SYMBOLS

PIPING

- ELBOW UP
- ELBOW DOWN
- TEE UP
- TEE DOWN
- PIPE REDUCER

PLUMBING

- WASTE LINE-ABOVE GRADE
- GW — GREASE WASTE LINE-ABOVE GRADE
- WASTE LINE-BELOW GRADE
- VENT LINE
- DOMESTIC COLD WATER
- DOMESTIC HOT WATER
- T — DOMESTIC TEMPERED HOT WATER
- DOMESTIC HOT WATER RECIRC.
- 140 — 140 DEGREE DOMESTIC HOT WATER

LIGHTING

- WALL WASHER LIGHTING FIXTURE, ARROW INDICATES DIRECTION
- FLUORESCENT FIXTURE AND TYPE
- EMERGENCY LIGHT FIXTURE
- NIGHT LIGHT FIXTURE
- LIGHT FIXTURE AND TYPE
- LIGHT FIXTURE AND TYPE
- EMERGENCY LIGHT FIXTURE AND TYPE
- WALL MOUNTED FIXTURE
- WALL SCONCE
- WALL MOUNTED FIXTURE
- EXIT LIGHT CLG. MNTD. (SGL. FACE)
- EXIT LIGHT CLG. MNTD. (DBL. FACE)
- EXIT LIGHT WALL MNTD. (SGL. FACE)
- EXIT/EMERGENCY LIGHT
- EMERGENCY LIGHT
- A — LOW VOLTAGE AISLE LIGHTING

WIRING DEVICES & OUTLETS

- SIMPLEX RECEPTACLE
- DUPLEX RECEPTACLE
- G — GROUND FAULT INTERRUPTER
- WP — WEATHERPROOF GROUND FAULT INTERRUPTER DUPLEX RECEPTACLE
- QUAD RECEPTACLE
- HEAVY DUTY RECEPTACLE-NEMA TYPE AS NOTED
- FLOOR MOUNTED DEVICE
- CEILING MOUNTED DEVICE
- ISOLATED GROUND DUPLEX RECEPTACLE
- ISOLATED GROUND QUAD RECEPTACLE
- W — WALL MOUNTED PHONE
- 48 — CENTER OF DEVICE AT 48" A.F.F.
- DATA OUTLET
- TELEPHONE/DATA OUTLET
- CABLE T.V. OUTLET
- CABLE TRAY
- SURFACE RACEWAY
- S — SWITCH, SPST U.N.O.
- S2 — SWITCH, DPST
- SF — FUSESTAT
- S3 — 3-WAY SWITCH
- S4 — 4-WAY SWITCH
- SD — DIMMER SWITCH
- SJ — JAMB SWITCH
- SM — MOTOR RATED SWITCH
- SWP — SWITCH WITH WEATHERPROOF COVER
- SK — KEYED SWITCH
- TIME SWITCH
- PUSH BUTTON
- P — PHOTOCELL SWITCH
- M — MOTION SENSOR
- RC — ROOM CONTROLLER
- PC — PLUG LOAD CONTROLLER

DUCTWORK

- AHU 1 — EQUIPMENT TYPE AND NUMBER
- PUMP
- LINEAR SLOT DIFFUSER
- FLEXIBLE DUCT
- NEGATIVE PRESSURE AIR DUCT UP
- NEGATIVE PRESSURE AIR DUCT DOWN
- POSITIVE PRESSURE AIR DUCT UP
- POSITIVE PRESSURE AIR DUCT DOWN
- RISE — DUCT RISE OR DROP IN THE DIRECTION OF AIRFLOW
- SQUARE TO ROUND TRANSITION
- ROUND DUCT UP, DOWN
- ELBOW WITH TURNING VANES
- FLEXIBLE CONNECTION
- MANUAL BALANCE DAMPER
- M — MOTORIZED CONTROL DAMPER
- F — FIRE DAMPER
- S — SMOKE DAMPER
- FS — FIRE/SMOKE DAMPER
- SPIN-IN BRANCH DUCT CONNECTOR-WITH DAMPER IF SHOWN
- HIGH EFFICIENCY BRANCH DUCT CONNECTOR-WITH DAMPER IF SHOWN
- SUPPLY AIR DIFFUSER
- DUCT MOUNTED GRILLE/WALL GRILLE
- RETURN GRILLE
- NOISE REDUCING RETURN AIR TRANSFER
- SUPPLY DIFFUSER - THREE-WAY THROW
- S1 — DIFFUSER, GRILLE, OR REGISTER TYPE
- 100 — CFM
- 6" — CONNECTION SIZE

POWER EQUIPMENT

- ELECTRICAL DISTRIBUTION PANEL, SWITCHBOARD, OR MOTOR CONTROL
- PANEL BOARD
- LOAD CENTER
- M — METER
- J-BOX
- MOTOR
- DISCONNECT SWITCH
- HOME RUN
- CONCEALED CONDUIT
- CONDUIT BELOW SLAB
- ONE HOT, ONE NEUTRAL, AND ONE GROUND IN CONCEALED CONDUIT (#12 in 1/2" C. U.N.O.)
- EXPOSED CONDUIT
- CONDUIT TURNING DOWN
- CONDUIT TURNING UP
- SHARED HOME RUN

FIRE ALARM

- FACP — FIRE ALARM CONTROL PANEL
- FAA — ANNUNCIATOR PANEL
- FA — FIRE ALARM POWER EXTENDER
- P — PULL STATION
- S — SMOKE DETECTOR
- H — HEAT/THERMAL DETECTOR
- D — DUCT SMOKE DETECTOR
- MAGNETIC DOOR HOLD
- HORN/STROBE
- STROBE
- SPEAKER/STROBE
- SPEAKER
- HORN
- T — VALVE TAMPER SWITCH
- FLOW SWITCH

TEMPERATURE CONTROLS

- AHU-1 — TEMPERATURE SENSOR/THERMOSTAT SERVING AHU-1
- HUMIDITY SENSOR/HUMIDISTAT

ABBREVIATIONS

A	AMPS; AIR (COMPRESSED)
A/C	AIR CONDITIONING
AF	AMPERE FUSE
AFC	ABOVE FINISHED CEILING
AFEA	AREA FOR EVACUATION ASSISTANCE
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
AIC	AMPERE INTERRUPTING CURRENT
AL	ALUMINUM
APD	AIR PRESSURE DROP
ATS	AUTOMATIC TRANSFER SWITCH
AV	ACID VENT
AW	ACID WASTE
AWG	AMERICAN WIRE GAUGE
BCU	BLOWER COIL UNIT
BFP	BACKFLOW PREVENTER
BHP	BRAKE HORSEPOWER
BFF	BELOW FINISHED FLOOR
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BOS	BOTTOM OF STRUCTURE
BTUH	BRITISH THERMAL UNITS PER HOUR
C	CONDUIT
CT	CURRENT TRANSFORMER
CATV	CABLE TELEVISION SYSTEM
CAV	CONSTANT AIR VOLUME
CCTV	CLOSED CIRCUIT TELEVISION
CD	CONDENSATE DRAIN
CFCI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CH	CHILLER
CO	CLEANOUT, CARBON MONOXIDE
CO2	CARBON DIOXIDE
CT	COOLING TOWER
CTR	COOLING TOWER RETURN
CTS	COOLING TOWER SUPPLY
CU	COPPER, CONDENSING UNIT
CUH	CABINET UNIT HEATER
CW	COLD WATER
CWR	CHILLED WATER RETURN
CWS	CHILLED WATER SUPPLY
D	DRAIN
DDC	DIRECT DIGITAL CONTROL
DFU	DRAINAGE FIXTURE UNITS
DN	DOWN
DPDT	DOUBLE-POLE, DOUBLE-THROW
DPST	DOUBLE-POLE, SINGLE-THROW
DX	DIRECT EXPANSION
EAT	ENTERING AIR TEMPERATURE
E/C	ELECTRICAL CONTRACTOR
EDB	ENTERING DRY BULB
EF	EXHAUST FAN
EJ	EXPANSION JOINT
ESFR	EARLY SUPPRESSION FAST RESPONSE
ESP	EXTERNAL STATIC PRESSURE
ETR	EXISTING TO REMAIN
EWB	ENTERING WET BULB
EWC	ELECTRIC WATER COOLER
FAA	FIRE ALARM ANNUNCIATOR
FACP	FIRE ALARM CONTROL PANEL
FBO	FURNISHED BY OTHERS
FCO	FLOOR CLEANOUT
FCU	FAN COOL UNIT
FD	FIRE DAMPER, FLOOR DRAIN
FF	FINISHED FLOOR
FGCO	FINISHED GRADE CLEANOUT
FL	FLOW LINE
FLA	FULL LOAD AMPS
F/C	FIRE PROTECTION CONTRACTOR
FPM	FEET PER MINUTE
FTU	FAN TERMINAL UNIT
FVNR	FULL VOLTAGE, NON-REVERSING
G	NATURAL GAS
G/C	GENERAL CONTRACTOR
GFI	GROUND FAULT INTERRUPTER
GND	GROUND
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GW	GREASE WASTE
HB	HOSE BIBB
HCR	HOT/CHILLED WATER RETURN
HCS	HOT/CHILLED WATER SUPPLY
HD	HEAD, HUB DRAIN
HOA	HAND-OFF-AUTOMATIC
HP	HEAT PUMP
HPC	HIGH PRESSURE CONDENSATE
HPR	HEAT PUMP RETURN
HPS	HEAT PUMP SUPPLY, HIGH PRESSURE STEAM, HIGH PRESSURE SODIUM
HSTAT	HUMIDISTAT
HTG	HEATING
HTR	HEATER
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IG	ISOLATED GROUND
IN. WC	INCHES OF WATER COLUMN
INC.	INCANDESCENT
KCMIL	1000 CIRCULAR MILS
KV	KILOVOLT
KVA	KILOVOLT-AMPS
KVAR	KILOVOLT-AMPS-REACTIVE
KW	KILOWATT
KWH	KILOWATT-HOUR
L	LAVATORY
LAT	LEAVING AIR TEMPERATURE
LDB	LEAVING DRY BULB
LF	LINEAR FEET
LP	LOW PRESSURE
LPC	LOW PRESSURE STEAM CONDENSATE
LPG	LIQUIFIED PETROLEUM GAS (PROPANE)
LPS	LOW PRESSURE STEAM
LRA	LOCKED ROTOR AMPS
LWB	LEAVING WET BULB
LWT	LEAVING WATER TEMPERATURE
MBH	1000 BTU PER HOUR
M/C	MECHANICAL CONTRACTOR
MCA	MINIMUM CIRCUIT AMPACITY
MCC	MOTOR CONTROL CENTER
MCM	1000 CIRCULAR MILS
MD	MOTORIZED DAMPER
MDP	MAIN DISTRIBUTION PANEL
MFR	MANUFACTURER
MH	MANHOLE/METAL HALIDE
MLO	MAIN LUGS ONLY
MPC	MEDIUM PRESSURE CONDENSATE
MPS	MEDIUM PRESSURE STEAM
MS	MOTOR STARTER
MSB	MAIN SWITCHBOARD
MTD	MOUNTED
MAU	MAKE-UP AIR UNIT
N	NITROGEN
N/A	NOT APPLICABLE
NC	NOISE CRITERIA
NFWH	NON-FREEZE WALL HYDRANT
NIC	NOT IN CONTRACT
NO	NITROUS OXIDE
N/O N/C	NORMALLY OPEN, NORMALLY CLOSED
O	OXYGEN
OA	OUTSIDE AIR
OC	ON CENTER
OD	OUTSIDE DIAMETER
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
ORD	OVERFLOW ROOF DRAIN
PA	PIPE ANCHOR
PCWR	PRIMARY CHILLED WATER RETURN
PCWS	PRIMARY CHILLED WATER SUPPLY
PCR	PUMPED CONDENSATE RETURN
PD	PRESSURE DROP (FEET OF WATER)
PH	PHASE
PHWR	PRIMARY HEATING WATER RETURN
PHWS	PRIMARY HEATING WATER SUPPLY
PNL	PANEL
PRV	PRESSURE REDUCING VALVE
PS	PULSE START
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH-ABSOLUTE
PSIG	POUNDS PER SQUARE INCH-GAUGE
PT	POTENTIAL TRANSFORMER
QTY	QUANTITY
R	REFRIGERANT
RA	RETURN AIR
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
REV	REVISION
RF	RETURN FAN
RH	RELATIVE HUMIDITY
RLA	RUNNING LOAD AMPS
RPM	REVOLUTIONS PER MINUTE
RTU	ROOF TOP UNIT
S	SINK, STEAM
SA	SUPPLY AIR
SAN	SANITARY SEWER
SCWR	SECONDARY CHILLED WATER RETURN
SCWS	SECONDARY CHILLED WATER SUPPLY
SD	SMOKE DAMPER, STORM DRAIN
SF	SUPPLY FAN
SHWR	SECONDARY HEATING WATER RETURN
SHWS	SECONDARY HEATING WATER SUPPLY
SPST	SINGLE-POLE SINGLE-THROW
SP	STATIC PRESSURE
SQFT	SQUARE FOOT/SQUARE FEET
S/S	START/STOP
SS	SERVICE SINK, STAINLESS STEEL
ST	STORM DRAIN, SOUND TRAP, STEAM TRAP
STC	SOUND TRANSMISSION CLASS
STM	STEAM
SW	SOFT WATER
SWBD	SWITCHBOARD
T	TEMPERED WATER
TG	TEMPERATURE GAUGE
TDH	TOTAL DYNAMIC HEAD
TSP	TOTAL STATIC PRESSURE
TSTAT	THERMOSTAT
TL	TWISTLOCK
TU	TERMINAL UNIT
UF	UNDER FLOOR
UG	UNDER GROUND
UH	UNIT HEATER
UL	UNDERWRITERS LABORATORIES, INC.
UNO	UNLESS NOTED OTHERWISE
UPS	UNINTERRUPTIBLE POWER SUPPLY
V	VACUUM
VAC	VOLTS ALTERNATING CURRENT
VAV	VARIABLE AIR VOLUME
VCP	VITRIFIED CLAY PIPE
VD	VOLUME DAMPER
VFD	VARIABLE FREQUENCY DRIVE
VTR	VENT THROUGH ROOF
W	WATER SERVICE, WATTS
WB	WET BULB
WCO	WALL CLEANOUT
WC	WATER COLUMN, WATER CLOSET
WH	WALL HYDRANT
WPD	WATER PRESSURE DROP
WP	WEATHERPROOF
WT	WATERTIGHT, WEIGHT
XFMR	TRANSFORMER
XP	EXPLOSION PROOF

GENERAL

- HEAVY LINEWEIGHT INDICATES NEW WORK
- CONNECT NEW TO EXISTING
- LIGHT AND SCREENED LINEWEIGHT INDICATES EXISTING-TO-REMAIN
- DARK AND DASHED LINEWEIGHT INDICATES DEMOLITION WHEN SHOWN ON DEMOLITION PLAN OR NOTED
- POINT OF DISCONNECT FROM EXISTING
- 2 — CONSTRUCTION NOTE
- 2 — REVISION NUMBER
- 1 M201 — SECTION CUT THROUGH DRAWING
- 1 M201 — AREA OF ENLARGEMENT
- 1 M201 — PLAN NUMBER / SHEET WHERE ENLARGED PLAN IS DRAWN

THIS IS A MASTER LEGEND.
NOT ALL SYMBOLS, ABBREVIATIONS, ETC. ARE USED ON THE DRAWINGS.

GENERAL MEP REQUIREMENTS

1. Provide all seismic supports, restraints, accessories and options for equipment as required by code. Code required design of MEP seismic supports shall be provided by contractor.
2. The contract includes all labor, material, and equipment required for the complete systems as shown and specified. Provide all devices and accessories as necessary for complete and working systems.
3. The contractors shall become familiar with the work of all other trades and shall fully coordinate their work prior to ordering equipment or installation of systems.
4. The materials, products and equipment described in these specifications or on the drawings establish a standard of required function, dimension, appearance, and quality to be met by any proposed substitution. Listing of these manufacturers shall in no way be construed as a device intended to limit the bidders to those specifically listed.
5. Reference to any article, device, product, material, fixture, form or type of construction by name, make, or catalog number, shall be interpreted as having established a standard of quality and shall not be construed as limiting competition. Articles, fixtures, etc. of equal quality by manufacturers listed in this specification for the applicable use, shall be acceptable, subject to performance, spatial, structural, and electrical constraints of the project design. The Engineer reserves last opinion as to a product's equality or superiority to that specified.
6. Shop drawings shall be submitted in PDF form and for all equipment and major materials supplied and shall include: manufacturer, model number, materials, and miscellaneous data as required to describe the equipment; capacity, voltage, phase, ampacity, and other miscellaneous data to quantify the size of the equipment; dimensional drawings showing layout, connection points, and detailed layout of components; electrical full load amps and minimum circuit ampacities; and other pertinent information needed for complete review by the engineer. Conspicuously mark on each submittal the exact model, fittings, accessories, and devices to be supplied. When a schedule is shown on the drawings or in the specifications, provide a copy of that schedule with the submittal. Contractor shall check all shop drawings to verify that they meet the requirements of the drawings and specifications before forwarding to the architect and engineer. All shop drawings submitted shall bear the stamp of the contractor to show that they have been reviewed in detail. No work shall be fabricated and no equipment ordered until the architect and engineer have returned acceptable reviewed shop drawings.
7. Before project close-out, submit installation, operating, maintenance instructions, and parts lists for equipment provided in PDF format. Include in the manual a list of service organizations capable of rendering service for each piece of equipment. Keep in a safe place all keys, wrenches, and other specialty tools furnished with equipment. Present to owner at project close-out and receive a receipt showing the Owner has received the same.
8. Locations of equipment, piping, and other work are indicated diagrammatically on the drawings. Each contractor shall coordinate exact locations subject to structural conditions, work of other contractors, access requirements, and the approval of the architect and engineer.
9. Drawings and specifications indicate minimum construction standards, but should any work indicated be sub-standard, to any ordinances, laws, codes, rules, or regulations bearing on work, the contractor shall execute work in accordance with such without increased cost to the Owner, but not until he has referred such variances to the Engineer.
10. The contractors shall secure and pay for the necessary permits and certificates of inspection for their trade. Keep record of all permits, inspections and submit two copies to the engineer with request for final inspection.
11. This contractor shall warrant that the complete systems installed under this contract shall be free of defects in workmanship and material for a period of one (1) year from the date of substantial completion by the Owner. If defects occur during the one year guarantee period, this contractor shall repair or replace such defects at no expense to the owner and to the satisfaction of the owner and engineer.
12. Provide 3-1/2" concrete bases for all floor mounted equipment unless shown or noted otherwise. Provide 6x6 W1.4 wire fabric reinforcing minimum or as required by the structural engineer.
13. Adequately protect equipment from damage after delivery to the jobsite. Cover with heavy polyethylene plastic. Elevate equipment when there is danger of water damage. Equipment damaged will be rejected.
14. Any scratches to factory finishes shall be touched up using factory supplied paint before final acceptance. If extensive damage to factory finishes has occurred, equipment panels shall be replaced to the satisfaction of the engineer. If rust has formed, remove as recommended by the manufacturer before touch-up.
15. Install all equipment in strict accordance with the manufacturer's recommendations and the shop drawings reviewed by the Engineer. The complete installation shall function as designed and intended with respect to efficiency, capacity, and noise level, etc. Any abnormal noise caused by rattling equipment, conduit, or fixtures will not be acceptable.
16. Contractor shall perform initial start-up of systems and shall provide necessary supervision and labor to make the first seasonal change-over of systems. Owner's operating personnel shall be present during this operation.
17. It is the contractor's responsibility to provide materials and trim which fit properly the types of ceiling, wall, or floor finishes actually installed. Model numbers in specifications or shown on drawings are not intended to designate the required trim.
18. Contractor shall provide all miscellaneous steel, etc., for the proper installation of the systems specified and/or indicated on the plans. Any item connecting to building structure shall be done in a manner accepted by the structural engineer. When bar joists are used for steel construction, items shall be supported from angle iron spanning the top chord of the joists.
19. Periodically during construction and prior to Owner acceptance of the building, Contractor shall remove from the premises and dispose of all packing material and debris.
20. Before submitting his or her bid, the Contractor shall visit the actual location of the job and shall fully understand the scope of the work to be done and the conditions under which it is to be performed. In no case shall additional compensation be granted when existing conditions could reasonably be determined.
21. The Electrical Contractor shall provide all conduit and wiring and shall connect complete and ready for operation all electrical motors and equipment in the other contracts. The other contractors shall furnish to the Electrical Contractor all switches, electrical controls, and other accessories required. Installation of all motors, equipment, etc., shall be made by the Contractor furnishing the equipment, unless otherwise indicated.
22. Unless integral to the equipment supplied or noted otherwise, the Electrical Contractor shall provide disconnect switches, motor starters, and variable frequency drives as required by code and/or as shown on the drawings. The contractors responsible for installing the associated equipment shall coordinate with the Electrical Contractor to ensure devices of the proper size are furnished. Further, the other trades shall furnish all electric control items needed to the Electrical Contractor for installation and connection.
23. The contractor shall provide openings and chases, cutting and patching, excavation and backfilling, and pipe sleeves as needed for proper execution of the work.
24. Sleeves are required in all penetrations through new exterior walls, masonry walls, floors and fire rated gypboard walls. Sleeves shall be either Schedule 5 steel pipe, EMT conduit, field fabricated from minimum 16 gauge steel with 2" overlap at the seam, or as required by UL listed fire-stopping system. Space between sleeves and pipe in outside walls shall be sealed using link seals. Space between sleeves and pipe in other wall construction shall be the diameter necessary to provide the clearance required by the UL listed fire stopping method chosen by the contractor.
25. Provide fire stopping to maintain the fire rating of walls, floors, ceilings, or other building component. Fire stopping shall be composed of components that are compatible with each other, the substrates forming openings, and the items, if any, penetrating the fire stopping under conditions of service and application, as demonstrated by the fire stopping manufacturer based on testing and field experience. Firestop system installation must meet requirements of ASTM E-814, UL Standard 1479 or UL Standard 2079 tested assemblies that provide a fire rating equal to that of construction being penetrated.

HVAC REQUIREMENTS

1. Provide all equipment as shown or noted on the plans. Provide all accessories, controls, or other items as necessary for complete and operating systems. All equipment shall be labeled, bearing designation as shown on the drawings. Labels shall be engraved, white on black laminated plastic plates.
2. All temporary valves, dampers, disconnects, etc. not indicated, but required by phasing, shall be included in the base bid.
3. Provide canvas connections for all duct systems at fan or unit connections.
4. All ductwork sizes shown on the drawings represent free area. Adjust sheetmetal sizes accordingly to accommodate insulation.
5. All rectangular outdoor air intake ducts, exhaust ducts, mixed air ducts, return air ducts, boots/transfers, and low pressure supply ducts, shall be lined with Certain-Teed, SoftTouch, type 150, 1.5 pcf, 1-1/2" thick with K=0.24 based on 75° F mean temperature and an NRC of 0.45. Liner shall be installed according to the latest SMACNA duct liner application standard.
6. Provide all sheet metal work as specified and indicated on the drawings. All duct construction, gauges, methods of construction, and methods for hanging and supporting shall conform to SMACNA "HVAC Duct Construction Standards" and all applicable codes.
7. Low pressure ducts shall conform to SMACNA Tables 1-5 (2" w.g.) and Tables 1-10 through 1-13. Additional reinforcing shall be installed where necessary to eliminate excessive movement and vibration. All rectangular branch takeoffs in supply ductwork shall be the 45° entry design with a manual damper. Low pressure round ducts 10" and smaller in diameter shall be constructed per SMACNA Table 3-2, 2" w.g. Low pressure round ducts 12" and larger in diameter, and all exposed round ducts, shall be of spiral construction.
8. Flexible ductwork is acceptable where indicated in low pressure ductwork and shall be Flexmaster Type 8M, or approved equal, UL-181 Class I air duct, insulated, flexible duct with manufacturer's minimum working pressure rating of 6" W.G. The use of flexible duct run shall be limited to 6' on any single duct run. INSTALL FLEXIBLE DUCT AS STRAIGHT AS POSSIBLE WITHOUT SAGGING. MAKE BENDS WITH MAXIMUM RADIUS POSSIBLE.
9. Provide double vane style turning vanes in all elbows of rectangular ducts except in kitchen hood exhaust.
10. Fire dampers, combination fire/smoke dampers, and smoke dampers shall be provided as required per code and where shown on the drawings. Dampers shall be in full compliance with local codes. Provide access doors for access to dampers
11. All piping shall be concealed in walls, below floors, or above ceilings unless indicated otherwise or shown running through areas with exposed structure. Pipe shall be installed parallel or perpendicular to building surfaces.
12. Before testing begins, the contractor shall clean ductwork, coils, fans, etc. in the air system to remove all construction dirt and debris; provide new air filters; start, lubricate and balance all fans; lubricate all motors and bearings; check belt tension; check motor rotation; clean all strainers; verify water has been treated and cleaned; set automatic fill valves at required system pressure; check expansion tanks to determine that they are not air bound and that the system is completely full of water; check air vents at high points of systems and determine if all are installed and operating freely (automatic type) or bleed completely (manual type); check operation of automatic bypass valves; check and set operating temperatures of chillers to design requirements.
13. The contractor shall procure the services of a balancing and testing agency which will balance in accordance with the National Environmental Balancing Bureau. Air and water flows shall be balanced to within plus or minus 10% of design requirements. The final report shall be submitted to the Engineer for review. Piping systems shall be pressure tested at a minimum of twice the expected system capacity or a maximum of the pressure rating of the system components.
14. During testing and balancing, the contractor shall change or adjust pulleys as required to give proper fan RPM.
15. During construction, contractor shall cover all duct openings to prevent the spread of dust and debris.

ELECTRICAL REQUIREMENTS

1. The Electrical Contractor shall provide all conduit and wiring and shall connect complete and ready for operation all electrical motors and equipment for other trades as shown on the drawings and as required for complete and operating systems.
2. Projector and Rack: The owner will provide the projector and rack and the Electrical Contractor shall make all required electrical connections.
3. Single Phase Exhaust Fans: The MC shall provide the single phase exhaust fans with disconnecting means. The Electrical Contractor shall provide the line voltage thermostat as may be indicated. The Electrical Contractor shall make all required electrical connections.
4. Provide the wire as specified and the circuiting as shown on the drawings. All power wires and cables #10 awg and smaller shall be annealed soft copper, solid construction, code type THWN or THHN. All power wires and cables #8 awg and larger shall be annealed soft copper, compressed strand construction, code type THWN-2 or THHN. Minimum conductor #12 in E.M.T.
5. Color coding for 120/208 volt systems shall be Black/Blue/Red for phase conductors, White for neutral and green for grounding conductors. Color coding for 277/480 volt systems shall be Brown/Orange/Yellow for phase conductors, Grey/White for neutral and green for grounding conductors.
6. All interior conduit shall be E.M.T. Provide setscrew couplings and fittings for NEMA 1 installations and compression couplings and fittings for NEMA 3R installations as a minimum. All conduit shall be run parallel or perpendicular to the building surfaces. All conduit shall be concealed in walls. Overhead conduit shall be concealed except in rooms without ceilings.
7. At the Contractor's option all interior branch circuits (except those in the projector booth) may be type MC cable with listed fittings and couplers in lieu of EMT conduit and conductors. All homeruns to panels will be made with EMT conduit (no MC connections to panel cans). Color coding shall be maintained.
8. Each 120 volt outlet circuit shall be provided with dedicated neutral conductors. Three phase, four wire homeruns of 120 volt branch circuits will not be accepted.
9. Each light fixture shall be provided with a dedicated fixture whip from a junction box. The practice of 'daisy-chaining' from fixture to fixture will not be accepted. Multiple fixture whips from a single box is acceptable.
10. Provide conduits and raceways; electrical pull, junction and device boxes as specified and shown on the drawings, as well as those required for a complete and code acceptable installation.
11. The Electrical Contractor shall provide rough-in boxes and ½" conduit for thermostats under the supervision of the temperature controls installation contractor.
12. Provide engraved, white on black, laminated plastic plate, mechanically affixed labels on all panels, transformers, safety switches, motor starter, etc. Where panels, etc., occur in finished rooms, label shall be on inside of the door. Labels shall match designation indicated on the plans.
13. Provide 20 amp, heavy duty commercial wiring devices as shown on the drawings. Device and coverplate colors shall be as directed by the architect. Coverplates shall be stainless steel or nylon and match the existing devices in the area. Ground fault interrupter receptacles shall be provided in all locations as required in Section 210.8 of the latest adopted version of the NEC. Tamper resistant receptacles shall be provided at all locations as required by the latest adopted version of the NEC.
14. Provide heavy-duty safety switches as indicated on the plans and as specified. Provide the appropriate NEMA enclosure rating for the installation location. All safety switches shall be NEMA Type HD and UL listed. Provide fusible devices as shown on the drawings.
15. Provide light fixtures as specified. Material, equipment or services necessary to complete the installation of these fixtures, but not specifically mentioned shall be furnished as though specified. Refer to domestic development sheets for auditorium and booth general and emergency lighting fixtures.
16. Properly support and align all fixtures and provide all necessary steel shapes for support of the fixtures. Fixtures recessed in ceilings shall be securely connected to the ceiling. For fixtures weighing less than 56 pounds, provide a minimum of two (2) 12 gauge wires which are connected to the structure above. Fixtures weighing more than 56 pounds shall be supported directly from the structure above.
17. Verify all ceiling systems and coordinate fixture type and accessories prior to ordering fixtures. Coordinate and cooperate with ceiling installer in regards to the location and installation of light fixtures.
18. All wall mounted fixtures shall be coordinated with the architectural features of the building. Where specific elevations or dimensions are not indicated, verify the correct location with the Architect prior to beginning any work.
19. At the time of substantial completion, aim all track lights, flood lights, spot lights, etc per the Architect's direction. Provide all scaffolds, lifts etc as required.
20. Conduit/EMT
   a. All home run circuits shall be installed in conduit from the electrical panelboard to the room/area served by the circuit.
   b. All home run circuits shall terminate in a homerun junction box located within the room/area served.
   c. All homerun junction boxes shall be installed in accessible locations. In all finished areas of the building, home run junction boxes shall not be installed in visible locations.
27. Where MC cable is permitted:
   a. MC cable is permitted downstream of home run junction boxes.
   b. MC cable shall be installed in straight horizontal and vertical runs at right angles to walls, ceilings and floors. No diagonal runs.
   c. MC cable shall be properly secured and supported in walls or from the structure above and routed in a neat and orderly manner.
   d. MC cable may be installed concealed in walls.
   e. MC cable may be used for short whips (intent is 6 feet or less) above suspended ceiling systems from junction boxes to individual fixtures. MC cable shall be concealed by suspended ceiling systems.
   f. Where MC cable exits a wall, the junction box shall not be located more than 24" from the point where the MC cable exits a wall. The intent is for conduit to be installed in the space above suspended ceilings.
   g. MC cable may be installed inside millwork and in areas where rigid or EMT conduit physically cannot be installed.
28. Where MC cable is not allowed:
   a. Do not install MC cable where it is visible, including public areas, lobbys, corridors, overhead in exposed ceiling areas, electrical rooms and projection platforms.
   b. Do not install MC cable unsupported or resting on top of a suspended ceiling system.
   c. Do not install MC cable on underside of metal roof deck where roof fasteners may puncture MC cable.
   d. Do not install MC cable in wet locations.
   e. Do not install MC cable for electrical feeders.
   f. Do not install MC cable directly into electrical panelboards.
   g. Excess MC cable shall not be coiled up inside walls or ceilings.
   h. Do not install MC cable for speaker cables or seat transducers.
29. Do not install MC cable downstream of auditorium aisle lighting transformers.
30. All starters, VFD's, and control devices shall be installed at floor level and be easily serviced without the need of a ladder.
31. Where permissible by local codes, ENT conduit is permitted for the seat transducer conduit below the auditorium risers in lieu of EMT conduit.

FIRE PROTECTION

1. Refer to domestic development sheets for fire protection specifications.

STATE OF GEORGIA REGISTERED PROFESSIONAL ENGINEER No. PE032059 NEIL BARTL...

SIGNATURE DATE:

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GW& Project Number: 2017.671
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SHEET LEGEND

G000's	GENERAL INFORMATION & SCOPE OF WORK
N100's	EGRESS / ADA PLANS & DETAILS
A100's	FLOOR PLANS & CEILING PLANS
A200's	EXTERIOR & INTERIOR ELEVATIONS
A300's	BUILDING SECTIONS
A400's	ENLARGED PLANS
A500's	EXTERIOR & INTERIOR DETAILS
A600's	DOOR SCHEDULE, DOOR DETAILS, FINISH SCHEDULE, FINISH PLANS
Q100's	AUDITORIUM SIGHT LINE SECTIONS
S's	STRUCTURAL
M's	MECHANICAL
P's	PLUMBING
E's	ELECTRICAL
WF's	WAYFINDING DETAILS
FS's	CASEWORK & EQUIPMENT
PLF's	PLF AUDITORIUM

AMC MADISON YARDS 8

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ATLANTA, GA 30316

American Multi-Cinema, Inc.
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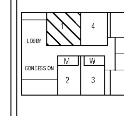
REV	DATE	DESCRIPTION

Project Issue Date: 05/22/2018

KEY PLAN:



SHEET TITLE:
SYMBOLS LEGEND & SPECIFICATIONS

SHEET NUMBER:
PLFME1

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