLET - WALL MOUNTED
	G.F.C.I. DUPLEX RECEPTACLE OUTLET - WALL MOUNTED
AC	ABOVE COUNTER G.F.C.I. DUPLEX RECEPTACLE OUTLET - WALL MOUNTED
	ISOLATED GROUND DUPLEX RECEPTACLE OUTLET - WALL MOUNTED
	WALL MOUNTED QUAD RECEPTACLE OUTLET
	SPECIAL PURPOSE RECEPTACLE - WALL MOUNTED (SEE EQUIPMENT SCHEDULE OR NOTES)
	DUPLEX RECEPTACLE - FLOOR MOUNTED
	DUPLEX RECEPTACLE - CEILING MOUNTED
	CONTROLLED RECEPTACLE
	JUNCTION BOX
	FLOOR BOX DEVICES / POKE-THRU DEVICES WITH POWER AND TELE/DATA PER PLANS (SEE DRAWINGS FOR MODEL)
	TELEPHONE / DATA COMBINATION OUTLET - WALL MOUNTED
	TELEPHONE OUTLET - WALL MOUNTED
	DATA OUTLET - WALL MOUNTED
	PANELBOARD WALL/RECESSED MOUNTED (277/480 VOLT, 120/208Y VOLT AS NOTED ON PLANS)
	TRANSFORMER (RATING AND CONFIGURATIONS AS NOTED ON PLANS)
	DISCONNECT SWITCH (FRAME/POLES/FUSE-IF REQUIRED)
M	MOTOR LOAD
S_M	MOTOR RATED TOGGLE SWITCH
	LIGHTING & CONTROLS
	LIGHT FIXTURE HALF SHADED FIXTURE OR"EM" INDICATES FIXTURES WITH INTEGRAL BATTERY PACK FOR EMERGENCY (REFER LIGHTING FIXTURE SCHEDULE ON LIGHTING PLAN)
	CEILING/WALL MOUNTED SELF POWERED EXIT LIGHT FIXTURE WITH DIRECTIONAL ARROWS AS INDICATED. SHADED AREA DENOTES FACE(S) (REFER LIGHTING FIXTURE SCHEDULE ON LIGHTING PLAN)
$S_{\#}$	LIGHTING SWITCH U.O.N. "A" DENOTES LIGHTING FIXTURE CONTROLLED - WALL MOUNTED (48" AFF) UNO '#' 'BLANK' - S.P.S.T. SWITCH '3' - THREE WAY SWITCH '4' - FOUR WAY SWITCH 'D' - DIMMER SWITCH 'T' - TIMER SWITCH 'OV' - OVERRIDE SWITCH
S_{OS}	OCCUPANCY SENSOR (DUAL TECHNOLOGY) SWITCH W/ MANUAL OVERRIDE WALL MOUNTED.
OS	OCCUPANCY SENSOR (DUAL TECHNOLOGY) - CEILING MOUNTED
DS	DAYLIGHT SENSOR - CEILING MOUNTED
TC	TIME CLOCK
C	LIGHTING CONTACTORS

NOTES:

1. NOT ALL SYMBOLS MAY APPEAR ON DRAWINGS.
2. COORDINATE EXACT LOCATION AND SPECIFIC MOUNTING HEIGHT OF OUTLETS WITH ARCHITECT.
3. MOUNTING HEIGHTS SHALL BE 18" AFF FOR THE OUTLETS, 42" AFF FOR THE LIGHTING SWITCHES OR AS INDICATED IN THE LEGEND UNLESS, OTHERWISE NOTED ON THE PLANS.

ELECTRICAL GENERAL NOTES:

A. DRAWINGS ARE SCHEMATIC IN NATURE AND MAY NOT BE DRAWN EXACTLY TO SCALE. CONTRACTOR IS RESPONSIBLE FOR COORDINATING EXACT ROUTING OF ALL SERVICES WITH EXISTING CONDITIONS AND WITH ALL OTHER TRADES.

B. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR CEILING TYPES AND EXACT LOCATION OF ALL FIXTURES. VERIFY CEILING TYPES WITH ARCHITECT PRIOR TO ORDERING LIGHT FIXTURES TO ENSURE COMPATIBLE FIXTURE TRIMS AND MOUNTING HARDWARE.

C. ALL WORK SHALL COMPLY WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE, AND ALL APPLICABLE LOCAL AND STATE CODES.

D. ALL CIRCUITS SHALL INCLUDE A GREEN GROUND CONDUCTOR SIZED IN ACCORDANCE WITH 250-95, OR LARGER IF NOTED.

E. ALL PENETRATIONS OF FIRE RATED PARTITIONS DUE TO THE INSTALLATION OF ELECTRICAL SYSTEMS SHALL BE SEALED TO MAINTAIN THE FIRE RATING OF THE WALL.

F. ALL CONDUITS EXPOSED TO PUBLIC VIEW SHALL BE PAINTED. VERIFY COLOR WITH OWNER AND ARCHITECT.

G. CONTRACTOR SHALL CONNECT ALL LIGHTS AND POWER FOR ALL OWNER FURNISHED CASEWORK. REFER TO OWNER'S FURNITURE AND FIXTURE LAYOUT FOR EXACT HEIGHTS AND LOCATIONS.

H. NO MORE THAN (9) CURRENT CARRYING CONDUCTORS SHALL BE INSTALLED IN ANY CONDUIT.

I. ALL CONDUIT PENETRATIONS OF THE ROOF SHALL OCCUR WITHIN THE MECHANICAL CURBS, EXCEPT WHERE SPECIFICALLY INDICATED OTHERWISE.

J. NO CONDUIT SHALL BE ROUTED IN ANY PARTITION WITH A TILE FINISH.

K. UNDERGROUND PVC CONDUITS SHALL CONVERT TO RIGID GALVANIZED STEEL ELBOW AND CONTINUE AS RIGID GALVANIZED STEEL CONDUIT UNTIL EMERGENCE FROM SLAB OR CONCRETE ENCASEMENT. PROVIDE THREADED CAPS AT BOTH ENDS OF SPARE OR UNUSED CONDUITS. EXCEPTION: ALL PARTS OF UNDERGROUND LIGHTING BRANCH CIRCUIT CONDUITS MAY BE PVC WITH GROUND WIRE.

L. ALL WALL LIGHT SWITCHES SHALL BE RATED AT 20A. ALL DEDICATED RECEPTACLES SHALL BE RATED 20A. U.N.O.

M. ALL JUNCTION BOXES MOUNTED ABOVE CEILING SHALL BE MOUNTED 1'-0" AFC.

N. ALL EXIT/EMERGENCY SHALL BE ON SAME BRANCH CIRCUIT AS THAT SERVING NORMAL LIGHTING IN THE AREA AND CONNECTED AHEAD OF ANY SWITCH, UNLESS NOTED OTHERWISE.

O. MINIMUM WIRE SIZE TO BE 2#12, 1#12, 3/4"C UNLESS NOTED OTHERWISE. CONTRACTOR SHALL USE #10 WIRING FOR OVER 100FT (10AMPS).

P. EXIT SIGNS AND EMERGENCY EGRESS LIGHTS MUST BE APPROVED BY FIELD INSPECTOR. ADDITIONAL FIXTURES MAY BE REQUIRED BY FIELD INSPECTOR.

Q. REFER TO MECHANICAL DRAWINGS AND COORDINATE WITH MECHANICAL CONTRACTOR FOR THE EXACT LOCATION AND ELECTRICAL REQUIREMENTS OF MECHANICAL EQUIPMENT.

R. REFER TO PLUMBING DRAWINGS AND COORDINATE WITH PLUMBING CONTRACTOR FOR THE EXACT LOCATION AND ELECTRICAL REQUIREMENTS OF PLUMBING EQUIPMENT.

S. ALL RECEPTACLES IN BATHROOM AND KITCHEN SHALL BE GFI RATED.

T. ALL RECEPTACLES ON ROOF AND EXTERIOR SHALL BE WEATHERPROOF AND GFI RATED.

U. REFER TO OWNER EQUIPMENT MANUALS AND COORDINATE WITH SUPPLIER FOR EXACT LOCATION AND ELECTRICAL REQUIREMENTS OF EQUIPMENT.

ELECTRICAL DEMOLITION NOTES:

A. PRIOR TO SUBMITTING A PROPOSAL, THE ELECTRICAL CONTRACTOR SHALL VISIT AND CAREFULLY INVESTIGATE THE EXISTING AREAS AFFECTED BY THIS WORK IN ORDER TO BECOME FAMILIAR WITH EXISTING CONDITIONS AND THE DIFFICULTIES THAT WILL ATTEND THE EXECUTION OF THIS WORK. THE CONTRACTOR SHALL BASE HIS BID ACCORDINGLY. SUBMISSION OF PROPOSAL WILL BE CONSTRUED AS CONFIRMATION THAT A THOROUGH EXAMINATION OF THE SITE HAS BEEN MADE BY THE CONTRACTOR. LATER CLAIMS FOR UNFORESEEN EXTRA LABOR, EQUIPMENT OR MATERIALS WILL NOT BE ACCEPTED. SAID CLAIM(S) COULD HAVE BEEN FORESEEN DURING THE SITE INVESTIGATION.

B. CONTRACTOR'S WORK SHALL COMPLY WITH ALL SAFETY RELATED WORK PRACTICES DETAILED IN THE LATEST EDITION OF NFPA 70E.

C. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ALL ELECTRICAL FACILITIES RENDERED INACTIVE OR OBSOLETE BY THE SCOPE OF THE ARCHITECTURAL, MECHANICAL AND PLUMBING DEMOLITION WORK. THE CONTRACTOR IS ALERTED THAT SUCH ELECTRICAL FACILITIES MAY NOT BE EXPLICITLY SHOWN ON THE ELECTRICAL DEMOLITION DRAWINGS. THE CONTRACTOR SHALL VISIT THE SITE, REFER TO THE ARCHITECTURAL, MECHANICAL,ELECTRICAL AND PLUMBING DRAWINGS, AND COORDINATE WITH THE GENERAL, MECHANICAL, AND PLUMBING CONTRACTOR(S), AND INCLUDE ALL ELECTRICAL DEMOLITION WORK INCLUDING,HOWEVER NOT NECESSARILY LIMITED TO, THE COMPLETE REMOVAL OF ALL ELECTRICAL AND CONTROL WIRES, CONDUIT, JUNCTION BOXES, ENCLOSURE AND RACEWAY SUPPORT SYSTEMS, DISCONNECT SWITCHES, CIRCUIT BREAKERS ETC. INTENDED FOR REMOVAL AS REQUIRED TO COMPLETE THE WORK.

D. THE INTENT OF THE DEMOLITION WORK REQUIREMENTS INCLUDE ALL LABOR AND EQUIPMENT REQUIRED TO ATTAIN THE FINAL CONDITIONS AS SHOWN ON THE ARCHITECTURAL, MECHANICAL, TEMPERATURE CONTROL, AND PLUMBING, STRUCTURAL, ELECTRICAL NEW WORK PLANS. THE CONTRACTOR SHALL REVIEW ALL OTHER TRADE DRAWINGS AND COORDINATE WILL ALL OTHER TRADE CONTRACTORS, AND BASE HIS BID ACCORDINGLY.

E. REFER TO THE ARCHITECTURAL DEMOLITION PLANS FOR SCOPE RELATED TO THE LAYOUT OF WALLS, CEILINGS, ETC... TO BE REMOVED.

F. COORDINATE ALL POWER SHUT-DOWNS AND FIRE ALARM SYSTEM MODIFICATIONS, WHERE APPLICABLE, WITH THE ONSITE FACILITIES MANAGEMENT TEAM.

G. REMOVE ALL EXISTING DEVICES (RECEPTACLES, DATA OUTLETS, FIRE ALARM DEVICES, SWITCHES, EMPTY JUNCTION BOXES, ETC...) ASSOCIATED WITH ANY WALLS OR OTHER PARTITIONS IDENTIFIED TO BE REMOVED. REMOVE ALL ASSOCIATED CONDUIT AND WIRING BACK TO ITS SOURCE. RE-LABEL ALL NEW SPARE BREAKERS AS "SPARE" IN THE APPROPRIATE PANEL SCHEDULES.

H. REMOVE ALL EXISTING DEVICES (RECEPTACLES, DATA OUTLETS, FIRE ALARM DEVICES, SWITCHES, EMPTY JUNCTION BOXES, ETC...) ON EXISTING TO REMAIN WALLS, BOTH INTERIOR AND PERIMETER, UNLESS SPECIFICALLY SHOWN AS EXISTING TO REMAIN ON SHEETS ELSEWHERE IN THIS SET. REMOVE ALL ASSOCIATED CONDUIT AND WIRING BACK TO ITS SOURCE. RE-LABEL ALL NEW SPARE BREAKERS AS "SPARE" IN THE APPROPRIATE PANEL SCHEDULES.

I. NO BLANK COVER PLATES SHALL BE ALLOWED. REFER TO ARCHITECTURAL SET FOR DETAILS CONCERNING PATCHING OF EXISTING OPENINGS BASED ON THE PARTITION TYPE IT CURRENTLY RESIDES IN.

J. REMOVE ALL EXISTING LIGHT FIXTURES AND EXIT SIGNS FROM THE SCOPE OF WORK AREA UNLESS SPECIFICALLY IDENTIFIED AS 'EXISTING TO REMAIN' (E) OR 'EXISTING TO BE RELOCATED (R). REMOVE ALL ASSOCIATED CONDUIT AND WIRING BACK TO ITS SOURCE. RE-LABEL ALL NEWLY SPARED BREAKERS AS "SPARE" IN THE APPROPRIATE PANEL SCHEDULES.

K. FOR ANY MECHANICAL EQUIPMENT BEING REMOVED, REMOVE ALL WIRING, CONDUIT, AND ASSOCIATED DISCONNECTS BACK TO ITS SOURCE. COORDINATE EXACT UNITS BEING REMOVED WITH DIVISION 22 & 23. RE-LABEL ALL NEW SPARE BREAKERS AS "SPARE IN THE APPROPRIATE PANEL SCHEDULES.

L. REFER TO THE FIRE ALARM FLOOR PLANS FOR EXACT FIRE ALARMS DEVICES TO EITHER BE REMOVED, RELOCATED, OR LEFT IN PLACE.

M. REMOVE ALL ABANDONED EMPTY CONDUIT AND JUNCTION BOXES FROM THE CEILING SPACE.

N. ANY EXISTING FLOOR BOX, ABANDONED CONDUIT PENETRATION, ETC... THROUGH THE SLAB WITHIN THE SCOPE OF WORK AREA NOT SPECIFICALLY IDENTIFIED TO REMAIN SHALL BE REMOVED AND THE FLOOR PATCHED TO A LIKE NEW CONDITION.

O. COORDINATE WITH THE TENANT AND/OR LANDLORD EXACTLY WHICH DEVICES AND EQUIPMENT ARE REQUIRED TO BE TURNED OVER TO THE OWNER ONCE REMOVED.

P. PROVIDE ADEQUATE PROTECTION OF ANY EXISTING TO REMAIN DEVICE OR FIXTURE SUCH THAT IT IS NOT DAMAGED DURING THE CONSTRUCTION PROCESS.

SCOPE OF WORK

TENANT IMPROVEMENT PROJECT INVOLVES INTERIOR ALTERATIONS TO A2 ASSEMBLY BUILDING. INSTALLATION OF MINOR NEW KITCHEN EQUIPMENT. MODIFICATIONS TO ELECTRICAL SYSTEM AS PER PLANS. WHICH INCLUDE REUSE EXISTING 100A, 277/480V, 3-PHASE, 4 WIRE ELECTRICAL FEEDER & ELECTRICAL METER POWERED FROM MAIN ELECTRICAL SERVICE. REUSES EXISTING ELECTRICAL PANELS AND TRANSFORMER FOR THE PROPOSED PROJECT SPACE. PROVIDE ALL NECESSARY EQUIPMENT, ALL WIRING AND LIGHTING FOR THE PROJECT SPACE INCLUDING WIRING FOR VENTILATION EQUIPMENT.

APPLICABLE CODES:

ALL WORK SHALL COMPLY WITH THE PROVISIONS OF THE SPECIFICATIONS AND DRAWINGS, AND SHALL SATISFY ALL APPLICABLE CODES, ORDINANCES, AND REGULATIONS OF ALL GOVERNING BODIES INVOLVED. APPLICABLE CODES INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING:

1. BUILDING: 2018 PHILADELPHIA BUILDING CODE (IBC 2018).
2. ELECTRICAL: 2017 PHILADELPHIA ELECTRICAL CODE (NEC 2017).
3. ENERGY: 2018 PHILADELPHIA ENERGY CONSERVATION CODE (IECC 2018).

ABBREVIATIONS:

NOTE:	NOT ALL ABBREVIATIONS MAY BE USED.
A	AMPERE
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHJ	AUTHORITY HAVING JURISDICTION
AFC	AVAILABLE FAULT CURRENT
AIC	AMPERE INTERRUPTING CAPACITY
ATS	AUTOMATIC TRANSFER SWITCH
BLDG	BUILDING
BRKR	BREAKER
C	CONDUIT
CKT	CIRCUIT
CLG	CEILING
CO	CONVENTIONAL RECEPTACLE
CT	CURRENT TRANSFORMER
CU	COPPER
CTR	CENTER
EA	EACH
EGC	EQUIPMENT GROUNDING CONDUCTOR
EOL	ELECTRONIC OVERLOAD
FDR	FEEDER
FLA	FULL LOAD AMPS
GEC	GROUNDING ELECTRODE CONDUCTOR
GFI	GROUND FAULT INTERRUPTER
GND	GROUND
GRS	GALVANIZED RIGID STEEL
HOA	HAND-OFF-AUTO
IG	ISOLATED GROUND
JB	JUNCTION BOX
KVA	KILOVOLT-AMPERE
KW	KILOWATT
L.S.I.G.	LONG, SHORT, INSTANTANEOUS, GROUND FAULT TRIP
LTG	LIGHTING
MCA	MINIMUM CIRCUIT AMPS
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCCB	MOLDED CASE CIRCUIT BREAKER
MCP	MOTOR CIRCUIT PROTECTOR
MDP	MAIN DISTRIBUTION PANEL
MFS	MAXIMUM FUSE SIZE
MLO	MAIN LUGS ONLY
MOCP	MAXIMUM OVERCURRENT PROTECTION
MTD	MOUNTED
MTS	MANUAL TRANSFER SWITCH
N.C.	NORMALLY CLOSED
N.O.	NORMALLY OPEN
NTS	NOT TO SCALE
OCPD	OVERCURRENT PROTECTION DEVICE
OH	OVERHEAD
P	POLE
PH	PHASE
PNL	PANEL
PWR	POWER
RECEP	RECEPTACLE
RM	ROOM
SW	SWITCH
S/W	SHOW WINDOW RECEPTACLE
SWBR	SWITCHBOARD
SWGR	SWITCHGEAR
TBB	TELECOM BACKBOARD
TELE	TELEPHONE
TYP	TYPICAL
UG	UNDERGROUND
UNO	UNLESS NOTED OTHERWISE
UPS	UNINTERRUPTIBLE POWER SUPPLY
V	VOLT
VIF	VERIFY IN FIELD
W/	WITH
W	WIRE
WP	WEATHER PROOF

STOP AND READ:

THE CONTRACTOR AND SUB-CONTRACTORS **SHALL NOT INITIATE ANY WORK UNTIL EXISTING FIELD CONDITIONS ARE PROPERLY VERIFIED**.

DRAWING LIST:

E-001	ELECTRICAL SYMBOL LIST, ABBREVIATIONS & GENERAL NOTES
E-002	ELECTRICAL SPECIFICATIONS SHEET (1 OF 2)
E-003	ELECTRICAL SPECIFICATIONS SHEET (2 OF 2)
E-100	ELECTRICAL POWER PLAN
E-200	LIGHTING PLAN
E-201	LIGHTING CONTROL DETAILS
E-300	ELECTRICAL RISER DIAGRAM AND PANEL SCHEDULES
E-301	ELECTRICAL PANEL SCHEDULES
E-400	ELECTRICAL DETAILS

3

Property of NY Engineers

APPROVAL STAMP AREA

BLANK STREET

SHEET TITLE:

ELECTRICAL SYMBOL LIST, ABBREVIATIONS & GENERAL NOTES

SHEET NUMBER:

E-001

SUMMARY

A. GENERAL AND SUPPLEMENTARY CONDITIONS WITHIN THE SPECIFICATIONS ARE HEREBY INCORPORATED AND BECOME PART OF THESE SPECIFICATIONS AND AS SUCH SHALL BE APPLICABLE TO THE WORK OF THE ELECTRICAL CONTRACT.
B. PRIOR TO SUBMISSION OF A BID PROPOSAL, THE CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH ALL EXISTING CONDITIONS AND LIMITATIONS THAT IMPACT THE WORK OF THIS CONTRACT. NO ADDITIONAL COSTS TO THE OWNER SHALL BE PERMITTED FOR CHANGES TO THE WORK AS A RESULT OF THE CONTRACTORS FAILURE TO VISIT THE SITE PRIOR TO BIDDING AND IDENTIFY ITEMS THAT WERE ABLE TO BE VERIFIED DURING A SITE VISIT PRIOR TO THE SUBMISSION OF A BID PROPOSAL.
C. CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIAL, EQUIPMENT, RIGGING, AND MISCELLANEOUS ITEMS AS REQUIRED FOR A COMPLETE, OPERATIONAL, FUNCTIONAL AND CODE COMPLIANT ELECTRICAL INSTALLATION AS SHOWN ON THE DRAWINGS AND AS SPECIFIED IN THESE SPECIFICATIONS.

LANDLORDS REQUIREMENTS

A. ALL WORK OF THIS CONTRACT SHALL BE COMPLETED IN STRICT ACCORDANCE WITH THE REQUIREMENTS OF THE LANDLORD'S WORK LETTER, LANDLORD'S CONSTRUCTION CRITERIA AND/OR THE TENANT/LANDLORD AGREEMENT. THIS CONTRACTOR SHALL EXAMINE THESE DOCUMENTS PRIOR TO THE SUBMISSION OF A BID PROPOSAL.
B. ALL APPLICABLE REQUIREMENTS OF THE LANDLORD'S WORK LETTER, LANDLORDS CONSTRUCTION CRITERIA AND/OR THE TENANT/LANDLORD AGREEMENT DOCUMENTS SHALL BE CONSIDERED PART OF THESE SPECIFICATIONS.

EXISTING CONDITIONS

A. THE CONTRACT DOCUMENTS ARE BASED ON INFORMATION PROVIDED TO THE CONSULTANT AT THE TIME OF DESIGN. THIS CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO SUBMITTING A BID PROPOSAL. BIDS AND SUBSTITUTIONS A PRIOR TO SUBMISSION OF A BID PROPOSAL, CONTRACTOR SHALL THOROUGHLY REVIEW THE BID INSTRUCTIONS AND ALL CIVIL, ARCHITECTURAL, STRUCTURAL, FOOD SERVICE AND MEPFP CONSTRUCTION DOCUMENTS.
B. SHOULD THE CONTRACTOR WISH TO SUBMIT AN ALTERNATE PRODUCT TO THE MANUFACTURERS NAMED IN THESE SPECIFICATIONS OR ON THE DRAWINGS FOR ANY EQUIPMENT, THE CONTRACTOR SHALL SUBMIT A VOLUNTARY ALTERNATIVE A MINIMUM OF SEVEN (7) CALENDAR DAYS PRIOR TO BID, STATING THE MANUFACTURER'S NAME, MODEL NUMBER, WRITTEN, DETAILED PRODUCT DATA.
C. WORK PERFORMED OR CONSTRUCTED WITH UNAPPROVED EQUALS IS AT CONTRACTOR'S RISK AND ANY REQUIRED CORRECTION OF WORK INCORPORATING UNAPPROVED EQUALS SHALL BE AT CONTRACTOR'S SOLE COST AND EXPENSE.
D. NO SUBSTITUTIONS PERMITTED FOR LIGHTING FIXTURES.

QUALITY ASSURANCE

A. ALL MATERIALS AND EQUIPMENT SHALL BE NEW.
B. PROVIDE PERMITS, INSPECTIONS, FINAL CERTIFICATES OF INSPECTION BY THE AUTHORITY HAVING JURISDICTION, PERMIT AND INSPECTION FEES AND ALL MATERIALS, EQUIPMENT AND LABOR AS REQUIRED FOR A COMPLETE, FUNCTIONAL, FULLY OPERATIONAL AND CODE COMPLIANT ELECTRICAL SYSTEM.
C. THIS CONTRACTOR SHALL PROVIDE ALL MATERIALS, LABOR AND ACCESSORIES FOR A COMPLETE FUNCTIONAL AND CODE COMPLIANT ELECTRICAL INSTALLATION, WHETHER OR NOT SHOWN ON THE DRAWINGS OR SPECIFIED IN THESE SPECIFICATIONS.
D. EC SHALL VERIFY THE VOLTAGE AND AMPERAGE REQUIREMENTS OF ALL EQUIPMENT DELIVERED TO THE SITE PRIOR TO CONNECTION. EC SHALL NOTIFY THE OWNER OF ANY DIFFERENCES
E. REQUIREMENTS OF REGULATORY AGENCIES:
   1. PERMITS: ARRANGE AND PAY FOR ALL PERMITS, INSPECTIONS AND UTILITY CONNECTIONS REQUIRED.
   2. PROVIDE ALL TESTS AND INSPECTIONS REQUIRED BY THE AUTHORITY HAVING JURISDICTION.
   3. PROVIDE A SIGNED CERTIFICATE OF INSPECTION AT THE COMPLETION OF THE PROJECT. INCLUDE IN OPERATION AND MAINTENANCE MANUALS.
F. CODES AND STANDARDS
   1. COMPLY WITH SPECIFIED CODES AND STANDARDS. IF CONFLICT EXISTS BETWEEN CODES OR STANDARDS AND DRAWINGS, PROJECT MANUAL OR ADDENDA REQUIREMENTS, REQUEST CLARIFICATION FROM ARCHITECT/ENGINEER.
   2. CONFORM TO THE INSTALLATION RULES AND REGULATIONS OF THE CODES AND STANDARDS LISTED INCLUDING ALL SUBSEQUENTLY PUBLISHED AMENDMENTS THERETO ISSUED PRIOR TO THE DATE OF THE BIDDING DOCUMENTS.
   3. CONFORM TO THE REQUIREMENTS OF ALL LOCAL, STATE AND FEDERAL AGENCIES WHICH HAVE AUTHORITY OVER THIS PROJECT.
   4. COMPLY WITH THE APPLICABLE EDITION OF THE FOLLOWING CODES AND STANDARDS THAT HAVE BEEN ADOPTED BY AND ARE ENFORCED BY THE AUTHORITY HAVING JURISDICTION:
      a. INTERNATIONAL BUILDING CODE
      b. INTERNATIONAL ENERGY CONSERVATION CODE
      c. INTERNATIONAL MECHANICAL CODE.
      d. NATIONAL ELECTRICAL CODE
      e. INTERNATIONAL FIRE CODE
      f. LIFE SAFETY CODE, NFPA 101
      g. AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES
      h. ALL LOCAL CODES AND ORDINANCES ADOPTED AND ENFORCED BY THE AUTHORITY HAVING JURISDICTION.
G. REFERENCED STANDARDS:
   1. ALL EQUIPMENT, APPARATUS, MATERIALS AND SYSTEMS SHALL BE RATED, TESTED, FABRICATED AND INSTALLED IN ACCORDANCE WITH THE APPLICABLE INDUSTRY STANDARDS.
   2. ALL EQUIPMENT, APPARATUS, MATERIALS AND SYSTEMS SHALL BE LISTED AND LABELED BY A NATIONALLY RECOGNIZED TESTING LABORATORY (UL, ETL, ETC).

ELECTRICAL CONTRACT DOCUMENTS

A. THE ELECTRICAL DRAWINGS (DRAWINGS) AND THE SPECIFICATIONS SHALL TOGETHER FORM A SET OF CONTRACT DOCUMENTS FOR THE ELECTRICAL WORK. NEITHER THE DRAWINGS OR THE SPECIFICATIONS SHALL BE COMPLETE WITHOUT THE OTHER. ANY ITEM SHOWN ONLY ON THE DRAWINGS OR SPECIFIED ONLY IN THE SPECIFICATIONS SHALL BE CONSIDERED AS IF SHOWN AND SPECIFIED IN BOTH.
B. ELECTRICAL DRAWINGS AND SPECIFICATIONS: COMPLY WITH THE FOLLOWING REQUIREMENTS:
   1. CONTRACTOR SHALL FAMILIARIZE THEMSELVES WITH ALL DRAWINGS AND SPECIFICATIONS WITHIN THE CONTRACT DOCUMENTS, INCLUDING, BUT NOT NECESSARILY LIMITED TO, GEOTECHNICAL, LANDSCAPE, CIVIL, ARCHITECTURAL, STRUCTURAL, FOOD SERVICE, MECHANICAL, PLUMBING, TELECOMMUNICATION AND FIRE PROTECTION DRAWINGS AND SPECIFICATIONS.
   2. THE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC IN NATURE AND ARE INTENDED TO INDICATE APPROXIMATE LOCATION ONLY OF ELECTRICAL WORK. THE ACTUAL LOCATION OF ANY ELECTRICAL WORK SHALL NOT INTERFERE WITH THE LOCATION, CLEARANCES, ETC. REQUIRED BY THE WORK OF OTHER TRADES.
   3. PRIOR TO ROUGH-IN, CONTRACTOR SHALL COORDINATE ALL DEVICE LOCATIONS WITH THE ARCHITECTURAL WALL ELEVATIONS, CASEWORK/CABINETRY ELEVATIONS AND DETAILS AND THE FINAL, APPROVED FOOD SERVICE SHOP DRAWINGS.
C. DEFINITIONS: THE FOLLOWING TERMS ARE USED ON THE ELECTRICAL DRAWINGS AND IN THE SPECIFICATIONS AND SHALL BE DEFINED AS FOLLOWS:
   1. CONTRACTOR - THE ELECTRICAL CONTRACTOR OR ANY OF THEIR SUB-CONTRACTORS.
   2. WORK - ALL MATERIAL, LABOR, TRANSPORTATION OF THE ELECTRICAL CONTRACTOR OR ANY OF THEIR SUB-CONTRACTORS.
   3. FURNISH - PURCHASE, SUBMIT FOR REVIEW AND APPROVAL, COORDINATE WITH THE CONTRACT DOCUMENTS AND DELIVER TO THE PROJECT SITE IN NEW, UNDAMAGED CONDITION, STORE AS DIRECTED, PROTECT FROM DAMAGE DURING STORAGE.
   4. INSTALL - INSTALL IN PLACE, MAKE READY FOR CONNECTION TO THE REQUIRED SERVICE.
   5. CONNECT - CONNECT TO THE REQUIRED SERVICE AS REQUIRED FOR PROPER OPERATION, TEST FOR PROPER OPERATION AND FUNCTIONALITY IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS AND REQUIREMENTS SPECIFIED WITHIN THESE SPECIFICATIONS AND TURN OVER TO THE OWNER IN FULL OPERATING CONDITION.
   6. PROVIDE - FURNISH, INSTALL AND CONNECT AS DEFINED HEREIN FOR A COMPLETE, FUNCTIONAL AND CODE COMPLIANT INSTALLATION READY FOR INTENDED USE.
   7. FINISHED SPACE - SPACES HAVING WALLS PAINTED OR FINISHED WITH WALL COVERING, LAY-IN OR DRYWALL CEILINGS, AND FINISHED FLOORING MATERIALS. EXAMPLES OF FINISHED SPACES INCLUDE, BUT ARE NOT NECESSARILY LIMITED TO, ALL SPACES IN A DWELLING UNIT, OFFICES, LOBBIES, CORRIDORS, TOILET ROOMS, ETC.
   8. UNFINISHED SPACES - SPACES WITH UNFINISHED WALLS AND FLOORS AND TYPICALLY ARE NOT EQUIPPED WITH A CEILING. EXAMPLES INCLUDE, BUT ARE NOT NECESSARILY LIMITED TO, MECHANICAL ROOMS, ELECTRICAL ROOMS, SERVICE AREAS, ETC.
   9. SHALL - ACTION THAT IS REQUIRED WITHOUT OPTION OR QUALIFICATION.
   10. REMOVE - DETACH ITEMS FROM EXISTING CONSTRUCTION AND LEGALLY DISPOSE OF THEM OFF SITE UNLESS INDICATED TO BE REMOVED AND SALVAGED OR REMOVED AND RE-INSTALLED.
   11. REMOVE AND SALVAGE - CAREFULLY DETACH FROM EXISTING CONSTRUCTION IN A MANNER TO PREVENT DAMAGE AND DELIVER TO OWNER READY FOR RE-USE.
   12. REMOVE AND REINSTALL - DETACH ITEMS FROM EXISTING CONSTRUCTION, PREPARE FOR RE-USE, RE-INSTALL AND RECONNECT WHERE INDICATED SUCH THAT THE RE-INSTALLED ITEM IS FULLY OPERATIONAL.
   13. EXISTING TO REMAIN - EXISTING ITEMS OF CONSTRUCTION THAT ARE NOT TO BE PERMANENTLY REMOVED AND THAT ARE NOT OTHERWISE INDICATED TO BE REMOVED, REMOVED AND SALVAGED OR REMOVED AND RE-INSTALLED.

SUBMITTALS

A. REVIEW OF THE SHOP DRAWINGS IS RENDERED AS A SERVICE ONLY AND SHALL NOT BE CONSIDERED AS A GUARANTEE OF MEASUREMENTS OR OF BUILDING CONDITIONS; NOR SHALL IT BE CONSTRUED AS RELIEVING THE CONTRACTOR'S OF BASIC RESPONSIBILITIES UNDER HIS CONTRACT. ARCHITECT/ENGINEER WILL REVIEW SHOP DRAWINGS ONLY FOR CONFORMANCE WITH DESIGN CONCEPT OF THE PROJECT. REVIEW BY THE ARCHITECT/ENGINEER SHALL NOT BE CONSTRUED:
   1. AS PERMITTING ANY DEPARTURE FROM THE CONTRACT REQUIREMENTS.
   2. AS RELIEVING THE CONTRACTOR OF THE RESPONSIBILITY FOR ANY ERROR IN DETAILS, DIMENSIONS OR OTHERWISE THAT MAY EXIST.
   3. AS APPROVED DEPARTURES FROM ADDITIONAL DETAILS OR INSTRUCTIONS PREVIOUSLY FURNISHED BY THE ARCHITECT/ENGINEER.

SHOP DRAWINGS:

1. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND DESCRIPTIVE LITERATURE OF EQUIPMENT TO BE FURNISHED UNDER THIS CONTRACT. DRAWINGS SHALL STATE CAPACITIES, SIZES, ETC., OF ALL EQUIPMENT AND SHALL BE CERTIFIED. SEE GENERAL CONDITIONS AND SUPPLEMENTARY CONDITIONS FOR ADDITIONAL REQUIREMENTS.
2. PROVIDE SUBMITTALS FOR LIGHTING FIXTURES, TRANSFORMERS, PANELBOARDS, LIGHTING CONTROL DEVICES, CONTACTORS, WIRING DEVICES, DISCONNECT SWITCHES, POWER SYSTEM STUDY.

B. THE CONTRACTOR SHALL PERFORM NO PORTION OF THE WORK REQUIRING SUBMITTAL AND REVIEW OF SHOP DRAWINGS, PRODUCT DATA, SAMPLES OR SIMILAR SUBMITTALS UNTIL THE RESPECTIVE SUBMITTALS HAS BEEN APPROVED BY THE ENGINEER.

ELECTRICAL COORDINATION DRAWINGS

A. PREPARE ELECTRICAL COORDINATION DRAWINGS AS REQUIRED BY THE WORK AND AS DIRECTED BY THE GENERAL CONTRACTOR.
B. MEET WITH REPRESENTATIVES OF THE OTHER DISCIPLINES/TRADES TO COORDINATE THE ELECTRICAL WORK WITH THE WORK OF EACH DISCIPLINE AND TO OBTAIN INFORMATION REGARDING THEIR WORK THAT IS TO BE INDICATED ON THE COORDINATION DRAWINGS.

POWER SYSTEM STUDIES - GENERAL

A. PROVIDE COMPUTER-BASED, POWER SYSTEM STUDIES THAT INCLUDES: A SHORT CIRCUIT STUDY TO DETERMINE THE MINIMUM INTERRUPTING CAPACITY OF CIRCUIT PROTECTIVE DEVICES; AN ARC-FLASH STUDY TO DETERMINE THE ARC-FLASH HAZARD DISTANCE AND THE INCIDENT ENERGY TO WHICH PERSONNEL COULD BE EXPOSED DURING WORK ON OR NEAR ELECTRICAL EQUIPMENT.
B. STUDIES SHALL BE PERFORMED UTILIZING COMPUTER PROGRAMS THAT ARE DISTRIBUTED NATIONALLY AND ARE IN WIDE USE. SOFTWARE ALGORITHMS SHALL COMPLY WITH REQUIREMENTS OF STANDARDS AND GUIDES SPECIFIED IN THIS SECTION. MANUAL CALCULATIONS ARE UNACCEPTABLE.
C. SOFTWARE DEVELOPERS: SUBJECT TO COMPLIANCE WITH SPECIFIED REQUIREMENTS, PERFORM STUDIES UTILIZING SOFTWARE PRODUCTS BY ONE OF THE FOLLOWING:
   1. EASY POWER
   2. POWER ANALYTICS CORPORATION
   3. SKM SYSTEMS ANALYSIS
D. ALL STUDIES SHALL BE BASED ON THE DEVICE CHARACTERISTICS OF ACTUAL EXISTING COMPONENTS OR THE NEW COMPONENTS BEING INSTALLED.
E. PROVIDE ALL FIELD LABOR AS REQUIRED TO OBTAIN ALL DATA NECESSARY TO CONDUCT THE STUDIES SPECIFIED HEREIN.
F. SUBMIT STUDIES FOR REVIEW BEFORE SUBMITTING THE SYSTEM OVERCURRENT PROTECTIVE DEVICE AND POWER DISTRIBUTION EQUIPMENT SUBMITTALS. SUBMIT STUDY REPORT FOR REVIEW PRIOR TO RECEIVING FINAL APPROVAL OF THE OVERCURRENT PROTECTIVE DEVICE AND DISTRIBUTION EQUIPMENT SUBMITTALS.
G. WHERE FORMAL COMPLETION OF STUDIES WILL CAUSE A DELAY IN THE ORDERING AND MANUFACTURING OF OVERCURRENT PROTECTIVE DEVICES AND POWER DISTRIBUTION EQUIPMENT, OBTAIN APPROVAL FROM ENGINEER FOR PRELIMINARY SUBMITTAL OF SUFFICIENT STUDY DATA TO ENSURE THAT THE SELECTION OF DEVICES AND ASSOCIATED CHARACTERISTICS IS SATISFACTORY AND IN COMPLIANCE WITH THE RESULTS OF THE STUDIES BEING PERFORMED.

SHORT CIRCUIT STUDY

A. PROVIDE A COMPUTER-BASED, SHORT CIRCUIT STUDY TO DETERMINE THE MINIMUM INTERRUPTING CAPACITY OF CIRCUIT PROTECTIVE DEVICES.
B. FOR NEW EQUIPMENT, USE CHARACTERISTICS SUBMITTED UNDER THE PROVISIONS OF ACTION SUBMITTALS AND INFORMATION SUBMITTALS FOR THIS PROJECT.
C. FOR EXISTING RELOCATED EQUIPMENT AND EXISTING EQUIPMENT THAT IS EXISTING TO REMAIN, OBTAIN REQUIRED ELECTRICAL DISTRIBUTION SYSTEM DATA BY FIELD INVESTIGATION AND SURVEYS, CONDUCTED BY QUALIFIED TECHNICIANS AND ENGINEERS. SEE QUALIFICATIONS OF TECHNICIANS AND ENGINEERS SHALL BE QUALIFIED AS DEFINED BY NFPA 70E.
D. GATHER AND TABULATE THE REQUIRED DATA TO SUPPORT THE SHORT-CIRCUIT STUDY. COMPLY WITH RECOMMENDATIONS IN IEEE 551 AS TO THE AMOUNT OF DETAIL THAT IS REQUIRED TO BE ACQUIRED IN THE FIELD.
E. BEGIN SHORT-CIRCUIT CURRENT ANALYSIS AT THE SERVICE, EXTENDING DOWN TO THE SYSTEM OVERCURRENT PROTECTIVE DEVICES AS FOLLOWS:
   1. TO NORMAL SYSTEM LOW-VOLTAGE LOAD BUSES WHERE FAULT CURRENT IS 10,000 A OR LESS.

ARC FLASH HAZARD STUDY

A. PROVIDE A COMPUTER-BASED, ARC-FLASH HAZARD STUDY TO DETERMINE THE ARC-FLASH HAZARD DISTANCE AND THE INCIDENT ENERGY TO WHICH PERSONNEL COULD BE EXPOSED DURING WORK ON OR NEAR EXISTING AND NEW ELECTRICAL EQUIPMENT.
B. ELECTRICAL SURVEY DATA: GATHER AND TABULATE ALL REQUIRED INPUT DATA TO SUPPORT STUDY. COMPLY WITH RECOMMENDATIONS IN IEEE 1584 AND NFPA 70E AS TO THE AMOUNT OF DETAIL THAT IS REQUIRED TO BE ACQUIRED IN THE FIELD.
C. FOR NEW EQUIPMENT, USE CHARACTERISTICS SUBMITTED UNDER THE PROVISIONS OF ACTION SUBMITTALS AND INFORMATION SUBMITTALS FOR THIS PROJECT.
D. FOR EXISTING EQUIPMENT, WHETHER OR NOT RELOCATED, OBTAIN REQUIRED ELECTRICAL DISTRIBUTION SYSTEM DATA BY FIELD INVESTIGATION AND SURVEYS, CONDUCTED BY QUALIFIED TECHNICIANS AND ENGINEERS.
E. HAZARD LABELS SHALL HAVE AN ORANGE HEADER WITH THE WORDING, "WARNING, ARC-FLASH HAZARD," AND SHALL INCLUDE THE FOLLOWING INFORMATION TAKEN DIRECTLY FROM THE ARC-FLASH HAZARD ANALYSIS:
   1. LOCATION DESIGNATION.
   2. NOMINAL VOLTAGE.
   3. FLASH PROTECTION BOUNDARY.
   4. HAZARD/RISK CATEGORY.
   5. INCIDENT ENERGY.
   6. WORKING DISTANCE.
   7. ENGINEERING REPORT NUMBER, REVISION NUMBER, AND ISSUE DATE.
F. ARC FLASH HAZARD WARNING LABELS SHALL BE A 3.5-BY-5-INCH THERMAL TRANSFER LABEL OF HIGH-ADHESION POLYESTER FOR EACH WORK LOCATION INCLUDED IN THE ANALYSIS.
G. LABELS SHALL BE MACHINE PRINTED, WITH NO FIELD-APPLIED MARKINGS.

RECORD DOCUMENTS

A. DURING THE PROGRESS OF THE WORK, CONTRACTOR SHALL MAINTAIN A CURRENT (DAILY) AS-BUILT SET OF THE DRAWINGS AND SPECIFICATIONS, INDICATING THEREON ALL WORK INSTALLED AT VARIANCE WITH SUCH CONTRACT DOCUMENTS INCLUDING, WITHOUT LIMITATION, WORK COVERED BY ADDENDA, FIELD WORK ORDERS, CHANGE ORDERS, AND ENGINEERS
B. CONTRACTOR SHALL PROVIDE THE TENANT WITH THE FINAL AS-BUILT SET OF DRAWINGS AT THE COMPLETION OF THE WORK.

COORDINATION WITH LANDLORD AND UTILITY COMPANIES

A. PRIOR TO COMMENCEMENT OF WORK, CONTRACTOR SHALL COORDINATE THE WORK OF THIS CONTRACT WITH THE LANDLORD'S AUTHORIZED REPRESENTATIVE AND AUTHORIZED REPRESENTATIVES OF EACH SERVING UTILITY THAT WILL PROVIDE SERVICE TO THIS SITE, INCLUDING BUT NOT NECESSARILY LIMITED TO, ELECTRIC, TELEPHONE AND CABLE/SATELLITE TV SERVICE PROVIDERS.
B. CONTRACTOR SHALL MEET WITH AUTHORIZED REPRESENTATIVES OF THE LANDLORD AND EACH UTILITY TO DISCUSS LANDLORD UTILITY COMPANY SCOPE OF WORK, CONTRACTOR SCOPE OF WORK, POINT OF SERVICE PICK-UP, DETAILS REGARDING SYSTEM INTERFACE, UTILITY COMPANY STANDARDS TO BE COMPLIED WITH, ETC.

COORDINATION WITH OTHER TRADES

A. ELECTRICAL WORK SHALL BE INSTALLED SO AS TO NOT CONFLICT WITH THE WORK OF OTHER TRADES.
B. SET ALL SLEEVES AND CUT AND PATCH ALL MISCELLANEOUS HOLES NECESSARY FOR THE CONVENIENT AND PROPER INSTALLATION OF THE WORK.
C. CONFER WITH THE OTHER CONTRACTORS REGARDING THE LOCATION AND SIZE OF PIPES, EQUIPMENT, DUCTS, OPENINGS AND SPECIAL ARCHITECTURAL TREATMENTS IN ORDER THAT THERE MAY BE NO INTERFERENCES BETWEEN THE INSTALLATION OR THE PROGRESS OF THE WORK OF ANY CONTRACTOR ON THE PROJECT.
D. ALL LINE VOLTAGE WIRING AND FINAL CONNECTIONS TO COMPLETE MECHANICAL SYSTEMS SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.
E. PROVIDE FINAL ELECTRICAL CONNECTIONS TO EQUIPMENT FURNISHED/PROVIDED BY OTHERS, (HVAC EQUIPMENT, PLUMBING EQUIPMENT, COMMERCIAL KITCHEN EQUIPMENT, ETC.
F. COORDINATE THE NEMA CONFIGURATION OF THE RECEPTACLE TO BE PROVIDED WITH THE NEMA PLUG CONFIGURATION OF THE CORD/PLUG ASSEMBLY FURNISHED WITH THE EQUIPMENT TO BE INSTALLED. PROVIDE RECEPTACLES HAVING A NEMA CONFIGURATION THAT MATCHES THE NEMA CONFIGURATION OF THE PLUG ON THE EQUIPMENT.
G. PROVIDE FINAL COORDINATION OF AVAILABLE POWER (VOLTAGE/PHASE) WITH OTHER TRADES PRIOR TO THEIR ORDERING OF EQUIPMENT.
H. REFER TO MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION REGARDING ELECTRICAL WORK TO BE PROVIDED ASSOCIATED WITH MECHANICAL EQUIPMENT.
I. WHERE ELECTRICAL WORK (CONDUIT BOXES, RECEPTACLES, DISCONNECT SWITCHES, ETC.) ARE SECURED DIRECTLY TO THE HOUSING OF MECHANICAL EQUIPMENT, THEY SHALL BE INSTALLED SO THAT ACCESS TO THE EQUIPMENT HOUSING NOT REQUIRED TO BE REMOVED FOR ROUTINE MAINTENANCE. PRIOR TO INSTALLATION, COORDINATE ALL ELECTRICAL WORK AT MECHANICAL EQUIPMENT WITH MECHANICAL CONTRACTOR.

TEMPORARY POWER

A. THE CONTRACTOR SHALL PROVIDE ALL REQUIRED TEMPORARY CONSTRUCTION POWER AND LIGHTING FOR ALL CONTRACTORS AND SUB-CONTRACTORS TO PERFORM THE WORK OF THEIR CONTRACTS.
B. PRIOR TO THE SUBMISSION OF A BID PROPOSAL, THE CONTRACTOR SHALL CONTACT THE GENERAL CONTRACTOR TO COORDINATE THE TYPE OF EQUIPMENT TO BE UTILIZED DURING THE WORK OF THIS CONTRACT

SEQUENCING AND SCHEDULING

A. COORDINATE ELECTRICAL EQUIPMENT INSTALLATION WITH OTHER BUILDING COMPONENTS AND THE PROJECT PHASING PLAN.

UTILITY COMPANY METERING EQUIPMENT

A. PROVIDE ALL EQUIPMENT REQUIRED FOR ELECTRICITY METERING BY UTILITY COMPANY. ALL METERING EQUIPMENT AND THE INSTALLATION OF THE EQUIPMENT SHALL BE IN COMPLIANCE WITH ALL UTILITY COMPANY REQUIREMENTS.
B. ELECTRICAL SERVICE CONNECTIONS: COORDINATE WITH UTILITY COMPANIES AND COMPONENTS THEY FURNISH AS FOLLOWS:
   1. COMPLY WITH REQUIREMENTS OF UTILITIES PROVIDING ELECTRICAL POWER SERVICES.
   2. COORDINATE INSTALLATION AND CONNECTION OF UTILITIES AND SERVICES, INCLUDING PROVISION FOR ELECTRICITY-METERING COMPONENTS.
C. METERS SHALL BE FURNISHED BY UTILITY COMPANY; INSTALLED BY ELECTRICAL CONTRACTOR.
D. METER SOCKETS: COMPLY WITH REQUIREMENTS OF ELECTRICAL-POWER UTILITY COMPANY. INSTALL ALL CONDUITS AND EQUIPMENT ACCORDING TO UTILITY COMPANY'S WRITTEN REQUIREMENTS. PROVIDE EMPTY CONDUITS FOR METERING LEADS AND EXTEND GROUNDING CONNECTIONS AS REQUIRED BY UTILITY COMPANY.

FIRE STOPPING

A. PROVIDE FIRE STOPPING FOR PENETRATIONS BY CONDUIT OR CABLES AND OTHER EQUIPMENT THROUGH FIRE-RATED VERTICAL BARRIERS (WALLS AND PARTITIONS), HORIZONTAL BARRIERS (FLOOR/CEILING ASSEMBLIES) AND VERTICAL SHAFT WALLS AND PARTITIONS.
B. FIRESTOP SYSTEM INSTALLATION SHALL COMPLY WITH THE REQUIREMENTS OF ATME E 814 OR UL 1479 TESTED ASSEMBLIES THAT PROVIDE A FIRE RATING EQUAL TO OR GREATER THAN THAT OF THE CONSTRUCTION BEING PENETRATED.

SEISMIC RESTRAINT

A. PROVIDE SEISMIC RESTRAINT FOR ELECTRICAL WORK AND SYSTEMS AND EQUIPMENT IN STRICT ACCORDANCE WITH THE APPLICABLE BUILDING CODE AND THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION
B. SUBMIT ALL REQUIRED DETAILS TO THE AUTHORITY HAVING JURISDICTION FOR REVIEW AND APPROVAL.

CUTTING & PATCHING

A. PRIOR TO CORE DRILLING OR SAW CUTTING OPERATIONS, CONTRACTOR SHALL X-RAY OR GROUND PENETRTING RADAR (GPR) THE EXISTING SLAB TO DETERMINE THE LOCATION OF ANY EXISTING UTILITIES, STRUCTURAL MEMBERS. ETC. COORDINATE ALL SCANNING, CUTTING AND CORE DRILLING OPERATIONS WITH GC AND LANDLORD PRIOR TO COMMENCEMENT OF WORK.
B. CORE-DRILL OR SAW-CUT EXISTING FLOORS, WALLS, ROOF, ETC., AS REQUIRED FOR THE INSTALLATION OF THE ELECTRICAL WORK. STRUCTURAL COMPONENTS, INCLUDING BUT NOT NECESSARILY LIMITED TO, COLUMNS, BEAMS, GIRDERS, PLATES OR JOISTS SHALL NOT BE CUT.
C. PATCH SURROUNDING AREAS FLUSH WITH ADJACENT SURFACES AND PREPARE TO RECEIVE SPECIFIED FINISHES. PATCH AND REPAIR ROOF TO MATCH EXISTING ROOFING SYSTEM. ALL ROOF WORK SHALL BE PERFORMED TO MEET THE WARRANTY REQUIREMENTS OF THE EXISTING ROOFING SYSTEM.

GROUNDING

A. PROVIDE ELECTRICAL SYSTEM AND EQUIPMENT GROUNDING IN ACCORDANCE WITH N.E.C. REQUIREMENTS.
B. THE METALLIC CONDUIT SYSTEM SHALL BE GROUNDED AND BONDED TO FORM AN EQUIPMENT GROUNDING CONDUCTOR.
C. PROVIDE AN INSULATED EQUIPMENT GROUND CONDUCTOR WITHIN ALL FEEDERS AND BRANCH CIRCUITS. THIS EQUIPMENT GROUND CONDUCTOR SHALL BE IN ADDITION TO THE EQUIPMENT GROUND CONDUCTOR FORMED BY THE METALLIC CONDUIT SYSTEM.
D. PROVIDE AN ISOLATED GROUND CONDUCTOR IN ADDITION TO THE EQUIPMENT GROUNDING CONDUCTOR IN SELECT BRANCH CIRCUITS AS NOTED ON THE DRAWINGS.
E. PROVIDE A #6 AWG GREEN INSULATED GROUNDING CONDUCTOR FROM THE GROUND BAR AT TELEPHONE TERMINAL BOARD TO THE ELECTRICAL SERVICE GROUND.
F. PROVIDE A COPPER GROUNDING BAR AT THE TELEPHONE TERMINAL BACKBOARD. GROUNDING BAR SHALL BE ¼ INCH X 4 INCHES X 12 INCHES, PRE-DRILLED FOR CONDUCTOR TERMINATIONS, WITH NON-METALLIC STAND-OFF BRACKETS WITH INSULATORS. CHATSWORTH PRODUCTS 19622-012 OR APPROVED EQUAL.

EQUIPMENT IDENTIFICATION

A. PROVIDE EQUIPMENT LABELS ON PANELBOARDS, DISCONNECT SWITCHES, CONTACTORS, TRANSFORMERS, CONTROLS. EQUIPMENT LABELS SHALL BE ENGRAVED PHENOLIC OR LAMINATED PLASTIC NAMEPLATES ATTACHED TO ENCLOSURE WITH MECHANICAL FASTENERS. SELF-ADHESIVE NAMEPLATES ARE NOT ACCEPTABLE. LETTERING SHALL BE 1/2" HIGH, BLACK TEXT ON WHITE BACKGROUND.
B. ENGRAVED NAMEPLATES ATTACHED TO COMPONENTS SHALL IDENTIFY THE EQUIPMENT DESIGNATION, NAME OF THE "UPSTREAM" POWER SOURCE (AS APPLICABLE), VOLTAGE AND PHASE.
C. THE COVERS OF ALL OUTLET AND JUNCTION BOXES INSTALLED ABOVE CEILINGS AND INSTALLED EXPOSED IN UNFINISHED SPACES SHALL BE LABELED TO IDENTIFY THE SERVING PANEL, VOLTAGE, PHASE AND CIRCUIT NUMBERS CONTAINED WITHIN THE BOX. LABEL SHALL BE LEGIBLY HANDWRITTEN WITH BLACK, FELT TIP PERMANENT MARKER.
D. THE COVER PLATE OF ALL WIRING DEVICES SHALL BE LABELED TO IDENTIFY THE SERVING PANEL AND THE CIRCUITS SERVING THE DEVICE. LABELS SHALL BE MACHINE PRINTED, BLACK TEXT ON A CLEAR, SELF ADHESIVE LABEL.

CONDUIT AND FITTINGS

A. ALL INTERIOR AND EXTERIOR CONDUITS SHALL BE INSTALLED AND SUPPORTED IN ACCORDANCE WITH N.E.C. REQUIREMENTS.
B. MINIMUM CONDUIT SIZE SHALL BE 3/4" TRADE SIZE. SWITCH LEGS SHALL BE 1/2" TRADE SIZE.
C. WITHIN INTERIOR FINISHED AREAS, ALL CONDUIT SHALL BE INSTALLED CONCEALED WITHIN NEW AND EXISTING WALLS AND ABOVE NEW AND EXISTING CEILINGS.
D. CONDUIT INSTALLED WITHIN THE INTERIOR OF THE BUILDING SHALL BE GALVANIZED ELECTRICAL METALLIC TUBING (EMT). CONDUIT FITTINGS FOR INDOOR EMT CONDUITS SHALL BE CAST METAL, COMPRESSION TYPE.
E. EMT SHALL BE USED FOR INTERIOR FEEDERS AND BRANCH CIRCUITS INSTALLED EXPOSED IN UNFINISHED SPACES, CONCEALED ABOVE NEW OR EXISTING CEILINGS OR CONCEALED WITHIN EXISTING AND NEW INTERIOR PARTITIONS.
F. CONDUITS INSTALLED EXPOSED ON THE EXTERIOR OF THE BUILDING SHALL BE GALVANIZED RIGID STEEL. FITTINGS SHALL BE THREADED TYPE.
G. CONDUITS INSTALLED UNDER SLAB ON GRADE CONSTRUCTION SHALL BE RIGID NON-METALLIC (RNC), SCHEDULE 40 PVC. RNC COMPLYING WITH NEMA TC 2 AND UL 651 UNLESS OTHERWISE INDICATED. FITTINGS FOR RIGID NON-METALLIC CONDUIT SHALL COMPLY WITH NEMA TC 3; MATCH TO CONDUIT TYPE AND MATERIAL.
H. PROVIDE CONDUIT EXPANSION FITTINGS IN ALL CONDUIT RUNS THAT EXTEND ACROSS BUILDING EXPANSION JOINTS AND WHERE MOVEMENT MAY BE ENCOUNTERED.
I. CONDUIT SHALL BE SUPPORTED FROM STRUCTURE ONLY.
J. PVC CONDUIT SHALL ONLY BE USED BELOW GRADE.
K. PROVIDE FLEXIBLE METAL CONDUIT FOR CONNECTIONS TO VIBRATING EQUIPMENT WITHIN INTERIOR DRY LOCATIONS. MAXIMUM CONDUIT LENGTH SHALL BE 36 INCHES.
L. PROVIDE LIQ

OXES AND FITTINGS

A. ALL OUTLET BOXES SHALL BE UL LISTED AND LABELED FOR USE IN THE SPACE THEY OCCUPY AND THE PURPOSE THEY SERVE.
B. SHEET METAL OUTLET AND DEVICE BOXES FOR DRY, INTERIOR APPLICATIONS: COMPLY WITH NEMA OS 1 AND UL 514A.
C. CAST-METAL OUTLET AND DEVICE BOXES FOR EXTERIOR APPLICATIONS: COMPLY WITH NEMA FB 1, FERROUS ALLOY, TYPE FS OR FD, WITH GASKETED COVER.
D. OUTLET BOXES INSTALLED WITHIN FIRE RATED ASSEMBLIES SHALL HAVE A FIRE RATING EQUAL TO OR GREATER THAN THE RATING OF THE WALL IN WHICH IT IS INSTALLED.
E. OUTLET BOXES SHALL BE 4 INCHES SQUARE BY 2 1/8 INCHES DEEP , EXCEPT FOR 2" PARTITIONS SHALL BE AT LEAST 1-1/2" DEEP.
F. OUTLET BOXES FOR VOICE AND DATA DEVICES SHALL BE 4 11/16 INCHES SQUARE BY 2 1/8 INCHES DEEP.
G. ALL PULLBOXES SHALL BE CONSTRUCTED OF GALVANIZED STEEL, OF METAL GAUGE AND PHYSICAL SIZE AS REQUIRED BY THE N.E.C. FOR THE NUMBER AND SIZE OF CONDUITS AND CONDUCTORS ASSOCIATED WITH THE PULLBOX.
H. FIXTURE OUTLET BOXES IN/OR ON CEILINGS SHALL NOT BE LESS THAN 1-1/2" DEEP OR LESS THAN 4" SQUARE. ALL OUTLET BOXES INTENDED TO SUPPORT FIXTURES SHALL BE EQUIPPED WITH 3/8" FIXTURE STUDS FASTENED THROUGH THE BOTTOM OF THE BOX WITH FOUR BOLTS.
I. NEW OUTLET BOXES INSTALLED WITHIN NEW OR EXISTING STUD WALL CONSTRUCTION SHALL BE MOUNTED TO A STUD OR MOUNTED IN A BRACKET THAT SPANS STUD-TO-STUD, CADDY TSGB BRACKET OR APPROVED EQUAL. THE USE OF "OLD WORK" TYPE BOXES THAT.
J. ACCEPTABLE MANUFACTURERS FOR BOXES: APPLETON, STEEL CITY, RACO.

PANELBOARDS

A. PANELBOARDS SHALL BE LIGHTING AND APPLIANCE TYPE, DEAD FRONT, SAFETY TYPE, FURNISHED WITH BRANCH CIRCUIT BREAKER OVERCURRENT PROTECTIVE DEVICES, COPPER PHASE, NEUTRAL AND EQUIPMENT GROUNDING BUS BARS, MAIN CIRCUIT BREAKER OR MAIN LUG ONLY AS NOTED ON THE DRAWINGS. MAIN BUSES AND CONNECTORS SHALL BE HARD DRAWN COPPER OF 98% CONDUCTIVITY. LOAD CENTERS ARE NOT ACCEPTABLE FOR USE.
B. CIRCUIT BREAKERS SHALL BE MOLDED CASE, BOLT-ON TYPE SUITABLE FOR VOLTAGE AND AMPERE RATINGS INDICATED ON DRAWINGS AND IN PANEL SCHEDULES. REFER TO THE PANEL SCHEDULES ON THE DRAWINGS FOR ADDITIONAL ACCESSORIES TO BE PROVIDED AT SELECT CIRCUIT BREAKERS.
C. CIRCUIT BREAKERS SHALL HAVE A MINIMUM AMPERE INTERRUPTING CAPACITY (AIC) OF 10,000 AMPERES FOR 120/208V SYSTEMS, 14,000 FOR 277/480V SYSTEMS
D. WHERE THE POWER SYSTEM STUDY IDENTIFIES AVAILABLE FAULT CURRENT VALUES AT EXISTING AND NEW PANELS THAT ARE HIGHER THAN THE MINIMUM AIC RATINGS SPECIFIED HEREIN, PROVIDE CIRCUIT BREAKERS IN THE PANELS THAT HAVE AIC RATINGS GREATER THAN THE AVAILABLE FAULT CURRENT AT THE PANEL AS DETERMINED BY THE POWER SYSTEM STUDY.
E. PROVIDE NEMA 1 ENCLOSURES FOR INTERIOR PANELS.
F. PANEL BOARDS SHALL BE EQUIPPED WITH FLUSH TYPE LOCK AND CATCH. ALL LOCKS SHALL BE KEYED ALIKE, WITH TWO KEYS SUPPLIED WITH EACH LOCK.
G. CIRCUIT BREAKERS SERVING LIGHTING CIRCUITS SHALL BE RATED FOR SWITCH DUTY.
H. CIRCUIT BREAKERS SERVING HVAC EQUIPMENT SHALL BE HACR RATED.
I. ALL LUGS SHALL BE OF THE SOLDERLESS TYPE AND RATED AT A MINIMUM OF 75°C.
J. PROVIDE NEW CIRCUIT DIRECTORIES WITHIN NEW AND EXISTING PANELS TO REFLECT THE WORK OF THIS CONTRACT. DIRECTORY SHALL BE TYPEWRITTEN OR COMPUTER GENERATED. HANDWRITTEN CIRCUIT DIRECTORIES ARE NOT ACCEPTABLE.
K. UTILIZE FINAL, OWNER ASSIGNED ROOM NAMES AND NUMBERS TO IDENTIFY SPACES WITHIN THE CIRCUIT DIRECTORIES. COMPLY WITH NEC 408.4 WHEN IDENTIFYING CIRCUITS IN CIRCUIT DIRECTORIES.
L. PANEL CIRCUITS SHALL BE CONFIGURED SUCH THAT THE LOAD IS DISTRIBUTED EVENLY ACROSS ALL THREE PHASES TO WITHIN 10% IN ACCORDANCE WITH N.E.C. REQUIREMENTS.
M. ALL NEW AND EXISTING PANEL BOARDS SHALL BE LABELED TO IDENTIFY THE AMOUNT OF FAULT CURRENT AVAILABLE AT THE PANEL AS DETERMINED BY THE POWER SYSTEM STUDY TO BE PERFORMED. LABEL SHALL BE MACHINE PRINTED, BLACK TEXT ON CLEAR, SELF ADHESIVE TAPE. INSTALL LABEL ADJACENT TO PANEL BOARDS ENGRAVED NAMEPLATE.
N. ALL NEW AND EXISTING PANEL BOARDS SHALL BE LABELED TO IDENTIFY THE ARC FLASH HAZARD CHARACTERISTICS AT THE PANEL AS DETERMINED BY THE POWER SYSTEM STUDY TO BE PERFORMED.
O. ALL "SPARE" CIRCUIT BREAKERS SHALL BE SET TO THE "OFF" POSITION.
P. PROVIDE THREE (3) EMPTY 1 INCH CONDUITS FROM EACH FLUSH MOUNTED PANEL STUBBED UP TO ABOVE ACCESSIBLE CEILING.
Q. PROVIDE HANDLE TIES ON ALL MULTI-WIRE BRANCH CIRCUITS IN ACCORDANCE WITH NEC 210.4(B).
R. ACCEPTABLE MANUFACTURERS FOR PANELBOARDS BY SCHNEIDER, ABB, SIEMENS OR EATON.

SWITCHES

A. TOGGLE SWITCHES SHALL BE SINGLE POLE, 3-WAY OR 4-WAY AS NOTED ON THE DRAWINGS, 20 AMPERES, 120/277 VOLT AC TYPE, SPECIFICATION GRADE WITH SCREW TERMINALS. HUBBELL 1221-X, 1223-X OR 1224-X OR APPROVED EQUIVALENT BY ONE OF THE ADDITIONAL MANUFACTURERS SPECIFIED HEREIN.
B. TOGGLE SWITCHES SHALL BE MOUNTED AT DOORS, INSTALLED ADJACENT TO THE TRIM ON THE STRIKING SIDE OF THE DOOR, REGARDLESS OF THE LOCATION INDICATED ON THE DRAWINGS. VERIFY ALL DOOR SWINGS PRIOR TO INSTALLATION OF OUTLET BOXES FOR SWITCHES.
C. DEVICE COLOR SHALL BE AS SELECTED BY THE OWNER/ARCHITECT.
D. PROVIDE A NEUTRAL CONDUCTOR TO ALL SWITCH LOCATIONS
E. ADDITIONAL ACCEPTABLE MANUFACTURERS FOR SWITCHES: LEGRAND, LEVITON.

RECEPTACLES

A. RECEPTACLES SHALL BE 20 AMP, 125 VOLT, 2-POLE, 3-WIRE, GROUNDING TYPE, NEMA 5-20R WITH SCREW TERMINALS. HUBBELL 5362-W OR APPROVED EQUAL BY ONE OF THE ADDITIONAL MANUFACTURERS SPECIFIED HEREIN.
B. GFCI RECEPTACLES SHALL BE 20 AMP, 125 VOLT, 2-POLE, 3-WIRE, GROUNDING TYPE, FEED THROUGH TYPE CAPABLE OF PROTECTING DOWNSTREAM RECEPTACLES ON A SINGLE CIRCUIT, SOLID STATE GROUND FAULT SENSING AND SIGNALING, 5 MILLIAMP TRIP LEVEL, NEMA 5-20R WITH SCREW TERMINALS. HUBBELL GF5362-X OR APPROVED EQUAL BY ONE OF THE ADDITIONAL MANUFACTURERS SPECIFIED HEREIN.
C. ISOLATED GROUND RECEPTACLES SHALL BE ORANGE, 20 AMP, 125 VOLT, 2-POLE, 3-WIRE, GROUNDING TYPE, NEMA 5-20R WITH SCREW TERMINALS. HUBBELL IG-5362-W OR APPROVED EQUAL BY ONE OF THE ADDITIONAL MANUFACTURERS SPECIFIED HEREIN.
D. PROVIDE SPECIAL PURPOSE RECEPTACLES HAVING NEMA CONFIGURATIONS THAT MATE AND MATCH THE NEMA PLUG CONFIGURATION PROVIDED WITH THE EQUIPMENT TO BE CONNECTED.
E. COVER PLATES FOR EXTERIOR RECEPTACLES SHALL BE RATED FOR "WEATHERPROOF WHILE IN USE".
F. DEVICE COLOR SHALL BE AS SELECTED BY THE OWNER/ARCHITECT.
G. ADDITIONAL ACCEPTABLE MANUFACTURERS FOR SWITCHES AND RECEPTACLES: LEGRAND, LEVITON.

GFCI PROTECTION:

A. ALL KITCHEN SINGLE PHASE RECEPTACLES RATED 150 VOLTS TO GROUND OR LESS, 50 AMPS OR LESS AND THREE PHASE RECEPTACLES RATED 150 VOLTS TO GROUND OR LESS, 100 AMPS OR LESS SHALL HAVE GROUND FAULT CIRCUIT INTERRUPTER PROTECTION FOR PERSONNEL IN ACCORDANCE WITH NEC 210.8, (B), (1) - (10), OR THE EQUIVALENT REQUIREMENT WITHIN THE APPLICABLE ELECTRICAL CODE.
B. THE "GFCI" NOTATION AT A DEVICE OR CIRCUIT BREAKER INDICATES THAT GFCI PROTECTION SHALL BE PROVIDED FOR THE CIRCUIT OR CIRCUITS INDICATED. GFCI PROTECTION SHALL BE PROVIDED BY ONE OF THE FOLLOWING MEANS:
   - INTEGRAL GFCI PROTECTION WITHIN THE DEVICE (NEMA 5-20R RECEPTACLES), WHEN THE DEVICE IS ABLE TO BE INSTALLED IN A READILY ACCESSIBLE LOCATION AS DEFINED BY THE APPLICABLE ELECTRICAL CODE.
   - GFCI CIRCUIT BREAKER INSTALLED WITHIN THE PANEL FOR SERVICE TO THE CIRCUIT OR CIRCUITS.
   - GFCI CIRCUIT BREAKER INSTALLED WITHIN AN INDIVIDUAL ENCLOSURE EXTERNAL TO THE PANEL FOR SERVICE TO THE CIRCUIT.
   - DEAD-FRONT GFCI DEVICE INSTALLED IN A READILY ACCESSIBLE LOCATION AS DEFINED BY THE NEC (APPLICABLE TO 20 AMP, 120 VOLT CIRCUITS).
   - AN INDIVIDUALLY MOUNTED EXTERNAL SPECIAL PURPOSE GROUND FAULT CIRCUIT INTERRUPTER (SPGFCI) DEVICE SIMILAR TO "SHOCK BLOCK" PRODUCTS AS MANUFACTURED BY LITTLE FUSE, OR APPROVED EQUAL.
   - DEAD FRONT DEVISES SHALL BE BE LABELED TO IDENTIFY THE CIRCUIT AND THE LOAD SERVED BY THE DEVICE

COVER PLATES FOR TOGGLE SWITCHES AND RECEPTACLES

A. COVER PLATES WITHIN NON-FOOD SERVICE AREAS SHALL BE NYLON, OF CONFIGURATION TO MATCH THE WIRING DEVICE.
B. COVER PLATES WITHIN THE FOOD SERVICE AREA SHALL BE STAINLESS STEEL WITH STAINLESS STEEL HARDWARE, UNLESS OTHERWISE NOTED.
C. CONFIGURATION AND COLOR OF COVER PLATE SHALL MATCH THAT OF THE WIRING DEVICE THAT THE PLATE WILL BE INSTALLED ON.
D. COVER PLATE COLOR SHALL BE AS SELECTED BY THE OWNER/ARCHITECT.
E. ADDITIONAL ACCEPTABLE MANUFACTURERS FOR COVER PLATES: LEGRAND, LEVITON.

MOUNTING HEIGHTS FOR ELECTRICAL DEVICES AND EQUIPMENT

A. DEVICES AND EQUIPMENT SHALL BE INSTALLED AT THE MOUNTING HEIGHTS NOTED BELOW UNLESS NOTED OTHERWISE ON THE DRAWINGS OR REQUIRED BY APPLICABLE CODES AND STANDARDS:
   - 1TOGGLE SWITCHES, WALL SWITCH OCCUPANCY SENSORS AND DIMMERS FOR LIGHTING CONTROL - TOP OF DEVICE 48" AFF
   - CONVENIENCE RECEPTACLES -TOP OF DEVICE 18" AFF
   - CONVENIENCE RECEPTACLES AT COUNTERTOPS - BOTTOM OF DEVICE 44" AFF OR AS NOTED ON THE DRAWINGS
   - RECEPTACLES AT FOOD SERVICE EQUIPMENT - AS INDICATED ON THE FINAL, APPROVED FOOD SERVICE SHOP DRAWINGS.
   - TELEPHONE AND DATA OUTLETS - TOP OF DEVICE 18" AFF OR AS REQUIRED BY THE ADJACENT CASEWORK
   - DISCONNECT SWITCHES - TOP OF ENCLOSURE 66" AFF
   - PANELBOARDS - TOP OF ENCLOSURE 72" AFF

DISCONNECT SWITCHES

A. DISCONNECT SWITCHES SHALL BE HEAVY DUTY TYPE, UL LISTED AND LABELED, EQUIPPED WITH A LUG FOR TERMINATION OF THE EQUIPMENT GROUNDING CONDUCTOR.
B. DISCONNECT SWITCHES SHALL HAVE NEMA 1 ENCLOSURES FOR DRY, INDOOR APPLICATIONS; NEMA 3R ENCLOSURES FOR OUTDOOR OR WET LOCATION APPLICATIONS.
C. DISCONNECT SWITCHES INSTALLED EXPOSED IN FOOD SERVICE AREAS SHALL BE NEMA 4X STAINLESS STEEL.
D. ALL DISCONNECT SWITCHES SHALL BE EQUIPPED WITH AN ENGRAVED NAMEPLATE TO IDENTIFY THE SERVING PANEL, CIRCUIT NUMBERS AND THE LOAD SERVED BY THE SWITCH.
E. ACCEPTABLE MANUFACTURERS FOR DISCONNECT SWITCHES: SCHNEIDER, ABB, SIEMENS OR EATON.

DUCT MOUNTED SMOKE DETECTORS

A. PROVIDE A 120 VOLT POWER SOURCE TO ALL DUCT MOUNTED SMOKE DETECTORS INSTALLED WITHIN NEW AND EXISTING MECHANICAL EQUIPMENT
B. PROVIDE DUCT MOUNTED SMOKE DETECTORS WITHIN NEW AND EXISTING MECHANICAL EQUIPMENT AS REQUIRED BY APPLICABLE CODES. FINAL ELECTRICAL CONNECTION AND ALL INTERLOCK WIRING BY THE ELECTRICAL CONTRACTOR.
C. PROVIDE ALL INTERLOCK WIRING IN CONDUIT BETWEEN ALL DUCT DETECTORS SUCH THAT UPON DETECTING SMOKE IN ANY ONE DETECTOR, ALL ROOF TOP UNITS SHALL BE SHUT DOWN.
D. PROVIDE TEST/RESET SWITCH AND PIEZO ALERT SOUNDER AND REMOTE ANNUNCIATORS ALARM LED MOUNTED AS DIRECTED BY LOCAL AHJ. EC TO PROVIDE ALL REQUIRED INTERLOCK WIRING BETWEEN DUCT DETECTOR AND REMOTE SWITCH.
E. REFER TO DETAILS ON MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION.

TESTING

A. PROVIDE ALL TESTS AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION.
B. PROVIDE THE TESTS AS OUTLINED HEREINAFTER AND OTHER TESTS REQUIRED TO ESTABLISH THE ADEQUACY, QUALITY, SAFETY, COMPLETED STATUS AND SUITABLE OPERATION OF EACH SYSTEM.
C. PROMPTLY CORRECT ANY FAILURES, DEFICIENCIES AND/OR DEFECTS REVEALED BY THESE TESTS. AFTER CORRECTING FAILURES, DEFICIENCIES OF DEFECTS, CONDUCT NEW TESTING TO VERIFY THAT THE DEFICIENCY HAS BEEN RECTIFIED AND THE SYSTEM IS FUNCTIONING PROPERLY.
D. NEW AND EXISTING PANELBOARDS SHALL HAVE PHASE CURRENTS BALANCED TO WITHIN +/- 10% VARIATION BETWEEN AVERAGE PHASE CURRENT AND MEASURED INDIVIDUAL PHASE.
E. AN OPERATIONAL TEST OF THE EMERGENCY LIGHTING/EXIT SIGNAGE SYSTEM SHALL BE PERFORMED IN THE PRESENCE OF THE OWNER AND THE AUTHORITY HAVING JURISDICTION TO DEMONSTRATE PROPER OPERATION AND COMPLIANCE WITH APPLICABLE CODES AND SPECIFIED REQUIREMENTS.

OPERATION AND MAINTENANCE MANUALS

A. THIRTY (30) DAYS PRIOR TO SUBSTANTIAL COMPLETION, SUBMIT OPERATING AND MAINTENANCE MANUALS FOR EQUIPMENT TO ENGINEER FOR APPROVAL. INCLUDE ONE COPY OF EACH FINAL APPROVED SUBMITTAL FOR RECORD PURPOSES, INDICATING THE ACTUAL PRODUCT INSTALLED. INCLUDE SIGNIFICANT CHANGES IN THE PRODUCT DELIVERED TO PROJECT SITE AND CHANGES IN MANUFACTURER'S WRITTEN INSTRUCTIONS FOR INSTALLATION.
B. PROVIDE COMPREHENSIVE CONTACT LIST INCLUDING CONTRACTOR AND SUBCONTRACTOR'S NAMES, ADDRESSES, TELEPHONE AND CONTACT PERSON FOR OWNER'S USE.

TRAINING OF OWNER'S DESIGNATED PERSONNEL

A. PREPARE AND SUBMIT OPERATING INSTRUCTIONS AND PROVIDE ON-SITE TRAINING OF OWNER'S PERSONNEL IN USE AND MAINTENANCE OF OPERATING EQUIPMENT.

WARRANTY

A. THE CONTRACTOR SHALL GUARANTEE ALL MATERIALS, EQUIPMENT AND THE INSTALLATION TO BE FREE OF DEFECTS THAT MAY DEVELOP IN ANY PART OF THEIR WORK CAUSED BY FAULTY WORKMANSHIP, MATERIAL OR EQUIPMENT FAILURES, FOR A MINIMUM OF ONE (1) YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION OR FOR AS LONG AS NORMAL EQUIPMENT MANUFACTURER WARRANTIES ARE IN EFFECT FROM THE DATE OF OWNER'S ACCEPTANCE OF THE PROJECT, WHICHEVER IS LATER.
B. DURING THE ONE (1) YEAR WARRANTY PERIOD, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THE PREMISES CAUSED BY DEFECTS IN WORKMANSHIP OR DEFECTS IN THE WORK OR EQUIPMENT FURNISHED AND/OR INSTALLED UNDER THE WORK OF THE ELECTRICAL CONTRACT.

TRANSFORMERS

A. DRY-TYPE TRANSFORMERS SHALL BE [illegible] ENCLOSED, VENTILATED TYPE WITH KVA AND VOLTAGE RATING AS NOTED ON DRAWINGS
B. SOUND LEVEL SHALL BE LOW.
C. INSTALLATION SHALL INCLUDE K[illegible]FLEX OR EQUAL VIBRATION DAMPENING MOUNTS AND FLEXIBLE STEEL CONDUIT FOR PRIMARY AND SECONDARY.
D. MOUNT TRANSFORMER ON VIBRATION ISOLATORS. LOCATE TRANSFORMER AS NOT TO CAUSE SERVICING OR CLEARANCE DIFFICULTIES OR VIOLATIONS WITH OTHER EQUIPMENT. 15 KVA RATED AND LARGER: WITH
E. TRANSFORMERS SHALL COMPLY WITH NEMA TP 1 ENERGY-EFFICIENCY LEVELS AS VERIFIED BY TESTING ACCORDING TO NEMA TP 2.
F. CORES: ELECTRICAL GRADE, NON-AGING SILICON STEEL WITH HIGH PERMEABILITY AND LOW HYSTERESIS LOSSES.
G. COILS: CONTINUOUS WINDINGS WITHOUT SPLICES EXCEPT FOR TAPS.
   1. INTERNAL COIL CONNECTIONS: BRAZED OR PRESSURE TYPE.
   2. COIL MATERIAL: ALUMINUM.
H. ENCLOSURE: VENTILATED.
   1. NEMA 250, TYPE 2: CORE AND COIL SHALL BE ENCAPSULATED WITHIN RESIN COMPOUND TO SEAL OUT MOISTURE AND AIR.
   2. KVA RATINGS: BASED ON CONVECTION COOLING ONLY AND NOT RELYING ON AUXILIARY FANS.
I. TRANSFORMER ENCLOSURE FINISH: COMPLY WITH NEMA 250.
   1. FINISH COLOR: GRAY.
J. INSULATION CLASS, 30 KVA AND LARGER: 220 DEG C, UL-COMPONENT-RECOGNIZED INSULATION SYSTEM WITH A MAXIMUM OF 150-DEG C RISE ABOVE 40-DEG C AMBIENT TEMPERATURE.
K. TAPS: PROVIDE TWO (2) 2.5% TAPS ABOVE AND FOUR (4) 2.5% TAPS BELOW NORMAL FULL CAPACITY.
L. ACCEPTABLE MANUFACTURERS FOR TRANSFORMERS: SCHNEIDER, ABB, SIEMENS OR EATON.

FIRE ALARM SYSTEM

A. FIRE ALARM SYSTEM WORK IS A DELEGATED DESIGN AND IS NOT INCLUDED AS PART OF THE ELECTRICAL SCOPE OF WORK.
B. FIRE ALARM SYSTEM WORK SHALL BE PROVIDED BY THE GENERAL CONTRACTOR AS A DELEGATED DESIGN.
C. GENERAL CONTRACTOR (GC) SHALL BE RESPONSIBLE FOR RETAINING THE SERVICES OF A FIRE ALARM SYSTEM VENDOR/DESIGN PROFESSIONAL TO PREPARE THE FIRE ALARM SYSTEM DESIGN, DETAILS, CALCULATIONS, ETC. AS REQUIRED BY ALL APPLICABLE CODES AND THE AUTHORITY HAVING JURISDICTION.
D. GC/VENDOR/DESIGN PROFESSIONAL SHALL BE RESPONSIBLE FOR VERIFYING ALL APPLICABLE CODE REQUIREMENTS AND ALL LOCAL FIRE ALARM SYSTEM REQUIREMENTS WITH THE LOCAL AUTHORITY HAVING JURISDICTION.
E. GC/VENDOR/DESIGN PROFESSIONAL SHALL BE RESPONSIBLE FOR PROVIDING ALL REQUIRED SUBMITTAL DRAWINGS TO THE AUTHORITY HAVING JURISDICTION FOR REVIEW AND APPROVAL PRIOR TO COMMENCING WORK.
F. GC/VENDOR SHALL BE RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS FOR THE FIRE ALARM WORK.

HOOD FIRE SUPPRESSION SYSTEM - ELECTRICAL WORK

A. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL CONTROL WIRING INSTALLED WITHIN CONDUIT BETWEEN THE HOOD FIRE SUPPRESSION SYSTEM CONTROL PANEL AND ANY COMPONENT REQUIRED TO BE AUTOMATICALLY CONTROLLED OR DISCONNECTED FROM ITS POWER SUPPLY UPON ACTIVATION OF THE HOOD FIRE SUPPRESSION SYSTEM.
B. COMPONENTS TO BE CONNECTED TO THE HOOD FIRE SUPPRESSION SYSTEM CONTROL PANEL INCLUDE, BUT ARE NOT NECESSARILY LIMITED TO, THE SHUNT-TRIP CIRCUIT BREAKERS IN AN ELECTRICAL PANEL, THE COIL OF ANY SHUNT-TRIP CONTACTOR, ELECTRICALLY OPERATED GAS VALVE.
C. EC TO COORDINATE ALL ELECTRICAL WORK WITH MECHANICAL CONTRACTOR AND HOOD FIRE SUPPRESSION SYSTEM INSTALLER.

HOME RUNS AND BRANCH WIRING FOR 120 VOLT 16 AMP CIRCUITS SHALL BE AS FOLLOWS TO ACCOUNT FOR VOLTAGE DROP:

LENGTH	HOME RUN WIRE SIZE	CIRCUIT WIRE SIZE
1' TO 65'	12	12
66' TO 104'	10	12
105' TO 156'	8	12
157' TO 263'	6	12
264' TO 419'	4	12

Property of NYC Engineers

APPROVAL STAMP AREA

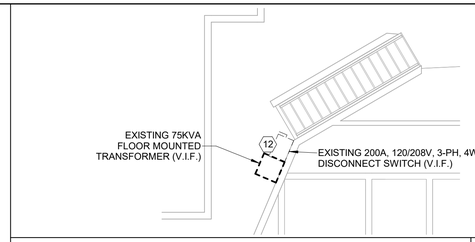
BLANK STREET

SHEET TITLE:

ELECTRICAL SPECIFICATIONS SHEET (2 OF 2)

SHEET NUMBER:

E-003

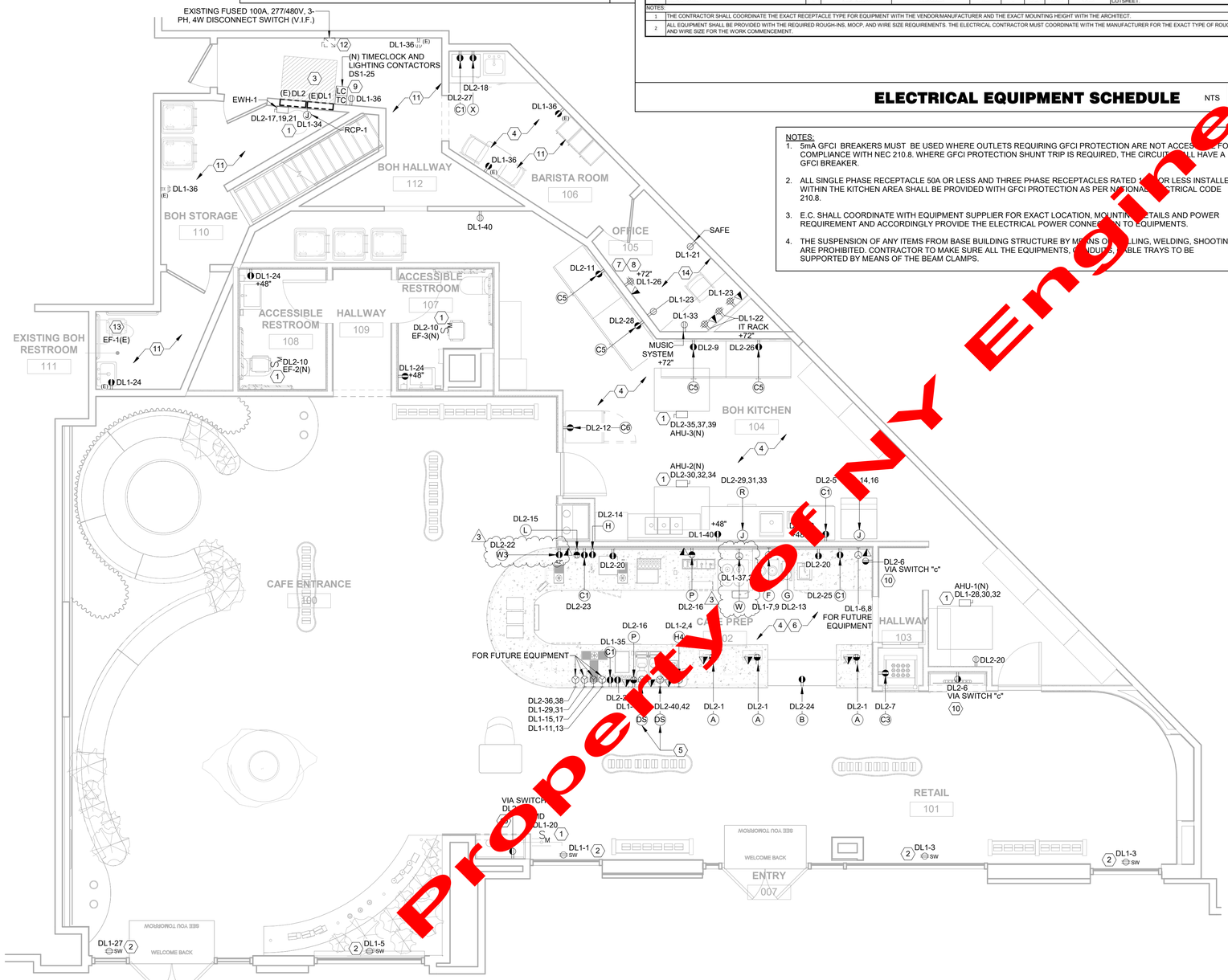


MEZZANINE PARTIAL POWER PLAN 3/16" = 1'-0" E

TYPE MARK	DESCRIPTION	QTY	MANUFACTURER	MODEL	VOLTAGE	PHASE	AMPS	KW	CONNECTION	NOTES
A	POS	3	TBD	TBD	120	1	1.6	0.19	5-15P	
B	PASTRY CASE	1	TBD	TBD	120	1	4	0.48	5-15P	VERIFY OUTLET/POWER REQUIREMENTS WITH EQUIPMENT CUTSHEET.
C1	UNDER COUNTER REFRIGERATOR	5	SUMMIT	FF63BK	120	1	0.8	0.10	5-15P	
C3	VERTICAL DISPLAY REFRIGERATOR	1	AVANTACO	BVAC-28HC	120	1	12.2	1.46	5-15P	
C5	UPRIGHT DOUBLE DOOR FRIDGE	4	AVANTCO	A-49R-HC 54"	120	1	6.2	0.74	5-15P	STAINLESS STEEL
C6	REACH-IN GLASS SWING DOOR REFRIGERATOR	1	AVANTCO	A-23R-HC 29"	120	1	4.2	0.50	5-15P	
DS	ESPRESSO	2	EVERSYS	SHOTMASTER C/ST	208	1	22.8	4.75	L6-30P	RJ 45 CONNECTN NEEDED. VERIFY OUTLET REQUIREMENTS WITH EQUIPMENT VENDOR/ CUTSHEET.
F	TWIN COFFEE BREWER	1	CURTIS	G4TP2T10A3100	220V	1	34.5	7.60	L14-30P	PROVIDE 220V CONNECTION. VERIFY OUTLET REQUIREMENTS WITH EQUIPMENT CUTSHEET.
G	COFFEE GRINDER	1	MAHLKONIG	EK43	120	1	10.9	1.30	5-15P	
H	COLD BREW TAP	1	MARCO	POUR'D CON – 3 BUTTON	120	1	1.5	0.18	5-15P	VERIFY OUTLET REQUIREMENTS WITH EQUIPMENT CUTSHEET.
H4	UNDERCOUNTER HOT WATER BOILER	1	MARCO	FRIIA HC	220	1	13.46	2.80	6-20P	VERIFY OUTLET REQUIREMENTS WITH EQUIPMENT CUTSHEET.
I2	ICE MACHINE	1	MANTOWOC	IDT1200A-261	208	1	14.2	2.95	DIRECT	VERIFY OUTLET REQUIREMENTS WITH EQUIPMENT CUTSHEET.
L	WIRELESS TOUCH SCREEN (KDS TABLET)	1	APPLE	9TH GEN IPAD	120	1	3	0.36	5-15P	1.25A @24V DC: POWER CONSUMPTION 6W
P	PRINTER	2	STAR	TSP143IV SK	120	1	1.6	0.19	5-15P	100 to 240VAC ± 10%, 50/60 Hz, POWER SUPPLY EMBEDED IN PRINTER
R	LIGHTN ASHER	1	ECOLAB	E-LITE	208	3	21.3	7.67	DIRECT	
W	ICE CREAM FREEZER	1	CIRCLE SERIES GYLCOL POZZETTI	CIAM	208	1	2.1	0.44	6-20P	
W3	BOTTLE WARMER	1	INTELLISERV	JS-1/3	120	1	4.2	0.5	5-15P	
X	MICROWAVE	1	EMERSON	MW7302B	120	1	5.83	0.70	5-20P	VERIFY OUTLET REQUIREMENTS WITH EQUIPMENT CUTSHEET.

NOTES:
1. THE CONTRACTOR SHALL COORDINATE THE EXACT RECEPTACLE TYPE FOR EQUIPMENT WITH THE VENDOR/MANUFACTURER AND THE EXACT MOUNTING HEIGHT WITH THE ARCHITECT.
2. ALL EQUIPMENT SHALL BE PROVIDED WITH THE REQUIRED ROUGH-INS, MOCP, AND WIRE SIZE REQUIREMENTS. THE ELECTRICAL CONTRACTOR MUST COORDINATE WITH THE MANUFACTURER FOR THE EXACT TYPE OF ROUGH-INS AND WIRE SIZE FOR THE WORK COMMENCEMENT.

ELECTRICAL EQUIPMENT SCHEDULE NTS



ELECTRICAL POWER PLAN 1/4" = 1'-0" C

NOTES:
1. 5mA GFCI BREAKERS MUST BE USED WHERE OUTLETS REQUIRING GFCI PROTECTION ARE NOT ACCESSIBLE FOR COMPLIANCE WITH NEC 210.8. WHERE GFCI PROTECTION SHUNT TRIP IS REQUIRED, THE CIRCUIT SHALL HAVE A GFCI BREAKER.
2. ALL SINGLE PHASE RECEPTACLE 50A OR LESS AND THREE PHASE RECEPTACLES RATED 100A OR LESS INSTALLED WITHIN THE KITCHEN AREA SHALL BE PROVIDED WITH GFCI PROTECTION AS PER NATIONAL ELECTRICAL CODE 210.8.
3. E.C. SHALL COORDINATE WITH EQUIPMENT SUPPLIER FOR EXACT LOCATION, MOUNTING DETAILS AND POWER REQUIREMENT AND ACCORDINGLY PROVIDE THE ELECTRICAL POWER CONNECTION TO EQUIPMENTS.
4. THE SUSPENSION OF ANY ITEMS FROM BASE BUILDING STRUCTURE BY MEANS OF DRILLING, WELDING, SHOOTING ARE PROHIBITED. CONTRACTOR TO MAKE SURE ALL THE EQUIPMENTS, CONDUITS, CABLE TRAYS TO BE SUPPORTED BY MEANS OF THE BEAM CLAMPS.

LEGEND:
———— NEW
- - - - - - EXISTING

A. ALL CONDUIT DROPS ARE INSIDE WALLS U.O.N. SEE ARCH. DWGS FOR WALL DIMS.

B. CONTRACTOR SHALL VERIFY UNDERGROUND CONDUIT LOCATIONS PRIOR TO POURING SLAB.

C. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE THIS DATA ON THE LOCATION OF ELECT. ROUGH-INS WITH INFO PROVIDED ON THE ARCH. AND STRUCT. DWGS AND THE EQUIPMENT ACTUALLY SUPPLIED, AND TO CONFIRM THE CORRECTNESS OF ANY DIMENSIONS HEREIN.

D. FOR EXACT LOCATIONS OF KITCHEN & MECHANICAL EQUIPMENT AND POINTS OF CONNECTION, REFER TO KITCHEN & MECHANICAL EQUIPMENT DRAWINGS AND MANUFACTURER'S SHOP DRAWINGS.

E. CONTRACTOR SHALL VERIFY CIRCUIT BREAKER, DISCONNECT SWITCH, STARTER AND FUSE SIZES WITH SELECTED EQUIPMENT MANUFACTURER'S SHOP DRAWINGS PRIOR TO PLACING ORDER AND PROVIDE EVERYTHING AS REQUIRED.

F. ELECTRICAL CONTRACTOR TO COORDINATE RECEPTACLE MOUNTING HEIGHT, CONFIGURATION OF EQUIPMENT LOCATIONS AND REQUIREMENTS OF EQUIPMENTS WITH ARCHITECTURAL MILLWORK DRAWING PRIOR TO ROUGH-IN ELECTRICAL DEVICES.

G. ELECTRICAL EQUIPMENT ENCLOSURES SHALL BE NEMA-1 FOR INTERIOR AND NEMA 3R FOR EXTERIOR. IN COASTAL REGION, THE STANDARD FOR OUTSIDE SHALL BE NEMA-4X.

H. ALL 15 AND 20A, 120V RECEPTACLES IN COMMERCIAL KITCHENS ARE REQUIRED TO BE GFCI PROTECTED. THIS INCLUDES ISOLATED GROUND RECEPTACLES.

I. E.C. TO COORDINATE ALL LOW VOLTAGE LOCATIONS AND REQUIREMENTS WITH TENANT & TENANT LV SUBCONTRACTOR.

J. IT'S THE ELECTRICAL CONTRACTORS RESPONSIBILITY TO BALANCE ALL CIRCUITS BETWEEN THE PHASES OF THE SYSTEM, REGARDLESS OF CIRCUITS INDICATED.

K. ALL PENETRATIONS IN FIRE RATED WALL ASSEMBLIES SHALL BE SEALED WITH UL LISTED FIRE STOPPING MATERIAL.

L. ALL RECEPTACLES WITHIN SIX (6) FEET OF A SINK SHALL BE G.F.I. TYPE.

M. REFER TO GENERAL AND SPECIFICATION NOTES, FOR ALL REQUIREMENTS. ALL ROUGH-IN ARE TO BE INSPECTED BY K.E.C. CONTRACTOR BEFORE ANY WALL FINISHES ARE TO BE INSTALLED.

N. ALL WORK SHOWN SHALL COMPLY WITH ALL NATIONAL, STATE, AND LOCAL CODE ORDINANCES, ETC.

O. ELECTRICAL CONTRACTOR SHALL VERIFY AND PROVIDE ALL CONDUIT AND WIRE FOR CONNECTION TO ALL ELECTRICAL DEVICES, PER MANUFACTURERR'S'S INSTALLATION INSTRUCTIONS.

P. ALL RECEPTACLES IN "PUBLIC" AREAS ARE TO HAVE PLASTIC "CHILD GUARDS."

Q. ALL GFCI RECEPTACLES SHALL BE INSTALLED IN A READILY ACCESSIBLE LOCATION OR A DEAD FRONT GFI DEVICE INSTALLED IN A READILY ACCESSIBLE LOCATION. OR A GFCI CIRCUIT BREAKER SHALL USED TO FEED THE CIRCUIT NOTED.

R. PROVIDE A LOCAL DISCONNECT WITHIN SIGHT OF APPLIANCES OVER 300 VA OR 1/8 HP FOR HARD WIRED CONNECTIONS, OR USE A LOCKABLE BRANCH CIRCUIT BREAKER PER NEC 422.31(B) AND 110.25.

S. ALL OUTLETS SHALL BE INSTALLED AT 18" AFF UNLESS NOTED OTHERWISE. REFER TO ARCHITECTURAL PAGES FOR PREP. SERVICE COUNTER DESIGN AND POWER AND DATA OUTLETS PLACEMENT COORDINATION.

ELECTRICAL POWER PLAN GENERAL NOTES NTS B

1. ALL PLUMBING & MECHANICAL EQUIPMENT SHALL BE PROVIDED WITH THE REQUIRED ROUGH-INS, MOCP, AND WIRE SIZE REQUIREMENTS. THE ELECTRICAL CONTRACTOR MUST COORDINATE WITH THE MANUFACTURER FOR THE EXACT TYPE OF ROUGH-INS AND WIRE SIZE BEFORE THE COMMENCEMENT OF WORK.
2. PROVIDE A NEW SHOW WINDOW RECEPTACLE ABOVE THE WINDOW ON THE WALL OR CEILING AS REQUIRED TO MEET NEC 210.62 SHOW WINDOW REQUIREMENTS. COORDINATE THE EXACT LOCATION WITH THE ARCHITECT. CONTRACTOR TO FIELD VERIFY THE EXISTING SHOW WINDOW RECEPTACLE AVAILABILITY & OPERABLE CONDITION. REUSE IF POSSIBLE; OTHERWISE PROVIDE NEW AS SHOWN ON PLAN.
3. EXISTING ELECTRICAL PANELS SHALL REMAIN. ELECTRICAL CONTRACTOR TO FIELD VERIFY THE EXACT SIZE, LOCATION & OPERABLE CONDITION OF THE PANEL. REPLACE IF FOUND INOPERABLE. ELECTRICAL CONTRACTOR SHALL MAINTAIN REQUIRED WORKING CLEARANCES FOR ELECTRICAL PANELS IN ACCORDANCE WITH NEC 110.26(A)(1). BASE BID ACCORDINGLY.
4. ELECTRICAL CONTRACTOR TO VERIFY THAT ALL GFCI RECEPTACLES SHALL BE INSTALLED IN A READILY ACCESSIBLE LOCATION. IF NOT A GFCI CIRCUIT BREAKER SHALL USED TO FEED THE CIRCUIT AS NOTED. PROVIDE THE PROVISION ACCORDINGLY.
5. COORDINATE POWER REQUIREMENTS WITH PURCHASED EQUIPMENT (NEMA RATED RECEPTACLE OR HARDWIRED CONNECTION). PROVIDE RJ45 CONNECTOR FOR ESPRESSO MACHINE. COORDINATE INSTALLATION REQUIREMENTS WITH MANUFACTURER PRIOR TO COMMENCEMENT.
6. ALL OUTLETS FOR BAR AREA EQUIPMENT ARE TO BE INSTALLED UNDER COUNTER.
7. QUAD RECEPTACLE FOR SECURITY SYSTEM MOUNTED AT 6'-0" AFF. VERIFY WITH OWNER FOR ADDITIONAL SYSTEM EQUIPMENT REQUIRED. PROVIDE AND INSTALL SAME. RECEPTACLE TO ALSO SERVE THE DVR. COORDINATE WITH ARCHITECT/OWNER FOR EXACT LOCATION PRIOR TO ROUGH IN.
8. FEMALE CAT-6 TERMINAL WITH 2FT PIG TAIL.
9. CONTRACTOR TO FIELD VERIFY THE EXACT LOCATION AND OPERABLE CONDITION OF EXISTING TIME CLOCK AND LIGHTING CONTACTORS. REUSE IF POSSIBLE. OTHERWISE PROVIDE NEW TIMECLOCK AND LIGHTING CONTACTOR AS SHOWN. COORDINATE EXACT REQUIREMENT WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN. BASE BID ACCORDINGLY.
10. CONTROLLED RECEPTACLE FOR MILLWORK LIGHT FIXTURE 'L06-MO' AND 'L06-HO'. ELECTRICAL CONTRACTOR SHALL VERIFY FINAL LOCATION AND HEIGHTS FOR EQUIPMENTS. COORDINATE WITH ARCHITECT/OWNER. BASE BID ACCORDINGLY.
11. EXISTING RECEPTACLE SHALL REMAIN WITH ITS CIRCUITRY. ELECTRICAL CONTRACTOR SHALL VERIFY EXISTING RECEPTACLE LOCATION IN FIELD, REUSE IF RECEPTACLE AND CIRCUIT ARE IN OPERABLE CONDITION, IF NOT, PROVIDE NEW AS SHOWN. COORDINATE EXACT REQUIREMENT WITH ARCHITECT/OWNER. BASE BID ACCORDINGLY.
12. EXISTING ELECTRICAL DISCONNECT SWITCH AND TRANSFORMER SHALL REMAIN. ELECTRICAL CONTRACTOR TO FIELD VERIFY THE EXACT SIZE, LOCATION & OPERABLE CONDITION; REPLACE IF FOUND INOPERABLE. ELECTRICAL CONTRACTOR SHALL MAINTAIN REQUIRED WORKING CLEARANCES IN ACCORDANCE WITH NEC 110.26(A)(1). BASE BID ACCORDINGLY.
13. EXISTING EF-1 (E) SHALL REMAIN WITH ITS CIRCUITRY. ELECTRICAL CONTRACTOR SHALL VERIFY ITS LOCATION, POWER CONNECTION, CONTROL, CIRCUIT FEEDING IT AND OPERABLE CONDITION WITH MECHANICAL CONTRACTOR IN FIELD. PROVIDE NEW IF FOUND IN-OPERABLE. BASE BID ACCORDINGLY.
14. ELECTRICAL CONTRACTOR SHALL VERIFY FINAL LOCATION FOR EQUIPMENTS BY COORDINATING WITH ARCHITECT/OWNER. BASE BID ACCORDINGLY.

ELECTRICAL POWER PLAN KEY NOTES NTS A

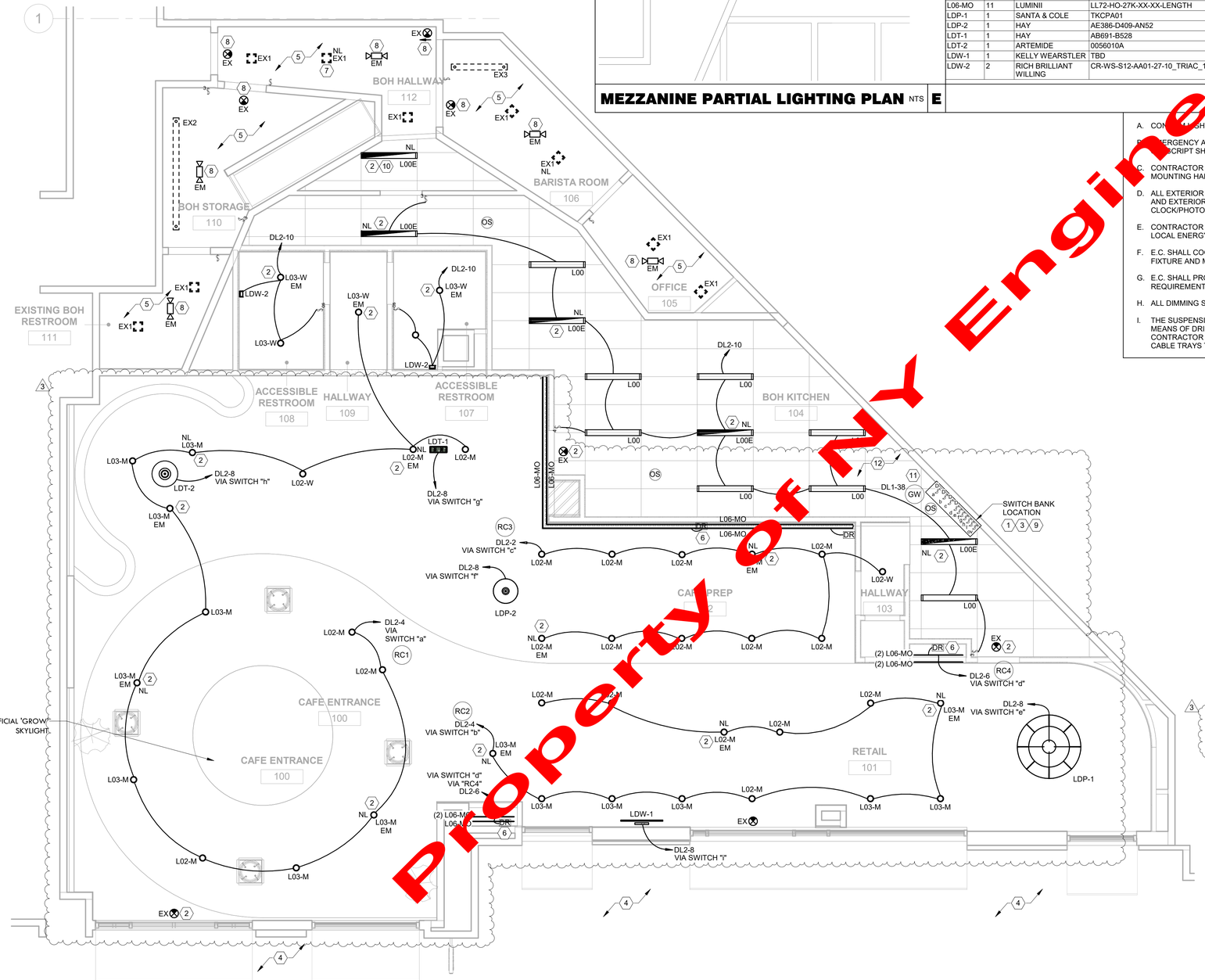
APPROVAL STAMP AREA

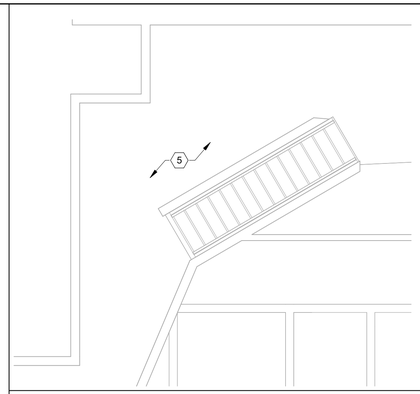
BLANK STREET

SHEET TITLE:
ELECTRICAL POWER PLAN

SHEET NUMBER:
E-100

Property of NY Engineers





MEZZANINE PARTIAL LIGHTING PLAN NTS E

NO	COUNT	MANUFACTURER	CATALOG NUMBER	DESCRIPTION	LAMP TYPE	ELECTRICAL DATA
EM	5	ISOLITE	ELF-4WWH-MRC	CEILING EMERGENCY LIGHT	LED	120 V/1-4 VA
EX	8	THE EXIT LIGHT CO.	ELSM-RM	EXIT SIGN	LED	120 V/1-2 VA
EX1	9	EXISTING	EXISTING	EXISTING SQUARE LIGHT	LED	120 V/1-20 VA
EX2	1	EXISTING	EXISTING	EXISTING LINEAR LIGHT	LED	120 V/1-30 VA
EX3	1	EXISTING	EXISTING	EXISTING LINEAR LIGHT	LED	120 V/1-25 VA
L00	8	LSI INDUSTRIES	W444-LED-SS-WW-UE	SURFACE MOUNTED LINEAR	LED	120 V/1-35 VA
L00E	5	LSI INDUSTRIES	W444-LED-SS-WW-UE-EM	SURFACE MOUNTED LINEAR EMERGENCY	LED	120 V/1-35 VA
L02-M	17	USAI	S2RD-F-15V2M-27KH-30-P1-WH-WH-NCIC-_-UNV-D6E	RECESSED DIRECT LIGHTING	LED	120 V/1-15 VA
L02-M EM	4	USAI	S2RD-F-15V2M-27KH-30-P1-WH-WH-NCIC-_-UNV-D6E-EM6C	RECESSED DIRECT LIGHTING WITH EMERGENCY	LED	120 V/1-15 VA
L02-W	2	USAI	S2RD-F-15V2M-27KH-65-P1-WH-WH-NCIC-_-UNV-D6E	RECESSED DIRECT LIGHTING	LED	120 V/1-15 VA
L03-M	10	USAI	S2RA-F-15V2M-27KH-30-WH-WH-NCIC-UNV-D6E	RECESSED DIRECT LIGHTING	LED	120 V/1-15 VA
L03-M EM	5	USAI	S2RA-F-15V2M-27KH-30-WH-WH-NCIC-UNV-D6E-EM6C	RECESSED DIRECT LIGHTING WITH EMERGENCY	LED	120 V/1-15 VA
L03-W	2	USAI	S2RA-F-15V2M-27KH-65-WH-WH-NCIC-UNV-D6E	RECESSED DIRECT LIGHTING	LED	120 V/1-15 VA
L03-W EM	3	USAI	S2RA-F-15V2M-27KH-65-WH-WH-NCIC-UNV-D6E-EM6C	RECESSED DIRECT LIGHTING WITH EMERGENCY	LED	120 V/1-15 VA
L06-MO	11	LUMINII	LL72-HO-27K-XX-XX-LENGTH	CONCEALED LINEAR LIGHT	LED	120 V/1-5.9VA/FT
LDP-1	1	SANTA & COLE	TKCPA01	PENDANT ROUND LIGHT	LED	120 V/1-54 VA
LDP-2	1	HAY	AE386-D409-AN52	PENDANT LAMP LIGHT	LED	120 V/1-16 VA
LDT-1	1	HAY	AB691-B528	ALUMINUM TABLE LAMP	LED	120 V/1-16 VA
LDT-2	1	ARTEMIDE	0056010A	NESSO TABLE LAMP	LED	120 V/1-20 VA
LDW-1	1	KELLY WEARSTLER	TBD	LINEA SCONCE	LED	120 V/1-16 VA
LDW-2	2	RICH BRILLIANT WILLING	CR-WS-S12-AA01-27-10_TRIAC_120V_IPC	WALL CRISP SCONCE	LED	120 V/1-17 VA

LEGEND:
———— NEW
- - - - - - EXISTING

LIGHTING FIXTURE SCHEDULE NOTES:

1. REFER TO ARCHITECTURAL DRAWINGS FOR FINAL LIGHTING FIXTURE SCHEDULES AND EXACT FIXTURE LOCATIONS.
2. ALL COLOURS, TRIMS, AND FINISH SHALL BE APPROVED BY ARCHITECT/INTERIOR DESIGNER(S).
3. ALL TRIMS AND INSTALLATION REQUIREMENTS SHALL BE COORDINATED WITH THE CEILING TYPE IN WHICH IT IS TO BE INSTALLED. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT CEILING TYPE FOR WHICH THE FIXTURE IS TO BE INSTALLED.
4. ALL LIGHT FIXTURE SHALL BE ON 120 V.
5. ALL ILLUMINATED EXIT SIGNS TO HAVE A MAX WATTAGE OF 5 PER SIDE.

LIGHTING CONTROL NOTES:

1. AUTOMATIC LIGHTING CONTROLS: OCCUPANCY SENSOR SHALL BE CAPABLE OF TURNING OFF LIGHTS WITHIN 15 MINUTES OF ALL OCCUPANTS LEAVING THE SPACE.
2. ALL CONTROLS SHALL BE AS PER 2018 PHILADELPHIA ENERGY CONSERVATION CODE.

LIGHTING FIXTURE SCHEDULE NTS C

A. CONFIRM LIGHTING FIXTURE QUANTITIES WITH SUPPLIER.

B. EMERGENCY AND NORMAL LIGHTING MARKED WITH LIGHT TAG "EM" ON SCRIPT SHALL OPERATE CONTINUOUSLY.

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

D. ALL EXTERIOR NON-EMERGENCY LIGHT FIXTURES, BUILDING SIGNS, AND EXTERIOR SIGNS SHALL BE CONTROLLED THROUGH TIME CLOCK/PHOTO CELL.

E. CONTRACTOR SHALL PROVIDE DIMMING SYSTEM WHEN REQUIRED BY LOCAL ENERGY CODE. BASE BID ACCORDINGLY.

F. E.C. SHALL COORDINATE WITH ARCHIECT/OWNER FOR FINAL LIGHT FIXTURE AND MODEL PRIOR TO ROUGH-IN.

G. E.C. SHALL PROVIDE ADDITIONAL LIGHTING CONTROLS AS PER AHJ REQUIREMENTS IF ANY TO COMPLETE THE PERMIT REQUIREMENTS.

H. ALL DIMMING SWITCHES SHALL BE 0-10V.

I. THE SUSPENSION OF ANY ITEMS FROM BASE BUILDING STRUCTURE BY MEANS OF DRILLING, WELDING, SHOOTING ARE PROHIBITED. CONTRACTOR TO MAKE SURE ALL THE EQUIPMENTS, CONDUITS, CABLE TRAYS TO BE SUPPORTED BY MEANS OF THE BEAM CLAMPS.

J. COORDINATE EXACT LOCATION AND MOUNTING HEIGHTS WITH ARCHITECTURAL PLANS. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS, DETAILS, AND LIGHTING NOTES FOR FURTHER INFORMATION OF DEVICE PLACEMENT AND OTHER RELEVANT INFORMATION.

K. EMERGENCY AND EXIT LIGHTS SHALL BE INSTALLED AND CIRCUITED PER THE LATEST NATIONAL ELECTRIC CODE AND ALL LOCAL CODES UNSWITCHED AHEAD OF ALL LIGHTING CONTROLS. ALL EMERGENCY AND EXIT FIXTURES SHALL BE DUAL VOLTAGE (120/277 VOLT INPUT) WITH 90 MINUTE BATTERY BACK UP.

L. LOWER CASE LETTERS IN LIGHTING FIXTURES AND ADJACENT TO SWITCHES IN EACH INDIVIDUAL ROOM/AREA INDICATE WHICH LIGHT FIXTURE IS TO BE CONTROLLED FROM EACH CORRESPONDING SWITCH IN THAT ROOM/AREA.

M. ALL CONTROL CABLING PROVIDED AS A PART OF ANY LIGHTING CONTROL SYSTEM SHALL BE PLENUM RATE.

N. CONTRACTOR TO COORDINATE WITH LIGHTING VENDOR AND PROVIDE FIXTURES WITH ALL REQUIRED DRIVERS, TRIMS, MOUNTING HARDWARE, AND ACCESSORIES.

O. REFER TO SHEET E201.00 FOR LIGHTING CONTROL SCHEDULE AND CONTROLLER WIRING DIAGRAM.

LIGHTING PLAN GENERAL NOTES NTS B

1. CONTRACTOR SHALL COORDINATE WITH THE LIGHTING VENDOR/ARCHITECT TO CONFIRM DIMMING COMPATIBILITY OF ALL SPECIFIED LIGHT FIXTURES. VERIFY LIGHT FIXTURES REQUIRING (0-10V) DIMMING AND OR ELV/MLV/TRIAC DIMMING. PROVIDE APPROPRIATE DIMMER SWITCHES AND DEDICATED CIRCUITING AS REQUIRED.
2. FIXTURE SHALL BE PROVIDED WITH INTEGRAL 90-MINUTE MINIMUM BATTERY BACKUP. WIRE ALL EXISTING/NEW EMERGENCY AND EXIT LIGHT TO LIGHTING CIRCUIT AHEAD OF ALL CONTROL & SWITCHING FOR CONTINUOUS OPERATIONS. NIGHT LIGHT FIXTURE MARKED AS 'NL'. WIRE ALL NIGHT LIGHT TO LIGHTING CIRCUIT AHEAD OF ALL CONTROL & SWITCHING FOR CONTINUOUS OPERATIONS. PROVIDE EMERGENCY LIGHTS WITH TEST SWITCH AND REWIRED TO BOH AREA BY COORDINATING WITH ARCHITECT/OWNER.
3. ELECTRICAL CONTRACTOR TO COORDINATE THE FINAL LOCATION OF DIMMER SWITCH BANK WITH ARCHITECT/OWNER. DIMMER SWITCHES SHALL BE RATED FOR A TOTAL LOAD OF SWITCHED CIRCUIT AND LAMP TYPE AS REQUIRED. DIMMERS SHALL BE PROVIDED WITH AN ON/OFF SWITCH. CONFIRM SWITCHBANK WILL FIT WITHIN THIS DESIGNATED AREA AND STACK MULTIPLE SWITCHBANK AT THIS LOCATION IF A SINGLE SWITCHBANK WILL NOT FIT WITHIN THIS DESIGNATED AREA.
4. EXTERIOR LIGHTS CONTROL BY PHOTOCELL OR TIME CLOCK. E.C. TO COORDINATE WITH ARCHITECT/OWNER FOR EXACT LOCATION IN FIELD AND PROVIDE CONNECTIONS AS REQUIRE. BASE BID ACCORDINGLY.
5. EXISTING LIGHTING AND ITS CONTROL SHALL REMAIN WITH ITS CIRCUITRY. ELECTRICAL CONTRACTOR SHALL VERIFY THEIR LOCATION, OPERABLE CONDITION AND CIRCUIT FEEDING FROM PANEL IN FIELD. PROVIDE NEW AS SHOWN IF FOUND INOPERABLE. BASE BID ACCORDINGLY.
6. LIGHT FIXTURE 'L06-MO' AND 'L06-HO' WILL HAVE DRIVERS. DRIVERS ARE PLUG-IN. E.C. SHALL COORDINATE WITH LIGHTING VENDOR AND PROVIDE DRIVER, CONTROLLED RECEPTACLE AS REQUIRED. REFER POWER PLAN FOR RECEPTACLE LOCATION. FIELD VERIFY EXACT LOCATION PRIOR TO ROUGH INS. BASE BID ACCORDINGLY.
7. THIS LIGHT FIXTURE SHALL NOT BE CONTROLLED BY AUTOMATIC MEANS ONLY AS PER 110.26(D).
8. ELECTRICAL CONTRACTOR TO FIELD VERIFY WHETHER ANY EXISTING EXIT SIGN, EMERGENCY OR BUG-EYE LIGHT FIXTURES ARE PROVIDED. CONFIRM THEY ARE CODE-COMPLIANT. IF NOT, PROVIDE EXIT/EMERGENCY/BUG-EYE FIXTURES AS SHOWN ON THE PLANS AND REFER TO KEYNOTE #2. BASE BID ACCORDINGLY.
9. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH L.V. VENDOR AND PROVIDE VALUME CONTROL SWITCH FOR MUSIC SYSTEM. COORDINATE EXACT REQUIREMT PRIOR TO ROUGH-INS. BASE BID ACCORDINGLY.
10. CONNECT NEW LIGHT TO EXISTING LIGHTING CIRCUIT FEEDING THAT AREA. ELECTRICAL CONTRACTOR SHALL VERIFY OPERABLE CONDITION AND CIRCUIT FEEDING FROM PANEL IN FIELD. PROVIDE NEW IF FOUND INOPERABLE. BASE BID ACCORDINGLY.
11. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH CASAMBI LIGHTING VENDOR AND PROVIDE GATEWAY MODULE WITH POWER SUPPLY UNIT. PROVIDE POWER FOR SAME AS REQUIRED. BASE BID ACCORDINGLY.
12. REMOTE DRIVERS TO BE LOCATED BELOW CEILING IN BOH AREA AND MOUNTED ON PLYWOOD BACKBOARD (PAINTED BY GC). FINAL LOCATION TO BE FIEELD VERIFIED.

LIGHTING PLAN KEY NOTES NTS A

LIGHTING PLAN 1/4" = 1'-0" D

BLANK STREET

APPROVAL STAMP AREA

SHEET TITLE:
LIGHTING PLAN

SHEET NUMBER:
E-200

Property of NY Engineers

LIGHTING CONTROL SCHEDULE

CIRCUIT TAG	SCENE	SWITCH ID	AREA	LIGHTING FIXTURE	CONROLLING	DIMMING TYPE	SWITCH TYPE	DIMMER MODULE	CONTROLLER
DL2-4	SCENE-1	a	CAFE ENTRANCE	L02-M,L02-W,L03-M, L03-W	DIMMING SWITCH	0-10V	BTT-S4BWH/BK-C	PSC-WCM-450-BLE-CB	RC1
DL2-4	SCENE-2	b	RETAIL	L02-M,L03-M	DIMMING SWITCH	0-10V	BTT-S4BWH/BK-C	PSC-WCM-450-BLE-CB	RC2
DL2-2	SCENE-3	c	CAFÉ PREP	L02-M,L02-W	DIMMING SWITCH	0-10V	BTT-S4BWH/BK-C	PSC-WCM-450-BLE-CB	RC3
DL2-6	SCENE-4	d	DINING AREA	L06-MO	DIMMING SWITCH	0-10V	BTT-S4BWH/BK-C	PSC-WCM-450-BLE-CB	RC4
DL2-8		e	DINING AREA	LDP-1	TOGGLE SWITCH, ON/OFF	-	-	-	-
DL2-8		f	DINING AREA	LDP-2	TOGGLE SWITCH, ON/OFF	-	-	-	-
DL2-8		g	DINING AREA	LDT-1	TOGGLE SWITCH, ON/OFF	-	-	-	-
DL2-8		h-PLUG OUTET	DINING AREA	LDT-2	TOGGLE SWITCH, ON/OFF	-	-	-	-
DL2-8		i	DINING AREA	LDW-1	TOGGLE SWITCH, ON/OFF	-	-	-	-
DL2-10		3-WAY SWITCH	BOH	L00	OS & TOGGLE SWITCH	-	-	-	-
DL2-10			RESTROOM	L03-W, LDW-2	OCCUPANCY SENSOR SWITCH	-	-	-	-

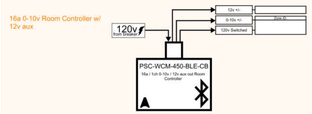
NOTE:
1. CONTRACTOR TO REFER BLANK STREET LIGHTING CONTROL STANDRD PRIOR TO ROUG-INS.
2.THE CONTRACTOR SHALL COORDINATE WITH CASAMBI TO ENSURE ALL LIGHTING CONTROL COMPONENTS, ZONING, AND COMMISSIONING MEET PROJECT REQUIREMENTS.

PSC-WCM-450-BLE-CB

Casambi Mesh Room Controller, 120-277 Volt with dimming, 12 volt Aux, Sensor input, Power Metering, 16A Relay

- 100-277VAC Input Voltage
- 0-10V Output to LED Driver
- Relay with Zero-Crossing
- Active High Output for Relay Drive
- 12V aux Power (PSC-WCM-450-BLE-CB)

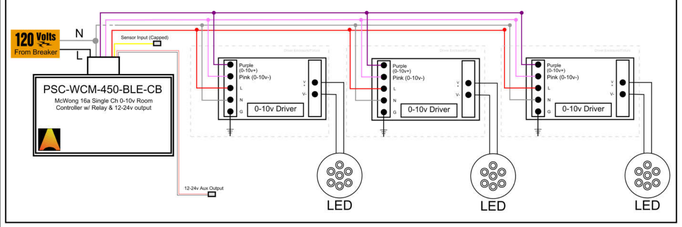




Layout Symbol

Detailed Wiring Diagram

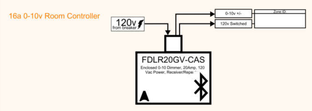
PSC-WCM-450-BLE-CB 16a Single Channel 0-10v w/ HV Switch Leg & 24v Aux Output (Zone Control)



FDLR20GV-CAS

Enclosed Casambi bluetooth Relay Receiver/Repeater
20 Amp SPDT, 120-277 Vac Power, with 0-10 Vdc Analog Output

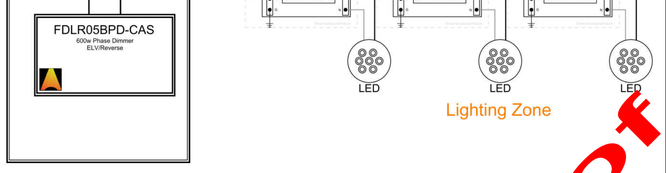




Layout Symbol

Detailed Wiring Diagram

FDLR05BPD-CAS
600w Phase DimmerELV/Reverse
Junction box/Enclosure



BTT-S4BWH-C

4-Button Dual Power Light Switch Wireless Bluetooth - Coin cell battery (CR2032) and/or Low-voltage 5V-30 VDC - Casambi Flashed White

Technical Spec:	BTT-S4BWH-C
Range	50'-150'+ (10m-30m) @ 2Mbps 45'-120'+ (15m-40m) @ 1Mbps 60'-180'+ (20m-60m) @ 500Kbps
Frequency	Bluetooth (BLE) 2.4 GHz
Power Supply	Coin cell battery (CR2032) Low-voltage 5V-30 VDC
Buttons	1, 2, 3 or 4
Dimensions	1.58" (4 cm) W x 4.34" (10.5 cm) H x 0.42" (1 cm) D
Operating Temp (battery) Operating Temp (Line)	-13° to +149°F (-25° to +65°C)
Certification	FCC (United States): SHNMDBTSOQ I.C. (Canada): 8017A-MDBTSOQ UL Pending



Battery Switch



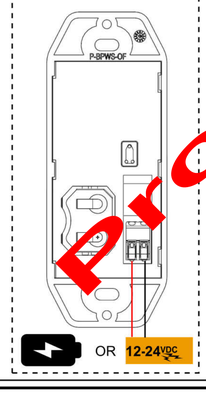
Layout Symbol

Detailed Wiring Diagram

Battery Powered Switch

Single Gang Wall Box

BTT-S4BWH-C



Property of NY Engineers

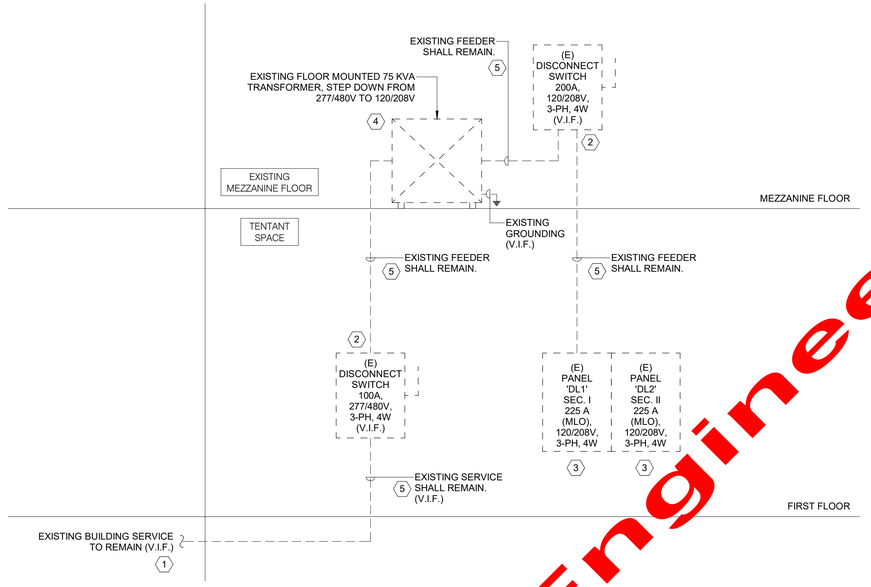
BLANK STREET

APPROVAL STAMP AREA

SHEET TITLE:
LIGHTING CONTROL DETAILS

SHEET NUMBER:
E-201

LEGEND:
NEW
EXISTING



ELECTRICAL RISER DIAGRAM NTS A

ELECTRICAL RISER GENERAL NOTES NTS C

A. PROPER CLEARANCE MUST BE MAINTAINED ABOUT ELECTRICAL EQUIPMENT PER N.E.C. FIELD VERIFY EXACT MOUNTING SPACE AVAILABLE IN ELECTRICAL ROOM/AREA PRIOR TO INSTALLATION OF ELECTRICAL EQUIPMENT.

B. MAKE ALL FINAL ELECTRICAL CONNECTIONS FOR A COMPLETE ELECTRICAL DISTRIBUTION SYSTEM. ALL CONNECTIONS / DISCONNECTIONS TO LANDLORDS/UTILITIES SERVICE EQUIPMENT SHALL BE AS DIRECTED BY LANDLORDS/UTILITIES SITE REPRESENTATIVE. TENANT GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TERMINATION/DETERMINATION EXPENSES.

C. SYSTEM SHALL BE GROUNDED TO THE MAIN BUILDING'S GROUNDING SYSTEM.

D. DISCONNECT SWITCHES AND PANELS SHALL BE INSTALLED ON PLYWOOD BACKBOARDS.

E. TENANT CONTRACTOR MUST VERIFY ELECTRICAL SERVICE, SUB-FEED WIRING AND PANELS PRIOR TO START OF TENANT'S ELECTRICAL WORK. TENANT GENERAL CONTRACTOR SHALL MAKE APPLICATION TO THE LOCAL UTILITY FOR CONTINUED METERED ELECTRIC SERVICE IN THE TENANT'S NAME. TENANT GENERAL CONTRACTOR SHALL CONFIRM ALL LOCAL UTILITY GUIDELINES AND REQUIREMENTS PRIOR TO BID, SHALL INCLUDE THE COSTS OF THESE REQUIREMENTS IN THE BID, AND SHALL COMPLY WITH THEM DURING CONSTRUCTION. AVAILABLE FAULT CURRENT AT SERVICE EQUIPMENT SHALL BE LEGIBLY MARKED IN THE FIELD WITH THE MAXIMUM AVAILABLE FAULT CURRENT PER NEW YORK CITY ELECTRICAL CODE OF ARTICLE 110.24.

F. CONTRACTOR SHALL COORDINATE SHORT CIRCUIT RATING (Isc) WITH UTILITY & AHJ, PRIOR TO COMMENCING ANY WORK, TYPICAL FOR ALL ELECTRICAL EQUIPMENT.

G. CONTRACTOR SHALL VERIFY INCOMING SERVICE AMPERAGE, WIRE SIZING AND DISTRIBUTION.

H. CONTRACTOR SHALL COORDINATE WITH BASE BUILDING FOR THE EXACT LOCATION OF THE EXISTING SWITCH GEAR AND EXACT POWER DISTRIBUTION.

I. CONTRACTOR SHALL VERIFY OPERABLE CONDITION INFIELD OF ALL EXISTING TO REMAIN ELECTRICAL DEVICES/EQUIPMENTS AND REPLACE WITH NEW IF FOUND INOPERABLE.

J. DRAWING ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK. ALL CONDUIT ROUTING AND OFFSETS, DROPS AND RISES OF RUNS ARE NOT SHOWN ON THE PLANS AND ARE SHOWN DIAGRAMMATICALLY IN THE RISERS. 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.

ELECTRICAL RISER KEY NOTES NTS B

1. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH BASE BUILDING/LANDLORD/OWNER FOR EXACT POWER DISTRIBUTION PRIOR TO COMMENCING ANY WORK. INFORM ENGINEER ON RECORD FOR ANY DISCREPANCIES. BASE BID ACCORDINGLY.

2. EXISTING ELECTRICAL DISCONNECT SWITCHES SHALL REMAIN. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE LANDLORD IN THE FIELD AND VERIFY THE EXACT LOCATION, RATING, VOLTAGE, PHASE, AND OPERABLE CONDITION OF EXISTING DISCONNECT SWITCH AND METER. REPLACE EXISTING DISCONNECT SWITCHES WITH NEW IF FOUND INOPERABLE. BASE BID ACCORDINGLY.

3. EXISTING ELECTRICAL PANELS SHALL REMAIN. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE LANDLORD IN THE FIELD AND VERIFY THE EXACT LOCATION, RATING, VOLTAGE, PHASE, AND OPERABLE CONDITION OF EXISTING PANELS. REPLACE EXISTING PANELS WITH NEW IF FOUND INOPERABLE. BASE BID ACCORDINGLY. ELECTRICAL CONTRACTOR SHALL MAINTAIN REQUIRED WORKING CLEARANCES FOR ELECTRICAL PANELS IN ACCORDANCE WITH NEC 110.26(A)(1).

4. EXISTING 75KVA FLOOR MOUNTED TRANSFORMER SHALL REMAIN. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE LANDLORD IN THE FIELD AND VERIFY THE EXACT LOCATION, RATING, VOLTAGE, PHASE, AND OPERABLE CONDITION OF EXISTING TRANSFORMER. REPLACE EXISTING TRANSFORMER WITH NEW IF FOUND INOPERABLE. BASE BID ACCORDINGLY.

5. EXISTING FEEDERS TO REMAIN. ELECTRICAL CONTRACTOR TO VERIFY OPERABLE CONDITION OF FEEDERS IN THE FIELD AND PROVIDE NEW IF FOUND INOPERABLE. BASE BID ACCORDINGLY.

Property of NY Engineers

APPROVAL STAMP AREA

BLANK STREET

SHEET TITLE:
ELECTRICAL RISER DIAGRAM

SHEET NUMBER:
E-300

Branch Panel: DL1 (EXISTING)

Location: BOH 105 /AY 112
Supply From: EXISTING DISCONNECT SWITCH
Mounting: RECESSED
Enclosure: NEMA 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating: V.I.F. (1) (2)
Mains Type: MLO
Mains Rating: 225 A
MCB Rating: NA

Notes:

CKT	Load Name	Wire Size	Trip	Poles	A		B		C		Poles	Trip	Wire Size	Load Name	CKT
1	SHOW WINDOW RECEPTACLE	12	20 A	1	1200	1400					2	20 A	12	H4_UNDERCOUNTER HOT WATER BOILER (3)	2
3	SHOW WINDOW RECEPTACLE	12	20 A	1			1200	1400			--	--	--	--	4
5	SHOW WINDOW RECEPTACLE	12	20 A	1					1200	1664	2	20 A	12	FUTURE EQUIPMENT (3)	6
7	F_TWIN COFFEE BREWER (3)	8	45 A	2	3800	1664					--	--	--	--	8
9	--	--	--	--			3800	2375			2	30 A	10	DS_ESPRESSO (3)	10
11	FUTURE EQUIPMENT (3)	12	20 A	2					1550	2375	--	--	--	--	12
13	--	--	--	--	1550	1477					2	20 A	12	I2_ICE MACHINE (3) (4)	14
15	FUTURE EQUIPMENT (3)	12	20 A	2			1550	1477			--	--	--	--	16
17	--	--	--	--					1550	168	1	20 A	12	EF-1 (E)	18
19	EXISTING EXTERIOR LIGHTING	12	20 A	1	100	50					1	20 A	12	MOTORIZED DAMPER	20
21	SAFE RECEPTACLE	12	20 A	1			180	720			1	20 A	12	IT RACK	22
23	OFFICE RECEPTACLE	12	20 A	1					540	540	1	20 A	12	EXISTING RESTROOM RECEPTACLE	24
25	TIME CLOCK	12	20 A	1	200	360					1	20 A	12	NVR SECURITY SYSTEM	26
27	SHOW WINDOW RECEPTACLE	12	20 A	1			1200	690			3	15 A	12	AHU-1 (N) (3) (4)	28
29	FUTURE EQUIPMENT (3)	12	20 A	2					1550	690	--	--	--	--	30
31	--	--	--	--	1550	690					--	--	--	--	32
33	MUSIC SYSTEM	12	20 A	1			180	52			1	20 A	12	RCP-1	34
35	C1_UC REFRIGERATOR		20 A	1					96	900	1	20 A	12	GENERAL RECEPTACLE	36
37	W_ICE CREAM FREEZER	12	20 A	2	220	200					1	20 A	12	GATEWAY MODULE	38
39	--	--	--	--			220	540			1	20 A	12	GENERAL RECEPTACLE	40
41	SPARE		20 A	1					0	0	1	20 A		SPARE	42
			Total Load:		14461 VA		15584 VA		12823 VA						
			Total Amps:		123 A		132 A		107 A						

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	2071 VA	100.00%	2071 VA		
Kitchen Equipment - Non-Dwelling Unit	31268 VA	65.00%	20324 VA	**Total Conn. Load:**	42869 VA
Motor	218 VA	100.00%	218 VA	**Total Est. Demand:**	33150 VA
Receptacle	4212 VA	100.00%	4212 VA	**Total Conn.:**	119 A
Spare	200 VA	100.00%	200 VA	**Total Est. Demand:**	92 A
Lighting	100 VA	125.00%	125 VA		
Show Window Receptacle	4800 VA	125.00%	6000 VA		

Notes:

Branch Panel: DL2 (EXISTING)

Location: BOH 105 /AY 112
Supply From: EXISTING DISCONNECT SWITCH
Mounting: RECESSED
Enclosure: NEMA 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating: V.I.F. (1) (2)
Mains Type: MLO
Mains Rating: 225 A
MCB Rating: NA

Notes:

CKT	Load Name	Wire Size	Trip	Poles	A		B		C		Poles	Trip	Wire Size	Load Name	CKT
1	A_POS/PRINTER	12	20 A	1	540	165					1	20 A	12	CAFE PREP. LIGHTING_SWITCH - c	2
3	EXISTING LIGHTING	12	20 A	1			235	420			1	20 A	12	DINING AREA LIGHTING_SWITCH - a & b	4
5	C1_UC REFRIGERATOR	12	20 A	1					96	518	1	20 A	12	LINEAR LIGHTING_SWITCH - d	6
7	C3_DISPLAY REFRIGERATOR	12	20 A	1	1464	122					1	20 A	12	DECORATIVE LIGHTING_SWITCH - e, f, g ,h ,i	8
9	C5_UPRIGHT DOUBLE FRIDGE	12	20 A	1			744	828			1	20 A	12	BOH & RESTROOM LIGHTING	10
11	C5_UPRIGHT DOUBLE FRIDGE	12	20 A	1					744	[illegible]	1	20 A	12	C6_REACH-IN REFRIGERATOR	12
13	G_COFFEE GRINDER	12	20 A	1	1308	180					1	20 A	12	H_COLD BREW TAP	14
15	L_KDS TABLET	12	20 A	1			360	360			1	20 A	12	P_PRINTER	16
17	EWH-1	8	40 A	3					[illegible]33	700	1	20 A	12	X_MICROWAVE	18
19	--	--	--	--	3333	720					1	20 A	12	KITCHEN RECEPTACLE	20 (3)
21	--	--	--	--			3333				1	20 A	12	W3_BOTTLE WARMER	22
23	C1_UC REFRIGERATOR	12	20 A	1					96	480	1	20 A	12	B_PASTRY CASE	24
25	C1_UC REFRIGERATOR	12	20 A	1	96	744					1	20 A	12	C5_UPRIGHT DOUBLE FRIDGE	26
27	C1_UC REFRIGERATOR	12	20 A	1			96	[illegible]4			1	20 A	12	C5_UPRIGHT DOUBLE FRIDGE	28
29	R_DISHWASHER	10	30 A	3					2558	690	3	15 A	12	AHU-2 (N)	30
31	--	--	--	--	2558	690					--	--	--	--	32
33	--	--	--	--			[illegible]58	690			--	--	--	--	34
35	AHU-3 (N)	12	15 A	3					690	1498	2	20 A	12	FUTURE EQUIPMENT (3)	36
37	--	--	--	--	69[illegible]	1498					--	--	--	--	38
39	--	--	--	--			690	2375			2	30 A	10	DS_ESPRESSO (3)	40
41	SPARE		20 A	1					0	2375	--	--	--	--	42
			Total Load:		14109 VA		13915 VA		14282 VA						
			Total Amps:		118 A		116 A		119 A						

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	4143 VA	100.00%	4143 VA		
Kitchen Equipment - Non-Dwelling Unit	23914 VA	65.00%	15544 VA	**Total Conn. Load:**	42306 VA
Motor	336 VA	100.00%	336 VA	**Total Est. Demand:**	34419 VA
Receptacle	1980 VA	100.00%	1980 VA	**Total Conn.:**	117 A
Lighting	1941 VA	125.00%	2426 VA	**Total Est. Demand:**	96 A
Water Heater	10000 VA	100.00%	10000 VA		

Notes:

ELECTRICAL LOAD SUMMARY

DESCRIPTION	CONNECTED KVA	VOLT	PHASE	DEMAND FACTOR	DEMAND KVA
LIGHTING	1.9	120	1	1.25	2.4
RECEPTACLES	6.1	120	1	>10kW=10+[0.5*(kW-10)]	6.1
HVAC	6.2	208	3	1.00	6.2
MOTOR	0.5	120	1	1.00	0.5
KITCHEN EQUIPENTS	55.9	208	1	0.65	36.4
OTHER	0.02	120	1	1.00	0.02
WATER HEATER	10.0	208	3	1.00	10.0
SHOW WINDOW RECEPTACLE	4.8	120	1	1.25	6.0
TOTAL	85.5				67.6

NOTES:

* USE GREATER VALUE OF THE TWO CATEGORIES.
** 125% OF THE LARGEST MOTOR OR COMPRESSOR IN SYSTEM APPLIED ONLY ON ONE UNIT.
*** N.E.C. ARTICLE 220-12 REQUIREMENT (200 VA PER FOOT OF SHOW WINDOW) MINUS ACTUAL SHOW WINDOW LIGHTING kVA.

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

67.6 x 1000 = 67,553
208 x 1.732 = 360
187.5 AMPS

USE (EXISTING) 200AMP SERVICE

PANEL SCHEDULE GENERAL NOTES

1. ALL CIRCUITING SHOWN IS FOR REFERENCE PURPOSE ONLY. INFORM ENGINEER FOR ANY DISCREPANCY BEFORE PURCHASE OF ANY EQUIPMENTS/WIRES OR DIVECES.
2. ELECTRICAL CONTRACTOR TO VERIFY THE EXACT PANEL SIZES AND INCOMING FEEDER SIZE.
3. REFER TO ARCHITECTURAL SHEET FOR KITCHEN EQUIPMENT PLAN & SCHEDULE. E.C. SHALL VERIFY THE BREAKER, CABLE, ELECTRICAL LOAD, PLUG, CORD, RECEPTACLES AND CONDUIT REQUIREMENTS/SIZES/RATING FOR ALL THE KITCHEN EQUIPMENTS WITH EQUIPMENT SUPPLIER/MANUFACTURER AND PROVIDE THE ELECTRICAL CONNECTION PER MANUFACTURER RECOMMENDATIONS/REQUIREMENTS. BASE BID ACCORDINGLY.
4. E.C. SHALL COORDINATE WITH MECHANICAL, PLUMBING AND WALK-IN COOLER/FREEZER CONTRACTOR/EQUIPMENT MANUFACTURER FOR EXACT ELECTRICAL REQUIREMENTS FOR CABLE AND BREAKERS. PROVIDE THE ELECTRICAL BREAKER AND CABLE UPSIZE AS REQUIRED. BASE BID ACCORDINGLY.

PANEL SCHEDULE KEY NOTES

(1) NEW BREAKERS MAY BE REQUIRED FOR USE IN THE EXISTING PANELBOARD TO MATCH RATING INDICATED IN THE PANEL SCHEDULE. PRIOR TO BID/PRICING, THE ELECTRICAL CONTRACTOR SHALL VERIFY ALL EXISTING-TO-REMAIN PANELBOARD MANUFACTURER AND MODEL NUMBER TO ENSURE THAT REPLACEMENT BREAKERS ARE AVAILABLE. WHERE BREAKER AVAILABILITY ISSUES ARISE, NOTIFY THE PROJECT MANAGER PRIOR TO BID/PRICING.

(2) DESIGNATED CIRCUIT NUMBER SHOWN ON THE PANEL SCHEDULE FOR A CERTAIN LOAD, MAY BE DIFFERENT THAN THE ACTUAL CIRCUIT NUMBER IN THE EXISTING PANELBOARD. ALL EXISTING-TO-REMAIN ELECTRICAL LOADS SHALL REMAIN CONNECTED TO THE SAME BREAKER AND CIRCUIT DESIGNATION. AVAILABLE SPARES AND SPACES SHALL BE UTILIZED TO FEED THE NEW LOADS.

(3) PROVIDE GFI BREAKER FOR CIRCUIT.

(4) PROVIDE LOCKABLE BREAKER(S) FOR CIRCUIT.

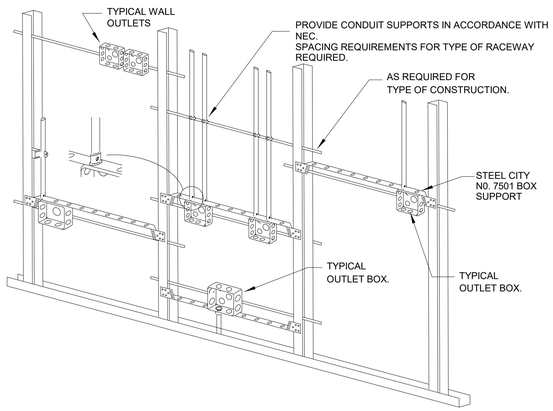
Property of NY Engineers

APPROVAL STAMP AREA

BLANK STREET

SHEET TITLE:
ELECTRICAL PANEL SCHEDULES

SHEET NUMBER:
E-301

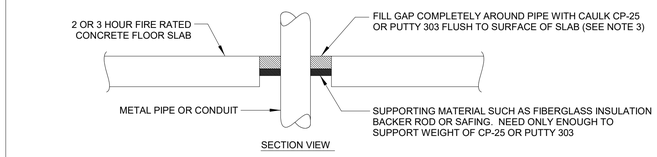


NOTES:

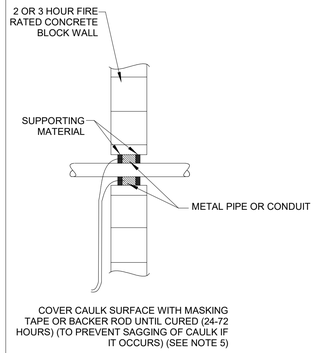
1. TYPICAL FOR WOOD AND METAL STUD ROUGH-IN
2. PLASTER RINGS NOT SHOWN
3. LOCATE ALL OUTLET BOXES IN ACCORDANCE WITH ARCHITECTURAL DRAWINGS, AND WITH ALL APPLICABLE SHOP DRAWINGS.
4. OUTLETS ON OPPOSITE SIDES OF WALLS OR PARTITIONS IN THE SAME STUD SPACE MUST BE SEPARATED BY A MIN. OF 24" HORIZONTAL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

1 TYPICAL ROUGH-IN REQUIREMENTS

SCALE: NOT TO SCALE



SECTION VIEW



COVER CAULK SURFACE WITH MASKING TAPE OR BACKER ROD UNTIL CURED (24-72 HOURS) (TO PREVENT SAGGING OF CAULK IF IT OCCURS) (SEE NOTE 5)

SECTION VIEW

NOTES:

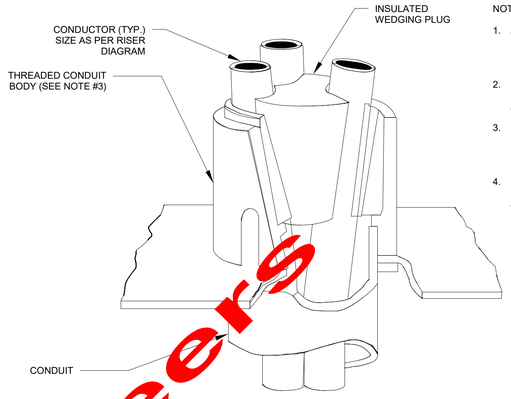
1. FOR CONCRETE BLOCK WALLS, CENTER CAULK CP-25 OR PUTTY 303 WITHIN WALL WITH DAMMING ON BOTH SIDES.
2. RECOMMENDATIONS BASED ON PRODUCT PERFORMANCE PER ASTM E-814 (UL 1479) FIRE TEST AND UL CLASSIFICATION FIRE STOP SYSTEMS 49, 33 AND 91.
3. UP TO 40% SHRINKAGE OF CP-25 OR PUTTY 303 IS ACCEPTABLE AFTER WET DEPTH INSTALLATION.
4. WHEN ANNULAR SPACE EXCEEDS 3/4" (19mm). A 28 AWG METAL COVER PLATE MUST BE MECHANICALLY SECURED ATOP THE 3M FIRE BARRIER APPLICATION, OR TIGHTLY PACK A NON-COMBUSTIBLE DAMMING MATERIAL ATOP INSTALLED CAULK OR PUTTY.
5. OPTIONS TO MASKING TAPE TO PREVENT SAGGING:
   - A.A. INSTALL ADDITIONAL DAMMING MATERIAL OVER PRODUCT TO HOLD WITHIN OPENING.
   - A.B. REMOVE PRODUCT FROM CONTAINER AND ALLOW TO AIR CURE IN SMALL BATCHES FOR 12 HRS. THEN HAND FORM INTO OPENING.
6. WET INSTALLED DEPTH OF CAULK CP-25 OR PUTTY 303 DEPENDS ON TYPE AND SIZE OF PIPE:

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

1" (25mm) DEPTH CAULK CP-25 OR PUTTY 303 WITHIN WALL

2 FIRE STOP DETAIL

SCALE: NOT TO SCALE



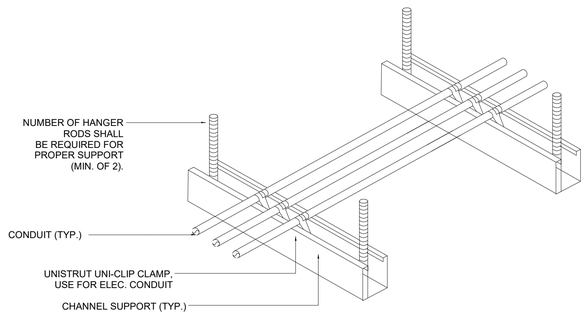
NOTES:

1. ALL CONDUCTORS IN VERTICAL RACEWAYS SHALL BE SUPPORTED IN ACCORDANCE WITH ARTICLE 300.19 OF NEC. CABLE SUPPORTS SHALL BE LOCATED AT THE INTERVALS REQUIRED BY THE NEC.
2. CABLE SUPPORT SYSTEM SHALL BE AS MANUFACTURED BY O-Z GEDNEY WITH pOZI-GRIP "S-STYLE" WEDGING PLUG OR APPROVED EQUAL.
3. FOR THREADLESS CONDUIT (RIGID, IMC OR EMT), ATTACH CONDUIT BODY TO MALE THREADS OF A SET SCREW OR COMPRESSION CONNECT, AS PERMITTED BY SPECIFICATIONS.
4. PROVIDE PULL BOX AT EACH LOCATION OF CABLE SUPPORTS. PULL BOX SHALL BE SIZED AS PER CODE TO ACCOMMODATE ALL CONDUITS.

3 VERTICAL CABLE SUPPORT DETAIL

SCALE: NOT TO SCALE

NOTE:
THIS INFORMATION MAY NOT CONTAIN ALL DETAILS REQUIRED FOR CONSTRUCTION. APPROPRIATE MODIFICATION MAY BE REQUIRED TO ENSURE SUITABILITY OF THESE DRAWINGS FOR THE SPECIFIC APPLICATION. IT IS THE USER'S RESPONSIBILITY TO ENSURE INSTALLATION OF THE EQUIPMENT/SYSTEM IS IN ACCORDANCE WITH BUILDING/PROJECT SPECIFICATIONS, APPLICABLE CODES AND STANDARDS.

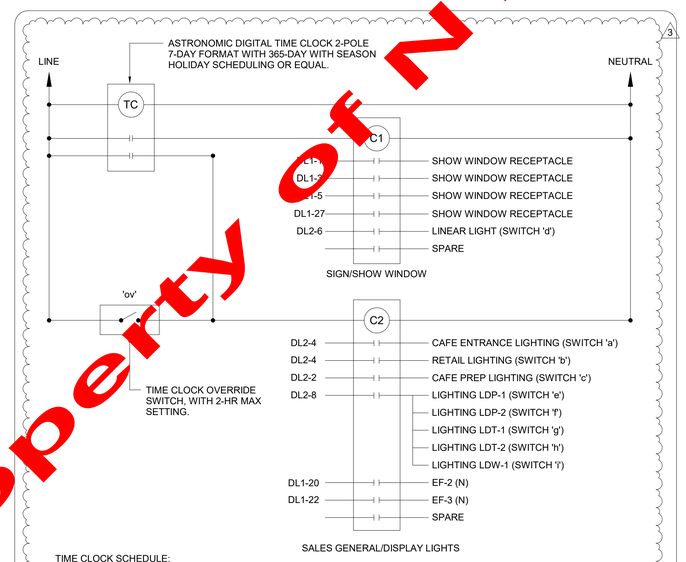


NOTES:

1. ALL CONDUIT MAY BE COMBINED ON SAME SUPPORT CHANNEL WHERE PRACTICAL.
2. SUPPORT CHANNEL LENGTH SHALL NOT BE DETERMINED UNTIL ALL PIPING, CONDUIT, ETC. TO BE SUPPORTED IS COORDINATED.
3. SUPPORT CHANNEL SPACING SHALL BE NO MORE THAN 10'-0".
4. UNISTRUT AND CONDUIT INSTALLATION MAY BE REVERSED.

4 CONDUIT SUPPORT DETAIL

SCALE: NOT TO SCALE



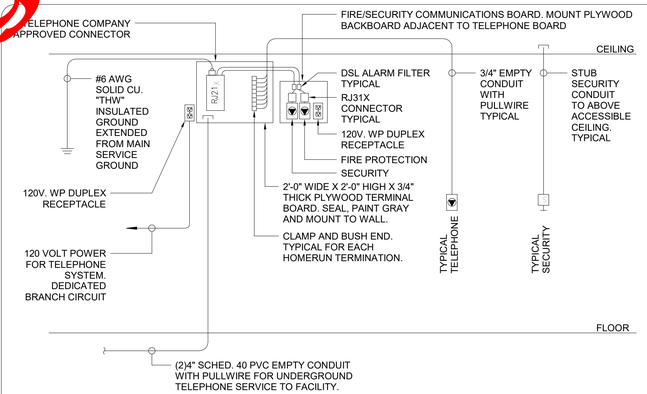
TIME CLOCK SCHEDULE:

CONTRACTOR TO SET TIME CLOCK SETTINGS AND VERIFY WITH OWNER:

1. LIGHTING SHALL BE "ON" DAILY FROM 8:00AM TO 11:00PM. (OR AS REQUIRED BY CLIENT)
2. DURING SET "OFF" TIME LIGHTING TO BE CONTROLLED BY A 2-HR MANUAL OVERRIDE SWITCH.
3. LIGHTING TIME-CLOCK, CONTACTOR REQUIREMENT NEED TO BE VERIFY BASED ON THE FINAL CONTROL STRATEGY AND CASAMBI GATEWAY PROGRAMMING.

5 LIGHTING CONTROL DIAGRAM

SCALE: NOT TO SCALE



TELEPHONE SYSTEM RISER DIAGRAM NOTES:

1. VERIFY, COORDINATE AND INCORPORATE THE REQUIREMENTS OF THE TELE. CO. AND ALL GOVERNING CODES IN FORCE, PRIOR TO COMMENCEMENT OF WORK.
2. FURNISH AND INSTALL A RACEWAY SYSTEM OF CABLE AND 3/4" CONDUIT AND PROPERLY SIZED JUNCTION BOXES WITH COVER PLATES FOR THE TELEPHONE SYSTEM AS SHOWN ON THE DRAWINGS AND IN THE DIAGRAM.
3. ALL CONDUIT SHALL ORIGINATE AT THE JUNCTION BOXES, BE NO SMALLER THAN 3/4" ELECTRICAL TRADE SIZE, BE CONTINUOUS AND TERMINATE AT THE SYSTEM TERMINAL BOARD NEATLY CLAMPED AND WITH BUSHED ENDS. HOME RUNS SHALL BE LIMITED TO ONE (1) TELEPHONE OUTLET IN ONE 3/4" CONDUIT.
4. THERE ARE MULTIPLE DEDICATED TELEPHONE LINES AND THEY SHALL BE SEGREGATED FROM EACH OTHER AND SHALL BE SEGREGATED FROM THE STANDARD TELEPHONE LINES.
5. FURNISH AND INSTALL A 200 LB'Z TEST NYLON PULL LINE IN ANY EMPTY CONDUIT. TAG EACH END OF PULL LINE AS TO SERVICE AND THE LOCATION OF THE OPPOSITE TERMINUS OF THE CONDUIT.
6. ALL CONDUITS SHALL CONTAIN ONE (1) HIGH QUALITY 4 PAIR CAT III PLENUM CABLE TELEPHONE LINES PULLED WITH PROPER INSTALLED JACKS. LINES MUST BE LABELED AT TELEPHONE BOARD.

6 TELEPHONE SYSTEM RISER DIAGRAM

SCALE: NOT TO SCALE

APPROVAL STAMP AREA

BLANK STREET

SHEET TITLE:

ELECTRICAL DETAILS

SHEET NUMBER:

E-400

Property of NY Engineers

PLUMBING SYMBOLS LIST

PLUMBING LEGENDS		PLUMBING ABBREVIATIONS	
SAN	SANITARY SEWER	AFF	ABOVE FINISH FLOOR
GW	GREASE WASTE	AHJ	AUTHORITY HAVING JURISDICTION
V	VENT PIPING	BFP	BACKFLOW PREVENTER
CW	COLD WATER	CD	CONDENSATE DRAIN
HW	HOT WATER	CO/FCO	CLEANOUT/ FLOOR CLEANOUT
HWR	RECIRCULATING HOT WATER	CW	COLD WATER
	BALANCING VALVE	DN	DOWN
EX.SAN	EXISTING SANITARY	ETR	EXISTING TO REMAIN
EX.CW	EXISTING COLD WATER	ET	EXPANSION TANK
FW	FILTER WATER LINE	EV	EQUIPMENT VENDOR
	BACKFLOW PREVENTER	EX	EXISTING
	ISOLATION VALVE	WCO	WALL CLEANOUT
	PIPE UP OR DOWN	FD	FLOOR DRAIN
	POINT OF CONNECTION	FS	FLOOR SINK
	PIPE UP	GC	GENERAL CONTRACTOR
	RE-CIRCULATION PUMP	GPM	GALLONS PER MINUTE
	FUNNEL DRAIN / FLOOR DRAIN	GW	GREASE WASTE
FCO	FLOOR CLEANOUT	FFD	FUNNEL DRAIN
	FLOOR SINK	HS	HAND SINK
	UNION	HW	HOT WATER
TYP	TYPICAL	HWR	HOT WATER RETURN
V	VENT	IW	INDIRECT WASTE
VLL	VERIFY WITH LANDLORD	KW	KILOWATTS
VTR	VENT THRU ROOF	LAV	LAVATORY
VIF	VERIFY IN FIELD	MS	MOP SINK
W	WASTE	NIC	NOT IN SCOPE
WC	WATER CLOSET	NG	NATURAL GAS
EWH	ELECTRIC WATER HEATER	PC	PLUMBING CONTRACTOR
WHA	WATER HAMMER ARRESTOR	V	VENT
SPS	SEE PLUMBING SCHEDULE	S	SANITARY
SAN	SANITARY	(E) S	EXISTING SANITARY

PLUMBING DRAWING LIST

P-001	PLUMBING SYMBOLS, ABBREVIATIONS, NOTES AND SCHEDULE
P-002	PLUMBING SPECIFICATION SHEET (01 OF 02)
P-003	PLUMBING SPECIFICATION SHEET (02 OF 02)
P-100	WASTE AND VENT PIPING PLAN
P-101	WATER SUPPLY PIPING PLAN
P-200	PLUMBING RISERS
P-300	PLUMBING DETAILS SHEET (01 OF 02)
P-301	PLUMBING DETAILS SHEET (02 OF 02)

APPLICABLE CODES

PHILADELPHIA BUILDING CODE 2018

PHILADELPHIA MECHANICAL CODE 2018

PHILADELPHIA PLUMBING CODE 2018

PHILADELPHIA ENERGY CONSERVATION CODE 2018

PHILADELPHIA FIRE CODE 2018

NATIONAL ELECTRIC CODE 2017

BACKFLOW PREVENTER DEVICE SCHEDULE

TAG	SERIES	SIZE	TYPE	USAGE	APPROVAL
BFP-1	LF009M2QT	1-1/4"	REDUCED PRESSURE BACKFLOW PREVENTER	DOMESTIC WATER CONNECTION	ASSE 1013, AWWA C511
BFP-2	SD-3	1/2"	DUAL CHECK VALVE W/ ATMOSPHERIC VENT	ESPRESSO MACHINE, PITCHER RINSER,	ASSE 1022
BFP-3	LF9D	1/2"	BACKFLOW PREVENTER W/ ATMOSPHERIC VENT	COFFEE BREWER, ICE MACHINE	ASSE 1012
BFP-4	LF007QT	1/2"	DUAL CHECK VALVE	WATER FILTER, COLD BREW TAP, WATER TAP	ASSE 1015
BFP-5	LF008PCQT	1/2"	SPILL RESISTANT VACUUM BREAKER	MOP SINK, CLEANING EQUIPMENT, DISHWASHER	ASSE 1056

NOTES:
CONTRACTOR TO VERIFY EXACT REQUIREMENTS OF ALL REQUIRED BACKFLOW DEVICES AND FIXTURES WITH AUTHORITIES HAVING JURISDICTION PRIOR TO BID.

ELECTRIC TYPE WATER HEATER WITH STORAGE

TAG	QTY.	MANUFACTURER	MODEL	ELECTRICAL DATA V/PH/HZ	TEMP. SET POINT DEG. F.	POWER INPUT (KW)	RECOVERY CAP. GPM @ 90°F RISE	DIMENSIONS	REMARKS
EWH-1	1	AO SMITH	DEN-80	208V/3PH/60HZ	140	10 KW	45	59.375" (H)* 24" (D)	1,2,3

NOTES:
1. FURNISH WITH EXPANSION TANK AS SPECIFIED ON PLANS.
2. MAINTAIN CLEARANCE AS PER MANUFACTURER RECOMMENDATION.
3. CSA CERTIFIED AND ASME RATED T&P RELIEF VALVE.

PLUMBING KITCHEN EQUIPMENT SCHEDULE

TAG	FIXTURE	QUANTITY	SAN / WASTE	VENT	COLD WATER	HOT WATER	FW	DESCRIPTION/REMARK
DS	ESPRESSO MACHINE	2	INDIRECT TO FLOOR SINK	--	--	--	1/2"	INSTALL COMPLETE WITH FLEXIBLE WATER CONNECTION, AND DRAIN INSTALLED BELOW THE COUNTER AND ROUTED TO THE NEAREST AVAILABLE APPROVED DRAIN, TERMINATED WITH AN INDIRECT CONNECTION. FIELD COORDINATE WITH MILLWORK.
E/E2	PITCHER RINSER	4	INDIRECT TO FLOOR SINK	--	1/2"	--	--	INSTALL COMPLETE WITH FLEXIBLE WATER CONNECTION, AND DRAIN INSTALLED BELOW THE COUNTER AND ROUTED TO THE NEAREST AVAILABLE APPROVED DRAIN, TERMINATED WITH AN INDIRECT CONNECTION. FIELD COORDINATE WITH MILLWORK.
F	COFFEE BREWER	1	--	--	--	--	1/2"	INSTALL COMPLETE WITH FLEXIBLE WATER CONNECTION INSTALLED BELOW THE COUNTER. FIELD COORDINATE WITH MILLWORK.
H	COLD BREW TAP	1	--	--	--	--	1/2"	INSTALL COMPLETE WITH FLEXIBLE WATER CONNECTION INSTALLED BELOW THE COUNTER. FIELD COORDINATE WITH MILLWORK.
I	UNDERBAR ICE BIN	1	INDIRECT TO FLOOR SINK	--	--	--	--	THE ICE BIN SHALL BE LOCATED ABOVE THE FLOOR SINK AS INDICATED ON THE PLANS. EQUIPMENT SHALL DRAIN WITH AN INDIRECT CONNECTION TO APPROVED RECEPTOR.
K	HAND WASH SINK (COUNTER MOUNTED)	2	2"	1-1/2"	1/2"	1/2"	--	INSTALL COMPLETE WITH FLEXIBLE WATER CONNECTION, AND DRAIN INSTALLED BELOW THE COUNTER AND ROUTED TO THE NEAREST AVAILABLE APPROVED DRAIN. FIELD COORDINATE WITH MILLWORK.
K2	PREP SINK	1	INDIRECT TO FUNNEL DRAIN	--	1/2"	1/2"	--	INSTALL COMPLETE WITH FLEXIBLE WATER CONNECTIONS, AND MANIFOLD DRAIN ROUTED TO THE FUNNEL DRAIN. DRAIN SHALL BE TRAPPED PRIOR TO GREASE TRAP CONNECTION.
N	3 COMP SINK	1	INDIRECT TO FUNNEL DRAIN	--	1/2"	1/2"	--	INSTALL COMPLETE WITH FLEXIBLE WATER CONNECTIONS, AND MANIFOLD DRAIN ROUTED TO THE FUNNEL DRAIN. DRAIN SHALL BE TRAPPED PRIOR TO GREASE TRAP CONNECTION.
Q	MOP SINK	1	3"	2"	1/2"	1/2"	--	INSTALL COMPLETE WITH FLEXIBLE WATER CONNECTION TO FAUCET WITH INTEGRAL VACUUM BREAKER, AND DRAIN STUBBED UP TO THE BOTTOM OF THE CABINET CONNECTION.
I2	ICE MAKER (FREE STANDING)	1	INDIRECT TO FLOOR SINK	--	--	--	1/2"	INSTALL COMPLETE WITH FLEXIBLE WATER CONNECTION, AND DRAIN HOSE ROUTED TO THE NEAREST AVAILABLE APPROVED DRAIN AND TERMINATED WITH AN INDIRECT CONNECTION.
O	WATER FILTER ASSEMBLY	1	INDIRECT TO FLOOR DRAIN	--	--	1/2"	1/2"	OWNER FURNISHED, CONTRACTOR INSTALLED.
R	DISHWASHER	1	INDIRECT TO FUNNEL DRAIN	--	--	1/2"	--	INSTALL COMPLETE WITH FLEXIBLE WATER CONNECTIONS, AND MANIFOLD DRAIN ROUTED TO THE FUNNEL DRAIN. DRAIN SHALL BE TRAPPED PRIOR TO GREASE TRAP CONNECTION. FIELD COORDINATE WITH ADJACENT EQUIPMENT.
H2	WATER TAP	1	--	--	--	--	1/2"	INSTALL COMPLETE WITH FLEXIBLE WATER CONNECTION INSTALLED BELOW THE COUNTER. FIELD COORDINATE WITH MILLWORK.
H3	HOT BREW TAP	1	--	--	--	--	1/2"	INSTALL COMPLETE WITH FLEXIBLE WATER CONNECTION INSTALLED BELOW THE COUNTER. FIELD COORDINATE WITH MILLWORK.
W2	SCOOP RINSER	1	INDIRECT TO FLOOR SINK	--	1/2"	--	--	INSTALL COMPLETE WITH FLEXIBLE WATER CONNECTION, AND FLEXIBLE DRAIN ROUTED TO THE NEAREST AVAILABLE APPROVED DRAIN, TERMINATED WITH AN INDIRECT CONNECTION. FIELD COORDINATE WITH ADJACENT EQUIPMENT.

PLUMBING FIXTURE SCHEDULE

MARK	FIXTURE	ROUGH-IN-SIZE SAN / WASTE	VENT	COLD WATER	HOT WATER	DESCRIPTION/REMARK	NOTE (#)
FS-1	FLOOR SINK	3"	2"	--	--	ZURN #1900 SANI-FLOOR RECEPTOR, 12"x12"x6 ACID RESISTING PORCELAIN ENAMEL INTERIOR AND TOP, CAST IRON BODY, SQUARE SLOTTED LIGHT DUTY GRATE, AND WHITE ABS DOME STRAINER. COORDINATE GRATE CONFIGURATION WITH KITCHEN ROUGH IN PLANS.	--
FD-1	FLOOR DRAIN	3"	2"	--	--	WATTS #FD104-A5 ROUND STRAINER, 5"Ø NICKEL BRONZE GRATE, EPOXY COATED CAST IRON BODY, CONVERTIBLE MEMBRANE CLAMP, AND ADJUSTABLE COLLAR.	--
FFD-1	FUNNEL DRAIN	3"	2"	--	--	INDIRECT WASTE FUNNEL (ZURN Z326 OR EQUIVALENT) WITH 6-3/4" DIA. OPENING AND 3" OUTLET.	--
FFD-2	FLOOR FUNNEL DRAIN	3"	2"	--	--	WATTS #FD1004-A5 FLOOR DRAIN WITH ROUND FUNNEL STRAINER, 5"Ø NICKEL BRONZE TOP, CAST IRON BODY, CONVERTIBLE MEMBRANE CLAMP, AND ADJUSTABLE COLLAR.	
MXV-1	MIXING VALVE	--	--	1/2"	1/2"	WATTS B[illegible]ATOR #LFMMV UNDER SINK THERMOSTATIC MIXING VALVE, WITH BRASS BODY AND INTEGRAL MOUNTING HOLES, TAMPER RESISTANT ENCLOSURE. SECURED TO STRUCTURE. 1070 APPROVED	--
FCO-1	FLOOR CLEANOUT	LINE SIZED	--	--	--	ZURN Z1400 ADJUSTABLE FLOOR CLEANOUT, DURA-COATED CAST IRON BODY, GAS AND WATER TIGHT TAPERED THREAD PLUG, AND 5"Ø ROUND POLISHED NICKEL BRONZE TOP.	--
WCO	WALL CLEANOUT	LINE SIZED	--	--	--	ZURN #1446 SQUARE WALL CLEANOUT, DURA-COATED CAST IRON BODY, GAS AND WATER TIGHT TAPERED THREAD PLUG, AND NICKEL BRONZE SECURED SMOOTH WALL ACCESS COVER AND FRAME.	--
WC-1	WATER CLOSET	4"	2"	--	--	AMERICAN STANDARD MODEL CL3324B-6DACTBI, FLUSH TANK TYPE WATER CLOSET, 1.2 GPF, VITREOUS CHINA, DUAL FLUSH, BACK INLET, P TRAP (CONVERTIBLE TO S TRAP), DOUBLE VORTEX HYGIENE RIM. SOFT CLOSE QUICK RELEASE SEAT. COORDINATE WITH ARCHITECT FOR FINAL SELECTION.	(1), (2), (3)
LAV-1	LAVATORY	2"	1-1/2"	2"	1/2"	ADA COMPLIANT AMERICAN STANDARD, LUCERNE MODEL 0355.034, WITH WALL BRACKET, OFFSET P-TRAP. PROVIDE CHICAGO FAUCETS 802-VE39VP317ABCP FAUCET, 4" FIXED CENTERS, 0.35 GPM. FLOW RESTRICTOR, AREATOR, POP-UP WASTE. PROVIDE WITH BODRICK B-822 SAOP DISPENSER. COORDINATE WITH ARCHITECT FOR FINAL SELECTION	(1), (2), (3)

NOTES:
1. INSTALL IN ACCORDANCE WITH ADA ACCESSIBILITY REQUIREMENTS AND ARCHITECTURAL COORDINATION.
2. FURNISH WITH MANUFACTURER'S RECCOMENDATIONS.
3. REFER TO ARCHITECTURAL DRAWINGS FOR FINISHES AND MOUNTING HEIGHTS.

PLUMBING EQUIPMENT SCHEDULE

MARK	FIXTURE	ROUGH-IN-SIZE SAN / WASTE	VENT	COLD WATER	HOT WATER	DESCRIPTION/REMARK
RCP	RECIRCULATION PUMP	--	--	1/2"	--	BELL&GOSSETT NBF-10S/LW, 52 WATTS, 115V/1 PH, 2 GPM @ 12 FT. HEAD
ET-1	EXPANSION TANK	--	--	3/4"	--	THERMXTROL ST-12C-DD, WITH STAINLESS STEEL BODY AND ASME DEEP DRAWN DIAPHRAGM FOR 6.4 GALLONS TOTAL CAPACITY/ 3.2 GALLONS ACCEPTANCE CAPACITY, 55 PSI FACTORY PRE-CHARGED.
WHA-1	WATER HAMMER ARRESTOR	--	--	LINE SIZED	--	PPP, INC. SERIES SC, FULLY MECHANICAL WATER HAMMER ARRESTER SIZED AND LOCATED PER THE MANUFACTURER SPECIFICATIONS.
GI-1	GREASE TRAP	4"	2"	--	--	GB2 GREASE INTERCEPTOR 35 GPM, 4" FPT INLET/OUTLET, WITH 3" PLAIN END FITTING ADAPTERS AND PEDESTRIAN-RATED COVER

SCOPE OF WORK

TENANT IMPROVEMENT PROJECT INVOLVES INTERIOR AND EXTERIOR ALTERATIONS TO A SMALL ASSEMBLY BUILDING, GROUP A-2 COFFEE SHOP, WITH ZONING C-3. TYPE II-A CONSTRUCTION. INSTALLATION OF MINOR NEW KITCHEN EQUIPMENT. MODIFICATIONS TO EXISTING PLUMBING SYSTEM AS PER PLANS. WHICH INCLUDE REUSING EXISTING SANITARY & WATER SUPPLY SERVICE MAIN & CONNECTING NEW SANITARY & WATER SUPPLY LINE TO EXISTING SERVICE MAIN. PROVIDE NEW 4" SANITARY & GREASE WASTE LINE FOR THE PROPOSED SPACE WITH NEW GREASE INTERCEPTOR.

PLUMBING GENERAL NOTES

1. THESE DRAWINGS ARE SCHEMATIC IN NATURE AND ARE NOT INTENDED TO SHOW ALL POSSIBLE CONDITIONS. IT IS INTENDED THAT A COMPLETE TENANT PLUMBING SYSTEM BE PROVIDED WITH ALL NECESSARY EQUIPMENT, ACCESSORIES, OPTIONS AND CONTROLS, COMPLETELY COORDINATED WITH ALL DISCIPLINES. ALL ITEMS AND LABOR REQUIRED FOR A COMPLETE TENANT PLUMBING SYSTEM IN ACCORDANCE WITH ALL APPLICABLE CODES, STANDARDS AND THE BASE BUILDING CONTRACT DOCUMENTS SHALL BE FURNISHED WITHOUT INCURRING ADDITIONS TO THE CONTRACT.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL NECESSARY FITTINGS AS REQUIRED BY ALL APPLICABLE CODES AND GOVERNING AUTHORITIES.
3. REFER TO THE ARCHITECTURAL DRAWINGS FOR EXACT PARTITION LAYOUTS, REFLECTED CEILING PLANS, DIMENSIONS, ETC.
4. VISIT SITE AND CAREFULLY EXAMINE EXISTING CONDITIONS PRIOR TO SUBMITTING BID. THE EXISTING CONDITIONS SHOWN ARE BASED ON DOCUMENTS PROVIDED BY OTHERS AND HAVE NOT BEEN VERIFIED BY THE ENGINEER. IF EXISTING CONDITIONS DIFFER FROM DRAWINGS IN SUCH A MANNER THAT WILL AFFECT PRICING, (I.E., PIPING, WATER HEATERS, FIXTURES, ETC.);CONTRACTOR WILL NOTIFY OWNER SO THAT A RESOLUTION CAN BE MADE PRIOR TO SUBMITTING BIDS. NO ALLOWANCE WILL BE MADE FOR LACK OF KNOWLEDGE OF EXISTING CONDITIONS.
5. ALL SANITARY WASTE AND GREASE WASTE PIPING SHALL HAVE A 1/4" PER FOOT SLOPE UNLESS OTHERWISE NOTED OR PER LOCAL CODE.
6. ALL SANITARY WASTE, VENT, AND WATER PIPING AND INSULATION SHALL BE AS SPECIFIED IN THE BASE BUILDING DOCUMENTS. ALL NEW WORK SHALL CONFORM TO BASE BUILDING STANDARD AS A MINIMUM.
7. VALVES AND FITTINGS SHALL BE OF SAME SIZE OF LINE ON WHICH THEY ARE LOCATED, UNLESS OTHERWISE INDICATED ON DRAWINGS.
8. CONTRACTOR SHALL COORDINATE ALL WORK WITH OTHER TRADES.
9. CONTRACTOR SHALL FIELD VERIFY ALL GIVEN MEASUREMENTS PRIOR TO LAYING AND CONNECTING ALL SANITARY AND WASTE PIPING AND NOTIFY ARCHITECT OF ANY DISCREPANCIES.
10. AIR CHAMBERS SHALL NOT BE CONSIDERED AN EQUAL TO WATER ARRESTORS AS SPECIFIED.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING FIRE RATING AND WEATHERPROOFING INTEGRITY OF ALL PIPING AND PENETRATIONS.
12. ALL WATER SUPPLY AND SANITARY LINES SHALL BE RUN AS CLOSE TO PLANS AS POSSIBLE WITH NO CHANGES IN SIZING.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL NECESSARY SUPPORTING DEVICES FOR ALL FIXTURES INCLUDED IN CONTRACT OR HEREIN SPECIFIED OR OTHERWISE.
14. CHANGES IN THE DIRECTION OF SANITARY PIPING SHALL NOT BE MADE WITH FITTINGS WHICH WILL CAUSE EXCESSIVE REDUCTION IN THE VELOCITY OF FLOW OR CREATE ANY OTHER ADVERSE EFFECT UNLESS PHYSICALLY IMPOSSIBLE (IE: USE OF SANITARY TEE IN A HORIZONTAL CONNECTION. USE OF A DOUBLE SANITARY TEE IN A VERTICAL STACK, IN GENERAL, USE OF SHORT-RADIUS FITTINGS FOR BRANCH TO HOUSE DRAIN OR STACK CONNECTION).
15. ALL DRAINAGE PIPING SHALL BE MARKED WITH THE SEAL OF APPROVAL OF THE NATIONAL SANITATION FOUNDATION.
16. PROVIDE ACCESS PANELS TO ALL VALVES WITHIN CHASES OR ABOVE NONACCESSIBLE CEILINGS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
17. SEE ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS OF PLUMBING FIXTURE MOUNTING HEIGHTS, AND DIMENSIONS.
18. CONTRACTOR SHALL VERIFY INVERT ELEVATIONS OF SANITARY AND GREASE TRAPS TO WHICH NEW SEWER LINES ARE TO BE CONNECTED BEFORE INSTALLATION OF NEW SEWER LINE.
19. ALL VENTS THROUGH ROOF SHALL BE MIN. 10'-0" FROM ANY AIR INTAKES.
20. CONTRACTOR SHALL INSTALL DIELECTRIC UNIONS AT CONNECTIONS OF DISSIMILAR METALS.
21. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS (INCLUDING PIPE ROUTING AND EQUIPMENT LOCATIONS) TO ARCHITECT/ENGINEER FOR REVIEW AND APPROVAL PRIOR TO THE INSTALLATION OR PURCHASING OF ANY PIPING AND/OR EQUIPMENT.
22. CLEANOUTS SHALL BE PROVIDED AT THE LOCATIONS INDICATED AND A MINIMUM WHERE REQUIRED BY CODE . FLOOR CLEANOUTS SHALL BE A MINIMUM OF 4" AND SHALL BE COMPLETE WITH A FLUSH PLUG AND REMOVABLE SCORIATED BRONZE FLOOR PLATE, PROVIDE CARPET BUTTONS IN CARPETED AREAS.
23. PROVIDE BACKFLOW PROTECTION DEVICES REQUIRED BY AGENCIES HAVING JURISDICTION. BACKFLOW DEVICES REQUIRING TESTING SHALL BE INSTALLED NO HIGHER THAN 5'-0" A.F.F.
24. PROVIDE CONDENSATE DRAIN FROM A/C UNITS TO APPROVED DRAIN. PROVIDE GAS PIPING TO UNITS. MAKE FINAL CONNECTIONS REQUIRED FOR OPERATION.
25. COORDINATE INSTALLATION OF PLUMBING WORK WITH OTHER TRADES SO AS TO AVOID UNNECESSARY DELAY OR INTERFERENCES. REVIEW ARCHITECTURAL AND EQUIPMENT SHEETS.
26. ALL PROPOSED POKE-THRU AND TRENCHING LOCATIONS TO BE REVIEWED AND APPROVED BY LANDLORD'S STRUCTURAL ENGINEER BEFORE CUTTING OR DRILLING IS PERMITTED.
27. PROVIDE QUARTER-TURN ISOLATION VALVES FOR ALL PLUMBING EQUIPMENTS.

GREASE INTERCEPTOR CALCULATIONS

Step 1: Flow rate to grease interceptor

Fixture flow rate: (cu in / 231) = gal x 0.75 / 2 min = 2 min flow rate

NAME	TYPE	DIMENSIONS	QTY	CU IN	FLOW RATE
3 Compartment Sink	3 Compartment Sink	14" x 10" x 10" (3)	1	4,200	6.82 GPM
Dishwasher	Dishwasher (Conveyor)	6 gal.	1	1,386	3 GPM
Prep Sink One Bowl	Prep Sink One Bowl	20" x 16" x 8"	1	2,560	4.16 GPM
Total					**13.97 GPM**

Step 2: Grease Production

Number of Seats x 4 turns per seat x Grease Production Value x Days between pump-out = Grease output

Number of seats in facility: 50
Grease production value: 0.005 lbs per serving (Coffee Shop: Low / No flatware)
Days between pump-outs: 90 days

50 x 4 x 0.005 x 90 = 90 lbs of FOG

APPROVAL STAMP AREA

BLANK STREET

SHEET TITLE:

PLUMBING SYMBOL, ABBREVIATIONS, NOTES AND SCHEDULE

SHEET NUMBER:

P-001

Property of NY Engineers

PLUMBING SPECIFICATIONS

1. GENERAL

THE "ARCHITECTURAL GENERAL CONDITIONS" GOVERN WORK UNDER THIS SECTION.

BEFORE SUBMITTING A PROPOSAL, THIS CONTRACTOR SHALL VISIT THE SITE OF THE WORK AND SHALL CAREFULLY EXAMINE THE DRAWINGS AND SPECIFICATIONS. IT IS EXPRESSLY UNDERSTOOD THAT THIS PROPOSAL IS BASED ON THE ABOVE REQUIREMENTS AND THAT IT COVERS EVERYTHING NECESSARY TO DO AND COMPLETE THE WORK.

2. INSPECTION AND COOPERATION

NO DEVIATION FROM THE DRAWINGS AND /OR SPECIFICATIONS WILL BE ALLOWED WITHOUT PRIOR WRITTEN APPROVAL OF ARCHITECT OR ENGINEER. THIS CONTRACTOR SHALL COOPERATE WITH THE OTHER CONTRACTORS TO ALLOW FOR THE INSTALLATION OF THEIR WORK AS WELL AS HIS OWN.

THIS CONTRACTOR SHALL BE RESPONSIBLE FOR HIS WORK FITTING IN PLACE WITHOUT CONFLICT WITH THE OTHER TRADES, WHERE PROPER PLANNING COULD AVOID INTERFERENCE.

3. CODES AND PERMITS

NOTHING IN THE DRAWINGS AND/OR SPECIFICATIONS SHALL BE INTERPRETED TO CONFLICT WITH ANY CITY OR PROVINCIAL LAW, REGULATION, CODE, ORDINANCE, RULING, OR FIRE UNDERWRITER'S REQUIREMENT APPLICABLE TO THIS CLASS OF WORK.

SHOULD THE DRAWINGS AND/OR SPECIFICATIONS CONFLICT WITH SUCH LAWS OR ORDINANCES, THE CONFLICTING PORTION OF THE WORK SHALL BE INSTALLED STRICTLY IN ACCORDANCE WITH SUCH LAWS AND ORDINANCES WITHOUT EXTRA COST.

THIS CONTRACTOR SHALL SECURE AND PAY FOR ALL NECESSARY PERMITS AND INSPECTIONS REQUIRED FOR THIS INSTALLATION OF HIS WORK.

4. ACCURACY OF DATA

THE INFORMATION GIVEN HEREIN AND ON THE DRAWINGS IS AS EXACT AS COULD BE SECURED, BUT ITS EXTREME ACCURACY IS NOT GUARANTEED.

THIS CONTRACTOR SHALL EXAMINE THE LOCATIONS AND VERIFY ALL MEASUREMENTS, DISTANCES, ELEVATIONS AND EXISTING PIPE SIZES BEFORE STARTING THE WORK AS ALL PIPING SYSTEMS SHOWN ON THE DRAWINGS ARE DIAGRAMMATIC ONLY. THIS CONTRACTOR SHALL PROVIDE ALL NECESSARY OFFSETS, RAISED AND DROPS IN PIPING AND DUCTWORK AS REQUIRED BY BUILDING CONDITIONS AT NO ADDITIONAL COST.

PLUMBING DRAWINGS SHALL NOT BE USED FOR GENERAL CONSTRUCTION DIMENSIONS OR FOR TYPE OF MATERIAL USED. FOR EXACT BUILDING LAYOUT, DIMENSIONS AND BUILDING MATERIAL USED, THIS CONTRACTOR SHALL REFER TO THE ARCHITECTURAL DRAWINGS.

5. SHOP DRAWINGS

SHOP OR INSTALLATION DRAWINGS, FOUNDATION PLANS, EQUIPMENT OR APPARATUS DRAWINGS SHALL BE FURNISHED BY THIS CONTRACTOR. THESE DRAWINGS SHALL BE CLEARLY MARKED INDICATING WHICH ITEMS ARE TO BE SUPPLIED AND SHALL STATE CAPACITIES, SIZES AND GENERAL DESCRIPTION OF ALL EQUIPMENT. ANY CHANGES FROM THE SPECIFIED ITEMS SHALL BE NOTED ON THE SUBMITTALS.

SHOP DRAWINGS OF SPECIAL APPARATUS OR EQUIPMENT WHICH IS TO BE FABRICATED INDIVIDUALLY FOR THIS PROJECT AND IS NOT DESCRIBED BY STANDARD MANUFACTURER'S DRAWINGS OR BULLETINS SHALL BE SUBMITTED FOR PROCESSING BEFORE FABRICATION.

THESE DRAWINGS SHALL BE SUBMITTED IN A TIMELY MANNER.

IT SHALL BE THIS CONTRACTORS RESPONSIBILITY TO MAINTAIN LIAISON WITH ALL PARTIES CONCERNED WITH THE MATERIAL SUBMITTED. THIS CONTRACTOR SHALL NOT PURCHASE ANY EQUIPMENT UNTIL SHOP DRAWINGS HAVE BEEN PROCESSED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY FEES ACCRUED FROM THE RETURN OF FIXTURES PURCHASED PRIOR TO THE REVIEW OF SHOP DRAWINGS AND THAT ARE NOT APPROVED.

THIS CONTRACTOR SHALL SUBMIT NO DRAWINGS WITHOUT NOTATION INDICATING DATE OF CONTRACTOR'S REVIEW AND SIGNATURE OF CHECK FOR CONTRACTOR TOGETHER WITH CONTRACTOR'S NAME AND PROJECT IDENTIFICATION.

ARCHITECT'S PROCESSING WILL NOT CONSTITUTE A COMPLETE CHECK BUT WILL INDICATE ONLY THAT GENERAL METHOD OF CONSTRUCTION AND DETAILING IS SATISFACTORY.

ARCHITECT'S PROCESSING WILL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR ERRORS SINCE THIS CONTRACTOR IS SOLELY RESPONSIBLE FOR DIMENSIONS AND DESIGNS OF ADEQUATE CONNECTIONS, DETAILS AND SATISFACTORY CONSTRUCTION OF ALL WORK, AS WELL AS FURNISHING MATERIALS AND WORKMANSHIP REQUIRED BY DRAWINGS AND SPECIFICATIONS WHICH MAY NOT BE INDICATED ON THE SUBMITTALS WHEN APPROVED.

CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING ENGINEER REVIEW DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS. REVIEW OF A SPECIFIC ITEM SHALL NOT INCLUDE REVIEW OF AN ASSEMBLY OF WHICH THE ITEM IS A COMPONENT. THE CONTRACTOR IS RESPONSIBLE FOR: EQUIPMENT VOLTAGES AND DIMENSIONS TO BE CONFIRMED AND CORRELATED WITH ALL DISCIPLINES PRIOR TO PURCHASE; INFORMATION THAT PERTAINS SOLELY TO THE FABRICATION PROCESSES OR TO THE MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES OF CONSTRUCTION; COORDINATION OF THE WORK WITH THAT OF ALL OTHER TRADES AND PERFORMING ALL WORK IN A SAFE AND SATISFACTORY MANNER.

6. SUBSTITUTIONS OF EQUIPMENT OR MATERIAL

THE BRAND NAMES OF EQUIPMENT OR MATERIALS SPECIFIED HEREIN SHALL ESTABLISH QUALITY, CAPACITY, TYPE AND DIMENSIONS TO BE INCLUDED IN THE BASE BID.

APPROVAL OF SUBSTITUTED ITEMS WILL BE BASED ON ABILITY AND CAPACITY TO PERFORM FUNCTION SERVED, QUALITY AND AVAILABILITY OF PARTS AND SERVICE, QUALITY OF EQUIPMENT, DELIVERY SCHEDULE, ETC. THE ARCHITECT SHALL REVIEW ALL SUCH REQUESTS BUT RESERVES THE SOLE RIGHT OF JUDGEMENT TO APPROVE OR REJECT THE PROPOSED SUBSTITUTIONS.

ACCEPTANCE OR REJECTION OF PROPOSED SUBSTITUTIONS SHALL NOT CAUSE ADDITIONAL COST. ANY CHANGES OF PIPING, DUCTWORK, ELECTRICAL CONTROLS OR INSTALLATION REQUIRED BECAUSE OF THE SUBSTITUTION OR EQUIPMENT SHALL BE PAID FOR BY THIS CONTRACTOR PROPOSING THE SUBSTITUTION.

7. ERECTION OF APPARATUS

ALL WORK SHALL BE DONE UNDER THE PERSONAL SUPERVISION OF THIS CONTRACTOR WHO SHALL PROVIDE A COMPETENT FOREMAN TO LAY OUT ALL WORK. ALL WORK SHALL BE LAID OUT WITH DUE REGARD FOR THE SPACE REQUIREMENTS OF THE OTHER CONTRACTORS. THIS CONTRACTOR SHALL REPORT ANY CONFLICTS OR DIFFICULTIES IN REGARD TO THE INSTALLATION IMMEDIATELY.

WHERE CROWDED LOCATIONS EXIST OR WHERE THERE IS A POSSIBILITY OF CONFLICT BETWEEN TRADES, THIS CONTRACTOR SHALL MAKE COMPOSITE DRAWINGS SHOWING THE EXACT LOCATIONS OF PIPES, DUCT, CONDUIT AND EQUIPMENT. DRAWINGS SHALL BE BASED ON FIELD MEASUREMENTS AND AFTER CONSULTATION AND AGREEMENT BETWEEN THE TRADES, SHALL BE APPROVED BY ARCHITECT AND ENGINEER BEFORE INSTALLATION OF THE WORK.

EQUIPMENT OF A TYPE TO REQUIRE REPLACEMENT, SERVICING, ADJUSTING OR MAINTENANCE SHALL BE LOCATED TO ALLOW EASY ACCESS AND SPACE FOR REMOVAL OF INTERNAL ASSEMBLIES, IT REQUIRED.

8. EXCAVATION AND BACKFILL

THIS CONTRACTOR SHALL DO ALL EXCAVATION REQUIRED TO INSTALL PIPES AND EQUIPMENT SHOWN ON THE PLANS OR REQUIRED FOR PROPER OPERATION. EXCESS EXCAVATION BELOW THE REQUIRED LEVEL SHALL BE BACKFILLED WITH EARTH AND THOROUGHLY TAMPED. UTILITIES SERVICES LINES SHALL BE INSPECTED AND APPROVED BY THE PROPER INSPECTION AUTHORITY BEFORE BACKFILLING.

INSTALL PLASTIC PIPE AND FITTINGS IN STRICT ACCORDANCE WITH THE INSTALLATION RECOMMENDATIONS OF THE PIPE AND FITTINGS MANUFACTURER, APPENDIX X1 OF ASTM D2265 (STORAGE AND INSTALLATION PROCEDURES FOR PLASTIC DRAIN, WASTE, AND VENT PIPING) AND FOR BURIED PIPE ASTM D2321 (STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY-FLOW APPLICATIONS). SUCH INSTRUCTIONS SHALL INCLUDE BUT ARE NOT LIMITED TO CUTTING, SOLVENT CEMENTING AND PRIMING, JOINTS, CONNECTIONS, TRANSITIONS, ALIGNMENT AND GRADE, TRENCHING, BEDDING, BACKFILL AND COMPACTION, SUPPORTS AND SPACING AND ALLOWANCE FOR THERMAL EXPANSION.

CAST IRON PIPING TRENCHING SHALL BE IN ACCORDANCE TO THE CAST IRON SOIL PIPE AND FITTINGS HANDBOOK ISSUED BY THE CAST IRON SOIL PIPE INSTITUTE.

THE BOTTOM OF TRENCHES SHALL BE TAMPED HARD AN GRADED TO SECURE THE REQUIRED FALL. ROCK, WHERE ENCOUNTERED SHALL BE EXCAVATED TO A DEPTH OF SIX INCHES (6") BELOW THE BOTTOM OF THE PIPE, AND BEFORE THE PIPE IS LAID, THE SPACE BETWEEN BOTTOM PIPE AND ROCK SURFACE SHALL BE FILLED WITH GRAVEL. IF TRENCHES ARE DEEPER THAN BOTTOM OF FLOORING OR CLOSER THAN THREE FEET (3'0") TO FOOTING THEY MUST BE FILLED WITH COHESIVE SOIL AND COMPACTED TO 95% OF MAXIMUM DENSITY, STANDARD PROCTOR, ASTM. D- 698. ALL OTHER EXCAVATIONS UNDER FLOOR SLABS COMPACTED TO 95% STANDARD PROCTOR.

WHEN EXCESS DIRT HAS BEEN REMOVED, THE TRENCH SHALL BE BROUGHT TO THE REQUIRED LEVEL WITH SAND AND GRAVEL FIRMLY COMPACTED.

TRENCHES AND EXCAVATION SHALL BE BACKFILLED IN 6" LAYERS OF EARTH, FREE FROM CLODS, AND STONES THOROUGHLY TAMPED TO A DEPTH OF 12" ABOVE THE PIPE. AFTER THAT DEPTH HAS BEEN REACHED, BACKFILLING SHALL BE DONE IN 12" LAYERS, THOROUGHLY TAMPED.

THIS CONTRACTOR SHALL BE RESPONSIBLE FOR ANY REPAIRS TO ANY DAMAGES OR SAGS TO THE PIPING SYSTEMS THAT OCCUR FROM THE IMPROPER EXCAVATION AND BACKFILL METHODS.

9. EQUIPMENT SUPPORTS

ANY STRUCTURAL STEEL MEMBERS REQUIRED TO ADAPT THE EQUIPMENT AND PIPING AS FURNISHED BY THIS CONTRACTOR, TO THE BUILDING STEEL OR STRUCTURE, SHALL BE INCLUDED IN THE BID OF THE CONTRACTOR FURNISHING THE EQUIPMENT OR PIPING. HANGING OF ALL EQUIPMENT AND REQUIRED SUPPORTING STEEL AND BRACING SHALL BE FURNISHED BY THE CONTRACTOR WHO SUPPLIES THE EQUIPMENT.

10. CUTTING AND PATCHING

THIS CONTRACTOR SHALL INCLUDE ALL CUTTING, PATCHING AND PAINTING OF PATCHED AREAS REQUIRED FOR AND RESULTING FROM THE INSTALLATION OF ALL OF THIS CONTRACTOR'S WORK, EXCEPT WHERE NOTED OTHERWISE.

ALL OPENINGS AROUND PIPE PENETRATIONS THROUGH SMOKE OR FIRE-RATED FLOORS, CEILINGS OR WALLS SHALL BE SEALED AIRTIGHT WITH MATERIAL HAVING A RATING EQUAL TO THE MATERIAL OF THE WALL, CEILING AND/OR FLOOR PENETRATED.

ALL PATCHING SHALL BE NEATLY FINISHED TO THE SATISFACTION OF THE ARCHITECT.

11. ACCESS PANELS

THIS CONTRACTOR SHALL LOCATE AND FURNISH FOR INSTALLATION BY THE GENERAL CONTRACTOR, ALL ACCESS PANELS AS REQUIRED FOR ACCESS TO VALVES, AND THE PROPER SERVICING OF EQUIPMENT AND LINES INSTALLED UNDER THE CONTRACT.

ALL PANELS SHALL BE MILCOR, STYLE "M" FOR MASONRY, "A" FOR ACOUSTICAL TILE AND "K" FOR PLASTER; EXCEPT FOR FIRE-RATED UL 1-1/2 HOUR AND "B" LABEL ACCESS PANELS SHALL BE FURNISHED IN FIRE-RATED WALLS AND CEILINGS AS INDICATED ON THE DRAWINGS. ACCESS DOORS SHALL BE 12" X 12" MINIMUM SIZE FOR VALVES.

12. DIELECTRIC UNIONS

FOR THE PREVENTION OF ELECTROLYTIC CORROSION AT CONNECTIONS BETWEEN PIPE OF DISSIMILAR METALS OR BETWEEN PIPE AND EQUIPMENT CONNECTIONS OF DISSIMILAR METALS, PROVIDE DIELECTRIC UNIONS OR FLANGES.

13. MOTORS, STARTERS AND DISCONNECTS

UNLESS SPECIFIED TO BE FURNISHED WITH EQUIPMENT, ALL MOTOR STARTERS AND DISCONNECT SWITCHES SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR.

14. JOINTS AND FITTINGS

THREADS ON SCREWED PIPE SHALL BE STANDARD AMERICAN BUTT AND TAPERED. PIPE SHALL BE REAMED OF BURRS AND KEPT CLEAR OF SCALE, DIRT AND SHAVINGS. TREADS SHALL BE MADE WITH FLAKE GRAPHITE AND LUBRICATING OIL OR APPROVED PIPE COMPOUND ON THE MALE THREAD ONLY.

COPPER-TO-STEEL AND COPPER-TO-BRASS JOINTS SHALL BE MADE WITH SILVER SOLDER. ALL OTHER COPPER-TO-COPPER JOINTS ABOVE GROUND SHALL BE MADE WITH LEAD FREE SOLDER. COPPER TUBING SHALL BE CUT SQUARE, BURRS REMOVED AND CARE SHALL BE TAKEN TO KEEP THE LINES FREE OF DIRT AND MOISTURE. ALL TUBING AND FITTINGS SHALL BE THOROUGHLY CLEANED.

WELDED PIPE SHALL HAVE BEVELED SINGLE "V" TYPE JOINTS FOR WHICH PIPE HAS BEEN BEVELED TO 45 DEGREES. WELD SHALL BE ONE-FOURTH GREATER THICKNESS THAN THE PIPE. CONNECTIONS TO EQUIPMENT, ACCESSORIES, ETC. SHALL BE MADE BY MEANS OF FLANGES AND/OR ADAPTERS.

UNIONS SHALL BE PROVIDED AT EACH SCREWED VALVE AND UNIONS OR FLANGES AT EACH EQUIPMENT CONNECTION.

15. EXPANSION JOINTS

FURNISH AND INSTALL FLEXONICS EXPANSION JOINTS IN PIPING SYSTEM WHERE SHOWN OR NECESSARY FOR EXPANSION AND CONTRACTION.

EXPANSION JOINTS IN PIPE 4" AND GREATER SHALL BE THE PACKLESS TYPE WITH STAINLESS STEEL BELLOWS AND HAVE WELDED OR FLANGED END. JOINTS SHALL HAVE TRAVERSE AS INDICATED ON THE PLANS. EXPANSION JOINTS SHALL BE OF THE CONTROLLED FLEXING TYPE.

EXPANSION JOINTS IN COPPER PIPE UNDER 4" IN SIZE SHALL BE OF THE COMPENSATOR TYPE CONSTRUCTED OF TWO-PLY STAINLESS STEEL BELLOWS AND CARBON STEEL SHROUDS AND END FITTINGS, INTERNAL GUIDES AND ANTI-TORQUE DEVICES.

EXPANSION JOINTS IN STEEL PIPE UNDER 4" IN SIZE SHALL BE OF THE COMPENSATOR TYPE CONSTRUCTED OF TWO-PLY STAINLESS STEEL ELBOWS AND CARBON STEEL SHROUDS AND END FITTINGS, INTERNAL GUIDES AND ANTI-TORQUE DEVICES.

PROVIDE GUIDES ON EACH SIDE OF EXPANSION JOINT, AT 4 PIPE DIAMETERS, 14 PIPE DIAMETERS, AND A THIRD GUIDE AS RECOMMENDED BY THE MANUFACTURER.

16. PIPE FLEXIBLE CONNECTIONS

FLEXIBLE PIPE CONNECTIONS SHALL BE RESISTOFLEX #R6904 OR APPROVED EQUAL FLEXIBLE CONNECTIONS MADE FROM TEFLON. PROVIDE FOR MOVEMENT IN PIPING BY USE OF SWING JOINTS AT CONNECTION OF ALL BRANCHES TO MAINS AND RISERS. ALL BRANCHES FROM MAINS AND RISERS SHALL HAVE 1/4" CLEARANCE BETWEEN PIPE INSULATION AND SLEEVE TO PERMIT PIPE MOVEMENT.

17. VALVES

THIS CONTRACTOR SHALL FURNISH AND INSTALL ALL VALVES OF ONE MANUFACTURER, FIGURE NUMBER AND TYPE THROUGHOUT THE ENTIRE INSTALLATION OF THE WORK, UNLESS OTHERWISE SPECIFIED. THE FOLLOWING NUMBERS ARE FROM THE CRANE CATALOG. EQUAL VALVES OF REPUTABLE MANUFACTURERS, SUCH AS HAMMOND, NIBCO-SCOTT AND/OR JENKINS WILL BE CONSIDERED EQUIVALENT.

ALL VALVES SHALL BE BUILT FOR A MINIMUM OF 125 PSIG WORKING PRESSURE.

ISOLATION VALVES SHALL BE PROVIDED ON ALL INDIVIDUAL FIXTURES AND FIXTURE GROUPS.

CHECK VALVES 2-1/2" AND SMALLER SHALL BE #36 (SCREWED ENDS) OR #1342 (SOLDER-JOINT ENDS) SWING-TYPE WITH BRONZE BODY AND BRONZE TRIM.

BUTTERFLY VALVES 2" AND LARGER SHALL BE #12F. IRON BODY, CAST-IRON WAFER W/LOCK LEVER. BALL VALVE UP TO 3" IN SIZE SHALL BE APOLLO SERIES #70 BRONZE VALVE WITH CHROME-PLATED BALL AND TEFLON SEAT.

GAS LINE COCKS UP TO 4" SHALL BE #320. 1/2 PSI FOR INDOOR APPLIANCE CONNECTIONS SHALL CONFORM TO ANSI Z21.15 AND CSA 9.1, 5 PSI FOR INDOOR SHUTOFF SHALL CONFORM TO CGA 91-002 AND ASME B16.44.

HOSE END VALVES SHALL BE #438 GATE VALVES WITH HOSE END NIPPLES.

18. PIPE SLEEVES AND COLLARS

THIS CONTRACTOR SHALL LAY OUT ALL HIS WORK AND SET SLEEVES IN NEW CONSTRUCTION AS CONCRETE FORMS AND WALL ARE ERECTED SO AS TO BE ABLE TO INSTALL HIS WORK WITHOUT CUTTING OR BREAKING OF FLOORS OR WALLS. ALL SLEEVES FOR INSULATED PIPING SHALL BE LARGE ENOUGH TO ALLOW INSULATION TO PASS THROUGH SLEEVE.

ALL SLEEVES PASSING THROUGH FLOORS WHICH ARE WATERPROOFED SHALL BE COPPER TUBING SLEEVES EXTENDING 1" ABOVE FINISHED FLOOR. ALL OTHER SLEEVES SHALL BE 24 GAUGE GALVANIZED PIPES AND SLEEVES TO BE THOROUGHLY PACKED WITH WATERPROOF SEALANT AND THE REMAINING SPACE FILLED WITH MASTIC AND MUST BE WATERTIGHT.

ALL SLEEVES PASSING THROUGH INNER WALLS SHALL BE STANDARD PIPE THIMBLES EQUAL TO THE THICKNESS OF THE WALL.

SPACES BETWEEN PIPES AND SLEEVES THROUGH OUTSIDE WALLS, ABOVE GRADE, SHALL BE CAULKED WITH CAULKING COMPOUND; THOSE BELOW GRADE SHALL BE MADE WATERTIGHT.

SPACE AROUND ALL PIPING THROUGH FIRE AND SMOKE RATED PARTITIONS OR FLOORS SHALL BE SEALED AIRTIGHT WITH MATERIALS OR EQUIPMENT AS SPECIFIED UNDER FIRESTOPPING.

ALL PIPE PENETRATIONS OF SLABS ON GRADE SHALL BE WRAPPED WITH #15 BUILDING FELTS OR FOAM WRAP.

19. HANGERS

A. PIPE HANGER AND SUPPORT PRODUCTS INSTALLATION
   a. VERTICAL PIPING: MSS TYPE 8 OR 42 CLAMPS.
   b. INDIVIDUAL STRAIGHT, HORIZONTAL PIPING RUNS: 100 FEET AND LESS: MSS TYPE 1, ADJUSTABLE, STEEL CLEVIS HANGERS. LONGER THAN 100 FEET: MSS TYPE 43, ADJUSTABLE ROLLER HANGERS. LONGER THAN 100 FEET IF INDICATED: MSS TYPE 49, SPRING CUSHION ROLLS.
   c. MULTIPLE, STRAIGHT, HORIZONTAL PIPING RUNS 100 FEET OR LONGER: MSS TYPE 44, PIPE ROLLS. SUPPORT PIPE ROLLS ON TRAPEZE.
   d. BASE OF VERTICAL PIPING: MSS TYPE 52, SPRING HANGERS.

B. SUPPORT VERTICAL PIPING AND TUBING AT BASE AND AT EACH FLOOR.
C. ROD DIAMETER MAY BE REDUCED ONE SIZE FOR DOUBLE-ROD HANGERS, TO A MINIMUM SIZE OF 3/8 INCH.
D. INSTALL HANGERS FOR ALL PIPING PER MSS SP-69, MANUFACTURERS MANUALS AND AS PER HANGER SUPPORT DETAIL ON DRAWINGS
E. INSTALL SUPPORTS FOR VERTICAL COPPER TUBING EVERY 10 FEET.
F. INSTALL SUPPORTS FOR VERTICAL STEEL PIPING EVERY 15 FEET.
G. SUPPORT PIPING AND TUBING NOT LISTED IN THIS ARTICLE ACCORDING TO MSS SP-69 AND MANUFACTURER'S WRITTEN INSTRUCTIONS.

20. DAMAGE BY LEAKS

THIS CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGES TO THE GROUNDS, WALKS, ROADS, ALL BUILDING COMPONENTS AND FINISHES, PIPING SYSTEMS, ELECTRICAL SYSTEMS AND THEIR EQUIPMENT AND CONTENT, CAUSED BY LEAKS IN THE PIPING SYSTEMS BEING INSTALLED OR HAVING BEEN INSTALLED HEREIN. ALL REPAIRS WILL BE MADE AT THIS CONTRACTOR'S EXPENSE.

21. PIPE MARKERS

FURNISH AND INSTALL BRADY #B-350 THIN FILM OR APPROVED EQUAL PIPE MARKERS. MARKERS SHALL BE 1-1/8" HIGH FOR PIPES 3" AND UNDER AND 2-1/4" HIGH FOR PIPES OVER 3". MARKERS SHALL INDICATE TYPE OF SERVICE AND DIRECTION OF FLOW.

PIPE MARKERS SHALL BE LOCATED:
- AT EQUIPMENT CONNECTIONS
- AT ACCESS DOORS, AT BRANCH MAINS
- ON ALL ACCESSIBLE PIPE A MAXIMUM OF 75' BETWEEN MARKERS.
- AT ALL PENETRATIONS ON EITHER SIDE OF PENETRATION

22. FLOOR, WALL AND CEILING PLATES

PIPES PASSING THROUGH FLOORS AND FINISHED CEILINGS, FITTED WITH CHROME- PLATED PLATES OR ESCUTCHEONS LARGE ENOUGH TO COMPLETELY CLOSE OPENING AROUND PIPE OR PIPE COVERING AND FLOOR SUPPORT IN THE CASE OF VERTICAL PIPING, SECURELY HELD IN PLACE; CAULK WATERTIGHT AROUND PIPE IN UNFINISHED ROOMS.

23. FIRE STOPPING

THE PENETRATIONS OF FIRE AND/OR SMOKE RATED WALLS OR FLOORS SHALL BE PROTECTED BY A UL APPROVED MATERIAL TO RETAIN THE INTEGRITY OF THE TIME-RATED CONSTRUCTION BY MAINTAINING AS EFFECTIVE BARRIER AGAINST THE SPREAD OF FLAME, SMOKE AND GASES. IT SHALL BE USED IN ALL DUCT CABLE, CONDUIT AND PIPING PENETRATIONS THROUGH FLOOR SLABS AND TIME-RATED WALLS, AND/OR FLOORS. THE RATING OF THE FIRESTOPPING SHALL EQUAL THE RATING OF THE TIME-RATED ASSEMBLY.

FIRESTOPPING MATERIAL SHALL BE 3M FIRE BARRIER SEALING SYSTEM OF APPROVED EQUAL. FIRESTOPPING MATERIAL SHALL CONSTITUTE ONE OR MORE OF THE FOLLOWING PRODUCTS:
- CAULK: CP-25
- PUTTY: #303
- WRAP/STRIP: FS195
- COMPOSITE SHEET: CS195
- PENETRATING SEALING SYSTEMS: 7900 SERIES

INSTALLATION OF FIRESTOPPING SHALL BE INSTALLED IN ACCORDANCE WITH AND IN STRICT CONFORMITY WITH MANUFACTURER'S PRINTED INSTRUCTIONS AS TO SURFACE PREPARATION, INSTALLATION AND QUALITY CONTROL. AREAS OF WORK SHALL REMAIN ACCESSIBLE UNTIL INSPECTION AND APPROVAL BY THE APPLICABLE CODE AUTHORITIES.

ON INSULATED PIPES, THE FIRE-RATING CLASSIFICATION SHALL NOT REQUIRE REMOVAL OF THE INSULATION.

QUALITY ASSURANCE:
SUBMIT MANUFACTURER'S PRODUCT DATA, LETTER OF CERTIFICATION OR CERTIFIED LABORATORY TEST REPORT THAT THE MATERIAL OR COMBINATION OF MATERIALS MEET THE REQUIREMENTS SPECIFIED IN ASTM E-814 AND ARE SO CLASSIFIED IN UL'S BUILDING MATERIALS DIRECTORY. MATERIALS SHALL MEET AND BE ACCEPTABLE FOR USE BY ALL MODEL BUILDING CODES. MATERIALS SHALL MEET THE REQUIREMENTS OF NFPME61- LIFE SAFETY CODE AND NFPA 70 NATIONAL ELECTRICAL CODE.

SUBMITTALS:
SUBMIT SHOP DRAWINGS, PRODUCT DATA, CERTIFICATES AND MANUFACTURER'S INSTALLATION INSTRUCTIONS. SUBMIT MANUFACTURER'S PRODUCT DATA FOR ALL MATERIALS AND PREFABRICATED DEVICES, PROVIDING DESCRIPTIONS SUFFICIENT FOR IDENTIFICATION AT THE JOB SITE. INCLUDE MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION.

SUBMIT SHOP DRAWINGS SHOWING PROPOSED MATERIAL, REINFORCEMENT, ANCHORAGE, FASTENINGS, AND METHOD OF INSTALLATION. CONSTRUCTION DETAILS SHALL ACCURATELY REFLECT ACTUAL JOB CONDITIONS.

24. CLEANUP AND ADJUSTMENT

ALL PARTS WORK LEFT CLEAN: EQUIPMENT, FIXTURES, VALVES, PIPES AND FITTINGS CLEAN OF GREASE AND METAL CUTTINGS. ANY DISCOLORATION OR OTHER DAMAGE TO PORTIONS OF BUILDING, ITS FINISH OR FURNISHING DUE TO THIS CONTRACTOR'S FAILURE TO PROPERLY CLEAN INTERIOR OF PIPING, REPAIRED AT THIS CONTRACTOR'S EXPENSE. ALL AUTOMATIC CONTROL DEVISES ADJUSTED FOR PROPER OPERATION. ALL SURPLUS MATERIALS AND ANY RUBBISH REMOVED AS IT ACCUMULATES. ALL EQUIPMENT LEFT IN SAFE, PROPER OPERATING CONDITION.

DAMAGE TO ANY PORTIONS MUST BE REPAIRED OF THE PART REPLACED BY THIS CONTRACTOR AND ALL PARTS LEFT WITHOUT DENTS, SCRATCHES, THROUGH THE FINISH PAINT, LOOSE PLASTER, STAINS OR OTHER BLEMISHES.

25. PIPE TESTING AND START-UP

ALL PIPING TO BE TESTED IN ACCORDANCE WITH THE FOLLOWING:
- WATER - 100 PSI WATER PRESSURE

ALL TESTING MUST HOLD FOR AT LEAST 24 HOURS WITHOUT LOSS OF PRESSURE OR VACUUM. ALL CONCEALED PIPING SHALL BE TESTED IN THE PRESENCE OF THE OWNER'S REPRESENTATIVE PRIOR TO COVERING. BEFORE STARTING ANY SYSTEM, ALL EQUIPMENT SHALL BE LUBRICATED PER MANUFACTURERS REQUIREMENTS BY THIS CONTRACTOR. TEST ENTIRE BUILDING SYSTEMS UNDER FULL LOAD CONDITIONS FOR A PERIOD OF NOT LESS THAT ONE (1) WEEK DURING WHICH TIME THE OPERATING PERSONNEL SHALL BE FULLY INSTRUCTED IN THE OPERATION AND MAINTENANCE OF THE PLANT. AFTER THE PLANT IS IN FULL OPERATION, THIS CONTRACTOR IS TO FURNISH WHATEVER ADDITIONAL SERVICE IS REQUIRED TO RECALIBRATE AND RESET CONTROLS, VALVES, BALANCING COCKS, ETC. TO ENSURE PROPER OPERATION OF THIS SYSTEM.

26. TESTING AND BALANCING

THIS CONTRACTOR SHALL AT THE TIME OF INSTALLATION ENSURE THAT ALL DEVICES TO COMPLETE TESTING AND BALANCING AS DIRECTED HEREIN ARE FURNISHED AND INSTALLED DURING FABRICATION AND INSTALLATION OF WORK. THIS WORK SHALL BE PERFORMED PRIOR TO TURNOVER TO BUILDING OCCUPANT AND WITH AMPLE TIME TO MAKE ANY NECESSARY REPAIRS OR CHANGES TO ACHIEVE A PROPERLY OPERATING SYSTEM.

27. SEISMIC RESTRAINTS ON PLUMBING EQUIPMENT

ALL PLUMBING EQUIPMENT SHALL BE PROVIDED WITH SEISMIC RESTRAINING SERVICES AS REQUIRED BY LOCAL BUILDING CODES. CONTRACTOR SHALL HAVE LOCAL BUILDING OFFICE REVIEW EACH PIECE OF EQUIPMENT WHEN INSTALLED AND THE CONTRACTOR SHALL INSTALL ALL REQUIRED TIE DOWN, ANCHORS, STRAPS OR OTHER DEVICES REQUIRED.

28. GUARANTEE

THIS CONTRACTOR SHALL GUARANTEE ALL EQUIPMENT, MATERIALS, AND LABOR FURNISHED UNDER THIS CONTRACT TO BE FREE FROM DEFECTS FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION AND SHALL REPAIR OR REPLACE ANY EQUIPMENT OR MATERIAL WHICH IS DEFECTIVE OR IMPROPERLY INSTALLED. IN ADDITION, THIS CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY DAMAGE TO THE BUILDINGS AND ITS CONTENTS OR OTHER EQUIPMENT, CAUSED BY DEFECTS OR IMPROPER INSTALLATION OF EQUIPMENT OR MATERIALS INSTALLED UNDER THIS SECTION OF THE SPECIFICATIONS.

29. TEMPORARY WATER

TEMPORARY WATER SERVICE (IF REQUIRED) TO THE BUILDING SHALL BE PROVIDED BY THIS CONTRACTOR TO THE BUILDING FOR CONSTRUCTION PURPOSES. THIS CONTRACTOR TO MAINTAIN WATER SERVICE AS REQUIRED DURING CONSTRUCTION.

PROPERTY OF NYC

APPROVAL STAMP AREA

BLANK STREET

SHEET TITLE:

PLUMBING SPECIFICATION SHEET (01 OF 02)

SHEET NUMBER:

P-002

30. DOMESTIC WATER SERVICE

THIS CONTRACTOR SHALL COORDINATE EXACT AVAILABLE DELIVERY PRESSURE AND PROVIDE ALTERNATE FEE FOR A PRESSURE BOOSTING SYSTEM IF PRESSURE IS LESS THAN REQUIRED PRESSURE. PROVIDE PRESSURE REDUCING VALVE WITH STRAINER IN SERVICE LINE IF REQUIRED BY LOCAL CODES OR PRESSURE IS ABOVE 80 PSI.

JOINTS SHALL BE CLEANED AND DEBURRED AS RECOMMENDED BY THE MANUFACTURER AND FEDERAL, STATE, AND LOCAL CODES AND PRESS FITTINGS ARE AN ACCEPTABLE IF ALLOWED BY LOCAL AHJ. WHERE PRESS FITTING S ARE NOT ALLOWED SOLDERED AS LISTED BELOW. FLUX SHALL BE NON-CORROSIVE. VICTAULIC GROUVED COUPLINGS ARE ACCEPTABLE ALTERNATE IF ALLOWED BY LOCAL AHJ.

ABOVE GRADE - WHERE FITTINGS ARE SOLDERED BOTH FITTINGS AND TUBING SHALL BE CLEANED AS DESCRIBED ABOVE. UNDER NO CIRCUMSTANCES SHALL DISSIMILAR METALS COME INTO DIRECT CONTACT WITH COPPER TUBING; E.G., GALVANIZED STRAPPING, HANGERS, OR CLAMPS TO SECURE THE TUBING. BELOW GRADE, OR FLOOR SLAB ON EARTH OR STONE FILL - HIGH TEMPERATURE, SOLDER, 1200 DEG. F OR GREATER MELTING POINT.

NOTE: WATER PIPE TO BE PROPERLY SECURED AND ALIGNED SO AS NOT TO EXERT VERTICAL OR HORIZONTAL STRESSES ON THE SEATING OF THE MATING (MALE AND FEMALE) SURFACES OF THE UNIONS.

MATERIALS - UNDERGROUND: TYPE "K" COPPER TUBE, SOFT TEMPER
MATERIALS - ABOVEGROUND: TYPE "L" COPPER TUBE, HARD DRAWN.
ALTERNATE MATERIALS - PEX-A PIPING IS AN ACCEPTABLE ALTERNATE IF NOT INSTALLED IN A PLENUM AND APPROVED BY LOCAL CODE OFFICIALS. VIEGA, PROPRESS COPPER ½-INCH THROUGH 4-INCH WITH EPDM SEALING ELEMENT AND/OR VIEGA, PROPRESS 304 OR 316 STAINLESS ½-INCH THROUGH 4-INCH WITH EPDM OR FKM SEALING ELEMENT IS ACCEPTABLE IF ALLOWED BY LOCAL CODE.

31. STERILIZATION OF DOMESTIC WATER SYSTEM

THE ENTIRE DOMESTIC WATER DISTRIBUTION SYSTEM SHALL BE FLUSHED CLEAR OF ANY DEBRIS AND THOROUGHLY STERILIZED WITH A SOLUTION CONTAINING NOT LESS THAN 100 PARTS PER MILLION OF AVAILABLE CHLORINE. THE SOLUTION SHALL REMAIN IN THE SYSTEM FOR TWO (2) HOURS DURING WHICH TIME ALL VALVES AND FAUCETS SHALL BE OPENED AND CLOSED SEVERAL TIMES. AFTER STERILIZATION, THE SOLUTION SHALL BE FLUSHED FROM THE SYSTEM WITH CLEAN WATER UNTIL THE RESIDUE CHLORINE CONTENT IS NOT GREATER THAN THE CHLORINE LEVEL OF THE AVAILABLE WATER SUPPLY.

STERILIZATION SHALL BE PERFORMED PRIOR TO TURNOVER TO OCCUPANT AS TO NOT ALLOW FOR THE WATER SYSTEM TO REMAIN STAGNANT FOR LONGER THAN 24 HOURS.

THIS CONTRACTOR SHALL HAVE THE WATER TESTED AND APPROVED BY THE HEALTH DEPARTMENT.

32. SANITARY SEWERS

THIS CONTRACTOR SHALL CONNECT SANITARY SEWER AS INDICATED ON THE DRAWINGS. VERIFY DIRECTION OF FLOW PRIOR TO ANY ROUGH-IN WORK.

EACH PIPE SHALL BE LAID TO THE LINE AND GRADE INDICATED ON THE PLANS AND SUCH A MANNER AS TO FORM A CLOSE CONCENTRIC JOINT WITH THE ADJOINING PIPE AND TO PRESENT OFFSETS IN FLOW LINE. ALL PIPE SHALL BE LAID WITH THE BELLS UPHILL.

THE SUB-GRADES SHALL BE KEPT FREE FROM WATER WHILE PIPES ARE BEING LAID. ALL PIPE SHALL BE LAID WITH ENDS ABUTTING AND TRUE TO LINE AND GRADE. THEY SHALL BE FITTED AND MATCHED SO THAT THEY WILL FORM A SEWER WITH A SMOOTH AND UNIFORM INVERT.

EACH JOINT SHALL BE CLEANED AS IT IS LAID AND ALL BELLS SHALL BE CLEANED BEFORE PIPES ARE JOINED.

33. WASTE, SOIL, DRAIN, GREASE WASTE AND VENT PIPING

ABOVE GRADE WASTE AND SOIL PIPING SHALL BE HUBLESS CAST IRON PIPE WITH STAINLESS STEEL COUPLINGS AND ELASTOMERIC GASKETS WITH A MINIMUM 4 BANDS PER COUPLING.

THE DRAINS, SOIL WASTE, GREASE WASTE AND VENT PIPE AND FITTINGS INCLUDING EXTENSIONS TO SEWERS SHALL BE OF THE SIZES INDICATED ON THE DRAWINGS. PIPE AND FITTINGS TO BE, CYLINDRICAL AND FREE FROM CRACKS OR OTHER DEFECTS.

ALL TRENCHES TO BE DUG WITH GRADUAL FALL, THE PIPING TO BE STRAIGHT AND FREE FROM ANY SAGS.

THE ARRANGEMENT OF THE SYSTEM SHALL BE AS SHOWN ON THE DRAWINGS AND AS DIRECT AS POSSIBLE, AVOIDING ALL UNNECESSARY OFFSETS. THE STACKS SHALL BE FIRMLY SECURED IN POSITION WITH WROUGHT IRON CLAMPS AT EACH FLOOR.

ALL CHANGES IN DIRECTION OF SOIL, GREASE WASTE OR WASTE PIPE SHALL BE MADE BY MEANS OF "Y" BRANCHES AND 1/8 BENDS. NINETY DEGREE SHORT TURN FITTINGS WILL NOT BE PERMITTED EXCEPT TO INDIVIDUAL FIXTURE CONNECTIONS OR WHERE THE FLOW IS FROM THE HORIZONTAL TO THE VERTICAL.

SANITARY WASTE & GREASE WASTE CLEANOUTS ARE TO BE PROVIDED AT EVERY TURN GREATER THAN 45°, AT INTERVALS OF NO GREATER THAN 50', AT ANY STACK ROUTING BELOW GRADE. NOT ALL CLEANOUTS LOCATIONS MAY BE SHOWN ON THE DRAWING.

ALL TRAP SCREWS MUST BE OF FULL SIZE OF PIPE UP TO 4" AND 4" FOR ALL OVER THIS SIZE. CONNECTIONS BETWEEN OUTLETS OF FIXTURES AND SOIL OR WASTE PIPE SHALL BE MADE WITH "Y" BRANCHES TO "TY" BRANCHES WHEREVER POSSIBLE. ALL HORIZONTAL SOIL WASTE AND VENT PIPE SHALL BE GRADED TOWARD OUTLETS AND PIPE NOT BURIED SHALL BE INSTALLED ABOVE THE CEILING OR CLOSE AS POSSIBLE TO THE CONSTRUCTION ABOVE WHERE THERE IS NO CEILING.

THE STACKS SHALL BE EXTENDED THROUGH ROOF OF BUILDING TO POINTS NOT LESS THAT 12" ABOVE ROOF. EXTENSIONS THROUGH ROOF SHALL BE MADE WATER- TIGHT BY MEANS OF A LEAD FLASHING OF FOUR POINTS SHEET LEAD SPREAD OVER A DISTANCE OF NOT LESS THAN TWELVE INCHES (12") AROUND PIPE. THIMBLE TO BE SOLDERED TO BASE AND EXTENDED OVER AND TURNED DOWN INTO END OF PIPE IN AN APPROVED MANNER.

ALL CLEANOUTS IN FLOORS TO BE JOSAM #8360 OR EQUAL. ADJUSTABLE CLEANOUT WITH BODY TO MATCH THE PIPING MATERIAL, CAST BRASS SCORIATED COVER WITH LETTERS C.O. CAST IN TOP AND CONCEALED BRASS PLUG.

CLEANOUTS SHALL BE INSTALLED IN BASE OF EACH STACK. CONCEALED CLEANOUTS SHALL HAVE JOSAM #8600 OR EQUAL. CAST BRASS CHROMIUM PLATED FLAT ACCESS COVER PLATES.

ALL JOINTS OF CAST IRON PIPE SHALL BE MADE WITH MANUFACTURERS RECOMMENDED JOINING MATERIAL. AT THE CONTRACTOR'S OPTION HE MAY USE NO-HUB PIPE, FITTINGS, COUPLING AND GASKETS IN LIEU OF CAULKED JOINTS IF APPROVED BY THE LOCAL CODES AND ORDINANCES.

34. VENT FLASHING

EACH VENT FLASHING SHALL BE MADE WATER-TIGHT WITH THE ROOF BY PROPER WATER PROOF FLASHING.

35. SANITARY WASTE, GREASE WASTE, VENT AND WATER CONNECTIONS

THE MINIMUM SIZE OF WASTE, VENT, AND WATER CONNECTION TO THE INDIVIDUAL FIXTURES SHALL BE AS SHOWN ON DRAWINGS.

WHERE FIXTURES ARE GROUPED PIPES SHALL BE INCREASED IN PROPORTION: IN ALL CASES THE SIZE ARRANGEMENTS AND CONNECTIONS OF WATER AND VENT PIPING SHALL NOT BE LESS THAN SIZE OF OPENINGS SPECIFIED FOR FIXTURES AND APPEARING IN FIXTURE LIST. NO WATER PIPE LESS THAN 1/2" SHALL BE INSTALLED IN CONCEALED PLACES SUCH AS IN PARTITIONS OR WALLS ETC.

36. PLUMBING FIXTURES AND TRIM

PLUMBING FIXTURES SHALL BE FURNISHED AND INSTALLED IN A NEAT AND WORKMANLIKE MANNER WITH PROPER CONNECTIONS TO SUPPLY AND DRAINAGE PIPING. ALL FIXTURES SHALL BE FREE OF FLAWS AND DEFECTS OF ANY SORT IN MATERIAL AND WORKMANSHIP AND SHALL OPERATE PERFECTLY WHEN INSTALLED IN ACCORDANCE WITH MANUFACTURER'S DIRECTION.

MATERIALS: FIXTURES SHALL BE THE STANDARD PRODUCT OF ONE OF THE MANUFACTURER'S LISTED IN THE PLUMBING FIXTURE SCHEDULE, OR ANY EQUAL UNIT APPROVED BY THE ENGINEER.

INSTALLATION: THIS CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF THE PLUMBING FIXTURES AND ACCESSORIES DURING CONSTRUCTION. HE SHALL REPLACE AT HIS EXPENSE ANY MATERIAL THAT IS MARRED, SCRATCHED, DEFACED AND/OR BROKEN. FIXTURES SHALL BE COVERED WITH BUILDING PAPER AND WOODEN CRATES DURING CONSTRUCTION.

CONTRACTOR SHALL COORDINATE EXACT AND PROVIDE ROUGH-IN LOCATIONS WITH FIELD CONDITIONS AND PLANS PRIOR TO ANY WORK. CONTRACTOR SHALL CONNECT ALL FIXTURES TO THE PLUMBING SYSTEM.

ALL FIXTURES TO BE INSTALLED TO DIMENSIONS WITH CHROME-PLATED SUPPLIES WITH STOPS. ALL FIXTURES INSTALLED TO DIMENSIONS SHOWN ON THE DRAWINGS. ALL WATER CLOSETS SHALL HAVE CAULKING BETWEEN THE FLOOR AND UNDERSIDE OF THE WATER CLOSET.

PLUMBING EQUIPMENT: (REFER TO SCHEDULE ON THE DRAWINGS).

37. WATER HEATER ** COMMERCIAL STORAGE TYPE ELECTRIC WATER HEATER **

A. TANKS SHALL 80 GALLONS CAPACITY AND SHALL HAVE 150 PSI WORKING PRESSURE AND BE EQUIPPED WITH EXTRUDED HIGH DENSITY ANODE.

B. PROVIDE ASSOCIATED EXPANSION TANK (ET-1).

C. ALL INTERNAL SURFACES OF THE HEATER(S) EXPOSED TO WATER SHALL BE GLASS-LINED WITH AN ALKALINE BORO SILICATE COMPOSITION THAT HAS BEEN FUSED-TO-STEEL BY FIRING AT A TEMPERATURE RANGE OF 1400°F TO 1600°F.

D. ELECTRIC HEATING ELEMENTS SHALL BE LOW WATT DENSITY GOLDENROD 1" SCREW-IN TYPE.

E. EACH ELEMENT SHALL BE CONTROLLED BY AN INDIVIDUALLY MOUNTED THERMOSTAT AND HIGH TEMPERATURE CUT-OFF SWITCH ALL INTERNAL CIRCUITS SHALL BE FUSED. THE OUTER JACKET SHALL BE OF BAKED ENAMEL FINISH AND SHALL BE PROVIDED WITH FULL SIZE CONTROL COMPARTMENT FOR PERFORMANCE OF SERVICE AND MAINTENANCE THROUGH HINGED FRONT PANEL AND SHALL ENCLOSE THE TANK WITH FOAM INSULATION. ELECTRICAL JUNCTION BOX WITH HEAVY DUTY TERMINAL BLOCK SHALL BE PROVIDED. THE DRAIN VALVE SHALL BE LOCATED IN THE FRONT FOR EASE OF SERVICING.

38. HOT WATER CIRCULATOR

HOT WATER CIRCULATOR SHALL BE AS SCHEDULED. ACCEPTABLE SUBSTITUTE MANUFACTURERS ARE B&G, GOULDS, AND GRUNDFOS, SUBJECT TO SUBSTITUTION REQUIREMENTS. HOT WATER CIRCULATORS USED IN POTABLE WATER SYSTEMS SHALL BE LEAD-FREE.

39. ENERGY CONSERVATION NOTES

1. ALL DOMESTIC WATER PIPING ABOVE GRADE SHALL BE INSULATED WITH FIRE-RETARDANT,FACTORY-APPLIED JACKET. PROVIDE COLD WATER PIPING WITH FACTORY-APPLIED VAPOR BARRIER. INSULATION REQUIREMENT SHOULD COMPLY WITH PHILADELPHIA ENERGY CODE 2018, C403.11.3 TABLE C403.11.3.

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

2. AS PER PHILADELPHIA ENERGY CODE 2018, SECTION C404.6.3 THE CONTROL OF ON PUMPS THAT CIRCULATE WATER BETWEEN A WATER HEATER AND A HEATED-WATER STORAGE TANK SHALL LIMIT OPERATION OF THE PUMP FROM HEATING CYCLE STARTUP TO NOT GREATER THAN 5 MINUTES AFTER THE END OF THE CYCLE.

3. AS PER THE PHILADELPHIA ENERGY CODE 2018, SECTION C404.7 HEATED-WATER CIRCULATION SYSTEMS SHALL BE PROVIDED WITH A CIRCULATION PUMP. THE SYSTEM RETURN PIPE SHALL BE A DEDICATED RETURN PIPE OR A COLD WATER SUPPLY PIPE. CONTROLS FOR CIRCULATING HOT WATER SYSTEM PUMPS SHALL START THE PUMP BASED UPON THE IDENTIFICATION OF A DEMAND FOR HOT WATER WITHIN THE OCCUPANCY. THE CONTROLS SHALL AUTOMATICALLY TURN OFF THE PUMP WHEN THE WATER IN THE CIRCULATION LOOP IS AT THE DESIRED TEMPERATURE AND WHEN THERE IS NO DEMAND FOR HOT WATER.

A. THE CONTROLS SHALL LIMIT THE TEMPERATURE OF THE WATER ENTERING THE COLD WATER PIPING TO NOT GREATER THAN 104°F (40°C).

B. 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 WATER OF A FIXTURE OR SENSING THE FLOW OF HOT OR TEMPERED WATER TO A FIXTURE FITTING OR APPLIANCE. CONTROLS SHALL LIMIT THE TEMPERATURE OF THE WATER ENTERING THE COLD WATER PIPING TO NOT GREATER THAN 104°F (40°C).

4. HOT WATER SYSTEM PIPING IS DESIGNED AS PER MAXIMUM ALLOWED PIPE LENGTH METHOD PER C404.5.1. THE HW PHILADELPHIA ENERGY CODE 2018 SECTION PIPE LENGTH FROM THE NEAREST SOURCE OF HEATED WATER TO THE TERMINATION OF THE FIXTURE SUPPLY PIPE SHALL BE AS PER FOLLOWING TABLE.

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

PIPING MATERIAL & INSULATION

APPLICATION	PIPING MATERIAL	PIPE FITTING/WELD	PIPE SCHEDULE/TYPE	INSULATION MATERIAL	INSULATION THICKNESS
SANITARY WASTE & VENT					
BELOW GRADE	CAST IRON (HUB & SPIGOT)	COMPRESSION GASKET OR CAULKED JOINT	ASTM A74		
ABOVE GRADE	HUBLESS CAST IRON (CI-NO HUB)	MECHANICAL JOINT COUPLING NO-HUB COUPLING	ASTM A888 / CISPI 301		
DOMESTIC WATER					
ABOVE GRADE HOT WATER	HARD COPPER	SOLDER	TYPE L	FIBERGLASS	< 1" PIPE: 1", ≥ 1" PIPE: 1 1/2"
ABOVE GRADE COLD WATER	HARD COPPER	SOLDER	TYPE L	FIBERGLASS	< 1" PIPE: 1/2", ≥ 1" PIPE: 1"
CONDENSATE DRAIN					
INDOORS	COPPER DWV	SOLDER, SOLVENT	TYPE M, 40	ARMAFLEX	

NOTES:
1. PLASTIC SANITARY PIPING IS NOT USED WITHIN THIS COMMERCIAL TENANT SPACE. ALL SANITARY WASTE AND VENT PIPING SHALL COMPLY WITH PHILADELPHIA PLUMBING CODE SECTION P-702 FOR COMMERCIAL OCCUPANCIES.
2. USE MATERIAL ONLY AS APPROVED BY AUTHORITIES HAVING JURISDICTION.
3. INSULATION VALUES MUST MEET MINIMUM REQUIREMENT OF ENERGY CODE ADOPTED BY THE AUTHORITY HAVING JURISDICTION, OR LISTED HEREIN, WHICHEVER IS GREATER.

Property of NY Engineers

APPROVAL STAMP AREA

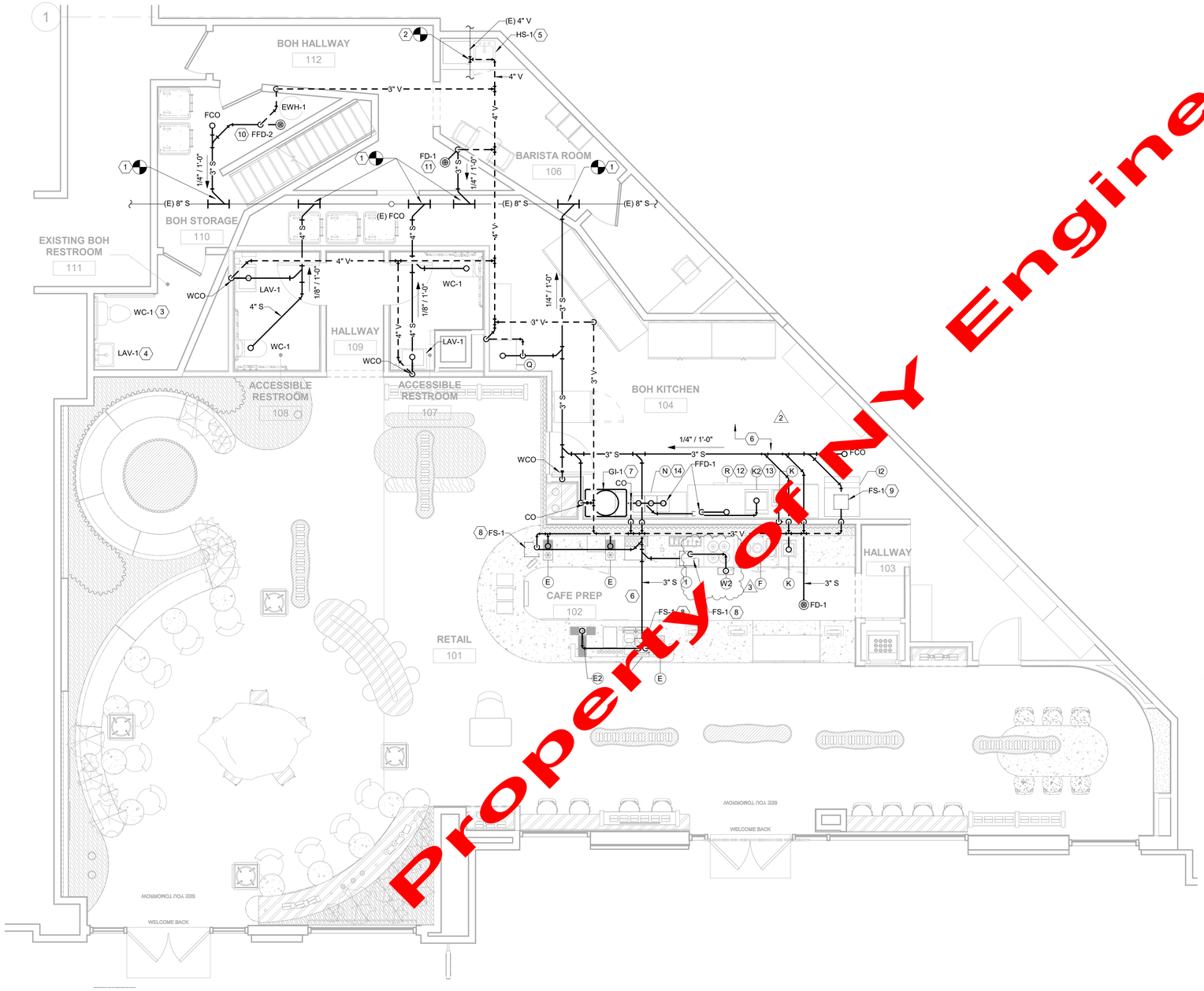
BLANK STREET

SHEET TITLE:

PLUMBING SPECIFICATION SHEET (02 OF 02)

SHEET NUMBER:

P-003



Property of NY Engineers

A. NO ROOF PENETRATIONS PERMITTED WITHIN ROOF WATER PLY. REFER TO ROOF PLAN FOR LOCATIONS.

B. REFER TO RISER DIAGRAM ON SHEET P200 FOR ALL WASTE AND VENT SIZES.

C. VERIFY WITH THE LOCAL BUILDING AUTHORITY THAT CONDENSATE DRAINAGE CAN BE ROUTED TO APPROVED PLUMBING FIXTURE.

D. THE SUSPENSION OF ANY ITEMS FROM BASE BUILDING STRUCTURE BY MEANS OF DRILLING, WELDING, SHOOTING ARE PROHIBITED. CONTRACTOR TO MAKE SURE ALL THE EQUIPMENTS AND PIPES TO BE SUPPORTED BY MEANS OF THE BEAM CLAMPS.

E. ALL EXPOSED PIPING IN PUBLIC AREAS SHALL BE INSTALLED AS TIGHT AS POSSIBLE TO THE WARM SIDE OF THE EXPOSED STRUCTURE.

F. THE INSTALLATION OF THE PLUMBING SYSTEMS SHALL BE COORDINATED WITH ALL ELECTRICAL AND MECHANICAL EQUIPMENT, STRUCTURAL SLAB AND FRAMING.

G. REFER TO PLUMBING SHEET P-001 FOR PLUMBING FIXTURE AND EQUIPMENT SCHEDULES INCLUDING SPECIFICATIONS AND ROUGH-IN SIZES.

H. PLUMBING CONTRACTOR SHALL COORDINATE WITH THE KITCHEN EQUIPMENT SUPPLIER FOR THE COMPLETE INSTALLATION AND SERVICE CONNECTIONS OF ALL KITCHEN EQUIPMENT.

I. PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLETE INSTALLATION OF ALL PLUMBING TO KITCHEN EQUIPMENT. ALL INDIRECT DRAIN LINES SHALL BE INSTALLED WITH APPROVED AIR GAPS. ALL WATER LINES UNDER EQUIPMENT/MILLWORK SHALL BE INSTALLED SECURELY.

J. REFER TO ARCHITECTURAL AND MILLWORK DRAWINGS FOR DETAILS OF COUNTERTOPS, CASEWORK, AND OTHER FIXTURES, SHOWING EXACT LOCATION OF OPENINGS FOR PLUMBING ITEMS BEING INSTALLED. COORDINATE THE COMPLETE INSTALLATION WITH THE GENERAL CONTRACTOR.

K. ALL WALL PIPING STUB-OUTS SHALL BE SECURELY TIED TO THE STRUCTURE WITH SUFFICIENT BACKING TO ELIMINATE MOVEMENT.

L. ALL OPENINGS IN DWV SYSTEMS RESULTING FROM INSTALLATION ROUGH-IN SHALL BE PROTECTED WITH A TEST PLUG THAT IS SECURELY LOCKED IN PLACE UNTIL FINAL FINISHED CONNECTIONS ARE INSTALLED.

M. PLUMBING CONTRACTOR TO ARRANGE AND PAY FOR ALL REQUIRED FEES, PERMITS, AND MISCELLANEOUS COSTS ASSOCIATED WITH THE PLUMBING WORK PER LOCAL PLUMBING CODES.

N. ALL PENETRATIONS IN FIRE RATED WALL ASSEMBLIES SHALL BE SEALED WITH UL LISTED FIRE STOPPING MATERIAL.

O. PLUMBING CONTRACTOR TO FLUSH AND SANITIZE ALL WATER LINES PRIOR TO THE INSTALLATION OF THE FILTRATION SYSTEM.

P. ALL EXISTING SANITARY WASTE LINES SHALL BE INSPECTED AND CLEARED OF ANY DEBRIS AND CAMERA SCOPED TO VERIFY THEY ARE IN GOOD WORKING CONDITION FOR INTENDED REUSE. NOTIFY THE OWNER'S REPRESENTATIVE IF ANY REMEDIATION WORK IS REQUIRED.

Q. ANY FLOOR PENETRATION SHALL BE COORDINATED AND APPROVED BY LANDLORD PRIOR TO INSTALLATION.

R. NO PIPING OR EQUIPMENT SHALL BE INSTALLED IN THE BASEMENT BELOW SPACE ABOVE ANY EXISTING EQUIPMENT AND SHALL NOT OBSTRUCT ANY REQUIRED AREA FOR SERVICING, MAINTENANCE, AND CLEANING OF ANY EXISTING EQUIPMENT. COORDINATE COMPLETE INSTALLATION WITH LANDLORD PRIOR TO START OF CONSTRUCTION.

S. PLUMBING IS NOT PERMITTED IN ANY DEMISING PARTITIONS. FURROUT THE WALL AS NECESSARY.

T. CONTRACTOR SHALL FIELD-VERIFY IF THE BASEMENT OR FLOOR BELOW IS ACCESSIBLE TO ALL TENANTS FOR THE INSTALLATION OF CLEANOUTS; OTHERWISE, PROVIDE FLOOR CLEANOUTS.

U. PLUMBING VENTING IS DESIGNED AS PER 2018 PHILADELPHIA PLUMBING CODE SECTION 919 (PHILADELPHIA SINGLE STACK/VENTING SYSTEM).

GENERAL NOTES - WASTE AND VENT

NTS | C

1. FIELD VERIFY AND CONNECT NEW 3"/4" SANITARY LINE TO THE EXISTING SANITARY SEWER MAINS. PLUMBING CONTRACTOR SHALL FIELD VERIFY LOCATION OF EXISTING SEWER MAINS, VERIFY SIZE AND INVERT. NOTIFY THE ENGINEER IF INVERT CAN NOT BE MET. REVIEW AND COORDINATE WITH LL BEFORE COMMENCING.
2. CONTRACTOR SHALL CONNECT NEW 4" VENT LINE TO THE EXISTING VENT LINE IN THE SPACE. VERIFY EXACT LOCATION, SIZE, ROUTING AND CONNECTION POINT PRIOR TO BID. NOTIFY THE ENGINEER / ARCHITECT WITH ANY DISCREPANCIES PRIOR TO BID.
3. EXISTING WATER CLOSET TO BE REPLACED WITH NEW AT THE SAME LOCATION. EXISTING SANITARY AND VENT PIPING, INCLUDING ALL ASSOCIATED ACCESSORIES AND FITTINGS, TO REMAIN. CONTRACTOR SHALL FIELD VERIFY THE CONDITION OF EXISTING PIPING AND REPLACE ANY PIPING OR FITTINGS FOUND TO BE DAMAGED, CORRODED, OR NOT IN SERVICEABLE CONDITION.
4. EXISTING LAVATORY TO BE REPLACED WITH NEW AT THE SAME LOCATION. EXISTING SANITARY AND VENT PIPING, INCLUDING ALL ASSOCIATED ACCESSORIES AND FITTINGS, TO REMAIN. CONTRACTOR SHALL FIELD VERIFY THE CONDITION OF EXISTING PIPING AND REPLACE ANY PIPING OR FITTINGS FOUND TO BE DAMAGED, CORRODED, OR NOT IN SERVICEABLE CONDITION.
5. EXISTING HAND SINK TO BE REPLACED WITH NEW AT THE SAME LOCATION. EXISTING SANITARY AND VENT PIPING, INCLUDING ALL ASSOCIATED ACCESSORIES AND FITTINGS, TO REMAIN. CONTRACTOR SHALL FIELD VERIFY THE CONDITION OF EXISTING PIPING AND REPLACE ANY PIPING OR FITTINGS FOUND TO BE DAMAGED, CORRODED, OR NOT IN SERVICEABLE CONDITION.
6. CONTRACTOR TO COORDINATE THE SANITARY PIPING WITH THE BASE BUILDING STRUCTURAL FOOTING AND ADJUST THE PIPING AS PER SITE CONDITIONS. NOTIFY THE ENGINEER / ARCHITECT WITH ANY DISCREPANCIES PRIOR TO BID.
7. THE PROPOSED LOCATION IS FOR A SCHIER GB-2 GREASE INTERCEPTOR, WHICH FEATURES BUILT-IN FLOW CONTROL AND INTEGRAL AIR RELIEF/ANTI-SIPHON CAPABILITIES. INSTALL AS PER MANUFACTURER'S INSTRUCTIONS.
8. ROUTE INDIRECT DRAIN LINES FROM KITCHEN EQUIPMENTS TO ADJACENT FLOOR SINK WITH APPROVED AIR GAP AS PER LOCAL CODE.
9. ROUTE INDIRECT DRAIN LINES FROM ICE MACHINE (#I2) TO ADJACENT FLOOR SINK WITH APPROVED AIR GAP AS PER LOCAL CODE.
10. ROUTE T & P RELIEF DRAIN FROM WATER HEATER (EWH-1) AND EMERGENCY DRAIN FROM BFP-1 TO ADJACENT FLOOR FUNNEL DRAIN (FFD-2) WITH APPROVED AIR GAP.
11. ROUTE INDIRECT WASTE FROM WATER FILTER SYSTEM (#O) & RO TANK TO ADJACENT FLOOR DRAIN (FD-1) WITH APPROVED AIR GAP.
12. ROUTE INDIRECT DRAIN LINES FROM DISHWASHER (#R) TO FUNNEL DRAIN (#FFD-1) WITH APPROVED AIR GAP AS PER LOCAL CODE.
13. ROUTE INDIRECT DRAIN FROM PREPARATION SINK(#K2) TO FUNNEL DRAIN (#FFD-1) WITH APPROVED AIR GAP AS PER LOCAL CODE.
14. ROUTE INDIRECT WASTE PIPING FROM EACH COMPARTMENT OF THE THREE-COMPARTMENT SINK (#N) INDEPENDENTLY TO FUNNEL DRAIN (#FFD-1). PROVIDE APPROVED AIR GAPS IN ACCORDANCE WITH THE LOCAL PLUMBING CODE.

KEY NOTES - WASTE AND VENT

NTS | B

WASTE AND VENT PIPING PLAN

1/4" = 1'-0" | A

APPROVAL STAMP AREA

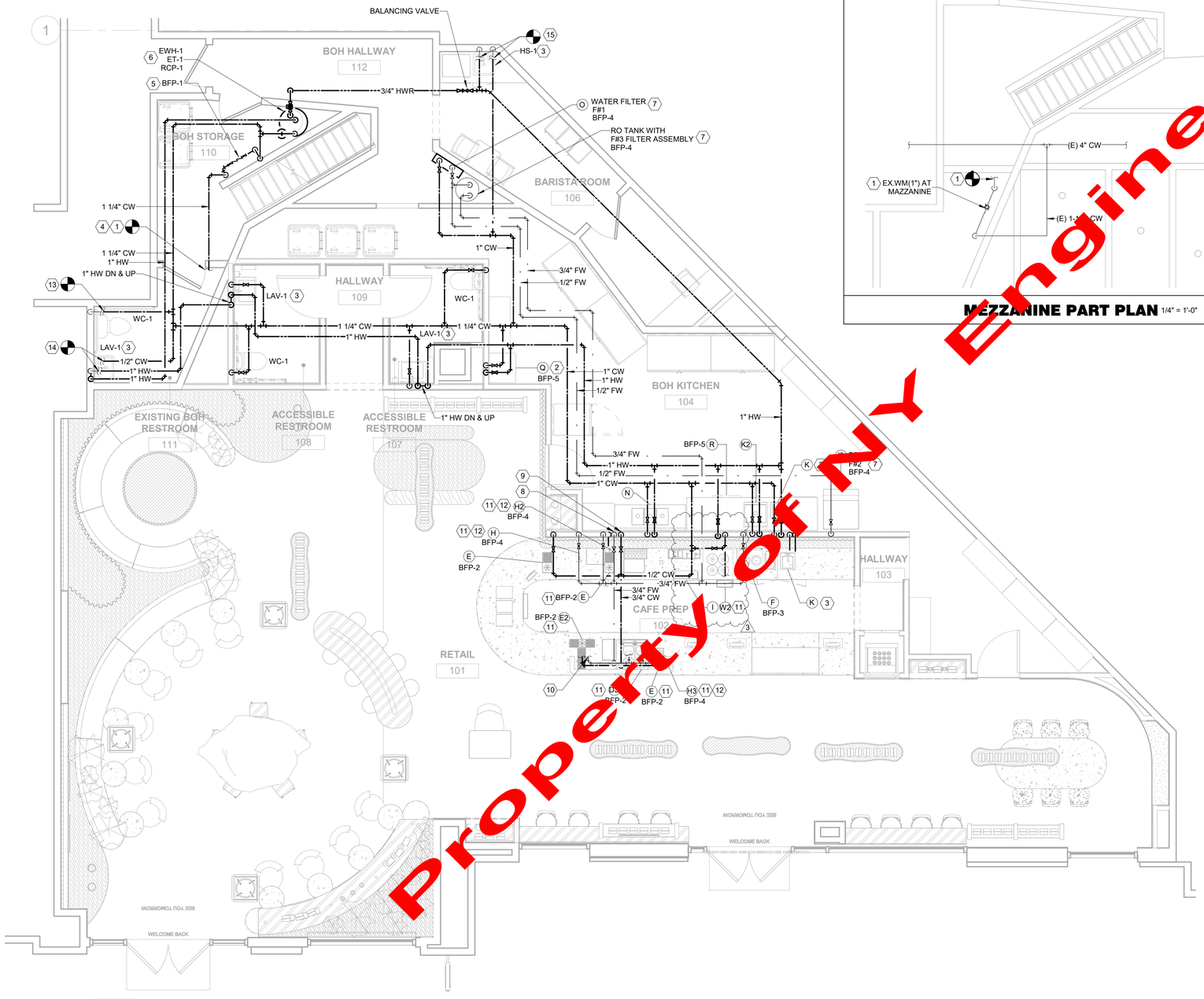
BLANK STREET

SHEET TITLE:

WASTE AND VENT PIPING PLAN

SHEET NUMBER:

P-100



WATER SUPPLY PIPING PLAN 1/4" = 1'-0" **A**

MEZZANINE PART PLAN 1/4" = 1'-0" **D**

A. REFER RISER DIAGRAM FOR EACH BRANCH SIZES.

B. FLUSH WATER SUPPLY LINES OF ALL DEBRIS AND IMPURITIES PRIOR TO CONNECTING TO WATER FILTERS.

C. NO ROOF PENETRATION PERMITTED WITHIN ROOF "WATER VALLEYS" REFER TO ROOF PLANS FOR LOCATIONS

D. THE SUSPENSION OF ANY ITEMS FROM BASE BUILDING STRUCTURE BY MEANS OF DRILLING, WELDING, SHOOTING ARE PROHIBITED. CONTRACTOR TO MAKE SURE ALL THE EQUIPMENTS AND PIPES TO BE SUPPORTED BY MEANS OF THE BEAM CLAMPS.

E. CONTRACTOR SHALL VERIFY EXISTING WATER PRESSURE IN FIELD PRIOR TO ANY WORK AND PIPING ROUGH IN.

F. ALL WATER LINES SHALL BE COPPER TUBE TYPE-L PERMITTED. THERE SHALL BE NO PIPING JOINTS OF FITTINGS INSTALLED IN WATER PIPING BELOW THE FLOOR SLAB.ALL FLOOR DRAINS ARE REQUIRED TO HAVE TRAP PRIMERS.

G. ANY UNUSED PLUMBING EQUIPMENT, PIPING, ETC., WITHIN OR SERVING THE PREMISES MUST BE COMPLETELY REMOVED TO POINT OF ORIGIN. DO NOT ABANDON IN PLACE.

H. ALL FLOOR PENETRATIONS MUST BE CORE BORED, SLEEVED, GROUTED, SEALED AND MADE WATERPROOF. SLEEVES MUST EXTEND A MINIMUM OF 4" AFF.

I. IF NOT ALREADY EXISTING, INSTALL A SHUT OFF VALVE ON DOMESTIC WATER LINE INSIDE SPACE.

J. TENANT IS REQUIRED TO INSTALL A WATERPROOF MEMBRANE IN ALL WET AREAS OF THE SPACE. TENANT SHALL USE A 30 MIL POLYMER MODIFIED CLEAVAGE MEMBRANE (EQUAL TO NOBLESEAL TS) INSTALLED PER MANUFACTURERS RECOMMENDATIONS AND ANSI A 108. MEMBRANE MUST BE EXTENDED UP THE WALL A MINIMUM OF 6" OR EQUAL TO THE HEIGHT OF THE FLOOR BASE.

K. THE SUSPENSION OF ANY ITEMS FROM BASE BUILDING STRUCTURE BY MEANS OF DRILLING, WELDING, SHOOTING ARE PROHIBITED. CONTRACTOR TO MAKE SURE ALL THE EQUIPMENTS AND PIPES TO BE SUPPORTED BY MEANS OF THE BEAM CLAMPS

L. ROUTE HW WATER LOOP DOWN IN WALL TO FIXTURE. MINIMIZE DISTANCE FROM THE LOOP TO HOT WATER DISCHARGE.

M. COORDINATE OVERALL PIPING DIAMETER (INCLUDING INSULATION) WITH WALL DEPTH.

N. NOTIFY ARCHITECT IF OVER ALL PIPE DIAMETER EXCEEDS WALL DEPTH.

O. CONTRACTOR SHALL VERIFY EXISTING WATER PRESSURE IN FIELD PRIOR TO ANY WORK AND PIPING ROUGH IN.

P. ALL PLUMBING FIXTURES SHALL MEET THE FLOW REQUIREMENTS SPECIFIED IN THE PHILAPDEPHIA PLUMBING CODE 2018.

Q. WATER PIPES AND FITTINGS WITH A LEAD CONTENT WHICH EXCEEDS 0.25% SHALL BE PROHIBITED IN SYSTEMS CONVEYING POTABLE WATER.

R. PUBLIC LAVATORIES SHALL HAVE CONTROLS TO LIMIT THE WATER TEMPERATURE TO 110 DEGREES FAHRENHEIT.

S. CONTRACTOR TO FIELD VERIFY FEASIBILITY OF SLAB PENETRATION AS PER STRUCTURAL REQUIREMENT.

T. ALL PLUMBING SHUTOFF VALVES SHALL BE COORDINATED WITH MECHANICAL EQUIPMENT AND SHALL BE EASILY ACCESSED FOR FUTURE OPERATION.

U. CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING AND COORDINATING WITH THE LOCAL UTILITY COMPANIES (WATER AND SEWER) TO INSURE TIMELY INSTALLATION OF UTILITY SERVICES TO THE POINTS SHOWN ON THE PLANS.

GENERAL NOTES - WATER SUPPLY NTS C

1. CONNECT A NEW 1-1/4" COLD WATER LINE TO THE EXISTING COLD WATER TAP WITHIN THE SPACE. CONTRACTOR SHALL FIELD VERIFY THE EXACT LOCATION OF THE EXISTING COLD WATER LINE AND UPGRADE ITS SIZE TO 1-1/4". THE LOCATION OF THE EXISTING WATER METER IS APPROXIMATE; VERIFY ITS CONDITION AND REPLACE IF NECESSARY. CONTRACTOR SHALL ALSO VERIFY THE AVAILABLE WATER PRESSURE, WHICH SHALL BE MAINTAINED BETWEEN 40–50 PSI. PROVIDE A BOOSTER PUMP IF ADEQUATE PRESSURE IS NOT AVAILABLE. BASE BID ACCORDINGLY.
2. MOP SINK FAUCET SHALL BE FACTORY EQUIPPED WITH AN ANTI SIPHON VACCUM BREAKER.
3. PROVIDE ASSE 1070 APPROVED THERMOSTATIC MIXING VALVE SET TO 110°F AT NEW AND EXISTING LAVATORIES & HAND SINKS, IF EXISTING NOT AVAILABLE.
4. NO TAP OFF TO BE TAKEN BEFORE SECONDARY BFP-1.
5. CONTRACTOR TO COORDINATE WITH LANDLORD / AHJ FOR THE REQUIREMENT OF BFP-1. PROVIDE BFP-1 (WATTS LF009M2QT OR EQUIVALENT) AS SHOWN ON THE PLAN. INSTALL BFP-1 AS PER LOCAL AHJ GUIDELINES. BASE BID ACCORDINGLY.
6. PROVIDE NEW ELECTRIC STORAGE TYPE WATER HEATER (EWH-1) WITH THERMAL EXPANSION TANK (ET-1) & RECIRCULATION PUMP (RCP-1) WITH ASSOCIATED ACCESSORIES AND FITTINGS. TERMINATE THE T & P RELIEF DRAIN FORM THE WATER HEATER TO THE NEAREST FLOOR DRAIN, PROVIDING AN APPROVED AIR GAP. REFER PLUMBING SCHEDULE ON SHEET #P300 FOR MORE DETAILS.
7. WALL MOUNTED WATER FILTER & RO TANK SHALL BE FURNISHED BY OWNER AND INSTALLED COMPLETE BY THE PLUMBING CONTRACTOR. REFER TO DETAILS ON SHEET #P301 FOR PROPOSED INSTALLATION.
8. ROUTE THE 3/4" FW LINE DOWN IN WALL FOR UNDERSLAB EXTENSION TO THE FRONT ORDER COUNTER MILLWORK AS SHOWN. EXTEND THE PIPING IN THE MILLWORK FOR FINAL CONNECTIONS TO KITCHEN EQUIPMENT. COORDINATE INSTLLATION WITH FIELD CONDITIONS.
9. ROUTE THE 3/4" CW LINE DOWN IN WALL FOR UNDERSLAB EXTENSION TO THE FRONT ORDER COUNTER MILLWORK AS SHOWN. EXTEND THE PIPING IN THE MILLWORK FOR FINAL CONNECTIONS TO KITCHEN EQUIPMENT. COORDINATE INSTALLATION WITH FIELD CONDITIONS.
10. ROUTE THE 1/2" FW LINE TO BELOW COUNTER FOR THE FUTURE EQUIPMENT.
11. REFER TO THE KITCHEN EQUIPMENT SCHEDULE ON SHEET #P001 FOR PROPOSED PIPING ROUGH-IN SIZES.
12. PROVIDE 1/2" FILTER WATER TO WATER TAP (#H), (#H2) & (#H3). CONTRACTOR TO VERIFY THE ACTUAL REQUIREMENT OF THE EQUIPMENT AS PER THE FIXTURE SPECS AND PROVIDE FW / CW ACCORDINLY.
13. EXSITING WATER CLOSET TO BE REPLACED WITH NEW IN THE SAME LOCATION. EXTEND & CONNECT 3/4" CW LINE TO EXISTING CW LINE IN THE SPACE. CONTRACTOR TO FIELD VERIFY THE EXACT PIPE SIZE, ROUTING, AND CONDITION OF EXISTING PIPING AND REPLACE IF NOT IN GOOD CONDITION.
14. EXISTING LAVATORY TO BE REPLACED WITH NEW IN THE SAME LOCATION. EXTEND & CONNECT 1/2" CW, HW, HWR LINES TO EXISTING CW, HW & HWR LINES IN THE SPACE. CONTRACTOR TO FIELD VERIFY THE EXACT PIPE SIZE, ROUTING, AND CONDITION OF EXISTING PIPING AND REPLACE IF NOT IN GOOD CONDITION.
15. EXISTING HAND SINK TO BE REPLACED WITH NEW IN THE SAME LOCATION. EXTEND & CONNECT 1/2" CW, HW, HWR LINES TO EXISTING CW, HW & HWR LINES FOR THE NEW HAND SINK IN THE SPACE. CONTRACTOR TO FIELD VERIFY THE EXACT PIPE SIZE, ROUTING, AND CONDITION OF EXISTING PIPING AND REPLACE IF NOT IN GOOD CONDITION.

KEY NOTES - WATER SUPPLY NTS B

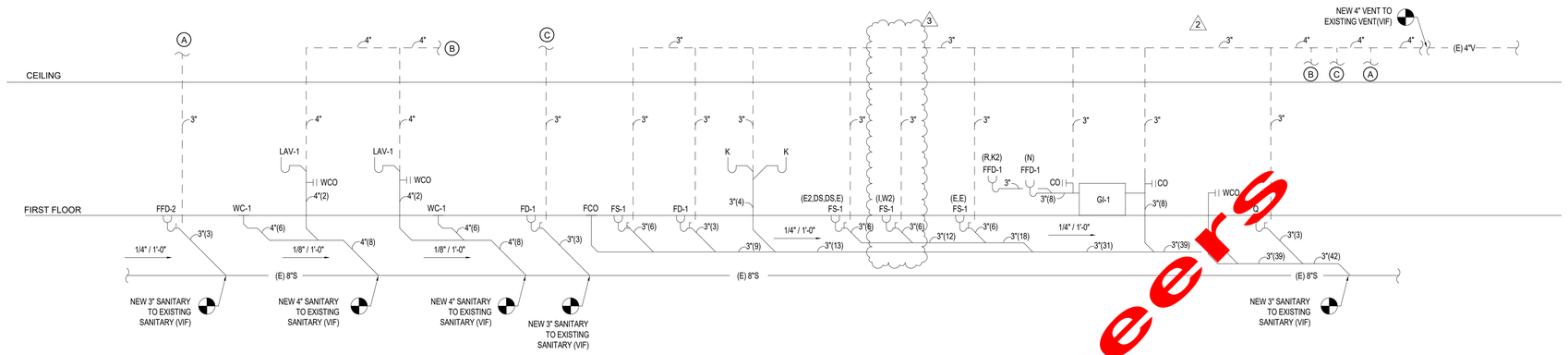
APPROVAL STAMP AREA

BLANK STREET

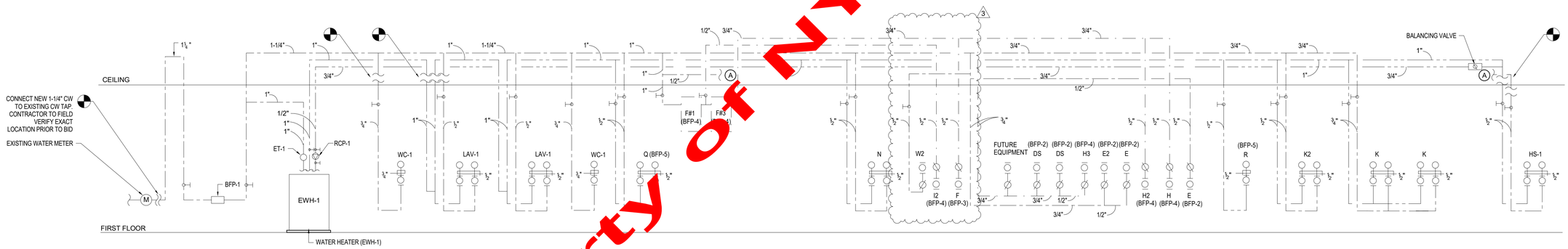
SHEET TITLE:
WATER SUPPLY PIPING PLAN

SHEET NUMBER:
P-101

Property of NY Engineers



SANITARY WASTE RISER DIAGRAM
NOT TO SCALE



WATER SUPPLY RISER
NOT TO SCALE

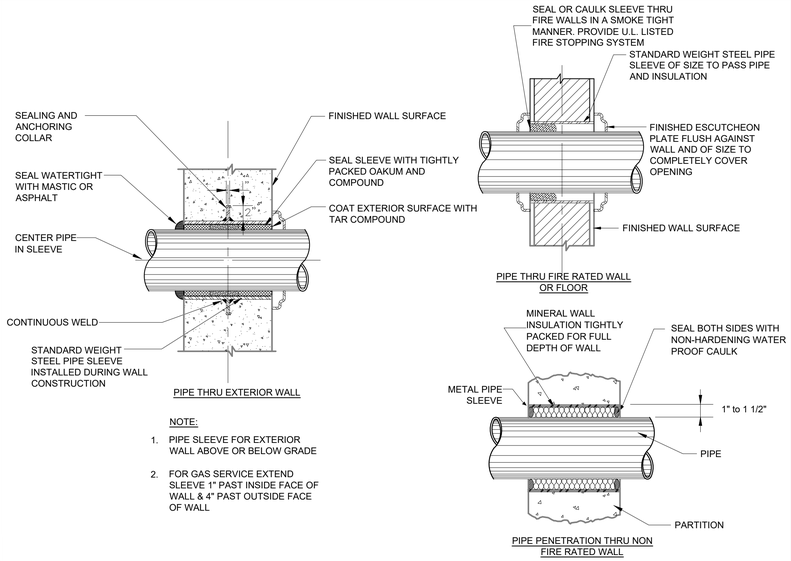
Property of NY Engineers

APPROVAL STAMP AREA

BLANK STREET

SHEET TITLE:
PLUMBING RISERS

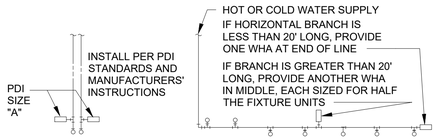
SHEET NUMBER:
P-200



NOTE:

1. PIPE SLEEVE FOR EXTERIOR WALL ABOVE OR BELOW GRADE
2. FOR GAS SERVICE EXTEND SLEEVE 1" PAST INSIDE FACE OF WALL & 4" PAST OUTSIDE FACE OF WALL

1	SCALE	PIPE SLEEVE THROUGH WALL SECTION
	N.T.S.	



SINGLE FIXTURE

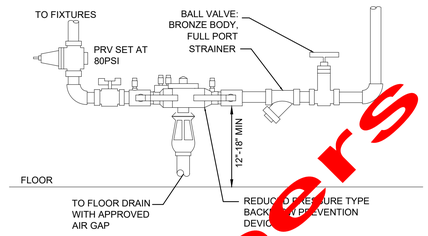
PDI SIZE	PIPE SIZE	FIXTURE UNIT LOAD
A	1/2"	1-11
B	3/4"	12-32
C	1"	33-60
D	1-1/4"	61-113
E	1-1/2"	114-154
F	2"	155-330

MULTIPLE FIXTURES

FIXTURE UNIT TABULATION		
FIXTURE	COLD	HOT
VALVE WATER CLOSET	5	--
URINAL	5	--
COUNTER SINK	1.5	1.5
LAVATORY	1.5	1.5
MOP BASIN	2.25	2.25
WATER COOLER	.25	--

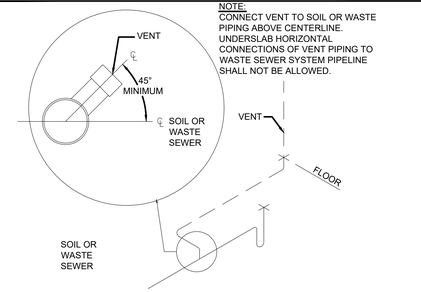
PROVIDE WATER HAMMER ARRESTERS BY SIOUX CHIEF, PRECISION PLUMBING PRODUCTS, WATTS OR APPROVED EQUAL WITH PISTON AND O-RING CONSTRUCTION HAVING PDI #WH-201, ASSE #1010 AND ANSI #A112.26.1M CERTIFICATION. INSTALL IN HORIZONTAL OR VERTICAL POSITION, BUT NEVER UPSIDE DOWN. INSTALL INLINE WITH WATER FLOW DIRECTION IF POSSIBLE. SIZE UNITS PER TABLES ABOVE.

2	SCALE	WATER HAMMER ARRESTOR
	N.T.S.	



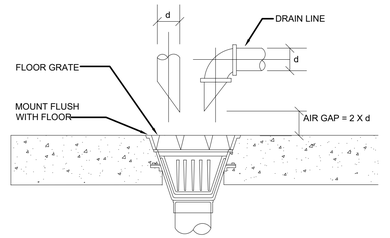
DETAIL SHOWS GENERAL SCHEMATIC REQUIREMENTS. PROVIDE BACKFLOW PREVENTER OF TYPE AND MANUFACTURER APPROVED BY LOCAL AUTHORITIES. PROVIDE PRESSURE REDUCING VALVE ONLY IF PRESSURE EXCEEDS 80 PSI - VERIFY. STRAINER AND REDUCING VALVE MAY BE INSTALLED IN VERTICAL PIPE IF SPACE LIMITATIONS REQUIRE IT. CLEAN STRAINER BEFORE TURNING BUILDING OVER TO OWNER. PROVIDE ANY REQUIRED CERTIFICATION OF TEST OF BACKFLOW PREVENTER TO LOCAL AUTHORITIES.

3	SCALE	BACKFLOW PREVENTER DETAIL
	N.T.S.	

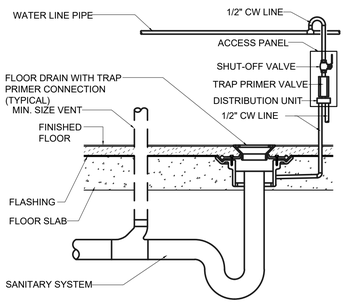


NOTE:
CONNECT VENT TO SOIL OR WASTE PIPING ABOVE CENTERLINE. UNDERSLAB HORIZONTAL CONNECTIONS OF VENT PIPING TO WASTE SEWER SYSTEM PIPELINE SHALL NOT BE ALLOWED.

10	SCALE	VENT PIPING INSTALLATION
	N.T.S.	

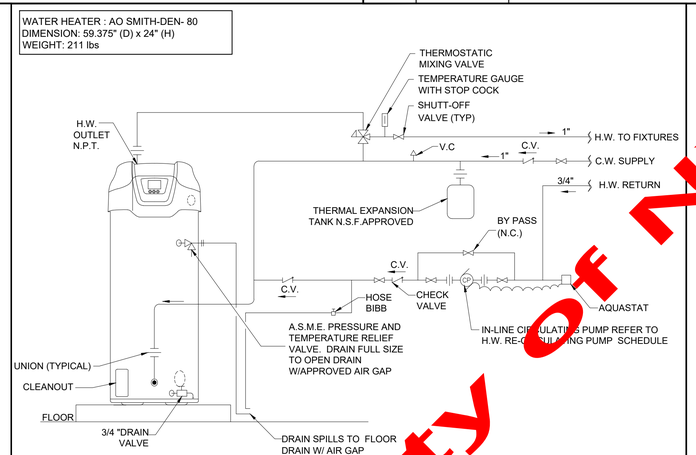


11	SCALE	FLOOR SINK DETAILS
	N.T.S.	

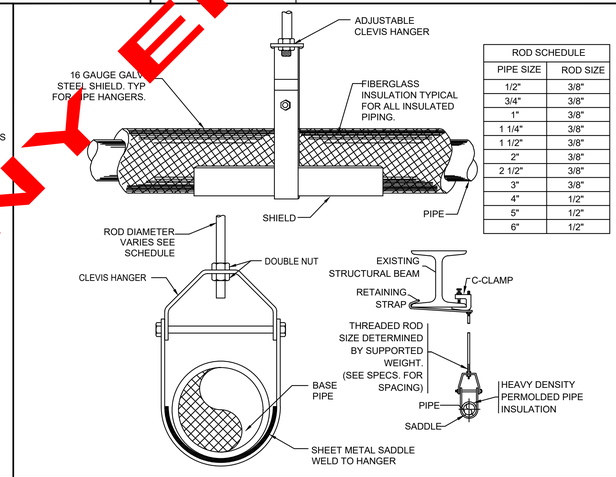


4	SCALE	FLOOR DRAIN WITH TRAP PRIMER
	N.T.S.	

WATER HEATER : AO SMITH-DEN- 80
DIMENSION: 59.375" (D) x 24" (H)
WEIGHT: 211 lbs

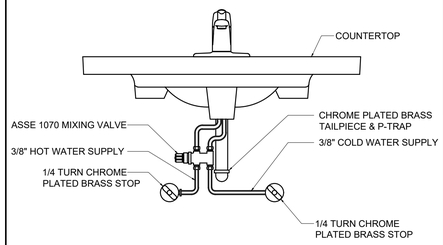


5	SCALE	STORAGE TYPE ELECTRIC WATER HEATER DETAIL
	N.T.S.	



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"

6	SCALE	HANGER DETAILS
	N.T.S.	



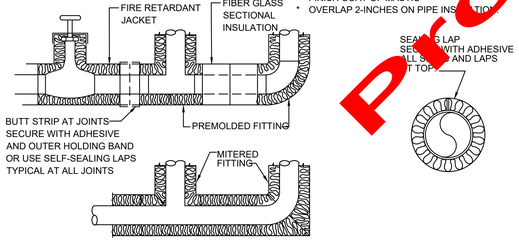
12	SCALE	MIXING VALVE DETAILS
	N.T.S.	

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.

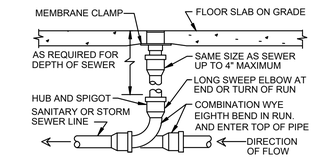
CONCEALED VALVES AND FITTINGS

- 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



7	SCALE	PIPE INSULATION DETAILS
	N.T.S.	

PROVIDE ROUND SECURED NICKEL BRONZE ADJUSTABLE TOP WITH "CO" CAST IN COVER. PROVIDE CLEANOUT TOP WITH VARIATIONS SUITABLE FOR FLOOR COVERING (CARPET MARKER, RECESSED FOR TILE, SCORIATED FOR UNFINISHED FLOORS). PROVIDE BRONZE PLUG IN CAST IRON BODY.



LOCATE AT BUILDING EXIT, AT ENDS OF RUNS, AT TURNS OF PIPE GREATER THAN 45 DEGREES, AT 50' INTERVALS ON STRAIGHT RUNS, AND WHERE SHOWN ON PLANS. PROVIDE BACKFILL PER ARCHITECTURAL SPECIFICATIONS. LOCATE CLEANOUTS WHERE THERE IS 18" CLEAR AROUND. CONSULT LOCAL CODES FOR OTHER FCO REQUIREMENTS.

8	SCALE	FLOOR CLEAN OUT DETAIL
	N.T.S.	

Property of NY Engineers

APPROVAL STAMP AREA

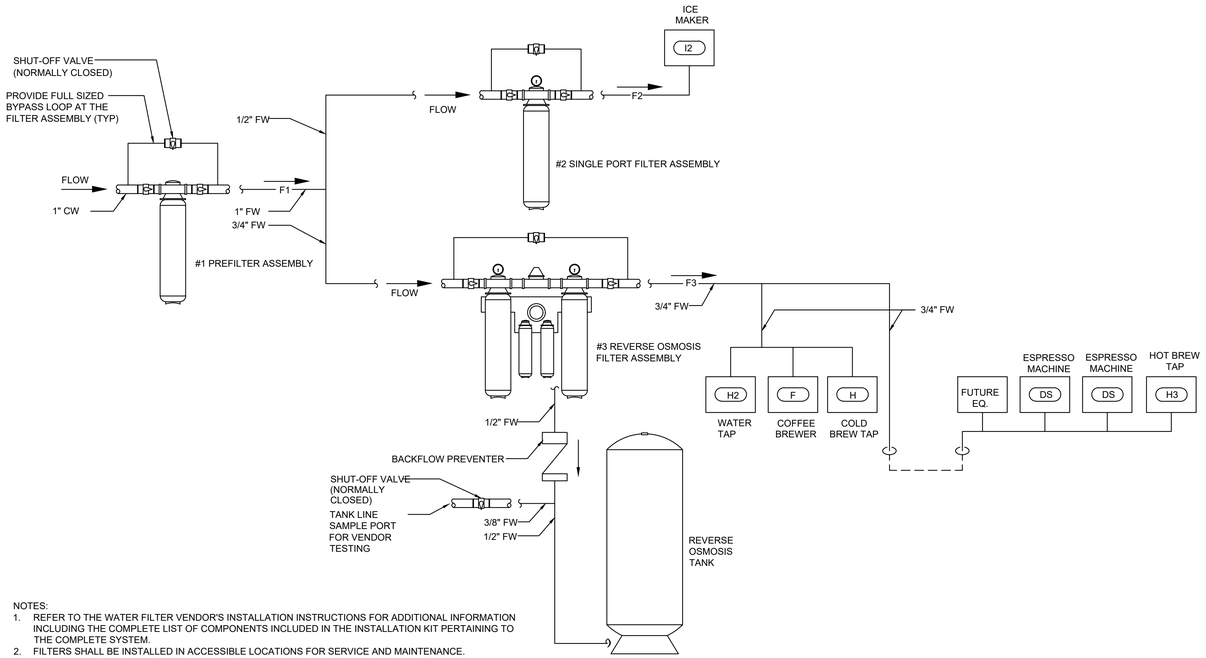
BLANK STREET

SHEET TITLE:

PLUMBING DETAILS (01 OF 02)

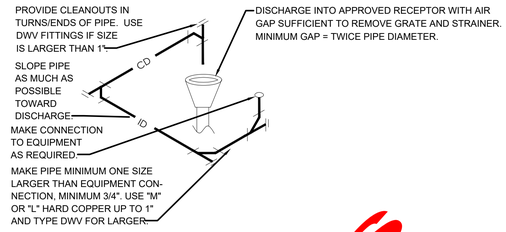
SHEET NUMBER:

P-300



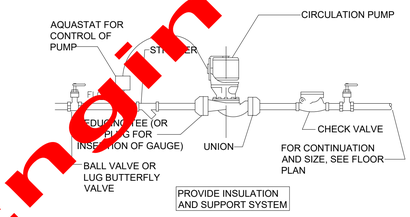
NOTES:
1. REFER TO THE WATER FILTER VENDOR'S INSTALLATION INSTRUCTIONS FOR ADDITIONAL INFORMATION INCLUDING THE COMPLETE LIST OF COMPONENTS INCLUDED IN THE INSTALLATION KIT PERTAINING TO THE COMPLETE SYSTEM.
2. FILTERS SHALL BE INSTALLED IN ACCESSIBLE LOCATIONS FOR SERVICE AND MAINTENANCE.
3. DETAIL SHOWN HERE IS FOR GENERAL INFORMATION REFER TO THE PLUMBING FLOOR PLANS FOR PROPOSED ROUTING SPECIFIC TO THIS PROJECT.

1	SCALE N.T.S.	WATER FILTER DETAIL

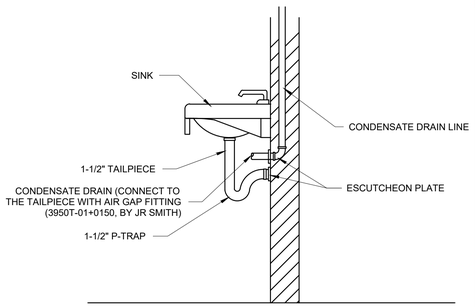


ROUTE PIPE INCONSPICUOUSLY AND UNOBTRUSIVELY. HANG PIPE AS REQUIRED. DO NOT INSULATE INDIRECT DRAIN PIPE WHEN INSTALLED EXPOSED IN FOOD SERVICE FACILITY.
REFER TO LOCAL CODES.

2	SCALE N.T.S.	INDIRECT CONDENSATE DRAIN DETAILS

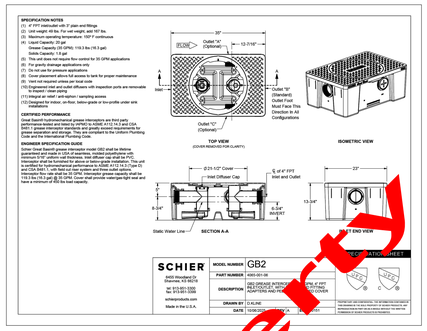


3	SCALE N.T.S.	INLINE RE-CIRCULATION PUMP DETAIL

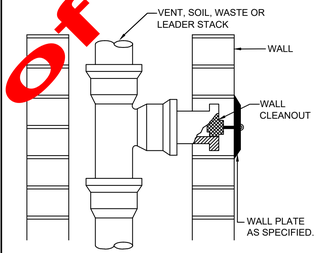


NOTE: CONTRACTOR TO PROVIDE CONDENSATE DRAIN PIPE MATERIAL AS PER IPC 2015 SECTION 314.2.2.

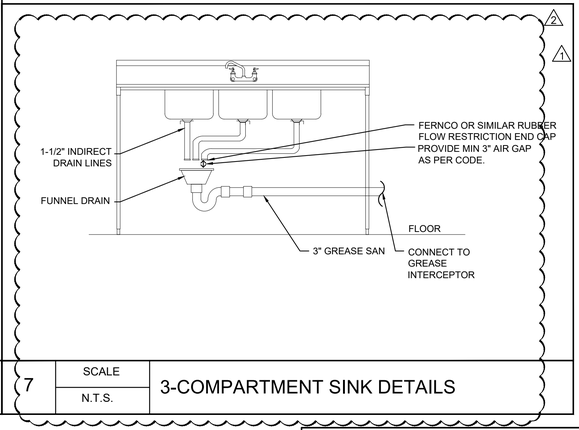
4	SCALE N.T.S.	TAILPIECE CONDENSATE DRAIN DETAIL



5	SCALE N.T.S.	GREASE TRAP DETAIL



6	SCALE N.T.S.	WALL CLEAN OUT DETAIL



7	SCALE N.T.S.	3-COMPARTMENT SINK DETAILS

Property of NY Engineers

APPROVAL STAMP AREA

BLANK STREET

SHEET TITLE:
PLUMBING DETAILS (02 OF 02)

SHEET NUMBER:
P-301