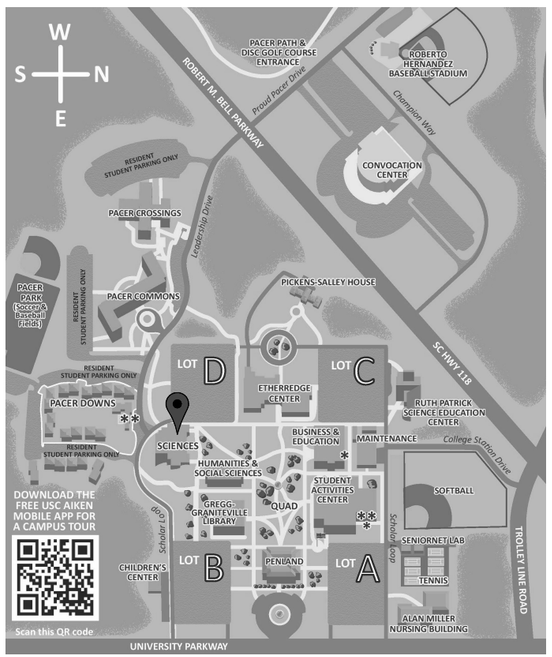
UNIVERSITY OF
SOUTH CAROLINA
AIKEN

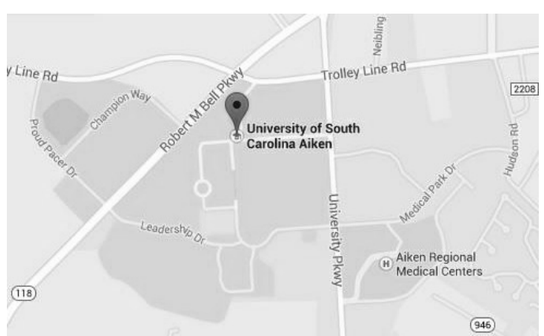
SCIENCE BUILDING OFFICE RENOVATION

471 UNIVERSITY PKWY. AIKEN, SC 29801

JUNE 11, 2015



USC AIKEN CAMPUS MAP
NOT TO SCALE



PROJECT LOCATION MAP
NOT TO SCALE

LEGEND

= PROJECT LOCATION

SCHEDULE OF DRAWINGS

SHEET:	TITLE:
CS-1.0	COVER SHEET
G-1.0	DEMOLITION AND NEW WORK FLOOR PLAN, NEW RCP PLAN, AND DETAILS
G-1.1	DETAILS AND DOOR SCHEDULE
M-1.0	MECHANICAL DEMOLITION & NEW WORK PLANS
M-2.0	MECHANICAL SPECIFICATIONS
M-2.1	MECHANICAL SPECIFICATIONS
P-1.0	PIPING NEW WORK PLAN

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No. 21596
06/12/2015
STEVEN A. PETERSEN

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No. 4433
CERTIFICATE OF AUTHORIZATION

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UNIVERSITY OF SOUTH CAROLINA AIKEN

SCIENCE BUILDING OFFICE RENOVATION

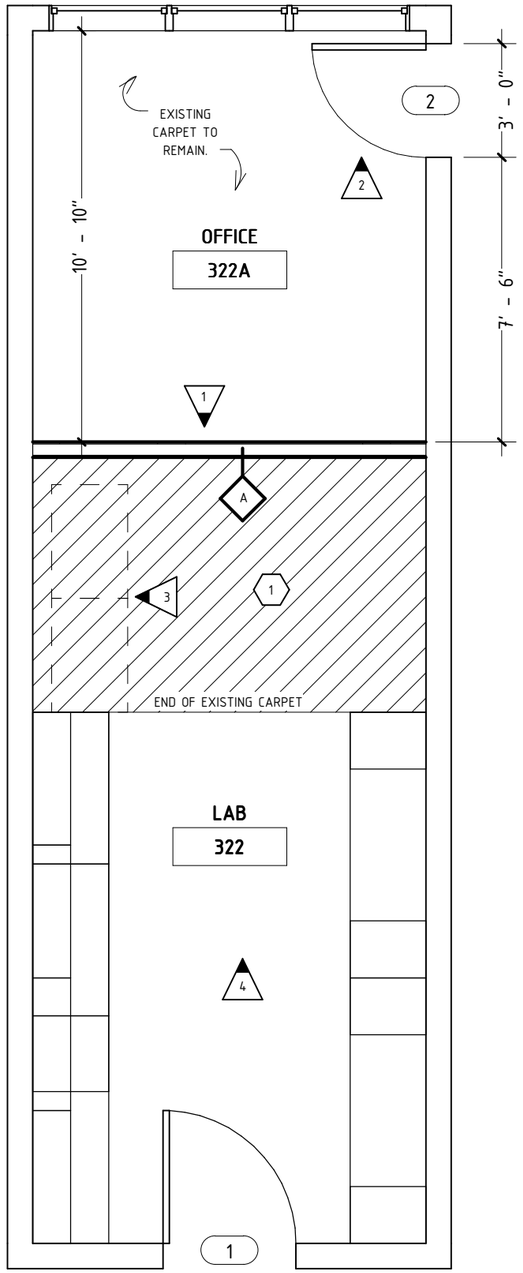
MARK	DATE	DESCRIPTION

PROJECT NO:	612-1501
CAD DWG FILE:	MECH.RVT
DRAWN BY:	LMA
CHK'D BY:	SAP
SHEET TITLE:	

COVER SHEET

SHEET NUMBER: CS-1.0

REVISION:



1 DEMOLITION AND NEW WORK PLAN
G-1.0 1/4" = 1'-0"
NORTH

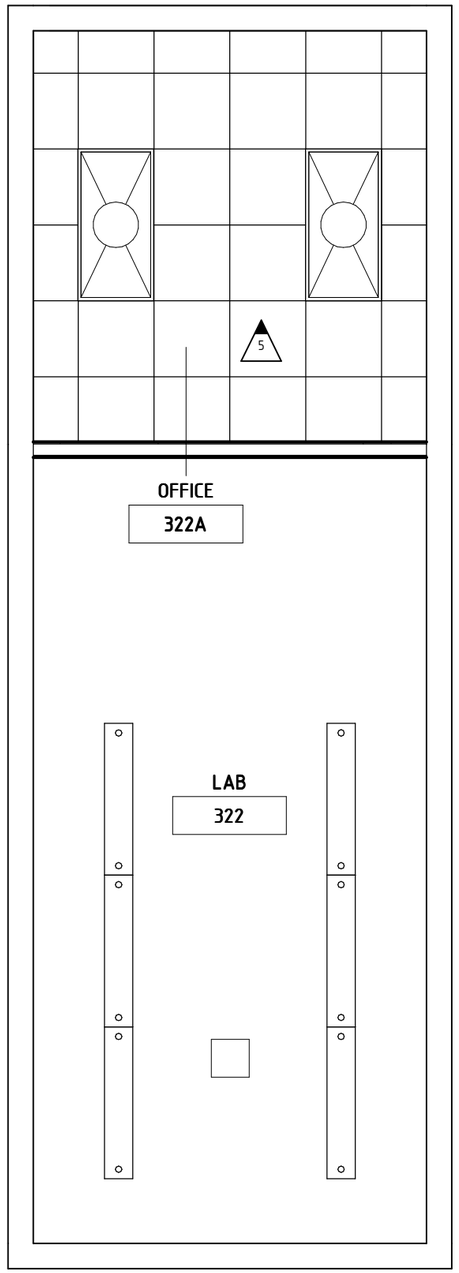
DEMOLITION KEY NOTES

GENERAL DEMOLITION NOTE:
IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROPERLY DISPOSE OF ALL ITEMS SCHEDULED FOR DEMOLITION.

1. REMOVE EXISTING CARPET. CLEAN AND REMOVE ALL ADHESIVE RESIDUE AND PREPARE CONCRETE FOR PAINTING.

NEW WORK KEY NOTES

1. INSTALL NEW METAL FRAME WALL PER DETAIL ON DRAWING G-1.0. INSTALL NEW VINYL WALL BASE ON EACH WALL FACE; MATCH WITH EXISTING WALL BASE. PRIME AND PAINT WALL - OWNER TO SELECT PAINT COLOR.
2. CUT NEW 3'-0" DOOR OPENING IN EXISTING CONCRETE BLOCK WALL. INSTALL NEW DOOR PER DETAIL ON G-1.0.
3. INSTALL OWNER PROVIDED FUME HOOD WITH CABINET BASE HERE.
4. PAINT ALL EXISTING CONCETE FLOOR IN LAB ARA.
5. INSTALL NEW ACT GRID. PRODUCT TO BE EQUAL TO ARMSTRONG ULTIMA, 24"x24" SQUARE LAY-IN CEILING TILES.



2 RCP NEW WORK PLAN
G-1.0 1/4" = 1'-0"
NORTH

KEY PLAN

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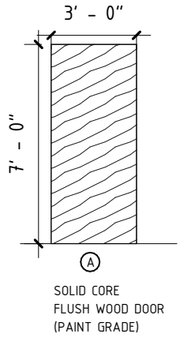
OFFICE RENOVATION

MARK	DATE	DESCRIPTION

PROJECT NO:	612-1501
CAD DWG FILE:	
DRAWN BY:	LMA
CHK'D BY:	SAP
SHEET TITLE:	DEMOLITON & NEW WORK FLOOR PLAN, NEW RCP PLAN
SHEET NUMBER:	G-1.0
REVISION:	

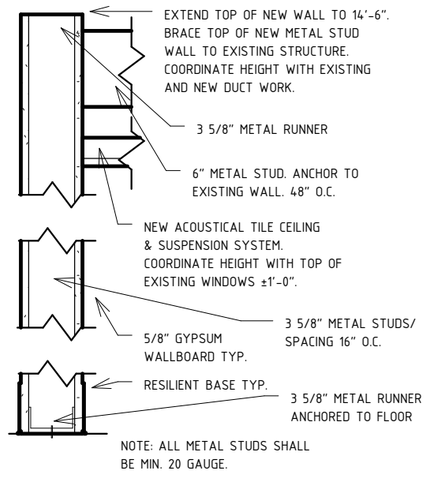
DOOR SCHEDULE

MARK	LOCATION	DOOR SIZE HGT	DOOR SIZE WD	DOOR SIZE THK	DOOR TYPE	DOOR MATERIAL	FRAME DETAILS: 3/G-0 HEAD	FRAME DETAILS: 3/G-0 JAMB	FRAME DETAILS: 3/G-0 SILL	FRAME TYPE	FIRE RATING	HARDWARE	NOTES
1	338 - LAB	-	-	-	-	-	-	-	-	-	-	-	EXISTING DOOR TO REMAIN
2	338B - OFFICE	7'-0"	3'-0"	1 3/4"	A	WOOD	-	-	-	A	-	LEVER HANDLE	-



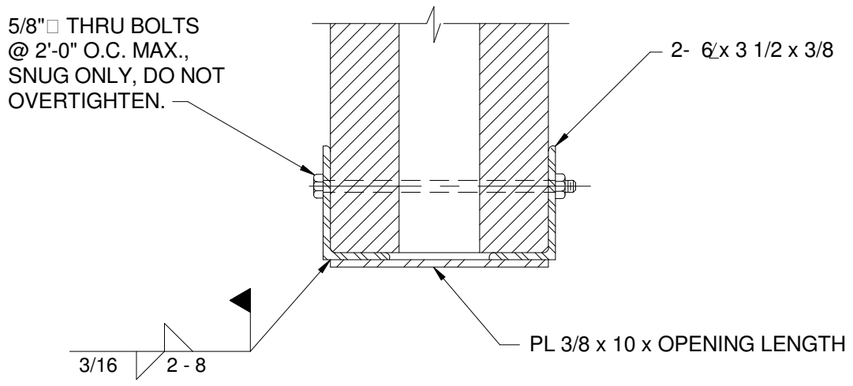
SOLID CORE
FLUSH WOOD DOOR
(PAINT GRADE)

1 | DETAIL - DOOR TYPE "A"
G-1.1 | 3/16" = 1'-0"



NOTE: ALL METAL STUDS SHALL BE MIN. 20 GAUGE.

2 | DETAIL - WALL TYPE "A"
G-1.1 | 1" = 1'-0"



MODIFICATION NOTES:

1. SAWCUT EXISTING WALL A MINIMUM OF 8" BEYOND PROPOSED ROUGH OPENING. INSERT HORIZONTAL LEG OF ANGLE INTO OPENING. GROUT BEARINGS.
2. REPEAT STEP 1 ON OTHER SIDE OF WALL.
3. INSTALL THRU BOLTS.
4. REMOVE EXISTING WALL.
5. INSTALL 3/8" PL.

3 | SECTION
G-1.1 | SCALE: 1 1/2"=1'-0"

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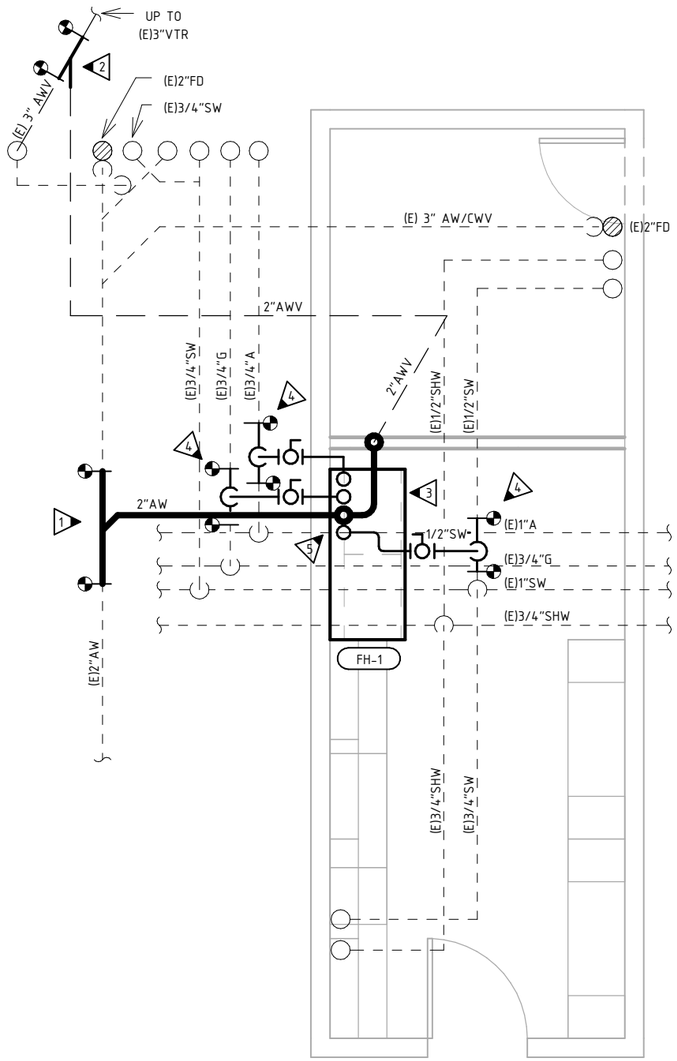
OFFICE RENOVATION

MARK	DATE	DESCRIPTION

PROJECT NO: 612-1501
CAD DWG FILE:
DRAWN BY: Author
CHK'D BY: Checker
SHEET TITLE:

DETAILS AND DOOR SCHEDULE

SHEET NUMBER: G-1.1
REVISION:



1 NEW PIPING PLAN
P-1.0 3/16" = 1'-0"
NORTH

NEW WORK KEY NOTES

GENERAL NOTES:

1. COORDINATE ALL SHUTDOWN AND STARTUP OF PLUMBING SERVICES AND TESTING WITH OWNER.

2. EXISTING CONDITIONS: NOT ALL EXISTING WORK IS DEPICTED ON THESE PLANS AND IS SHOWN FOR CONTRACTOR'S REFERENCE ONLY. FOR FURTHER CLARIFICATIONS OF EXISTING CONDITIONS, CONTRACTOR SHALL CONDUCT AN ONSITE INSPECTION AND SHALL REFERENCE EXISTING FACILITY DRAWINGS AVAILABLE FOR REVIEW AND LOCATED AT USCA FACILITIES/PLANNING OFFICES. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING PROJECT SITE EXISTING CONDITIONS PRIOR TO ORDERING MATERIALS AND FABRICATION. DISCREPANCIES DISCOVERED SHALL BE MARKED ON AS-BUILT DRAWINGS AND REPORTED TO OWNER AND ENGINEER.

3. ALL PIPING SERVICE ARE LOCATED IN CRAWSPACE BELOW.

1. CONTRACTOR SHALL MODIFY EXISTING 2"AW TO EXTEND NEW 2"AW BRANCH TO NEW HOOD. CONTRACTOR SHALL FIELD VERIFY INVERT FOR SLOPE THROUGH EXISTING CEILING CAVITY BELOW AND ADJUST ROUTE AS REQUIRED FOR INTERFERENCES AND REQUIRE PITCH. ALL ACID WASTE AND VENT PIPING SHALL BE PER SPECIFICATIONS.

2. ROUTE AND CONNECT NEW 2"AWV OVERHEAD TO (E) 3"AWV STACK AT EXTERIOR WALL.

3. CONTRACTOR TO INSTALL NEW FUME HOOD AND COMPLETE ROUGH-IN WITH FINAL TIE IN OF 2"AW TO CUP DRAINS, ½"A, ½"G AND ½"SW FOR COMPLETE FUNCTION HOOD. ALL PIPING SHALL BE PER SPECIFICATIONS.

4. INSTALL NEW BRANCH PIPING OFF EXISTING PIPING OF EQUAL OR GREATER SIZE. INSTALL NEW LINE SIZE FULL PORT BALL VALVE RATED FOR GAS/FLUID SERVICE PER SPECIFICATIONS AND PROPERLY LOCATED FOR EASE OF OPERATION AND MAINTENANCE.

5. CONTRACTOR SHALL CORE DRILL PENETRATIONS FOR ALL PIPING. CONTRACTOR SHALL SLEEVE AND FIRE CAULK/SEAL ALL PENETRATIONS IN FLOOR PER APPLICABLE HILTI UL LISTED DETAIL FOR A 2HR. FLOOR SLAB PENETRATION.

PLUMBING LEGEND

◐	NEW/EXSITING
(E)	EXISTING
A	AIR
G	GAS
SW	SERVICE WATER
SHW	SERVICE HOT WATER
AW	ACID WASTE
AWV	ACID WASTE VENT
VTR	VENT THRU ROOF

KEY PLAN

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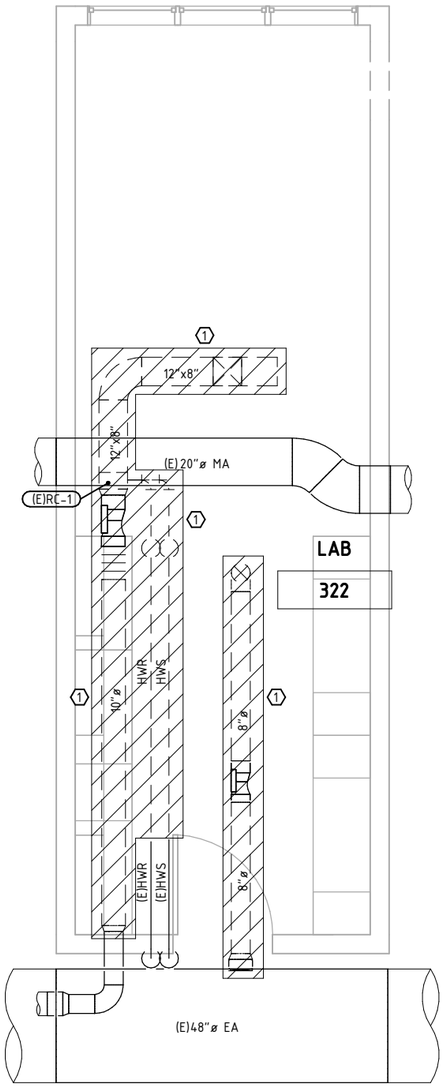
OFFICE RENOVATION

MARK	DATE	DESCRIPTION

PROJECT NO:	612-1501
CAD DWG FILE:	MECH RVT
DRAWN BY:	LMA
CHK'D BY:	SAP
SHEET TITLE:	

PIPING NEW WORK PLAN

SHEET NUMBER:	REVISION:
P-1.0	



1 HVAC DEMOLITION PLAN

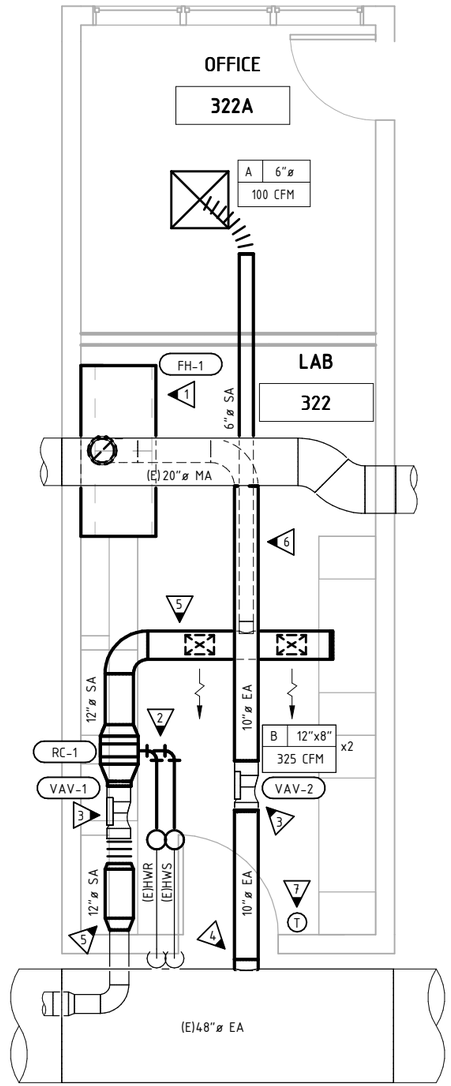
M-1.0 3/16" = 1'-0"

NORTH

DEMOLITION KEY NOTES

GENERAL DEMOLITION NOTE:
IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROPERLY DISPOSE OF ALL ITEMS SCHEDULED FOR DEMOLITION.

1. DEMO EXISTING DUCTWORK, PHOENIX VALVE, REHEAT COIL, AND PIPING AS SHOWN.



2 HVAC NEW WORK PLAN

M-1.0 3/16" = 1'-0"

NORTH

NEW WORK KEY NOTES

1. FUME HOOD PURCHASED BY OWNER AND INSTALLED BY CONTRACTOR. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF BASE CABINET, WORK SURFACE, AND PIPING.
2. REPIPE HOT WATER SUPPLY AND RETURN PIPING TO NEW REHEAT COIL. REVISE EXISTING PNEUMATIC CONTROL VALVE.
3. INSTALL NEW PHOENIX CONTROL VALVE.
4. ENLARGE OPENING IN EXISTING CONCRETE BLOCK WALL FOR NEW 10"Ø DUCT. PROVIDE NEW CONICAL ESCUTCHEON ON EACH SIDE OF WALL.
5. NEW SUPPLY DUCT SHALL BE DOUBLE WALL SPIRAL DUCT, GALVANIZED PAINT GRIP. PRIME AND PAINT COLOR TO MATCH EXISTING SYSTEM COLOR CODE.
6. NEW EXHAUST DUCT SHALL BE SINGLE WALL SPIRAL DUCT, GALVANIZED PAINT GRIP. PRIME AND PAINT COLOR TO MATCH EXISTING SYSTEM COLOR CODE.
7. EXISTING THERMOSTAT LOCATION TO REMAIN.

EQUIPMENT SCHEDULE

FH-1: OWNER PROVIDED FUME HOOD. CONTRACTOR TO PROVIDE AND INSTALL FUME HOOD MONITOR EQUAL TO PHOENIX X30 SERIES MODEL#FHM.

RC-2: REHEAT COIL 16"x16" Cu/Al COIL. 2GPM FLOW @ 20°ΔT.

VAV-1: MEDIUM-PRESSURE VARIABLE AIR VOLUME VALVE EQUAL TO PHOENIX MODEL#MAVA110MAMEHZ.

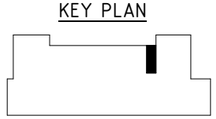
VAV-2: MEDIUM-PRESSURE VARIABLE AIR VOLUME VALVE EQUAL TO PHOENIX MODEL#EXVB110MAMEHO.

DIFFUSER TAGS

A: 4-WAY LAY-IN PLAQUE DIFFUSER EQUAL TO TITUS MODEL#OMNI. 24"x24" FACE SIZE IN WHITE. PROVIDE BACK PAN WITH FACTORY INSTALLED FOIL BACK INSULATION WITH MINIMUM R-VAULE OF 6.

B: ALUMINUM 3/16" PERFORATED SUPPLY GRILLE EQUAL TO TITUS MODEL#S8F. 12"x8" FACE SIZE IN WHITE.

KEY PLAN



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SCIENCE BUILDING OFFICE RENOVATION

MARK	DATE	DESCRIPTION

PROJECT NO:	612-1501
CAD DWG FILE:	MECH RVT
DRAWN BY:	LMA
CHK'D BY:	SAP
SHEET TITLE:	MECHANICAL DEMOLITION AND NEW WORK PLANS
SHEET NUMBER:	M-1.0
REVISION:	

MECHANICAL SPECIFICATIONS:

BASIC MECHANICAL MATERIALS AND METHODS

A. ALL WORK SHALL CONFORM TO NFPA 99, 2012 IBC, 2012 INTERNATIONAL PLUMBING CODE, 2012 INTERNATIONAL MECHANICAL CODE AND WITH ALL LOCAL, & STATE AMENDMENTS.
B. ARRANGE FOR PIPE SPACES, CHASES, SLOTS, AND OPENINGS IN BUILDING STRUCTURE DURING PROGRESS OF CONSTRUCTION, TO ALLOW FOR MECHANICAL INSTALLATIONS.
C. DRAWING PLANS, SCHEMATICS, AND DIAGRAMS INDICATE GENERAL LOCATION AND ARRANGEMENT OF PIPING SYSTEMS. INDICATED LOCATIONS AND ARRANGEMENTS WERE USED TO SIZE PIPE AND CALCULATE FRICTION LOSS, EXPANSION, PUMP SIZING, AND OTHER DESIGN CONSIDERATIONS. INSTALL PIPING AS INDICATED UNLESS DEVIATIONS TO LAYOUT ARE APPROVED ON COORDINATION DRAWINGS.
D. INSTALL PIPING IN CONCEALED LOCATIONS, UNLESS OTHERWISE INDICATED AND EXCEPT IN EQUIPMENT ROOMS AND SERVICE AREAS.
E. INSTALL PIPING TO PERMIT VALVE SERVICING, AT INDICATED SLOPES, FREE OF SAGS AND BENDS. INSTALL PIPING TO ALLOW APPLICATION OF INSULATION.
F. SELECT SYSTEM COMPONENTS WITH PRESSURE RATING EQUAL TO OR GREATER THAN SYSTEM OPERATING PRESSURE.
G. CONTRACTOR SHALL COORDINATE WITH EXISTING CONDITIONS AND DRAWINGS FOR FIRE WALL / BARRIER / PARTITION PENETRATIONS. CONTRACTOR SHALL PROVIDE FIRE STOPPING AS REQUIRED TO MEET WALL RESISTANCE RATING REQUIREMENTS.
H. INSTALL PIPING IN CONCEALED LOCATIONS, UNLESS OTHERWISE INDICATED AND EXCEPT IN EQUIPMENT ROOMS AND SERVICE AREAS.
I. INSTALL PIPING INDICATED TO BE EXPOSED AND PIPING IN EQUIPMENT ROOMS AND SERVICE AREAS AT RIGHT ANGLES OR PARALLEL TO BUILDING WALLS. DIAGONAL RUNS ARE PROHIBITED UNLESS SPECIFICALLY INDICATED OTHERWISE.
J. INSTALL PIPING ABOVE ACCESSIBLE CEILINGS TO ALLOW SUFFICIENT SPACE FOR CEILING PANEL REMOVAL.
K. INSTALL PIPING TO PERMIT VALVE SERVICING.
L. INSTALL PIPING AT INDICATED SLOPES.
M. INSTALL PIPING FREE OF SAGS AND BENDS.
N. INSTALL FITTINGS FOR CHANGES IN DIRECTION AND BRANCH CONNECTIONS.
O. INSTALL PIPING TO ALLOW APPLICATION OF INSULATION.
P. SELECT SYSTEM COMPONENTS WITH PRESSURE RATING EQUAL TO OR GREATER THAN SYSTEM OPERATING PRESSURE.
Q. INSTALL ESCUTCHEONS FOR PENETRATIONS OF WALLS, CEILINGS, AND FLOORS ACCORDING TO THE FOLLOWING:
    1. PIPING:
        a. PIPING WITH FITTING OR SLEEVE PROTRUDING FROM WALL: ONE-PIECE, DEEP-PATTERN TYPE.
        b. CHROME-PLATED PIPING: ONE-PIECE, CAST-BRASS TYPE WITH POLISHED CHROME-PLATED FINISH.
        c. INSULATED PIPING: ONE-PIECE, STAMPED-STEEL TYPE WITH SPRING CLIPS.
        d. BARE PIPING AT WALL AND FLOOR PENETRATIONS IN FINISHED SPACES: ONE-PIECE, CAST-BRASS TYPE WITH POLISHED CHROME-PLATED FINISH.
        e. BARE PIPING AT WALL AND FLOOR PENETRATIONS IN FINISHED SPACES: ONE-PIECE, STAMPED-STEEL TYPE.
        f. BARE PIPING AT CEILING PENETRATIONS IN FINISHED SPACES: ONE-PIECE OR SPLIT-CASTING, CAST-BRASS TYPE WITH POLISHED CHROME-PLATED FINISH.
        g. BARE PIPING AT CEILING PENETRATIONS IN FINISHED SPACES: ONE-PIECE, STAMPED-STEEL TYPE OR SPLIT-PLATE, STAMPED-STEEL TYPE WITH CONCEALED HINGE AND SET SCREW.
        h. BARE PIPING IN UNFINISHED SERVICE SPACES: ONE-PIECE, CAST-BRASS TYPE WITH POLISHED CHROME-PLATED FINISH.
        i. BARE PIPING IN UNFINISHED SERVICE SPACES: ONE-PIECE, STAMPED-STEEL TYPE WITH CONCEALED OR EXPOSED-RIVET HINGE AND SET SCREW OR SPRING CLIPS.
R. FIRE-BARRIER PENETRATIONS: MAINTAIN INDICATED FIRE RATING OF WALLS, PARTITIONS, CEILINGS, AND FLOORS AT PIPE PENETRATIONS. SEAL PIPE PENETRATIONS WITH FIRESTOP MATERIALS. REFER TO SPECIFICATION SECTION "THROUGH-PENETRATION FIRESTOP SYSTEMS" FOR MATERIALS.
S. VERIFY FINAL EQUIPMENT LOCATIONS FOR FINAL ROUGHING-IN.
T. REFER TO FUME HOOD EQUIPMENT SPECIFICATIONS, INSTALLATION, OPERATING DATA FOR FINAL ROUGHING-IN REQUIREMENTS.

PIPING JOINT CONSTRUCTION

A. REAM ENDS OF PIPES AND TUBES AND REMOVE BURRS. BEVEL PLAIN ENDS OF STEEL PIPE.
B. REMOVE SCALE, SLAG, DIRT, AND DEBRIS FROM INSIDE AND OUTSIDE OF PIPE AND FITTINGS BEFORE ASSEMBLY.
C. SOLDERED JOINTS: APPLY ASTM B 813, WATER-FLUSHABLE FLUX, UNLESS OTHERWISE INDICATED, TO TUBE END. CONSTRUCT JOINTS ACCORDING TO ASTM B 828 OR CDA'S "COPPER TUBE HANDBOOK," USING LEAD-FREE SOLDER ALLOY COMPLYING WITH ASTM B 32.
D. BRAZED JOINTS: CONSTRUCT JOINTS ACCORDING TO AWS'S "BRAZING HANDBOOK," "PIPE AND TUBE" CHAPTER, USING COPPER-PHOSPHORUS BRAZING FILLER METAL COMPLYING WITH AWS A5.8.

PAINTING

A. DAMAGE AND TOUCHUP: REPAIR MARRED AND DAMAGED FACTORY-PAINTED FINISHES WITH MATERIALS AND PROCEDURES TO MATCH ORIGINAL FACTORY FINISH.

PIPING SYSTEMS

A. WATER SERVICE PIPING: HARD COPPER TUBE, TYPE K; COPPER PRESSURE FITTINGS; AND SOLDERED JOINTS.
    1. ALL WATER SERVICE PIPING SHALL BE INSULATED WITH TYPE I MINERAL OR GLASS FIBERS BONDED WITH A THERMOSETTING RESIN. COMPLY WITH ASTM C 547, TYPE I, GRADE A, WITH FACTORY-APPLIED ASJ-SSL. MIN. THICKNESS OF 1" REQUIRED FOR ALL PIPING. REPAIR EXISTING PIPING AT TIE-IN LOCATION EXTENDING 4' EACH WAY.
    2. PROVIDE AND INSTALL GALVANIZED INSULATION SHIELDS AT HANGER LOCATIONS.
B. AIR SERVICE PIPING: HARD COPPER TUBE, TYPE K, COPPER PRESSURE FITTINGS; AND BRAZED JOINTS.
C. GAS SERVICE PIPING: HARD COPPER TUBE, TYPE K, COPPER PRESSURE FITTINGS; AND BRAZED JOINTS.

SPECIALTIES

A. BALL VALVES: MSS SP-110, CLASS 150, 600-PSI CWP, ASTM B564 TWO-PIECE, COPPER-ALLOY BRONZE BODY AND BONNET WITH FULL-PORT, CHROME-PLATED BRASS BALL; PTFE OR TFE SEATS, BLOWOUT-PROOF BRASS OR BRONZE STEM, THREADED OR SOLDERED END CONNECTIONS:
B. OPERATOR: VINYL-COVERED STEEL LEVER HANDLE. W/STEM EXTENSION FOR VALVES INSTALLED IN INSULATED PIPING.

ACID WASTE DRAINAGE PIPE AND VENT:

A. PIPE AND FITTINGS: CONFORMING TO ASTM F1412. POLYPROPYLENE MATERIAL SHALL CONFORM TO ASTM D4101.
B. FLAME-RETARDANT POLYPROPYLENE PIPE AND FITTINGS.
C. PIPE AND FITTINGS SHALL BE JOINED USING NO-HUB/PLAIN END COUPLING.
D. PIPE SHALL BE SUPPLIED IN FACTORY GROOVED 10-FT. LENGTH.
E. FITTINGS ARE TO MEET OR EXCEED SCHEDULE 40 DIMENSIONS.
F. COUPLING SHALL HAVE 300 SERIES STAINLESS STEEL OUTER BAND AND 5/16" BOLTS, NUTS AND WASHERS PLATED TO MEET A 100-HOUR SALT SPRAY TEST PER ASTM B117.
G. MANUFACTURERS:
    1. ORION INDUSTRIES
    2. AT CONTRACTOR'S OPTION AND APPROVAL OF THE OWNER AND ENGINEER; MATCH EXACTLY WITH NO DEVIATIONS EXISTING SYSTEM MANUFACTURER AND JOINING METHOD.
H. TEST SANITARY DRAINAGE AND VENT PIPING ACCORDING TO PROCEDURES OF AUTHORITIES HAVING JURISDICTION OR, IN ABSENCE OF PUBLISHED PROCEDURES, AS FOLLOWS:
    1. TEST FOR LEAKS AND DEFECTS IN NEW PIPING AND PARTS OF EXISTING PIPING THAT HAVE BEEN ALTERED WITH 10FT OF WATER HEAD ON VENT SYSTEM STACKS. MAKE FINAL CONNECTIONS TO EXISTING AW AND AWR SYSTEM AND INSPECT FINAL PIPING JOINTS VISUALLY UNDER FLOWING CONDITIONS.
    2. REPAIR LEAKS AND DEFECTS WITH NEW MATERIALS AND RETEST PIPING, OR PORTION THEREOF, UNTIL SATISFACTORY RESULTS ARE OBTAINED.

HANGERS AND SUPPORTS

A. PIPE HANGER AND SUPPORT INSTALLATION: COMPLY WITH MSS SP-69 AND MSS SP-89. INSTALL HANGERS, SUPPORTS, CLAMPS, AND ATTACHMENTS AS REQUIRED TO PROPERLY SUPPORT PIPING FROM BUILDING STRUCTURE. PROVIDE INSULATION SHIELDS AT SUPPORTS.
B. INSTALL HANGERS AND SUPPORTS COMPLETE WITH NECESSARY INSERTS, BOLTS, RODS, NUTS, WASHERS, AND OTHER ACCESSORIES. INSTALL HANGERS AND SUPPORTS TO PROVIDE INDICATED PIPE SLOPES AND SO MAXIMUM PIPE DEFLECTIONS ALLOWED BY ASME B31.9 ARE NOT EXCEEDED.
    1. INDIVIDUAL, STRAIGHT, HORIZONTAL PIPING RUNS: ACCORDING TO THE FOLLOWING:
        a. 100 FEET AND LESS: MSS TYPE 1, ADJUSTABLE, STEEL CLEVIS HANGERS.
    2. INSTALL HANGERS FOR COPPER TUBING WITH THE FOLLOWING MAXIMUM HORIZONTAL SPACING AND MINIMUM ROD DIAMETERS:
        a. NPS 1-1/4 AND SMALLER: 72 INCHES WITH 3/8-INCH ROD.
    3. INSTALL VINYL-COATED HANGERS FOR "PP" PIPING WITH THE FOLLOWING MAXIMUM HORIZONTAL SPACING AND MINIMUM ROD DIAMETERS:
        a. NPS 1-1/2 TO NPS 2: 48 INCHES (1200 MM) WITH 3/8-INCH (10-MM) ROD.
        b. NPS 2-1/2 TO NPS 3: 60 INCHES (1200 MM) WITH 1/2-INCH (13-MM) ROD.

MECHANICAL IDENTIFICATION

A. ASME COMPLIANCE: 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.
B. MANUFACTURED PIPE MARKERS, GENERAL: PREPRINTED, COLOR-CODED, WITH LETTERING INDICATING SERVICE, AND SHOWING DIRECTION OF FLOW.
    1. COLORS: COMPLY WITH ASME A13.1, UNLESS OTHERWISE INDICATED.
    2. LETTERING: USE PIPING SYSTEM TERMS INDICATED AND ABBREVIATE ONLY AS NECESSARY FOR EACH APPLICATION LENGTH.
    3. PIPES WITH OD, INCLUDING INSULATION, LESS THAN 6 INCHES (150 MM): FULL-BAND PIPE MARKERS EXTENDING 360 DEGREES AROUND PIPE AT EACH LOCATION.
    4. PIPES WITH OD, INCLUDING INSULATION, 6 INCHES (150 MM) AND LARGER: EITHER FULL-BAND OR STRIP-TYPE PIPE MARKERS AT LEAST THREE TIMES LETTER HEIGHT AND OF LENGTH REQUIRED FOR LABEL.
    5. ARROWS: INTEGRAL WITH PIPING SYSTEM SERVICE LETTERING TO ACCOMMODATE BOTH DIRECTIONS; OR AS SEPARATE UNIT ON EACH PIPE MARKER TO INDICATE DIRECTION OF FLOW.
C. SELF-ADHESIVE PIPE MARKERS: PLASTIC WITH PRESSURE-SENSITIVE, PERMANENT-TYPE, SELF-ADHESIVE BACK.

PIPING IDENTIFICATION

A. INSTALL MANUFACTURED PIPE MARKERS INDICATING SERVICE ON EACH NEW AND EXISTING PIPING SYSTEM CONSTRUCTION LIMITS. INSTALL WITH FLOW INDICATION ARROWS SHOWING DIRECTION OF FLOW.
    1. PIPES WITH OD, INCLUDING INSULATION, LESS THAN 6 INCHES (150 MM): SELF-ADHESIVE PIPE MARKERS. USE COLOR-CODED, SELF-ADHESIVE PLASTIC TAPE, 1-1/2 INCHES (38 MM) WIDE, LAPPED AT LEAST 1-1/2 INCHES (38 MM) AT BOTH ENDS OF PIPE MARKER, AND COVERING FULL CIRCUMFERENCE OF PIPE.
B. LOCATE PIPE MARKERS AND COLOR BANDS WHERE PIPING IS EXPOSED IN FINISHED SPACES; MACHINE ROOMS; ACCESSIBLE MAINTENANCE SPACES SUCH AS FURRED WALL CHASE AND PLENUMS; AND EXTERIOR NON-CONCEALED LOCATIONS AS FOLLOWS:
    1. NEAR EACH VALVE AND CONTROL DEVICE.
    2. NEAR EACH BRANCH CONNECTION, EXCLUDING SHORT TAKEOFFS FOR FIXTURES AND TERMINAL UNITS. WHERE FLOW PATTERN IS NOT OBVIOUS, MARK EACH PIPE AT BRANCH.
    3. NEAR PENETRATIONS THROUGH WALLS, FLOORS, CEILINGS, AND NONACCESSIBLE ENCLOSURES.
    4. AT ACCESS DOORS, MANHOLES, AND SIMILAR ACCESS POINTS THAT PERMIT VIEW OF CONCEALED PIPING.
    5. NEAR MAJOR EQUIPMENT ITEMS AND OTHER POINTS OF ORIGINATION AND TERMINATION.
    6. SPACED AT MAXIMUM INTERVALS OF 50 FEET (15 M) ALONG EACH RUN. REDUCE INTERVALS TO 25 FEET (7.6 M) IN AREAS OF CONGESTED PIPING AND EQUIPMENT.

VALVE-TAG INSTALLATION

A. INSTALL TAGS ON VALVES AND CONTROL DEVICES IN PIPING SYSTEMS.
    1. EXCEPT CHECK VALVES; VALVES WITHIN FACTORY-FABRICATED EQUIPMENT UNITS; PLUMBING FIXTURE SUPPLY STOPS; SHUTOFF VALVES; FAUCETS; CONVENIENCE AND LAWN-WATERING HOSE CONNECTIONS; AND HVAC TERMINAL DEVICES AND SIMILAR ROUGHING-IN CONNECTIONS OF END-USE FIXTURES AND UNITS.

ADJUSTING AND CLEANING

A. RELOCATE MECHANICAL IDENTIFICATION MATERIALS AND DEVICES THAT HAVE BECOME VISUALLY BLOCKED BY OTHER WORK.

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SOUTH CAROLINA — No. 21596 — 06/12/2015 — STEVEN A. PETERSEN

SOUTH CAROLINA — ING Consulting, Inc. No. 4433 — CERTIFICATE OF AUTHORIZATION

OWNER

UNIVERSITY OF SOUTH CAROLINA AIKEN

SCIENCE BUILDING OFFICE RENOVATION

MARK	DATE	DESCRIPTION

PROJECT NO: 612-1501
CAD DWG FILE:
DRAWN BY: LMA
CHK'D BY: SAP
SHEET TITLE: MECHANICAL SPECIFICATIONS

SHEET NUMBER: M-2.0
REVISION:

SELECTIVE DEMOLITION, REMOVAL & REPLACEMENT/REPAIR:

GENERAL

A. PROJECT REQUIRES REMOVAL, REPAIR AND REPLACEMENT OF EXISTING CEILING SYSTEMS, GYPSUM BOARD AND ASSOCIATED FINISH WITHIN THE CONSTRUCTION LIMITS TO INSTALL NEW WORK. CONTRACTOR SHALL DETERMINE THE EXTENT, INCLUDE IN THE BID LABOR AND MATERIAL NECESSARY FOR THE SELECTIVE DEMOLITION, REMOVAL, REPAIR REPLACEMENT AND INSTALLATION OF THESE MATERIALS TO PLACE ALL ITEMS WITHIN CONSTRUCTION LIMITS BACK TO NEW CONDITION. MATERIALS REMOVED THAT ARE NOT DAMAGED MAY BE CLEANED AND REINSTALLED WHERE APPLICABLE.

B. PRE-CONSTRUCTION CONFERENCE: CONDUCT CONFERENCE AT PROJECT SITE.
   1. INSPECT AND DISCUSS CONDITION OF CONSTRUCTION TO BE SELECTIVELY REMOVED FOR INSTALLATION OF NEW WORK.
   2. REVIEW AND FINALIZE SELECTIVE REMOVAL SCHEDULE AND VERIFY AVAILABILITY OF MATERIALS, EQUIPMENT, AND FACILITIES NEEDED TO MAKE PROGRESS AND AVOID INTERRUPTION TO OWNER OCCUPIED FACILITY.
   3. REVIEW REQUIREMENTS OF WORK PERFORMED BY OTHER TRADES THAT RELY ON SUBSTRATES EXPOSED BY SELECTIVE REMOVAL OPERATIONS.
   4. REVIEW AREAS WHERE EXISTING CONSTRUCTION IS TO REMAIN AND REQUIRES PROTECTION.

INFORMATIONAL SUBMITTALS

A. PROPOSED PROTECTION MEASURES: SUBMIT THE MEASURES PROPOSED FOR PROTECTING INDIVIDUALS AND PROPERTY, FOR DUST CONTROL AND FOR NOISE CONTROL. INDICATE PROPOSED LOCATIONS AND CONSTRUCTION OF BARRIERS.

B. SCHEDULE OF SELECTIVE REMOVAL ACTIVITIES: INDICATE THE FOLLOWING:
   1. DETAILED SEQUENCE OF SELECTIVE REMOVAL WORK, WITH STARTING AND ENDING DATES FOR EACH ACTIVITY. ENSURE ON-SITE OPERATIONS ARE UNINTERRUPTED.
   2. INTERRUPTION OF UTILITY SERVICES. INDICATE HOW LONG UTILITY SERVICES WILL BE INTERRUPTED.
   3. COORDINATION FOR SHUTOFF, CAPPING, AND CONTINUATION OF UTILITY SERVICES WITH PHYSICAL PLANT PERSONNEL.
   4. COORDINATION OF OWNER'S CONTINUING OCCUPANCY OF PORTIONS OF EXISTING BUILDING AND OF OWNER'S PARTIAL OCCUPANCY OF COMPLETED WORK.

FIELD CONDITIONS

A. OWNER WILL OCCUPY PORTIONS OF BUILDING IMMEDIATELY ADJACENT TO CONSTRUCTION AREA. CONDUCT SELECTIVE REMOVAL SO OWNER'S OPERATIONS WILL NOT BE DISRUPTED.

B. CONDITIONS EXISTING AT TIME OF INSPECTION FOR BIDDING PURPOSE WILL BE MAINTAINED BY OWNER AS FAR AS PRACTICAL.

C. NOTIFY ARCHITECT OF DISCREPANCIES BETWEEN EXISTING CONDITIONS AND DRAWINGS BEFORE PROCEEDING WITH SELECTIVE REMOVAL.

D. HAZARDOUS MATERIALS: IT IS NOT EXPECTED THAT HAZARDOUS MATERIALS WILL BE ENCOUNTERED IN THE WORK.
   1. IF SUSPECTED HAZARDOUS MATERIALS ARE ENCOUNTERED, DO NOT DISTURB; IMMEDIATELY NOTIFY ARCHITECT AND OWNER. HAZARDOUS MATERIALS WILL BE REMOVED BY OWNER UNDER A SEPARATE CONTRACT.

E. UTILITY SERVICE: MAINTAIN EXISTING UTILITIES INDICATED TO REMAIN IN SERVICE AND PROTECT THEM AGAINST DAMAGE DURING SELECTIVE REMOVAL OPERATIONS.
   1. MAINTAIN FIRE-PROTECTION FACILITIES IN SERVICE DURING CONSTRUCTION.

EXAMINATION

A. VERIFY THAT UTILITIES HAVE BEEN DISCONNECTED AND CAPPED BEFORE STARTING SELECTIVE REMOVAL OPERATIONS.

B. SURVEY EXISTING CONDITIONS AND CORRELATE WITH REQUIREMENTS INDICATED TO DETERMINE EXTENT OF SELECTIVE REMOVAL REQUIRED.

C. WHEN UNANTICIPATED MECHANICAL, ELECTRICAL, OR STRUCTURAL ELEMENTS THAT CONFLICT WITH INTENDED FUNCTION OR DESIGN ARE ENCOUNTERED, INVESTIGATE AND MEASURE THE NATURE AND EXTENT OF CONFLICT. PROMPTLY SUBMIT A NOTIFY ARCHITECT.

D. SURVEY OF EXISTING CONDITIONS: RECORD REMAINING EXISTING CONDITIONS BY USE OF MEASURED DRAWINGS.

MECHANICAL SYSTEMS

A. EXISTING SERVICES/SYSTEMS TO REMAIN: MAINTAIN SERVICES/SYSTEMS INDICATED TO REMAIN AND PROTECT THEM AGAINST DAMAGE.
   1. COMPLY WITH REQUIREMENTS FOR EXISTING SERVICES/SYSTEMS INTERRUPTIONS SPECIFIED.

B. EXISTING SERVICES/SYSTEMS TO BE REMOVED, RELOCATED, OR ABANDONED: LOCATE, IDENTIFY, DISCONNECT, AND SEAL OR CAP OFF INDICATED UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS SERVING AREAS TO BE SELECTIVELY DEMOLISHED.
   1. CONTRACTOR SHALL CONTACT OWNER TO ARRANGE FOR SHUT OFF INDICATED SERVICES/SYSTEMS WHEN REQUESTED BY CONTRACTOR.
   2. ARRANGE TO SHUT OFF INDICATED UTILITIES WITH PHYSICAL PLANT PERSONNEL.
   3. IF SERVICES/SYSTEMS ARE REQUIRED TO BE REMOVED, RELOCATED, OR ABANDONED, PROVIDE TEMPORARY SERVICES/SYSTEMS THAT BYPASS AREA OF SELECTIVE DEMOLITION AND THAT MAINTAIN CONTINUITY OF SERVICES/SYSTEMS TO OTHER PARTS OF BUILDING.
   4. DISCONNECT, DEMOLISH, AND REMOVE FIRE-SUPPRESSION SYSTEMS, PLUMBING, AND HVAC SYSTEMS, EQUIPMENT, AND COMPONENTS INDICATED TO BE REMOVED.
      a. PIPING TO BE REMOVED: REMOVE PORTION OF PIPING INDICATED TO BE REMOVED AND CAP OR PLUG REMAINING PIPING WITH SAME OR COMPATIBLE PIPING MATERIAL.
      b. PIPING TO BE ABANDONED IN PLACE: DRAIN PIPING AND CAP OR PLUG PIPING WITH SAME OR COMPATIBLE PIPING MATERIAL.
      c. EQUIPMENT TO BE REMOVED: DISCONNECT AND CAP SERVICES AND REMOVE EQUIPMENT.
      d. EQUIPMENT TO BE REMOVED AND REINSTALLED: DISCONNECT AND CAP SERVICES AND REMOVE, CLEAN, AND STORE EQUIPMENT; WHEN APPROPRIATE, REINSTALL, RECONNECT, AND MAKE EQUIPMENT OPERATIONAL.
      e. EQUIPMENT TO BE REMOVED AND SALVAGED: DISCONNECT AND CAP SERVICES AND REMOVE EQUIPMENT AND DELIVER TO OWNER.
      f. DUCTS TO BE REMOVED: REMOVE PORTION OF DUCTS INDICATED TO BE REMOVED AND PLUG REMAINING DUCTS WITH SAME OR COMPATIBLE DUCTWORK MATERIAL.
      g. DUCTS TO BE ABANDONED IN PLACE: CAP OR PLUG DUCTS WITH SAME OR COMPATIBLE DUCTWORK MATERIAL.

PREPARATION

A. TEMPORARY FACILITIES: PROVIDE TEMPORARY BARRICADES AND OTHER PROTECTION REQUIRED TO PREVENT INJURY TO PEOPLE AND DAMAGE TO ADJACENT BUILDINGS AND FACILITIES TO REMAIN.
   1. PROVIDE PROTECTION TO ENSURE SAFE PASSAGE OF PEOPLE AROUND SELECTIVE DEMOLITION AREA AND TO AND FROM OCCUPIED PORTIONS OF BUILDING.
   2. PROTECT WALLS, CEILINGS, FLOORS, AND OTHER EXISTING FINISH WORK THAT ARE TO REMAIN OR THAT ARE EXPOSED DURING SELECTIVE DEMOLITION OPERATIONS.
   3. COVER AND PROTECT FURNITURE, FURNISHINGS, AND EQUIPMENT THAT HAVE NOT BEEN REMOVED.
   4. COMPLY WITH REQUIREMENTS FOR TEMPORARY ENCLOSURES, DUST CONTROL, HEATING, AND COOLING BY BLOCKING RETURN AIR PATHS AND SUPPLY BY INSTALLING TEMPORARY DUCTWORK CAPS AND DUCTSEAL. EXHAUST SYSTEM DUCTS MAY REMAIN OPEN.

SELECTIVE DEMOLITION, GENERAL

A. GENERAL: DEMOLISH AND REMOVE EXISTING CONSTRUCTION ONLY TO THE EXTENT REQUIRED BY NEW CONSTRUCTION AND AS INDICATED. USE METHODS REQUIRED TO COMPLETE THE WORK WITHIN LIMITATIONS OF GOVERNING REGULATIONS AND AS FOLLOWS:
   1. PROCEED WITH SELECTIVE DEMOLITION SYSTEMATICALLY, FROM HIGHER TO LOWER LEVEL. COMPLETE SELECTIVE DEMOLITION OPERATIONS ABOVE EACH FLOOR OR TIER BEFORE DISTURBING SUPPORTING MEMBERS ON THE NEXT LOWER LEVEL.
   2. NEATLY CUT OPENINGS AND HOLES PLUMB, SQUARE, AND TRUE TO DIMENSIONS REQUIRED. USE CUTTING METHODS LEAST LIKELY TO DAMAGE CONSTRUCTION TO REMAIN OR ADJOINING CONSTRUCTION. USE HAND TOOLS OR SMALL POWER TOOLS DESIGNED FOR SAWING OR GRINDING, NOT HAMMERING AND CHOPPING, TO MINIMIZE DISTURBANCE OF ADJACENT SURFACES.TEMPORARILY COVER OPENINGS TO REMAIN.
   3. CUT OR DRILL FROM THE EXPOSED OR FINISHED SIDE INTO CONCEALED SURFACES TO AVOID MARRING EXISTING FINISHED SURFACES.
   4. DO NOT USE CUTTING TORCHES UNTIL WORK AREA IS CLEARED OF FLAMMABLE MATERIALS. AT CONCEALED SPACES, SUCH AS DUCT AND PIPE INTERIORS, VERIFY CONDITION AND CONTENTS OF HIDDEN SPACE BEFORE STARTING FLAME-CUTTING OPERATIONS. MAINTAIN FIRE WATCH AND PORTABLE FIRE-SUPPRESSION DEVICES DURING FLAME-CUTTING OPERATIONS.
   5. MAINTAIN ADEQUATE VENTILATION WHEN USING CUTTING TORCHES.
   6. LOCATE SELECTIVE DEMOLITION EQUIPMENT AND REMOVE DEBRIS AND MATERIALS SO AS NOT TO IMPOSE EXCESSIVE LOADS ON SUPPORTING WALLS, FLOORS, OR FRAMING.
   7. DISPOSE OF DEMOLISHED ITEMS AND MATERIALS PROMPTLY.

B. REMOVED AND REINSTALLED ITEMS:
   1. CLEAN AND REPAIR ITEMS TO FUNCTIONAL CONDITION ADEQUATE FOR INTENDED REUSE.
   2. REINSTALL ITEMS IN LOCATIONS INDICATED. COMPLY WITH INSTALLATION REQUIREMENTS FOR NEW MATERIALS AND EQUIPMENT. PROVIDE CONNECTIONS, SUPPORTS, AND MISCELLANEOUS MATERIALS NECESSARY TO MAKE ITEM FUNCTIONAL FOR USE INDICATED.

C. EXISTING ITEMS TO REMAIN: PROTECT CONSTRUCTION INDICATED TO REMAIN AGAINST DAMAGE AND SOILING DURING SELECTIVE DEMOLITION. WHEN PERMITTED BY ARCHITECT, ITEMS MAY BE REMOVED TO A SUITABLE, PROTECTED STORAGE LOCATION DURING SELECTIVE DEMOLITION AND CLEANED AND REINSTALLED IN THEIR ORIGINAL LOCATIONS AFTER SELECTIVE DEMOLITION OPERATIONS ARE COMPLETE.

DISPOSAL OF DEMOLISHED MATERIALS

A. GENERAL: EXCEPT FOR ITEMS OR MATERIALS INDICATED TO BE REUSED, SALVAGED, REINSTALLED, OR OTHERWISE INDICATED TO REMAIN OWNER'S PROPERTY, REMOVE DEMOLISHED MATERIALS FROM PROJECT SITE.
   1. DO NOT ALLOW DEMOLISHED MATERIALS TO ACCUMULATE ON-SITE.
   2. REMOVE AND TRANSPORT DEBRIS IN A MANNER THAT WILL PREVENT SPILLAGE ON ADJACENT SURFACES AND AREAS.
   3. REMOVE DEBRIS FROM ELEVATED PORTIONS OF BUILDING BY CHUTE, HOIST, OR OTHER DEVICE THAT WILL CONVEY DEBRIS TO GRADE LEVEL IN A CONTROLLED DESCENT.

B. DISPOSAL: TRANSPORT DEMOLISHED MATERIALS OFF OWNER'S PROPERTY AND LEGALLY DISPOSE OF THEM.

C. CLEANING: CLEAN ADJACENT STRUCTURES AND IMPROVEMENTS OF DUST, DIRT, AND DEBRIS CAUSED BY SELECTIVE DEMOLITION OPERATIONS. RETURN ADJACENT AREAS TO CONDITION EXISTING BEFORE SELECTIVE DEMOLITION OPERATIONS BEGAN.

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SCIENCE BUILDING
OFFICE RENOVATION

MARK	DATE	DESCRIPTION

PROJECT NO:	612-1501
CAD DWG FILE:	
DRAWN BY:	LMA
CHK'D BY:	SAP

SHEET TITLE:

MECHANICAL
SPECIFICATIONS

SHEET NUMBER:	REVISION:
M-2.1	