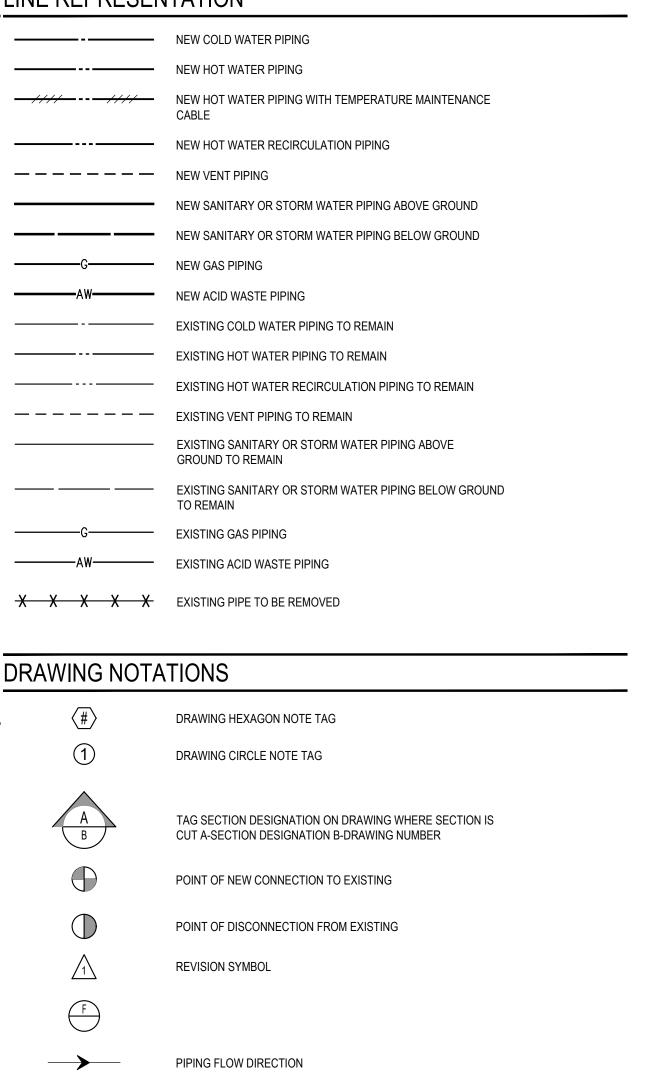
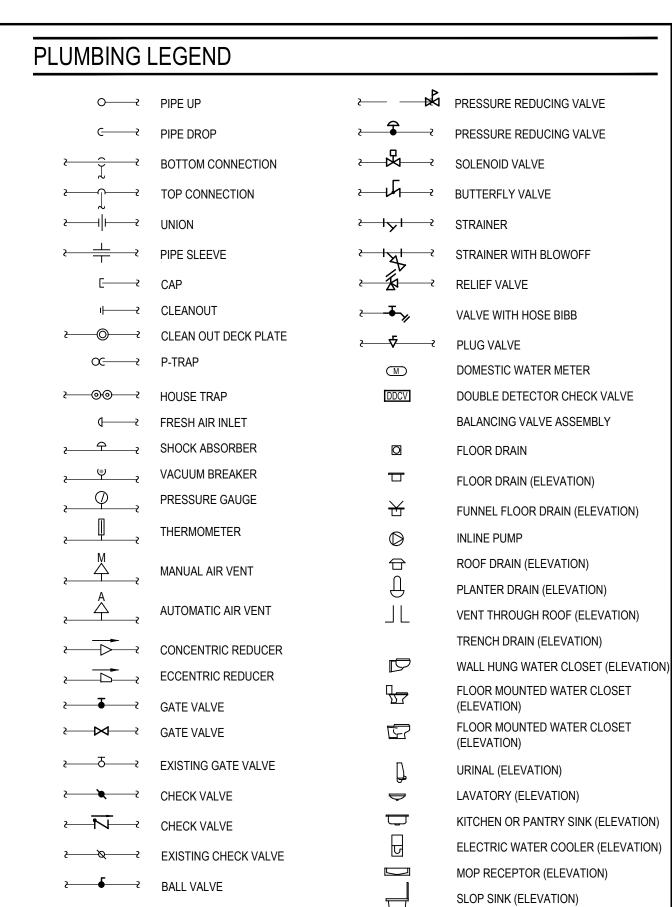
#### PLUMBING NOTES LINE REPRESENTATION 1. ALL NEW DOMESTIC HOT AND COLD WATER SUPPLY AND HOT WATER RETURN PIPES NEW COLD WATER PIPING SHALL BE COPPER TUBING AND SHALL ORIGINATE ON THE SAME FLOOR FROM THE NEAREST WET COLUMN WITH PROPER ACCESS FOR MAINTENANCE. IF ATTACHED TO NEW HOT WATER PIPING DISSIMILAR METAL, A CORROSION INHIBITOR IS TO BE PROVIDED. 2. INSULATE ALL NEW AND EXISTING DOMESTIC HOT AND COLD WATER SUPPLY AND HOT WATER RETURN PIPES. NEW HOT WATER RECIRCULATION PIPING 3. WASTE LINES SHALL BE PROPERLY PITCHED TO PREVENT "TRAPPED" WATER. INSTALL WASTE LINE CONNECTIONS WITH LONG TERM OR 45° "Y" FITTINGS. — — — — — NEW VENT PIPING 4. RETAIN EXISTING CLEAN OUT CONNECTIONS AND PROVIDE CLEAN OUT CONNECTIONS AT NEW FITTINGS. 5. WHEN CONNECTING NEW DOMESTIC HOT AND COLD WATER SUPPLY AND HOT WATER RETURN PIPES TO EXISTING RISERS, CONTRACTORS SHALL LEAVE A PLUGGED VALVED OUTLET FOR EACH, FOR FUTURE USE. —AW——— NEW ACID WASTE PIPING 6. ALL NEW DOMESTIC HOT AND COLD WATER SUPPLY AND HOT WATER RETURN PIPES ATTENDANT FITTINGS MUST BE PROPERLY INSULATED AND COVERED. EXISTING COLD WATER PIPING TO REMAIN 7. INDIVIDUAL SHUT-OFF VALVES MUST BE SUPPLIED AND INSTALLED FOR EACH NEW EXISTING HOT WATER PIPING TO REMAIN FIXTURE, INCLUDING WATER COOLERS. 8. ALL NEW PIPES ARE TO BE SUPPORTED FROM SLAB OR STEEL BEAMS, NOT FROM EXISTING PIPES OR DUCT WORK. — — — — — EXISTING VENT PIPING TO REMAIN 9. ALL WATER SHUTDOWNS TO BE COORDINATED THROUGH THE BUILDING MANAGER. ALL WATER SHUTDOWNS ARE TO BE PERFORMED OR SUPERVISED BY BUILDING **GROUND TO REMAIN** PERSONNEL, AT THE DISCRETION OF THE BUILDING MANAGER. 10. PLUMBER SHALL BE RESPONSIBLE THAT ENTIRE INSTALLATION IS IN ACCORDANCE WITH TO REMAIN LOCAL AND STATE CODES. ————G————— EXISTING GAS PIPING 11. PRIVATE BATHROOMS MUST BE INSTALLED ON MINIMUM 4" WASTE LINE. ——AW———— EXISTING ACID WASTE PIPING 12. ALL VALVES ARE TO BE PROPERLY TAGGED. X X X X EXISTING PIPE TO BE REMOVED 13. ALL DOMESTIC WATER PIPING SHALL BE PROPERLY LABELED. 14. ANY WET COLUMNS USED SHOULD BE PROVIDED WITH A 24" x 24" STEEL SURFACE MOUNTED ACCESS DOOR. DRAWING NOTATIONS 15. HOT WATER HEATERS SERVING PRIVATE BATHROOMS, KITCHENS, ETC. ARE TO BE SUPPLIED FROM THE WET COLUMN THAT SUPPLIES THE COLD WATER TO THESE AREAS. DRAWING HEXAGON NOTE TAG

	PRESSURE VESSEL AND HEATER SCHEDULE																				
DESIGNATION	NO. REQUIRED	MANUFACTURER AND MODEL NUMBER	STORAGE WATER TEMPERATURE (DEG.F) VOLUME/HEATER (GALS.)	RECOVERY/HEATER (GPH)	TEMPERATURE RISE (DEG. F)	CAPACITY FLOW (G.P.M.)	W.W.P. (PSIG.)	TEST PRESSURE (PSIG.)	DIAMETER (INCHES)	LENGHT/HEIGHT (INCHES)	WIDTH (INCHES)	INLET/OUTLET (INCHES)	GAS LOAD (CFH)	GAS PRESSURE REQ. (IN W.C.)	(INCH.) HEAD THICKNESS	(INCH.) STEAM LOAD	(LBS./HR./HTR.) MAX. ALLOWABLE PRESSURE DROP	STEAM VALVE	STEAM PRESSURE	ALLOWABLE PRESSURE DROP	LOCATION/REMARKS
DHW-1	2	AERCO INNO 1060	140		100	20			4	42/75	28	2 1	060	4							PLUMBING EQUIPMENT ROOM @ BASEMENT/HW HTR FOR KITCHEN & LAUNDRY
ET-1	2	AMTROL ST-5-C	2						8	13											PLUMBING EQUIPMENT ROOM @ BASEMENT
DHW-2	2	AERCO INNO 1350	120		80	33			4	12/75	28	2 1	350	4							PLUMBING EQUIPMENT ROOM @ BASEMENT/HW HTR FOR PODS



# ARRREVIATIONS

<b>ABBREVIATION</b>	<u>S</u>
AFF	ABOVE FINISHED FLOOR
BFP	BACKFLOW PREVENTER
BVA	BALANCING VALVE ASSEMBLY
CM	COFFEE MAKER
CODP	CLEAN OUT DECK PLATE
CW	COLD WATER
DIA	DIAMETER
DN	DOWN
EWC	ELECTRIC WATER COOLER
FAI	FRESH AIR INLET
FCW	FILTERED COLD WATER
FD	FLOOR DRAIN
FFD	FUNNEL FLOOR DRAIN
FL	FLOOR
FS	FLOOR SINK
G	GAS
НВ	HOSE BIBB
HW	HOT WATER
HWR	HOT WATER RECIRCULATION
IM	ICE MAKER
LAV	LAVATORY
LDR	LEADER
MIN	MINIMUM
MR	MOP RECEPTOR
Р	PLUMBING
RD	ROOF DRAIN
RPZ	REDUCED PRESSURE ZONE
RTU	ROOF TOP UNIT
S	SANITARY
SH	SHOWER SERVICE
SK	SINK
ST	STORM
UR	URINAL
V	VENT
VB	VACUUM BREAKER
VIF	VERIFY IN FIELD
VTR	VENT THRU ROOF
W	WASTE
WH	WALL HYDRANT
WC	WATER CLOSET



**™** MIXING VALVE

**₹** OS&Y VALVE

PLUMBING DRAWING LIST P-001 PLUMBING LEGEND & NOTES P-101 PLUMBING SPECIFICATIONS - 1 OF 2 PLUMBING SPECIFICATIONS - 2 OF 2 PLUMBING BASEMENT FLOOR DEMOLITION PART PLAN PLUMBING BASEMENT FLOOR PART PLAN PLUMBING DETAILS

BATHTUB (ELEVATION)

2 COMPARTMENT SINK (ELEVATION)

3 COMPARTMENT SINK (ELEVATION)

 $\overline{\Box}$ 

GE Crotonville - Executive Residence Building Water Heater Replacement

Old Albany Post Road, Ossining, NY

11/09/21	ISSUED FOR PRICING	
11/09/21	ISSUED FOR PRICING ISSUED FOR REVIEW	



PLUMBING LEGEND & NOTES

10/XX/2021
Proj. Engineer:
-

G003-03-017 Drawing No:

TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE 2020 ENERGY CONSERVATION THIS PLAN IS APPROVED ONLY FOR THE WORK ON THE APPLICATION SPECIFICATION SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON OR TO BE

CONSIDERED AS EITHER BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES.

01 OF 06

#### 1.01 GENERAL REQUIREMENTS

- A THE LATEST EDITION OF AIA DOCUMENTS A201 GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION, OR AS REQUIRED BY THE ARCHITECTURAL DOCUMENTS AND/OR THE STRUCTURAL ENGINEERS DOCUMENTS ARE PART OF THE CONTRACT.
- B. PROVIDE ALL PLUMBING WORK SHOWN ON THE CONTRACT DOCUMENTS. ALL WORK SHALL COMPLY WITH THE REQUIREMENTS OF THE UNIFORM CONSTRUCTION CODE (NJAC 5:23), 2020 BUILDING CODE OF NEW YORK STATE, 2020 PLUMBING CODE OF NY STATE, 2020 FUEL GAS CODE OF NY STATE, AND ALL AUTHORITIES HAVING JURISDICTION (AHJ), APPLICABLE NATIONAL, STATE AND LOCAL CODES, LAWS AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK
- SHALL BE INCORPORATED INTO AND MADE A PART OF THESE SPECIFICATIONS C. ALL MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE OF THIS WORK, FINAL ACCEPTANCE SHALL BE DEFINED AS THE TIME AT WHICH THE PLUMBING WORK IS TAKEN OVER AND ACCEPTED BY THE OWNER. ENGAGE THE SERVICES OF VARIOUS MANUFACTURERS SUPPLYING THE FOUIPMENT FOR THE PROPER STARTUP, OPERATION AND TRAINING OF ALL SYSTEMS INSTALLED. INSTRUCT THE OWNERS PERSONNEL IN THE PROPER

OPERATION AND SERVICING OF THE EQUIPMENT.

- D. BIDDERS SHALL VISIT AND CAREFULLY EXAMINE THE AREA AFFECTED BY THIS WORK TO FAMILIARIZE THEMSELVES WITH THE EXISTING CONDITIONS AND THE DIFFICULTIES THAT WILL AFFECT THE EXECUTION OF THIS WORK BEFORE SUBMITTING PROPOSALS, EXAMINE THE CONTRACT DOCUMENTS OF THIS TRADE AND ALL OTHER TRADES FOR THIS PROJECT. VERIFY ALL EXISTING CONDITIONS AT THE SITE, AND BECOME FULLY INFORMED AS TO THE EXTENT AND CHARACTER OF THE WORK IN THE BUILDING. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE AND LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR. EQUIPMENT, OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN EXAMINATION BEEN MADE. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ENGINEERS ATTENTION PRIOR TO BID. IF DISCREPANCIES ARE NOT RESOLVED TO CONTRACTORS SATISFACTION THEY SHALL BE QUALIFIED IN THEIR BID SUBMISSION.
- E. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK INCLUDED IN CONTRACT. IT IS NOT INTENDED TO SPECIFY OR TO SHOW EVERY OFFSET, FITTING, OR COMPONENT. HOWEVER, CONTRACT DOCUMENTS REQUIRE COMPONENTS AND MATERIALS WHETHER OR NOT INDICATED OR SPECIFIED AS NECESSARY TO MAKE THE INSTALLATION COMPLETE AND OPERATIONAL. ALL WORK SHALL BE COORDINATED WITH OTHER TRADES TO AVOID CONFLICT. THE CONTRACTOR SHALL. WITHOUT EXTRA COST TO THE OWNER. MAKE ALL REASONABLE MODIFICATIONS IN THE WORK AS MAY BE REQUIRED TO PREVENT CONFLICT WITH THE WORK OF OTHER TRADES, OR FOR THE PROPER INSTALLATION OF THE WORK.
- SHALL BE MADE AT SUCH TIME AS TO CAUSE THE LEAST INTERFERENCE WITH ESTABLISHED BUILDING OPERATING PROCEDURE. ALL EXISTING SERVICE SHUTDOWNS SHALL BE SUPERVISED AND DIRECTED BY BUILDING MANAGEMENT. THE CONTRACTOR SHALL GIVE NOTICE 48 HOURS PRIOR TO ANY

F. INTERRUPTION OF EXISTING BUILDING SERVICES IN ORDER TO CONNECT NEW PIPING TO EXISTING

- G. ALTHOUGH NOT SPECIFICALLY MENTIONED HEREIN OR SHOWN ON THE DRAWINGS. ANY EQUIPMENT MATERIALS, ACCESSORIES, OR LABOR REQUIRED FOR A CODE COMPLIANT AND COMPLETE INSTALLATION OF THE PLUMBING WORK SHALL BE FURNISHED AND INSTALLED AS PART OF THE
- H. PATCH AND/OR REPLACE DAMAGED ARCHITECTURAL COMPONENTS AS A RESULT OF PLUMBING SYSTEMS INSTALLATION. CLEAN UP THE CONSTRUCTION SITE DAILY DURING CONSTRUCTION SO AS NOT TO INTERFERE WITH THE WORK OF OTHER TRADES, AND AFTER THE COMPLETION OF
- I. ALL NECESSARY CUTTING AND PATCHING IN FLOOR SLABS, ROOF SLABS, WALLS, AND CEILINGS FOR THE PLUMBING WORK SHALL BE PERFORMED BY THIS CONTRACTOR. RESTORE TO MATCH EXISTING
- J. REMOVAL, TEMPORARY CONNECTIONS AND RELOCATION OF CERTAIN EXISTING WORK WILL BE NECESSARY FOR THE INSTALLATION OF THE NEW SYSTEMS. ALL EXISTING CONDITIONS ARE NOT COMPLETELY DETAILED ON THE DRAWINGS. THE CONTRACTOR SHALL SURVEY THE SITE AND MAKE ALL NECESSARY CHANGES REQUIRED BASED ON EXISTING CONDITIONS FOR PROPER INSTALLATION OF NEW WORK.
- K. ALL EQUIPMENT INSTALLED OR CONNECTED INTO THE BUILDING STACKS, RISERS, PLUMBING SYSTEMS AND INFRASTRUCTURE SHALL BE APPROVED IN ADVANCE BY THE BUILDING PRIOR TO INSTALLATION. PLAN INSTALLATION OF NEW WORK AND CONNECTIONS TO EXISTING PIPING TO INSURE MINIMUM INTERFERENCE WITH REGULAR OPERATION OF EXISTING FACILITIES. ALL SYSTEM SHUTDOWNS AFFECTING OTHER AREAS SHALL BE COORDINATED WITH BUILDING MANAGEMENT.
- L. GUARANTEE: THE CONTRACTOR SHALL GUARANTEE AND SERVICE THE ENTIRE INSTALLATION FOR A PERIOD OF ONE YEAR FROM THE DATE OF THE FINAL ACCEPTANCE OF THE INSTALLATION. THE CONTRACTOR SHALL, DURING THE PERIOD OF THE GUARANTEE, REPLACE OR REPAIR AT HIS OWN EXPENSE ANY PIECE OF EQUIPMENT AND/OR MATERIAL WHICH IS FOUND TO BE DEFECTIVE. THE REPLACEMENT OR REPAIR SHALL BE PERFORMED THE SAME DAY OF NOTIFICATION IN AN EMERGENCY FASHION WHEN NOTIFIED BY THE OWNER OR AUTHORIZED REPRESENTATIVE. THE CONTRACTOR SHALL ALSO REPAIR ALL DAMAGE TO SURROUNDING WORK CAUSED BY THE FAILURE, REPAIR OR REPLACEMENT OF DEFECTIVE EQUIPMENT. THE FINAL ACCEPTANCE WILL BE MADE AFTER THE CONTRACTOR HAS DEMONSTRATED THAT HIS WORK FULFILLS THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATION, AND HAS FURNISHED ALL THE REQUIRED CERTIFICATES OF INSPECTION AND APPROVALS

## 1.02 SCOPE OF WORK

- A. THE CONTRACTOR SHALL FURNISH AND INSTALL PLUMBING WORK COMPLETE WITH ALL EQUIPMENT. FIXTURES, PIPING, VALVES, AND ACCESSORIES AND ASSOCIATED WORK IN ACCORDANCE ALL NATIONAL, STATE AND LOCAL AUTHORITIES HAVING JURISDICTION, BUILDING MANAGEMENT, DESIGN DRAWINGS AND THIS SPECIFICATION. THE SCOPE OF WORK SHALL INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING:
- ECT AND REMOVE PLUMBING EQUIPMENT, FIXTURES, PIPING AND SUPPORTS. REMOVE PIPING BACK TO EXISTING STACKS AND RISERS AND CAP.
- 2. FURNISH AND INSTALL NEW FIXTURES, PIPING, VALVES, SUPPORTS, SEISMIC BRACING AND RELATED EQUIPMENT. MAKE ALL REQUIRED PLUMBING CONNECTIONS TO APPLIANCES OR EQUIPMENT
- 3. PREPARE AND SUBMIT 'AS-BUILT' DRAWINGS INDICATING ACTUAL LOCATIONS OF EQUIPMENT, PIPING, AND VALVES, 'AS-BUILT' DRAWINGS SHALL BE SUBMITTED TO THE OWNER UPON COMPLETION OF INSTALLATION AND TESTING. SUBMIT DIGITAL COPIES IN PDF FORMAT AND .DWG AUTOCAD FORMAT
- 4. PERFORM CUTTING, CORING, AND ROUGH PATCHING REQUIRED TO ACCOMMODATE PLUMBING INSTALLATION.
- 5. PERFORM MAINTENANCE AND PROPER OPERATION OF EXISTING BASE BUILDING SYSTEMS WITHIN THE CONTRACT AREA IN ACCORDANCE WITH THE REQUIREMENTS OF BUILDING MANAGEMENT. 6. PROVIDE INSULATION OF PIPING, FITTINGS, VALVES. PROVIDE PIPING SYSTEMS IDENTIFICATION. PROVIDE VALVE TAGS AND CHART.
- 7. COORDINATION WITH WORK OF OTHER TRADES.
- 8. SCAFFOLDING AND RIGGING.
- 9. TESTING AS REQUIRED BY APPLICABLE CODES AND STANDARDS. 10. SECURING OF ALL PERMITS AND APPROVALS AND PAYMENT OF FEES.
- 1.03 SHOP DRAWINGS, EQUIPMENT SUBMISSION, MAINTENANCE MANUALS.
- A. SUBMIT ONE (1) PRINT OF THE PLUMBING PIPING LAYOUT, CERTIFIED BY ALL TRADES THAT COORDINATION HAS BEEN ESTABLISHED. SUBMIT MANUFACTURER'S CATALOG CUTS OF THE
- 1. PIPING AND FITTINGS INSULATION
- VALVES
- 4. VALVE TAGS AND CHART
- 5. HANGERS AND SUPPORTS, SEISMIC SUPPORTS
- 6. ESCUTCHEONS AND SLEEVES WATER HEATER(S)
- 8. OPERATION AND MAINTENANCE MANUALS
- 9. MANUFACTURER'S CATALOG CUTS OF ALL EQUIPMENT
- B. UPON REQUEST, THE ENGINEER MAY FURNISH DESIGN DRAWINGS TO THE CONTRACTOR TO AID IN DEVELOPMENT OF PIPING SHOP DRAWINGS. THESE SHALL BE FURNISHED IN THE SAME FORMAT FOR WHICH THE DESIGN DRAWINGS WERE CREATED.

1.05 QUALITY ASSURANCE

- A. NO SUBSTITUTE MATERIAL OR MANUFACTURER OF EQUIPMENT SHALL BE PERMITTED WITHOUT A FORMAL WRITTEN SUBMITTAL TO THE ENGINEER WHICH INCLUDES ALL DIMENSIONAL, PERFORMANCE AND MATERIAL SPECIFICATIONS, ANY CHANGES IN LAYOUT, STRUCTURAL REQUIREMENTS, OR DESIGN DUE TO THE USE OF A SUBSTITUTION SHALL BE SUBMITTED TO THE ENGINEER AS PART OF THIS PROPOSAL. THE CONTRACTOR TAKES FULL RESPONSIBILITY FOR THE SUBSTITUTION AND ALL CHANGES RESULTING FROM SUBSTITUTION. ALL ITEMS SHALL BE SUBMITTED FOR REVIEW IN
- CONJUNCTION WITH THE SUBMITTAL OF THE ALTERNATE. ANY SUBSTITUTION MUST BE SUBMITTED WITH AN EXPLANATION WHY SUBSTITUTION IS BEING UTILIZED. IF THE SUBSTITUTED ITEM DEVIATES FROM THE SPECIFIED ITEM, THOSE DEVIATIONS ARE TO BE IDENTIFIED ON A LINE BY LINE BASIS. IF THE SUBSTITUTION IS BEING UTILIZED FOR FINANCIAL REASONS. THE ASSOCIATED CREDIT MUST BE SIMULTANEOUSLY SUBMITTED.
- B. ALL SUBSTITUTED MATERIAL SHALL CONFORM TO SPACE REQUIREMENTS AND PERFORMANCE REQUIREMENTS SHOWN ON CONTRACT DOCUMENTS.
- C. CONTRACTOR SHALL SUBMIT HIS BID BASED ON THE SPECIFIED ITEMS AND SHALL SUPPLY AS AN ADD OR DEDUCT ALTERNATE PRICE FOR ANY SUBSTITUTIONS.
- A. ALL PIPES SHALL BE MARKED TO INDICATE MANUFACTURER AND ASTM STANDARD. EACH FULL PIPE
- LENGTH SHALL HAVE THE MANUFACTURER'S NAME CAST, STAMPED OR ROLLED ON. B. EACH FITTING SHALL HAVE THE MANUFACTURER'S SYMBOL & PRESSURE RATING CAST, STAMPED OR
- C. ALL NEW COMPONENTS OF THE PLUMBING SYSTEM MUST CONFORM TO LOCAL AND STATE BUILDING

AND PLUMBING CODES AND BUILDING STANDARDS.

#### 1.06 COORDINATION WITH BUILDING MANAGEMENT

- A. THE PLUMBING CONTRACTOR IS TO OBTAIN A COPY OF THE BUILDING RULES AND REGULATIONS FOR TENANT ALTERATIONS PRIOR TO BID SUBMISSION IN ORDER TO DETERMINE THE BUILDING MANAGEMENTS MINIMUM MATERIAL REQUIREMENTS AND THE EXTENT OF WORK REQUIRED TO BE PERFORMED ON PREMIUM TIME, INCLUDING, BUT NOT LIMITED TO THE FOLLOWING
- SHUT-DOWNS OF BUILDING SERVICES
- 2. NOISY WORK, INCLUDING CORE DRILLING
- 3. WORK IN OTHER TENANTS SPACES B. THE PLUMBING CONTRACTOR IS RESPONSIBLE FOR ADHERING TO THE BUILDING OWNER'S BUILDES AND REGULATIONS. ANY DISCREPANCIES BETWEEN THE CONTRACT DOCUMENTS AND THE BUILDING'S RULES AND REGULATIONS SHALL BE SUBMITTED TO THE ARCHITECT/ENGINEER WITH THE BID FOR
- C. PRIOR TO THE START OF ANY BUILDING PLUMBING SYSTEM MODIFICATIONS, THE PROPERTY MANAGER SHALL BE PROVIDED WITH A MINIMUM OF 24-HOURS NOTICE BUILDING SERVICES IN ORDER TO CONNECT NEW PIPING TO EXISTING SHALL BE MADE AT SUCH TIME AS TO CAUSE THE LEAST INTERFERENCE WITH ESTABLISHED BUILDING OPERATING PROCEDURE. THE CONTRACTOR SHALL NOT INTERRUPT THE SERVICE WITHOUT WRITTEN PERMISSION OF BUILDING MANAGEMENT.
- D. DURING THE PROJECT DURATION. THE BUILDING MANAGEMENT OFFICE AND ITS DESIGNATED REPRESENTATIVE SHALL BE ABLE TO INSPECT THE WORK IN PROGRESS. ANY WORK WHICH THE BUILDING MANAGEMENT DEEMS UNACCEPTABLE SHALL BE REMOVED AND REPLACED AT THE EXPENSE OF CONTRACTOR/TENANT.

#### 1.07 AS-BUILT DRAWINGS:

- A. CONTRACTOR SHALL MAINTAIN RECORD DRAWING PRINTS ON JOB SITE AND RECORD, AT TIME OF OCCURRENCE, DEVIATIONS FROM CONTRACT DOCUMENTS.
- THE INSTALLATION, IN AUTO-CAD 2014 OR NEWER. AN ELECTRONIC COPY (AUTOCAD FORMAT) OF ALL PLUMBING DRAWINGS WILL BE PROVIDED TO THE PLUMBINGIOUNDERCTIONERCUPEION NO COST. (ARCHITECTURAL DRAWINGS IN AUTOCAD FORMAT MUST BE OBTAINED FROM THE ARCHITECT). THE DRAWINGS WILL REFLECT THE BID AND/OR CONSTRUCTION SET OF DRAWINGS. SHOULD THE CONTRACTOR REQUIRE ADDITIONAL ELECTRONIC COPIES DURING CONSTRUCTION, A COST OF \$250.00

B. AT THE COMPLETION OF WORK AND BEFORE FINAL ACCEPTANCE, PROVIDE AS-BUILT DRAWINGS OF

- C. CLEARLY INDICATE THE WORDS "AS-BUILT" IN THE TITLE BLOCK COLUMN OF THE DRAWINGS AS WELL AS THE PLUMBING CONTRACTOR'S NAME AND ADDRESS.
- D. SUBMIT A SINGLE PRINT TO CONSULTANT FOR REVIEW. WHEN FOUND ACCEPTABLE BY THE CONSULTANT, SUBMIT THREE SETS OF PRINTS TOGETHER WITH THE CAD DISK FOR PRESENTATION TO THE LANDLORD AND TENANT.

#### 1.08 OPERATION AND MAINTENANCE MANUALS:

PER DRAWING WILL BE CHARGED BY THE CONSULTANT.

- A. PROVIDE TWO) SETS OF OPERATION AND MAINTENANCE MANUALS OF ALL PLUMBING EQUIPMENT SUBMITTED IN HARD COVER 3-RING BINDERS. INCLUDE THE FOLLOWING INFORMATION IN THE OPERATIONS AND MAINTENANCE MANUALS:
- 1. NAMES AND ADDRESS OF LOCAL SUPPLIERS FOR THE ITEMS INCLUDED.
- 2. TECHNICAL DATA, PRODUCT DATA, SUPPLEMENTED BY BULLETINS, COMPONENT ILLUSTRATIONS, EXPLODED VIEWS, TECHNICAL DESCRIPTIONS OF ITEMS, AND PARTS LISTS. ADVERTISING OR SALES LITERATURE IS NOT ACCEPTABLE.
- 3. THE CONSULTANTS REVIEWED SHOP DRAWINGS.
- 4. CERTIFICATE(S) OF ACCEPTANCE FROM THE AUTHORITIES INSPECTION DEPARTMENT.
- B. REVIEW INFORMATION PROVIDED IN THE MAINTENANCE INSTRUCTIONS AND MANUALS WITH THE TENANT'S OPERATING PERSONNEL AND LANDLORD'S OPERATING PERSONNEL WHERE BASE BUILDING SYSTEMS ARE REVISED, TO ENSURE A COMPLETE UNDERSTANDING OF THE ELECTRICAL EQUIPMENT AND SYSTEMS AND THEIR OPERATION.

#### 1.09 MATERIALS AND EQUIPMENT

DIVISION IN WHOSE WORK IT OCCURS.

VALVES, EQUIPMENT, ETC. AS REQUIRED.

NO COST TO LANDLORD OR TENANT.

SHALL BE INCLUDED IN THE PRICE SUBMITTED.

BUT EXCLUSIVE OF OVERHEAD AND PROFIT.

MUST BE REPAIRED OR REPLACED, AT NO COST.

DEMOLITION AND ALTERATION.

AND DISPOSED OF, OFF SITE.

1.19 UNIT PRICES

PIPING AS NECESSARY FOR THE COMPLETION OF THE PROJECT.

WORK, THAT ARE REQUIRED TO REMAIN IN SERVICE, SHALL DO SO.

DIVISION, OR REPAIR TO THE SATISFACTION OF THE CONSULTANT.

A. SUBMIT THE FOLLOWING LIST OF UNIT PRICES (FURNISH AND INSTALL):

G. CARRY OUT THE WORK WITH MINIMUM OF NOISE, DUST AND DISTURBANCE.

1. FIXTURES - \$ FOR EACH TYPE IN THE DOCUMENTS (INCLUDE ROUGHING)

SECURED TO EXISTING WALLS, FLOORS OR CEILINGS TO BE DEMOLISHED.

QUOTATIONS FOR CHANGE ORDERS ON THIS PROJECT.

1.15 INTERRUPTION OF SERVICES

1.16 VALUATION OF CHANGES

1.17 COMPLETION OF CONTRACT

LOCATIONS APPROVED BY THE LANDLORD IN WRITING.

- A. ALL MATERIALS AND EQUIPMENT SHALL BE NEW, CERTIFIED BY A NATIONALLY RECOGNIZED TESTING LABORATORY AND MANUFACTURED TO THE STANDARDS SPECIFIED.
- A. PROVIDE AND MAINTAIN INSURANCE TO PROTECT THE LANDLORD, TENANT AND TRADES FROM ALL POSSIBLE CLAIMS. SUBMIT WITH BID FOR AN AMOUNT ACCEPTABLE TO LANDLORD AND TENANT.
- A. THE DRAWINGS FOR THE PLUMBING WORK ARE DIAGRAMMATIC PERFORMANCE DRAWINGS ONLY, INTENDED TO CONVEY THE SCOPE OF WORK AND INDICATE THE GENERAL ARRANGEMENT AND APPROXIMATE SIZE AND LOCATION OF PLUMBING AND EQUIPMENT. THE DRAWINGS DO NOT INTEND TO SHOW ARCHITECTURAL INTERIOR DESIGN MECHANICAL STRUCTURAL OR BASE BUILDING DETAILS. CONTRACTOR IS TO BE RESPONSIBLE FOR A THOROUGH KNOWLEDGE OF SAME BEFORE PROCEEDING
- B. DO NOT SCALE OR MEASURE DRAWINGS. BUT OBTAIN INFORMATION REGARDING ACCURATE DIMENSIONS FROM THE DIMENSIONS SHOWN ON THE DESIGN CONSULTANT/ARCHITECT'S DRAWINGS OR BY SITE MEASUREMENTS.
- C. ANY DISCREPANCIES BETWEEN DRAWINGS AND/OR SPECIFICATIONS AND EXISTING CONDITIONS. MUST BE REFERRED TO THE DESIGN CONSULTANT/ARCHITECT BEFORE ANY WORK AFFECTED IS BEGUN.
- D. COOPERATE AND COORDINATE WITH OTHER CONTRACTORS IN LAYING OUT OF WORK SO AS NOT TO CONSTRUCTION SCHEDULE AND COORDINATE WITH WORK OF OTHER CONTRACTORS.
- E. MAKE, AT NO ADDITIONAL COST, ANY CHANGES OR ADDITIONS TO MATERIALS AND EQUIPMENT NECESSARY TO ACCOMMODATE STRUCTURAL CONDITIONS (OFFSETS AROUND BEAMS, COLUMN, ETC.)
- A. IT IS THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS THAT THE CONTRACTOR IS TO PROVIDE
- COMPLETE AND OPERATIONAL SYSTEMS. B. ANY MISCELLANEOUS ITEMS, VALVES, FITTINGS, GAUGES, HARDWARE, ETC., NOT SPECIFICALLY DESCRIBED, BUT REQUIRED FOR THE OPERATION OF THE PLUMBING SYSTEMS, MUST BE PROVIDED

CONSULTANT/ARCHITECT AND LANDLORD. ARRANGE FOR ACCESS DOOR INSTALLATION BY THE

A. BEFORE CORE DRILLING FLOOR SLAB OR STRUCTURAL WALLS, X-RAY SLABS OR WALLS AND HAVE THE

B. ANY EXISTING BUILDING SERVICE DAMAGED BY CORE DRILLING SHALL BE REPAIRED IMMEDIATELY AT

C. FLOOR DRILLING TO BE PERFORMED AFTER NORMAL WORKING HOURS AND AT A TIME ACCEPTABLE TO

A. INTERRUPTION OF EXISTING PLUMBING SERVICES TO ANY PART OF THE BUILDING SHALL OCCUR ONLY

A. PROVIDE COMPLETE BREAKDOWN OF MATERIAL, LABOR, OVERHEAD, PROFIT, ETC., WHEN SUBMITTING

B. THE HOURLY LABOR RATE SHALL BE INCLUSIVE OF ALL CHARGES FOR SUPERVISION, VARIABLE LABOR

A. ALL EQUIPMENT MUST BE CLEANED AND TESTED BEFORE FINAL ACCEPTANCE BY THE CONSULTANT.

B. DEFECTS AND DEFICIENCIES WHICH ORIGINATE OR BECOME EVIDENT DURING THE WARRANTY PERIOD

A. VISIT THE SITE, EXAMINE THE EXISTING CONDITIONS AND BECOME FAMILIAR WITH THE EXTENT OF THE

B. REVIEW AND CONFIRM WITH THE ARCHITECT/DESIGNER'S DRAWINGS FOR THE COMPLETE EXTENT OF

C. ENSURE THAT ALL EXISTING PLUMBING PIPING OR SYSTEMS, IN AREAS OUTSIDE THE AREAS OF THIS

D. RELOCATE ANY PLUMBING PIPING OR EQUIPMENT THAT IS REQUIRED TO REMAIN IN SERVICE, THAT IS

E. ALL EXISTING PLUMBING EQUIPMENT OR PIPING WHICH IS NO LONGER REQUIRED SHALL BE REMOVED

F. BE RESPONSIBLE AND PAY FOR ANY DAMAGE TO THE BASE BUILDING INCURRED BY WORK OF THIS

2. PIPING - \$/LF FOR EACH SIZE AND TYPE REQUIRED (INCLUDE HANGERS & INSULATION WHERE

NECESSARY REMOVAL, RELOCATION, RECONNECTING AND REROUTING OF PLUMBING EQUIPMENT AND

FACTORS, HAND TOOLS, PAYROLL BURDENS, HEIGHT FACTORS, WARRANTIES, STORAGE, RENTALS,

ADDITIONAL BONDING, PARKING, CLEAN-UP, AS-BUILT DRAWINGS, HOISTING, FREIGHT AND DELIVERY,

B. INTERRUPTIONS SHALL ONLY OCCUR DURING PREMIUM TIME PERIODS: ALL ALLOWANCES FOR THIS

LANDLORD AND ALLOWANCES FOR THIS WORK SHALL BE INCLUDED IN BID PRICE SUBMITTED.

B. PROVIDE ACCESS PANELS, MINIMUM 18" X 18", FOR ALL NEW AND EXISTING

BY PRE-ARRANGEMENT WITH AND AT TIMES SUITABLE TO THE LANDLORD.

- AND INCLUDED AS PART OF THE BID. 1.13 ACCESS DOORS. LOAD REQUIRED. A. WHEREVER ANY BASE BUILDING EQUIPMENT OR NEW EQUIPMENT, VALVES, ETC. REQUIRES
- ACCESSIBILITY, MAINTENANCE OR ADJUSTMENT, PROVIDE ACCESS DOORS APPROVED BY DESIGN

  - HANGERS SHALL NOT BE PERMITTED. J. INTERVALS OF SUPPORTS
  - 1. ALL HORIZONTAL CAST IRON PIPING SHALL BE SUPPORTED ON FIVE FOOT CENTERS AND AT ALL JOINTS. IN ADDITION ALL CAST IRON 'NO-HUB' PIPING AND FITTINGS 5" DIA. AND LARGER MUST BE OPENING OR CHANGE OF DIRECTION BY THE USE OF BRACES BLOCKS RODDING OR OTHER IRON SOIL PIPE INSTITUTE HANDBOOK.
  - 2. ALL HORIZONTAL STEEL SCREWED PIPING SHALL BE SUPPORTED ON TEN FOOT CENTERS.
  - 3. ALL HORIZONTAL COPPER TUBING SHALL BE SUPPORTED BY HANGERS NOT OVER SIX FEET APART FOR TUBING 1-1/4" DIA. AND SMALLER AND NOT OVER TEN FEET APART FOR TUBING 1-1/2" AND
  - AND STATE CODES 2.05 INSULATION

## A. DOMESTIC COLD WATER, HOT WATER, HOT WATER RECIRC. PIPING, HORIZONTAL STORM PIPING:

- 1. JOHNS MANVILLE MICRO-LOK HP FIBER GLASS PIPE INSULATION WITH FACTORY APPLIED ALL
- GAUGE PVC FITTING COVERS WITH HI-LO TEMPERATURE FIBER GLASS INSERTS.
- 3. PROVIDE 1" THICK INSULATION FOR DOMESTIC WATER PIPING AND HORIZONTAL STORM PIPING B. INSULATE ALL EXPOSED DRAINAGE PIPING INCLUDING HOT, COLD AND TEMPERED WATER SUPPLIES

#### ABRASIVE SURFACES". PIPE COVER MATERIAL TO BE 1/8" THICK PVC WITH ANTIMICROBIAL, ANTIFUNGAL AND U/V INHIBITED PROPERTIES. PLUMBEREX PRO-EXTREME OR APPROVED EQUAL.

2.07 ESCUTCHEONS

- A. PROVIDE SLEEVES FOR ALL PIPES PASSING THROUGH FLOORS, WALLS AND PARTITIONS. B. SLEEVES THROUGH WALLS, AND WHERE SERVING EXPOSED PIPE PENETRATING FLOORS SHALL BE
- 18 GAUGE GALVANIZED SHEET METAL.
- CAPABLE OF RETURNING THE WALL OR PARTITION BACK TO ITS UNPENETRATED FIRE RESISTANCE E. FIRESTOPPING CAULK SHALL BE SIMILAR TO 3M CP 25WB + CAULK. FIRESTOPPING WRAP SHALL BE SIMILAR TO 3M FS-195 + WRAP/STRIP.
- B. ESCUTCHEON APPLICATION SCHEDULE
- 2. UNFINISHED SPACES SHALL BE PLAIN BRASS OR CAST IRON.

- PART 2 MATERIALS 2.01 PIPING AND FITTINGS
  - A. DOMESTIC HOT AND COLD WATER PIPING, INDIRECT WASTE PIPING
  - 1. PIPING (SOLDERED JOINTS): TYPE L HARD COPPER TUBE, DRAWN TEMPER, COMPLYING WITH ASTM
  - 2. FITTINGS (SOLDERED JOINTS): WROUGHT COPPER SOLDER JOINT PRESSURE TYPE FITTINGS COMPLYING WITH ASME B.16.22.
  - 3. SOLDER FILLER METALS: ALLOY SN95 OR ALLOY SN94: TIN (SN) APPROXIMATELY 95%, AND SILVER (AG) APPROXIMATELY 5%, HAVING 0.10% MAXIMUM LEAD (PB) CONTENT.

4. SOLDERING FLUX: APPLY ASTM B 813, WATER-FLUSHABLE FLUX TO END OF TUBE. JOIN COPPER

TUBE AND FITTINGS ACCORDING TO ASTM B 828 OR CDA'S "COPPER TUBE HANDBOOK. 5. ALL EXPOSED PIPING SHALL BE CHROME PLATED BRASS. ALL PIPE PASSING THROUGH WALLS, FLOORS CEILINGS AND PARTITIONS SHALL BE PROVIDED WITH CHROME PLATED BRASS.

#### B. FUEL GAS PIPING

1. PIPING: ASTM A 53/A 53M. BLACK STEEL. SCHEDULE 40. TYPE E OR S. GRADE B.

ESCUTCHEONS HELD IN PLACE WITH SET SCREWS.

2. MALLEABLE-IRON THREADED FITTINGS: ASME B16.3. CLASS 150. STANDARD PATTERN, PIPING UP TO 4" DIAMETER AND BELOW 1/2 PSIG 3 WROUGHT-STEEL WELDING FITTINGS: STM A 234/A 234M FOR BUTT WELDING AND SOCKET WELDING COMPLY WITH AWS D10 12/D10 12M FOR WELDING MATERIALS APPROPRIATE FOR WALL THICKNESS

AND CHEMICAL ANALYSIS OF STEEL PIPE BEING WELDED. PIPING 4" AND LARGER AT ANY PRESSURE

- AND ANY SIZE PIPING WITH GAS PRESSURE ABOVE 1/2 PSIG SHALL BE WELDED. 4. PROTECTIVE COATING FOR UNDERGROUND PIPING: FACTORY-APPLIED, THREE-LAYER COATING OF EPOXY, ADHESIVE, AND PE. JOINT COVER KITS: EPOXY PAINT, ADHESIVE, AND HEAT-SHRINK PE
- 5. WHERE PIPING IS EXPOSED TO EXTERIOR, PROVIDE WITH FACTORY APPLIED PROTECTIVE COATING OR USE SCH. 40 GALVANIZED STEEL PIPE AND FITTINGS. AFTER GALVANIZED PIPING THREADS HAVE BEEN CUT AND FITTINGS CONNECTED PAINT THE EXPOSED THREADS AND PIPING WITH AN EXTERIOR, NON-RUSTING PAINT TO PROTECT THE AREA OF PIPING WHERE THE GALVANIZATION HAS BEEN REMOVED

#### 2.02 VALVES - DOMESTIC WATER

- SHUT-OFF VALVES 3" AND SMALLER: TWO PIECE, FULL PORT, LEAD-FREE BRONZE BALL VALVES, 600 PSI NON-SHOCK CWP, NSF/ANSI-61-8 WITH THE CAPABILITY OF ACCEPTING EXTENDED OPERATING HANDLES. MILWAUKEE MODEL UPBA100S FOR THREADED ENDS OR UPBA150SF FOR SOLDERED ENDS.PROVIDE EXTENDED OPERATING HANDLE WHEN INSTALLING ON INSULATED PIPE
- SHUT-OFF VALVES 3" AND LARGER: LEAD-FREE BRONZE GATE VALVE, NON-RISING STEM, SOLID WEDGE, 300 PSI NON-SHOCK CWP, NSF/ANSI-61-8. NIBCO T-113-LF FOR THREADED ENDS OR S-113-LF FOR SOLDER ENDS
- CHECK VALVES 2" AND SMALLER: LEAD-FREE BRONZE, Y-PATTERN, HORIZONTAL SWING, WITH RENEWABLE SEAT AND DISC. 200 PSI CWP NON-SHOCK. NSF/ANSI-61-8. NIBCO T-413-Y-LF FOR THREADED ENDS OR S-413-Y-LF FOR SOLDER ENDS
- CHECK VALVES 2-1/2" & 3": LOW LEAD, BRONZE BODY, SWING CHECK ALVE, 200 PSIG, NON-SHOCK, ASME B16.1, MILWAUKEE UP967 FOR THREADED ENDS, UP968 FOR
- CHECK VALVES ON PUMP DISCHARGE: SILENT CECK VALVE, FLANGED, CLASS 125, STAINLESS STEEL SPRING & SCREWS, CAST IRON BODY, MILWAUKEE MODEL 1800.
- SOLENOID VALVE DE-ENERGIZED CLOSED, ASCO MODEL #8210G003, 120 V., WITH BRONZE BODY.
- PRESSURE REDUCING VALVE ½" to 2": LEAD FREE, ASSE 1003 LISTED, DIRECT ACTING PRESSURE D. REDUCING VALVE WITH STRAINER. VALVE SHALL BE WATTS SERIES LF223S.

REDUCING VALVE WITH STRAINER. VALVE SHALL BE WATTS SERIES LF223BS

PRESSURE REDUCING VALVE - 21/2" AND 3": LEAD FREE, ASSE 1003 LISTED, DIRECT ACTING PRESSURE

## 2.03 VALVE TAGS AND CHART

- A. PROVIDE FOR EACH VALVE, EXCEPT STOP VALVES AT FIXTURES, A 2 INCH DIAMTER BRASS TAG WITH 1 INCH HIGH NUMERAL STAMPED THEREON, SECURED TO THE VALVE BY MEANS OF BRASS S-HOOK OR BRASS CHAIN. EACH SYSTEM TO HAVE A LETTER DESIGNATION AS WELL.
- В. FURNISH AN APPROVED, NEATLY DRAWN VALVE CHART, PROPERLY FRAMED, SHOWING THE USE AND LOCATION OF EACH VALVE THAT IS TAGGED.

#### 2.04 HANGERS AND SUPPORTS

- A. ALL PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH ALL APPLICABLE LOCAL AND STATE CODES
- B EXCEPT AS OTHERWISE INDICATED PROVIDE FACTORY FABRICATED HANGERS CLAMPS RODS BUILDING ATTACHMENTS, INSULATION SADDLES AND INSULATION SHIELDS SHALL BE UL ISTED FM GLOBAL APPROVED AND COMPLYING WITH ANSI MSS-SP-58. CONTRACTOR SHALL SELECT AND APPLY HANGERS AND SUPPORTS IN ACCORDANCE WITH MSS-SP-69
- C. ALL INSULATED HORIZONTAL PIPING LARGER THAN 1" DIAMETER SHALL BE HUNG WITH ADJUSTABLE GALVANIZED STEEL CLEVIS HANGERS, COOPER B-LINE FIG. B3100. ALL INSULATED COPPER PIPING 3/" DIAMETER OR SMALLER SHALL BE HUNG WITH ADJUSTABLE SWIVEL HANGER FOR COPPER TURING COOPER B-LINE B3170CT
- D. FOR ALL INSULATED HORIZONTAL PIPING PROVIDE CRUSH RESISTANT INSULATION INSERTS AT ALL PIPE SUPPORT POINTS (WHETHER HANGERS OR STRUTS). INSULATION INSERT SHALL BE COOPER B-LINE FIG. B338, 360 DEG. CALCIUM SILICATE SHIELD. HANGERS SHALL NOT PENETRATE INSULATION. WHERE INSULATED PIPING IS SUPPORTED WITH CLEVIS HANGERS OR SWIVEL HANGERS COOPER B-LINE FIG. B3154 PRE-GALVANIZED INSULATION SHIELDS MAY BE USED.
- E. ALL HORIZONTAL CAST IRON OR UNINSULATED STEEL PIPING SHALL BE HUNG WITH ADJUSTABLE GALVANIZED STEEL CLEVIS HANGERS, COOPER B-LINE FIG. B3100 PRE-GALVANIZED STANDARD CLEVIS
- F. VERTICAL PIPING SHALL BE SUPPORTED BY MEANS OF RISER CLAMPS. RISER CLAMPS SHALL FIT EXACT PIPE SIZE FOR BARE PIPES. FOR CAST IRON PIPES USE TWO BOLT, GALVANIZED BLACK STEEL CLAMPS OR FOUR BOLT, EXTRA HEAVY GALVANIZED STEEL RISER CLAMPS. FOR COPPER TUBING USE CARBON STEEL COPPER PLATED RISER CLAMP.
- G. RODS FOR PIPE HANGERS SHALL BE CONTINUOUS THREADED ROD, GALVANIZED STEEL SIZED FOR THE
- H. C-CLAMPS MUST BE INSTALLED WITH RETAINING STRAPS.
- I. ATTACH HANGER RODS TO THE BUILDING ONLY IN A MANNER APPROVED BY THE CLIENT, GENERAL ELECTRIC. DO NOT HANG PIPING FROM DUCTWORK OR OTHER PIPING. CHAIN STRAPS. PERFORATED BARS OR WIRE
- - SUITABLY BRACED TO PREVENT HORIZONTAL MOVEMENT. THIS MUST BE DONE AT EVERY BRANCH SUITABLE METHOD, TO PREVENT MOVEMENT OR JOINT SEPARATION PER CHAPTER IV OF THE CAST
- K. PROVIDE SEISMIC RESTRAINTS FOR ALL PIPING SYSTEMS AND EQUIPMENT AS REQUIRED BY LOCAL

- SERVICE VAPOR-RETARDER JACKET WITH SELF-SEALING CLOSURE LAP. COMPLYING WITH ASTM C547, ASTM C585, ASTM C1136 AND ASTM E84, COMPOSITE FHC 25/50 LISTED AND LABELED, FIRE AND SMOKE HAZARD RATING NOT TO EXCEED A FLAME SPREAD OF 25 OR SMOKE DEVELOPMENT OF
- 2. FITTINGS AND VALVES TO BE COVERED WITH JOHNS MANVILLE ZESTON 2000 SERIES STANDARD
- STEAM AFTER CLEANING AND BEFORE TRAPS ARE INSTALLED. DRAIN ENTIRE SYSTEM. UNDER LAVATORIES OR SINKS, INSTALLED COVER SHALL MEET ADA 4.19.4, ADAAG 606.5, ICC/ANSI A117.1 606 6 OR GSA & DOD'S ABA 606 5 REQUIREMENT TO "PROTECT AGAINST CONTACT - NO SHARP OR

- 2.06 SLEEVES AND FIRE STOPPING
- SCHEDULE 40. C. SLEEVES WITHIN FURRED OUT ENCLOSURE, GYPSUM BOARD PARTITIONS AND BLOCK WALLS SHALL BE
- D. ALL SLEEVES THROUGH RATED WALLS OR PARTITIONS SHALL FORM A U.L. CLASSIFIED FIRESTOP
- A. INSTALL ESCUTCHEONS ON BOTH SIDES OF CONSTRUCTION WHEREVER PIPES PASS THROUGH WALLS. FLOORS PARTITIONS OR CEILINGS. ESCUTCHEONS SHALL BE HELD IN PLACE WITH SET SCREWS. TAKE SPECIAL CARE TO PROTECT THE ESCUTCHEONS DURING THE COURSE OF CONSTRUCTION.
- 1. FINISHED SPACES SHALL BE POLISHED BRASS

- 2.08 PIPE IDENTIFICATION A. INSTALL MANUFACTURED PIPE MARKERS ON EACH PIPING SYSTEM. INSTALL WITH FLOW INDICATION ARROWS SHOWING DIRECTION OF FLOW. LOCATE PIPE MARKERS EVERY TWENTY FEET ON EACH PIPE
- AND AT A MINIMUM OF ONCE IN EACH ROOM. B. COMPLY WITH ASME A13.1 'SCHEME FOR THE IDENTIFICATION OF PIPING SYSTEMS' FOR LETTER SIZE, LENGTH OF COLOR FIELD, COLORS, AND VIEWING ANGLES OF IDENTIFICATION DEVICES FOR PIPING.

- 3.01 GENERAL A. PERFORM THE WORK AT SUCH TIME AND IN SUCH MANNER AS TO MINIMIZE INTERFERENCE WITH THE BUILDING'S NORMAL OPERATION NOTIFY BUILDING MANAGEMENT REPRESENTATIVES IN ADVANCE EACH TIME AN INTERRUPTION WILL BE REQUIRED FOR THE PERFORMANCE OF SOME PHASE OF THE WORK SCHEDULE SUCH SERVICE OUTAGE OR INTERRUPTION ONLY AFTER HAVING RECEIVED
- DIRECTED SHALL BE FOLLOWED AS CLOSELY AS POSSIBLE. B. OPENINGS AROUND PIPING PENETRATIONS THROUGH FIRE RESISTANCE RATED WALLS, PARTITIONS, FLOORS, OR CEILINGS SHALL BE FIRE STOPPED USING APPROVED METHODS, SEALANT SHALL BE

PROCEEDING. ALL CORING/CHASING WILL BE DONE ON OVERTIME.

3.02 GENERAL INSTALLATION REQUIREMENTS

APPROVAL OF DATE, HOUR, AND TIME INTERVAL REQUIRED THEREOF. SCHEDULE OF WORK AS

- C. PRIOR TO ANY CHASING, CHOPPING, OR CORE DRILLING BEING PERFORMED, THE CONTRACTOR SHALL FIELD INVESTIGATE CONDITIONS AND COORDINATE WITH ALL APPROPRIATE TRADES TO ENSURE THAT WORK WILL BE IN HARMONY WITH OTHER WORK AND NOT AFFECTED ANY EXISTING BUILDING SYSTEMS. X-RAY SLABS IF REQUIRED. THIS WORK MUST BE APPROVED BY BUILDING MANAGEMENT PRIOR TO
- D. THE CONTRACTOR SHALL TAKE STATIC AND RESIDUAL PRESSURE READINGS AT ALL NEW POINTS OF CONNECTION TO THE BASE BUILDING DOMESTIC WATER SYSTEM. THE RESIDUAL PRESSURE READING SHALL BE TAKEN WITH THE BASE BUILDING SHUT-OFF VALVE IN THE FULL OPEN POSITION. ALL RESULTING PRESSURES AND FLOWS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. PROCUREMENT AND INSTALLATION OF PLUMBING FIXTURES AND APPLIANCES SHALL OCCUR ONLY AFTER THE FLOW TEST RESULTS AND ANY PRESSURE/OPERATIONAL CONCERNS HAVE BEEN REVIEWED BY THE ENGINEER.
- A RUN AND ARRANGE PIPING APPROXIMATELY AS INDICATED ON THE DRAWINGS AND AS DIRECTED. DURING INSTALLATION, AS STRAIGHT AND DIRECT AS POSSIBLE, FORMING RIGHT ANGLES OR PARALLEL LINES WITH BUILDING WALLS AND OTHER PIPES, AND NEATLY SPACED. PIPING SHALL BE INSTALLED SO THAT EVERY PORTION OF THE SYSTEM CAN BE ENTIRELY DRAINED

B. MATERIALS AND COMPONENTS: INSTALL LEVEL, PLUMB, AND PARALLEL AND PERPENDICULAR TO

C. EQUIPMENT: INSTALL TO FACILITATE SERVICE, MAINTENANCE, AND REPAIR OR REPLACEMENT OF

OTHER BUILDING SYSTEMS AND COMPONENTS, UNLESS OTHERWISE INDICATED.

- COMPONENTS. CONNECT FOR EASE OF DISCONNECTING, WITH MINIMUM INTERFERENCE WITH OTHER INSTALLATIONS D. DO NOT INSTALL PIPES OR OTHER APPARATUS IN A MANNER WHICH MAY INTERFERE WITH THE FULL
- SWING OF ANY DOOR. E. THE ARRANGEMENT, POSITION AND CONNECTION OF PIPES INDICATED ON THE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS POSSIBLE BUT THE RIGHT IS RESERVED BY THE OWNER TO CHANGE LOCATIONS AND ELEVATIONS TO ACCOMMODATE CONDITIONS WHICH MAY ARISE DURING THE PROGRESS OF THE WORK, WITHOUT ADDITIONAL COMPENSATION TO THE CONTRACTOR FOR SUCH CHANGES, PROVIDED THAT NO ADDITIONAL EQUIPMENT OR FIXTURES ARE REQUIRED AND CHANGES
- F. REAM ALL PIPE SMOOTH BEFORE INSTALLATION. DO NOT BEND, SPLIT, FLATTEN OR DAMAGEE PIPE IN ANY WAY. ANY PIPE CUT, DENTED OR DAMAGED SHALL BE REPLACED BY THIS CONTRACTOR WITHOUT ADDITIONAL EXPENSE TO THE OWNER.
- G. THE DRAWINGS ARE GIVEN AS A GUIDE ONLY, AND THEREFORE, DO NOT RELIEVE THIS CONTRACTOR FROM PROVIDING AND INSTALLING ALL EQUIPMENT NECESSARY TO COMPLETE THE INSTALLATION ACCORDING TO THE REQUIREMENTS OF LOCAL AND STATE PLUMBING AND BUILDING CODES.

#### A. THE PLUMBING CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS WITH THE LOCAL BUILDING DEPARTMENT AND BE RESPONSIBLE FOR OBTAINING FNAL APPROVALS WITH ALL AUTHORITIES HAVING JURISDICTION. PROVIDE A COPY OF ALL REQUIRED APPLICATIONS AND PERMITS TO THE PROPERTY

MANAGER AND LANDLORD FOR THEIR RECORDS.

SPECIFICATIONS."

ARE REQUESTED PRIOR TO INSTALLATION

3.03 BUILDING DEPARTMENT PERMITS AND CERTIFICATES

- 3.04 CUTTING AND PATCHING A. DO ALL CUTTING NECESSARY FOR THE INSTALLATION OF PLUMBING WORK. ACCURATELY LAYOUT WORK FOR WHICH CUTTING IS REQUIRED, SO AS TO AVOID UNNECESSARY LARGE OPENINGS. CUTTING OF BEAMS, JOISTS, FLOORS OR WALLS OF THE BUILDING WILL NOT BE PERMITTED EXCEPT AFTER
- RECEIVING APPROVAL OF THE BUILDING MANAGER. B. ROUGH PATCHING WILL BE DONE BY THIS CONTRACTOR IN A MANNER TO ACCOMMODATE FINISHED PATCHING WORK FINISHED PATCHING WILL BE DONE "LINDER ANOTHER SECTION OF THE
- 3.05 PROTECTION A. CONTRACTOR SHALL BE RESPONSIBLE FOR HIS WORK AND EQUIPMENT UNTIL FINALLY INSPECTED, TESTED AND ACCEPTED. MATERIALS AND EQUIPMENT SHALL BE CAREFULLY STORED. WHICH ARE NOT IMMEDIATELY INSTALLED. AFTER DELIVERY TO SITE, CLOSE EXPOSED PARTS OF THE WORK WITH
- TEMPORARY COVERS, OR PLUGS DURING CONSTRUCTION, TO PREVENT ENTRY OF MOISTURE OR OBSTRUCTING MATERIALS. B. PROTECT THE WORK AND MATERIAL OF OTHERS FROM DAMAGE INSTALLED AS PART OF T

CONTRACT. RESTORE ANY WORK DAMAGED AND BE RESPONSIBLE FOR ALL CURRENT WORK AND

A. PROVIDE ALL LABOR AND MATERIAL TO PERFORM ALL REQUIRED TESTS IN ACCORDANCE WITH THE

LOCAL AND STATE PLUMBING CODES. TESTS SHALL BE PERFORMED IN THE PRESENCE OF THE

OWNER'S REPRESENTATIVE AND ALL OTHER AUTHORITIES HAVING JURISDICTION.

- B NOTIFY THE OWNER'S REPRESENTATIVE A MINIMUM OF 48 HOURS IN ADVANCE OF PERFORMING THE TESTING. IN ORDER THAT ARRANGEMENTS CAN BE MADE FOR THEIR TO WITNESS THE TESTS.
- C. ALL DEFECTIVE WORK SHALL BE PROMPTLY REPAIRED OR REPLACED AND THE TESTS REPEATED UNTIL ACCEPTABLE PASSING RESULTS HAVE BEEN ACHIEVED.
- D. ANY DAMAGE RESULTING FROM TESTING SHALL BE REPAIRED TO THE SATISFACTION OF THE OWNER.
- E. SUBMIT ALL TESTING RESULTS TO THE OWNER F. FLUSHING AND DISINFECTION OF DOMESTIC WATER PIPING
- 1 CHEMICAL CLEANING AND PRETREATMENT 2. CLEANING OF PIPING SHALL BE PERFORMED IN THE PRESENCE OF A BUILDING REPRESENTATIVE.
- 3 PROVIDE ALL DISPERSANTS, SCALE INHIBITORS AND CORROSION INHIBITORS AS REQUIRED FOR CLEANING AND TREATING ALL PIPING SYSTEMS. CHROMATES SHALL NOT BE USED.
- 4. ALL CHEMICALS TO BE USED FOR PIPE CLEANING SHALL BE APPROVED BY THE BASE BUILDING CHEMICAL TREATMENT COMPANY. 5. FLUSH PIPING SYSTEMS WITH THE APPROVED CLEANING CHEMICAL TO REMOVE PIPE DOPE.

SLUSHING COMPOUNDS, CUTTING OILS AND OTHER LOOSE EXTRANEOUS MATERIALS. SEAL ENDS

- AFTER CLEANING. THE CONTRACTOR SHALL
- 7. SATISFY EACH CHEMICAL HAS THE PROPER FEED RATES FOR CLEANING AND PRETREATMENT OF
- 8. CHECK THAT THE CLEANING SOLUTION IS ACTUALLY IN EACH SYSTEM. 9. SATISFY WHEN TO FLUSH THE SYSTEM. 10. CHECK EACH SYSTEM FOLLOWING FLUSHING TO ENSURE CLEANING CHEMICALS HAVE BEEN

REMOVED FROM EACH SYSTEM AND TEST TO ENSURE PH OF NEW SYSTEM IS WITHIN 0.5 OF FRESH

11. BLOCK MODULATING VALVES, ZONE VALVES AND OTHER SYSTEM RESTRICTIONS. PROVIDE BY PASS PIPING AND VALVING TO ISOLATE NEW AND EXISTING TO BE RE-USED EQUIPMENT SUCH AS CHILLERS, COILS, HEAT EXCHANGERS, ETC. FROM THE CLEANING PROCESS.

12. PROVIDE PORTABLE PUMPS TO CIRCULATE WATER FOR CLEANING PURPOSES AT RESPECTIVE

FLOWS FOR FOUR (4) HOURS. REMOVE AND CLEAN STRAINERS. BLOW OFF LOW POINTS WITH

13. CHEMICAL USED FOR CLEANING OF SYSTEMS SHALL COMPLY WITH THE RECOMMENDATIONS OF THE MANUFACTURERS OF THE MAJOR COMPONENTS IN THE SYSTEM AND SHALL BE APPROVED FOR

14. UPON INITIAL FILL (FOLLOWING SYSTEM FLUSHING) THE APPROVED CHEMICALS WHICH PROVIDE A

PROTECTIVE COATING TO PREVENT OXIDATION OF THE CLEANED SYSTEM SHALL BE ADDED.

GE Crotonville - Executive Residence Building Water Heater Replacement

Old Albany Post Road Ossining, NY

11/09/21 ISSUED FOR PRICING 10/29/21 ISSUED FOR REVIEW Revision No. Issued

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PLUMBING SPECIFICATIONS - 1 OF 2

NOT TO SCALE 10/XX/2021

Drawing No:

G003-03-017

TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT. THESE PLAN AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE 2020 ENERGY CONSERVATION THIS PLAN IS APPROVED ONLY FOR THE WORK ON THE APPLICATION SPECIFICATION SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON OR TO BE

CONSIDERED AS EITHER BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES

02 OF 06

PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract apply to this Section, including General and Supplementary
- Conditions and Division 01 Specification Sections.
- A. This Section includes packaged, factory-fabricated and assembled, gas-fired, semi-instantaneous, high efficiency condensing domestic water heaters, trim and accessories for generating hot potable water.

#### 1.3 SUBMITTALS

1.2 SUMMARY

- A. Product Data: Include performance data, operating characteristics, furnished specialties and accessories.
- 1. Prior to flue vent installation, engineered calculations and drawings must be submitted to Architect/Engineer to thoroughly demonstrate that size and configuration conform to recommended size, length and footprint for each submitted water heater.
- B. Efficiency Curves: At a minimum, submit <u>Thermal</u> efficiency curves for 100%, 80%, 60%, 40%, 20% and the lowest input firing rates at incoming water temperatures ranging from 70°F to 140°F. Test protocols shall conform to
- C. Pressure Drop Curve: Submit pressure drop curve for flows ranging from 0 GPM to maximum value of water heater.
- D. Shop Drawings: For water heaters, water heater trim and accessories, include
- 1. Plans, elevations, sections, details and attachments to other work
- 2. Wiring Diagrams for power, signal and control wiring E. Source Quality Control Test Reports: Reports shall be included in submittals.
- F. Field Quality Control Test Reports: Reports shall be included in submittals.
- G. Operation and Maintenance Data: Data to be included in water heater emergency, operation and maintenance
- H. Warranty: Standard warranty specified in this Section.
- Other Informational Submittals
- 1. ASME Stamp Certification and Report: Submit "A," "S," or "PP" stamp certificate of authorization, as required by authorities having jurisdiction, and document hydrostatic testing of piping external to water heater.
- 1.4 QUALITY ASSURANCE
- A. Electrical Components, Devices and Accessories: Condensing water heaters must be listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended
- B. Performance Compliance: Condensing water heaters must be rated in accordance with ASHRAE 118.1 testing methods and verified by AHRI as capable of achieving the energy efficiency and performance ratings as tested
- within prescribed tolerances.

. ASME Compliance: Condensing water heaters must be constructed in accordance with ASME Water heater and

- Pressure Vessel Code. Section IV (HLW) Potable Water Heaters. D. Comply with NSF 5 Water heaters, hot water supply boilers, and heat recovery equipment and NSF 372, drinking
- water system components lead content. . ASHRAE/IESNA 90.1 Compliance: Condensing water heaters shall have minimum Thermal efficiency according
- to "Gas and Oil Fired water heaters Minimum Efficiency Requirements," when tested in accordance with Section G.1 "Method of Test for Measuring Thermal Efficiency" and G.2 "Method of Test for Measuring Standby Loss" of
- F. UL Compliance. Condensing water heaters must be tested for compliance with UL 795, "Commercial-Industrial Gas Heating Equipment." Condensing water heaters shall be listed and labeled by a testing agency acceptable to authorities having jurisdiction.
- G. NOx Emission Standards. When installed and operated in accordance with manufacturer's instructions, condensing water heaters hall comply with the NOx emission standards outlined in South Coast Air Quality Management District (SCAQMD), Rule 1146.2; and the Texas Commission on Environmental Quality (TCEQ), Title 30, Chapter 117, Rule 117.465.

#### 1.5 COORDINATION

A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement and formwork requirements are specified in Division 03.

- A. Standard Warranty: Water heaters shall include manufacturer's standard form in which manufacturer agrees to repair or replace components of water heaters that fail in materials or workmanship within specified warranty

mechanical defects, or workmanship.

- 1. Warranty Period for Fire-Tube Condensing Water heaters: a. The pressure vessel shall carry a 10\_year from shipment, non-prorated, limited warranty against any failure due to waterside corrosion, mechanical defects, or workmanship. The heat exchanger shall carry a 10 year from shipment, prorated, limited warranty against any failure due to condensate corrosion, thermal stress,
- b. Manufacturer labeled control panels are conditionally warranted against failure for two (2) years from
- All other components, with the exception of the igniter and flame detector, are conditionally guaranteed against any failure for 18 months from shipment

#### PART 2 - PRODUCTS

- 2.1 MANUFACTURERS
- A. Subject to compliance with all specified requirements, provide products as produced by the manufacture used as manufacture, and operation of condensing, modulating water heater systems may be submitted for approval as an equal provided the submission contains sufficient information for evaluation and the manufacturer certifies full compliance with the performance, physical characteristic requirements and all operational features of these
- B. Alternate manufacturers shall provide a reference list with a minimum of five (5) similar installations, contact name and phone number, and model of equipment provided. For Alternate manufacturers: All costs associated with system design changes, including redesign, additional components, engineering drawings, and filings with the NYC Building Department shall be borne entirely by the installing Plumbing/Mechanical Contractor.
- C. Should the initial "Or, Equal" submittal be incomplete or otherwise fail to demonstrate "Or, Equal" status, no further submissions by the failed manufacturer will be reviewed
- D. Basis-of-Design Product: Subject to compliance with requirements, provide AERCO International Inc. INNOVATION series water heaters
- 2.2 CONSTRUCTION
- A. General: Water heaters shall be UL Listed, ASME Section IV (HLW) coded and stamped and shall incorporate an FM gas train. Each unit shall operate with a minimum ASHRAE 118.1 Thermal efficiency of 96% at full fire.
- B. System shall consist of water heater models as shown on the Schedule.
- C. Description: Water heater shall be direct fired, fully condensing, fire-tube design with pressure tight sealed heat exchanger. Gas pressure required into the regulator shall be a nominal 4" WC. maximum 14" WC. Power burner shall have full modulation, minimum firing rate shall not exceed 45,000 BTU/HR input. Water heaters requiring more than 4" WC gas pressure to the inlet of the gas train or with a minimum input greater than 45,000 BTU/Hr will not be considered equal. The heater shall have the capability of discharging into a positive pressure vent. Water heater thermal efficiency shall increase with decreasing load (output), while maintaining setpoint. Water heater shall have an operational setpoint capability of 50 °F to 190 °F and shall maintain the outlet temperature within an accuracy of +/- 4 OF during load changes of up to 50% rated capacity. Heater shall operate quietly, less than 55 dba. The factory assembled and tested water heater shall be built on a steel base, including a sealed insulated sheet metal enclosure that acts as combustion-air intake plenum. Each water heater shall have an ASME
- approved temperature/pressure relief valve with a setting of 150 psig and 210 <sup>O</sup>F. D. Heat Exchanger: The heat exchanger shall be constructed with 316L stainless steel helical fire tubes, combustion chamber and dished tubesheet, with a two-pass combustion gas flow design. The heat exchanger shall be electroless nickel plated. The fire tubes shall be 3/4" OD, with no less than 0.035" wall thickness. The upper and lower stainless steel tubesheet shall be no less than 0.625" thick. The heat exchanger shall be welded and brazed construction. The heat exchanger shall be ASME Sect IV (HLW) stamped for a working pressure not less than 160
- Shell Assembly Pressure Vessel: The shell assembly pressure vessel shall have a maximum water volume of 26 gallons. The water heater water pressure drop shall not exceed 2 psig at 30 gpm. The water heater water connections shall be 2\_inch NPT male connections. The shell assembly pressure vessel shall be constructed of 304 stainless steel of 0.25\_inch wall thickness. The shell assembly pressure vessel shall be electroless nickel plated. Inspection openings in the pressure vessel shall be in accordance with ASME Section IV pressure vessel code. The shell assembly pressure vessel shall be ASME Sect IV (HLW) stamped for a working pressure not less than 160 psig.
- Modulating Air/Fuel Valve and Burner: The water heater burner's minimum turndown ratio of the firing rate shall be achieved without loss of combustion efficiency or staging of gas valves. The burner shall produce no more than its rated ppm of NOx corrected to 3% excess oxygen. The unit shall be certified by the South Coast Air Quality Management District (SCAQMD) as compliant with Rule 1146.2 for water heaters and water heaters less than or equal to 2 MBTUs, and the Texas Commission on Environmental Quality (TCEQ) as being compliant with Section 117.465 for water heaters and water heaters less than or equal to 2 MBTUs. The burner shall be metal\_fiber mesh covering a stainless steel body with spark ignition and flame rectification. All burner material exposed to the combustion zone shall be of stainless steel construction. There shall be no moving parts within the burner itself. A modulating air/fuel valve shall meter the air and fuel input. The modulating motor must be linked to both the gas valve body and air valve body with a single linkage. The linkage shall not require any field adjustment. A variable frequency drive (VFD), controlled cast aluminum pre-mix blower shall be used to ensure the optimum mixing of air and fuel between the air/fuel valve and the burner.
- 6. Minimum water heater <u>Thermal</u> efficiencies shall be as follows at a 70 degree delta-T:
- EWT 70 F, 100% Fire 96%, 80% Fire 97%, 60% Fire 97.5%, 40% Fire 98%, 20% Fire 98.5%, <10% Fire - 99%
- H. The exhaust manifold shall be of corrosion resistant cast aluminum with a 6 inch diameter flue connection. The exhaust manifold shall have a collecting reservoir and a gravity drain for the elimination of condensation
- Exhaust Safety System: The water heater shall include an exhaust sensor that continuously monitors the flue gas temperature during operation to protect the integrity of the flue material and to ensure proper operational performance. The exhaust safety system will reduce the heaters firing rate in the event that the flue gas temperature reaches critical levels and will disable the water heater if the condition does not improve. The heater will display a fault during this event on the control panel and will also provide a control point to the building automation system for monitoring purposes.
- Blower. The water heater shall include a variable-speed, DC centrifugal fan to operate during the burner firing sequence and pre-purge the combustion chamber.

1. Motors: Blower motors shall comply with requirements specified in Division 23 Section "Common Motor

- Requirements for HVAC Equipment. a. Motor Sizes: Driven load shall not require a motor to operate in the service factor range above 1.0.
- K. Ignition: Ignition shall be via spark ignition with 100 percent main-valve shutoff and electronic flame supervision.
- Accessibility: Heater physical size shall enable future upgrade or replacement through a standard doorway without
- M. Serviceability: Heaters shall be fully serviceable from either side and all connections shall be on the back of the unit. This design shall allow for 2 heaters to have 0 side clearance between them for optimum space conservation.

- 2.3 CONTROLS
- A. Refer to Division 23, Section "Instrumentation and Control of HVAC."
- B. The water heater control system shall be segregated into three components: "C-More" Control Panel, Power Box and Input/Output Connection Box. The entire system shall be Underwriters Laboratories recognized.
- C. The control panel shall consist of six individual circuit boards using state-of-the-art surface-mount technology in a single enclosure. These circuit boards shall include:
- 1. A display board incorporating LED display to indicate temperature and a vacuum fluorescent display module
- for all message enunciation 2. A CPU board housing all control functions
- 3. An electric low-water cutoff board with test and manual reset functions
- 4. A power supply board
- 5. An ignition /stepper board incorporating flame safeguard control A connector board
- Each board shall be individually field replaceable
- D. The combustion safeguard/flame monitoring system shall use spark ignition and a rectification-type flame sensor.
- E. The control panel hardware shall support both RS-232 and RS-485 remote communications.
- F. The controls shall annunciate water heater and sensor status and include extensive self-diagnostic capabilities that incorporate a minimum of eight separate status messages and 34 separate fault messages.
- G. The control panel shall incorporate three self-governing features designed to enhance operation in modes where it receives an external control signal by eliminating nuisance faults due to over-temperature, improper external signal or loss of external signal. These features include:
- 1. Setpoint High Limit: Setpoint high limit allows for a selectable maximum water heater outlet temperature and acts as temperature limiting governor. Setpoint limit is based on a PID function that automatically limits firing rate to maintain outlet temperature within a 0 to 10 degree selectable band from the desired maximum water heater outlet temperature.
- 2. Setpoint Low Limit: Setpoint low limit allows for a selectable minimum operating temperature.
- 3. Failsafe Mode: Failsafe mode allows the water heater to switch its mode to operate from an internal setpoint if its external control signal is lost, rather than shut off. This is a selectable mode, enabling the control can to shut off the unit upon loss of external signal, if so desired.
- H. The water heater control system shall incorporate the following additional features for enhanced external system
- System start temperature feature Pump delay timer
- 3. Auxiliary start delay timer
- 4. Auxiliary temperature sensor
- 5. Analog output feature to enable simple monitoring of temperature setpoint, outlet temperature or fire rate
- 6. Remote interlock circuit
- 7. Delayed interlock circuit
- 8. Fault relay for remote fault alarm
- 9. Remote monitoring communications capability. Enabling the Owner to purchase a future subscription of the OnAER Remote Monitoring Service without equipment modification
- I. Water Heater Management: the water heater control system shall incorporate onboard multi-unit sequencing logic that would allow lead-lag functionality & sequencing between multiple water heaters operating in parallel and must have the following capabilities:
- 1. Efficiently sequence 2 up to 8 units on the same system to meet the load requirement.
- 2. Individual unit feed-forward logic will still be enabled for accurate temperature control equal to individual unit's
- 3. Operate one motorized valve per unit as an element of the load sequencing, Valves shall close with decreased
- load as heaters turn off, minimum of one (quantity must be selectable) must always stay open for recirculation. 4. Automatically rotate lead/lag amongst the units on the chain and monitor run hours per unit and balance load in
- an effort to equalize unit run hours 5. Automatic bump-less transfer of master function to next unit on the chain in case of designated master unit
- failure; master/slave status should be shown on the individual unit displays 6. Units will default to individual control upon failure of the communications chain
- 7. Night temperature setback.
- 8. Designated master control, used to display and adjust key system parameters
- J. Each water heater shall be supplied with a factory packaged and pre-wired motorized ball valve. This valve shall be controlled by the water heater control system as an element of the onboard water heater management.
- K. Each water heater shall include an electric, single-seated combination safety shutoff valve/regulator with proof of
- L. Each water heater shall incorporate dual over-temperature protection with manual reset, in accordance with ASME
- 2.4 CONDENSATE
- A. Low-profile condensate neutralizing tubes. Each tube shall be suitable for no less than 12 months continuous operation at full condensing rate. Tubes shall be refillable;

B. Condensate traps, manufactured from only non-corrosive materials. In order to guarantee flue gasses cannot leak

- into the boiler room, the traps shall be float-type traps NO EXCEPTIONS. 2.5 ELECTRICAL POWER
- A. Controllers, Electrical Devices and Wiring: Electrical devices and connections are specified in Division 26 sections.
- B. Single-Point Field Power Connection: Factory-installed and factory-wired switches, motor controllers, transformers and other electrical devices shall provide a single-point field power connection to the water heater.
- C. Electrical Characteristics:
- Voltage: 120 V 2. Phase: Single
- 3. Frequency: 60 Hz
- 4. Full-Load Current: 9 Amps
- 2.6 VENTING
- A. The exhaust vent must be UL Listed for use with Category III and IV appliances and compatible with positive pressure, condensing flue gas service. UL\_ listed vents AL 29-4C stainless steel must be used with water heaters.

C. Combustion-Air Intake: Water heaters shall be capable of drawing combustion air from the outdoors via a metal or

- B. The minimum exhaust vent duct size for each water heater is six-inch diameter.
- PVC duct connected between the water heater and the outdoors. D. The minimum sealed combustion air duct size for each water heater is six-inch diameter.
- E. Common Vent and Common Combustion Air must be an available option for water heater installation. Consult manufacturer for common vent and combustion air sizing.
- F. Follow guidelines specified in manufacturer's venting guide.
- 2.7 SERVICE CONTRACT A. The manufacturer's representative shall include a one (1) year service contract. The service contract period shall commence upon owner acceptance of the system. The service contract shall include a complete system inspection twice a year including: visual inspection of the heat exchanger and combustion chamber; combustion analysis including a time/date printout of results and recalibration as needed; check and adjustment of temperature setting; check and adjustment of gas supply pressure; replacement of both the spark plug (ignitor) and flame detector. Any required service work (or periodic tube cleaning) to be noted in a formal inspection report along with a detailed
- A. Burner and Hydrostatic Test: Factory adjust burner to eliminate excess oxygen, carbon dioxide, oxides of nitrogen emissions and carbon monoxide in flue gas, and to achieve combustion efficiency. Perform hydrostatic testing.
- B. Test and inspect factory-assembled water heaters, before shipping, according to ASME Boiler and Pressure Vessel
- 1. If water heaters are not factory assembled and fire-tested, the local vendor is responsible for all field assembly
- C. Allow Owner access to source quality-control testing of water heaters. Notify Architect fourteen days in advance of

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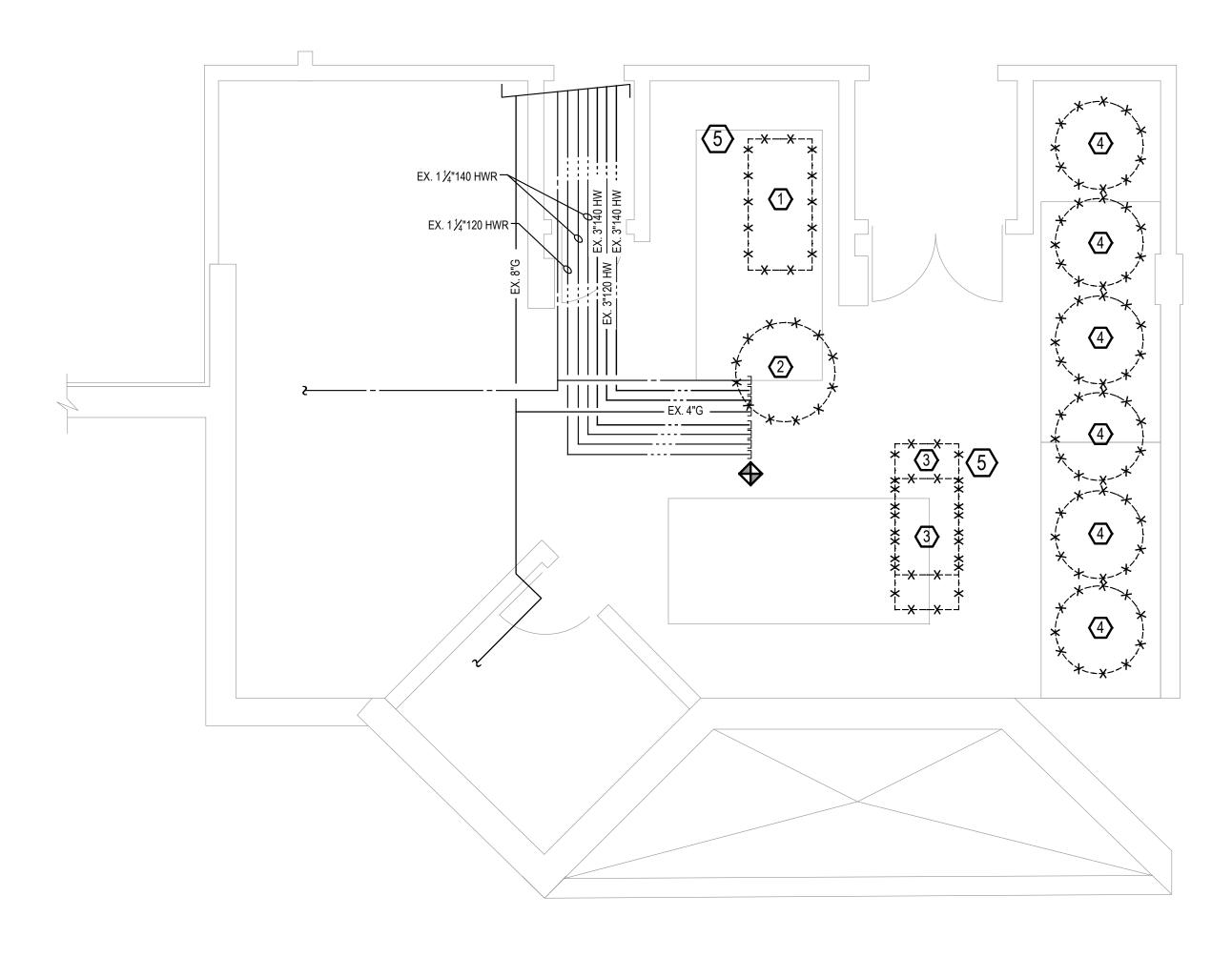
PLUMBING SPECIFICATIONS - 2 OF 2 NOT TO SCALE 10/XX/2021 Proj. Manager:

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AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE 2020 ENERGY CONSERVATION THIS PLAN IS APPROVED ONLY FOR THE WORK ON THE APPLICATION SPECIFICATION SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON OR TO BE CONSIDERED AS EITHER BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES.

TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT, THESE PLANS

03 OF 06



PLUMBING - BASEMENT DEMOLITION PART PLAN SCALE: 1/2"=1'-0"

## PLUMBING DEMOLITION NOTES

- 1. <u>GENERAL</u>
- A. PRIOR TO PROPOSAL SUBMISSION, THIS CONTRACTOR SHALL VISIT THE SITE TO REVIEW THE EXISTING CONDITIONS ASSOCIATED WITH THE SCOPE OF WORK AND ADJACENT AREAS TO ASCERTAIN THE DIFFICULTIES WHICH WILL AFFECT THE EXECUTION OF THE WORK OF THIS CONTRACT.
- B. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT THE ABOVE SITE EXAMINATION HAS BEEN MADE AND LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN EXAMINATION BEEN MADE.
- C. DEMOLITION WORK SHALL INCLUDE ALL MATERIALS, LABOR, EXTENSIONS, CONNECTIONS, CUTTING, REPAIRING, ADAPTING AND OTHER PLUMBING WORK REQUIRED TO MAINTAIN SERVICE PENDING THE COMPLETION OF THE PERMANENT WORK. COORDINATE THE EXTENT OF DEMOLITION WORK WITH THE ARCHITECT AND BUILDING MANAGEMENT.
- 2. SCOPE OF WORK
- A. ALL EXISTING WORK REQUIRED TO REMAIN BUT INTERFERING WITH PROPOSED NEW PLUMBING (AS WELL AS ELECTRICAL, MECHANICAL AND GENERAL CONSTRUCTION WORK) SHALL BE RELOCATED AND RECONNECTED USING MATERIALS CONFORMING TO STANDARDS OF THIS CONTRACT.
- B. REMOVE BASE BUILDING PIPING AS INDICATED BELOW:
- a. REMOVE ALL ABANDONED BASE BUILDING PIPING BACK TO THE EXISTING WET COLUMNS OR SHAFTS, OR AS NOTED ON DRAWINGS.
- b. CONTRACTOR TO CONTACT BUILDING MANAGEMENT AND TENANT REGARDING REMOVAL SCOPE OF WORK TO MAINTAIN CONTINUITY OF ALL SERVICES TO ALL TENANTS WHO ARE TO REMAIN OPERATIONAL AND NOT BE AFFECTED BY DEMOLITION WORK.
- c. ALL EXISTING BUILDING VALVES FOR DOMESTIC WATER MAINS AT SHAFTS ARE TO REMAIN.
- C. PROVIDE ADDITIONAL SUPPORT FOR ALL EXISTING PIPING TO REMAIN WHICH ARE AFFECTED BY DEMOLITION OF EXISTING CEILING AND PARTITIONS.
- D. ALL MATERIALS AND EQUIPMENT SHALL BE DISPOSED OF IN ACCORDANCE WITH APPLICABLE LAWS AND ENVIRONMENTAL REGULATIONS.
- E. COORDINATE WITH OWNER TO DETERMINE WHETHER EQUIPMENT IS TO BE TURNED OVER FOR FUTURE USE AND STORED IN THEIR ASSOCIATED STORAGE
- F. CONTRACTOR TO DISCONNECT ALL ELECTRICAL CIRCUITING AND CONTROLS AS

## PLUMBING KEY NOTES

- CONTRACTOR SHALL DECOMMISSION AND REMOVE EXISTING GAS-FIRED WATER HEATER. DISCONNECT AND REMOVE ALL EXISTING CW, HW & HWR PIPING FROM THE WATER HEATER TO THE STORAGE TANK WATER HEATER TO THE STORAGE TANK.
- CONTRACTOR SHALL DECOMMISSION AND REMOVE EXISTING 750 GALLONS HOT WATER STORAGE TANK, DISCONNECT AND REMOVE ALL EXISTING CW, HW & HWR PIPING FROM THE STORAGE TANK TO POINT OF DISCONNECTION TO THE EXISTING.
- CONTRACTOR SHALL DECOMMISSION AND REMOVE EXISTING TWO (2) GAS-FIRED WATER HEATER. DISCONNECT AND REMOVE ALL EXISTING CW, HW & HWR PIPING FROM THE WATER HEATER TO THE STORAGE TANK.
- CONTRACTOR SHALL DECOMMISSION AND REMOVE EXISTING SIX (6) 500 GALLONS HOT WATER STORAGE TANK, DISCONNECT AND REMOVE ALL EXISTING CW, HW & HWR PIPING FROM THE STORAGE TANK TO POINT OF DISCONNECTION TO THE EXISTING.

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CONTRACTOR SHALL DECOMMISSION AND SAVE TWO (2) EXISTING RE-CIRCULATION PUMP DURING DEMOLITION. IT SHALL BE RE-USED FOR NEW INSTALLATION. COORDINATE ALL WIRING CONNECTION AND CIRCUITS WITH THE ELECTRICIAN.

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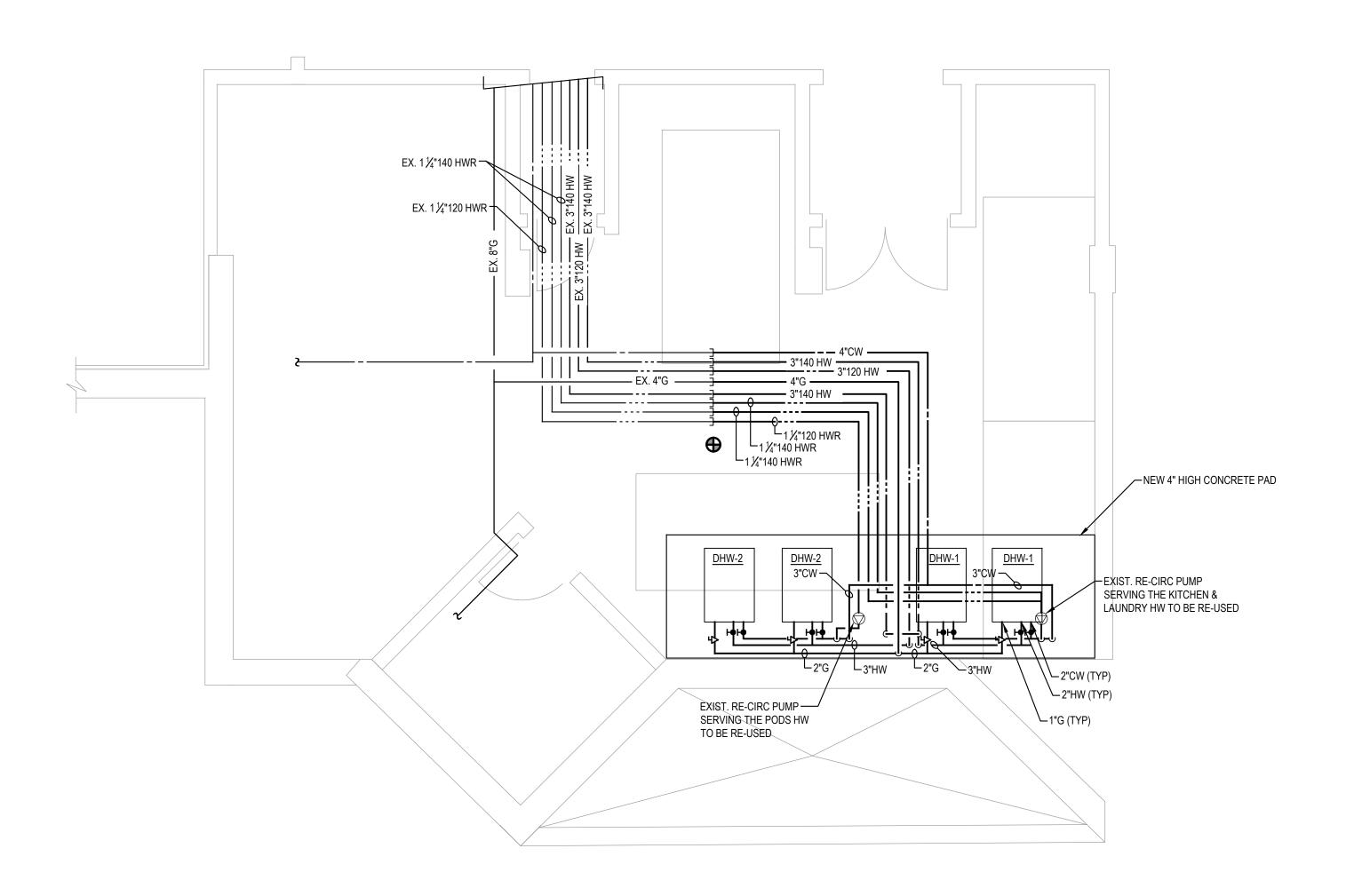
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PLUMBING BASEMENT FLOOR DEMOLITION PART PLAN

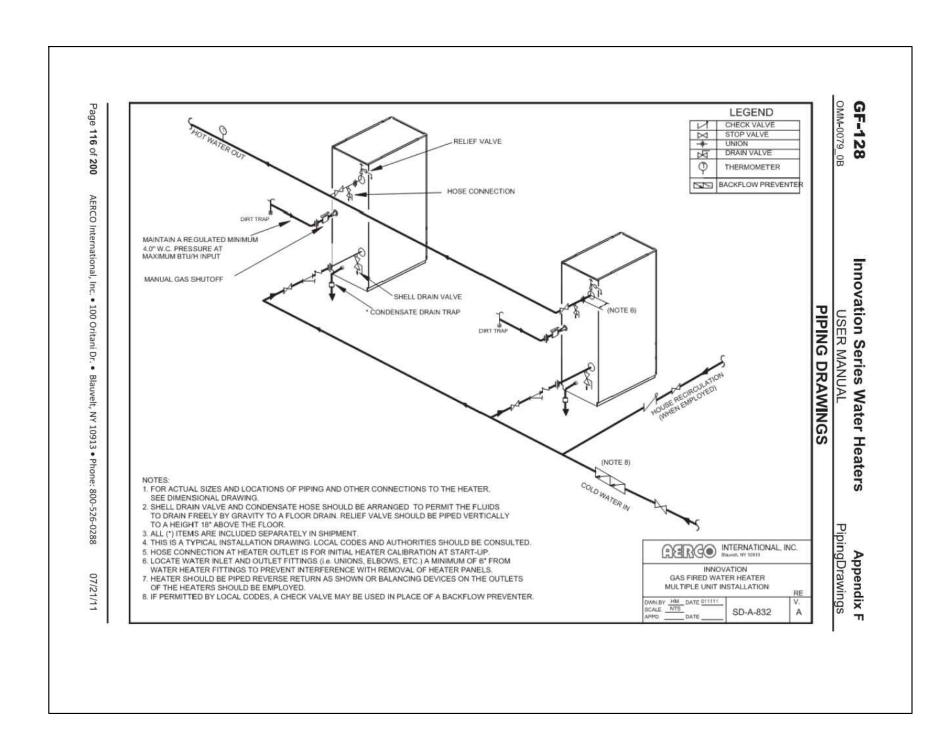
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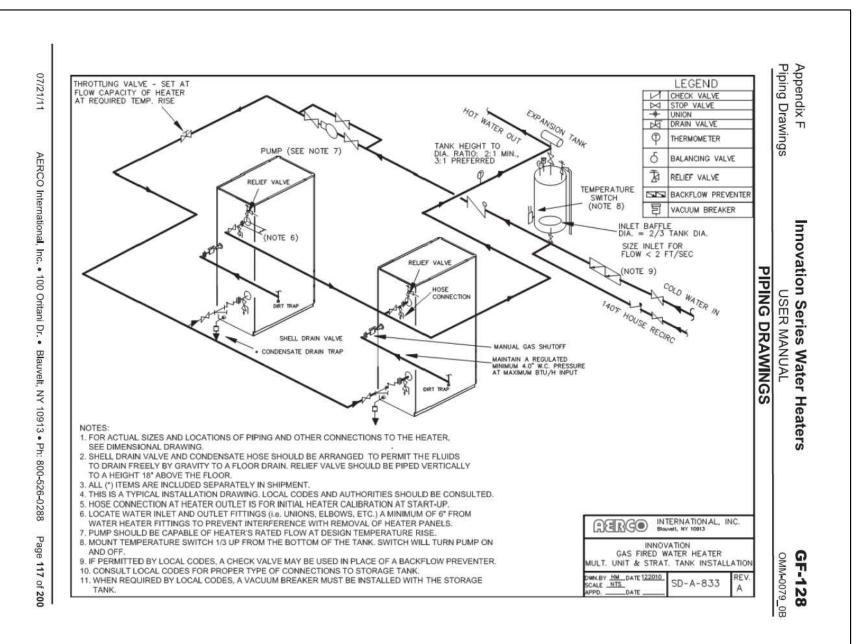


PLUMBING - BASEMENT PART PLAN



## DWH-1: AERCO INNO 1060 - MANUFACTURER'S PIPING DETAIL (FOR REFERENCE) SCALE: NTS

\*\*\*NOTE:CONTRACTOR TO PURCHASE ALL VALVING AS SHOWN AND INSTALL PER DETAIL ABOVE (MANUFACTURER'S RECOMMENDATION)



DWH-2: AERCO INNO 1350 - MANUFACTURER'S PIPING DETAIL (FOR REFERENCE)

\*\*\*NOTE: CONTRACTOR TO PURCHASE ALL VALVING AS SHOWN AND INSTALL PER DETAIL

## PLUMBING GENERAL NOTES

- 1. ROUTING OF WASTE, VENT, AND DOMESTIC WATER PIPING IS SHOWN DIAGRAMMATICALLY ONLY. PLUMBING CONTRACTOR MUST DETERMINE EXACT ROUTING OF NEW PIPING COORDINATED WITH ALL NEW AND EXISTING CONDITIONS. FIELD VERIFY EXACT SIZES OF THE EXIST. CW, HW, HWR PIPING.
- 2. THE PLUMBING CONTRACTOR SHALL COORDINATE ALL NEW WORK WITH THE EXISTING CONDITIONS AND THE NEW WORK OF ALL OTHER TRADES ON THE JOB SITE AND SHALL BE RESPONSIBLE TO REPAIR AND REPLACE ANY EXISTING SUSPENDED CEILINGS AND / OR FINISHES DAMAGED BY THE INSTALLATION OF EQUIPMENT, PIPING, FIXTURES, ETC. UNDER THE PLUMBING CONTRACT.CONTRACTOR TO VERIFY ON SITE THE EXACT LOCATION OF EXISTING SAN, VENT CW & HW RISER PIPE BEFORE INSTALLING ANY NEW WORK.
- 3. ALL FIRE PROOFING WORK AFFECTED BY NEW INSTALLATION ARE TO BE RESTORED TO ITS ORIGINAL CONDITION AND THE REQUIRED RATING.
- 4. PLUMBING INSTALLATION SHALL BE IN ACCORDANCE WITH LOCAL BUILDING CODES AND BUILDING STANDARD FOR ALTERATION CONSTRUCTION.
- 5. ANY HOT AND COLD WATER REQUESTS FOR SHUT RISER DOWNS SHALL BE MADE TO THE BUILDING 2 WEEKS IN ADVANCE.
- 6. CONTRACTOR SHALL PROVIDE AN ALLOWANCE IN HIS BID PRICE TO MODIFY EXISTING PLUMBING SYSTEM UPON THE REQUEST OF THE CLIENT TO ACCOMMODATE THE NEW SCOPE OF WORK.
- 7. CONTRACTOR SHALL COORDINATE WITH THE ELECTRICIAN FOR ANY POWER REQUIREMENT ON WATER HEATER AND CIRCULATION PUMP.
- REMOVE EXISTING TEMPERATURE MIXING VALVE AND RELATED TEMPERED WATER. HOT & COLD WATER SERVICES LINES TO EXISTING WATER HEATERS. CAP EXISTING HW, CW, HWR LINES IN THE CEILING WHERE INDICATED ON THE FLOOR PLAN.
- 9. CONTRACTOR TO COORDINATE WITH THE ELECTRICIAN ALL NEW CONNECTIONS/RECONNECTIONS OF ANY ELECTRICAL CIRCUITING AND CONTROLS AS NECESSARY, I.E., CIRCULATION PUMP, AQUASTAT, ETC.
- 10. CONTRACTOR TO PROVIDE AN ALLOWANCE IN HIS BID PRICE TO FURNISH & INSTALL NEW CIRCULATION PUMPS UPON THE REQUEST OF THE CLIENT.

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THROTTLING VALVE - SET AT FLOW CAPACITY OF HEATER AT REQUIRED TEMP. RISE	PUMP (SEE NOTE 7)	TANK HEIGHT TO DIA. RATIO: 2:1 MIN., 3:1 PREFERRED	EXPANSION TANK	LEGEND  CHECK VALVE STOP VALVE UNION DRAIN VALVE  THERMOMETER  BALANCING VALVE	Piping Drawings
	SHELL DRAIN VALVE CONDENSATE DRAIN TRAP	MAINTAIN A	SIZE	COLD	USER MANUAL PIPING DRAWINGS
SEE DIMENSIONAL DRAWIN 2. SHELL DRAIN VALVE AND C TO DRAIN FREELY BY GRAY TO A HEIGHT 18" ABOVE TH 3. ALL (*) ITEMS ARE INCLUDE 4. THIS IS A TYPICAL INSTALL 5. HOSE CONNECTION AT HEA 6. LOCATE WATER INLET AND WATER HEATER FITTINGS T 7. PUMP SHOULD BE CAPABLI	ONDENSATE HOSE SHOULD BE ARRANGED TO P ITY TO A FLOOR DRAIN. RELIEF VALVE SHOULD B E FLOOR.	ERMIT THE FLUIDS BE PIPED VERTICALLY  ES SHOULD BE CONSULTED. ON AT START-UP. MINIMUM OF 6" FROM HEATER PANELS. HATURE RISE.	RERGO	) INTERNATIONAL, INC. Blowelt, MY 10913 INNOVATION	-
AND OFF.  9. IF PERMITTED BY LOCAL CO 10. CONSULT LOCAL CODES F	DDES, A CHECK VALVE MAY BE USED IN PLACE OI OR PROPER TYPE OF CONNECTIONS TO STORAG IL CODES, A VACUUM BREAKER MUST BE INSTAL	F A BACKFLOW PREVENTER. SE TANK.	GAS FI	RED WATER HEATER STRAT. TANK INSTALLATION	<b>-</b>   ₹

SCALE: NTS

ABOVE (MANUFACTURER'S RECOMMENDATION)

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PLUMBING BASEMENT FI	LOOR PART PLAN
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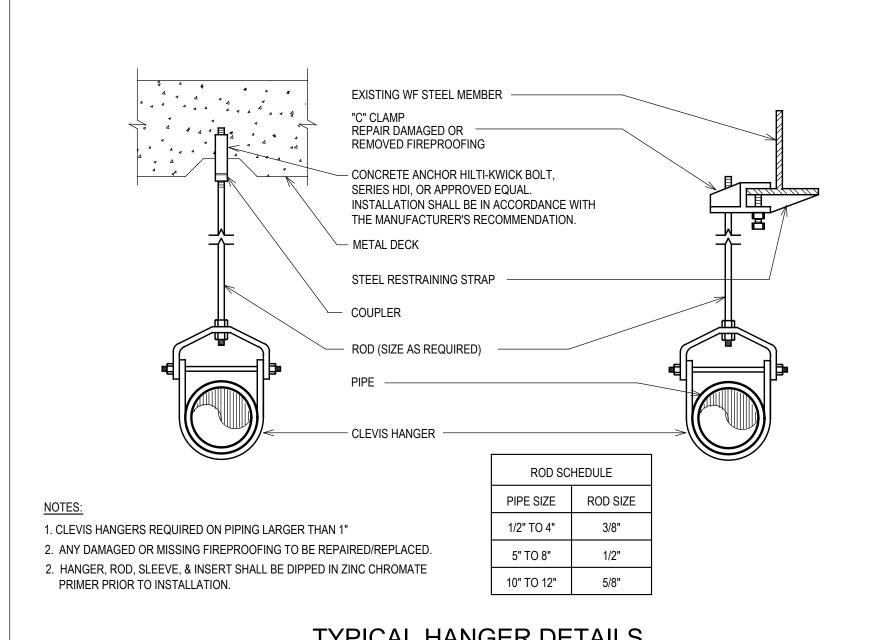
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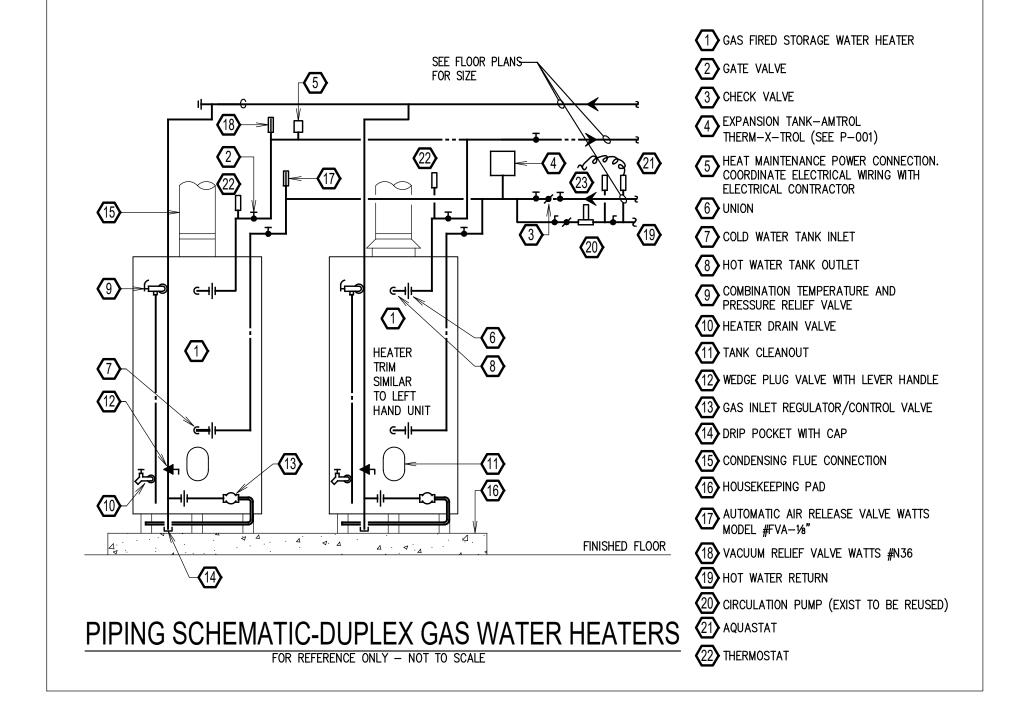
SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON OR TO BE CONSIDERED AS EITHER BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES.

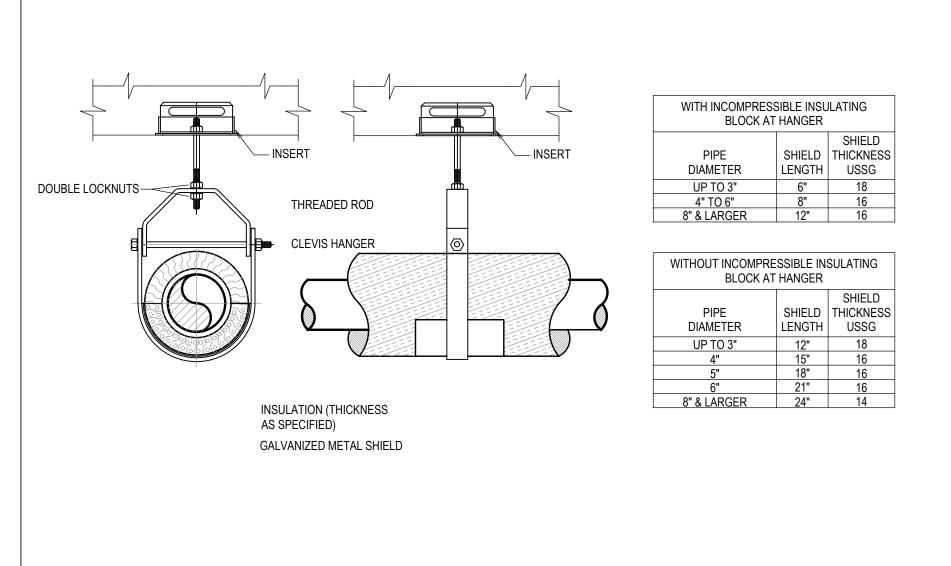
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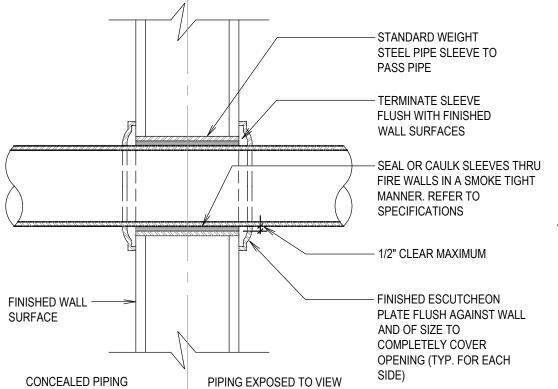


## TYPICAL HANGER DETAILS NOT TO SCALE





TYPICAL PIPE INSULATION DETAIL NOT TO SCALE



#### SLEEVES AND ESCUTCHEONS

- A. SLEEVES FOR PIPING THROUGH MASONRY WALLS SHALL BE SCHEDULE 40, STANDARD GALVANIZED STEEL PIPE; IN FRAMED PARTITIONS SHALL BE 20 GAUGE SHEET METAL. THE SPACE BETWEEN THE PIPE AND ITS SLEEVE SHALL NOT EXCEED ONE-HALF INCH. THE SLEEVE SHALL HAVE A SUFFICIENT LENGTH TO BE FLUSH WITH THE FINISHED WALL SURFACE.
- B. EXPOSED PIPING PASSING THROUGH WALLS, FLOORS OR CEILING SHALL BE FITTED WITH CHROMIUM-PLATED CAST BRASS ESCUTCHEONS WITH FASTENING SET SCREWS.

#### **CUTTING AND PATCHING**

- A. PIPING PASSING THROUGH WALLS SHALL HAVE A TRIM OPENING CUT NO GREATER THAN NECESSARY FOR THE INSTALLATION OF A SLEEVE SECURED THEREIN.
- B. PIPING PASSING THROUGH CONCRETE FLOORS SHALL HAVE AN OPENING CORE DRILLED SO THAT THE SPACE BETWEEN THE OPENING AND THE PIPE SHALL NOT EXCEED ONE-HALF
- C. ANNULAR SPACES BETWEEN PIPING AND SLEEVES OR CORE DRILLED FLOOR OPENINGS SHALL BE PACKED WITH MINERAL WOOL AND SEALED, TO RETAIN THE FIRE INTEGRITY OF THE WALLS AND FLOORS, WITH A NON-HARDENING COMPOUND SIMILAR OR EQUAL TO DUXSEAL AS MANUFACTURED BY THE J.M. CLIPPER CORP.

TYPICAL DETAIL OF PIPE INSTALLATION THRU RATED WALL

NOT TO SCALE

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AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE 2020 ENERGY CONSERVATION

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#### MECHANICAL SPECIFICATIONS

PART 1- GENERAL

#### 1.01 GENERAL

- A. THE LATEST EDITION OF AIA DOCUMENTS A201 GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION, OR AS REQUIRED BY THE ARCHITECTURAL DOCUMENTS AND/OR THE STRUCTURAL ENGINEERS DOCUMENTS ARE PART OF THE CONTRACT.
- B. BIDDERS SHALL VISIT AND CAREFULLY EXAMINE THE AREA AFFECTED BY THIS WORK TO FAMILIARIZE THEMSELVES WITH THE EXISTING CONDITIONS AND THE DIFFICULTIES THAT WILL AFFECT THE EXECUTION OF THIS WORK BEFORE SUBMITTING PROPOSALS. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE AND LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT, OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN EXAMINATION BEEN MADE. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ENGINEERS ATTENTION PRIOR TO BID. IF DISCREPANCIES ARE NOT RESOLVED TO CONTRACTORS SATISFACTION THEY SHALL BE QUALIFIED IN THEIR BID SUBMISSION.
- C. THIS CONTRACTOR SHALL REVIEW ALL CONSTRUCTION DOCUMENTS ASSOCIATED WITH THIS PROJECT INCLUDING GENERAL CONSTRUCTION, DEMOLITION, ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING AND SPRINKLER PLANS AND SPECIFICATIONS. ALL WORK REQUIRED IN THE BID WHICH IS INDICATED OR IMPLIED TO BE PERFORMED BY THIS TRADE IN OTHER SECTIONS OF THE WORK SHALL BE INCLUDED IN THEIR BID. IF A CONFLICT OCCURS IN THE BID SPECIFICATIONS AND/OR ON THE DRAWINGS, THE MORE STRINGENT SITUATION SHALL APPLY.
- D. COORDINATE ALL WORK OF THE SECTION WITH EXISTING CONDITIONS AND THE WORK OF OTHER TRADES. THE CONTRACTOR SHALL THOROUGHLY ACQUAINT HIMSELF WITH THE WORK INVOLVED AND SHALL VERIFY AT THE BUILDING ALL MEASUREMENTS NECESSARY FOR THE PROPER INSTALLATION OF THE WORK, OBTAINING THE SAME WHEN NECESSARY FROM THE OTHER CONTRACTORS AND SECTIONS. CONTRACTOR SHALL ALSO BE PREPARED TO PROMPTLY FURNISH TO OTHER CONTRACTORS ANY INFORMATION RELATING TO THE WORK OF THIS SECTION NECESSARY FOR THE PROPER INSTALLATION OF OTHER CONTRACTS AND SHALL COOPERATE TO SECURE THE BEST PROGRESS OF, AND HARMONY BETWEEN, THE WORK OF THE DIFFERENT CONTRACTS AND SECTIONS IN THE INTERESTS OF THE INSTALLATION AS A WHOLE. CONFER WITH OTHER CONTRACTORS AND ENGINEER FOR ADJACENT WORK TO THIS SECTION AND ARRANGE TO HAVE VISIBLE PORTIONS OF WORK FIT AND HARMONIZE IN A MANNER SATISFACTORY TO THE OWNER'S REPRESENTATIVE.
- E. THE SPECIFICATIONS ARE ACCOMPANIED BY DRAWINGS INDICATING THE GENERAL LOCATION OF EQUIPMENT AND CONNECTIONS THERETO. UNLESS SPECIFICALLY DIMENSIONED, LOCATIONS OF EQUIPMENT AND ROUTINGS ARE APPROXIMATE. SCALES ON DRAWINGS ARE INDICATED FOR BIDDING PURPOSES ONLY. DRAWINGS SHALL NOT BE SCALED FOR CONSTRUCTION AND MANUFACTURING DETAILS. CERTAIN SYSTEMS ARE DIAGRAMMATIC AND GIVE THE GENERAL ARRANGEMENT ONLY. NO ADDED COMPENSATION WILL BE PERMITTED FOR VARIATIONS DUE TO FIELD CONDITIONS. EXACT LOCATIONS AND ARRANGEMENTS SHALL BE DETERMINED IN THE FIELD ON THE BASIS OF DETAILS INDICATED ON APPROVED SHOP DRAWINGS, AND SUPPLEMENTARY INFORMATION ISSUED BY THE ENGINEER, AND SHALL PROVIDE FOR OPERATING EFFICIENCY, NEATNESS OF APPEARANCE, AND EASE OF MAINTENANCE.
- F. GUARANTEE: THE CONTRACTOR SHALL GUARANTEE AND SERVICE THE ENTIRE INSTALLATION FOR A PERIOD OF ONE YEAR FROM THE DATE OF THE FINAL ACCEPTANCE OF THE INSTALLATION. THE CONTRACTOR SHALL, DURING THE PERIOD OF THE GUARANTEE, REPLACE OR REPAIR AT HIS OWN EXPENSE ANY PIECE OF EQUIPMENT AND/OR MATERIAL WHICH IS FOUND TO BE DEFECTIVE. THE REPLACEMENT OR REPAIR SHALL BE PERFORMED THE SAME DAY OF NOTIFICATION IN AN EMERGENCY FASHION WHEN NOTIFIED BY THE OWNER OR AUTHORIZED REPRESENTATIVE. THE CONTRACTOR SHALL ALSO REPAIR ALL DAMAGE TO SURROUNDING WORK CAUSED BY THE FAILURE, REPAIR OR REPLACEMENT OF DEFECTIVE EQUIPMENT. ALL REFRIGERATION COMPRESSORS SHALL HAVE A FACTORY GUARANTEE INCLUDING PARTS AND LABOR FOR FIVE YEARS TOTAL. THE FINAL ACCEPTANCE WILL BE MADE AFTER THE CONTRACTOR HAS ADJUSTED HIS EQUIPMENT, BALANCED THE VARIOUS SYSTEMS, DEMONSTRATED THAT IT FULFILLS THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATION, AND HAS FURNISHED ALL THE REQUIRED CERTIFICATES OF INSPECTION AND APPROVALS.
- G. EQUIPMENT AND MATERIALS: MOST ITEMS OF MECHANICAL AND ELECTRICAL EQUIPMENT AND MATERIAL ARE NOTED ON THE DRAWINGS OR IN THE SPECIFICATIONS WITH A MANUFACTURER'S NAME AND CATALOG NUMBER. THIS DESIGNATION IS USED TO SET THE STANDARD FOR CONSTRUCTION, PERFORMANCE, OPERATION AND APPEARANCE. PRODUCTS OF OTHER MANUFACTURERS WILL BE CONSIDERED AND RULED UPON BY THE ENGINEER. THE SUBMISSION OF A SUBSTITUTION IMPLIES THAT THE ITEM HAS ALL NECESSARY UNDERWRITERS' LABORATORIES, BOARD OF STANDARDS AND APPEALS, NATIONAL ELECTRICAL CODE, AND NEW YORK STATE ELECTRICAL CODES ETC. APPROVALS. SHOULD THE ITEM BE FOUND NOT TO HAVE SUCH APPROVAL, IT SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE
- H. SUBSTITUTIONS: DEVIATIONS FROM CONTRACT DOCUMENTS AND SUBSTITUTION OF MATERIALS OR EQUIPMENT FOR THOSE SPECIFIED SHALL BE REQUESTED INDIVIDUALLY IN WRITING. FURNISH INFORMATION AS REQUIRED TO DEMONSTRATE THAT THE ARTICLE, MATERIAL, APPARATUS, PRODUCT OR PROCESS TO BE USED IS ADEQUATELY COMPARABLE TO THAT SPECIFIED IN QUALITY, FINISH, DESIGN, EFFICIENCY, DURABILITY AND GENERAL APPEARANCE, AND HAS BEEN ELSEWHERE DEMONSTRATED TO BE SERVICEABLE FOR THE PURPOSES FOR WHICH IT IS INTENDED. IF TESTS OR DEMONSTRATIONS ARE REQUIRED BY THE OWNER'S REPRESENTATIVES, THE COST OF SUCH TESTS OR DEMONSTRATIONS SHALL BE BORNE BY THE CONTRACTOR. DESCRIBE REASON FOR CHANGE, CONNECTIONS TO ADJACENT MATERIALS, ELECTRICAL SERVICES, SERVICE ACCESS REQUIREMENTS, DIFFERENCES IN OPERATING CHARACTERISTICS OR CYCLES AND ALL OTHER POINTS OF DEVIATION. CONTRACTOR TO ASSUME FULL RESPONSIBILITY FOR SAFETY, COORDINATION WITH OTHER TRADES, OPERATION AND PERFORMANCE OF ALTERED
- I. THIS CONTRACTOR IS TO OBTAIN A COPY OF THE BUILDING RULES AND REGULATIONS PRIOR TO BID SUBMISSION. ALL WORK MUST BE INSTALLED IN ACCORDANCE WITH THE BUILDING RULES AND REGULATIONS. DETERMINE REQUIREMENTS AND THE EXTENT OF PREMIUM TIME WORK REQUIRED BY BUILDING, FOR THE PURPOSE OF THE BID ASSUME ANY NOISY WORK (E.G., CHOPPING, CORE DRILLING, WELDING, BRAISING, SOLDERING, ETC.) AND BASE BUILDING SYSTEMS INTERRUPTIONS ARE TO BE PERFORMED OUTSIDE NORMAL BUSINESS HOURS.
- J. REMOVAL, TEMPORARY CONNECTIONS AND RELOCATION OF CERTAIN EXISTING WORK WILL BE NECESSARY FOR THE INSTALLATION OF THE NEW SYSTEMS. ALL EXISTING CONDITIONS ARE NOT COMPLETELY DETAILED ON THE DRAWINGS. THE CONTRACTOR SHALL SURVEY THE SITE AND MAKE ALL NECESSARY CHANGES REQUIRED BASED ON EXISTING CONDITIONS FOR PROPER INSTALLATION OF NEW WORK.
- K. WHERE PIPE AND/OR DUCTWORK PENETRATE RATED WALLS, THE SPACE BETWEEN THE INSULATION AND THE WALL SHALL BE CAULKED WITH NON-COMBUSTIBLE MATERIAL IN AN APPROVED MANNER. ALL PIPING AND/OR DUCTWORK TO BE INSTALLED ABOVE HUNG CEILING UNLESS OTHERWISE NOTED ON DRAWINGS. THE CONTRACTOR SHALL COORDINATE WITH ARCHITECTURAL DRAWINGS FOR ALL CEILING ELEVATIONS.
- L. ACCESS DOORS IN FINISHED CONSTRUCTION: THE CONTRACTOR SHALL PREPARE A LIST OF ALL ACCESS DOORS (MINIMUM 18"X18") REQUIRED FOR OPERATION AND MAINTENANCE OF ALL CONCEALED EQUIPMENT AND OTHER DEVICES, WHICH SHALL BE SUPPLIED TO THE GENERAL CONTRACTOR FOR INSTALLATION. THE COST TO FURNISH AND INSTALL ACCESS DOORS SHALL BE INCLUDED IN THIS CONTRACTORS BID. THIS CONTRACTOR IN ADVANCE OF CEILING INSTALLATIONS SHALL SUITABLY FIELD TAG AND IDENTIFY ALL CONCEALED EQUIPMENT, VALVES, DAMPERS, ETC., WHICH REQUIRE ACCESS DOOR PROVISIONS.
- M. NEW DUCTWORK SHALL ARRIVE ON THE CONSTRUCTION SITE SEALED AND REMAIN PROTECTED FROM DEBRIS THROUGHOUT CONSTRUCTION PRIOR TO FINAL INSTALLATION. AIR DISTRIBUTION ACCESSORIES AND INTERNAL COMPONENTS OF ALL HVAC EQUIPMENT SHALL BE SEALED AND PROTECTED FROM DEBRIS WHILE ON THE CONSTRUCTION SITE PRIOR TO FINAL CONNECTION AND START-LIP
- N. ALL VOLATILE ORGANIC COMPOUND (VOC) LIMITS OF ADHESIVES, SEALANTS AND SEALANT PRIMERS MUST COMPLY WITH SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT (SCAQMD) RULE #1168, AMENDMENT DATE OF JANUARY 7, 2005.

## 1.02 SCOPE OF WORK

- A. THE CONTRACTOR SHALL FURNISH AND INSTALL AN HVAC SYSTEM COMPLETE WITH ALL EQUIPMENT, DUCTWORK, PIPING, INSULATION, CONTROLS, ACCESSORIES AND ASSOCIATED WORK IN ACCORDANCE WITH THE NEW YORK STATE BUILDING CODE, ALL NATIONAL, STATE AND LOCAL AUTHORITIES HAVING JURISDICTION, BUILDING MANAGEMENT, DESIGN DRAWINGS AND THIS SPECIFICATION.
- B. THE WORK SHALL INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, HOISTING AND RIGGING, BREAKDOWN AND SETUP OF EQUIPMENT FOR INSTALLATION, SCAFFOLDING, AND SERVICES TO COMPLETE THE SYSTEM AND PROVIDE THE OWNER WITH A FULLY OPERATIONAL SYSTEM. ANY EQUIPMENT, PARTS, MATERIALS, ACCESSORIES, OR LABOR THAT IS NECESSARY FOR PROPER PERFORMANCE OF THE MECHANICAL WORK ALTHOUGH NOT SPECIFICALLY MENTIONED HEREIN OR SHOWN ON THE DRAWINGS SHALL BE FURNISHED AND INSTALLED WITHOUT ADDITIONAL COSTS. WHEN INSTALLATION OF A PART OF ANY SYSTEM (PLUMBING, HEATING, AIR CONDITIONING, ELECTRICAL OR OTHERWISE) REQUIRES A SHUTDOWN OF ANY OPERATING SYSTEM, CONNECT THE PARTIAL SYSTEM ONLY AFTER NOTIFICATION TO AND WITH APPROVAL OF THE OWNER. COORDINATE ACTIVITIES CLOSELY WITH THOSE OF SUBCONTRACTOR'S SO THE OPERATION IS RESTRICTED TO AS SHORT AN INTERVAL AS POSSIBLE AND "OUT OF SERVICE" TIME OF THESE FACILITIES IS KEPT TO A MINIMUM. ANY SHUTDOWN OF THE ELECTRICAL SYSTEM WILL BE DONE OUT OF HOURS AS APPROVED BY OWNER.
- C. IT IS IMPERATIVE THAT EXISTING SYSTEMS BE MAINTAINED IN CONTINUOUS OPERATION DURING THE COURSE OF CONSTRUCTION; IF SHUTDOWNS ARE REQUIRED TO PERMIT THE DISCONNECTION AND REMOVAL OR RECONNECTION OF EXISTING WORK, OR FINAL CONNECTION TO BE MADE TO AN EXISTING SYSTEM, THEY SHALL OCCUR ONLY DURING OFF-HOURS AND ONLY AFTER PROPER PERMISSION HAS BEEN OBTAINED FROM BUILDING MANAGEMENT.
- D. THE BUILDING MANAGEMENT REQUIRES NOT LESS THAN SEVEN DAYS NOTICE FOR SHUTDOWN OF ANY BUILDING SYSTEM.
- E. MAKE AN ACCURATE TAKE-OFF ALL EXISTING EQUIPMENT, DUCTWORK, PIPING, CONDUIT, PANELBOARDS, WIRING DEVICES, AND OTHER ACCESSORIES BEING REMOVED DURING DEMOLITION AND INCLUDE THE COST FOR DISCONNECTING AND REMOVAL OF STATED EQUIPMENT, ETC. INTO THE BASE BID. REMOVALS SHALL BE AS SPECIFIED AND/OR AS INDICATED ON THE DRAWINGS. IN CERTAIN CASES, EQUIPMENT OR MATERIALS DESIGNATED FOR REMOVAL SHALL REMAIN THE PROPERTY OF THE OWNER AND SHALL BE TURNED OVER AT LOCATIONS IN THE BUILDING AS DIRECTED BY THE OWNER.

- F. PLAN INSTALLATION OF NEW WORK AND CONNECTIONS TO EXISTING WORK TO INSURE MINIMUM INTERFERENCE WITH REGULAR OPERATION OF EXISTING FACILITIES. ALL SYSTEM SHUTDOWNS AFFECTING OTHER AREAS SHALL BE COORDINATED WITH BUILDING MANAGEMENT.
- G. THIS TENANT/OWNER SHALL PROCURE THE SERVICES OF A THIRD PARTY INSPECTION COMPANY TO PERFORM ALL SPECIAL INSPECTIONS IN ACCORDANCE WITH THE NEW YORK CITY BUILDING CODE. SECURE ALL REQUIRED PERMITS AND APPROVALS AND TRANSMIT SAME TO THE OWNER. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FEES.

#### 1.03 SHOP DRAWINGS, EQUIPMENT SUBMISSION, MAINTENANCE MANUALS

- A. SUBMIT ONE (1) REPRODUCIBLE AND ONE (1) PRINT OF THE SHEET METAL AND PIPING SHOP
- DRAWINGS, 3/8" SCALE, CERTIFIED BY ALL TRADES THAT COORDINATION HAS BEEN ESTABLISHED.

  B. SUBMIT THREE (3) COPIES OF ALL SHEET METAL AND PIPING SHOP STANDARDS LEAKAGE TEST CERTIFICATION, AIR AND WATER BALANCING REPORTS, AND CERTIFIED EQUIPMENT CUTS WITH CONSTRUCTION WIRING DIAGRAMS, AND AUTOMATIC TEMPERATURE CONTROL SHOP DRAWINGS INCLUDING CONTROL AND POWER WIRING DIAGRAMS, SEQUENCE OF OPERATIONS AND ALL CUTS OF EQUIPMENT AND DEVICES.
- C. SUBMIT FOUR (4) BOOK BOUND OPERATING AND SERVICE MANUALS WHICH SHALL INCLUDE COPIES OF ALL AS-BUILT SHOP DRAWINGS FOLDED AND PLACED INTO BINDER POCKETS, AS-BUILT DRAWINGS IN ELECTRONIC FORMAT, COPIES OF REVIEWED EQUIPMENT CUTS FOR INSTALLED EQUIPMENT, COPIES OF EQUIPMENT START UP CHECKLISTS, AIR AND WATER BALANCING REPORTS, LEAK TESTS, HYDROSTATIC TESTS, WATER TREATMENT AND CHEMICAL CLEANING CERTIFICATION. CONTRACTOR SHALL INSTRUCT OWNERS PERSONNEL ON THE OPERATION OF ALL HVAC SYSTEMS.
- D. AS WORK PROGRESSES AND FOR DURATION OF CONTRACTOR, MAINTAIN COMPLETE AND SEPARATE SET OF PRINTS OF CONTRACT DRAWINGS AT THE JOB SITE. RECORD WORK COMPLETED AND ALL CHANGES FROM ORIGINAL CONTRACT DRAWINGS CLEARLY AND ACCURATELY INCLUDING WORK INSTALLED AS A MODIFICATION OR ADDITION TO THE ORIGINAL DESIGN. RECORD VALVE TAGS AS THEY ARE INSTALLED. FINAL SUBMISSION OF REPRODUCIBLE AS-BUILT DRAWINGS ARE TO BE SIGNED AND CERTIFIED BY INSTALLING CONTRACTOR THAT THIS IS THE AS-BUILT CONDITION OF THE WORK. AS-BUILT SHOP DRAWINGS SHALL BE SUBMITTED IN DRAWING AND ELECTRONIC FORMAT (AUTOCAD 2007 MINIMUM).

#### PART 2- PRODUCT/APPLICATION

#### 2.01 DUCTWORK

- A. PROVIDE ALL SUPPLY, RETURN, EXHAUST, AND OUTSIDE AIR SHEET METAL DUCTWORK, FITTINGS, DAMPERS, TURNING VANES, ACCESS DOORS, PLENUMS, FLEXIBLE CONNECTIONS, AND SUPPORTS AND PERFORM LEAK TEST PER LATEST SMACNA STANDARDS AND NFPA90A AS MODIFIED BY NEW YORK STATE BUILDING CODE. ALL DUCTWORK JOINTS SHALL BE SEALED AIR TIGHT WITH APPROVED DUCT SEALANT, SIMILAR TO 3M-900.
- B. PRE-FABRICATED BREECHING AND STACK:
- PROVIDE DOUBLE WALL ALL FUEL RATED STAINLESS STEEL BREECHING AND STACK BY METALVENT, SECURITY CHIMNEY OR METALFAB.
- 2. SUPPLY ALL REQUIRED FITTINGS INCLUDING DRAFT INDUCER AS REQUIRED BY STACK/DRAFT CALCULATIONS AND STRUCTURAL SUPPORTS FOR A COMPLETE OPERATIONAL INSTALLATION. INSTALL SYSTEM AND MAKE IT SMOKE TIGHT IN STRICT CONFORMANCE TO MANUFACTURERS INSTRUCTIONS.
- 3. PROVIDE AN EXPLOSION RELIEF VALVE IN THE EXHAUST SYSTEM PER NFPA 37 AND A DRAIN CONNECTION AT THE FLUE BASE.
- 4. THE INNER AND OUTER PIPE JOINTS SHALL BE SEALED BY USE OF OVERLAPPING TYPE
- V-BANDS WITH PROPER SEALANTS FOR INTERIOR AND EXTERIOR INSTALLATIONS.

  5. THE SYSTEM SHALL BE INSTALLED AS PER THE MANUFACTURERS RECOMMENDATIONS AND IN
- CONFORMANCE WITH THE MANUFACTURERS TEN (10) YEAR WARRANTY.

  6. SUBMIT STACK CALCULATIONS FOR REVIEW AND APPROVAL BY THE ENGINEER.

## PART 3- EXECUTION

- 3.01 A. PROVIDE AND INSTALL ALL EQUIPMENT AND ACCESSORIES OF THE SIZES AND CAPACITIES AS SCHEDULED AND AS INDICATED ON THE DRAWINGS AND IN ACCORDANCE WITH APPROVED SHOP DRAWINGS AND MANUFACTURERS RECOMMENDATIONS.
- B. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL REQUIRED CLEARANCES FOR SERVICING AND MAINTENANCE. COORDINATE REQUIREMENTS WITH ALL TRADES.

# MECHANICAL LEGEND A(250) DIFFUSER TYPE AND CFM (CUBIC FEET PER MINUTE). REFER TO SCHEDULE. DOUBLE LINE DUCT ACOUSTIC LINING IN DUCT FLEXIBLE DUCT WIRE MESH SCREEN VOLUME DAMPER FIRE DAMPER WITH DUCT ACCESS DOOR BACKDRAFT DAMPER MOTORIZED DAMPER WITH DUCT ACCESS DOOR SMOKE DAMPER WITH DUCT ACCESS DOOR COMBINATION FIRE/SMOKE DAMPER WITH DUCT ACCESS DOOR ENERGY CODE PROGRESS INSPECTIONS

A LICENSED PROFESSIONAL ENGINEER OR ARCHITECT OR OTHER PERSON HAVING NOT LESS THAN FIVE (5) YEARS EXPERIENCE SUPERVISING THE INSTALLATION OF MECHANICAL/PLUMBING SYSTEMS AND CONDUCTING SUCH TESTS WILL FILE DOCUMENTATION AND REPORT OF TEST THAT THE SYSTEM COMPLIES WITH THE CONSTRUCTION DOCUMENTS AND APPLICABLE LAWS.

#### PROGRESS INSPECTIONS:

1. HVAC INSULATION AND SEALING

# NEW YORK CITY BUILDING DEPARTMENT NOTES

ALL WORK SHALL COMPLY WITH APPLICABLE SECTIONS OF THE BUILDING CODE, CITY OF NEW YORK, EFFECTIVE JANUARY 1, 2015 AND ALL AMENDMENTS AND RULES AND REGULATIONS OF THE DEPARTMENT OF BUILDINGS TO DATE.

- 1. A TEST WILL BE CONDUCTED UNDER DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR ARCHITECT OR OTHER PERSON HAVING NOT LESS THAN FIVE (5) YEARS EXPERIENCE SUPERVISING THE INSTALLATION OF THE MECHANICAL SYSTEM. THE TEST WILL SHOW COMPLIANCE WITH 2014 BUILDING CODE REQUIREMENTS AS OUTLINED IN SECTION [BC 1704].
- 2. THE LICENSED PROFESSIONAL ENGINEER OR ARCHITECT OR OTHER PERSON HAVING NOT LESS THAN FIVE (5) YEARS EXPERIENCE SUPERVISING THE INSTALLATION OF MECHANICAL SYSTEMS AND CONDUCTING SUCH TESTS WILL FILE DOCUMENTATION AND REPORT OF TEST THAT THE SYSTEM COMPLIES WITH THE CONSTRUCTION DOCUMENTS AND APPLICABLE LAWS.
- 3. SPECIAL INSPECTIONS:
- a. ALL MECHANICAL SYSTEMS, EQUIPMENT AND MATERIALS INSPECTIONS SHALL BE PERFORMED IN ACCORDANCE WITH SECTION [BC 1704.16] OF THE 2014 NYC BUILDING CODE.
- 4. SMOKE DETECTION SYSTEMS SHALL BE INSTALLED AND SEQUENCED TO FOLLOW CONTROLS OPERATIONS IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION [MC 606] OF THE 2014 NYC MECHANICAL CODE.
- 5. FIRE DAMPERS, SMOKE DAMPERS, COMBINATION FIRE/SMOKE DAMPERS AND CEILING DAMPERS LOCATED WITHIN AIR DISTRIBUTION AND SMOKE CONTROL SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION [MC 607] OF THE 2014 NYC MECHANICAL CODE.
- 6. ALL FIRE DAMPERS SHALL BE ACCEPTED FOR USE BY THE NEW YORK CITY DEPARTMENT OF BUILDINGS AND SHALL BE MANUFACTURED AND INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF UL 555.
- 7. SMOKE DAMPERS SHALL BE ACCEPTED FOR USE BY THE NEW YORK CITY DEPARTMENT OF BUILDINGS AND SHALL BE MANUFACTURED AND INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF UL 555S.
- 8. COMBINATION FIRE/SMOKE DAMPERS SHALL BE ACCEPTED FOR USE BY THE NEW YORK CITY DEPARTMENT OF BUILDINGS AND SHALL BE MANUFACTURED AND INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF BOTH UL 555 AND UL 555S.
- 9. CEILING RADIATION DAMPERS SHALL BE ACCEPTED FOR USE BY THE NEW YORK CITY DEPARTMENT OF BUILDINGS AND SHALL BE MANUFACTURED AND INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF UL 555C.
- 10. THESE PLANS ARE APPROVED ONLY FOR THE WORK INDICATED ON THE APPLICATION SPECIFICATION SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON OR TO BE CONSIDERED AS EITHER BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES.
- 11. TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE NEW YORK CITY ENERGY CONSERVATION CODE.

# LINE REPRESENTATION NEW PIPING, DUCTWORK OR EQUIPMENT —— – EXISTING DUCTWORK - — — — EXISTING PIPING X - X - X EXISTING PIPING, DUCTWORK OR EQUIPMENT TO BE REMOVED THERMOSTAT/SENSOR WIRING FROM SENSING DEVICE TO CONTROLLED DEVICE **NEW EQUIPMENT** EXISTING EQUIPMENT TO REMAIN EXISTING EQUIPMENT TO BE RELOCATED RELOCATED POSITION OF EXISTING EQUIPMENT EXISTING EQUIPMENT TO BE REMOVED DRAWING NOTATIONS $\langle \# \rangle$ DRAWING NOTE TAG SECTION DESIGNATION ON DRAWING WHERE SECTION IS CUT A-SECTION DESIGNATION B-DRAWING NO. POINT OF NEW CONNECTION TO EXISTING WORK POINT OF DEMOLITION REMOVE AND PATCH EXISTING WORK REVISION SYMBOL **ABBREVIATION** AIR CONDITIONING UNIT ACCESS DOOF AIR FILTER ABOVE FINISH FLOOR AIR HANDLING UNIT ACOUSTIC LINING AUTOMATIC TEMPERATURE CONTROL ABOVE HUNG CEILING BACK DRAFT DAMPER CONDENSATE DRAIN **CUBIC FEET PER MINUTE**

- CG CEILING GRILLE
- CR CEILING REGISTER
- CW COLD WATER
- D DRAIN
- DN DOWN
- EF EXHAUST FAN
- FAI FRESH AIR INTAKE
  FC FLEXIBLE CONNECTION
- FCU FAN COIL UNIT
- FD FIRE DAMPER
- FP-VAV FAN POWERED VARIABLE AIR VOLUME
- FSD FIRE SMOKE DAMPER
  GC GENERAL CONTRACTOR
- HWS&R HOT WATER SUPPLY AND RETURN
- MOD MOTORIZED OUTSIDE AIR DAMPER
- NK NECK SIZE
- OA OUTSIDE AIR
- OED OPEN ENDED DUCT
- RG RETURN GRILLE
- RA RETURN AIR
- TD/TRD TRANSFER DUCT
- TF TRANSFER FAN
  TR TOP REGISTER
- TG TRANSFER GRILLE
- UH UNIT HEATER
- VAV VARIABLE AIR VOLUME

  VD VOLUME DAMPER (OPPOSED BLADE DAMPER)
- WMS WIRE MESH SCREEN

## MECHANICAL DRAWING LIST

M-001.00 MECHANICAL LEGEND & GENERAL NOTES

M-201.00 MECHANICAL BASEMENT FLOOR DEMOLITION PART PLAN

M-501.00 MECHANICAL BASEMENT FLOOR PART PLAN

Date Issued Revision No.

Revision No.

Revision No.

Revision No.

Revision No.

Revision No.

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GE Crotonville - Executive

Residence Building Water

Heater Replacement

Old Albany Post Road,

Ossining, NY

Drawing Title:

MECHANICAL

LEGEND & NOTES

11/09/21 ISSUED FOR PRICING

10/29/21 ISSUED FOR REVIEW

Scale

NOT TO SCALE

10/XX/2021

Proj. Manager:

RR

JJC

Drawing No:

G003-03-017

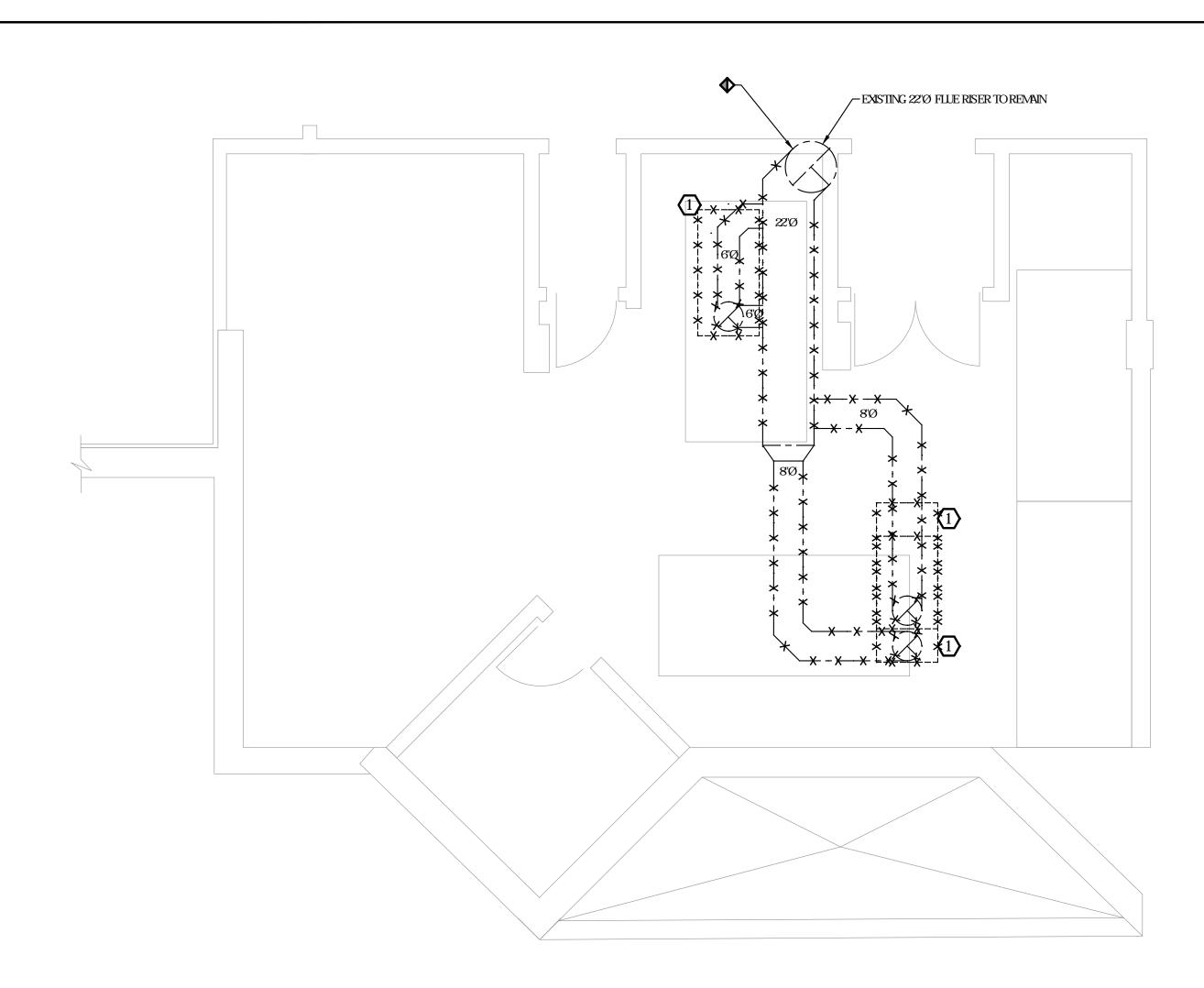
TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE 2020 ENERGY CONSERVATION

THIS PLAN IS APPROVED ONLY FOR THE WORK ON THE APPLICATION SPECIFICATION

SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON OR TO BE CONSIDERED AS EITHER BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES

**01** OF **03** 

OI :



# MECHANICAL DEMOLITION NOTES

#### 1. GENERAL

- A. PRIOR TO PROPOSAL SUBMISSION. THIS CONTRACTOR SHALL VISIT THE SITE TO REVIEW THE EXISTING CONDITIONS ASSOCIATED WITH THE SCOPE OF WORK AND ADJACENT AREAS TO ASCERTAIN THE DIFFICULTIES WHICH WILL AFFECT THE EXECUTION OF THE WORK OF THIS
- B. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT THE ABOVE SITE EXAMINATION HAS BEEN MADE AND LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN EXAMINATION BEEN MADE.
- C. DEMOLITION WORK SHALL INCLUDE ALL MATERIALS, LABOR, EXTENSIONS, CONNECTIONS, CUTTING REPAIRING, ADAPTING AND OTHER MECHANICAL WORK REQUIRED TO MAINTAIN SERVICE PENDING THE COMPLETION OF THE PERMANENT WORK. COORDINATE THE EXTENT OF DEMOLITION WORK WITH THE ARCHITECT AND BUILDING MANAGEMENT.

#### 2. SCOPE OF WORK.

- A. ALL EXISTING WORK REQUIRED TO REMAIN BUT INTERFERING WITH PROPOSED NEW MECHANICAL, PLUMBING, ELECTRICAL, AND GENERAL CONSTRUCTION WORK. INTERFERING WORK SHALL BE RELOCATED AND RECONNECTED USING MATERIALS CONFORMING TO STANDARDS OF
- B. REMOVE EXISTING FLUE PIPE CONNECTED TO EXISTING HOT WATER HEATERS.PATCH FLUE UNTIL NEW CONNECTION IS MADE.
- C. PROVIDE ADDITIONAL SUPPORT FOR ALL EXISTING DUCTS AND PIPING TO REMAIN WHICH ARE AFFECTED BY DEMOLITION OF EXISTING CEILING
- D. ALL MATERIALS AND EQUIPMENT SHALL BE DISPOSED OF IN ACCORDANCE WITH APPLICABLE LAWS AND ENVIRONMENTAL REGULATIONS.
- E. COORDINATE WITH OWNER TO DETERMINE WHETHER EQUIPMENT IS TO BE TURNED OVER FOR FUTURE USE AND STORED IN THEIR ASSOCIATED STORAGE LOCATIONS.

# MECHANICAL KEY NOTES

PLUMBING CONTRACTOR SHALL DECOMMISSION AND REMOVE EXISTING GAS-FIRED WATER HEATER. DISCONNECT AND REMOVE EXISTING FLUE ASSOCIATED WITH GAS-FIRE WATER HEATER BACK TO FLUE MAIN. PATCH FLUE UNTIL RECONNECTION.

GE Crotonville - Executive Residence Building Water Heater Replacement

Old Albany Post Road, Ossining, NY

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MECHANICAL BASEMENT FLOOR DEMOLITION PART PLAN

10/29/21 ISSUED FOR REVIEW

Scale	Issue Date:
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RR	JJC

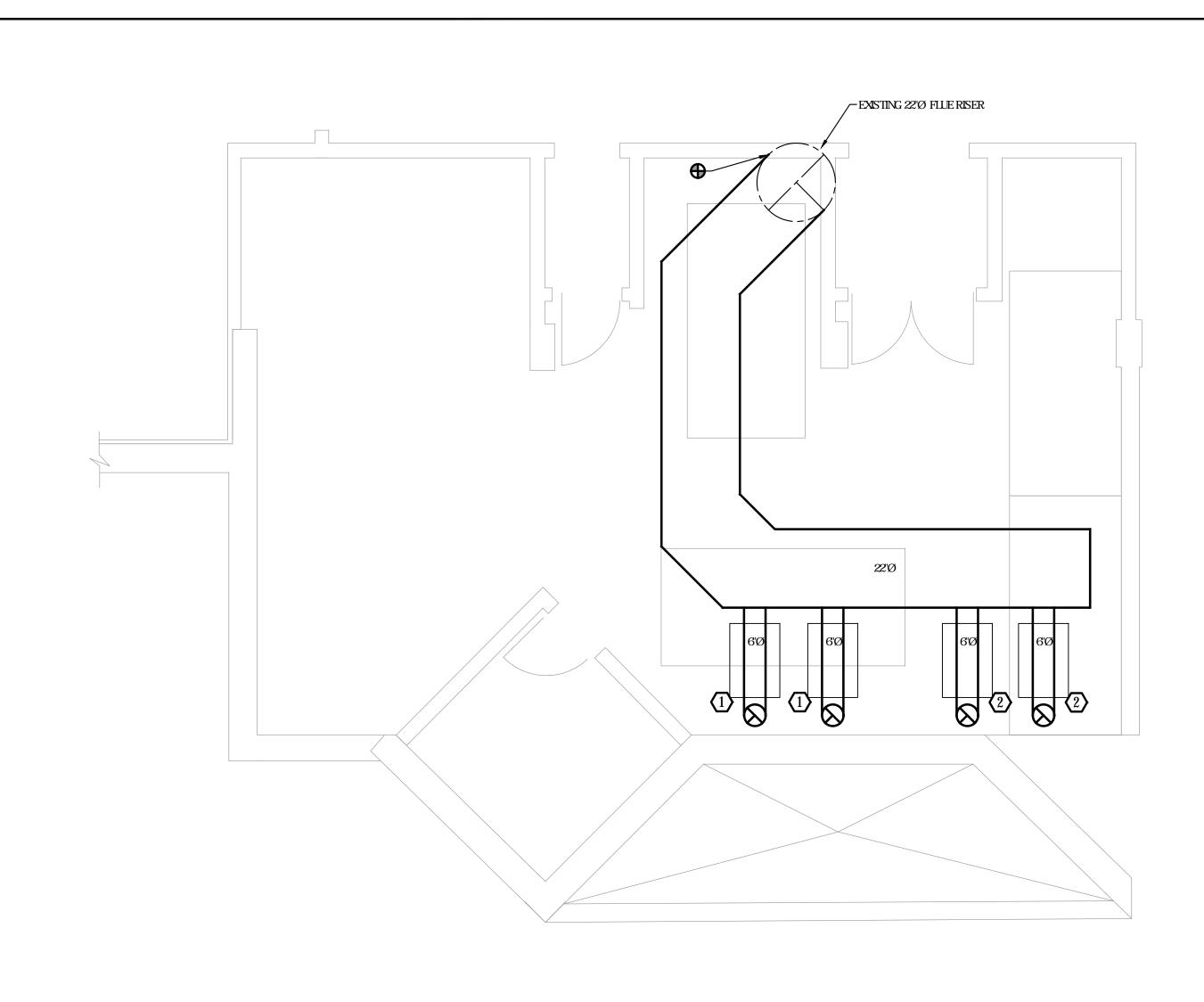
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TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE 2020 ENERGY CONSERVATION THIS PLAN IS APPROVED ONLY FOR THE WORK ON THE APPLICATION SPECIFICATION SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON OR TO BE

CONSIDERED AS EITHER BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES.

**02** OF **03** 

M-201



# MECHANICAL KEYED NOTES

PROVIDE NEW6'Ø FLUE AND BREECHING FOR NEWAERCOMODEL INN 1350HOT WATER HEATER. CONNECT TO EXISTING FLUE RISER. HOT WATER HEATER SHALL BE INSTALLED BY PLUMBER. COORDINATED FLUE CONNECTION TO HOT WATER HEATER WITH PLUMBING CONTRACTOR.

PROVIDE NEW6'Ø FLUE AND BREECHING FOR NEWAERCO MODEL INN 1080 HOT WATER HEATER. CONNECT TO EXISTING FLUE RISER. HOT WATER HEATER SHALL BE INSTALLED BY PLUMBER. COORDINATED FLUE CONNECTION TO HOT WATER HEATER WITH PLUMBING CONTRACTOR.

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MECHANICAL BASEMENT FLOOR PART PLAN

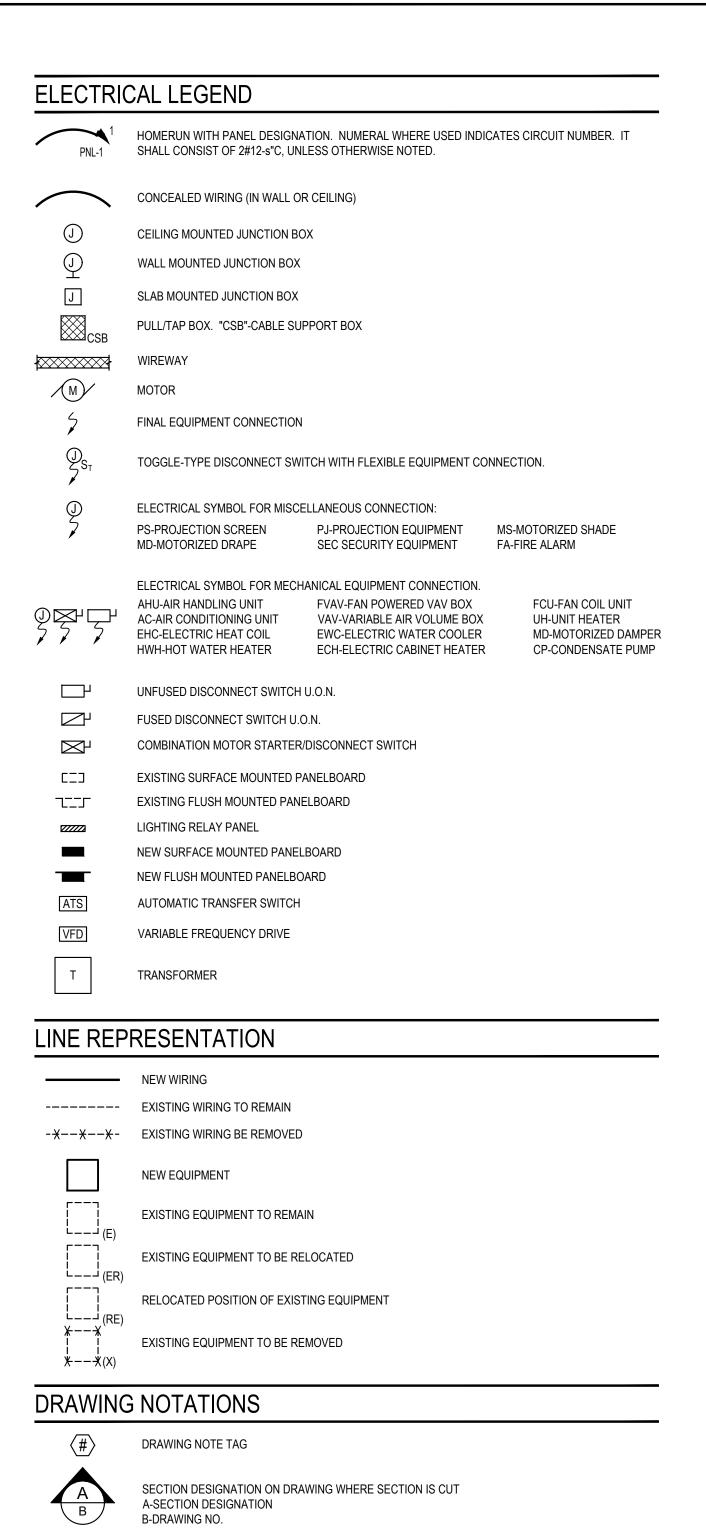
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M-501

TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE 2020 ENERGY CONSERVATION THIS PLAN IS APPROVED ONLY FOR THE WORK ON THE APPLICATION SPECIFICATION SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON OR TO BE CONSIDERED AS EITHER BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES.



REVISION SYMBOL

## **ABBREVIATIONS**

LIGHTING CONTROL PANEL

LEAK DETECTOR

(NOT ALL ARREVIATIONS ARE NECESSARILY LISED ON THIS DROJECT)

Α	AMP/AMPERE	LDP	LEAK DETECTION PANEL
ACU	AIR CONDITIONING UNIT	LTG	LIGHTING
ADA	AMERICANS WITH DISABILITIES ACT	MAX	MAXIMUM
AFF	ABOVE FURNISHED FLOOR	MCB	MAIN CIRCUIT BREAKER
AHJ	AUTHORITIES HAVING JURISDICTION	MD	MOTORIZED DAMPER
AHU	AIR HANDLING UNIT	MECH	MECHANICAL
AL	ALUMINUM	MER	MECHANICAL EQUIPMENT ROOM
ATS	AUTOMATIC TRANSFER SWITCH	MLO	MAIN LUG ONLY
AV	AUDIO VISUAL	MS	MOTORIZED SHADE
AWG	AMERICAN WIRE GAUGE	MTD	MOUNTED
BDS	BATTERY DIAGNOSTIC SYSTEM	N	NEUTRAL
C, CDT	CONDUIT	(N)	NEW
CAC	COMPUTER ROOM GRADE AIR CONDITIONING	(NÉ)	NEW TO REPLACE EXISTING
	UNIT	ŇF ´	NON-FUSED
CB	CIRCUIT BREAKER	NIC	NOT IN CONTRACT
CKT	CIRCUIT	NL	NIGHT LIGHT
CP	CONDENSATE PUMP	NTS	NOT TO SCALE
CT	COOLING TOWER	NYCEC	NEW YORK CITY ELECTRIC CODE
CU	COPPER		NEW YORK CITY ENERGY CONSERVATION COD
DISC	DISCONNECT	Р	POLE
DWG	DRAWING	PB	PULL BOX
(E)	EXISTING TO REMAIN	PDU	POWER DISTRIBUTION UNIT
ÈĆ	ELECTRICAL CONTRACTOR	PH	PHASE
EF	EXHAUST FAN	PS	PROJECTION SCREEN
EHC	ELECTRIC HEAT COIL	PNL	PANEL
ELEC	ELECTRICAL	(RE)	RELOCATED EXISTING (NEW LOCATION)
EM	EMERGENCY	REĆEPT	
EPO	EMERGENCY POWER OFF	RGB	REFERENCE GROUND BAR
EWH	ELECTRIC HOT WATER HEATER	RM	ROOM
(ER)	EXISTING TO BE RELOCATED	SD	SMOKE DETECTOR
FA	FIRE ALARM	SRG	SIGNAL REFERENCE GROUND BAR
FBO	FURNISHED BY OTHERS, INSTALLED AND	SPEC	SPECIFICATION
	WIRED BY THE ELECTRICAL CONTRACTOR	SW	SWITCH
FCU	FAN COIL UNIT	SWBD	SWITCHBOARD
FIBO	FURNISHED AND INSTALLED BY OTHERS,	TEL	TELEPHONE
	WIRED BY THE ELECTRICAL CONTRACTOR	TF	TRANSFER FAN
FT	FEET	TV	TELEVISION
	GROUND	TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
GEN	GENERATOR	TYP	TYPICAL
GFI	GROUND FAULT INTERRUPTER	UNF	UNFUSED
HZ	HERTZ	UON	UNLESS OTHERWISE NOTED
IG	ISOLATED GROUND	UPS	UNINTERRUPTIBLE POWER SUPPLY
IDF	INFORMATION DISTRIBUTION FRAME	V	VOLT/VOLTAGE
IT	INFORMATION TECHNOLOGY	VA	VOLTAMPERE
JB	JUNCTION BOX	VAV	VARIABLE AIR VOLUME
KVA	KILOVOLTAMPERE	W	WIRE
KCMIL	THOUSAND CIRCULAR MILS	WP	WEATHERPROOF
LOD	LIQUEINO CONTROL BANEL		DEMOVE

(X)

REMOVE

## GENERAL NOTES

- 1. ELECTRICAL DRAWINGS ARE DIAGRAMMATIC. SIZES AND LOCATION OF EQUIPMENT AND WIRING ARE SHOWN TO SCALE WHERE POSSIBLE, BUT MAY BE DISTORTED FOR CLARITY ON THE DRAWINGS. FINAL LOCATION OF OUTLETS AND EQUIPMENT SHALL BE AS APPROVED BY THE ARCHITECT. IT IS NOT WITHIN THE SCOPE OF THE DRAWINGS TO SHOW ALL NECESSARY BENDS, OFFSET, PULL BOXES AND OBSTRUCTIONS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSTALL THEIR WORK TO CONFORM TO THE STRUCTURE, PRESERVE HEADROOM AND KEEP OPENINGS AND PASSAGEWAYS CLEAN.
- 2. REFER TO SPECIFICATIONS COVERING HVAC, PLUMBING AND FIRE PROTECTION WORK FOR POSSIBLE ADDITIONAL WORK TO BE PERFORMED UNDER THE ELECTRICAL CONTRACT.
- 3. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR REVIEWING THE FULL SET OF BID DOCUMENTS TO BE AWARE OF THE TOTAL SCOPE PRIOR TO SUBMITTING BID.
- 4. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WORK WITH HVAC, PLUMBING AND OTHER TRADES FOR EXACT LOCATION OF ALL CONTROL DEVICES. LOCATION AS SHOWN ON THE ELECTRICAL PLANS ARE APPROXIMATE. ALL FINAL CONNECTIONS TO MOTOR TERMINALS SHALL BE DONE WITH A MINIMUM 18" OF LIQUID TIGHT FLEXIBLE CONDUIT USING THE APPROPRIATE FITTINGS. PROVIDE EXTERIOR GROUND WIRE WRAPPED AROUND FLEXIBLE CONDUIT WHERE REQUIRED BY CODE.
- 5. ALL NOTATIONS OF "SCALE" ARE INTENDED AS APPROXIMATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE TO ASCERTAIN THE EXACT LOCATIONS OF ALL EQUIPMENT AND VERIFYING REQUIRED CLEARANCES.
- 6. THIS CONTRACTOR SHALL FURNISH AND INSTALL ALL LABOR AND MATERIALS REQUIRED TO PRODUCE COMPLETE AND WORKING SYSTEMS. THE CONTRACTOR SHALL FURNISH AND INSTALL COMPLETE WIRING FOR LIGHTING, POWER, HVAC EQUIPMENT, ETC.
- 7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FIELD MEASUREMENTS AND VERIFICATION OF FIELD CONDITIONS PRIOR TO PERFORMING ANY WORK. ALL CHANGES IN WORK NECESSITATED BY FAILURE OF THIS CONTRACTOR TO COMPLY WITH THIS CONDITION SHALL BE UNDERTAKEN BY THIS CONTRACTOR AT THEIR OWN
- 8. ALL AREAS ABOVE PANELBOARDS SHALL BE FREE FROM WORK OF OTHER TRADES PER NEC/NYCEC SECTION
- 9. ALL WORKING CLEARANCES FOR PANELBOARDS AND OTHER ELECTRICAL EQUIPMENT SHALL COMPLY WITH THE NEC ELECTRIC CODE AND ASSOCIATED TABLES.
- 10. NUMERAL INDICATED ADJACENT TO DEVICES AND EQUIPMENT INDICATES CIRCUIT NUMBER IN PANEL. PROVIDE WIRE AND CONDUIT TO INTERCONNECT THE AFOREMENTIONED, ASSOCIATED SWITCHES, AND CONTROL DEVICES WITH SAME CIRCUIT NUMBERS. ROUTE TO PANEL VIA CONDUIT HOMERUNS SHOWN.
- 11. ELECTRICAL CONTRACTOR SHALL PROVIDE UPDATED TYPEWRITTEN PANEL DIRECTORIES IN COMPLIANCE WITH NEC ARTICLE 408.4. THE IDENTIFICATION SHALL INCLUDE AN APPROVED DEGREE OF DETAIL THAT ALLOWS EACH CIRCUIT TO BE DISTINGUISHED FROM ALL OTHERS. CIRCUITS USED FOR THE SAME PURPOSE MUST BE IDENTIFIED BY THEIR LOCATION. UTILIZE ROOM NUMBERS, WORKSTATION NUMBERS, COLUMN GRID LINES, ETC. SUBMIT SCHEDULES TO ENGINEER FOR REVIEW PRIOR TO INSTALLATION
- 12. PROVIDE TIE BARS ON ALL SINGLE POLE CIRCUIT BREAKERS SERVING MULTI-WIRE BRANCH CIRCUITS IN COMPLIANCE WITH NEC ARTICLE 210.4 (B). EXISTING CIRCUIT BREAKERS REQUIRING TIE HANDLES SHALL BE REPLACED WITH NEW TRIP FREE HANDLE BREAKERS. NEW BREAKERS SHALL MATCH BASE BUILDING STANDARDS, SHALL BE FROM SAME MANUFACTURER OF EXISTING BREAKERS THAT ARE TO REMAIN IN PANEL, AND SHALL BE COMPATIBLE WITH PANELBOARD. CONTRACTOR SHALL COORDINATE REQUIREMENTS IN FIELD WITH EXISTING
- 13. ARMORED CABLE SHALL NOT BE INSTALLED EXPOSED IN ELECTRIC CLOSETS, MECHANICAL ROOMS, TELEPHONE CLOSETS, ETC. EMT OR CONDUIT SHALL BE UTILIZED FROM ELECTRIC CLOSET TO FIRST RECEPTACLE OR LIGHT FIXTURES.
- 14. THE CONTRACTOR SHALL DO NECESSARY CUTTING, CHOPPING AND PATCHING FOR WORK UNDER THIS CONTRACT. ALL CHOPPING, ETC. SHALL BE PERFORMED AFTER HOURS AND COORDINATED WITH BUILDING MANAGEMENT.
- 15. PROVIDE UNFUSED DISCONNECT SWITCHES FOR ALL MECHANICAL EQUIPMENT UNLESS OTHERWISE NOTED ON CONSTRUCTION DOCUMENTS OF HVAC SCHEDULES.
- 16. THE MINIMUM RATING OF DISCONNECT SWITCHES SHALL BE EQUAL TO OR GREATER THAN THE RATING OF THE PROTECTIVE DEVICE ON THE SUPPLY SIDE OF THE DISCONNECT SWITCH. MINIMUM DISCONNECT SWITCH SIZE IS 30
- 17. WIRING IN ALL PLENUM HUNG CEILING INSTALLED WITHOUT CONDUIT OR EMT SHALL BE TEFLON JACKETED OR LISTED FOR INSTALLATION IN A PLENUM.
- 18. ALL CONTROL WIRING ASSOCIATED WITH MECHANICAL EQUIPMENT IS THE RESPONSIBILITY OF THE MECHANICAL
- 19. NO LOW VOLTAGE WIRING SHALL BE PERMITTED IN THE SAME RACEWAY AS POWER WIRING.
- 20. FURNISH AND INSTALL WIRING FOR EQUIPMENT FURNISHED BY OTHERS AS SHOWN ON ARCHITECTURAL, MECHANICAL, PLUMBING, AND/OR ELECTRICAL DRAWINGS. COORDINATE WITH OTHER TRADES FOR DETAILS OF INSTALLATION AND WIRING REQUIREMENTS.
- 21. PROVIDE FIRESTOPPING ON ALL NEW AND EXISTING PENETRATIONS THROUGH THE WALL AND FLOOR DUE TO DEMOLITION OR NEW CONSTRUCTION. THE FIRE RATING OF THE PENETRATION SEALING METHOD SHALL MATCH THE RATING OF THE WALL OR FLOOR. USE A UL LISTED SEALING METHOD WHICH IS ACCEPTABLE TO BUILDING MANAGEMENT.
- 22. BRANCH CIRCUIT HOMERUN CONDUCTORS SHALL BE INCREASED ONE SIZE TO COMPENSATE FOR VOLTAGE DROP WHEN 120V CIRCUITING EXCEEDS 100 FEET.
- 23. UPON COMPLETION OF ALL ELECTRICAL WORK, THE ELECTRICAL CONTRACTOR SHALL ADJUST AND TEST ALL CIRCUITS, RECEPTACLES, SWITCHES, LIGHTS, MOTORS AND ANY OTHER ELECTRICAL ITEMS INSTALLED. ANY DEFECTIVE ITEMS SHALL BE IMMEDIATELY REPAIRED OR REPLACED WITH NEW AND THAT PORTION OF THE SYSTEM RETESTED. ALL SUCH REMEDIAL WORK SHALL BE PERFORMED AT NO ADDITIONAL COST TO THE OWNER.
- 24. COORDINATE ANY REQUIRED SHUTDOWNS AND SERVICE CONNECTION POINTS WITH BUILDING MANAGEMENT IN ACCORDING WITH BUILDING RULES AND REGULATIONS OR AT LEAST TEN (10) BUSINESS DAYS' NOTICE PRIOR TO ANY WORK, WHICHEVER IS MORE STRINGENT.
- 25. EXISTING BASE BUILDING CORE DEVICES (LIGHTING, RECEPTACLES, ETC.) SHALL REMAIN ACTIVE. IF DEVICES HAVE BEEN DISCONNECTED BY DEMOLITION, DEVICES SHALL BE RECONNECTED AND RE-ENERGIZED UTILIZING SPARE CIRCUIT BREAKERS. ALL CORE DEVICES VISUAL TO TENANT SHALL BE REMOVED AND REPLACED WITH NEW DEVICES MATCHING PROJECT STANDARDS.

## **POWER NOTES**

1. ELECTRICAL CONTRACTOR SHALL MAINTAIN THE CONTINUITY OF CIRCUITING IN AREAS WHICH ARE CONNECTED TO EXISTING ELECTRICAL DEVICES AND ELECTRICAL SERVICES STILL IN USE.

- 2. CIRCUIT NUMBERS ARE FOR CONTRACTOR'S REFERENCE ONLY AND MAY NOT NECESSARILY REFLECT THE EXACT CIRCUIT ARRANGEMENT IN PANELS. ELECTRICAL CONTRACTOR SHALL UTILIZE EXISTING SPARE CIRCUIT BREAKERS AND CIRCUIT BREAKERS MADE AVAILABLE FROM DEMOLITION FOR CIRCUITS INDICATED TO RESPECTIVE PANEL. CONTRACTOR SHALL ADJUST ACCORDINGLY IN THE FIELD TO BALANCE THE CIRCUITRY EVENLY ON ALL PHASES ON EACH PANEL. FINAL CIRCUIT NUMBERS AND ARRANGEMENT MUST BE INDICATED ON AS-BUILT DRAWINGS AS PER SPECIFICATIONS.
- 3. ANY DISCREPANCIES SHALL BE DIRECTED TO ARCHITECT PRIOR TO BIDDING. WHERE DISCREPANCIES CANNOT BE RESOLVED PRIOR TO SUBMITTING BIDS, CONTRACTOR SHALL PROCEED BASED ON MORE COSTLY OR RESTRICTIVE INTERPRETATIONS.

## **DRAWING LIST**

ELECTRICAL BASEMENT FLOOR LEGEND & NOTES E-001

E-101 ELECTRICAL BASEMENT FLOOR SPECIFICATIONS SHEET 1 OF 2 E-102 ELECTRICAL BASEMENT FLOOR SPECIFICATIONS SHEET 2 OF 2

E-201 ELECTRICAL BASEMENT FLOOR DEMOLITION PART PLAN

ELECTRICAL BASEMENT FLOOR NEW WORK PART PLAN

GE Crotonville - Executive Residence Building Water Heater Replacement

Old Albany Post Road, Ossining, NY

11/09/21	ISSUED FOR PRICING	
10/29/21	ISSUED FOR REVIEW	
Date	Issued	Revision

825 Eighth Avenue, FL18 | New York, NY 10019 212.944.7722 | amagroupusa.com ELECTRICAL

BASEMENT FLOOR

LEGEND & NOTES NOT TO SCALE 10/XX/2021 Proj. Manager: RR

G003-03-017 Drawing No:

NYC DOB NUMBER

01 OF 05

E-001

#### 1.01 GENERAL REQUIREMENTS:

- A. ALL WORK SHALL COMPLY WITH REQUIREMENTS OF THE ELECTRICAL CODE OF THE CITY OF NEW YORK, THE NEW YORK CITY BUILDING CODE, BUILDING MANAGEMENT AND ALL AUTHORITIES HAVING JURISDICTION (AHJ). APPLICABLE NATIONAL, STATE AND LOCAL CODES, LAWS AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK SHALL BE INCORPORATED INTO AND MADE A PART OF THESE SPECIFICATIONS.
- IF A CONFLICT OCCURS IN THE SPECIFICATIONS AND/OR ON THE DRAWINGS, THE MORE STRINGENT SITUATION SHALL
- C. ALL MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE OF THIS WORK. FINAL ACCEPTANCE SHALL BE DEFINED AS THE TIME AT WHICH THE ELECTRICAL WORK IS TAKEN OVER AND ACCEPTED BY THE OWNER. ENGAGE THE SERVICES OF VARIOUS MANUFACTURERS SUPPLYING THE EQUIPMENT FOR THE PROPER STARTUP, OPERATION AND TRAINING OF ALL SYSTEMS INSTALLED. INSTRUCT THE OWNERS PERSONNEL IN THE PROPER OPERATION AND SERVICING OF THE EQUIPMENT.
- ELECTRICAL CONTRACTOR SHALL VISIT AND EXAMINE CAREFULLY THE EXISTING AREAS AFFECTED BY THIS WORK TO BECOME FAMILIAR WITH EXISTING CONDITIONS AND WITH DIFFICULTIES THAT WILL ATTEND THE EXECUTION OF THE WORK. CONTRACTOR SHALL PERFORM THIS, PRIOR TO SUBMITTING THEIR PROPOSAL. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE AND LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN EXAMINATION BEEN UNDERTAKEN.
- DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF WORK. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS OF ALL DEVICES INCLUDING DIMENSIONS AND ELEVATIONS. WORK SHALL BE COORDINATED WITH OTHER TRADES TO AVOID CONFLICTS.
- ALTHOUGH NOT SPECIFICALLY MENTIONED HEREIN OR SHOWN ON THE DRAWINGS, ANY EQUIPMENT, MATERIALS, ACCESSORIES, OR LABOR REQUIRED FOR PROPER AND COMPLETE INSTALLATION OF THE ELECTRICAL WORK SHALL BE FURNISHED AND INSTALLED AS PART OF THE ORIGINAL BID.
- G. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE LATEST COPY OF THE BUILDING RULES AND 1.10 REGULATIONS TO DETERMINE THE EXTENT OF PREMIUM TIME WORK REQUIRED. BASE BUILDING SYSTEM A. INTERRUPTIONS ARE TO BE PERFORMED OUTSIDE OF NORMAL BUSINESS HOURS. COORDINATE WITH BUILDING OWNER FOR ANY SERVICE INTERRUPTION OF EXISTING SYSTEMS AND GIVE NOTICE AS REQUIRED BY BUILDING RULES AND REGULATIONS.
- THEREIN CAUSED BY THE WORK OF THE CONTRACTOR SHALL BE REPAIRED AT NO ADDITIONAL EXPENSE TO THE
- ALL NEW MATERIALS REQUIRED SHALL CONFORM WITH THE STANDARDS OF THE UNDERWRITERS LABORATORIES, INC. (UL) IN EVERY CASE WHERE SUCH A STANDARD EXISTS
- DURING THE PROJECT DURATION, THE BUILDING MANAGEMENT OFFICE AND ITS DESIGNATED REPRESENTATIVE SHALL BE ABLE TO INSPECT THE WORK IN PROGRESS. ANY WORK WHICH THE BUILDING MANAGEMENT DEEMS UNACCEPTABLE SHALL BE REMOVED AND REPLACED AT THE EXPENSE OF CONTRACTOR/TENANT.
- ALL EQUIPMENT INSTALLED OR CONNECTED INTO THE BUILDING RISERS, SYSTEMS AND INFRASTRUCTURE SHALL BE APPROVED IN ADVANCE BY THE BUILDING PRIOR TO INSTALLATION.

#### 1.02 SCOPE OF WORK:

- A. PROVIDE ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY FOR COMPLETE, SAFE INSTALLATION OF ALL E. MAKE, AT NO ADDITIONAL COST, ANY CHANGES OR ADDITIONS TO MATERIALS AND EQUIPMENT NECESSARY TO F ELECTRICAL WORK. THE SCOPE OF WORK SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:
- INSTALLATION OF NEW RACEWAY AND CONDUCTORS FOR LIGHTING AND POWER.
- ADDITION OR MODIFICATION OF EXISTING ELECTRICAL DISTRIBUTION EQUIPMENT.
- INSTALLATION OF MECHANICAL EQUIPMENT FEEDERS AND FINAL CONNECTIONS TO MECHANICAL EQUIPMENT.
- GROUNDING OF ALL EQUIPMENT AS REQUIRED BY CODE AND AS SPECIFIED.
- DEMOLITION AND REMOVAL OF ELECTRICAL EQUIPMENT AS REQUIRED INCLUDING ALL CONDUCTORS AND CONDUIT BACK TO THEIR SOURCE
- IN ACCORDANCE WITH THE REQUIREMENTS OF BUILDING MANAGEMENT.
- RECEIPT AND INSTALLATION OF DEVICES, EQUIPMENT, SYSTEMS, SUPPLIED BY OTHERS AS DETAILED.
- COORDINATION WITH OTHER TRADES

# 1.03 SUBSTITUTIONS

- A. NO SUBSTITUTE MATERIAL OR MANUFACTURER OF EQUIPMENT SHALL BE PERMITTED WITHOUT A FORMAL WRITTEN SUBMITTAL TO THE ENGINEER WHICH INCLUDES ALL DIMENSIONAL, PERFORMANCE AND MATERIAL SPECIFICATIONS. ANY CHANGES IN LAYOUT, MECHANICAL CHARACTERISTICS, STRUCTURAL REQUIREMENTS, OR DESIGN DUE TO THE USE OF A SUBSTITUTION SHALL BE SUBMITTED TO THE ENGINEER AS PART OF THIS PROPOSAL. THE CONTRACTOR 1.18 NOISE AND VIBRATION: TAKES FULL RESPONSIBILITY FOR THE SUBSTITUTION AND ALL CHANGES RESULTING FROM SUBSTITUTION. ALL A. ELECTRICAL EQUIPMENT IS TO OPERATE WITHOUT OBJECTIONABLE NOISE OR VIBRATION. IF, IN THE OPINION OF THE ITEMS SHALL BE SUBMITTED FOR REVIEW IN CONJUNCTION WITH THE SUBMITTAL OF THE ALTERNATE. ANY SUBSTITUTION MUST BE SUBMITTED WITH AN EXPLANATION WHY SUBSTITUTION IS BEING UTILIZED. IF THE SUBSTITUTED ITEM DEVIATES FROM THE SPECIFIED ITEM, THOSE DEVIATIONS ARE TO BE IDENTIFIED ON A LINE BY LINE BASIS. IF THE SUBSTITUTION IS BEING UTILIZED FOR FINANCIAL REASONS, THE ASSOCIATED CREDIT MUST BE SIMULTANEOUSLY SUBMITTED.
- ALL SUBSTITUTED EQUIPMENT SHALL CONFORM TO SPACE REQUIREMENTS AND PERFORMANCE REQUIREMENTS SHOWN ON CONTRACT DOCUMENTS.
- CONTRACTOR SHALL SUBMIT BID BASED ON SPECIFIED ITEMS AND SHALL SUPPLY AS AN ALTERNATE PRICE ANY SUBSTITUTIONS.
- D. ALL EQUIPMENT SHALL BE APPROVED FOR USE IN THE STATE OF NEW YORK
- 1.04 SHOP DRAWINGS
- A. SHOP DRAWINGS SUBMISSION SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:
- DISTRIBUTION EQUIPMENT (PANELS, SWITCHES, ETC.).
- OVERCURRENT PROTECTIVE DEVICES (FUSES AND CIRCUIT BREAKERS). CONDUIT, RACEWAYS, WIREWAYS
- 4. WIRING
- SCALED FIELD DRAWINGS.
- ALL SUBMISSIONS SHALL BE MADE ELECTRONICALLY IN PDF FORMAT C. CHANGES MADE TO SHOP DRAWINGS BY THE CONSULTANT WILL NOT AFFECT THE CONTRACT PRICE
- 1.06 COORDINATION
- A. COORDINATE CHASES, SLOTS, INSERTS, SLEEVES, AND OPENINGS WITH GENERAL CONSTRUCTION WORK AND ARRANGE IN BUILDING STRUCTURE DURING PROGRESS OF CONSTRUCTION TO FACILITATE THE ELECTRICAL INSTALLATIONS THAT FOLLOW.
- 1. SET INSERTS AND SLEEVES IN POURED-IN-PLACE CONCRETE, MASONRY WORK, AND OTHER STRUCTURAL COMPONENTS AS THEY ARE CONSTRUCTED. SEQUENCE, COORDINATE, AND INTEGRATE INSTALLING ELECTRICAL MATERIALS AND EQUIPMENT FOR EFFICIENT 1.22 ENGINEERS FINAL INSPECTION
- FLOW OF THE WORK. COORDINATE INSTALLING LARGE EQUIPMENT REQUIRING POSITIONING BEFORE CLOSING IN A THE BUILDING COORDINATE ELECTRICAL SERVICE CONNECTIONS TO COMPONENTS FURNISHED BY UTILITY COMPANIES.
- COORDINATE INSTALLATION AND CONNECTION OF EXTERIOR UNDERGROUND AND OVERHEAD UTILITIES AND
- SERVICES, INCLUDING PROVISION FOR ELECTRICITY-METERING COMPONENTS. COMPLY WITH REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION AND OF UTILITY COMPANY PROVIDING 1.23 COMPLETION OF CONTRACT:
- ELECTRICAL POWER AND OTHER SERVICES.
- COORDINATE LOCATION OF ACCESS PANELS AND DOORS FOR ELECTRICAL ITEMS THAT ARE CONCEALED BY B. DEFECTS AND DEFICIENCIES WHICH ORIGINATE OR BECOME EVIDENT DURING THE WARRANTY PERIOD MUST BE P FINISHED SURFACES. ACCESS DOORS AND PANELS ARE SPECIFIED IN A SEPARATE DIVISION OF THE **SPECIFICATIONS**
- WHERE ELECTRICAL IDENTIFICATION DEVICES ARE APPLIED TO FIELD-FINISHED SURFACES, COORDINATE INSTALLATION OF IDENTIFICATION DEVICES WITH COMPLETION OF FINISHED SURFACE.
- WHERE ELECTRICAL IDENTIFICATION MARKINGS AND DEVICES WILL BE CONCEALED BY ACOUSTICAL CEILINGS AND SIMILAR FINISHES, COORDINATE INSTALLATION OF THESE ITEMS BEFORE CEILING INSTALLATION.

## 1.07 AS-BUILT DRAWINGS

ELECTRICAL CONTRACTOR'S NAME AND ADDRESS.

- CONTRACTOR SHALL MAINTAIN RECORD DRAWING PRINTS ON JOB SITE AND RECORD, AT TIME OF OCCURRENCE, DEVIATIONS FROM CONTRACT DOCUMENTS.
- B. AT THE COMPLETION OF WORK AND BEFORE FINAL ACCEPTANCE, PROVIDE AS-BUILT DRAWINGS OF THE 1.24 DEMOLITION: INSTALLATION, IN AUTO-CAD (VERSION AS REQUESTED BY CLIENT). INCORPORATE ALL CHANGES AND DEVIATIONS FROM BID DRAWINGS, UTILIZING NORMAL RECOGNIZED DRAFTING
- LOCATIONS OF ALL EQUIPMENT. ALL MAIN BRANCH CONDUIT RUNS, JUNCTION BOX LOCATIONS, CONDUIT RUNS FOR ALL FLOOR OUTLETS, ETC., MUST

PROCEDURES THAT MATCH THE ORIGINAL DRAFTING METHODOLOGY. AS-BUILT DRAWINGS SHALL INDICATE ACTUAL

- BE REFLECTED ON THE DRAWINGS. CLEARLY INDICATE THE WORDS "AS-BUILT" IN THE TITLE BLOCK COLUMN OF THE DRAWINGS AS WELL AS THE
- SUBMIT ONE (1) PDF SET TO CONSULTANT FOR REVIEW. WHEN FOUND ACCEPTABLE BY THE CONSULTANT, SUBMIT THREE (3) SETS OF PRINTS TOGETHER WITH THE CAD AND PDF DISK FOR PRESENTATION TO THE LANDLORD AND

#### 1.08 OPERATION AND MAINTENANCE MANUALS:

- PROVIDE TWO (2) SETS OF OPERATION AND MAINTENANCE MANUALS SUBMITTED IN HARD COVER 3-RING BINDERS. INCLUDE THE FOLLOWING INFORMATION IN THE OPERATIONS AND MAINTENANCE MANUALS:
- NAMES AND ADDRESS OF LOCAL SUPPLIERS FOR THE ITEMS INCLUDED
- TECHNICAL DATA, PRODUCT DATA, SUPPLEMENTED BY BULLETINS, COMPONENT ILLUSTRATIONS, EXPLODED VIEWS, TECHNICAL DESCRIPTIONS OF ITEMS, AND PARTS LISTS. ADVERTISING OR SALES LITERATURE IS NOT ACCEPTABLE.
- THE CONSULTANTS REVIEWED SHOP DRAWINGS.
- CERTIFICATE(S) OF ACCEPTANCE FROM THE AUTHORITIES INSPECTION DEPARTMENT VERIFICATION REPORTS AND CERTIFICATE(S) FOR ANY NEW FIRE ALARM COMPONENTS OR TIE-INS AND ANY
- BASE BUILDING TIE-INS FOR MISCELLANEOUS SYSTEMS (I.E. SECURITY, LIGHTING CONTROL, DIGITAL METERING). WRITTEN GUARANTEE.
- REVIEW INFORMATION PROVIDED IN THE MAINTENANCE INSTRUCTIONS AND MANUALS WITH THE TENANT'S OPERATING PERSONNEL AND LANDLORD'S OPERATING PERSONNEL WHERE BASE BUILDING SYSTEMS ARE REVISED, TO ENSURE A COMPLETE UNDERSTANDING OF THE ELECTRICAL EQUIPMENT AND SYSTEMS AND THEIR OPERATION.

#### 1.09 MATERIALS AND EQUIPMENT:

- ALL MATERIALS AND EQUIPMENT SHALL BE NEW, CERTIFIED BY A NATIONALLY RECOGNIZED TESTING LABORATORY AND MANUFACTURED TO THE STANDARDS SPECIFIED.
- WHERE THERE IS NO ALTERNATIVE TO SUPPLYING EQUIPMENT WHICH IS NOT NRTL CERTIFIED, OBTAIN SPECIAL APPROVAL FROM THE LOCAL ELECTRICAL SAFETY AUTHORITY.

PROVIDE AND MAINTAIN INSURANCE TO PROTECT THE LANDLORD, TENANT AND TRADES FROM ALL POSSIBLE CLAIMS. SUBMIT WITH BID FOR AN AMOUNT ACCEPTABLE TO LANDLORD AND TENANT.

#### 1.11 CONTRACT DOCUMENTS:

- ANY DAMAGE TO EXISTING PARTITIONS, FLOORS, CEILINGS OR ANY PART OF THE BUILDING OR EQUIPMENT HOUSED A. THE DRAWINGS FOR THE ELECTRICAL WORK ARE DIAGRAMMATIC PERFORMANCE DRAWINGS ONLY, INTENDED TO L. CONVEY THE SCOPE OF WORK AND INDICATE THE GENERAL ARRANGEMENT AND APPROXIMATE SIZE AND LOCATION OF ELECTRICAL EQUIPMENT. THE DRAWINGS DO NOT INTEND TO SHOW ARCHITECTURAL, INTERIOR DESIGN, MECHANICAL, STRUCTURAL OR BASE BUILDING DETAILS. BE RESPONSIBLE FOR A THOROUGH KNOWLEDGE OF SAME BEFORE PROCEEDING WITH THE WORK.
  - DO NOT SCALE OR MEASURE DRAWINGS, BUT OBTAIN INFORMATION REGARDING ACCURATE DIMENSIONS FROM THE DIMENSIONS SHOWN ON THE DESIGN CONSULTANT/ARCHITECT'S DRAWINGS, OR BY SITE MEASUREMENTS. ANY DISCREPANCIES BETWEEN DRAWINGS AND/OR SPECIFICATIONS AND EXISTING CONDITIONS, MUST BE REFERRED A. EMT: ANSI C80.3, ZINC-COATED STEEL, WITH DOUBLE SET-SCREW OR COMPRESSION FITTINGS. TO THE DESIGN CONSULTANT/ARCHITECT BEFORE ANY WORK AFFECTED IS BEGUN.
  - COOPERATE AND COORDINATE WITH OTHER CONTRACTORS IN LAYING OUT OF WORK SO AS NOT TO CONFLICT WITH B. FMC: ZINC-COATED STEEL THE WORK OF OTHER CONTRACTORS. CARRY OUT WORK PROMPTLY AS PER CONSTRUCTION SCHEDULE AND C. COORDINATE WITH WORK OF OTHER CONTRACTORS.
  - ACCOMMODATE STRUCTURAL CONDITIONS (OFFSETS AROUND BEAMS, COLUMN, ETC.)

#### 1.12 INTENT:

A. IT IS THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS THAT THE CONTRACTOR PROVIDE COMPLETE AND OPERATIONAL SYSTEMS AS REQUIRED. WHERE DIFFERENCES OCCUR, THE MAXIMUM CONDITION SHALL GOVERN. ANY MISCELLANEOUS ITEMS, HARDWARE, DEVICES, WIRING, ETC., NOT SPECIFICALLY DESCRIBED, BUT REQUIRED FOR THE OPERATION OF THE SYSTEM, MUST BE PROVIDED AND INCLUDED AS PART OF THE BID.

MAINTENANCE AND PROPER OPERATION OF EXISTING BASE BUILDING SYSTEMS WITHIN THE CONTRACT AREA A. WHEREVER ANY BASE BUILDING EQUIPMENT REQUIRES ACCESSIBILITY, MAINTENANCE OR ADJUSTMENT, PROVIDE ACCESS DOORS APPROVED BY DESIGN CONSULTANT/ARCHITECT AND LANDLORD. ARRANGE FOR ITS INSTALLATION BY THE DIVISION IN WHOSE WORK IT OCCURS.

#### 1.16 DRY WALL CEILINGS:

- A. IN ALL DRYWALL CEILING AREAS, DIVISION 16 IS TO REMOVE AND RELOCATE ALL EXISTING JUNCTION BOXES TO ACCESSIBLE CEILING SPACE.
- PROVIDE ACCESS PANELS FOR ALL NEW AND EXISTING DEVICES AS REQUIRED

- LANDLORD, ARCHITECT OR CONSULTANT, THE EQUIPMENT OPERATES WITH EXCESSIVE NOISE OR VIBRATION, THEN 2.03 SUPPORTING DEVICES THE EQUIPMENT MUST BE REPLACED OR NOISE OR VIBRATION ELIMINATED CONNECTIONS TO NOISE-PRODUCING AND VIBRATING EQUIPMENT MUST BE MADE WITH LIQUID-TIGHT FLEXIBLE
- CONDUIT AND ASSOCIATED CONNECTORS. THIS INCLUDES TRANSFORMERS, DIMMING EQUIPMENT RACKS, AND B. MOTORS. USE A MINIMUM OF 3 FT OF FLEXIBLE CABLE WITH SLACK AT EACH DEVICE. VIBRATION ISOLATORS ARE TO BE PROVIDED WHERE INDICATED OR REQUIRED. TRANSFORMERS TO BE ISOLATED
- FROM THE STRUCTURE, WITH SPRING AND RUBBER ISOLATORS WHEN WALL MOUNTED OR SUSPENDED AND 1/2" HIGH D. DENSITY NEOPRENE SANDWICH PADS (TYPE MWP) WHEN FLOOR MOUNTED

## 1.19 TENANT'S EQUIPMENT:

- A. WHERE SPECIFIED, INSTALL ALL EQUIPMENT PROVIDED BY THE TENANT. RECEIVE, STORE AND INSTALL EQUIPMENT AND ACCEPT FULL RESPONSIBILITY FOR ITS CORRECT OPERATION. PROVIDE CONDUIT, WIRE, BOXES, SWITCHES, OUTLETS, DEVICES, FLEX CONNECTIONS, ETC., AS REQUIRED.
- 1.20 INTERRUPTION OF SERVICES:
- A. INTERRUPTION OF ELECTRICAL SERVICE TO ANY PART OF THE BUILDING SHALL OCCUR ONLY BY PRE-ARRANGEMENT WITH AND AT TIMES SUITABLE TO THE LANDLORD. B. INTERRUPTIONS SHALL ONLY OCCUR DURING PREMIUM TIME PERIODS; ALL ALLOWANCES FOR THIS SHALL BE

## INCLUDED IN THE PRICE SUBMITTED.

- 1.21 VALUATION OF CHANGES: A. PROVIDE COMPLETE BREAKDOWN OF MATERIAL, LABOR, OVERHEAD, PROFIT, ETC., WHEN SUBMITTING QUOTATIONS FOR CHANGE NOTICES ON THIS PROJECT.
- THE HOURLY LABOR RATE SHALL BE INCLUSIVE OF ALL CHARGES FOR SUPERVISION, VARIABLE LABOR FACTORS, HAND TOOLS, PAYROLL BURDENS, HEIGHT FACTORS, WARRANTIES, STORAGE, RENTALS, ADDITIONAL BONDING, PARKING, CLEAN-UP, AS-BUILT DRAWINGS, HOISTING, FREIGHT AND DELIVERY, BUT EXCLUSIVE OF OVERHEAD AND

FINAL INSPECTION IS IMPERATIVE. PRIOR TO CLOSING OF CEILINGS, THIS CONTRACTOR SHALL CONTACT AMA CONSULTING ENGINEERS. (212-944-7722) AND THE LANDLORD'S REPRESENTATIVE TO PERFORM A FINAL INSPECTION.  $_{
m M}$ WHEN CEILING TILES HAVE BEEN INSTALLED IT WILL BE NECESSARY FOR THE CONTRACTOR TO REMOVE PORTIONS FOR INSPECTION.

- A. ALL EQUIPMENT MUST BE CLEANED AND TESTED BEFORE FINAL ACCEPTANCE BY THE CONSULTANT.
- REPAIRED OR REPLACED, AT NO COST REPLACE, AT NO COST, ALL INCANDESCENT LAMPS BURNED-OUT DURING A THIRTY (30) DAY PERIOD AND ALL Q. BURNED-OUT LED AND HID LAMPS FOR A PERIOD OF NINETY (90) DAYS AFTER DATE OF ISSUANCE OF CERTIFICATE OF
- "SUBSTANTIAL PERFORMANCE" FOR THE CONTRACT FOR THE WORK. IF, DURING THE WARRANTY PERIOD, TRANSFORMERS, BALLASTS OR OTHER NOISE AND VIBRATION PRODUCING EQUIPMENT ARE CONSIDERED BY THE CONSULTANT TO EXCEED ACCEPTABLE STANDARDS, THEN THESE MUST BE 2.04 PULLBOXES, JUNCTION BOXES AND OUTLET BOXES: REPLACED WITHOUT DELAY OR ADDITIONAL COST TO THE TENANT. ALL WORK RELATING TO THE REPLACEMENT OF DEFECTIVE ITEMS, MUST BE CARRIED OUT AFTER NORMAL WORKING HOURS AND AT A TIME WHICH IS ACCEPTABLE

WALLS, WITH APPROPRIATE CONCRETE.

TO THE TENANT

- VISIT THE SITE, EXAMINE THE EXISTING CONDITIONS AND BECOME FAMILIAR WITH THE EXTENT OF THE NECESSARY REMOVAL, RELOCATION, RECONNECTING AND REROUTING OF ELECTRICAL EQUIPMENT AND WIRING AS NECESSARY FOR THE COMPLETION OF THE PROJECT.
- MAKE SAFE AND DISCONNECT ALL POWER AND SYSTEMS, AS AND WHEN, AND TO THE EXTENT REQUIRED TO FACILITATE WITH THE DEMOLITION.
- ENSURE THAT ALL ELECTRICAL, LIFE SAFETY SERVICES, AND SERVICES FOR EXISTING EQUIPMENT, IN AREAS OUTSIDE THE AREAS OF THIS WORK, THAT ARE REQUIRED TO REMAIN IN SERVICE, SHALL DO SO.
- WHEN DELETING AND/OR MAKING SAFE EXISTING ELECTRICAL WORK, ENSURE THAT IT INCLUDES ALL CONDUITS AND WIRING BACK TO THE ASSOCIATED PANELBOARD OR CONTROL PANEL. WHERE FLOORBOXES ARE BEING REMOVED. ENSURE UNDER-FLOOR CONDUIT IS REMOVED BACK TO SOURCE AND FILL ALL CORE HOLES, IN FLOORS AND WIN
- DISCONNECT AND REMOVE EXISTING LIGHT FIXTURES, DEVICES, OUTLETS, ETC. WHICH ARE NOT TO BE REUSED. SUCH ITEMS SHALL BE CARTONED AND TURNED OVER TO THE LANDLORD AT A PLACE DESIGNATED BY THE I. LANDLORD. CUT BACK AND CAP UNUSED RACEWAY AND OUTLETS AND REMOVED UNUSED WIRING BACK TO
- PANELBOARD IN AN APPROVED MANNER. ALL EXISTING ELECTRICAL EQUIPMENT WHICH IS NO LONGER REQUIRED SHALL BE REMOVED AND DISPOSED OF, OFF
- G. BE RESPONSIBLE AND PAY FOR ANY DAMAGE TO THE BASE BUILDING INCURRED BY WORK OF THIS DIVISION, OR REPAIR TO THE SATISFACTION OF THE CONSULTANT.
- H. CARRY OUT THE WORK WITH MINIMUM OF NOISE, DUST AND DISTURBANCE.

- 1.25 WORK IN NEW AND RENOVATED AREAS:
- WHEN DELETING AND/OR MAKING SAFE EXISTING ELECTRICAL WORK, ENSURE THAT IT INCLUDES REMOVAL OF ALL 2.06 SUPPORTS AND FASTENINGS:
- DISCONNECTED WIRING BACK TO THE ASSOCIATED PANELBOARD OR DISTRIBUTION EQUIPMENT DISCONNECT AND REMOVE EXISTING LUMINAIRES, DEVICES, OUTLETS, ETC., WHICH ARE NOT TO BE REUSED. SUCH ITEMS SHALL BE CARTONED AND TURNED OVER TO THE LANDLORD AT A PLACE DESIGNATED BY THE LANDLORD.
- CUT BACK AND CAP UNUSED RACEWAY AND OUTLETS AND REMOVE UNUSED WIRING BACK TO PANELBOARD IN AN APPROVED MANNER. REMOVE ALL REDUNDANT COMMUNICATIONS CABLES BACK TO HUB ROOMS AND/OR TELEPHONE RISER ROOMS.
- ENSURE THAT ALL EXISTING EQUIPMENT WHICH IS TO BE REUSED AND/OR RELOCATED IS THOROUGHLY INSPECTED AND REFURBISHED TO ENSURE CORRECT OPERATION WHEN PUT BACK INTO SERVICE AND MEETS THE LOCAL ELECTRICAL SAFETY AUTHORITY'S APPROVAL. OUTLET BOXES AND WIRING AND/OR CONDUITS WHICH ARE  $^{
  m D}$
- CORRODED OR DAMAGED ARE TO BE REPLACED. ALL EXISTING ELECTRICAL EQUIPMENT WHICH IS NO LONGER REQUIRED SHALL BE REMOVED AND DISPOSED OF, OFF
- WHERE EXISTING OUTLET BOXES ARE REMOVED FROM EXISTING UNDERFLOOR DUCTS, PLUG AND CAP EXISTING HOLES FLUSH WITH FLOOR USING APPROVED FITTINGS. REMOVE ALL REDUNDANT WIRE AND CABLE BACK TO
- BE RESPONSIBLE AND PAY FOR ANY DAMAGE TO THE BASE BUILDING INCURRED BY WORK OF THIS DIVISION, OR 2.07 DISCONNECT SWITCHES:
- REPAIR TO THE SATISFACTION OF THE CONSULTANT. CARRY OUT THE WORK WITH A MINIMUM OF NOISE, DUST AND DISTURBANCE.
- PROVIDE TOOLS AND CLEAN UP EQUIPMENT. OBTAIN THE LANDLORD'S PERMISSION FOR THE USE OF ELECTRICAL, ELEVATOR, PLUMBING OR DRAINAGE OUTLETS. PROVIDE DAILY CLEAN UP AND PROPER DISPOSAL OF DEBRIS GENERATED BY DAILY OPERATIONS. ON COMPLETION
- OF THE WORK, ALL TOOLS, SURPLUS MATERIALS AND WASTE MATERIALS SHALL BE REMOVED AND THE PREMISES LEFT IN A CLEAN AND PERFECT CONDITION. REMOVE AND REROUTE EXISTING CONDUITS WHICH ARE TO REMAIN IN "FINISHED" AREAS WHICH ARE TO BE
- CONDUITS WHICH ARE TO BE CUT BACK ARE TO TERMINATE IN A JUNCTION BOX.
- CLEAN LUMINAIRE REFLECTORS AND LENSES, LAMPS AND OTHER SURFACES THAT HAVE BEEN EXPOSED TO CONSTRUCTION DUST AND DIRT. CLEAN THE INSIDES AND OUTSIDES OF PANELBOARDS, SPLITTERS AND OTHER ELECTRICAL EQUIPMENT, AND COMPLETELY REMOVE ALL DEBRIS AND TOOLS FROM THE PROJECT.

- RMC: ANSI C80.1, HOT-DIPPED GALVANIZED STEEL WITH THREADED FITTINGS IMC: ANSI C80.6. ZINC-COATED STEEL, WITH THREADED FITTINGS.
- LFMC: ZINC-COATED STEEL WITH SUNLIGHT-RESISTANT AND MINERAL-OIL-RESISTANT PLASTIC JACKET.
- RNC: NEMA TC 2, SCHEDULE 40/SCHEDULE 80 PVC, WITH NEMA TC3 FITTINGS.
- RACEWAY FITTINGS: SPECIFICALLY DESIGNED FOR THE RACEWAY TYPE WITH WHICH USED.
- ELECTRIC METALLIC TUBING SHALL BE INDUSTRY STANDARD THIN WALL CONDUIT, HOT DIPPED GALVANIZED STEEL (3/4" MIN, 4" MAX). THE FLEXIBLE METALLIC CONDUIT SHALL BE OF THE GROUNDING TYPE. IT SHALL CONSIST OF GALVANIZED STEEL B.
- TAPE FORMED INTO AN INDUSTRY STANDARD INTERLOCKING COIL (3/4" MIN). RIGID METAL CONDUIT SHALL BE INDUSTRY STANDARD STEEL CONDUIT (3/4" MIN, 4" MAX."
- THREADED FITTINGS SHALL BE USED WITH RIGID CONDUIT. DOUBLE SET SCREW OR COMPRESSION FITTINGS SHALL BE USED WITH EMT.
- 2.02 WIRE AND CABLE:
- CONDUCTORS, NO. 10 AWG AND SMALLER: SOLID COPPER.
- CONDUCTORS, LARGER THAN NO. 10 AWG: STRANDED COPPER
- INSULATION: THERMOPLASTIC, RATED AT 75 DEG C MINIMUM.
- ALL CONDUCTORS SHALL BE SOFT 98% MINIMUM CONDUCTIVITY PROPERLY REFINED COPPER, TYPE THHN/THWN INSULATED FOR INDOOR USE AND TYPE XHHW-2 FOR OUTDOOR USE RATED AT 600V, UNLESS OTHERWISE NOTED. REFER TO SECTION 3.11 FOR COLOR-CODING OF ALL WIRING.
- MATERIAL: COLD-FORMED STEEL, WITH CORROSION-RESISTANT COATING ACCEPTABLE TO AUTHORITIES
- HAVING JURISDICTION. METAL ITEMS FOR USE OUTDOORS OR IN DAMP LOCATIONS: HOT-DIP GALVANIZED STEEL
- SLOTTED-STEEL CHANNEL SUPPORTS: FLANGE EDGES TURNED TOWARD WEB, AND 9/16-INCH DIAMETER SLOTTED F HOLES AT A MAXIMUM OF 2 INCHES O.C., IN WEBS.

SLOTTED-STEEL CHANNEL SUPPORTS: COMPLY WITH DIVISION 5 SECTION "METAL FABRICATIONS" FOR SLOTTED H.

- CHANNEL FRAMING CHANNEL THICKNESS: SELECTED TO SUIT STRUCTURAL LOADING. FITTINGS AND ACCESSORIES: PRODUCTS OF THE SAME MANUFACTURER AS CHANNEL SUPPORTS.
- NONMETALLIC CHANNEL AND ANGLE SYSTEMS: STRUCTURAL-GRADE, FACTORY-FORMED, GLASS-FIBER-RESIN CHANNELS AND ANGLES WITH 9/16-INCH- DIAMETER HOLES AT A MAXIMUM OF 8 INCHES O.C., IN AT LEAST ONE , I SURFACE.
- FITTINGS AND ACCESSORIES: PRODUCTS OF THE SAME MANUFACTURER AS CHANNELS AND ANGLES. FITTINGS AND ACCESSORY MATERIALS: SAME AS CHANNELS AND ANGLES, EXCEPT METAL ITEMS MAY BE K.
- RACEWAY AND CABLE SUPPORTS: MANUFACTURED CLEVIS HANGERS, RISER CLAMPS, STRAPS, THREADED C-CLAMPS WITH RETAINERS, CEILING TRAPEZE HANGERS, WALL BRACKETS, AND SPRING-STEEL CLAMPS OR 2.19 ELECTRICAL IDENTIFICATION
- CLICK-TYPE HANGERS. PIPE SLEEVES: ASTM A 53, TYPE E, GRADE A, SCHEDULE 40, GALVANIZED STEEL, PLAIN ENDS.
- CABLE SUPPORTS FOR VERTICAL CONDUIT: FACTORY-FABRICATED ASSEMBLY CONSISTING OF THREADED BODY AND B. INSULATING WEDGING PLUG FOR NONARMORED ELECTRICAL CABLES IN RISER CONDUITS. PLUGS HAVE NUMBER AND SIZE OF CONDUCTOR GRIPPING HOLES AS REQUIRED TO SUIT INDIVIDUAL RISERS. BODY CONSTRUCTED OF MALLEABLE-IRON CASTING WITH HOT-DIP GALVANIZED FINISH.
- EXPANSION ANCHORS: CARBON-STEEL WEDGE OR SLEEVE TYPE.
- TOGGLE BOLTS: ALL-STEEL SPRINGHEAD TYPE. POWDER-DRIVEN THREADED STUDS: HEAT-TREATED STEEL

SPACING OF SUPPORTS SHALL BE PER THE NEC/NYCEC.

- PROVIDE ALL STEEL SUPPORTING MEMBERS, HANGERS, BRACKETS OR OTHER SPECIAL DETAILS REQUIRED AND EXCEPT FOR BRANCH CIRCUITRY INSTALL ALL CONDUIT IN HUNG CEILING SPACE ON ACCEPTABLE HANGERS AND
- INSERTS. CONDUIT OR MC CABLE FOR BRANCH CIRCUITRY SHALL BE SUPPORTED BY CLAMPS OR PIPE STRAPS U. SECURED TO THE CEILING SUPPORT SYSTEM (BLACK IRON - NYC), FROM STRUCTURAL MEMBERS OR FROM THE DECK. SUPPORT FROM CEILING TEES, CROSS TEES OR SUPPORT WIRES IS PROHIBITED.
- INSERTS ARE TO BE OF A LEAD SHIELD TYPE. HANGERS MUST NOT BE WELDED TO STRUCTURAL STEEL MEMBERS AND BURNING OF HOLES IN STRUCTURAL STEEL
- SLEEVES ARE TO BE OF A TYPE SUITABLE FOR THE APPLICATION AND BE SEALED AND MADE WATERTIGHT. SLEEVES THROUGH CONCRETE SHALL BE SCHEDULE 40 STEEL PIPE, SIZED FOR FREE PASSAGE OF CONDUIT AND INSTALLED FLUSH WITH UNDERSIZE OF CONCRETE SLAB AND EXTEND 4" ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED.

ALLOW ACCESS TO THE BOX.

- PULLBOXES, JUNCTION BOXES AND OUTLET BOXES SHALL BE MANUFACTURED FROM GALVANIZED INDUSTR' STANDARD GAUGE SHEET STEEL.
- PROVIDE PULL BOXES AND JUNCTION BOXES IN LONG STRAIGHT RUNS OF RACEWAY TO ASSURE THAT CABLES ARE NOT DAMAGED WHEN THEY ARE PULLED, TO FULFILL REQUIREMENTS AS TO THE NUMBER OF BENDS PERMITTED IN B. RACEWAY BETWEEN CABLE ACCESS POINTS, THE ACCESSIBILITY OF CABLE JOINTS AND SPLICES, AND THE APPLICATION OF CABLE SUPPORTS.
- PULLBOXES AND JUNCTION BOXES SHALL BE SIZED SO THAT THE MINIMUM BENDING RADIUS CRITERIA SPECIFIED A. FOR THE WIRES AND CABLE ARE MAINTAINED. SWITCH RECEPTACLE AND WALL OUTLET BOXES SHALL BE A NOMINAL 4" SQUARE, 1-1/2" OR 2-1/8" DEEP AS REQUIRED C
- DO NOT INSTALL OUTLET BOXES BACK TO BACK IN PARTITIONS. STAGGER TO PREVENT SOUND TRANSFER TWO OR MORE OUTLET BOXES THAT OCCUR AT THE SAME LOCATION SHALL BE GANGED TOGETHER IN THE SAME COVERPLATE UNLESS OTHERWISE NOTED.

LIGHTING FIXTURE BOXES SHALL BE 4" OCTAGON TYPE, DEPTH AS REQUIRED WITH 3/8" FIXTURE STUD. FOR

A MINIMUM OF ONE PULLBOX SHALL BE INSTALLED FOR EVERY 100 FT OF CONDUITS. (NOTE: EACH 90 DEGREE BEND

PULL/JUNCTION BOX BARRIERS SHALL BE PROVIDED WHERE REQUIRED BY CODE. INSTALL JUNCTION AND PULLBOXES IN INCONSPICUOUS LOCATIONS.

BY CODE WITH A RAISED COVER, UNLESS OTHERWISE INDICATED ON THE DRAWING.

PROVIDE BLANK COVERPLATES FOR BOXES WITHOUT WIRING DEVICES.

SHALL EQUATE TO 30' LENGTH OF CONDUIT). NO MORE THAN TWO (2) 90 DEGREE BENDS SHALL BE INSTALLED BETWEEN AND TWO ADJACENT PULLBOXES. ALL EQUIPMENT, DEVICE BOXES, JUNCTION BOXES, PULLBOXES AND OUTLET BOXES SHALL BE INSTALLED SO AS TO

SUSPENDED CEILING WORK, PROVIDE A 4" OCTAGON BOX WITH REMOVABLE BACKPLATE WHERE REQUIRED.

OUTLET BOXES SHALL BE PROVIDED FOR ALL LOW VOLTAGE DEVICES (I.E. TELEPHONE/DATA, SECURITY, FIRE ALARM, ETC.). COORDINATE BOX SIZE AND DEPTH WITH RESPECTIVE VENDOR.

- PROVIDE ALL STEEL SUPPORTING MEMBERS, HANGERS, BRACKETS OR OTHER SPECIAL DETAILS REQUIRED AND NECESSARY AS PER CODE
- EXCEPT FOR BRANCH CIRCUITRY INSTALL ALL CONDUIT IN HUNG CEILING SPACE ON ACCEPTABLE HANGERS AND INSERTS. CONDUIT OR MC CABLE FOR BRANCH CIRCUITRY SHALL BE SUPPORTED BY CLAMPS OR PIPE STRAPS SECURED TO THE CEILING SUPPORT SYSTEM (BLACK IRON), FROM STRUCTURAL MEMBERS OR FROM THE DECK. SUPPORT FROM CEILING TEES, CROSS TEES OR SUPPORT WIRES IS PROHIBITED.
- SPACING OF SUPPORTS SHALL BE PER THE NEC/NYCEC.
- INSERTS ARE TO BE OF A LEAD SHIELD TYPE.
- HANGERS MUST NOT BE WELDED TO STRUCTURAL STEEL MEMBERS AND BURNING OF HOLES IN STRUCTURAL STEEL
- SLEEVES ARE TO BE OF A TYPE SUITABLE FOR THE APPLICATION AND BE SEALED AND MADE WATERTIGHT. SLEEVES THROUGH CONCRETE SHALL BE SCHEDULE 40 STEEL PIPE, SIZED FOR FREE PASSAGE OF CONDUIT AND INSTALLED FLUSH WITH UNDERSIZE OF CONCRETE SLAB AND EXTEND 4" ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED.
- INDOOR DISCONNECT SWITCHES SHALL BE "QUICK-MAKE, QUICK-BREAK," HEAVY DUTY TYPE IN NEMA 1 ENCLOSURES. PROVIDE ALL FUSES WHERE NOTED.
- OUTDOOR DISCONNECT SWITCHES SHALL BE SIMILAR TO INDOOR, EXCEPT LISTED FOR OUTDOOR APPLICATIONS (NEMA 3R OR 4, AS REQUIRED)
- FUSED DISCONNECT SWITCHES SHALL BE PROVIDED WITH FUSE CLIPS TO ACCEPT SPECIFIED FUSES

- FOR PANELBOARD APPLICATIONS, CIRCUIT BREAKERS SHALL BE BOLTED TO THE PANELBOARD BUS BARS. WHERE CIRCUIT BREAKERS ARE INSTALLED IN EXISTING PANELBOARD BREAKERS SHALL BE OF THE SAME MANUFACTURER AND INTERRUPTING RATING. BREAKERS SHALL BE COMPATIBLE WITH EXISTING PANELBOARD
- CIRCUIT BREAKERS SHALL BE "THERMAL MAGNETIC" TYPE, QUICK-MAKE, QUICK- BREAK, TRIP-FREE WITH NON-WELDING CONTACTS COMPENSATED FOR AMBIENT TEMPERATURES AND SHALL HAVE A MINIMUM SHORT CIRCUIT RATING OF 10,000 AMPERES SYMMETRICAL FOR 120/208V PANELS AND 14,000 AMPERES SYMMETRICAL FOR 277/480V PANELS OR HIGHER WHERE NOTED. CIRCUIT BREAKERS SHALL BE FULLY RATED. SERIES RATING IS NOT
- MULTI-WIRE BRANCH CIRCUITS SUPPLYING POWER TO MORE THAN ONE DEVICE OR EQUIPMENT SHALL BE PROVIDED WITH A MEANS TO DISCONNECT SIMULTANEOUSLY ALL UNGROUNDED CONDUCTORS AT THE PANELBOARD WHERE THE BRANCH CIRCUIT ORIGINATES. CONTRACTOR SHALL COORDINATE WITH LOCAL AHJ THE MEANS REQUIRED TO MEET NEC SECTIONS 210.4(B). CONTRACTOR SHALL REMOVE AND REPLACE ALL EXISTING CIRCUIT BREAKERS THAT CAN NOT BE RETROFITTED WITH TIE BARS AS REQUIRED TO COMPLY WITH REQUIREMENT. TANDEM BREAKERS MAY NOT BE UTILIZED.
- PROVIDE BREAKER LOCKS FOR ALL NEW AND EXISTING BREAKERS SERVING EXIT LIGHTS, EMERGENCY LIGHTING AND EMERGENCY BATTERY PACKS.

- A. PROVIDE SUPPLEMENTARY GROUND BONDING WHERE METALLIC CONDUITS TERMINATE AT METAL CLAD EQUIPMENT (OR AT THE METAL PULL BOX OF EQUIPMENT) FOR WHICH A GROUND BUS IS SPECIFIED WITH A BUSHING OF THE GROUNDING TYPE CONNECTED INDIVIDUALLY TO GROUND BUS
- GROUND ALL EQUIPMENT IN ACCORDANCE WITH LATEST EDITION OF THE NATIONAL ELECTRICAL CODE. PROVIDE SEPARATE GREEN INSULATED GROUND CONDUCTOR IN EVERY CONDUIT TO ALL DEVICES, LIGHTING FIXTURES AND FEEDERS (PANELBOARDS, DISCONNECT SWITCHES, ETC.)
- ALL GROUND WIRES SHALL BE SUITABLY PROTECTED FROM MECHANICAL INJURY. SPECIALTY GROUNDING AS DETAILED ON THE DESIGN DRAWINGS OR REQUESTED AS ELECTRICAL CONTRACTOR SCOPE BY OTHER CONSULTANTS DOCUMENTS.

#### 2.16 MOTORS AND APPARATUS FURNISHED BY OTHERS:

- INSTALL ALL WIRING IN CONDUITS. CONNECT CONDUIT TO MOTOR CONDUIT TERMINAL BOXES WITH 18" TO 24" OF FLEXIBLE CONDUIT FROM END OF CONDUIT TO MOTOR TERMINAL BOX.
- PROVIDE CONNECTIONS TO ALL "EXISTING TO BE RELOCATED" AS WELL AS NEW MOTORS, CONTROLLERS, DISCONNECTS, ACTUATING AND CONTROL DEVICES. CONDUCTORS TO MOTORS TO BE THE SAME AS TO CONTROLLERS EXCEPT AS NOTED.
- C. MOTORS, CONTROLLERS, ACTUATING AND CONTROL DEVICES WILL BE SUPPLIED UNDER SECTIONS OF WORK ACCEPT DELIVERY OF CONTROLLERS, OR RELOCATE EXISTING CONTROLLERS, ERECT ON WALLS OR ABOVE CEILING
- AS INDICATED AND WIRE UNDER THIS SECTION EXCEPT AS NOTED. E. WIRE ALL MOTOR AND ACTUATING DEVICES SUPPLIED AND INSTALLED UNDER OTHER SECTIONS OF WORK EXCEPT

FURNISH DISCONNECT SWITCHES UNDER THIS SECTIONS OF WORK EXCEPT AS NOTED.

- G. LEAVE MOTOR, CONTROL AND ACTUATING EQUIPMENT READY FOR OPERATION. ASCERTAIN EXACT LOCATIONS OF CONTROLLERS AND CONTROL SERVICES PRIOR TO INSTALLATION AND PULLING
- COORDINATE WITH ALL OTHER TRADES AND PROVIDE ALL WIRING, CONDUIT, JUNCTION BOXES, DISCONNECTS, CONNECTIONS AND TERMINATIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER WIRING AND NECESSARY ELECTRICAL ADJUSTMENTS AS REQUIRED BY THE EQUIPMENT SPECIFICATION. UNLESS OTHERWISE NOTED, ALL STARTERS AND CONTROL WIRING TO BE PROVIDED BY DIVISION 15. DIVISION 16 TO
- RECEIVE. INSTALL STARTERS AND PROVIDE ALL LINE-SIDE AND LOAD-SIDE POWER WIRING AND REQUIRED ISOLATING DISCONNECT SWITCHES CONFIRM ELECTRICAL REQUIREMENTS AND EXACT LOCATIONS OF ALL MECHANICAL EQUIPMENT WITH DIVISION 15

## PRIOR TO INSTALLATION

- IDENTIFICATION DEVICES: A SINGLE TYPE OF IDENTIFICATION PRODUCT FOR EACH APPLICATION CATEGORY. USE
- COLORS PRESCRIBED BY ANSI A13.1, NFPA 70, AND THESE SPECIFICATIONS. RACEWAY AND CABLE LABELS: COMPLY WITH ANSI A13.1, TABLE 3, FOR MINIMUM SIZE OF LETTERS FOR LEGEND AND MINIMUM LENGTH OF COLOR FIELD FOR EACH RACEWAY AND CABLE SIZE.
- TYPE: PRETENSIONED, WRAPAROUND PLASTIC SLEEVES. FLEXIBLE, PREPRINTED, COLOR-CODED, ACRYLIC BAND SIZED TO SUIT THE DIAMETER OF THE ITEM IT IDENTIFIES.

TYPE: PREPRINTED, FLEXIBLE, SELF-ADHESIVE, VINYL. LEGEND IS OVERLAMINATED WITH A CLEAR, WEATHER-

- AND CHEMICAL-RESISTANT COATING. COLOR: BLACK LETTERS ON ORANGE BACKGROUND.
- 4. LEGEND: INDICATES VOLTAGE. COLORED ADHESIVE MARKING TAPE FOR RACEWAYS, WIRES, AND CABLES: SELF-ADHESIVE VINYL TAPE, NOT LESS THAN 1 INCH WIDE BY 3 MILS THICK.
- TAPE MARKERS FOR WIRE: VINYL OR VINYL-CLOTH, SELF-ADHESIVE, WRAPAROUND TYPE WITH PREPRINTED NUMBERS AND LETTERS. COLOR-CODING CABLE TIES: TYPE 6/6 NYLON, SELF-LOCKING TYPE. COLORS TO SUIT CODING SCHEME.
- PUNCHED OR DRILLED FOR MECHANICAL FASTENERS 1/16-INCH (1.6-MM) MINIMUM THICKNESS FOR SIGNS UP TO 20 SQ. IN. (129 SQ. CM) AND 1/8-INCH (3.2-MM) MINIMUM THICKNESS FOR LARGER SIZES. ENGRAVED LEGEND IN BLACK LETTERS ON WHITE BACKGROUND INTERIOR WARNING AND CAUTION SIGNS: COMPLY WITH 29 CFR, CHAPTER XVII, PART 1910.145. PREPRINTED,

ALUMINUM, BAKED-ENAMEL-FINISH SIGNS, PUNCHED OR DRILLED FOR MECHANICAL FASTENERS, WITH COLORS,

FASTENERS FOR NAMEPLATES AND SIGNS: SELF-TAPPING, STAINLESS-STEEL SCREWS OR NO. 10/32

ENGRAVED-PLASTIC LABELS, SIGNS, AND INSTRUCTION PLATES: ENGRAVING STOCK, MELAMINE PLASTIC LAMINATE

## 2.23 TOUCHUP PAINT

- A. FOR EQUIPMENT: EQUIPMENT MANUFACTURER'S PAINT SELECTED TO MATCH INSTALLED EQUIPMENT FINISH. GALVANIZED SURFACES: ZINC-RICH PAINT RECOMMENDED BY ITEM MANUFACTURER.
- ACCEPTABLE MANUFACTURERS: RACEWAYS: ALLIED TUBE & CONDUIT, NUCOR, WESTERN TUBE, WHEATLAND

LEGEND, AND SIZE APPROPRIATE TO THE APPLICATION.

WIRE/CABLE: SOUTHWIRE, GENERAL CABLE, OR CERRO METAL CLAD CABLE: AFC, SOUTHWIRE, OR STABILOY

STAINLESS-STEEL MACHINE SCREWS WITH NUTS AND FLAT AND LOCK WASHERS.

DISCONNECT SWITCHES: EATON, GE/ABB, SQUARE D, OR SIEMENS CIRCUIT BREAKERS: EATON, GE/ABB, SQUARE D OR SIEMENS. MATCH BUILDING STANDARD

FITTINGS, COUPLINGS, BUSHINGS, CONNECTORS: OZ GEDNEY, BURNDY, NEPCO, OR THOMAS AND BETTS

GE Crotonville - Executive Residence Building Water Heater Replacement

Old Albany Post Road, Ossining, NY

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**ELECTRICAL** BASEMENT FLOOR SPECIFICATIONS SHEET 1 OF 2

NOT TO SCALE 10/XX/2021

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E-10<sup>2</sup>

- 3.01 GENERAL
- PERFORM THE WORK AT SUCH TIME AND IN SUCH MANNER AS TO MINIMIZE INTERFERENCE WITH BUILDING'S NORMAL OPERATION. NOTIFY BUILDING MANAGEMENT REPRESENTATIVES IN ADVANCE EACH TIME A SERVICE OUTAGE OR INTERRUPTION WILL BE REQUIRED FOR THE PERFORMANCE OF SOME PHASE OF THE WORK. SCHEDULE SUCH SERVICE OUTAGE OR INTERRUPTION, ONLY AFTER HAVING RECEIVED APPROVAL OF DATE, HOUR, AND TIME

INTERVAL REQUIRED THEREOF. SCHEDULE OF WORK AS DIRECTED SHALL BE FOLLOWED AS CLOSELY AS POSSIBLE.

- OPENINGS AROUND ELECTRICAL PENETRATIONS THROUGH FIRE RESISTANCE RATED WALLS, PARTITIONS, FLOORS, OR CEILINGS SHALL BE FIRE STOPPED USING APPROVED METHODS. SEALANT SHALL BE RATED FOR 3 HOURS. TELECOMMUNICATION CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING FIRE STOPPING IN 'IT' CONDUITS/SLEEVES/PENETRATIONS AFTER 'IT' WIRES ARE PULLED.
- PROVIDE 277/480 VOLT DANGER LABELING AT ALL EQUIPMENT AND JUNCTION/PULL BOXES PER CODE
- MAINTAIN GROUND CONTINUITY THROUGHOUT ALL SYSTEMS
- MAINTAIN CONTINUITY AND PROTECT ALL EXISTING CIRCUITS TO REMAIN SERVING EQUIPMENT WITHIN BASI BUILDING CORE AREAS OR OTHER TENANT AREAS AFFECTED BY THE ALTERATION WORK. CONTRACTOR SHALL BE RESPONSIBLE TO TRACE ALL EXISTING CIRCUITS TO REMAIN ORIGINATING FROM PANELBOARDS, AND SUBMIT G. FINDINGS TO ENGINEER FOR CLARIFICATION PRIOR TO THE START OF ANY PANELBOARD WORK. WHENEVER IT IS REQUIRED THAT AN EXISTING CIRCUIT BE MODIFIED, REVISED, DISCONNECTED OR REMOVED IT SHALL BE UNDERSTOOD THAT THE CIRCUIT SHALL BE RECONNECTED AND SERVICE RE-ESTABLISHED IN THE REMAINING PORTION OF THE CIRCUIT AFFECTED BY THE ALTERNATION.
- PRIOR TO ANY CHASING, CHOPPING, OR CORE DRILLING BEING PERFORMED, THE CONTRACTOR SHALL FIELD INVESTIGATE CONDITIONS AND COORDINATE WITH ALL APPROPRIATE TRADES TO ENSURE THAT WORK WILL BE IN HARMONY WITH OTHER WORK AND NOT AFFECTED ANY EXISTING BUILDING SYSTEMS. X-RAY SLABS IF REQUIRED. THIS WORK MUST BE APPROVED BY BUILDING MANAGEMENT PRIOR TO PROCEEDING. ALL CORING/CHASING WILL BE
- FOR TEMPORARY POWER, FURNISH AND INSTALL WIRING FOR ADEQUATE LIGHT AND SMALL TOOLS POWER FOR THE PROJECT. THIS SHALL INCLUDE STRINGERS, LAMPS, OUTLETS, BREAKERS, AND FUSING, AS IT IS NECESSARY. ALL TEMPORARY WIRING SHALL BE REMOVED FROM SPACE AT COMPLETION OF PROJECT
- BOXES. CONDUIT SHALL BE STUBBED 6" ABOVE HUNG CEILING AND TURNED TOWARDS TERMINATION CLOSET ABOVE ACCESSIBLE CEILING AREA
- COORDINATE WITH THE BUILDING OWNER FOR ANY SERVICE INTERRUPTION OF EXISTING SYSTEMS AND GIVE NOTICE AS REQUIRED BY BUILDING RULES AND REGULATIONS OR A MINIMUM OF TEN (10) BUSINESS DAYS PRIOR TO ANY O WORK, WHICHEVER IS MORE STRINGENT. CONTRACTOR IS TO PERFORM WORK ON PREMIUM TIME SO AS TO NOT DISTURB EXISTING TENANTS ON OTHER FLOORS.
- PRIOR TO CONNECTING ANY NEW CIRCUITS TO EXISTING PANELBOARDS, CONNECTED TO FEEDERS WHICH SERVE OTHER TENANTS OR LOADS, PERFORM A 30 DAY CONTINUOUS METERING OF AMPERAGE ON ALL THREE PHASES PER NEC/NYCEC ARTICLE 220-87, EXCEPTION (1). SUBMIT INITIAL RESULTS TO ENGINEER FOR EVALUATION AFTER RECORDING OF 7 DAYS. NEW LOADS SHALL NOT BE CONNECTED TO AFFECTED PANELS PRIOR TO ENGINEER'S
- EVALUATION. WHEN USING TEMPORARY LIGHTING, THE CONTRACTOR SHALL CLEARLY LABEL PANELS AND BREAKERS USED FOR LIGHTING. LOCATION OF PANELS TO BE SHOWN ON FLOOR PLAN POSTED AT ENTRANCE TO WORK AREA. PROPER TEMPORARY LIGHTING AND POWER MUST BE INSTALLED AND MAINTAINED IN ALL WORK AREAS. CONNECTIONS TO EXISTING STAIRWELL AND EXIT LIGHT SYSTEMS ARE NOT PERMITTED
- THE CONTRACTOR SHALL CUT BACK TO THE FLOOR, WALL OR CEILING, REMOVE WIRING AND PLUG BOTH ENDS OF CONCEALED CONDUITS MADE OBSOLETE BY THIS ALTERNATION. EXPOSED CONDUITS, WIREWAYS, OUTLET BOXES, PULL BOXES, HANGERS, ETC. MADE OBSOLETE BY THE ALTERNATION WORK SHALL BE REMOVED, UNLESS OTHERWISE NOTED.
- IT IS POSSIBLE THAT THERE WILL BE CERTAIN REMOVALS AND RELOCATIONS OF THE EXISTING ELECTRICAL INSTALLATION NECESSARY FOR THE SATISFACTORY PERFORMANCE OF THE WORK. THESE CHANGES CANNOT BE W. INSTALL CONDUITS TO CONSERVE HEADROOM, PARALLEL AND PERPENDICULAR TO BUILDING LINES. DO NOT CLIP COMPLETELY DETAILED ON THE DRAWINGS, BUT MUST BE CONSIDERED BY THE CONTRACTOR WHILE REVIEWING THE EXISTING CONDITIONS AT THE SITE AND PREPARING THE PROPOSAL
- 3.02 ELECTRICAL EQUIPMENT INSTALLATION
- HEADROOM MAINTENANCE: IF MOUNTING HEIGHTS OR OTHER LOCATION CRITERIA ARE NOT INDICATED, ARRANGE AND INSTALL COMPONENTS AND EQUIPMENT TO PROVIDE THE MAXIMUM POSSIBLE HEADROOM
- MATERIALS AND COMPONENTS: INSTALL LEVEL, PLUMB, AND PARALLEL AND PERPENDICULAR TO OTHER BUILDING 3.09 ELECTRICAL SUPPORTING DEVICE APPLICATION SYSTEMS AND COMPONENTS, UNLESS OTHERWISE INDICATED.
- EQUIPMENT: INSTALL TO FACILITATE SERVICE, MAINTENANCE, AND REPAIR OR REPLACEMENT OF COMPONENTS. CONNECT FOR EASE OF DISCONNECTING, WITH MINIMUM INTERFERENCE WITH OTHER INSTALLATIONS.
- D. RIGHT OF WAY: GIVE TO RACEWAYS AND PIPING SYSTEMS INSTALLED AT A REQUIRED SLOPE.
- 3.03 RACEWAY APPLICATION A. USE THE FOLLOWING RACEWAYS FOR INDOOR INSTALLATIONS:
- EXPOSED: EMT
- CONCEALED: EMT (MC CABLE WHERE PERMISSIBLE ACCORDING TO SECTION 3.06B). CONNECTION TO VIBRATING EQUIPMENT: FMC; EXCEPT IN WET OR DAMP LOCATIONS, USE LFMC.
- 4. DAMP OR WET LOCATIONS: IMC/RMC.
- BOXES AND ENCLOSURES: NEMA 250, TYPE 1, UNLESS OTHERWISE INDICATED
- 3.04 RACEWAY AND CABLE INSTALLATION
- CONCEAL RACEWAYS AND CABLES, UNLESS OTHERWISE INDICATED, WITHIN FINISHED WALLS, CEILINGS, AND D.
- INSTALL RACEWAYS AND CABLES AT LEAST 6 INCHES (150 MM) AWAY FROM PARALLEL RUNS OF FLUES AND STEAM E. OR HOT-WATER PIPES. LOCATE HORIZONTAL RACEWAY RUNS ABOVE WATER AND STEAM PIPING.
- MAKE CONDUIT BENDS AND OFFSETS SO ID IS NOT REDUCED. KEEP LEGS OF BENDS IN THE SAME PLANE AND STRAIGHT LEGS OF OFFSETS PARALLEL, UNLESS OTHERWISE INDICATED.
- E. USE RACEWAY AND CABLE FITTINGS COMPATIBLE WITH RACEWAYS AND CABLES AND SUITABLE FOR USE AND LOCATION.
- INSTALL RACEWAYS EMBEDDED IN SLABS IN MIDDLE THIRD OF SLAB THICKNESS WHERE PRACTICAL, AND LEAVE AT
- LEAST 1-INCH CONCRETE COVER. OBTAIN STRUCTURAL ENGINEER'S APPROVAL PRIOR TO INSTALLATION. 1. SECURE RACEWAYS TO REINFORCING RODS TO PREVENT SAGGING OR SHIFTING DURING CONCRETE J.
- SPACE RACEWAYS LATERALLY TO PREVENT VOIDS IN CONCRETE.

USE TEMPORARY RACEWAY CAPS TO PREVENT FOREIGN MATTER FROM ENTERING.

- 3. INSTALL CONDUIT LARGER THAN 1-INCH TRADE SIZE (DN27) PARALLEL TO OR AT RIGHT ANGLES TO MAIN REINFORCEMENT. WHERE CONDUIT IS AT RIGHT ANGLES TO REINFORCEMENT, PLACE CONDUIT CLOSE TO
- 4. TRANSITION FROM SCHEDULE 40 NONMETALLIC TUBING TO SCHEDULE 80 NONMETALLIC CONDUIT, RIGID STEEL CONDUIT, OR IMC BEFORE RISING ABOVE FLOOR.
- MAKE BENDS IN EXPOSED PARALLEL OR BANKED RUNS FROM SAME CENTERLINE TO MAKE BENDS PARALLEL. USE FACTORY ELBOWS ONLY WHERE ELBOWS CAN BE INSTALLED PARALLEL; OTHERWISE, PROVIDE FIELD BENDS FOR EXPOSED PARALLEL RACEWAYS.
- INSTALL PULL WIRES IN EMPTY RACEWAYS. USE NO. 14 AWG ZINC-COATED STEEL OR MONOFILAMENT PLASTIC LINE WITH NOT LESS THAN 200-LB TENSILE STRENGTH. LEAVE AT LEAST 12 INCHES OF SLACK AT EACH END OF THE PULL
- INSTALL TELEPHONE AND SIGNAL SYSTEM RACEWAYS, 2-INCH TRADE SIZE AND SMALLER, IN MAXIMUM LENGTHS OF 100 FEET AND WITH A MAXIMUM OF TWO 90-DEGREE BENDS OR EQUIVALENT. SEPARATE LENGTHS WITH PULL OR JUNCTION BOXES WHERE NECESSARY TO COMPLY WITH THESE REQUIREMENTS, IN ADDITION TO REQUIREMENTS
- CONNECT MOTORS AND EQUIPMENT SUBJECT TO VIBRATION, NOISE TRANSMISSION, OR MOVEMENT WITH A MAXIMUM OF 72-INCH (1830-MM) FLEXIBLE CONDUIT. INSTALL LFMC IN WET OR DAMP LOCATIONS. INSTALL SEPARATE GROUND CONDUCTOR ACROSS FLEXIBLE CONNECTIONS.
- J. SET FLOOR BOXES LEVEL AND TRIM AFTER INSTALLATION TO FIT FLUSH TO FINISHED FLOOR SURFACE.
- 3.05 WIRING METHODS FOR POWER, LIGHTING, AND CONTROL CIRCUITS
- A. FEEDERS: TYPE THHN/THWN INSULATED CONDUCTORS IN RACEWAY
- UNDERGROUND FEEDERS AND BRANCH CIRCUITS: TYPE THWN OR SINGLE-WIRE, TYPE UF INSULATED CONDUCTORS
- BRANCH CIRCUITS: TYPE THW OR THHN/THWN INSULATED CONDUCTORS IN RACEWAY WHERE EXPOSED. METAL-CLAD CABLE SHALL BE PERMITTED WHERE PERMITTED BY AUTHORITIES HAVING JURISDICTION AND WHEN APPROVED BY LANDLORD RULES AND REGULATIONS AND BY TENANT. METAL-CLAD CABLE SHALL NOT BE INSTALLED WITHIN ELECTRIC CLOSETS OR DIRECTLY INTO PANELBOARDS.
- REMOTE-CONTROL SIGNALING AND POWER-LIMITED CIRCUITS: TYPE THHN/THWN INSULATED CONDUCTORS IN RACEWAY FOR CLASSES 1, 2, AND 3, UNLESS OTHERWISE INDICATED. CONDUCTORS USED FOR LOW-VOLTAGE SYSTEMS INCLUDING LIGHTING CONTROLS, HVAC CONTROLS, ETC. SHALL NOT SHARE THE SAME RACEWAY/ENCLOSURE AS LINE VOLTAGE CONDUCTORS.
- MULTI-WIRE BRANCH CIRCUITS SHALL BE PROVIDED WITH A MEANS TO DISCONNECT SIMULTANEOUSLY ALL UNGROUNDED CONDUCTORS AT THE PANELBOARD WHERE THE BRANCH CIRCUIT ORIGINATES.

3.06 WIRING INSTALLATION

PANELBOARDS

- ALL CONDUCTORS SHALL BE RUN IN CONDUIT. [SEE WIRE AND CABLE SECTION 3.06B FOR ALTERNATE PRICING TO A.
- UTILIZE MC CABLE WHERE PERMISSIBLE.] METAL CLAD (TYPE MC) FOR CONCEALED BRANCH CIRCUITRY IN TENANT SPACE ONLY MAYBE USED WHEN APPROVED B. BY TENANT AND BUILDING MANAGEMENT AND WHERE PERMITTED BY CODE. EMT SHALL BE USED OUTSIDE TENANT SPACE AND IN BUILDING CLOSETS. CONTRACTOR SHALL SUBMIT A DEDUCT ALTERNATE PRICE FOR USE OF MC IN
- WIRE CONNECTORS AND SPLICES: UNITS OF SIZE, AMPACITY RATING, MATERIAL, TYPE, AND CLASS SUITABLE FOR SERVICE INDICATED.
- THE MINIMUM WIRE SIZE FOR BRANCH CIRCUITS SHALL BE NO. 12 AWG EXCEPT 120 VOLT CIRCUITS OVER 100' IN LENGTH SHALL BE NO. 10 AWG.
- ALL FEEDER CONDUCTORS SHALL BE SIZED FOR MAXIMUM 2% VOLTAGE DROP PER ASHRAE 90.1-2010 8.4.1.1. BRANCH CIRCUITS SHALL ALSO BE SIZED FOR 2.5% VOLTAGE DROP
- TAG ALL FEEDERS IN ALL PULL BOXES, GUTTER SPACES, AND WIREWAYS THROUGH WHICH THEY PASS TERMINATE STRANDED CONDUCTORS NO. 8 AWG AND LARGER, AT SWITCHBOARDS, TRANSFORMERS, UPS SYSTEMS
- WITH COMPRESSION TYPE CONNECTORS. TERMINATE WITH MECHANICAL LUGS AT PANELBOARDS. JOIN OR TAP STRANDED CONDUCTORS (NO. 6 AWG AND LARGER) WITH PRESSURE INDENT TYPE CONNECTORS
- BURNDY, NEPCO, OR O.Z./GEDNEY WITH COMPOSITION INSULATING COVERS. SPLICES IN BRANCH WIRING (NO. 8 AWG AND SMALLER) SHALL BE TWISTED AND MADE MECHANICALLY TIGHT; THEN SECURED WITH PIGTAIL CONNECTORS, CRIMP TYPE CONNECTORS SHALL NOT BE USED. UTILIZE UL LISTED, "SILICON FILLED" PIGTAIL CONNECTORS WHERE LOCATED IN WET ENVIRONMENTS OR OUTDOORS.
- SUPPORT CONDUCTORS IN VERTICAL RACEWAYS IN ACCORDANCE WITH THE NEC/NYCEC BASED ON CONDUCTOR
- SIZE AND VERTICAL DISTANCE. WALL MOUNTED DEVICES SHALL BE FED VERTICALLY. HORIZONTAL RUNS THROUGH PARTITIONS SHALL NOT BE
- PERMITTED, EXCEPT IN LOW HEIGHT PARTITIONS OR WHERE NOTED ON DRAWINGS INSTALL WIRING AT OUTLETS WITH AT LEAST 12 INCHES (300 MM) OF SLACK CONDUCTOR AT EACH OUTLET.
- FURNISH AND INSTALL A MINIMUM 1" EMPTY CONDUIT FOR ALL WALL MOUNTED LOW VOLTAGE EQUIPMENT JUNCTION M. CONNECT OUTLET AND COMPONENT CONNECTIONS TO WIRING SYSTEMS AND TO GROUND. TIGHTEN ELECTRICAL CONNECTORS AND TERMINALS, ACCORDING TO MANUFACTURER'S PUBLISHED TORQUE-TIGHTENING VALUES. IF
  - MANUFACTURER'S TORQUE VALUES ARE NOT INDICATED, USE THOSE SPECIFIED IN UL 486A.
  - N. FOR ALL SIZES OF CONDUIT LARGER THAN 1-1/2", USE STANDARD ELBOW. CONDUIT SHALL BE SECURELY FASTENED IN PLACE AND HANGERS, SUPPORTS OR FASTENINGS SHALL BE PROVIDED
  - AT EACH ELBOW AND AT EACH END OF EACH STRAIGHT RUN TERMINATED AT A BOX OR CABINET PROVIDE EXPANSION FITTINGS IN EACH CONDUIT RUN WHEREVER IT CROSSES AN EXPANSION JOINT AND WHEREVER H.

  - THE CONDUIT LENGTH EXCEEDS 200 FEET. Q. UNLESS OTHERWISE INDICATED OR SPECIFIED, ALL WIRING SHALL BE INSTALLED CONCEALED.
  - TUBING (EMT) UNLESS OTHERWISE NOTED. FINAL CONNECTIONS TO MOTORS, LIGHT FIXTURES, TRANSFORMERS, AND EQUIPMENT SUBJECT TO VIBRATION WILL BE DONE WITH FLEXIBLE METALLIC CONDUIT (GREENFIELD). LENGTH

FEEDERS AND BRANCH CIRCUITRY ABOVE HUNG CEILING AND IN PARTITIONS SHALL BE RUN IN ELECTRICAL METALLIC

- SHALL NOT EXCEED 6 FEET. ALL CONDUIT IN MECHANICAL ROOMS, ELECTRICAL CLOSETS AND WHERE CONCEALED IN CONCRETE OR INSTALLED
- OUTDOORS SHALL BE RIGID THREADED REGARDLESS OF SIZE. ALL CONDUITS INSTALLED IN CONCRETE OR OUTDOORS SHALL BE PROVIDED WITH WEATHERPROOF CONNECTORS.
- U. ALL METAL CONDUIT TERMINATING IN A METAL ENCLOSURE SHALL HAVE AN INSULATED BUSHING. PROVIDE "GROUNDING" TYPE BUSHING WHERE REQUIRED
- WHERE CONDUITS ARE RUN IN THE CEILING SPACE OF THE FLOOR BELOW, THEY SHALL BE CONTINUOUS AND HAVE J. NO JUNCTION OR PULL BOXES UNLESS PRIOR APPROVAL IS GIVEN BY BUILDING MANAGEMENT/CLIENT.
- CONDUITS TO CEILING HANGER X. INSTALL TWO (2) (1") SPARE CONDUITS UP TO CEILING SPACE FOR EACH RECESSED PANELBOARD. TERMINATE THESE 3.13
- CONDUITS IN A 6" X 6" X 4" COVERED JUNCTION BOX IN CEILING SPACE.
- WALL COMMUNICATIONS CONDUIT SHALL BE REAMED AND INSTALLED COMPLETE WITH INSULATED BUSHINGS AT EACH END.
- DAMP LOCATIONS AND OUTDOORS: HOT-DIP GALVANIZED MATERIALS OR NONMETALLIC, U-CHANNEL SYSTEM
- COMPONENTS. DRY LOCATIONS: STEEL MATERIALS.
- SUPPORT CLAMPS FOR PVC RACEWAYS: CLICK-TYPE CLAMP SYSTEM.
- SELECTION OF SUPPORTS: COMPLY WITH MANUFACTURER'S WRITTEN INSTRUCTIONS
- STRENGTH OF SUPPORTS: ADEQUATE TO CARRY PRESENT AND FUTURE LOADS, TIMES A SAFETY FACTOR OF AT LEAST FOUR; MINIMUM OF 200-LB (90-KG) DESIGN LOAD.
- 3.10 SUPPORT INSTALLATION

CHANNEL AND ANGLE SUPPORTS.

- INSTALL SUPPORT DEVICES TO SECURELY AND PERMANENTLY FASTEN AND SUPPORT ELECTRICAL COMPONENTS. D. INSTALL INDIVIDUAL AND MULTIPLE RACEWAY HANGERS AND RISER CLAMPS TO SUPPORT RACEWAYS. PROVIDE E. U-BOLTS, CLAMPS, ATTACHMENTS, AND OTHER HARDWARE NECESSARY FOR HANGER ASSEMBLIES AND FOR SECURING HANGER RODS AND CONDUITS.
- C. SUPPORT PARALLEL RUNS OF HORIZONTAL RACEWAYS TOGETHER ON TRAPEZE- OR BRACKET-TYPE HANGERS. SIZE SUPPORTS FOR MULTIPLE RACEWAY INSTALLATIONS SO CAPACITY CAN BE INCREASED BY A 25 PERCENT MINIMUM IN THE FUTURE.
- SUPPORT INDIVIDUAL HORIZONTAL RACEWAYS WITH SEPARATE. MALLEABLE-IRON PIPE HANGERS OR CLAMPS.
- INSTALL 1/4-INCH- (6-MM-) DIAMETER OR LARGER THREADED STEEL HANGER RODS, UNLESS OTHERWISE INDICATED. SPRING-STEEL FASTENERS SPECIFICALLY DESIGNED FOR SUPPORTING SINGLE CONDUITS OR TUBING MAY BE USED INSTEAD OF MALLEABLE-IRON HANGERS FOR 1-1/2-INCH (38-MM) AND SMALLER RACEWAYS SERVING LIGHTING AND RECEPTACLE BRANCH CIRCUITS ABOVE SUSPENDED CEILINGS AND FOR FASTENING RACEWAYS TO SLOTTED
- ARRANGE SUPPORTS IN VERTICAL RUNS SO THE WEIGHT OF RACEWAYS AND ENCLOSED CONDUCTORS IS CARRIED ENTIRELY BY RACEWAY SUPPORTS, WITH NO WEIGHT LOAD ON RACEWAY TERMINALS. SIMULTANEOUSLY INSTALL VERTICAL CONDUCTOR SUPPORTS WITH CONDUCTORS.
- SEPARATELY SUPPORT CAST BOXES THAT ARE THREADED TO RACEWAYS AND USED FOR FIXTURE SUPPORT. SUPPORT SHEET-METAL BOXES DIRECTLY FROM THE BUILDING STRUCTURE OR BY BAR HANGERS. IF BAR HANGERS ARE USED. ATTACH BAR TO RACEWAYS ON OPPOSITE SIDES OF THE BOX AND SUPPORT THE RACEWAY WITH AN APPROVED FASTENER NOT MORE THAN 24 INCHES (610 MM) FROM THE BOX.
- INSTALL METAL CHANNEL RACKS FOR MOUNTING CABINETS, PANELBOARDS, DISCONNECT SWITCHES, CONTROL ENCLOSURES, PULL AND JUNCTION BOXES, TRANSFORMERS, AND OTHER DEVICES UNLESS COMPONENTS ARE MOUNTED DIRECTLY TO STRUCTURAL ELEMENTS OF ADEQUATE STRENGTH.
- INSTALL SLEEVES FOR CABLE AND RACEWAY PENETRATIONS OF CONCRETE SLABS AND WALLS UNLESS CORE-DRILLED HOLES ARE USED. INSTALL SLEEVES FOR CABLE AND RACEWAY PENETRATIONS OF MASONRY AND FIRE-RATED GYPSUM WALLS AND OF ALL OTHER FIRE-RATED FLOOR AND WALL ASSEMBLIES. INSTALL SLEEVES DURING ERECTION OF CONCRETE AND MASONRY WALLS.
- SECURELY FASTEN ELECTRICAL ITEMS AND THEIR SUPPORTS TO THE BUILDING STRUCTURE, UNLESS OTHERWISE INDICATED. PERFORM FASTENING ACCORDING TO THE FOLLOWING UNLESS OTHER FASTENING METHODS ARE INDICATED:
  - WOOD: FASTEN WITH WOOD SCREWS OR SCREW-TYPE NAILS.
- MASONRY: TOGGLE BOLTS ON HOLLOW MASONRY UNITS AND EXPANSION BOLTS ON SOLID MASONRY UNITS.
- NEW CONCRETE: CONCRETE INSERTS WITH MACHINE SCREWS AND BOLTS. EXISTING CONCRETE: EXPANSION BOLTS.
- INSTEAD OF EXPANSION BOLTS, THREADED STUDS DRIVEN BY A POWDER CHARGE AND PROVIDED WITH LOCK E. WASHERS MAY BE USED IN EXISTING CONCRETE.
- STEEL: WELDED THREADED STUDS OR SPRING-TENSION CLAMPS ON STEEL.
- a. FIELD WELDING: COMPLY WITH AWS D1.1. WELDING TO STEEL STRUCTURE MAY BE USED ONLY FOR THREADED STUDS, NOT FOR CONDUITS, PIPE G. STRAPS, OR OTHER ITEMS.
- LIGHT STEEL: SHEET-METAL SCREWS.
- FASTENERS: SELECT SO THE LOAD APPLIED TO EACH FASTENER DOES NOT EXCEED 25 PERCENT OF ITS PROOF-TEST LOAD.
- PULL TESTING FOR ALL POST INSTALLED ANCHORS IN CONCRETE AND IN MASONRY SHALL BE IN ACCORDANCE WITH ACI 318, AC01, AC58, AC93, AC106 STANDARDS AND LOCAL BUILDING CODE. THE MINIMUM NUMBER OF ANCHORS TESTED SHALL BE THE GREATER OF 20% OR THE TOTAL OF THREE.

- 3.11 IDENTIFICATION MATERIALS AND DEVICES
- INSTALL AT LOCATIONS FOR MOST CONVENIENT VIEWING WITHOUT INTERFERENCE WITH OPERATION AND A MAINTENANCE OF EQUIPMENT
- COORDINATE NAMES, ABBREVIATIONS, COLORS, AND OTHER DESIGNATIONS USED FOR ELECTRICAL IDENTIFICATION WITH CORRESPONDING DESIGNATIONS INDICATED IN THE CONTRACT DOCUMENTS OR REQUIRED BY CODES AND STANDARDS. USE CONSISTENT DESIGNATIONS THROUGHOUT PROJECT.
- LIEU OF EMT THROUGHOUT IN SUBMISSION OF BID. METAL CLAD (TYPE MC) SHALL NOT BE INSTALLED INTO SELF-ADHESIVE IDENTIFICATION PRODUCTS: CLEAN SURFACES BEFORE APPLYING.
  - IDENTIFY RACEWAYS AND CABLES WITH COLOR BANDING AS FOLLOWS:
    - BANDS: PRETENSIONED, SNAP-AROUND, COLORED PLASTIC SLEEVES OR COLORED ADHESIVE MARKING TAPE MAKE EACH COLOR BAND 2 INCHES (51 MM) WIDE, COMPLETELY ENCIRCLING CONDUIT, AND PLACE ADJACENT BANDS OF TWO-COLOR MARKINGS IN CONTACT, SIDE BY SIDE
    - BAND LOCATIONS: AT CHANGES IN DIRECTION, AT PENETRATIONS OF WALLS AND FLOORS, AT 50-FOOT (15-M) A. MAXIMUM INTERVALS IN STRAIGHT RUNS, AND AT 25-FOOT (8-M) MAXIMUM INTERVALS IN CONGESTED AREAS.
    - COLORS: AS FOLLOWS:
    - a. FIRE ALARM SYSTEM: RED.
    - b. SECURITY SYSTEM: BLUE AND YELLOW TELECOMMUNICATION SYSTEM: GREEN AND YELLOW.
    - TAG AND LABEL CIRCUITS DESIGNATED TO BE EXTENDED IN THE FUTURE. IDENTIFY SOURCE AND CIRCUIT NUMBERS IN EACH CABINET, PULL AND JUNCTION BOX, AND OUTLET BOX. COLOR-CODING MAY BE USED FOR VOLTAGE AND 3.25 PROTECTION
  - PHASE IDENTIFICATION. INSTALL CONTINUOUS UNDERGROUND PLASTIC MARKERS DURING TRENCH BACKFILLING, FOR EXTERIOR JNDERGROUND POWER, CONTROL, SIGNAL, AND COMMUNICATION LINES LOCATED DIRECTLY ABOVE POWER AND COMMUNICATION LINES. LOCATE 6 TO 8 INCHES BELOW FINISHED GRADE. IF WIDTH OF MULTIPLE LINES INSTALLED IN A COMMON TRENCH OR CONCRETE ENVELOPE DOES NOT EXCEED 16 INCHES, OVERALL, USE A SINGLE LINE B.
  - COLOR-CODE 208/120-V SYSTEM SECONDARY SERVICE, FEEDER, AND BRANCH-CIRCUIT CONDUCTORS THROUGHOUT THE SECONDARY ELECTRICAL SYSTEM SHALL BE SIMILAR TO (MATCHING BUILDING STANDARDS):

    - PHASE B: RED. PHASE C: BLUE
    - NEUTRAL: WHITE
  - GROUND: GREEN
  - COLOR-CODE 480/277-V SYSTEM SECONDARY SERVICE, FEEDER, AND BRANCH-CIRCUIT CONDUCTORS THROUGHOUT THE SECONDARY ELECTRICAL SYSTEM SHALL BE SIMILAR TO (MATCHING BUILDING STANDARDS):
  - PHASE A: YELLOW
  - PHASE B: BROWN. PHASE C: ORANGE.
  - NEUTRAL: GRAY OR WHITE WITH A COLORED STRIPE (NOT GREEN),

  - INSTALL WARNING, CAUTION, AND INSTRUCTION SIGNS WHERE REQUIRED TO COMPLY WITH 29 CFR, CHAPTER XVII PART 1910.145, AND WHERE NEEDED TO ENSURE SAFE OPERATION AND MAINTENANCE OF ELECTRICAL SYSTEMS AND OF ITEMS TO WHICH THEY CONNECT. INSTALL ENGRAVED PLASTIC-LAMINATED INSTRUCTION SIGNS WITH APPROVED LEGEND WHERE INSTRUCTIONS ARE NEEDED FOR SYSTEM OR EQUIPMENT OPERATION. INSTALL METAL-BACKED BUTYRATE SIGNS FOR OUTDOOR ITEMS.
  - INSTALL ENGRAVED-LAMINATED EMERGENCY-OPERATING SIGNS WITH WHITE LETTERS ON RED BACKGROUND WITH MINIMUM 3/8-INCH- (9-MM-) HIGH LETTERING FOR EMERGENCY INSTRUCTIONS ON POWER TRANSFER, LOAD SHEDDING, AND OTHER EMERGENCY OPERATIONS.

  - APPLY FIRESTOPPING TO CABLE AND RACEWAY PENETRATIONS OF FIRE-RATED FLOOR AND WALL ASSEMBLIES TO ACHIEVE FIRE-RESISTANCE RATING OF THE ASSEMBLY. PROVIDE FIELD APPLIED INTUMESCENT PUTTY (HILITI FS-ONE OR EQUAL) FIRESTOPPING AT ALL PENETRATIONS OF RATED ASSEMBLIES. FACTORY PRE-MANUFACTURED FIRESTOPPING DEVICES WILL NOT BE ACCEPTED. FIRESTOPPING MATERIALS AND INSTALLATION REQUIREMENTS ARE SPECIFIED IN A SEPARATE DIVISION OF THE SPECIFICATIONS.

  - PROTECT EXISTING ELECTRICAL EQUIPMENT AND INSTALLATIONS INDICATED TO REMAIN. IF DAMAGED OR DISTURBED IN THE COURSE OF THE WORK, REMOVE DAMAGED PORTIONS AND INSTALL NEW PRODUCTS OF EQUAL CAPACITY, QUALITY, AND FUNCTIONALITY.
  - ACCESSIBLE WORK: REMOVE EXPOSED ELECTRICAL EQUIPMENT AND INSTALLATIONS, INDICATED TO BE DEMOLISHED, IN THEIR ENTIRETY.
  - ABANDONED WORK: CUT AND REMOVE BURIED RACEWAY AND WIRING, INDICATED TO BE ABANDONED IN PLACE, 2 INCHES (50 MM) BELOW THE SURFACE OF ADJACENT CONSTRUCTION. CAP RACEWAYS AND PATCH SURFACE TO MATCH EXISTING FINISH
  - REMOVE DEMOLISHED MATERIAL FROM PROJECT SITE.
  - REMOVE, STORE, CLEAN, REINSTALL, RECONNECT, AND MAKE OPERATIONAL COMPONENTS INDICATED FOR RELOCATION.
  - 3.18 REFINISHING AND TOUCHUP PAINTING REFINISH AND TOUCH UP PAINT. PAINT MATERIALS AND APPLICATION REQUIREMENTS ARE SPECIFIED IN A SEPARATE
  - DIVISION OF THE SPECIFICATIONS. CLEAN DAMAGED AND DISTURBED AREAS AND APPLY PRIMER, INTERMEDIATE, AND FINISH COATS TO SUIT THE DEGREE OF DAMAGE AT EACH LOCATION.
  - FOLLOW PAINT MANUFACTURER'S WRITTEN INSTRUCTIONS FOR SURFACE PREPARATION AND FOR TIMING AND APPLICATION OF SUCCESSIVE COATS.
  - REPAIR DAMAGE TO GALVANIZED FINISHES WITH ZINC-RICH PAINT RECOMMENDED BY MANUFACTURER.
  - REPAIR DAMAGE TO PVC OR PAINT FINISHES WITH MATCHING TOUCHUP COATING RECOMMENDED BY

NAMEPLATE WITH 1/2" MINIMUM LETTERING ATTACHED BY SCREWS.

- 3.19 CLEANING AND PROTECTION ON COMPLETION OF INSTALLATION, INCLUDING OUTLETS, FITTINGS, AND DEVICES, INSPECT EXPOSED FINISH. REMOVE BURRS, DIRT, PAINT SPOTS, AND CONSTRUCTION DEBRIS.
- PROTECT EQUIPMENT AND INSTALLATIONS AND MAINTAIN CONDITIONS TO ENSURE THAT COATINGS, FINISHES, AND CABINETS ARE WITHOUT DAMAGE OR DETERIORATION AT TIME OF SUBSTANTIAL COMPLETION.
- 3.20 IDENTIFICATION OF EQUIPMENT: ALL PANELBOARDS, CONTROL PANELS, AND CABINETS SPECIFIED HEREIN SHALL BE CLEARLY IDENTIFIED WITH THE EQUIPMENT DESIGNATION AND VOLTAGE RATING. IDENTIFICATION SHALL BE BY WHITE ON BLACK PLASTIC
- ALL PANELBOARDS, SPECIFIED HEREIN SHALL BE PROVIDED WITH A MEANS OF IDENTIFICATION OF THE MULTI-WIRE BRANCH CIRCUIT COLOR CODE IDENTIFICATION SYSTEM INSTALLED PER THE REQUIREMENTS OF NEC/NYCEC ARTICLE 210.5. REFER TO SPECIFICATION SECTION 3.09 FOR COLOR CODING DESIGNATIONS. JUNCTION BOXES, SPLICE BOXES, ETC., SHALL BE IDENTIFIED WITH PANEL AND CIRCUIT NUMBERS, FOR CIRCUITS CONTAINED THEREIN. FACEPLATE OF SWITCHES FOR EQUIPMENT SUCH AS MOTORIZED SCREENS, ETC., SHALL BE
- IDENTIFIED WITH THE NAME OF THE DEVICE CONTROLLED. IDENTIFICATION SHALL BE BY INDELIBLE MARKER IN CONCEALED LOCATIONS AND ADHESIVE ('P' TOUCH TYPE) LABELS IN EXPOSED LOCATIONS. EMERGENCY DEVICES SHALL BE IDENTIFIED IN RED. CLEARLY LABEL ALL EXPOSED CONDUIT, PULLBOXES, JUNCTION BOXES, ETC TO INDICATE THE NATURE OF THE
- SERVICE. EMPTY CONDUITS SHALL BE IDENTIFIED WITH TAGS AT BOTH ENDS INDICATING THE LOCATION OF TERMINATION OF
- THE OPPOSITE END. FIRE ALARM SYSTEM JUNCTION BOXES SHALL BE PAINTED FIRE DEPARTMENT RED. APPROVED IDENTIFICATION CARDS SHALL BE FURNISHED ADJACENT TO ALL CONTROL PANELS AND MANUAL STATIONS.
- THE RECEPTACLES (OR DISCONNECT, JUNCTION BOX, ETC...) FACEPLATE. IDENTIFICATION SHALL BE PERMANENT, PROVIDE SCREW-FASTENED TYPEWRITTEN ENGRAVED LAMICOID NAMEPLATE WITH MINIMUM 1/4" HIGH WHITE LETTERING ON BLACK BACKGROUND, CLEARLY INDICATING THE FUNCTION, DESIGNATION OR EQUIPMENT

ALL RECEPTACLES SHALL HAVE CIRCUIT NUMBERS AND ASSOCIATED PANEL DESIGNATION CLEARLY IDENTIFIED ON

- CONTROLLED FOR EACH OF THE FOLLOWING: ALL PANEL AND SWITCH BOARDS
- EACH FEEDER CIRCUIT BREAKER/SWITCH WITHIN EACH SWITCHBOARD AND PANELBOARD MOTOR STARTERS AND MISCELLANEOUS CONTROL SWITCHES
- DISCONNECT SWITCHES

CORRECT WHERE NECESSARY

- ENCLOSED CIRCUIT BREAKERS CONTACTORS AND RELAYS
- CONTROL SWITCHES PROVIDE NAMEPLATES FOR ALL NEW AND EXISTING EQUIPMENT AS DESCRIBED ABOVE AND/OR DETAILED ON THE
- ENGINEERING DRAWINGS. PROVIDE TYPEWRITTEN DIRECTORIES FOR NEW AND EXISTING PANELS. CONFIRM EXISTING IDENTIFICATION AND

- 3.21 EXISTING EQUIPMENT REFURBISHMENT
- WHERE PANELBOARDS, SWITCHES, CIRCUIT BREAKERS, TRANSFORMERS, ETC. ARE EXISTING TO BE REUSED THE CONTRACTOR SHALL CLEAN AND REFURBISH THE EQUIPMENT. THIS SHALL INCLUDE TIGHTENING ALL CONNECTIONS, REPLACING DEFECTIVE MECHANISMS, EXERCISING MECHANISMS AND PROVIDING ANY MISCELLANEOUS COMPONENTS SO THE EQUIPMENT IS IN FIRST CLASS WORKING ORDER.
- ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE TO FIELD SURVEY ALL EXISTING BASE BUILDING RECEPTACLE, LIGHTING AND EQUIPMENT CIRCUITS WHICH ARE EXISTING TO REMAIN. PROVIDE AS BUILT SURVEY PRIOR TO THE START OF ANY WORK AND SUBMIT TO ENGINEER FOR RECORD. CIRCUITS SHALL REMAIN IN EXISTING PANELS OR WHEN PANELBOARDS ARE REPLACED, RETERMINATED IN NEW PANELBOARD.
- SWITCHBOARDS, PANELBOARDS AND ASSOCIATED EQUIPMENT (UPS, ETC.) THAT WILL REQUIRE ADJUSTMENT, SERVICING, INSPECTION, OR MAINTENANCE WHILE ENERGIZED SHALL BE FIELD MARKED INDICATING VOLTAGE AND WARNING QUALIFIED PERSONS OF POTENTIAL ELECTRIC ARC-FLASH HAZARDS PER NEC SECTION 110.16 AND NFPA 70E. REFER TO SECTION 1.26 FOR ADDITIONAL INFORMATION ON FLASH HAZARD ANALYSIS.
- SERVICE EQUIPMENT SHLL BE FIELD MARKED INDICATING THE MAXIMUM AVAILABLE FAULT CURRENT IN ACCORDANCE WITH NEC 110.24 (A). CONTRACTOR IS RESPONSIBLE FOR OBTAINING CORRECT VALUES FROM THE

- A. CONTRACTOR SHALL BE RESPONSIBLE FOR WORK AND EQUIPMENT UNTIL FINALLY INSPECTED, TESTED AND ACCEPTED. MATERIALS AND EQUIPMENT SHALL BE CAREFULLY STORED WHICH ARE NOT IMMEDIATELY INSTALLED AFTER DELIVERY TO SITE. CLOSE EXPOSED PARTS OF THE WORK WITH TEMPORARY COVERS, OR PLUGS DURING CONSTRUCTION, TO PREVENT ENTRY OF MOISTURE OR OBSTRUCTING MATERIALS.
- PROTECT THE WORK AND MATERIAL OF OTHERS FROM DAMAGE INSTALLED AS PART OF THIS CONTRACT. RESTORE ANY WORK DAMAGED AND BE RESPONSIBLE FOR ALL CURRENT WORK AND ASSOCIATED COSTS.

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**ELECTRICAL** 

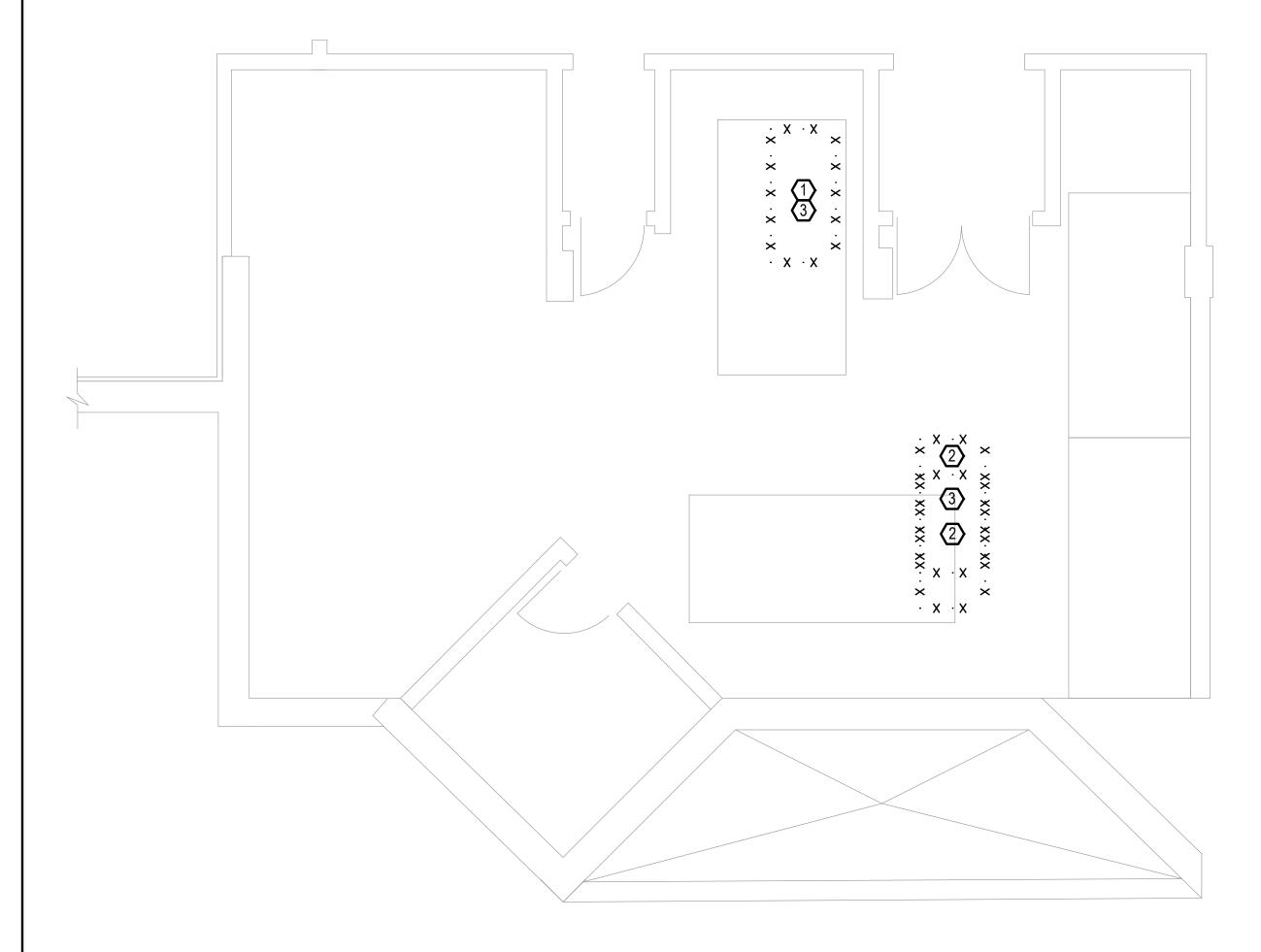
BASEMENT FLOOR SPECIFICATIONS SHEET 2 OF 2 NOT TO SCALE 10/XX/2021 Proj. Manager:

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# ELECTRICAL - BASEMENT PART PLAN

SCALE: 1/2" = 1'-0"

## **DEMOLITION NOTES**

- 1. PRIOR TO SUBMISSION OF BID, THIS CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH ALL EXISTING CONDITIONS TO DETERMINE THEIR IMPACT ON THE EXECUTION OF THIS CONTRACT WORK. SUBMISSION OF PROPOSAL WILL BE CONSTRUED OF SUCH AS EXAMINATION AND ALL LATER CLAIMS WILL NOT BE RECOGNIZED FOR DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN DURING SUCH EXAMINATION. GC TO COORDINATE ALL AFTER HOUR WORK WITH TENANT AND LANDLORD.
- 2. ALL ELECTRIC POWER MUST BE DISCONNECTED PRIOR TO COMMENCEMENT OF DEMOLITION.
- 3. DEMOLITION WORK SHALL INCLUDE, BUT NOT BE LIMITED TO, ANY & ALL MATERIALS, CONNECTIONS, EXTENSIONS, CUTTING, REPAIRING AND OTHER ELECTRICAL WORK, TEMPORARY OR PERMANENT, THAT MAY BE REQUIRED TO MAINTAIN SERVICE THROUGH THE COMPLETION OF THIS PROJECT. COORDINATE THE EXTENT OF THE DEMOLITION WORK WITH THE ARCHITECT.
- 4. EXISTING FEEDERS AND BRANCH CIRCUITRY PASSING THROUGH THE AREA OF DEMOLITION AND SERVING OCCUPIED ADJACENT AREAS AND INTERFERING WITH THE NEW WORK SHALL BE TRACED AND RELOCATED BY THIS CONTRACTOR. ALL NECESSARY SHUTDOWNS REQUIRED TO PERFORM THIS WORK SHALL BE COORDINATED WITH THE BUILDING MANAGEMENT. SHUT DOWN WILL NOT BE PERFORMED WITHOUT PRIOR APPROVAL.
- 5. WIRING, CONDUITS, AND SUPPORTS FOR FEEDERS AND BRANCH CIRCUITRY SHALL BE REMOVED BACK TO THEIR PANEL OF ORIGIN, WITH WIRE DISCONNECTED FROM UNDER THE PROTECTIVE DEVICE. COORDINATE REMOVALS WITH ARCHITECTURAL DOCUMENTS.
- 6. MAINTAIN THE CONTINUITY OF EXISTING BRANCH CIRCUITRY SERVING REMAINING ELECTRICAL DEVICES OUTSIDE THE SCOPE OF WORK WHERE PORTIONS OF EXISTING BRANCH CIRCUITRY ARE BEING REMOVED.
- 7. IDENTIFY AS SPARE ANY PROTECTIVE DEVICE IN EXISTING PANELS THAT ARE MADE SPARE DUE TO DEMOLITION. PANEL DIRECTORIES SHALL BE UPDATED ACCORDINGLY.
- 8. ELECTRICAL CONTRACTOR SHALL COORDINATE HIS WORK WITH THAT OF ALL OTHER TRADES, AND CONFER WITH THE ARCHITECT.
- 9. ELECTRICAL PANEL COVERS ARE NOT TO BE LEFT OFF ANY TIME, UNLESS MEN ARE WORKING ON THEM.
- 10. BUILDING FIRE ALARM SYSTEM INTEGRITY SHALL BE MAINTAINED AT ALL TIMES. (BEFORE, DURING AND AFTER DEMOLITION) EXISTING DEVICES ARE INDICATED. CONTRACTOR TO ENSURE ALL DEVICES ARE PROTECTED.
- 11. FOR MECHANICAL EQUIPMENT REFER TO MECHANICAL DEMO PLAN. EQUIPMENT SHALL BE REMOVED BY OTHERS. ELECTRICAL CONTRACTOR SHALL DISCONNECT AND REMOVE POWER AND SWITCHES.
- 12. DEMOLITION CONTRACTOR SHALL REMOVE FROM THE SITE ALL RESULTANT DEBRIS AND MATERIALS WHICH ARE NOT TO BE REUSED. IN CERTAIN CASES, EQUIPMENT OR MATERIALS DESIGNATED FOR REMOVAL SHALL REMAIN THE PROPERTY OF THE OWNER AND SHALL BE TURNED OVER AT LOCATIONS AS DIRECTED BY OWNER. THESE ITEMS SHALL INCLUDE, BUT ARE NOT LIMITED TO ALL SECURITY DEVICES, EQUIPMENT RACKS, WIRELESS ACCESS POINTS, ETC.
- 13. ON THE UNDERSIDE OF CEILING SLAB, THE CONTRACTOR SHALL LEAVE INTACT ALL CONDUITS NOT ASSOCIATED WITH THE AREA OF WORK. THESE RACEWAYS TO BE IDENTIFIED BY THE CONTRACTOR, MARKED FOR THE OWNER AND RE-SUPPORTED WITH A NEW KINDORF, HANGER RODS, STRAPS AND CLEVIS HOOKS BY THIS CONTRACTOR. COORDINATE IN THE FIELD PRIOR TO REMOVAL OF ANY CONDUITS IN THE CEILING.

## **DEMOLITION KEY NOTES**

- CONTRACTOR SHALL REMOVE EXISTING GAS-FIRED WATER HEATER SERVING KITCHEN/LAUNDRY.
  DISCONNECT ALL EXISTING ELECTRICAL CONNECTIONS. PULL WIRING BACK TO NEAREST DEVICE TO REMAIN,
  OTHERWISE LEAVE CIRCUIT IN CEILING JUNCTION BOX FOR CONNECTION TO NEW WATER HEATER.
- CONTRACTOR SHALL REMOVE EXISTING TWO (2) GAS-FIRED WATER HEATER SERVING PODS. DISCONNECT ALL EXISTING ELECTRICAL CONNECTIONS. PULL WIRING BACK TO NEAREST DEVICE TO REMAIN, OTHERWISE LEAVE CIRCUITS IN CEILING JUNCTION BOX FOR CONNECTION TO NEW WATER HEATERS.
- CONTRACTOR SHALL REMOVE AND RELOCATE EXISTING CIRCULATION PUMPS. DISCONNECT ALL EXISTING ELECTRICAL CONNECTIONS. PULL WIRING BACK TO NEAREST DEVICE TO REMAIN, OTHERWISE LEAVE CIRCUITS IN CEILING JUNCTION BOX FOR RE-CONNECTION.

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DEMOLITION PART PLAN

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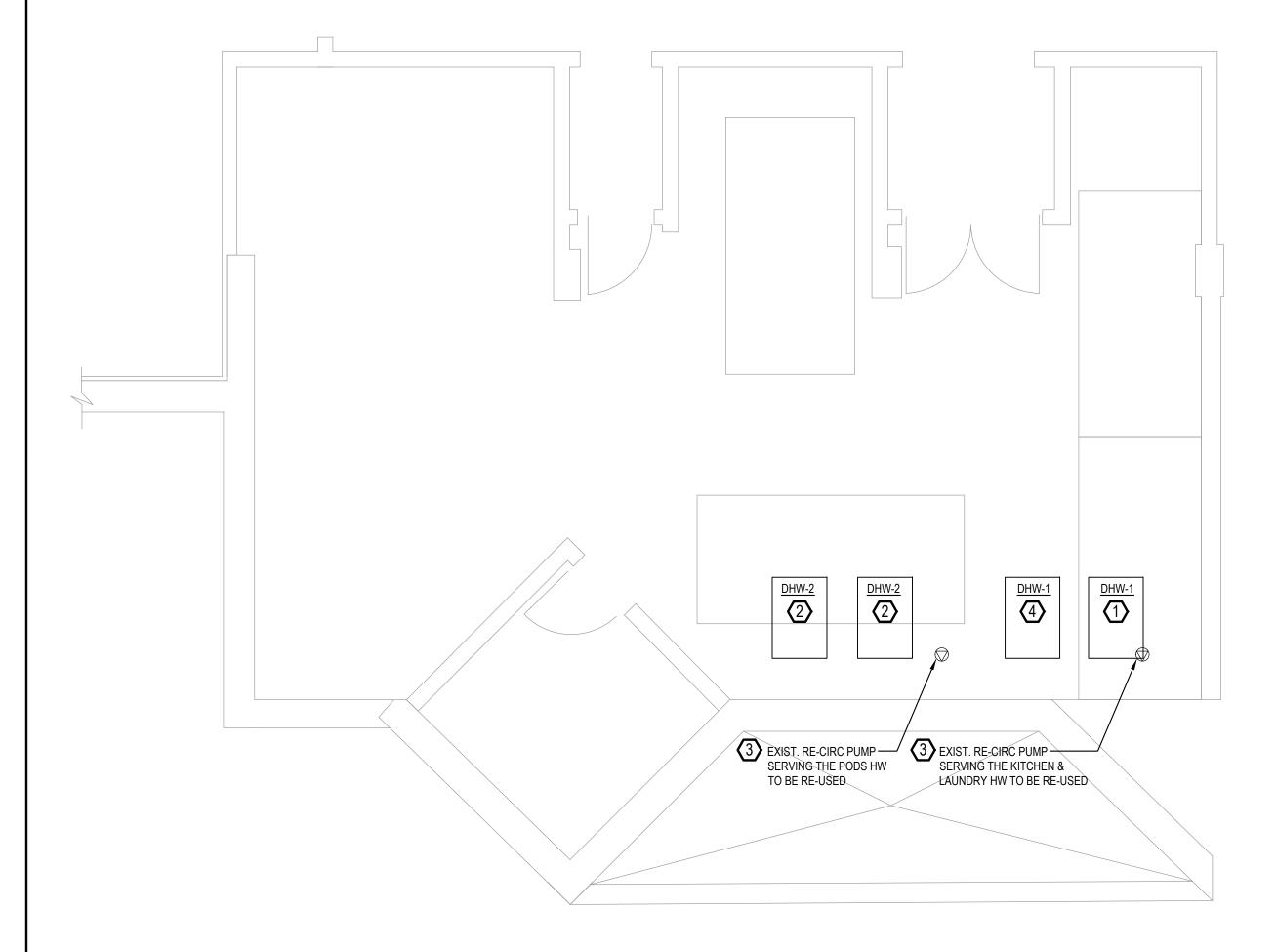
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# ELECTRICAL - BASEMENT PART PLAN

SCALE: 1/2" = 1'-0"

## **POWER NOTES**

- REFER TO DRAWING E-001 FOR GENERAL NOTES.
- 2. FOR EXACT LOCATIONS OF ALL MECHANICAL EQUIPMENT, REFER TO PLUMBING DRAWINGS.
- 3. ALL MECHANICAL EQUIPMENT SHALL BE FURNISHED AND INSTALLED BY THE PLUMBING CONTRACTOR, WIRED BY THE ELECTRICAL CONTRACTOR. ELECTRICAL CONTRACTOR SHALL WIRE MECHANICAL EQUIPMENT AS PER AN APPROVED MANUFACTURES WIRING DIAGRAM. ALL CONTROL WIRING SHALL BE BY THE HVAC OR PLUMBING CONTRACTOR.
- 4. CONTRACTOR SHALL PROVIDE CIRCUITS AS DESIGNATED FOR CONDENSATE PUMPS, SOLENOID VALVES, ETC. COORDINATE WITH PLUMBING CONTRACTORS FOR ALL REQUIREMENTS. PROVIDED ADDITIONAL CIRCUIT(S) FROM AVAILABLE SPARES AS REQUIRED.
- 5. ALL HEAT TRACE CIRCUITS SHALL HAVE GFI PROTECTED BREAKERS AND TWO POLE LOCKABLE (TOGGLE) DISCONNECT IN ACCORDANCE WITH NEC. EC SHALL INCLUDE IN BID PRICING FOR WIRING OF HWAT POWER TO ALL COMPONENTS (CONTROLLER, TIMECLOCK, ETC.)
- 6. CONTRACTOR SHALL PROVIDE DISCONNECT SWITCHES FOR ALL MECHANICAL EQUIPMENT THAT IS NOT FACTORY SUPPLIED UNLESS OTHERWISE NOTED ON DRAWINGS. CONTRACTOR SHALL COORDINATE SIZE WITH MECHANICAL EQUIPMENT SPECIFICATIONS AND MECHANICAL EQUIPMENT CONTRACTOR. ASSUME LINE VOLTAGE WIRING IS REQUIRED TO THE CONTROLS AND FROM THE CONTROLS TO THE EQUIPMENT.
- 7. ALL MECHANICAL EQUIPMENT MUST MAINTAIN REQUIRED SERVICE CLEARANCE OF 36" FOR MECHANICAL EQUIPMENT IN FRONT OF CONTROL PANEL AND/OR DISCONNECT SWITCH PER NEC.
- 8. CONTRACTOR SHALL PROVIDE 120V POWER FROM MECHANICAL CIRCUIT INDICATED/NEARBY FOR POWER TO ANY AND ALL LEAK DETECTION SYSTEMS AND SOLENOID VALVES REQUIRED FOR OPERATION OF ALL ELECTRIC WATER HEATERS (REFER TO NOTE #4). PROVIDE CIRCUIT(S) AS INDICATED FOR ALL HEAT TRACE PIPING FOR DOWNSTREAM HOT WATER PIPING. ALL COMPONENTS INSTALLED IN CEILING SHALL BE PLENUM RATED.

## **KEY NOTES**

- CONTRACTOR SHALL CONNECT NEW GAS-FIRED WATER HEATER SERVING THE KITCHEN/LAUNDRY TO EXISTING CIRCUIT PREVIOUSLY FEEDING WATER HEATER. EXTEND CIRCUIT AS REQUIRED.
- CONTRACTOR SHALL CONNECT NEW TWO (2) GAS-FIRED WATER HEATERS SERVING THE PODS TO EXISTING CIRCUITS PREVIOUSLY FEEDING WATER HEATERS. EXTEND CIRCUITS AS REQUIRED.
- CONTRACTOR SHALL CONNECT RELOCATED CIRCULATION PUMPS TO EXISTING CIRCUITS PREVIOUSLY FEEDING CIRCULATION PUMPS. SPLICE/EXTEND CIRCUIT AS REQUIRED.
- CONTRACTOR SHALL CONNECT NEW GAS-FIRED WATER HEATER SERVING THE KITCHEN/LAUNDRY TO A 120V-20A BREAKER WITH 2#12+#12G IN 3/4" CONDUIT. UTILIZE ANY SPARE BREAKERS OR BREAKERS MADE AVAILABLE FROM DEMOLITION FROM THE NEAREST 120V PANEL.

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NEW WORK PART PLAN

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