Department of Veterans Affairs
Fort Harrison, VA Montana Healthcare System
Replace Penthouse HVAC Systems

APPROVED FOR CONSTRUCTION

Approved: Director

Approved: Associate Director

Approved: Chief Facilities Management

Approved: Manager / Engineer

Approved: Safety Officer

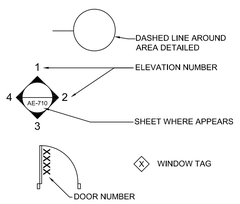
Approved: Union representative

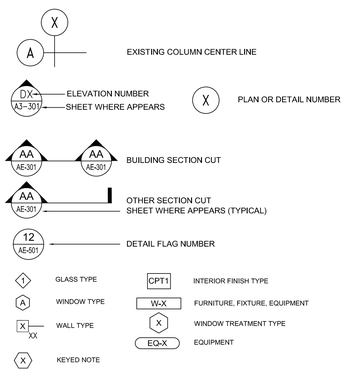
ABBREVIATIONS

A	
AFF	ABOVE FINISHED FLOOR
ACST	ACOUSTIC (AL)
ACT	ACOUSTICAL CEILING TILE
APC	ACOUSTICAL PANEL CEILING
AWP	ACOUSTICAL WALL PANEL
AWT	ACOUSTICAL WALL TREATMENT
ADJ	ADJUSTABLE
A/C	AIR CONDITIONING
AHU	AIR HANDLING UNIT
ALT	ALTERNATE
ALUM	ALUMINUM
AB	ANCHOR BOLT
L	ANGLE
APPROX	APPROXIMATE
ARCH	ARCHITECT (URAL)
ASPH	ASPHALT
ASSY	ASSEMBLY
AUTO	AUTOMATIC
AWN	AWNING
B	
BALC	BALCONY
BSMT	BASEMENT
BM	BEAM, BENCHMARK
BR	BEDROOM
BLKG	BLOCKING
BD	BOARD
BOT	BOTTOM
BRKT	BRACKET
BRK	BRICK
B CL	BROOM CLOSET
BLDG	BUILDING
BLT IN	BUILT-IN
BUR	BUILT-UP ROOFING
C	
CAB	CABINET
CPT	CARPET
CSMT	CASEMENT
CI	CAST IRON
CB	CATCH BASIN
CLG	CEILING
CEM	CEMENT
CL	CENTER LINE
CER	CERAMIC
CT	CERAMIC TILE
CO	CLEANOUT, CASED OPENING
CLR	CLEAR, COLOR
CLO	CLOSET
COL	COLUMN
CMPST	COMPOSITE
CONC	CONCRETE
CMU	CONCRETE MASONRY UNIT
CONSTR	CONSTRUCTION
CONT	CONTINUOUS
CONTR	CONTRACTOR
COTR	CONTRACTING OFFICER
CJ	CONTROL JOINT
COP	COPING
CU	COPPER
CG	CORNER GUARD
CORR	CORRIDOR
CNTR	COUNTER
CSK	COUNTER SUNK
D	
DMPF	DAMPPROOFING
DL	DEAD LOAD
DEMO	DEMOLITION
DET	DETAIL
DIA	DIAMETER
DIFF	DIFFUSER
DIM	DIMENSION
DR	DOOR, DRAIN
DH	DOUBLE HUNG
DN	DOWN
DS	DOWNSPOUT
DWR	DRAWER
DWG	DRAWING
DF	DRINKING FOUNTAIN
DUPL	DUPLICATE
E	
EA	EACH
E	EAST
EWC	ELECTRIC WATER COOLER
ELEC	ELECTRIC (AL)
EL	ELEVATION
ELEV	ELEVATOR
EMER	EMERGENCY
ENGR	ENGINEER
EQ	EQUAL
EQUIP	EQUIPMENT
EXIST	EXISTING
ETR	EXISTING TO REMAIN
EXP	EXPANSION
EXP BT	EXPANSION BOLT
EJ	EXPANSION JOINT
EXP	EXPOSED
EXT	EXTERIOR
EIFS	EXTERIOR INSULATION AND FINISH SYSTEM
F	
FWC	FABRIC WALL COVERING
FT	FEET, FOOT
FGL	FIBERGLASS
FIN	FINISH
FIN GR	FINISH GRADE
FDV	FIRE DEPARTMENT VALVE
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FHC	FIRE HOSE CABINET
FP	FIREPROOF
FIXT	FIXTURE
FLASH	FLASHING
FLEX	FLEXIBLE
FLR	FLOOR
FD	FLOOR DRAIN
FLUOR	FLUORESCENT
FTG	FOOTING
FDTN	FOUNDATION
FRMG	FRAMING
FURN	FURNACE, FURNITURE
G	
GA	GAGE
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GEN	GENERATOR
GL	GLASS
GL BLK	GLASS BLOCK
GB	GRAB BAR
GR	GRADE
GRAN	GRANITE
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GUT	GUTTER
GYP BD	GYPSUM BOARD
H	
HNDRL	HANDRAIL
HDW	HARDWARE
HDWD	HARDWOOD
HD	HEAD
HVAC	HEATING, VENTILATING AND AIR CONDITIONING
HT	HEIGHT
HPT	HIGH POINT
HC	HOLLOW CORE
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HB	HOSE BIBB
HOSP	HOSPITAL
HR	HOUR
I	
IN	INCH
INFO	INFORMATION
ID	INSIDE DIAMETER
INSUL	INSULATED,INSULATION
INT	INTERIOR
J	
JAN	JANITOR
JT	JOINT
K	
KPL	KICKPLATE
KIT	KITCHEN
KB	KNEE BRACE
L	
LAB	LABORATORY
LAM	LAMINATE
LC	LAUNDRY CHUTE
LV	LAVATORY
LT	LIGHT
LD	LINEAR DIFFUSER
L CL	LINEN CLOSET
LL	LIVE LOAD
LLV	LONG LEG VERTICAL
LPT	LOW POINT
M	
MACH	MACHINE
MH	MANHOLE
MFD	MANUFACTURED
MFR	MANUFACTURER
MRB	MARBLE BASE
MRF	MARBLE FLOOR
MKR BD	MARKER BOARD
MO	MASONRY OPENING
MATL	MATERIAL
MAX	MAXIMUM
MECH	MECHANICAL
MED	MEDICAL
MC	MEDICINE CABINET
MEMB	MEMBRANE
MTL	METAL
MIN	MINIMUM, MINUTE
MISC	MISCELLANEOUS
MOD	MODIFIED
MLDG	MOLDING
N	
NAT FIN	NATURAL FINISH
NOM	NOMINAL
N	NORTH
NA	NOT APPLICABLE
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
NO	NUMBER
O	
OFF	OFFICE
OC	ON CENTER
OPNG	OPENING
OPP	OPPOSITE
OPH	OPPOSITE HAND
ORCH	ORCHESTRA
ORN	ORNAMENTAL
OD	OUTSIDE DIAMETER
OH	OVERHANG, OVERHEAD
OF/CI	OWNER FURNISHED/ CONTRACTOR INSTALLED
O	OXYGEN
P	
P	PAINT
PR	PAIR
PNL	PANEL
PTD	PAPER TOWEL DISPENSER
PTN	PARTITION
PERF	PERFORATED
PC	PIECE
PLAM	PLASTIC LAMINATE
PLAS	PLASTIC, PLASTER
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PCC	PRECAST CONCRETE
PREFAB	PREFABRICATE
PREFIN	PREFINISH
PROD	PRODUCTION
Q	
QTY	QUANTITY
QT	QUARRY TILE
R	
R	RADIUS, RISER
RWD	REDWOOD
REF	REFERENCE, REFRIGERATOR
REINF	REINFORCE
REQD	REQUIRED
RB	RESILIENT BASE
RF	RESILIENT FLOORING
RA	RETURN AIR
REV	REVISION
RD	ROOF DRAIN
RM	ROOM
RO	ROUGH OPENING
RS	ROUGH SAWN
S	
SCHED	SCHEDULE
SECT	SECTION
SHTHG	SHEATHING
SHT	SHEET
SHV	SHELVING
SIM	SIMILAR
S	SOUTH
SP FIN	SPECIAL FINISH
SPEC	SPECIFICATION
SQ	SQUARE
SF	SQUARE FEET
SST	STAINLESS STEEL
STD	STANDARD
STL	STEEL
STL JST	STEEL JOIST
STOR	STORAGE
STRUCT	STRUCTURAL
SAS	SURFACED FOUR SIDES
SUSP	SUSPEND
SW	SWITCH
SYMM	SYMMETRICAL
T	
TK BD	TACKBOARD
TEL	TELEPHONE
TV	TELEVISION
TMPD	TEMPERED
TEMP	TEMPORARY
TER	TERRAZZO
THK	THICKNESS
TPD	TOILET PAPER DISPENSER
T&G	TONGUE AND GROOVE
TOS	TOP OF SLAB, STEEL
T	TREAD
TYP	TYPICAL
U	
UC	UNDERCUT
UNFIN	UNFINISH
UNO	UNLESS NOTED OTHERWISE
V	
VAC	VACUUM
VR	VAPOR RETARDER
VNR	VENEER
VP	VENEER PLASTER
VIF	VERIFY IN FIELD
VERT	VERTICAL
VEST	VESTIBULE
VCT	VINYL COMPOSITION TILE
VWC	VINYL WALL COVERING
W	
W CAB	WALL CABINETS
WC	WALL COVERING, WATER CLOSET
WP	WATERPROOFING, WEATHER PROOF, WORKING POINT
WT	WEIGHT
WWF	WELDED WIRE FABRIC
W	WEST
WF	WIDE FLANGE
WDW	WINDOW
W/	WITH
W/O	WITHOUT
WD	WOOD
WDP	WOOD PANELING

SYMBOL LEGEND

SYMBOL	DESCRIPTION
	DEMOLITION
	EXISTING WALL
	NEW WALL
	1 HOUR FIRE WALL
	2 HOUR FIRE WALL
	30 MINUTE SMOKE BARRIER
	SMOKE RESISTIVE HAZARDOUS AREA
	CONTRACT LIMIT LINE
	COLUMN CENTER LINE





CODE REFERENCES

BUILDING CODE:
2012 INTERNATIONAL BUILDING CODE
2012 INTERNATIONAL EXISTING BUILDING CODE
NFPA 99
2012 INTERNATIONAL ENERGY CONSERVATION CODE

ACCESSIBILITY CODE & GUIDELINES:
ABAAS & BFDG

MECHANICAL CODE:
2012 INTERNATIONAL MECHANICAL CODE

PLUMBING CODE:
2012 UNIFORM PLUMBING CODE

ELECTRICAL CODE:
2014 NATIONAL ELECTRIC CODE

BUILDING INFORMATION

BUILDINGS INVOLVED IN PROJECT INCLUDE THE FOLLOWING:
BUILDING 154
- AREA OF REMODEL INCLUDES ARCHITECTURAL, STRUCTURAL, MECHANICAL, PLUMBING, AND ELECTRICAL.

NO OCCUPANT LOAD WILL BE AFFECTED BY THIS PROJECT OR THE CONSTRUCTION OPERATION

PHASING

THE CONTRACTOR SHALL BE REQUIRED TO PERFORM CONSTRUCTION OPERATIONS DURING TIME FRAMES APPROVED BY THE HOSPITAL. HOSPITAL STAFF MUST BE ABLE TO PERFORM THEIR DUTIES WITH A MINIMUM OF DISRUPTION, THROUGHOUT THE ENTIRE DEMOLITION AND CONSTRUCTION PROCESS. ULTIMATELY, THE PRECISE SEQUENCE WILL BE DETERMINED AFTER A BUILDING CONTRACTOR HAS BEEN SELECTED AND CONSULTATIONS AMONG THE HOSPITAL STAFF, FACILITIES PERSONNEL, CONTRACTOR, AND ARCHITECT CAN BE ARRANGED.

WORK HOURS IN THE 2ND FLOOR SPS AND SURGICAL AREA(S) SHALL INCLUDE AFTER HOURS AND WEEKEND WORK TO NOT INTERFERE WITH SURGICAL SCHEDULE. WORK WILL HAVE TO BE SCHEDULED AND COORDINATED WITH VA ENGINEERING TO ACCOMMODATE OPERATIONS.

ALTERNATE

ALTERNATE #1 - THE CONTRACTOR SHALL PROVIDE A LINE ITEM TO THE BID FOR AN ALTERNATIVE POWER SOURCE TO THE NEW EQUIPMENT. THIS CONSISTS OF THE PROVISION OF A NEW MEDIUM VOLTAGE TO LOW VOLTAGE TRANSFORMER, A NEW DISTRIBUTION BOARD AND ALTERNATE FEEDS TO "154-DBPHN", "154-DBPHS" AND "154-CHLR-05B". SEE "ELECTRICAL ONE-LINE DIAGRAM SES-144C" ON SHEET E602 FOR DETAILS.

PROJECT DESCRIPTION

THIS PROJECT SHALL INCLUDED REMOVING AND REPLACING THE HVAC SYSTEMS LOCATED IN THE EXISTING PENTHOUSES AT THE FORT HARRISON, VA MONTANA HEALTHCARE SYSTEM.

THIS WORK SHALL INCLUDE BUT NOT BE LIMITED TO ARCHITECTURAL, STRUCTURAL, MECHANICAL, PLUMBING, & ELECTRICAL, IN GENERAL THE PROJECT IS PRIMARILY AN HVAC PROJECT WITH MINOR ARCHITECTURAL, PLUMBING, & ELECTRICAL UPGRADES. THE EXISTING HVAC UNITS SHALL BE REMOVED AND REPLACED WITH NEW. IT'S RECOMMENDED THAT THE CONTRACTOR VISIT THE SITE PRIOR TO BIDDING. THE CONTRACTOR WILL BE REQUIRED TO PROVIDE COORDINATION DRAWINGS AS PART OF THIS PROJECT.

GENERAL NOTES

1. REFER AND ADHERE TO THE INFECTION PREVENTION MEASURE REQUIREMENTS IN SPECIFICATION SECTION 01 00 00 GENERAL REQUIREMENTS.
2. CONTRACTOR TO REFER TO THE VA COR AND ASBESTOS REMEDIATION STUDY FOR ACTIONS CONCERNING THE POSSIBLE PRESENCE OF ASBESTOS.
3. NOTE NOT ALL KEYNOTES ARE ON ALL SHEETS.
4. ALL NEW AND ABANDONED PENETRATIONS ARE TO BE SEALED TO MATCH EXISTING CONSTRUCTION AND RATING REQUIREMENTS.
5. PROTECT ALL FURNISHINGS AND EQUIPMENT DURING CONSTRUCTION FROM DAMAGE AND CONSTRUCTION DEBRIS.

INFECTION CONTROL MEASURES

NOTE: IN ADDITION TO THE FOLLOWING INFECTION CONTROL MEASURES, THE CONTRACTOR SHALL REVIEW THE VA SAFETY-QUALITY CONTROL-INFECTION CONTROL DOCUMENTS IN THE SPECIFICATIONS. SEE SECTION 013526 - 1.12.

INFECTION CONTROL IS CRITICAL IN ALL MEDICAL CENTER FACILITIES. INTERIOR CONSTRUCTION ACTIVITIES CAUSING DISTURBANCE OF EXISTING DUST, OR CREATING NEW DUST, MUST BE CONDUCTED WITHIN VENTILATION-CONTROLLED AREAS THAT MINIMIZE THE FLOW OF AIRBORNE PARTICLES INTO PATIENT AREAS. EXTERIOR CONSTRUCTION ACTIVITIES CAUSING DISTURBANCE OF SOIL OR CREATES DUST IN SOME OTHER MANNER MUST BE CONTROLLED.

THE CONTRACTOR WILL BE REQUIRED TO FOLLOW THE ICRA REQUIREMENTS FOR THE FOLLOWING INTERIOR AND EXTERIOR AREAS:

1. OUTSIDE / PENTHOUSE
2. 2ND FLOOR SPS / SURGICAL AREA

EXTERIOR CONSTRUCTION ACTIVITY:
THE CONTRACTOR SHALL VERIFY THAT DUST WILL NOT BE INTRODUCED INTO THE MEDICAL CENTER THROUGH INTAKE VENTS, OR BUILDING OPENINGS. HEPA FILTRATION ON INTAKE VENTS IS REQUIRED WHERE DUST MAY BE INTRODUCED.
DUST CREATED FROM DISTURBANCE OF SOIL SUCH AS FROM VEHICLE MOVEMENT WILL BE WETTED WITH USE OF A WATER TRUCK AS NECESSARY.
ALL CUTTING, DRILLING, GRINDING, SANDING, OR DISTURBANCE OF MATERIALS SHALL BE ACCOMPLISHED WITH TOOLS EQUIPPED WITH EITHER LOCAL EXHAUST VENTILATION (I.E. VACUUM SYSTEMS) OR WET SUPPRESSION CONTROLS.

INTERIOR CONSTRUCTION ACTIVITY:

DURING CONSTRUCTION:
A. ISOLATE HVAC SYSTEM IN AREA WHERE WORK IS BEING DONE TO PREVENT CONTAMINATION OF DUCT SYSTEM.
B. COMPLETE ALL CRITICAL BARRIERS I.E. SHEET ROCK, PLYWOOD, PLASTIC, TO SEAL AREA FROM NON-WORK AREA OR IMPLEMENT CONTROL CUBE METHOD (CART WITH PLASTIC COVERING AND SEALED CONNECTION TO WORK SITE WITH HEPA VACUUM FOR VACUUMING PRIOR TO EXIT) BEFORE CONSTRUCTION BEGINS.
C. MAINTAIN NEGATIVE AIR PRESSURE WITHIN WORK SITE UTILIZING HEPA EQUIPPED AIR FILTRATION UNITS. PROVIDE NEGATIVE AIR PRESSURE MONITOR.
D. SEAL HOLES, PIPES, CONDUITS, AND PUNCTURES APPROPRIATELY.
E. CONSTRUCT ANTEROOM AND REQUIRE ALL PERSONNEL TO PASS THROUGH THIS ROOM SO THEY CAN BE VACUUMED USING A HEPA VACUUM CLEANER BEFORE LEAVING WORK SITE OR THEY CAN WEAR CLOTH OR PAPER COVERALLS THAT ARE REMOVED EACH TIME THEY LEAVE THE WORK SITE.
F. DO NOT REMOVE BARRIERS FROM WORK AREA UNTIL COMPLETED PROJECT IS INSPECTED BY A SAFETY OFFICER AND INFECTION CONTROL COORDINATOR AND THOROUGHLY CLEANED BY THE ENVIRONMENTAL MANAGEMENT SERVICES.

UPON COMPLETION OF PROJECT:
A. REMOVE BARRIER MATERIAL CAREFULLY TO MINIMIZE SPREADING OF DIRT AND DEBRIS ASSOCIATED WITH CONSTRUCTION.
B. CONTAIN CONSTRUCTION WASTE BEFORE TRANSPORT IN TIGHTLY COVERED CONTAINERS.
C. COVER TRANSPORT RECEPTACLES OR CARTS. TAPE COVERING UNLESS SOLID LID.
D. VACUUM WORK AREA WITH HEPA FILTERED VACUUMS.
E. WET MOP AREA WITH DISINFECTANT.
F. REMOVE ISOLATION OF HVAC SYSTEM IN AREAS WHERE WORK IS BEING PERFORMED.

TEMPORARY CONSTRUCTION BARRIERS:
1. THE CONTRACTOR SHALL USE THE FOLLOWING AS A GUIDE FOR ALL ICRA BARRIERS, TEMPORARY INFECTION CONTROL BARRIERS SHALL BE CONSTRUCTED AS FOLLOWS DEPENDING UPON LENGTH OF NEED:
   A. 1 DAY MAXIMUM - FLAME-RETARDANT PLASTIC
   B. 1 WEEK MAXIMUM - FLAME-RETARDANT PLASTIC
   C. GREATER THAN 1 WEEK - SEE NOTE 2 AND 3.
2. TEMPORARY CONSTRUCTION BARRIERS SHALL BE 3 5/8" METAL STUDS @ 16" O.C. WITH 5/8" TYPE "X" GYP. BD, EACH SIDE. BARRIERS ARE TO EXTEND TO THE BOTTOM OF EXISTING CEILINGS. PROVIDE NON-DAMAGING SEAL AT INTERSECTION WITH CEILING. PROVIDE PLASTIC SHEET BARRIER SEAL BETWEEN TOP OF WALL AND STRUCTURE ABOVE. TAPE ALL SEAMS AND PENETRATION OPENINGS TO PREVENT CONTAMINATION FROM PASSING OVER THE TOP OR UNDERNEATH THE WALL FROM CONSTRUCTION AREAS.
3. TEMPORARY CONSTRUCTION BARRIERS SHALL BE EITHER TYPE I OR TYPE II. TYPE I BARRIERS SHALL BE ANCHORED TO THE FLOORING SURFACE (WHICH IS INTENDED TO BE REPLACED) WITH POWER ACTUATED FASTENERS. TYPE II BARRIERS SHALL BE ANCHORED TO THE FLOORING SURFACE (WHICH IS INTENDED TO REMAIN) BY TAPING BOTTOM STUD TRACK TO FLOOR SURFACE OR BY OTHER METHODS WHICH WILL NOT HARM FLOOR SURFACE.
4. TEMPORARY PARTITIONS SHALL NOT CONSTRICT WALKWAYS TO LESS THAN 6'-0" CLEAR. ANY EXITS CHANGED OR BLOCKED SIGNAGE NEEDS TO BE POSTED FOR THE MODIFICATIONS.
5. PROVIDE TEMPORARY RATED DOOR AND FRAME IN CONSTRUCTION BARRIER AT ENTRY POINTS TO THE CONSTRUCTION AREAS. DOORS ARE TO REMAIN LOCKED AT ALL TIMES, CONSTRUCTION CORES WILL BE PROVIDED BY THE VA.

OWNER

Department of Veterans Affairs
Fort Harrison
VA Montana Healthcare System
Ft Harrison, MT 59636

Contract No: VA259-17-C-0212
Project No: 436-17-102

DESIGN TEAM

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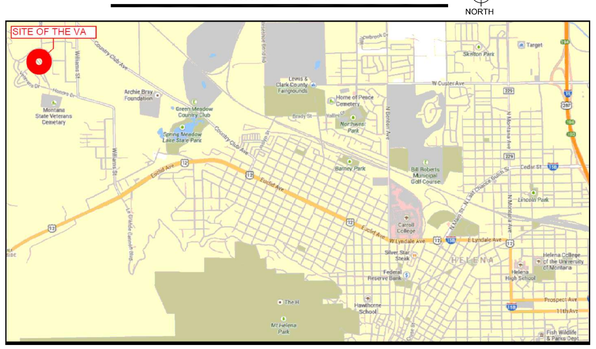
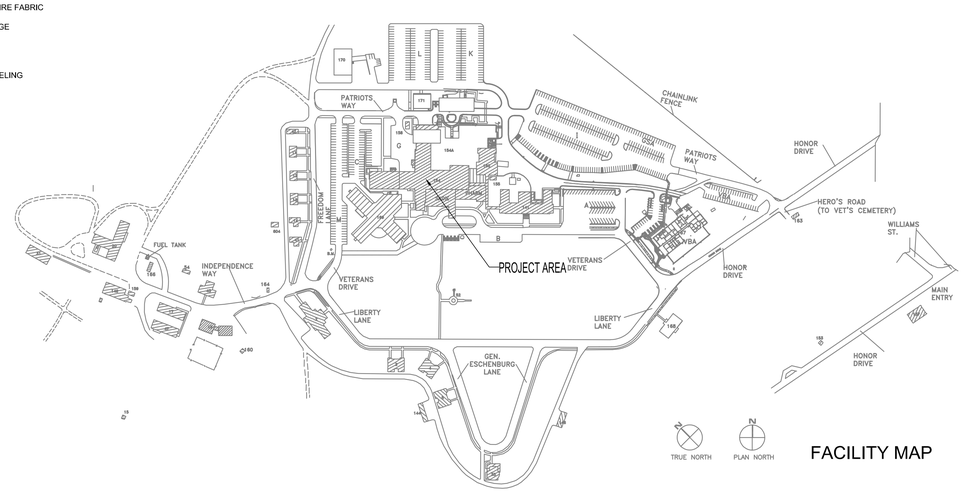
INDEX OF DRAWINGS

VICINITY MAP





FACILITY MAP

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Revisions:	Date

CONSULTANTS:

LICENSED ARCHITECT DAVID M COMBS 08.08.2018 No. 14151 PHOENIX, AZ STATE OF MONTANA

ARCHITECT/ENGINEERS:

AESUS design group — Architecture, Engineering, and Sustainable Design
1050 E. Southern Ave, Suite #D, Tempe, Arizona 85282, (480) 454-2861

Drawing Title: COVER SHEET

Project Title: REPLACE PENTHOUSE HVAC SYSTEMS
CONTRACT NO. VA259-17-C-0212

Location: FT. HARRISON HELENA, MT

Date: 08/07/18 | Checked: AESUS | Drawn: DC

Project Number: 436-17-102

Building Number: 154

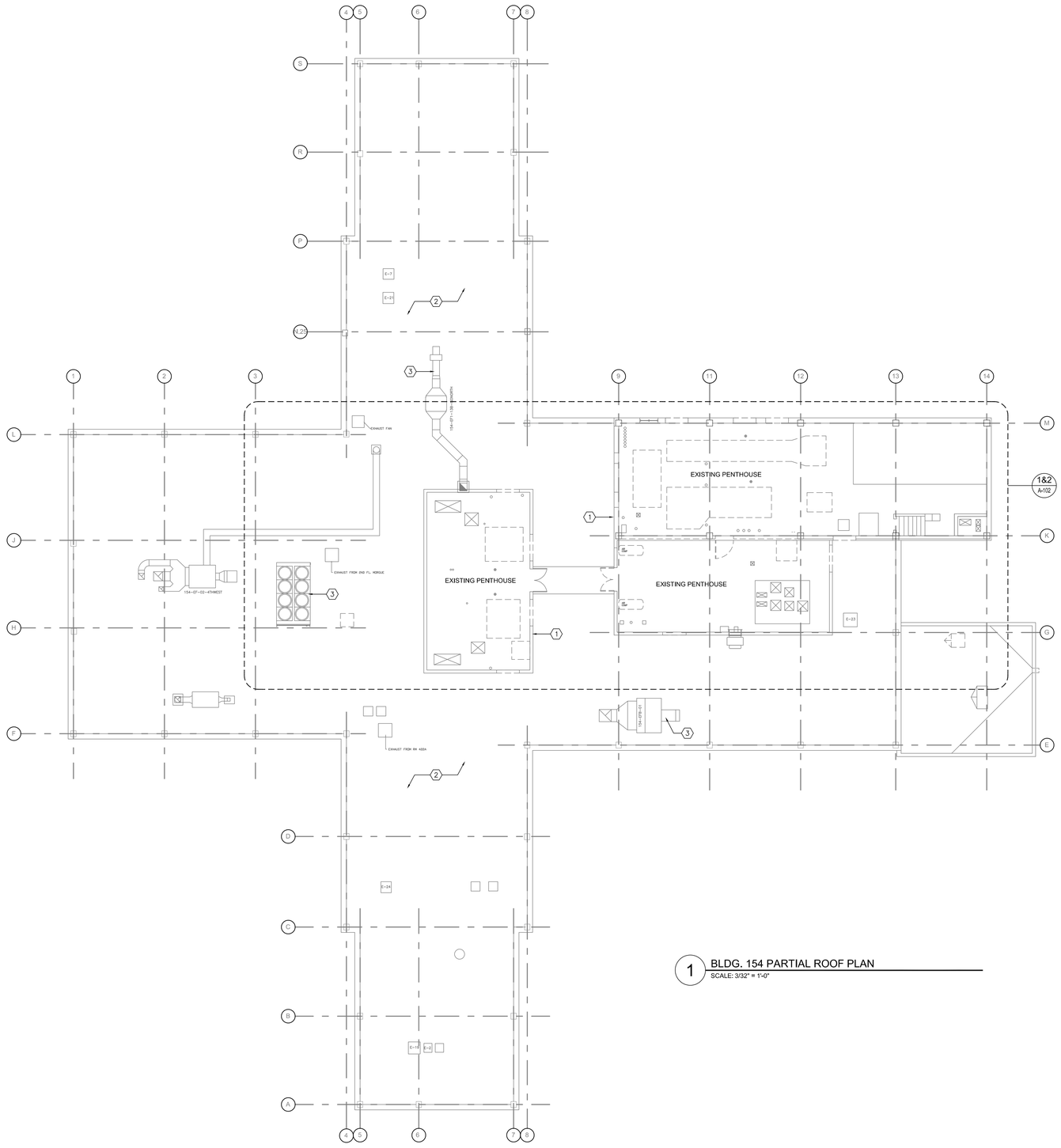
Drawing Number: G-001 -- --

'BID SET'

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231



1 BLDG. 154 PARTIAL ROOF PLAN
SCALE: 3/32" = 1'-0"

General Notes:

A. DO NOT SCALE DRAWINGS. WRITTEN DIMENSIONS SHALL HAVE PRECEDENCE. LARGER SCALE DRAWING SHALL HAVE PRECEDENCE OVER SMALLER SCALE DRAWINGS. THE GC SHALL NOTIFY THE VA OF ANY DISCREPANCIES OR CONFLICTS BEFORE PROCEEDING WITH THAT PORTION OF THE WORK.

B. THE CONTRACTORS SHALL COORDINATE EQUIPMENT AND MATERIAL TRAFFIC AND STORAGE WITH COR.

C. ALL UTILITY WORK SHALL BE COORDINATED WITH MECHANICAL, PLUMBING, ELECTRICAL, AND FIRE PROTECTION.

D. ALL ASPECTS OF CONTRACTOR STAGING AND CONSTRUCTION PHASING SHALL BE APPROVED BY COR.

E. REFER AND ADHERE TO THE INFECTION PREVENTION MEASURE REQUIREMENTS IN SPECIFICATION SECTION 01 00 00 GENERAL REQUIREMENTS. TEMPORARY ICRA BARRIER SHALL BE PROVIDED AT ALL PATIENT RELATED AREAS AND COMPLETED PRIOR TO THE START OF ANY WORK.

F. THE CONTRACTOR TO REFER TO THE VA COR AND ASBESTOS REMEDIATION STUDY FOR ACTIONS CONCERNING THE POSSIBLE PRESENCE OF ASBESTOS. IF ASBESTOS CONTAINING MATERIALS ARE SUSPECTED, STOP WORK IN THE AREA AND CONTACT COR.

G. THE VA IS RESPONSIBLE FOR REMOVING, STORING AND RELOCATING ALL MOVEABLE EQUIPMENT FURNITURE, SHELVING AND RELATED ACCESSORIES.

H. PRIOR TO THE START OF ANY WORK, IT IS RECOMMENCED THAT THE CONTRACTOR VISIT THE SITE TO FAMILIARIZE THEMSELVES WITH THE EXTENT AND NATURE OF WORK TO BE PERFORMED. EXISTING CONDITIONS MAY SLIGHTLY VARY FROM THOSE SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS, DIMENSIONS AND MATERIALS IN THE FIELD AND REPORT ANY DISCREPANCIES TO THE COR.

I.

J. THE CONTRACTOR SHALL VERIFY ALL ITEMS AND OR MATERIALS TO BE SALVAGED BY THE VA PRIOR TO THE START OF DEMOLITION WORK.

K. ALL DIMENSIONS ARE TAKEN FROM EXISTING FACE OF WALLS.

L. ANY REMOVED SIGNAGE SHALL BE STORED FOR FUTURE USE. COORDINATE WITH COR.

M. ALL HOSPITAL ACCESS POINTS, AND ALL BUILDING EXITS, MUST REMAIN ACCESSIBLE, CLEAR AND UNOBSTRUCTED THROUGHOUT ALL PHASES OF DEMOLITION AND CONSTRUCTION. SHORT-TERM CLOSURE MAY BE ACCEPTABLE AS COORDINATED WITH COR.

N. THE CONTRACTOR SHALL PATCH AND REPAIR ALL FIREPROOFING DAMAGED DURING CONSTRUCTION.

O. ALL COPPER MATERIALS REMOVED FROM THE BUILDING SHALL BE STORED AND TURNED OVER TO VA.

P. ALL EXISTING PENETRATIONS, WITHIN LIMIT OF WORK AND NEW CONSTRUCTION, ARE TO BE SEALED TO MATCH EXISTING CONSTRUCTION AND RATING.

Q. PROTECT ALL EXISITNG CONDITIONS & EQUIPMENT DURING CONSTRUCTION.

R. ALL EXPOSED CONCRETE FLOORS & WALLS SHALL BE SEALED, SEE SPECIFICATIONS.

S. THE CONTRACTOR SHALL COORDINATE ALL ROOF TOP WORK WITH COR AND EXISTING WARRANTY INFORMATION.

T. THE CONTRACTOR SHALL SCAN (GPR - GROUND PENETRATING RADAR) THE EXISTING CONCRETE SLAB PRIOR TO SAW CUTTING ANY NEW OPENING.

Legend:

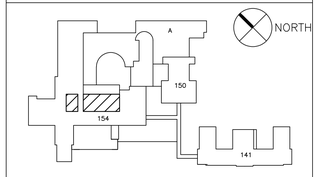
- DEMOLITION
- (E) EXISTING WALL
- (N) NEW WALL - SEE WALL TYPE LEGEND BELOW AND SHEET AE-603
- COLUMN CENTER LINE

Key Notes:

NOTE: NOT ALL KEYNOTES WILL BE USED ON ALL SHEETS.

1. EXISTING PENTHOUSE TO REMAIN. SEE MECHANICAL, PLUMBING, AND ELECTRICAL FOR ADDITIONAL INFORMATION.
2. EXISTING ROOF TO REMAIN, TYPICAL. PATCH AND REPAIR ROOF AS A RESULT OF CONSTRUCTION ACTIVITY.
3. EXISTING EQUIPMENT TO REMAIN, SEE MPE, TYPICAL.
4. EXISTING FLOOR PENETRATIONS TO REMAIN, TYPICAL.
5. EXISTING DRAIN / FLOOR SINK TO REMAIN.

KEY PLAN NTS



'BID SET'

Revisions:	Date
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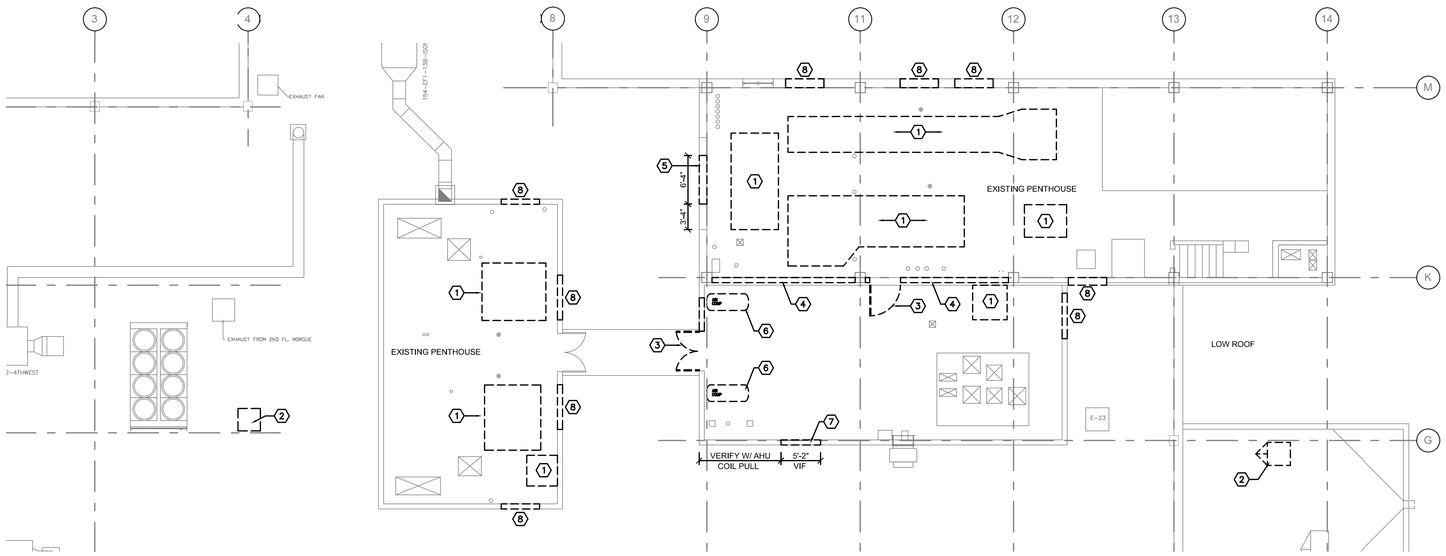
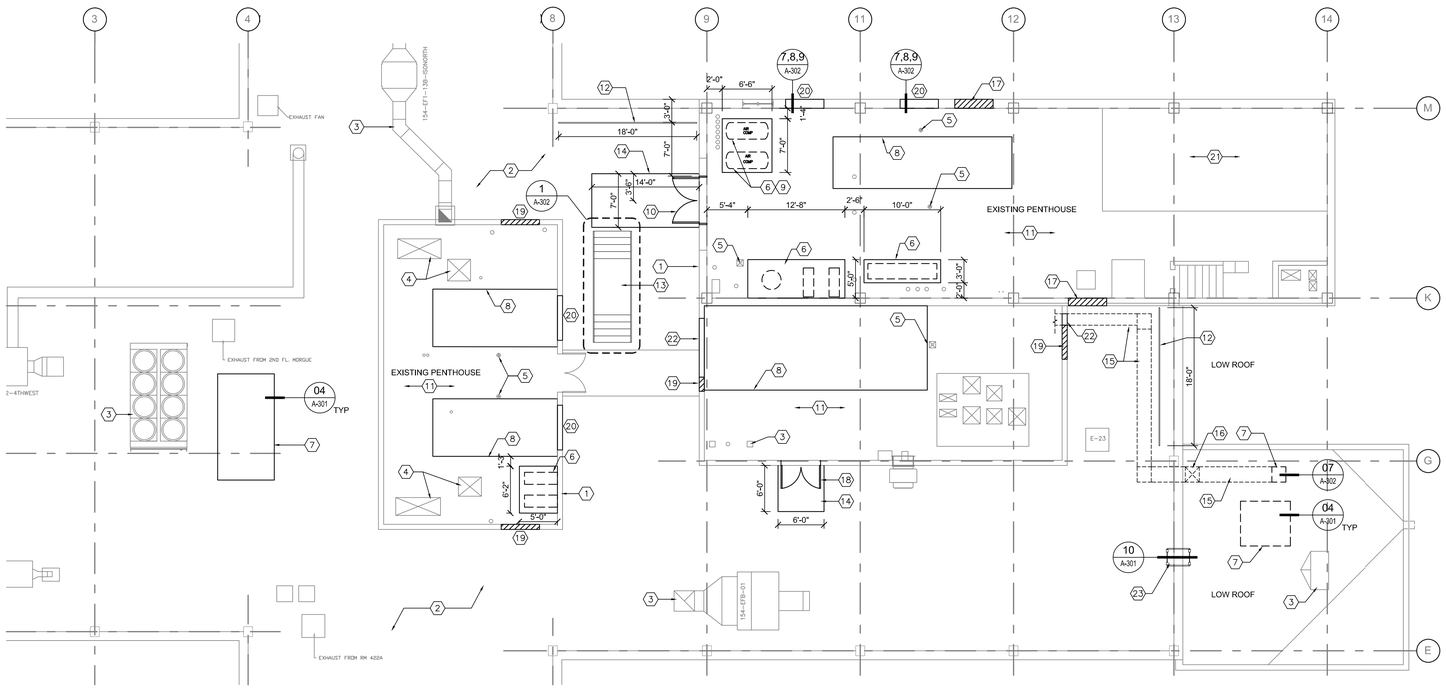
Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231



1 ENLARGED PENTHOUSE DEMOLITION PLAN
SCALE: 1/8" = 1'-0"



2 ENLARGED PENTHOUSE PLAN
SCALE: 1/8" = 1'-0"

Demolition General Notes:

A. REFER TO SHEET G-001 FOR ARCH DWG REFERENCE AND MATERIAL SYMBOLS AS WELL AS ABBREVIATIONS USED ON THIS SET OF DRAWINGS.

B. AREA OF WORK CONTAINS BUILDING INFRASTRUCTURE WHICH MAY BE CRITICAL TO THE ONGOING OPERATIONS OF THE BUILDING SHALL BE BROUGHT TO THE ATTENTION OF THE COR PRIOR TO ANY DEMOLITION OR SHUT-DOWNS.

C. DEMOLITION OPERATIONS ARE TO PROCEED WITH NECESSARY PREPARATIONS AND PRECAUTIONS TAKEN TO PROTECT ITEMS AND FINISHES TO REMAIN. THE CONTRACTOR SHALL COORDINATE DEMOLITION OPERATIONS WITH THE VA AND EACH SPECIFIC DEPARTMENTS PRIOR TO ANY DEMO WORK.

D. REMOVE AND DISPOSE ALL DEMOLISHED MATERIALS OFF SITE WHICH ARE NOT SCHEDULED TO REMAIN, BE RELOCATED, OR BECOME THE PROPERTY OF THE OWNER.

E. ANY PIPE REMAINING AFTER DEMOLITION MUST BE IDENTIFIED AT ITS TERMINATION WITH A LABEL BY THE CONTRACTOR.

F. DO NOT PENETRATE THE FLOOR SLAB WITHOUT COORDINATING WITH STRUCTURAL REQUIREMENTS.

G. UNLESS SPECIFICALLY NOTED OTHERWISE, EXISTING FLOOR AND CEILING MATERIALS SHALL REMAIN IN PLACE. PROTECT FLOORS AND CEILINGS FROM DAMAGE DURING DEMOLITION AND RENOVATION WORK.

H. EXISTING CONDITIONS SHOWN ARE FROM AVAILABLE RECORD DRAWINGS AND VISUAL FIELD SURVEYS. THE CONTRACTOR SHALL VERIFY ACTUAL EXISTING CONDITIONS AND NOTIFY THE VA OF ANY DISCREPANCIES.

I. DEMO WORK SHALL BE DONE IN A MANNER WHICH WILL NOT CAUSE UNNECESSARY INCONVENIENCE OR DANGER TO USERS OF THE PREMISES AND ADJACENT AREAS AND NOT INTERFERE WITH ITS OPERATION. ANY DEMO WORK TO BE PERFORMED MUST BE PLANNED IN ADVANCE AND APPROVED BY THE OWNER.

J. ANY EQUIPMENT, MATERIALS AND SUPPLIES TEMPORARILY REMOVED FOR THE PURPOSE OF PROTECTION SHALL BE REPLACED IN ORIGINAL LOCATIONS AND CONDITIONS. ANY MATERIAL DAMAGED SHALL BE REPLACED WITH NEW MATERIALS OF LIKE AND QUALITY.

K. REFER TO AND COORDINATE WITH MECHANICAL AND ELECTRICAL DWGS, FOR ADDITIONAL DEMOLITION INFORMATION.

L. ALL MATERIALS INDICATED TO BE REMOVED SHALL BE DISPOSED OF AND REMOVED FROM THE SITE. COORDINATE WITH THE COR, THE REMOVAL AND FINAL DISPOSAL LOCATION(DESTINATION(S) OF DEMOLITION. THE GC SHALL PROVIDE MONTHLY NEMA TRACKING REPORTS.

M. ALL REMOVED MATERIALS AND EQUIPMENT WHICH IS SALVAGEABLE SHALL REMAIN THE PROPERTY OF THE OWNER, DELIVER SUCH SALVAGED MATERIALS AND EQUIPMENT ON THE PREMISES AS DIRECTED BY THE COR AND NEATLY STORE THEM AND PROTECT FROM DAMAGE. ALL OTHER MATERIAL AND EQUIPMENT SHALL BE REMOVED FROM THE PROJECT SITE AT THE CONTRACTOR'S EXPENSE.

N. THE GOVERNMENT SHALL REMOVE THE FOLLOWING EXISTING ITEMS PRIOR TO ANY DEMO WORK. THE CONTRACTOR SHALL NOTIFY THE OWNER 72 HOURS IN ADVANCE OF ANY SCHEDULED DEMO WORK IN THE AREA OF THE ITEM TO ALLOW REMOVAL BY THE OWNER: FURNITURE, MEDICAL AND OTHER EQUIP., STORAGE ITEMS AND PERSONAL BELONGINGS

O. PATCH/REPAIR ALL ELEMENTS THAT ARE TO REMAIN AND ARE DAMAGED FROM THE DEMO WORK, BACK WITH CONSTRUCTION TO MATCH EXISTING CONDITIONS.

P. IN WALLS TO BE REMOVED, STRIP ALL EXISTING ELECTRICAL WIRING TO NEAREST ACTIVE J-BOX & CONDUIT.

Q. INTERIM LIFE SAFETY MEASURES MAY APPLY. COORDINATE WITH HOSPITAL'S SAFETY OFFICER AND COR.

R. MATERIALS AND EQUIPMENT ACCRUING FROM WORK REMOVED AND FROM DEMOLITION OF BUILDING OR STRUCTURES, OR PARTS THEREOF, SHALL BE DISPOSED PER SPECIFICATION SECTION 01 74 19

S. REMOVE ALL EXISTING ABANDONED CONDUITS, WIRES, AND PIPES ASSOCIATED WITH THIS CONTRACT.

T. DIMENSIONS ON DEMO PLANS TO BE VERIFIED WITH CONDITIONS ON SITE BY G.C.

Demolition Legend:

- DEMOLITION
- (E) EXISTING WALL
- (N) NEW WALL
- COLUMN CENTER LINE

Demolition Key Notes: (X)

NOTE: NOT ALL KEYNOTES WILL BE USED ON ALL SHEETS.

1. DEMOLISH EXISTING HOUSEKEEPING PAD, TYPICAL. GRIND AND PREP EXISTING SLAB FOR SMOOTH FINISH. COORDINATE WITH NEW HOUSEKEEPING PAD LOCATIONS.
2. REMOVE EXISTING ROOF TOP EQUIPMENT AND ASSOCIATED COMPONENTS. REMOVE AND REPLACE THE EXISTING ROOFING AS REQUIRED TO RE-INSTALL NEW EQUIPMENT. SEE ROOF PLAN AND MPE FOR ADDITIONAL INFO.
3. REMOVE EXISTING DOOR AND FRAME, RETAIN FOR RE-USE.
4. DEMOLISH EXISTING INFILL CMU WALL, DETACH AND RELOCATED EXISTING UTILITIES WITH UNI-STRUT RACK SUPPORTS. COORDINATE EXACT LOCATION WITH COR. THIS SHALL INCLUDE BUT NOT BE LIMITED TO PANEL BOARDS, DISCONNECT, VSD, CONTROLS, CONDUIT, SWITCHES, RECEPTICALS, AND J BOXES. THE EXISTING CONCRETE CURB SHALL REMAIN. CLEAN AND PREP ALL SURFACES FOR PAINT.
5. REMOVE EXISTING INFILL CMU WALL AND BRICK VENEER (AS REQUIRED) FOR NEW DOOR. THE CMU SHALL BE REMOVED UP TO THE EXISTING HEADER. CLEAN AND PREP SURFACES FOR NEW DOOR. SEE NEW WORK PLAN FOR MORE INFO.
6. RELOCATE EXISTING EQUIPMENT AND ALL ASSOCIATED COMPONENTS, SEE MPE FOR MORE INFO.
7. REMOVE EXISTING WALL (AS REQUIRED) FOR RELOCATED DOOR. COORDINATE ROUGH OPENING SIZE WITH EXISTING DOOR FRAME AND AHU COIL PULL LOCATION. SEE NEW WORK PLAN FOR MORE INFO.
8. REMOVE EXISTING MECHANICAL LOUVER AND ASSOCIATED COMPONENTS.

General Notes:

A. DO NOT SCALE DRAWINGS. WRITTEN DIMENSIONS SHALL HAVE PRECEDENCE. LARGER SCALE DRAWING SHALL HAVE PRECEDENCE OVER SMALLER SCALE DRAWINGS. THE GC SHALL NOTIFY THE VA OF ANY DISCREPANCIES OR CONFLICTS BEFORE PROCEEDING WITH THAT PORTION OF THE WORK.

B. THE CONTRACTORS SHALL COORDINATE EQUIPMENT AND MATERIAL TRAFFIC AND STORAGE WITH COR.

C. ALL UTILITY WORK SHALL BE COORDINATED WITH MECHANICAL, PLUMBING, ELECTRICAL, AND FIRE PROTECTION.

D. ALL ASPECTS OF CONTRACTOR STAGING AND CONSTRUCTION PHASING SHALL BE APPROVED BY COR.

E. REFER AND ADHERE TO THE INFECTION PREVENTION MEASURE REQUIREMENTS IN SPECIFICATION SECTION 01 00 00 GENERAL REQUIREMENTS. TEMPORARY ICRA BARRIER SHALL BE PROVIDED AT ALL PATIENT RELATED AREAS AND COMPLETED PRIOR TO THE START OF ANY WORK.

F. THE CONTRACTOR TO REFER TO THE VA COR AND ASBESTOS REMEDIATION STUDY FOR ACTIONS CONCERNING THE POSSIBLE PRESENCE OF ASBESTOS. IF ASBESTOS CONTAINING MATERIALS ARE SUSPECTED, STOP WORK IN THE AREA AND CONTACT COR.

G. THE VA IS RESPONSIBLE FOR REMOVING, STORING AND RELOCATING ALL MOVEABLE EQUIPMENT FURNITURE, SHELVING AND RELATED ACCESSORIES.

H. PRIOR TO THE START OF ANY WORK, IT IS RECOMMENCED THAT THE CONTRACTOR VISIT THE SITE TO FAMILIARIZE THEMSELVES WITH THE EXTENT AND NATURE OF WORK TO BE PERFORMED. EXISTING CONDITIONS MAY SLIGHTLY VARY FROM THOSE SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS, DIMENSIONS AND MATERIALS IN THE FIELD AND REPORT ANY DISCREPANCIES TO THE COR.

I.

J. THE CONTRACTOR SHALL VERIFY ALL ITEMS AND OR MATERIALS TO BE SALVAGED BY THE VA PRIOR TO THE START OF DEMOLITION WORK.

K. ALL DIMENSIONS ARE TAKEN FROM EXISTING FACE OF WALLS.

L. ANY REMOVED SIGNAGE SHALL BE STORED FOR FUTURE USE. COORDINATE WITH COR.

M. ALL HOSPITAL ACCESS POINTS, AND ALL BUILDING EXITS, MUST REMAIN ACCESSIBLE, CLEAR AND UNOBSTRUCTED THROUGHOUT ALL PHASES OF DEMOLITION AND CONSTRUCTION. SHORT-TERM CLOSURE MAY BE ACCEPTABLE AS COORDINATED WITH COR.

N. THE CONTRACTOR SHALL PATCH AND REPAIR ALL FIREPROOFING DAMAGED DURING CONSTRUCTION.

O. ALL COPPER MATERIALS REMOVED FROM THE BUILDING SHALL BE STORED AND TURNED OVER TO VA.

P. ALL EXISTING PENETRATIONS, WITHIN LIMIT OF WORK AND NEW CONSTRUCTION, ARE TO BE SEALED TO MATCH EXISTING CONSTRUCTION AND RATING.

Q. PROTECT ALL EXISITNG CONDITIONS & EQUIPMENT DURING CONSTRUCTION.

R. ALL EXPOSED CONCRETE FLOORS & WALLS SHALL BE SEALED, SEE SPECIFICATIONS.

S. THE CONTRACTOR SHALL COORDINATE ALL ROOF TOP WORK WITH COR AND EXISTING WARRANTY INFORMATION.

T. THE CONTRACTOR SHALL SCAN (GPR + GROUND PENETRATING RADAR) THE EXISTING CONCRETE SLAB PRIOR TO SAW CUTTING ANY NEW OPENING.

Legend:

- DEMOLITION
- (E) EXISTING WALL
- (N) NEW WALL - SEE WALL TYPE LEGEND BELOW AND SHEET AE-603
- COLUMN CENTER LINE

Key Notes: (X)

NOTE: NOT ALL KEYNOTES WILL BE USED ON ALL SHEETS.

1. EXISTING PENTHOUSE TO REMAIN. SEE MECHANICAL, PLUMBING, AND ELECTRICAL FOR ADDITIONAL INFORMATION.
2. EXISTING ROOF TO REMAIN, TYPICAL. PATCH AND REPAIR ROOF AS A RESULT OF CONSTRUCTION ACTIVITY.
3. EXISTING EQUIPMENT TO REMAIN, SEE MPE, TYPICAL.
4. EXISTING FLOOR PENETRATIONS TO REMAIN, TYPICAL.
5. EXISTING DRAIN / FLOOR SINK TO REMAIN.
6. NEW 6" HOUSEKEEPING PADS.
7. NEW EXTERIOR MECHANICAL UNIT W/ PRE-FABRICATED ROOF CURB. VERIFY EXACT SIZE AND CONFIGURATION WITH HVAC SHOP DRAWING SUBMITTAL(S). THE CONTRACTOR SHALL REMOVE AND REPAIR EXISTING ADJACENT ROOF. SEE MECHANICAL / STRUCTURAL FOR MORE INFO.
8. OUTLINE OF NEW EQUIPMENT. THE CONTRACTOR SHALL PROVIDE A PRE-FABRICATED CURB AND MOUNT TO THE EXISTING CONCRETE SLAB.
9. RELOCATED AIR COMPRESSOR, SEE MPE.
10. NEW 6'-0" WIDE X 10'-0" HIGH (VERIFY HEIGHT) HOLLOW METAL DOOR AND FRAME. THE DOOR HARDWARE SHALL MATCH EXISTING ADJACENT. PROVIDE HEAD, JAMB, AND SILL FLASHING TO TIE INTO EXISTING CONSTRUCTION. SEE DETAIL 4.5.A6 ON SHEET A-302. PAINT DOOR AND FRAME TO MATCH EXISTING.
11. CLEAN AND PREP THE EXISTING CONCRETE FLOOR. PROVIDE A SKID RESISTANT EPOXY COATING THROUGHOUT PENTHOUSE.
12. 42" HIGH GUARD RAIL ALONG ROOF EDGE, SEE DETAIL 3/A-302.
13. ROOF STAIR AND LANDING, SEE DETAIL 1/A-301. COORDINATE EXACT LOCATION WITH MECHANICAL PIPING ON ROOF. SEE MECHANICAL AND PLUMBING.
14. CONCRETE WALK PAD AT ROOF, MATCH EXISTING ADJACENT.
15. ROOF MOUNTED MECHANICAL DUCT, PROVIDE PRE-MANUFACTURED DUCT SUPPORTS SYSTEM AS REQUIRED. PHP OR EQUAL. SEE DETAIL 12/A-302.
16. WALL MOUNTED MECHANICAL DUCT, PROVIDE UNI-STRUT DUCT SUPPORTS AT EXTERIOR WALL. PROVIDE UNI-STRUT SHOP DRAWINGS FOR REVIEW. SEE DETAIL 11/A-302.
17. INFILL EXISTING OPENING WITH CMU/BRICK VENEER EXTERIOR WALL SYSTEM, MATCH EXISTING FINISH AND TEXTURE.
18. RE-INSTALL EXISTING DOOR AND FRAME. PAINT TO MATCH ADJACENT FINISH. VERIFY EXACT LOCATION WITH AHU COIL PULL PLACEMENT (SHOP DRAWINGS).
19. REPLACE METAL WALL PANELS AT OPENING, METAL WALL PANELS SHALL BE CONTINUOUS FROM TOP TO BOTTOM OF WALL. MATCH EXISTING PROFILE, COLOR, FINISH, AND INTERIOR WALL CONSTRUCTION.
20. MODIFY EXISTING LOUVER OPENING FOR NEW MECHANICAL EQUIPMENT, VERIFY EXACT SIZE WITH SHOP DWG'S.
21. THE CONTRACTOR SHALL TAKE EXTRA PRECAUTION TO PROTECT THE ELEVATOR EQUIPMENT IN PLACE. THE ELEVATOR POWER SUPPLY SHALL NOT BE DISTURBED DUE TO CONSTRUCTION ACTIVITY.
22. CUT AND FRAME OPENING IN METAL PANEL WALL SYSTEM FOR NEW MECHANICAL EQUIPMENT. PROVIDE BREAK METAL FLASHING AND SEALANTS AS REQ'D FOR WATER TIGHT PENETRATION. PATCH, REPAIR, AND PAINT INTERIOR FURRING WALL AND FINISH.
23. ROOF ACCESS LADDER AND PLATFORM, SEE SECTION FOR MORE INFO. COORDINATE EXACT LOCATION WITH COR.

'BID SET'

Revisions:	Date
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CONSULTANTS:

LICENSED ARCHITECT DAVID M COMBS 08.08.2018 No. 14151 PHOENIX, AZ STATE OF MONTANA

ARCHITECT/ENGINEERS:

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1050 E. Southern Ave, Suite 6D, Tempe, Arizona 85282, (480) 454-2861

Drawing Title: ENLARGED PENTHOUSE PLANS

Project Title: REPLACE PENTHOUSE HVAC SYSTEMS
CONTRACT NO. VA259-17-C-0212

Location: FT. HARRISON HELENA, MT

Date: 08/07/2018 | Checked: AESUS | Drawn: DC

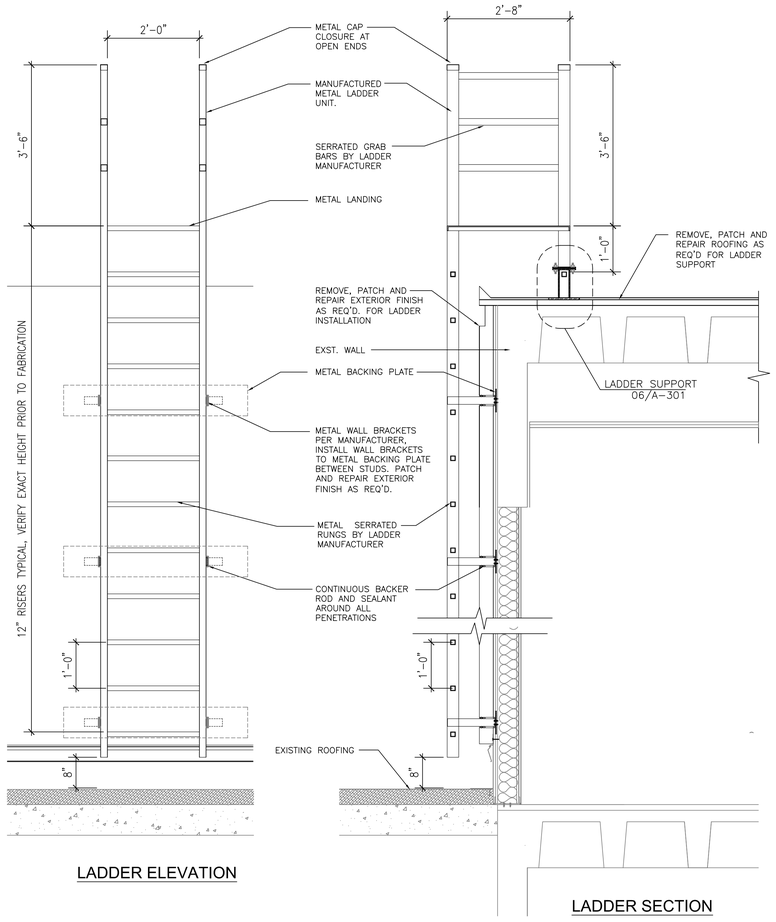
Project Number: 436-17-102

Building Number: 154

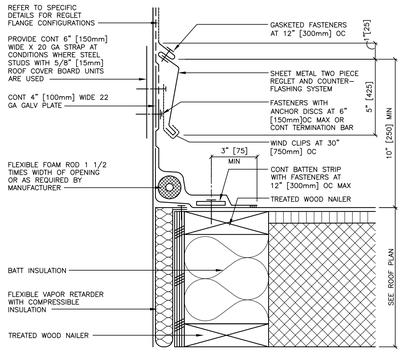
Drawing Number: A-102 -- --

Office of Construction and Facilities Management
Department of Veterans Affairs

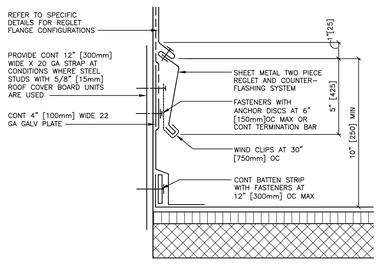
VA FORM 08-6231



10 ACCESS LADDER
1/16"=1'-0"



08 REGLET AND COUNTERFLASHING
NOT TO SCALE



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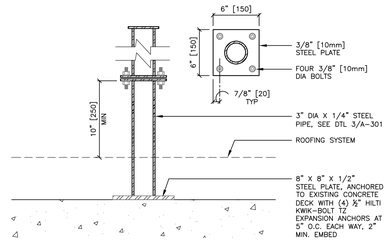
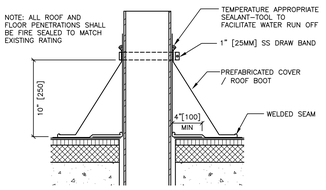
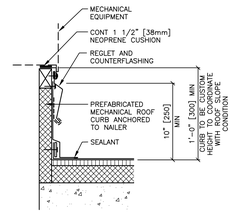


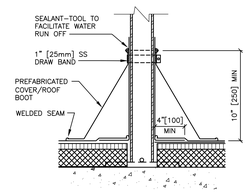
06 STAIR SUPPORT AT ROOF
NOT TO SCALE



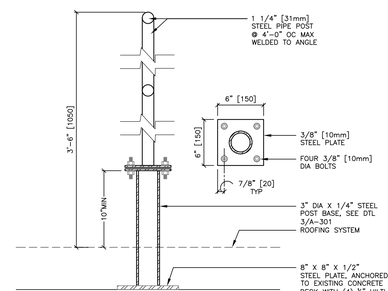
05 VENT PIPE PENETRATION
NOT TO SCALE



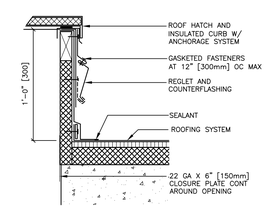
04 EQUIPMENT CURB
1 1/2" = 1'-0"



03 POST BASE AT ROOF
NOT TO SCALE



02 GUARDRAIL AT ROOF
1 1/2" = 1'-0"



01 ROOF HATCH
NOT TO SCALE

Revisions:	Date
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CONSULTANTS:

LICENSED ARCHITECT DAVID M. COMBS 08.08.2018 No. 14151 PHOENIX, AZ STATE OF MONTANA

ARCHITECT/ENGINEERS:

AESUS design group — Architecture, Engineering, and Sustainable Design
1050 E. Southern Ave, Suite 6D, Tempe, Arizona 85282, (480) 454-2981

Drawing Title: ROOF DETAILS

'BID SET'

Project Title: REPLACE PENTHOUSE HVAC SYSTEMS
CONTRACT NO. VA259-17-C-0212

Location: FT. HARRISON HELENA, MT

Date: 08/07/2018 | Checked: AESUS | Drawn: DC

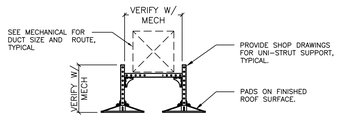
Project Number: 436-17-102

Building Number: 154

Drawing Number: A-301 -- --

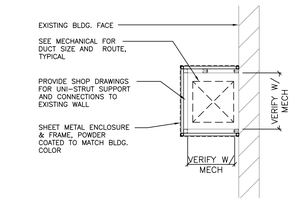
Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231



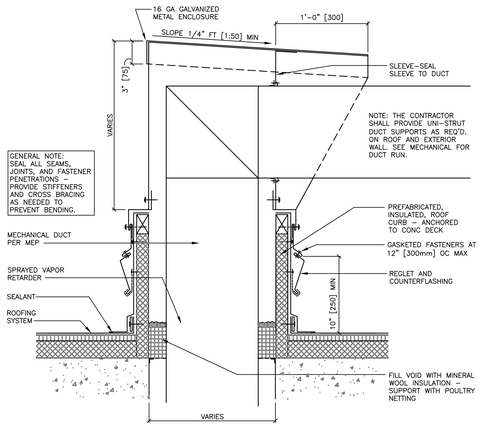
NOTES:
1. BASIS OF DESIGN DUCT SUPPORT IS PRE-MANUFACTURED (PHP). STICK BUILT IS ACCEPTABLE.

12 PRE-MANUFACTURED SUPPORT
SCALE 1/2" = 1'-0"

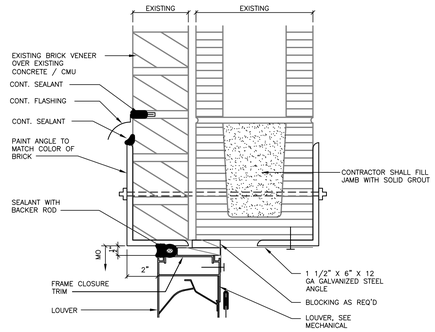


SECTION 'A'

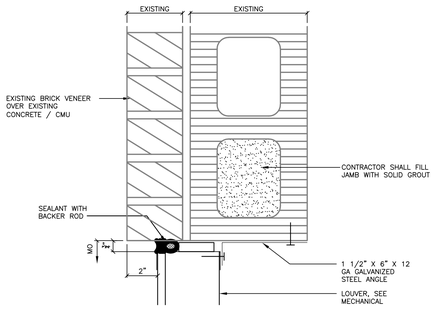
11 DUCT ENCLOSURE AT WALL
SCALE 1/2" = 1'-0"



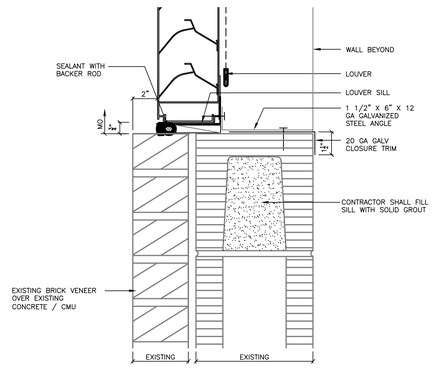
10 MECHANICAL DUCT PENETRATION BOX
NOT TO SCALE



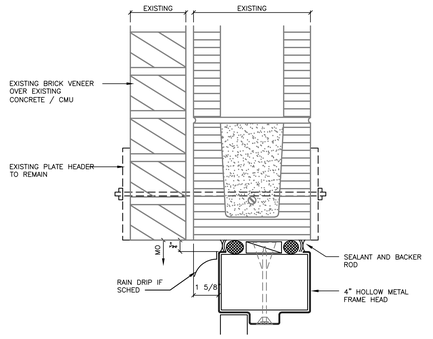
09 LOUVER HEAD DETAIL
3" = 1'-0"



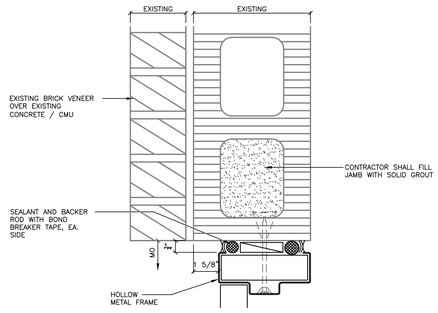
08 LOUVER JAMB DETAIL
3" = 1'-0"



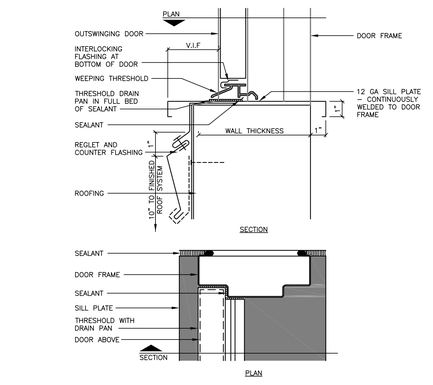
07 LOUVER JAMB DETAIL
3" = 1'-0"



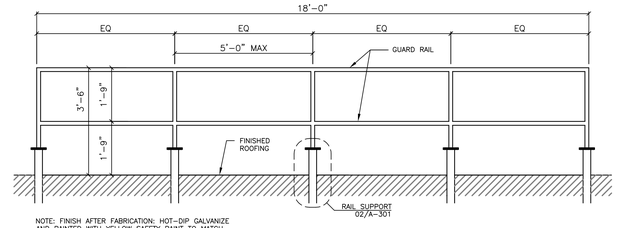
06 HEAD DETAIL AT HOLLOW METAL DOOR
3" = 1'-0"



05 JAMB DETAIL AT HOLLOW METAL DOOR
3" = 1'-0"

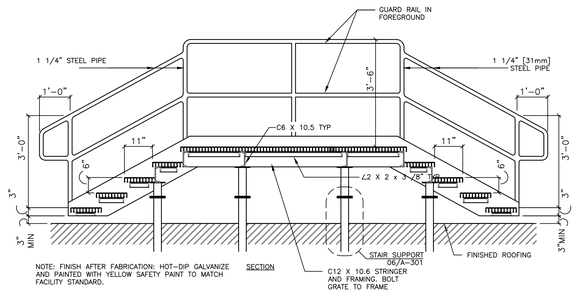


04 ROOF ACCESS DOOR DETAIL
3" = 1'-0"



NOTE: FINISH AFTER FABRICATION: HOT-DIP GALVANIZE AND PAINTED WITH YELLOW SAFETY PAINT TO MATCH FACILITY STANDARD.

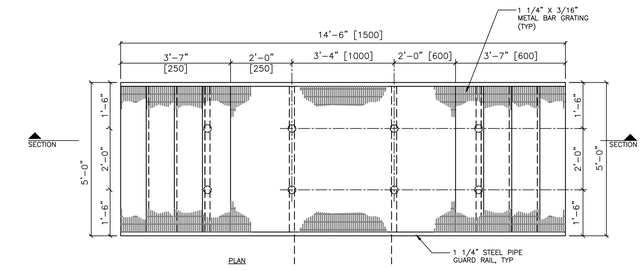
03 GUARDRAIL ELEVATION
SCALE 1/2" = 1'-0"



NOTE: FINISH AFTER FABRICATION: HOT-DIP GALVANIZE AND PAINTED WITH YELLOW SAFETY PAINT TO MATCH FACILITY STANDARD.

SECTION

02 STAIR SECTION
SCALE 1/2" = 1'-0"



01 ENLARGED STAIR PLAN
SCALE 1/2" = 1'-0"

Revisions	Date
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CONSULTANTS:

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ARCHITECT/ENGINEERS:

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CONTRACT NO. VA259-17-C-0212

Location: FT. HARRISON HELENA, MT

Date: 08/07/2018 | Checked: AESUS | Drawn: DC

Project Number: 436-17-102

Building Number: 154

Drawing Number: A-302

'BID SET

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231

RATED PENETRATION DETAIL

System No. W-L-1001

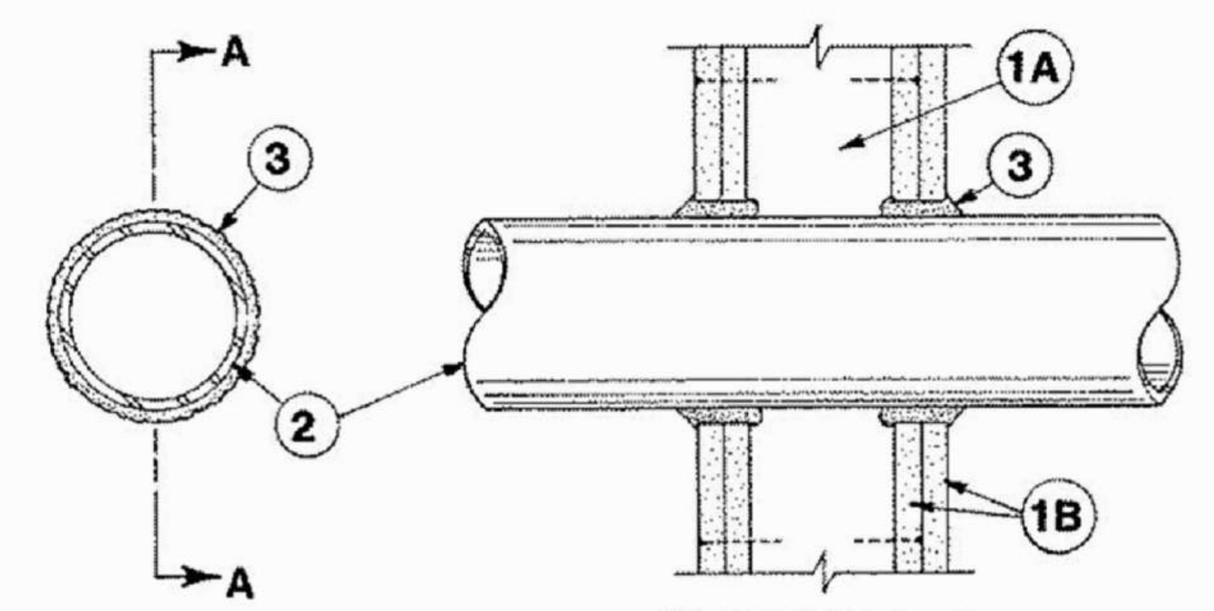
June 15, 2005

F Ratings — 1, 2, 3 and 4 Hr (See Items 2 and 3)

T Ratings — 0, 1, 2, 3, and 4 Hr (See Item 3)

L Rating At Ambient — less than 1 CFM/sq ft

L Rating At 400 F — less than 1 CFM/sq ft



SECTION A-A

1. **Wall Assembly** — The 1, 2, 3 or 4 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300 or U400 Series Wall or Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. **Studs** — Wall framing may consist of either wood studs (max 2 h fire rated assemblies) or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC with nom 2 by 4 in. (51 by 102 mm) lumber end plates and cross braces. Steel studs to be min 3-5/8 in. (92 mm) wide by 1-3/8 in. (35 mm) deep channels spaced max 24 in. (610 mm) OC.

B. **Gypsum Board*** — Nom 1/2 or 5/8 in. (13 or 16 mm) thick, 4 ft. (122 cm) wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 26 in. (660 mm).

2. **Through-Penetrant** — One metallic pipe, conduit or tubing installed either concentrically or eccentrically within the firestop system. The annular space between pipe, conduit or tubing and periphery of opening shall be min of 0 in / (0 mm). (point contact) to max 2 in. (51 mm) Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:

A. **Steel Pipe** — Nom 24 in. (610 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.

B. **Iron Pipe** — Nom 24 in. (610 mm) diam (or smaller) service weight (or heavier) cast iron soil pipe, nom 12 in (305 mm) diam (or smaller) or Class 50 (or heavier) ductile iron pressure pipe.

C. **Conduit** — Nom 6 in. (152 mm) diam (or smaller) steel conduit or nom 4 in (102 mm) diam (or smaller) steel electrical metallic tubing

D. **Copper Tubing** — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing

E. **Copper Pipe** — Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.

F. **Through Penetrating Product*** — Flexible Metal Piping The following types of steel flexible metal gas piping may be used:

1. Nom 2 in. (51 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

OMEGA FLEX INC

2. Nom 1 in. (25 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

GASTITE, DIV OF TITEFLEX

3. Nom 1 in. (25 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

WARD MFG INC

3. **Fill, Void or Cavity Material*** — **Caulk or Sealant** — Min 5/8. , 1-1/4,1-7/8 and 2-1/2 in. (16, 32, 48 and 64 mm) thickness of caulk for 1, 2, 3 and 4 hr rated assemblies, respectively, applied within annulus, flush with both surfaces of wall. Min 1/4 in. (6 mm) diam bead of caulk applied to gypsum board/penetrant interface at point contact location on both sides of wall. The hourly F Rating of the firestop system is dependent upon the hourly fire rating of the wall assembly in which it is installed, as shown in the following table. The hourly T Rating of the firestop system is dependent upon the type or size of the pipe or conduit and the hourly fire rating of the wall assembly in which it is installed, as tabulated below:

Max Pipe or Conduit Diam In (mm)	F Rating Hr	T Rating Hr
1 (25)	1 or 2	0+, 1 or 2
1 (25)	3 or 4	3 or 4
4 (102)	1 or 2	0
6 (152)	3 or 4	0
12 (305)	1 or 2	0

+When copper pipe is used, T Rating is 0 h.

3M COMPANY — CP 25WB+ or FB-3000 WT.

*Bearing the UL Classification Mark

NOTE: THE CONTRACOTR SHALL USE THE FACILTIY STANDARD FIRE CAULK SYSTEM. THE FACILTIY PREFERS HILTI PRODUCTS (FS-ONE INTUMESCENT FIRESTOP) OR EQUIVALENT. THE GC SHALL REVIEW THE PROJECT SPECIFICATIONS SECTION 078400 AND COORDINATE WITH THE FIRE & SAFETY DEPARTMENT PRIOR TO SUBMITTING PRODUCTS FOR REVIEW.

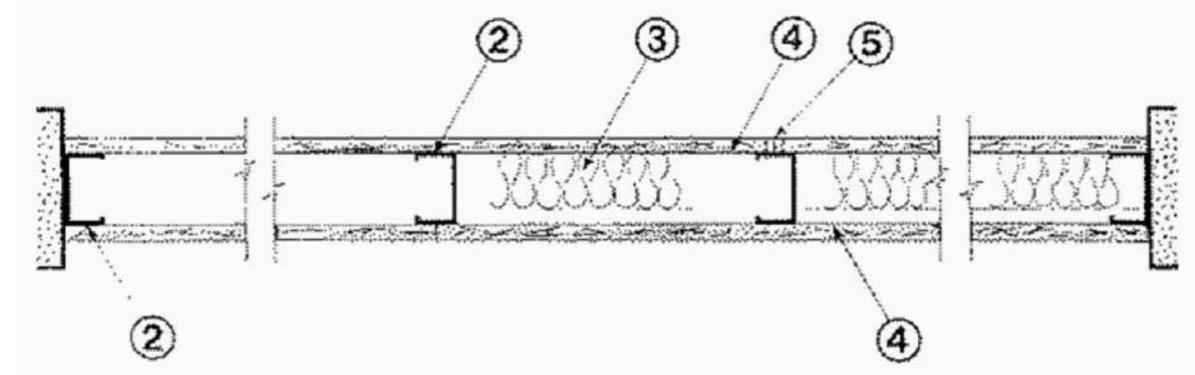
THE CONTRACTOR SHALL NOT USE COMBUSTIBLE MATERIAL AS IDENTIFIED IN THE STANDARD ASSEMBLY NOTES, TYPICAL.

1-HOUR RATED PARTITION

Design No. U465

September 15, 2010

Nonbearing Wall Rating — 1 HR.



1. **Floor and Ceiling Runners** — (not shown) — Channel shaped runners, 3-5/8 in. deep (min), 1-1/4 in. legs, formed from min No. 25 MSG galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.

1A. **Framing Members*— Floor and Ceiling Runners** — (Not shown) — As an alternate to Item 1 - Channel shaped, min 3-5/8 in. deep, attached to floor and ceiling with fasteners 24 in. OC. max.

ALLSTEEL & GYPSUM PRODUCTS INC — Type SUPREME Framing System

CONSOLIDATED FABRICATORS CORP,

BUILDING PRODUCTS DIV — Type SUPREME Framing System

QUAIL RUN BUILDING MATERIALS INC — Type SUPREME Framing System

SCAFCO STEEL STUD MANUFACTURING CO — Type SUPREME Framing System

STEEL CONSTRUCTION SYSTEMS INC — Type SUPREME Framing System

UNITED METAL PRODUCTS INC — Type SUPREME Framing System

1B. **Framing Members* - Floor and Ceiling Runners** — Not shown - In lieu of Item 1 — For use with Item 2B, proprietary channel shaped runners, 1-1/4 in. wide by min 3-5/8 in. deep fabricated from min 0.020 in. thick galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.

CRACO MFG INC — SmarterTrack20™, SmartTrack20™

MARINO/WARE, DIV OF WARE INDUSTRIES

INC — Viper20S™ Track, Viper20D™ Track

1C. **Floor and Ceiling Runners** — (Not shown)—For use with Item 2C- Channel shaped, fabricated from min 20 MSG corrosion-protected or galv steel, min depth to accommodate stud size, with min 1 in. long legs, attached to floor and ceiling with fasteners spaced max 24 in. OC.

1D. **Framing Members*— Floor and Ceiling Runners** — Not shown - In lieu of Items 1 through 1C — For use with Item 2D and 4G only, proprietary channel shaped runners, 1-1/4 in. deep by min 3-5/8 in. wide fabricated from min 0.018 in. thick galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.

CLARKWESTERN BUILDING SYSTEMS INC — CW ProTRAK

DIETRICH INDUSTRIES INC — DIETRICH ProTRAK

DMFCWBS L L C — ProTRAK

1E. **Framing Members*— Floor and Ceiling Runners** — Not shown - In lieu of Items 1 through 1D — For use with Item 2E and 4I only, proprietary channel shaped runners, 1-1/4 in. deep by min 3-5/8 in. wide fabricated from min 0.018 in. thick galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.

TELLING INDUSTRIES L L C — TRUE-TRACK™

2. **Steel Studs** — Channel shaped, 3-5/8 in. deep (min), formed from min No. 25 MSG galv steel spaced 24 in. OC max. Studs to be cut 3/4 in. less than assembly height.

2A. **Framing Members*— Steel Studs** — As an alternate to Item 2 - Channel shaped studs, min 3-5/8 in. deep, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly height.

ALLSTEEL & GYPSUM PRODUCTS INC — Type SUPREME Framing System

CONSOLIDATED FABRICATORS CORP,

BUILDING PRODUCTS DIV — Type SUPREME Framing System

QUAIL RUN BUILDING MATERIALS INC — Type SUPREME Framing System

SCAFCO STEEL STUD MANUFACTURING CO — Type SUPREME Framing System

STEEL CONSTRUCTION SYSTEMS INC — Type SUPREME Framing System

UNITED METAL PRODUCTS INC — Type SUPREME Framing System

2B. **Framing Members* - Steel Studs** — Not shown - In lieu of Item 2 — For use with Item 1B, proprietary channel shaped steel studs, 1-1/4 in. wide by min 3-5/8 in. deep fabricated from min 0.020 in. thick galv steel. Studs cut 3/4 in. less in length than assembly height.

CRACO MFG INC — SmarterStud20™, SmartStud20™

MARINO/WARE, DIV OF WARE INDUSTRIES

INC — Viper20S™, Viper20D™

2C. **Steel Studs** — (As an alternate to Item 2, For use with Item 4E) Channel shaped, fabricated from min 20 MSG corrosion-protected or galv steel, 3-1/2 in. min depth, spaced a max of 16 in. OC. Studs friction-fit into floor and ceiling runners. Studs to be cut 5/8 to 3/4 in. less than assembly height.

2D. **Framing Members*— Steel Studs** — As an alternate to Items 2 through 2C- For use with Item 1D and 4G only, channel shaped studs, min 3-5/8 in. wide fabricated from min 0.018 in. thick galv steel, spaced a max of 24 in. OC. Studs to be cut 1/2 in. less than assembly height.

CLARKWESTERN BUILDING SYSTEMS INC — CW ProSTUD

DIETRICH INDUSTRIES INC — DIETRICH ProSTUD

DMFCWBS L L C — ProSTUD

2E. **Framing Members*— Steel Studs** — As an alternate to Items 2 through 2D- For use with Item 1E and 4I only, channel shaped studs, min 3-5/8 in. wide fabricated from min 0.018 in. thick galv steel, spaced a max of 24 in. OC. Studs to be cut 1/2 in. less than assembly height.

TELLING INDUSTRIES L L C — TRUE-STUD™

3. **Batts and Blankets*** — (Optional) — Mineral wool or glass fiber batts partially or completely filling stud cavity.

See **Batts and Blankets** (BZJZ) category for names of Classified companies.

3A. **Fiber, Sprayed*** — As an alternate to Batts and Blankets (Item 3) — Spray applied cellulose material. The fiber is applied with water to completely fill the enclosed cavity in accordance with the application instructions supplied with the product. Nominal dry density of 3.0 lb/ft³. Alternate application method: The fiber is applied with U.S. Greenfiber LLC Type AD100 hot melt adhesive at a nominal ratio of one part adhesive to 6.6 parts fiber to completely fill the enclosed cavity in accordance with the application instructions supplied with the product. Nominal dry density of 2.5 lb/ft³.

U S GREENFIBER L L C — Cocoon2 Stabilized or Cocoon-FRM (Fire Rated Material)

3B. **Fiber, Sprayed*** — As an alternate to Batts and Blankets (Item 3) and Item 3A - Spray applied cellulose insulation material. The fiber is applied with water to interior surfaces in accordance with the application instructions supplied with the product. Applied to completely fill the enclosed cavity. Minimum dry density of 4.3 pounds per cubic ft.

NU-WOOL CO INC — Cellulose Insulation

3C. **Fiber, Sprayed*** — As an alternate to Batts and Blankets (Item 3) - Spray applied cellulose fiber. The fiber is applied with water to completely fill the enclosed cavity in accordance with the application instructions supplied with the product. The minimum dry density shall be 4.30 lbs/ft³.

INTERNATIONAL CELLULOSE CORP — Celbar-RL

4. **Gypsum Board*** — 5/8 in. thick, 4 ft wide, attached to steel studs and floor and ceiling track with 1 in. long, Type S steel screws spaced 8 in. OC. along edges of board and 12 in. OC in the field of the board. Joints oriented vertically and staggered on opposite sides of the assembly. When attached to item 6 (resilient channels) or 6A (furring channels), gypsum board is screw attached to furring channels with 1 in. long, Type S steel screws spaced 12 in. OC.

AMERICAN GYPSUM CO — Types AG-C, AGX-1

BEIJING NEW BUILDING MATERIALS PUBLIC

LTD CO — Type DBX-1.

CANADIAN GYPSUM COMPANY — Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC or WRX.

CERTAINTEED GYPSUM INC — Types 1, EGRG, GlasRoc, ProRoc Type X, ProRoc Type C, SilentFX.

CERTAINTEED GYPSUM CANADA INC — ProRoc Type C, ProRoc Type X, ProRoc Type Abuse-Resistant.

GEORGIA-PACIFIC GYPSUM L L C — Types 5, 6, 9, C, DAP, DD, DA, DAPC, DGG, DS, GPFS6.

LAFARGE NORTH AMERICA INC — Types LGFC2, LGFC2A, LGFC6, LGFC6A, LGFC-C, LGFC-C/A, LGFC-WD.

NATIONAL GYPSUM CO — Types FSK, FSK-C, FSK-G, FSW-C, FSW-G, FSW, FSW-3, FSW-5, FSW-6.

NATIONAL GYPSUM CO — Riyadh, Saudi Arabia — Type FR, or WR.

PABCO BUILDING PRODUCTS L L C, DBA

PABCO GYPSUM — Type PG-C, PG-11 or PG-9.

PANEL REY S A — Type PRX.

SIAM GYPSUM INDUSTRY (SARABURI) CO LTD — Type EX-1

TEMPLE-INLAND — Type X, Veneer Plaster Base - Type X, Water Rated - Type X, Sheathing - Type X, Soffit - Type X, TG-C, GreenGlass Type X, Type X ComfortGuard Sound Deadening Gypsum Board.

UNITED STATES GYPSUM CO — Type AR, C, FRX-G, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX, USGX (Joint tape and compound, Item 5, optional for use with Type USGX).

USG MEXICO S A DE C V — Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC or WRX.

4A. **Gypsum Board*** — (As alternate to Item 4) - Nom 5/8 in. thick gypsum panels with beveled, square or tapered edges, applied vertically or horizontally. Vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Horizontal edge joints and horizontal butt joints on opposite sides of studs need not be staggered or backed by steel framing. Panels attached to steel studs and floor runner with 1 in. long Type S steel screws spaced 8 in. OC when applied horizontally, or 8 in. OC along vertical and bottom edges and 12 in. OC in the field when panels are applied vertically. When used in widths other than 48 in., gypsum panels to be installed horizontally.

CANADIAN GYPSUM COMPANY — Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC or WRX.

CERTAINTEED GYPSUM INC — ProRoc Type X, ProRoc Type C.

CERTAINTEED GYPSUM CANADA INC — ProRoc Type X, ProRoc Type C.

GEORGIA-PACIFIC GYPSUM L L C — Types DAP, DAPC, DGG, DS.

LAFARGE NORTH AMERICA INC — Type LGFC6A, LGFC-C/A

UNITED STATES GYPSUM CO — T ype AR, C, FRX-G, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX, , USGX (Joint tape and compound, Item 5, optional for use with Type USGX).

USG MEXICO S A DE C V — Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC or WRX.

4B. **Gypsum Board*** — (As an alternate to Items 4 or 4A) — Nom 3/4 in. thick, 4 ft wide, installed as described in Item 4A with screw length increased to 1-1/4 in.

CANADIAN GYPSUM COMPANY — Types AR, IP-AR.

UNITED STATES GYPSUM CO — Types AR, IP-AR.

USG MEXICO S A DE C V — Types AR, IP-AR.

4C. **Gypsum Board*** — As an alternate to Items 4, 4A, and 4B - Nom. 5/8 in. thick gypsum panels, with square edges, applied horizontally. Gypsum panels fastened to framing with 1 in. long bugle head steel screws spaced a max 8 in. OC, with last 2 screws 3/4 in. and 4 in. from each edge of board. Horizontal joints need not be backed by steel framing. Horizontal edge joints and horizontal butt joints on opposite sides of studs on interior walls need not be staggered or backed by steel framing.

TEMPLE-INLAND — GreenGlass Type X.

4D. **Gypsum Board*** — As an alternate to Items 4, 4A, 4B, and 4C - Nom. 5/8 in. thick gypsum panels applied horizontally. Horizontal joints need not be backed by steel framing. Horizontal edge joints and horizontal butt joints on opposite sides of studs need not be staggered. Gypsum panels fastened to framing with 1 in. long Type S steel screws 1-1/2 in. from board edges, 3 in. from board edge and every 8 in. OC in the field. Screws spaced a max 12 in. along the top and bottom edges of the wall.

NATIONAL GYPSUM CO — Types FSK, FSK-C, FSK-G, FSW-C, FSW-G, FSW.

4E. **Gypsum Board*** — (As an alternate to Items 4 through 4D) - Installed as described in Item 4. 5/8 in. thick, 4 ft. wide, paper surfaced, applied vertically only and fastened to the studs and plates with 1 in. long, Type S steel screws spaced, 8 in. OC. Not to be used with item 6.

NATIONAL GYPSUM CO — SoundBreak XP Type X Gypsum Board

4F. **Gypsum Board*** — (Not Shown) - (As an alternate to Item 4 when used as the base layer on one or both sides of wall. For direct attachment only to steel studs Item 2C) - Nom 5/8 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over studs and staggered min 1 stud cavity on opposite sides of studs. Gypsum board secured to studs with 1-1/4 in. long Type S-12 steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field.

RAY-BAR ENGINEERING CORP — Type RB-LBG

4G. **Gypsum Board*** — (As an alternate to Items 4 through 4F) — For use with Items 1C and 2C only, 5/8 in. thick, 4 ft wide, attached to steel studs and floor and ceiling track with 1 in. long, Type S steel screws spaced 8 in. OC. along edges of board and 12 in. OC in the field of the board. Joints oriented vertically and staggered on opposite sides of the assembly.

NATIONAL GYPSUM CO — Types FSW

UNITED STATES GYPSUM CO — Type SCX

4H. **Wall and Partition Facings and Accessories*** — (As an alternate to Items 4 through 4G) — Nominal 5/8 in. thick, 4 ft wide panels, applied vertically and secured as described in Item 4.

SERIOUS MATERIALS INC — Types QuietRock ES, QuietRock 527.

4I. **Gypsum Board*** — (As an alternate to Items 4 through 4F) — For use with Items 1E and 2E only, 5/8 in. thick, 4 ft wide, attached to steel studs and floor and ceiling track with 1 in. long, Type S steel screws spaced 8 in. OC. along edges of board and 12 in. OC in the field of the board. Joints oriented vertically and staggered on opposite sides of the assembly.

UNITED STATES GYPSUM CO — Type SCX

5. **Joint Tape and Compound** — Vinyl, dry or premixed joint compound, applied in two coats to joints and screw heads; paper tape, 2 in. wide, embedded in first layer of compound over all joints. As an alternate, nominal 3/32 in. thick gypsum veneer plaster may be applied to the entire surface of Classified veneer baseboard. Joints reinforced. Paper tape and joint compound may be omitted when gypsum boards are supplied with square edges.

6. **Resilient Channel** — (Optional-Not Shown) — 25 MSG galv steel resilient channels spaced vertically max 24 in. OC, flange portion attached to each intersecting stud with 1/2 in. long type S-12 pan head steel screws. May not be used with Item 4F.

6A. **Steel Framing Members (Not Shown)*** — As an alternate to Item 3, furring channels and resilient sound isolation clip as described below:

a. **Furring Channels** — Formed of No. 25 MSG galv steel. 2-3/8 in. wide by 7/8 in. deep, spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels are overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping No. 6 framing screws, min 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel.

b. **Framing Members*** — Used to attach furring channels (Item a) to studs (Item 1). Clips spaced 48 in. OC., and secured to studs with 1-5/8 in. wafer or hex head Type S steel screw through the center grommet. Furring channels are friction fitted into clips.

PAC INTERNATIONAL INC — Type RSIC-1.

6B. **Framing Members*** — Optional - Not Shown - Used as an alternate method to attach resilient channels (Item 6). Clips attached at each intersection of the resilient channel and the steel studs (Item 2). Resilient channels are friction fitted into clips, and then clips are secured to the stud with min. 1 in. long Type S-12 pan head steel screws through the center hole of the clip and the resilient channel flange.

KEENE BUILDING PRODUCTS CO INC — Type RC Assurance.

7. **Wall and Partition Facings and Accessories*** — (Optional, Not shown) — Nominal 1/2 in. thick, 4 ft wide panels, for optional use as an additional layer on one or both sides of the assembly. Panels attached in accordance with manufacturer's recommendations. When the QR-510 panel is installed between the steel framing and the UL Classified gypsum board, the required UL Classified gypsum board layer(s) is/are to be installed as indicated as to fastener type and spacing, except that the required fastener length shall be increased by a minimum of 1/2 in. Not evaluated or intended as a substitute for the required layer(s) of UL Classified Gypsum Board.

SERIOUS MATERIALS INC — Type QuietRock QR-510.

8. **Lead Batten Strips** — (Not Shown, For Use With Item 4E) - Lead batten strips, min 1-1/2 in. wide, max 10 ft long with a max thickness of 0.125 in. Strips placed on the interior face of studs and attached from the exterior face of the stud with two 1 in. long Type S-12 pan head steel screws, one at the top of the strip and one at the bottom of the strip. Lead batten strips to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C". Lead batten strips required behind vertical joints of lead backed gypsum board (Item 4E) and optional at remaining stud locations. Required behind vertical joints.

9. **Lead Discs or Tabs** — (Not Shown, For Use With Item 4E) - Used in lieu of or in addition to the lead batten strips (Item 8) or optional at other locations - Max 3/4 in. diam by max 0.125 in. thick lead discs compression fitted or adhered over steel screw heads or max 1/2 in. by 1-1/4 in. by max 0.125 in. thick lead tabs placed on gypsum boards (Item 4E) underneath screw locations prior to the installation of the screws. Lead discs or tabs to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C".

*Bearing the UL Classification Mark

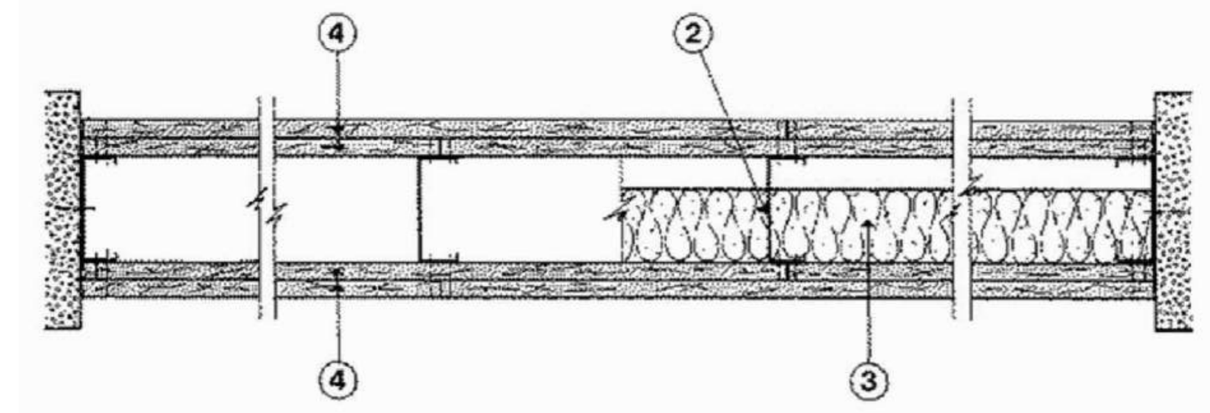
NOTE: THE CONTRACOTR SHALL VERIFY THE GYPSUM BOARD IS COMPLIANCE WITH THE BUY AMERICAN REQUIREMENTS.

2-HOUR RATED PARTITION

Design No. U411

September 15, 2010

Nonbearing Wall Rating — 2 HR.



1. **Floor and Ceiling Runner** — (Not Shown) — Min. 25 MSG galv steel, 1 in. return legs, 2-1/2 in. deep (min), attached to floor and ceiling with fasteners 24 in. OC max.

1A. **Framing Members*— Floor and Ceiling Runners** — (Not shown) — As an alternate to Item 1 - For use with Item 2A, channel shaped, min 2-1/2 in. deep, attached to floor and ceiling with fasteners 24 in. OC. max.

ALLSTEEL & GYPSUM PRODUCTS INC — Type SUPREME Framing System

CONSOLIDATED FABRICATORS CORP,

BUILDING PRODUCTS DIV — Type SUPREME Framing System

QUAIL RUN BUILDING MATERIALS INC — Type SUPREME Framing System

SCAFCO STEEL STUD MANUFACTURING CO — Type SUPREME Framing System

STEEL CONSTRUCTION SYSTEMS INC — Type SUPREME Framing System

UNITED METAL PRODUCTS INC — Type SUPREME Framing System

1B. **Floor and Ceiling Runners** — (Not shown)—For use with Item 2B- Channel shaped, fabricated from min 20 MSG corrosion-protected or galv steel, min width to accommodate stud size, with min 1 in. long legs, attached to floor and ceiling with fasteners spaced max 24 in. OC.

1C. **Framing Members*— Floor and Ceiling Runners** — (Not shown) — As an alternate to Item 1 - For use with Item 2B, channel shaped, min 2-1/2 in. wide fabricated from min 0.015 in. thick galv steel, attached to floor and ceiling with fasteners 24 in. OC. max.

CLARKWESTERN BUILDING SYSTEMS INC — CW ProTRAK

DIETRICH INDUSTRIES INC — DIETRICH ProTRAK

DMFCWBS L L C — ProTRAK

1D. **Framing Members*— Floor and Ceiling Runners** — (Not shown) — As an alternate to Item 1 - For use with Item 2D, channel shaped, min 2-1/2 in. wide fabricated from min 0.018 in. thick galv steel, attached to floor and ceiling with fasteners 24 in. OC. max.

TELLING INDUSTRIES L L C — TRUE-TRACK™

2. **Steel Studs** — Min 2-1/2 in. deep, formed of min 25 MSG galv steel max stud spacing 24 in. OC. Studs to be cut 3/4 in. less than assembly height.

2A. **Framing Members*— Steel Studs** — As an alternate to Item 2 - For use with Item 1A, channel shaped studs, min 2-1/2 in. deep, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly height.

ALLSTEEL & GYPSUM PRODUCTS INC — Type SUPREME Framing System

CONSOLIDATED FABRICATORS CORP,

BUILDING PRODUCTS DIV — Type SUPREME Framing System

QUAIL RUN BUILDING MATERIALS INC — Type SUPREME Framing System

SCAFCO STEEL STUD MANUFACTURING CO — Type SUPREME Framing System

STEEL CONSTRUCTION SYSTEMS INC — Type SUPREME Framing System

UNITED METAL PRODUCTS INC — Type SUPREME Framing System

2B. **Steel Studs** — (As an alternate to Item 2, For use with Item 4D) Channel shaped, fabricated from min 20 MSG corrosion-protected or galv steel, 3-1/2 in. min depth, spaced a max of 16 in. OC. Studs friction-fit into floor and ceiling runners. Studs to be cut 5/8 to 3/4 in. less than assembly height.

2C. **Framing Members*— Steel Studs** — As an alternate to Item 2 - For use with Item 1B, channel shaped studs, min 2-1/2 in. wide fabricated from min 0.015 in. thick galv steel, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly height.

CLARKWESTERN BUILDING SYSTEMS INC — CW ProSTUD

DIETRICH INDUSTRIES INC — DIETRICH ProSTUD

DMFCWBS L L C — ProSTUD

2D. **Framing Members*— Steel Studs** — As an alternate to Item 2 - For use with Item 1D, channel shaped studs, min 2-1/2 in. wide fabricated from min 0.018 in. thick galv steel, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly height.

TELLING INDUSTRIES L L C — TRUE-STUD™

3. **Batts and Blankets*** — (Optional) — Mineral wool or glass fiber batts partially or completely filling stud cavity. Fasten each batt to wallboard base layer with a min 9/16 in. long staple. Use five staples for each 4 ft piece. Drive one staple in the center of each piece and a staple at each corner, approx 3 in. from edges.

See **Batts and Blankets** (EZJZ) category for names of manufacturers.

3A. **Fiber, Sprayed*** — As an alternate to Batts and Blankets (Item 3) — Spray applied cellulose material. The fiber is applied with water to completely fill the enclosed cavity in accordance with the application instructions supplied with the product. Nominal dry density of 3.0 lb/ft³. Alternate application method: The fiber is applied with U.S. Greenfiber LLC Type AD100 hot melt adhesive at a nominal ratio of one part adhesive to 6.6 parts fiber to completely fill the enclosed cavity in accordance with the application instructions supplied with the product. Nominal dry density of 2.5 lb/ft³.

U S GREENFIBER L L C — — Cocoon2 Stabilized or Cocoon-FRM (Fire Rated Material)

3B. **Fiber, Sprayed*** — As an alternate to Batts and Blankets (Item 3) and Item 3A - Spray applied cellulose insulation material. The fiber is applied with water to interior surfaces in accordance with the application instructions supplied with the product. Applied to completely fill the enclosed cavity. Minimum dry density of 4.3 pounds per cubic ft.

NU-WOOL CO INC — Cellulose Insulation

3C. **Fiber, Sprayed*** — As an alternate to Batts and Blankets (Item 3) - Spray applied cellulose fiber. The fiber is applied with water to completely fill the enclosed cavity in accordance with the application instructions supplied with the product. The minimum dry density shall be 4.30 lbs/ft³.

INTERNATIONAL CELLULOSE CORP — Celbar-RL

4. **Gypsum Board*** — 5/8 in. thick, outer layer paper, glass mat or vinyl surfaced. (Laminated System) Gypsum board applied vertically in two layers. Inner layer attached to studs with 1 in. long Type S steel screws spaced 8 in. OC along vertical edges, and 12 in. OC in the field and outer layer laminated to inner layer with joint compound, applied with a notched spreader producing continuous beads of compound about 3/8 in. in diameter, spaced not greater than 2 in. OC. Joints of laminated outer layer offset 12 in. from inner layer joints Outer layer gypsum board attached to floor and ceiling runner track with 1-5/8 in. long Type S steel screws spaced 12 in. OC.

Optional, (Direct Attached System), Inner layer attached to studs with 1 in. long Type S steel screws spaced 16 in. OC in the field and along the vertical edges. Outer layer attached to the studs over the inner layer with 1-5/8 in. long Type S steel screws spaced 16 in. OC in the field and along the vertical edges and 12 in. OC to the floor and ceiling runners. Joints of screw-attached outer layer offset from inner layer joints. Joints of outer layer may be taped or untaped.

Nom 3/32 in. thick gypsum veneer plaster may be applied to the entire surface of Classified veneer baseboard. Joints reinforced.

AMERICAN GYPSUM CO — Types AG-C, AGX-1, AGX-11.

BEIJING NEW BUILDING MATERIALS PUBLIC

LTD CO — Type DBX-1.

CERTAINTEED GYPSUM INC — Types 1, FRPC, EGRG, GlasRoc, ProRoc Type X or ProRoc Type C.

CERTAINTEED GYPSUM CANADA INC — ProRoc Type C, ProRoc Type X or ProRoc Type Abuse-Resistant.

CANADIAN GYPSUM COMPANY — Type AR, C, FCV, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC or WRX.

GEORGIA-PACIFIC GYPSUM L L C — Types 5, 6, 9, C, DAP, DD, DA, DAPC, DGG, DS, GPFS6.

LAFARGE NORTH AMERICA INC — Types LGFC2, LGFC2A, LGFC3, LGFC6, LGFC6A, LGFC-C, LGFC-C/A, LGFC-WD.

NATIONAL GYPSUM CO — Types FSK-C, FSW, FSW-3, FSW-5, FSW-6, FSW-C, FSW-G, FSMR-C, SoundBreak XP Type X Gypsum Board.

NATIONAL GYPSUM CO — Riyadh, Saudi Arabia — Type FR, or WR.

PABCO BUILDING PRODUCTS L L C, DBA

PABCO GYPSUM — Type C, PG-3, PG-5, PG-9, PG-11 or PG-C.

PANEL REY S A — Type PRX, or PRC.

SIAM GYPSUM INDUSTRY (SARABURI) CO LTD — Type EX-1

TEMPLE-INLAND — Types TG-C, Type X, Veneer Plaster Base-Type X, Water Rated-Type X, Sheathing Type-X, Soffit-Type X, GreenGlass Type X, Type X ComfortGuard Sound Deadening Gypsum Board.

UNITED STATES GYPSUM CO — Type AR, C, FCV, FRX-G, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX, USGX.

USG MEXICO S A DE C V — Type AR, C, FCV, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC or WRX.

4A. **Gypsum Board*** — (As an alternate to Item 4) — Nom 3/4 in. thick, installed as described in Item 4 with 1-1/4 in. long Type S screws for inner layer and 2-1/4 in. long Type S screws for outer layer.

CANADIAN GYPSUM COMPANY — Types AR, IP-AR.

UNITED STATES GYPSUM CO — Types AR, IP-AR.

USG MEXICO S A DE C V — Types AR, IP-AR.

4B. **Gypsum Board*** — (As an alternate to Item 4 and 4A) —5/8 in. thick, 24 to 54 in. wide, applied horizontally as the outer layer to one side of the assembly. Horizontal joints need not be backed by steel framing. Secured as described in Item 4 for the direct attached system. When used in widths other than 48 in., gypsum panels to be installed horizontally.

CANADIAN GYPSUM COMPANY — Type SHX.

CERTAINTEED GYPSUM INC — ProRoc Type X, ProRoc Type C.

CERTAINTEED GYPSUM CANADA INC — ProRoc Type X, ProRoc Type C.

UNITED STATES GYPSUM CO — Type SHX, FRX-G.

USG MEXICO S A DE C V — Type SHX.

4C. **Gypsum Board*** — (As an alternate to Items 4, 4A and 4B) — Two layers of 5/8 in. thick gypsum board applied horizontally or vertically. Inner layer attached to studs with No. 6 by 1 in. long Type S bugle head screws spaced 24 in. OC along the top and bottom tracks starting 2 in. and then 12 in. from the vertical edge. Inner layer screws spaced 24 in. OC along the studs, starting 2 in. and then 12 in. from the top and bottom of the studs and starting 1-1/4 in. from the horizontal joints when installed horizontally. Outer layer attached to studs with 1-5/8 in. long Type S bugle head screws spaced 16 in. OC along the top and bottom tracks starting 1-3/4 in. from the vertical edge. Outer layer screws spaced 16 in. OC along the studs, starting 1-3/4 in. and then 8 in. from the top and bottom of the studs and starting 1-1/4 in. and then 8 in. from the horizontal joints when installed horizontally. Vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Vertical joints in adjacent layers staggered one stud cavity. Horizontal joints need not be backed by steel framing. Horizontal edge joints and horizontal butt joints on opposite sides of studs need not be staggered. Horizontal edge joints and horizontal butt joints in adjacent layers staggered a min of 12 in. When outer layers are installed horizontally, vinyl or casein, dry or premixed joint compound shall be applied in two coats to joints and screw heads of outer layer. Paper tape, nom 2 in. wide, embedded in first layer of compound over all joints of outer layer panels. Nom 3/32 in. thick gypsum veneer plaster may be applied to the entire surface of Classified veneer baseboard. Joints reinforced.

GEORGIA-PACIFIC GYPSUM L L C — Types 5, 9, C, DAP, DGG, DS.

4D. **Gypsum Board*** — (Not Shown) - (As an alternate to Item 4 when used as the base layer on one or both sides of wall. For direct attachment only to steel studs Item 2B) - Nom 5/8 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over studs and staggered min 1 stud cavity on opposite sides of studs. Gypsum board secured to studs with 1-1/4 in. long Type S-12 steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field.

RAY-BAR ENGINEERING CORP — Type RB-LBG

4E. **Wall and Partition Facings and Accessories*** — (As an alternate to Items 4 through 4D) — Nominal 5/8 in. thick, 4 ft wide panels, applied vertically and secured as described in Item 4.

SERIOUS MATERIALS INC — Types QuietRock ES, QuietRock 527.

4F. **Gypsum Board*** — (As an alternate to Items 4 through 4E) - 5/8 in. thick, 4 ft. wide, paper surfaced, applied vertically and secured as described in Item 4.

CERTAINTEED GYPSUM INC — Type SilentFX

5. **Lead Batten Strips** — (Not Shown, For Use With Item 4D) - Lead batten strips, min 1-1/2 in. wide, max 10 ft long with a max thickness of 0.125 in. Strips placed on the interior face of studs and attached from the exterior face of the stud with two 1 in. long Type S-12 pan head steel screws, one at the top of the strip and one at the bottom of the strip. Lead batten strips to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C". Lead batten strips required behind vertical joints of lead backed gypsum board (Item 4D) and optional at remaining stud locations. Required behind vertical joints.

6. **Lead Discs or Tabs** — (Not Shown, For Use With Item 4D) - Used in lieu of or in addition to the lead batten strips (Item 5) or optional at other locations - Max 3/4 in. diam by max 0.125 in. thick lead discs compression fitted or adhered over steel screw heads or max 1/2 in. by 1-1/4 in. by max 0.125 in. thick lead tabs placed on gypsum boards (Item 4D) underneath screw locations prior to the installation of the screws. Lead discs or tabs to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C".

*Bearing the UL Classification Mark

NOTE: THE CONTRACOTR SHALL VERIFY THE GYPSUM BOARD IS COMPLIANCE WITH THE BUY AMERICAN REQUIREMENTS.

'BID SET'

Revisions:	Date
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CONSULTANTS:

LICENSED ARCHITECT DAVID M COMBS 08.08.2018 No. 14151 PHOENIX, AZ STATE OF MONTANA

ARCHITECT/ENGINEERS:

AESUS designgroup Architecture, Engineering, and Sustainable Design
1050 E. Southern Ave, Suite #D, Tempe, Arizona 85282, (480) 454-2861

Drawing Title: UL ASSEMBLY

Project Title: REPLACE PENTHOUSE HVAC SYSTEMS
CONTRACT NO. VA259-17-C-0212

Location: FT. HARRISON HELENA, MT

Date: 08/07/2018 | Checked: AESUS | Drawn: DC

Project Number: 436-17-102

Building Number: 154

Drawing Number: A-601 -- --

Office of Construction and Facilities Management

Department of Veterans Affairs

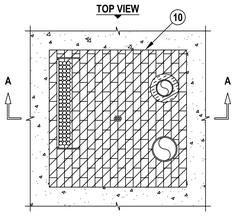
VA FORM 08-6231

UL/cUL SYSTEM NO. C-AJ-8207

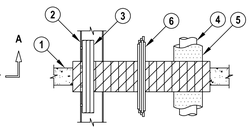
MULTIPLE PENETRATIONS THROUGH CONCRETE FLOOR/WALL OR BLOCK WALL

F-RATING = 2-HR. OR 3-HR. (SEE ITEM NO. 10 AND NOTE NO. 3 BELOW)
T-RATING = 0-HR.
NOTE : TESTED TO A 2.5 Pa PRESSURE DIFFERENTIAL

TOP VIEW



SECTION A-A



CA8207b.092217

1. CONCRETE FLOOR OR WALL ASSEMBLY (2-HR. OR 3-HR. FIRE-RATING) :
   A. LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE FLOOR (MINIMUM 4-1/2" THICK).
   B. ANY UL/cUL CLASSIFIED CONCRETE BLOCK WALL (SOLID OR FILLED).
2. MAXIMUM 24" x 4" OR MAXIMUM 18" x 6" ALUMINUM OR STEEL OPEN LADDER CABLE TRAY (MAX. QTY. = 2).
3. ANY COMBINATION OF THE FOLLOWING CABLES MAY BE USED WITHIN THE CABLE TRAY(S). CABLES TO FILL MAXIMUM 40% OF THE CROSS-SECTIONAL AREA OF CABLE TRAY (BASED ON A MAXIMUM 3" LOADING DEPTH) :
   A. MAXIMUM 500 KCMIL SINGLE COPPER CONDUCTOR POWER CABLE WITH PVC JACKET.
   B. MAXIMUM 300 PAIR NO. 24 AWG TELEPHONE CABLE WITH PVC JACKET.
   C. MAXIMUM 7/C NO. 12 AWG POWER CABLE WITH PVC JACKET.
   D. MAXIMUM 1/2" DIAMETER FIBER-OPTIC CABLE WITH PVC JACKET.
   E. MAXIMUM 3/C NO. 12 AWG METAL CLAD CABLE.
   F. MAXIMUM 2/C NO. 10 AWG CABLE WITH PVC JACKET.
   G. MAXIMUM 3/C NO. 8 AWG ALUMINUM CLAD CABLE WITH PVC JACKET.
4. ONE OR MORE OF THE FOLLOWING METALLIC PIPES, CONDUITS, OR TUBING TO BE INSTALLED WITHIN THE OPENING :
   A. MAXIMUM 8" NOMINAL DIAMETER STEEL PIPE (SCHEDULE 10 OR HEAVIER).
   B. MAXIMUM 8" NOMINAL DIAMETER CAST OR DUCTILE IRON PIPE.
   C. MAXIMUM 4" NOMINAL DIAMETER COPPER PIPE OR TUBING.
   D. MAXIMUM 6" NOMINAL DIAMETER STEEL CONDUIT.
   E. MAXIMUM 4" NOMINAL DIAMETER EMT.
5. [OPTIONAL] METALLIC PIPES OR TUBING MAY BE INSTALLED WITH ONE OF THE FOLLOWING (SEE NOTE NO. 3 BELOW) :
   A. NOMINAL 1-1/2" OR 2" THICK GLASS-FIBER PIPE INSULATION (MIN. 3.5 PCF DENSITY).
   B. NOMINAL 1-1/2" OR 2" THICK UNFACED MINERAL FIBER PIPE INSULATION (MIN. 3.5 PCF DENSITY) WITH FOIL-SCRIM-KRAFT OR ALL SERVICE JACKET WITH THE KRAFT SIDE EXPOSED. INSULATION SECURED WITH MIN. 18 SWG STEEL WIRE (SPACED 12" O/C).
   C. NOMINAL 1" THICK AB/PVC PIPE INSULATION FOR PIPES WITH A NOMINAL 2" DIAMETER OR SMALLER.
   D. NOMINAL 3/4" THICK AB/PVC PIPE INSULATION FOR PIPES WITH A NOMINAL 4" DIAMETER OR SMALLER.
   E. NOMINAL 1-1/2", 2", OR 3" THICK CELLULAR GLASS PIPE INSULATION (FOAMGLASS®) WITH A MINIMUM 12" LONG JACKET FORMED OF MINIMUM 0.010" THICK STEEL OR ALUMINUM SHEET AND CUT TO WRAP TIGHTLY AROUND THE PIPE INSULATION. JACKET SECURED WITH A MINIMUM 1/2" WIDE STAINLESS STEEL HOSE CLAMP OR BAND, LOCATED WITHIN 2" OF EACH END OF JACKET, AND SPACED A MAXIMUM OF 10" O/C. JACKET TO HAVE A MINIMUM 2" OVERLAP AT SEAM AND INSTALLED ABUTTING SURFACE OF FIRESTOP BLOCK ON TO TOP SURFACE OF FLOOR, OR BOTH SURFACES OF WALL.
   F. MAXIMUM 2" THICK CALCIUM SILICATE PIPE INSULATION SECURED WITH A MIN. 18 SWG STEEL WIRE (SPACED 12" O/C).
6. ONE OR MORE MAXIMUM 4" DIAMETER CABLE BUNDLE(S) CONSISTING OF ANY COMBINATION OF THE FOLLOWING :
   A. MAXIMUM 500 KCMIL SINGLE COPPER CONDUCTOR POWER CABLE WITH PVC JACKET.
   B. MAXIMUM 300 PAIR NO. 24 AWG TELEPHONE CABLE WITH PVC JACKET.
   C. MAXIMUM 7/C NO. 12 AWG POWER CABLE WITH PVC JACKET.
   D. MAXIMUM 1/2" DIAMETER FIBER-OPTIC CABLE WITH PVC JACKET.
   E. MAXIMUM 3/C NO. 12 AWG METAL CLAD CABLE.
   F. MAXIMUM 2/C NO. 10 AWG CABLE WITH PVC JACKET.
   G. MAXIMUM 3/C NO. 8 AWG ALUMINUM CLAD CABLE WITH PVC JACKET.
7. [NOT SHOWN] ONE OR MORE NON-METALLIC PIPES OR CONDUITS (SEE NOTES NO. 2 AND 3 BELOW) :
   A. MAXIMUM 2" NOMINAL DIAMETER PVC PLASTIC PIPE (SCHEDULE 40) (CLOSED OR VENTED PIPING SYSTEM).
   B. MAXIMUM 2" NOMINAL DIAMETER CPVC PLASTIC PIPE (SDR 13.5) (CLOSED PIPING SYSTEM).
   C. MAXIMUM 2" NOMINAL DIAMETER RIGID NON-METALLIC CONDUIT (RNC).
8. [NOT SHOWN] MAXIMUM 2" NOMINAL DIAMETER FIBER-OPTIC RACEWAY (PVC OR PVDF).
9. [NOT SHOWN] ELECTRICAL BUSWAY (NOMINAL 23" WIDE x 4-1/2" DEEP, OR SMALLER) ("I" SHAPED ALUMINUM OR STEEL ENCLOSURE CONTAINING FACTORY MOUNTED COPPER BARS RATED FOR 600V, 5000A OR ALUMINUM BARS RATED FOR 600V, 4000A) (MAX. QTY. = 2) (SEE NOTE NO. 3 BELOW).
10. HILTI CFS-BL FIRESTOP BLOCK (8" DEEP) FIRMLY PACKED AND CENTERED WITHIN FLOOR OR WALL. FOR 2-HR. FIRE-RATING WITH A MAXIMUM OPENING DIMENSION OF 36" OR LESS, FIRESTOP BLOCKS MAY BE INSTALLED (5" DEEP) FIRMLY PACKED AND FLUSH WITH TOP SURFACE OF FLOOR OR CENTERED WITHIN WALL.

UL/cUL SYSTEM NO. C-AJ-8207 - CONTINUED

MULTIPLE PENETRATIONS THROUGH CONCRETE FLOOR/WALL OR BLOCK WALL

F-RATING = 2-HR. OR 3-HR. (SEE ITEM NO. 10 AND NOTE NO. 3 BELOW)
T-RATING = 0-HR.
NOTE : TESTED TO A 2.5 Pa PRESSURE DIFFERENTIAL

ANNULAR SPACE	MIN.	MAX.
BETWEEN METALLIC PENETRANTS AND PERIPHERY OF OPENING	0"	-
BETWEEN METALLIC PENETRANTS AND OTHER PENETRANTS	4"	-
BETWEEN METALLIC PENETRANTS	1"	-
BETWEEN INSULATED PENETRANTS AND PERIPHERY OF OPENING	1"	-
BETWEEN INSULATED PENETRANTS	3"	-
BETWEEN INSULATED PENETRANTS AND OTHER PENETRANTS	4"	-
BETWEEN NON-METALLIC PENETRANTS	3"	-
BETWEEN NON-METALLIC PENETRANTS AND PERIPHERY OF OPENING	1"	-
BETWEEN NON-METALLIC PENETRANTS AND OTHER PENETRANTS	4"	-
BETWEEN CABLE BUNDLES	4"	-
BETWEEN CABLE BUNDLES AND PERIPHERY OF OPENING	1"	-
BETWEEN CABLE BUNDLES AND OTHER PENETRANTS	4"	-
BETWEEN CABLE TRAYS	5"	-
BETWEEN CABLE TRAYS AND PERIPHERY OF OPENING	0"	-
BETWEEN BUSWAYS AND PERIPHERY OF OPENING	1/2"	5-3/4"
BETWEEN BUSWAYS AND OTHER PENETRANTS	6"	-

NOTES : 1. MAXIMUM AREA OF OPENING = 18 SQ. FT., WITH A MAXIMUM DIMENSION OF 6 FT.
2. ONE OF THE FOLLOWING MUST BE INSTALLED AROUND NON-METALLIC PENETRANTS (ITEM NO. 7 ABOVE) PRIOR TO INSTALLATION OF FIRESTOP BLOCKS :
   A. MINIMUM 4" HIGH x 1/16" THICK LAYER OF HILTI FS-ONE MAX INTUMESCENT FIRESTOP SEALANT INSTALLED AROUND THE CIRCUMFERENCE OF PIPE AND CENTERED WITHIN FIRESTOP BLOCKS.
   B. HILTI CP 648E WRAP STRIP (NOMINAL 3/16" THICK x 1" WIDE) CONTINUOUSLY WRAPPED AROUND THE OUTER CIRCUMFERENCE OF THE PIPE, COVERING ONE TIME, WITH ENDS BUTTED AND HELD IN PLACE WITH TAPE. WRAP STRIP TO BE CENTERED WITHIN FIRESTOP BLOCKS.
3. THE FIRE-RATING OF THE FIRESTOP SYSTEM IS LIMITED TO 2-HR. WHEN NON-METALLIC PENETRANTS, BUSWAYS, OR ANY TYPE OF PIPE INSULATION IS USED.
4. APPLY HILTI FS-ONE MAX INTUMESCENT FIRESTOP SEALANT OR HILTI CP 618 FIRESTOP PUTTY STICK INTO INTERSTICES OF CABLES, BETWEEN CABLES AND CABLE TRAYS, AND INTO VOIDS TO MAXIMUM EXTENT POSSIBLE.
5. WIRE MESH [NOT SHOWN] - WHEN ANY DIMENSION OF THE THROUGH OPENING EXCEEDS 36 IN. (914 MM), WIRE MESH IS REQUIRED ON BOTH SIDES OF THE WALL OR FLOOR OPENING. WHEN MAX DIMENSION OF THE THROUGH OPENING DOES NOT EXCEED 36 IN. (914 MM), WIRE MESH IS REQUIRED ON TOP SIDE OF FLOOR OR BOTH SIDES OF WALL ONLY WHEN THE ANNULAR SPACE EXCEEDS 12 IN. (305 MM). NOM 1" HEXAGONAL WIRE MESH (20 GA. OR HEAVIER) OR NOM 2 IN. x 2 IN. WIRE FENCING FABRICATED FROM MIN NO 16 SWG (0.060 IN. OR 1.5 MM) GALV STEEL WIRE CUT TO FIT THE CONTOURS OF THE PENETRATING ITEMS AND THE OPENING WITH A MIN 3 IN. (76 MM) LAP BEYOND THE PERIPHERY OF THE OPENING. WIRE MESH SECURED TO BOTH SIDES OF FLOOR OR WALL BY MEANS OF 1/4 IN. (6 MM) DIAM BY 1-1/2 IN. (38 MM) LONG STEEL CONCRETE SCREWS IN CONJUNCTION WITH 1-1/2 IN. (38 MM) DIAM STEEL FENDER WASHERS SPACED MAX 6 IN. (152 MM) OC. ANY JOINTS WITHIN WIRE MESH SHALL OVERLAP 2 IN. (51 MM) AND BE SECURED TOGETHER BY MEANS OF NO. 20 SWG STEEL WIRE SPACED 6 IN. (152 MM) OC.

1 TO 3 HOUR RATED FIRE BARRIER PENETRATION
WALL OR FLOOR PENETRATION OF INSULATED PIPE OR TUBE

System No. C-AJ-5001

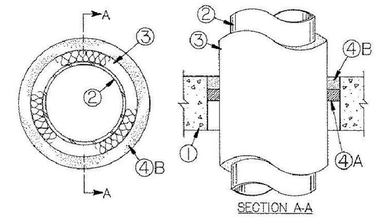
March 05, 2007

F Ratings — 1-1/2, 2 and 3 Hr (See Item 4)

T Ratings — 0, 1/2, 3/4 and 1 Hr (See Items 1A and 4)

L Rating At Ambient — 2 CFM per sq ft

L Rating At 400 F — less than 1 CFM per sq ft



SECTION A-A

1. **Floor or Wall Assembly** — Min 2-1/2 in. (64 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m^3) concrete. Wall may also be constructed of any UL Classified **Concrete Blocks***. Max diam of opening is 18 in. (457 mm)

See **Concrete Blocks** (CAZT) category in the Fire Resistance Directory for names of manufacturers.

1A. **Steel Sleeve** — (Optional, not shown) — Nom 10 in. (254 mm) (or smaller) Schedule 10 (or heavier) steel sleeve cast or grouted into floor or wall assembly. Sleeve may extend a max of 2 in. (51 mm) above top of floor or beyond either surface of wall. As an alternate, nom 10 in. (254 mm) diam (or smaller) sleeve fabricated from nom 0.019 in. (0.48 mm) thick galv steel cast or grouted into floor or wall assembly flush with floor or wall surfaces. **T Rating is 0 Hr when sleeve is used.**

2. **Through Penetrant** — Nom 4 in. (102 mm) diam (or smaller) Type L (or heavier) copper pipe, nom 12 in. (305 mm) diam (or smaller) service weight (or heavier) cast iron soil pipe, nom 12 in. (305 mm) diam (or smaller) Class 50 (or heavier) ductile iron pressure pipe or nom 12 in. (305 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe centered in the opening and rigidly supported on both sides of the floor or wall assembly.

3. **Pipe Covering** * — Nom 1/2 to 2 in. (13 to 51 mm) thick hollow cylindrical heavy density (min. 3.5 pcf or 56 kg/m^3) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap. Transverse joints secured with metal fasteners or with butt strip tape supplied with the product.

See **Pipe and Equipment Covering — Materials*** (BRGU) category in Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.

4. **Firestop System** — The details of the firestop system shall be as follows:

A. **Packing Material** — Min 2 in. (25 mm) thickness of firmly packed mineral wool batt insulation used as a permanent form. Packing material to be recessed from top surface of floor or sleeve or from both surfaces of wall as required to accommodate the required thickness of caulk fill material (Item B).

B. **Fill, Void or Cavity Material* — Caulk or Sealant** — Applied to fill the annular space flush with the top surface of the floor or sleeve or flush with both surfaces of wall. When nom pipe covering thickness is 2 in. (51 mm), min thickness of caulk fill material is 2 in. (51 mm). When nom pipe covering thickness is 1-1/2 in. (38 mm) or less, min thickness of caulk fill material is 1 in. (25 mm). The hourly F and T Ratings of the firestop system are dependent upon the thickness of the floor or wall, the size of pipe, the thickness of pipe covering material and the size of the annular space (between the pipe covering material and the edge of the circular through opening), as shown in the following table:

Min Floor or Wall Thkns, In. (mm)	Max Pipe Diam, In. (mm)	Nom Pipe Covering Thkns, In. (mm)	Annular Space, In. (mm)	F Rating Hr	T Rating Hr
2-1/2 (64)	4 (102)	1 or 1-1/2 (25 or 38)	1/2 to 2-3/8 (13 to 60)	2	1
4-1/2 (114)	4 (102)	2 (51)	1/4 to 3-5/8 (6 to 92)	2	1-1/2
2-1/2 (64)	12 (305)	1 (25)	1/2 to 1-1/2 (13 to 38)	2	1/2
4-1/2 (114)	12 (305)	1 (25)	1/2 to 2-3/8 (13 to 60)	3	1
2-1/2 (64)	12 (305)	1/2 (13)	1/2 to 2-3/8 (13 to 60)	2	0

3M COMPANY — CP 25WB+ or FB-3000 WT

*Bearing the UL Classification Mark

NOTE: THE CONTRACOTR SHALL USE THE FACILTIY STANDARD FIRE CAULK SYSTEM. THE FACILTIY PREFERS HILTI PRODUCTS (FS-ONE INTUMESCENT FIRESTOP) OR EQUIVALENT. THE GC SHALL REVIEW THE PROJECT SPECIFICATIONS SECTION 078400 AND COORDINATE WITH THE FIRE & SAFETY DEPARTMENT PRIOR TO SUBMITTING PRODUCTS FOR REVIEW.

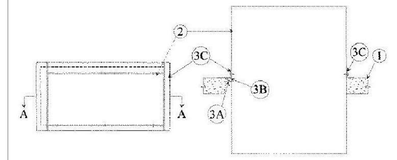
2 & 3 HOUR RATED FIRE BARRIER PENETRATION
FLOOR OR WALL PENETRATION OF DUCT @ CONCRETE

System No. C-AJ-7016

May 19, 2005

F Rating — 2 & 3 Hr (See Item 1)

T Rating — 0 Hr



SECTION A-A

1. **Floor or Wall Assembly** — Min 2-1/2 in. (64 mm) thick or min 4-1/2 in. (114 mm) thick lightweight or normal weight (100-150 pcf or 1600 - 2400 kg/m^3) concrete. Wall may also be constructed of any UL **Classified Concrete Blocks*. The F Rating is 2 hr and 3 hr for min 2-1/2 in. (64 mm) or min 4-1/2 in. (114 mm) thick assemblies.** Max area of opening is 576 sq in. (5716 c/m^2 with max dimension of 36 in. (914 mm) for 2 hr assemblies and 544 sq in. (3510 c/m^2 with max dimension of 34 in. (864 mm) for 3 hr assemblies.

See **Concrete Blocks** (CAZT) category in the Fire Resistance Directory for names of manufacturers.

2. **Through-Penetrants** — One steel duct to be installed either concentrically or eccentrically within the firestop system. An annular space of min 0 in. (point contact) to max 4 in. (0 mm to max 102 mm) is required within the firestop system for 2 hr assemblies and min 0 in. (point contact) to max 2 in. (0 mm to max 51 mm) is required within the firestop system for 3 hr assemblies. Steel duct to be rigidly supported on both sides of floor or wall assembly. The following sizes of steel ducts may be used:

A. **Steel Duct** — Nom 32 in. by 14 (813 mm by 356 mm) (or smaller) No. 22 gauge (or heavier) galv steel duct.

B. **Steel Duct** — Nom 30 in. by 12 (762 mm by 305 mm) (or smaller) No. 24 gauge (or heavier) galv steel duct.

3. **Firestop System** — The firestop system shall consist of the following:

A. **Packing Material*** — Nom 1 in. (25 mm) thickness of tightly packed mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of caulk fill material.

B. **Fill, Void or Cavity Material* — Caulk or Sealant** — Min 1 in. (25 mm) thickness of fill material applied within annulus, flush with top surface of floor or both surfaces of wall assembly. At the point contact location between duct and concrete, a min 1/4 in. (6 mm) diam bead of sealant shall be applied to the concrete/duct interface on the top surface of floor and on both surfaces of wall assembly.

3M COMPANY — CP 25WB+, FB-3000 WT or CP 15WB+

C. **Retaining Angles** — Min 16 gauge galv steel angles sized to lap duct a min of 2 in. (51 mm) and lap top surface of floor or both surfaces of wall a min of 1 in. (25 mm). Angles attached to duct with min 1/2 in. (13 mm) long, No. 10 (or larger) sheet metal screws spaced a max of 1 in. (25 mm) from each end of duct and spaced a max of 6 in. (152 mm) OC.

*Bearing the UL Classification Mark

NOTE: THE CONTRACOTR SHALL USE THE FACILTIY STANDARD FIRE CAULK SYSTEM. THE FACILTIY PREFERS HILTI PRODUCTS (FS-ONE INTUMESCENT FIRESTOP) OR EQUIVALENT. THE GC SHALL REVIEW THE PROJECT SPECIFICATIONS SECTION 078400 AND COORDINATE WITH THE FIRE & SAFETY DEPARTMENT PRIOR TO SUBMITTING PRODUCTS FOR REVIEW.

Revisions:	Date
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CONSULTANTS:

LICENSED ARCHITECT — DAVID M COMBS — No. 14151 — PHOENIX, AZ — STATE OF MONTANA — 08.08.2018

ARCHITECT/ENGINEERS:

AESUS design group — **Architecture, Engineering, and Sustainable Design**
1050 E. Southern Ave, Suite 4D, Tempe, Arizona 85282, (480) 454-2861

Drawing Title: UL ASSEMBLY

'BID SET'

Project Title: REPLACE PENTHOUSE HVAC SYSTEMS
CONTRACT NO. VA259-17-C-0212

Location: FT. HARRISON HELENA, MT

Date: 08/07/2018 | Checked: AESUS | Drawn: DC

Project Number: 436-17-102

Building Number: 154

Drawing Number: A-602 _ _

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231

three inches = one foot
one and one half inches = one foot
one inch = one foot
three quarters inch = one foot
one half inch = one foot
three eighths inch = one foot
one quarter inch = one foot
one eighth inch = one foot

ABBREVIATIONS

A/E	ARCHITECT / ENGINEER	CO2	CARBON DIOXODE	EX	EXISTING	HWP	HEATING HOT WATER PUMP	MAX	MAXIMUM	RA	RETURN AIR
AAV	AUTOMATIC AIR VENT	COMP	COMPRESSOR UNIT			HWR	HEATING HOT WATER RETURN	MB	MIXING BOX	RAT	RETURN AIR TEMPERATURE
ACD	AUTOMATIC CONTROL DAMPER,MODULATING	COP	COEFFICIENT OF PERFORMANCE	F	FAHRENHEIT	HWS	HEATING HOT WATER SUPPLY	MBH	1000 BTUH	RDS	ROOM DATA SHEETS
ACD-TP	AUTOMATIC CONTROL DAMPER,TWO POSITION	CP	CONDENSATE PUMP	F&T	FLOAT AND THERMOSTATIC	HWUH	HOT WATER UNIT HEATER	MCA	MINIMUM BRANCH CIRCUIT AMPACITY	RG	RETURN GRILLE
AD	ACCESS DOOR	CR	CEILING REGISTER	F/SDPR	COMBINATION FIRE SMOKE DAMPER	HVD	HOISTWAY VENT DAMPER	MER	MECHANICAL EQUIPMENT ROOM	RH	RELATIVE HUMIDITY
AF	AFTER FILTER	CS	CONDENSATE STORAGE TANK	FA	FREE AREA	HX	HEAT EXCHANGER	MERV	MINIMUM EFFICIENCY REPORTING VALUE	RLA	RUN LOAD AMPERE
AFCV	AIR FLOW CONTROL VALVE	CSG	CLEAN STEAM GENERATOR	FC	FLEXIBLE CONNECTION	HZ	HERTZ	MH	MANHOLE	RN	NEW RELOCATED LOCATION
AFF	ABOVE FINISHED FLOOR	CT	COOLING TOWER	FCU	FAN COIL UNIT (4 PIPE)			MHP	MOTOR HORSEPOWER	RPM	REVOLUTIONS PER MINUTE
AFW	AIR FOIL WHEEL (FAN)	CU	CONDENSING UNIT	FCUC	FAN COIL UNIT COOLING ONLY	I/O	INPUT/OUTPUT	MIN	MINIMUM	RR	RETURN REGISTER
AHU	AIR-HANDLING UNIT	CUH	CABINET UNIT HEATER	FCUH	FAN COIL UNIT HEATING ONLY	IAQ	INDOOR AIR QUALITY	MM	MILLIMETER		
AMP	AMPERAGE	CV	CONSTANT VOLUME	FCW	FORWARD CURVED WHEEL (FAN)	IBT	INVERTED BUCKET TRAP	MOV	MOTOR OPERATED VALVE	SA	SUPPLY AIR
AP	ACCESS PANEL	CW	COLD WATER (POTABLE)	FD	FLOOR DRAIN	ICF	IN-LINE CENTRIFUGAL FAN	MPR	MEDIUM PRESSURE RETURN (STEAM CONDENSATE)	SAT	SUPPLY AIR TEMPERATURE
APD	AIR PRESSURE DROP	CWCC	CHILLED WATER COOLING COIL	FD	FIRE DAMPER	ICU	INTENSIVE CARE UNIT	MPS	MEDIUM PRESSURE STEAM	SCFM	STANDARD CUBIC FEET PER MINUTE
ARI	AIR CONDITIONING AND REFRIGERATION INSTITUTE	CWP	CONDENSER WATER PUMP	FF	FINAL FILTER	ID	INSIDE DIAMETER	MRI	MAGNETIC RESONANCE IMAGING	SD	SMOKE DETECTOR
AS	AIR SEPARATOR	CWR	CONDENSER WATER RETURN (TO COOLING TOWER)	FHX	FLUE GAS/FEEDWATER HEAT EXCHANGER	IFB	INTEGRAL FACE AND BYPASS	MTD	MEAN TEMPERATURE DIFFERENCE	SD	SUPPLY AIR DIFFUSER
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS	CWS	CONDENSER WATER SUPPLY (FROM COOLING TOWER)	FM	FLOW METER	IN	INCHES	MVD	MANUAL VOLUME DAMPER	SD-1	SCHEMATIC DESIGN (SUBMISSION1)
				FOP	FUEL OIL PUMP	IN HG	INCHES OF MERCURY	MZ	MULTI-ZONE	SD-2	SCHEMATIC DESIGN (SUBMISSION2)
B	BOILER	D	DAMPER - AUTOMATIC	FOT	FUEL OIL TANK	IN WC	INCH WATER COLUMN			SDPR	SMOKE DAMPER
BD	BUTTERFLY DAMPER	D-1	OUTDOOR AIR DAMPER	FOHX	FUEL OIL HEAT EXCHANGER	IN WG	INCH WATER GAUGE	NA	NOT APPLICABLE	SEN	SENSIBLE HEAT
BDD	BACKDRAFT DAMPER	D-2	RETURN AIR DAMPER	FPM	FEET PER MINUTE	IN-LB	INCH-POUND	NC	NOISE CRITERIA	SF	SUPPLY FAN
BDR	BASE BOARD RADIATOR	D-3	RELIEF AIR DAMPER	FPS	FEET PER SECOND	IPLV	INTEGRATED PART LOAD VALUE	NC	NORMALLY CLOSED	SG	SUPPLY AIR GRILLE
BFP	BACKFLOW PREVENTER	DB	DECIBELS	FPTU	FAN POWERED TERMINAL UNIT	IRH	INFRARED HEATER	NG	NATURAL GAS	SI	SQUARE INCHES
BFT	BOILER PLANT FIRE TUBE	Db	DRY-BULB TEMPERATURE	FR	FLOOR REGISTER	IS	INSECT SCREEN	NGFM	NATURAL GAS FLOWMETER	SP	STATIC PRESSURE
BG	BOTTOM GRILLE	DD-1	DESIGN DEVELOPMENT (SUBMISSION1)	FRP	FIBER REINFORCED POLYESTER	IU	INDUCTION UNIT	NO	NORMALLY OPEN	SP GR	SPECIFIC GRAVITY
BHP	BRAKE HORSEPOWER	DD-2	DESIGN DEVELOPMENT (SUBMISSION2)	FS	FLOW SWITCH	IV	INLET VANES	NOAA	NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION	SPD	SUPPLY PROCESS AND DISTRIBUTION
BHW	HOT WATER HEATING BOILER	DDC	DIRECT DIGITAL CONTROLS	FSTAT	FREEZESTAT			NOM	NOMINAL	SPS	STATIC PRESSURE SENSOR
BHX	BOILER BLOWDOWN HEAT EXCHANGER	DEG	DEGREE			kg	KILOGRAM	NPLV	NON-STANDARD PART LOAD VALUE	SQ FT	SQUARE FOOT (FEET)
BIW	BACKWARD INCLINED WHEEL (FAN)	DF	DIFFUSER	GA	GAUGE	kg/HR	KILOGRAM PER HOUR	NPSH	NET POSITIVE SUCTION HEAD	SR	SUPPLY AIR REGISTER
BMT	BONE MARROW TRANSPLANT	DIA	DIAMETER	GAL	GALLONS	kPa	KILOPASCAL	NTS	NOT TO SCALE		
BR	BOTTOM REGISTER	DIW	DEIONIZED WATER	GH	GRAVITY HOOD	kW	KILOWATT			T & PCV	TEMPERATURE AND PRESSURE CONTROL VALVE
BSC	BIOLOGICAL SAFETY CABINETS	DP	DEW POINT TEMPERATURE	GPD	GALLONS PER DAY	kWh	KILOWATT HOUR	OA	OUTSIDE AIR	TAB	TESTING, ADJUSTING, BALANCE
BT	BLOWOFF TANK	DP	DIFFUSER PLATE	GPH	GALLONS PER HOUR			OAG	OUTSIDE AIR GRILLE	TD	TEMPERATURE DIFFERENCE
BTC	BLOWOFF TANK CONTROL VALVE	DPA	DIFFERENTIAL PRESSURE ASSEMBLY	GPM	GALLONS PER MINUTE	L	LITER	OAI	OUTSIDE AIR INTAKE	TSP	TOTAL STATIC PRESSURE
BTU	BRITISH THERMAL UNIT	DPS	DIFFERENTIAL PRESSURE SENSOR	GPR	GAS PRESSURE REGULATOR	L/h	LITERS PER HOUR (OR LITERS/HOUR)	OD	OUTSIDE DIAMETER	TSTAT	THERMOSTAT
BTUH	BRITISH THERMAL UNIT PER HOUR	DX	DIRECT EXPANSION	GS	GALVANIZED STEEL	L/m	LITERS PER MINUTE (OR LITERS/MINUTE)	OFM	OIL FLOWMETER	TU	TERMINAL UNIT
BWT	BOILER PLANT WATER TUBE	DXCC	DIRECT EXPANSION COOLING COIL			L/s	LITERS PER SECOND (OR LITERS/SECOND)	OR	OPERATING ROOM	TWU	THRU-WALL UNIT
				H	HUMIDIFIER	LAT	LEAVING AIR TEMPERATURE				
C	CENTIGRADE (CELSIUS)	EA	EXHAUST AIR	H&CW	HOT & COLD WATER	LBS/HR	POUNDS PER HOUR	P	PUMP	UC	UNDER CUT
CC	COOLING COIL	EAT	ENTERING AIR TEMPERATURE	HAC	HOUSEKEEPING AID CLOSET	LF	LINEAR FOOT (FEET)	PA	PASCAL	UL	UNDERWRITERS LABORATORY
CCD	COOLING COIL CONDENSATE DRAIN	EC	EVAPORATIVE COOLER	HB	HOSE BIBB	LGT	LEAVING GLYCOL TEMPERATURE	PC	PUMPED CONDENSATE		
CD	CEILING DIFFUSER	ECC	ENGINEERING CONTROL CENTER	HC	HEATING COIL	LH	LATENT HEAT	PCF	POUNDS PER CUBIC FOOT (FEET)	V	VALVE
CD-1	CONSTRUCTION DOCUMENTS (SUBMISSION1)	ECU	EVAPORATIVE CONDENSER UNIT	HD	HEAD	LPG	LIQUID PROPANE GAS	PD	PRESSURE DROP	VAV	VARIABLE AIR VOLUME
CD-2	CONSTRUCTION DOCUMENTS (SUBMISSION2)	EDH	ELECTRIC DUCT HEATER	HD	HOOD	LPR	LOW PRESSURE RETURN (STEAM CONDENSATE)	PEF	PROPELLER (TYPE) EXHAUST FAN	VD	VOLUME DAMPER (MANUAL OPPOSED BLADE)
CENT	CENTRIFUGAL	EER	ENERGY EFFICIENCY RATIO	HOA	HAND/OFF/AUTOMATIC	LPRC	LOW PRESSURE STEAM RETURN (CLEAN)	PF	PRE-FILTER	VFD	VARIABLE FREQUENCY DRIVE
CFH	CUBIC FEET PER HOUR	EF	EXHAUST FAN	HP	HEAT PUMP	LLHX	LIQUID TO LIQUID HEAT EXCHANGER	PG	PRESSURE GAGE	VHA	VETERANS HEALTH ADMINISTRATION
CFM	CUBIC FEET PER MINUTE	EG	EXHAUST GRILLE	HP	HORSEPOWER	LPS	LOW PRESSURE STEAM	PGW	PROPYLENE GLYCOL-WATER (SOLUTION)	VSD	VARIABLE SPEED DRIVE
CFT	CUBIC FEET	EGS	EMERGENCY GAS SHUTOFF	HPDT	HIGH PRESSURE DRIP TRAP	LPSC	LOW PRESSURE STEAM (CLEAN)	PHC	PREHEAT COIL		
CFP	CHEMICAL FEED PUMP	EGT	ENTERING GLYCOL TEMPERATURE	HPR	HIGH PRESSURE RETURN (STEAM CONDENSATE)	LSD	LINEAR SLOT DIFFUSER	PPM	PARTS PER MILLION	W	WATTS
CG	CEILING GRILLE	EH	EXHAUST HOOD	HPS	HIGH PRESSURE SUPPLY (STEAM)	LTCP	LOCAL TEMPERATURE CONTROL PANEL	PRS	PRESSURE REGULATING (VALVE) STATION	WB	WET-BULB (TEMPERATURE)
CH	CHILLER	EJ	EXPANSION JOINT	HRC	HEAT RECOVERY COIL	LVG	LEAVING	PRV	PRESSURE REGULATING VALVE	WG	WATER GAGE
CHP	CHILLED WATER PUMP	EMD	END OF MAIN DRIP (STEAM)	HRD	HEAT RECOVERY DEVICE	LVR	LOUVER	PSI	POUNDS PER SQUARE INCH	WPD	WATER SIDE PRESSURE DROP
CHW	CHILLER WATER	ENT	ENTERING	HRP	HYDRONIC RADIANT (CEILING) PANEL	LWT	LEAVING WATER TEMPERATURE	PSIA	POUNDS PER SQUARE INCH – ABSOLUTE		
CHR	CHILLED WATER RETURN	ER	EXHAUST REGISTER	HRW	HEAT RECOVERY WHEEL			PSIG	POUNDS PER SQUARE INCH – GAGE	YR	YEAR
CHS	CHILLED WATER SUPPLY	ERC	ELECTRIC REHEAT COIL	HSTAT	HUMIDISTAT	M	METER, SI UNIT	PSS	PRIMARY SECONDARY SYSTEM		
CI	CAST IRON	ERP	ELECTRIC RADIANT PANEL	HTM	HUMIDIFIER TERMINAL	M/s	METERS PER SECOND (OR METERS/SECOND)	PSV	PRESSURE SAFETY VALVE		
CM	CARBON MONOXIDE	ESP	EXTERNAL STATIC PRESSURE	HUM	HUMIDIFIER UNIT MOUNTED	MA	MIXED AIR	PTAC	PACKAGED TERMINAL AIR CONDITIONER		
CM	CUBIC METER	ET	EXPANSION TANK	HVU	HEATING AND VENTILATING UNIT	MAT	MIXED AIR TEMPERATURE				
CM/S	CUBIC METER PER SECOND	ETO	ETHYLENE OXIDE	HW	HOT WATER	MAU	MAKE-UP AIR UNIT	R	RELOCATE		
CO	CLEAN OUT	EUH	ELECTRIC UNIT HEATER	HWC	HOT WATER COIL	MAV	MANUAL AIR VENT	R/E	RETURN OR EXHAUST		
		EWC	EVAPORATIVE WATER COOLER	HWHC	HOT WATER HEATING COIL						
		EWT	ENTERING WATER TEMPERATURE								

GENERAL NOTES:

A. ALL PIPING AND DUCTS IN FINISHED ROOMS OR SPACES SHALL BE CONCEALED IN FURRED CHASES OR SUSPENDED CEILINGS, UNLESS OTHERWISE NOTED.

B. PROVIDE ACCESS PANELS OR DOORS IN INACCESSIBLE CEILINGS AND/OR CHASES FOR ALL VALVES, TRAPS, DAMPERS, CLEANOUTS, COILS, FANS, CONTROLS, ETC. ACCESS DOOR RATING SHALL MATCH CLASSIFICATION OF WALL AND CEILING FIRE RATING.

C. COORDINATE THE LOCATION OF ALL DIFFUSERS, GRILLES, REGISTERS, ACCESS DOORS, ETC., WITH THE ARCHITECTURAL REFLECTED CEILING PLAN(S).

D. ALL ROUND RUN OUTS AND DROPS TO DIFFUSERS SHALL BE THE SAME NOMINAL SIZE AS THE SCHEDULED DIFFUSER NECK SIZE.

E. THE FIRST FIGURE OF DUCT SIZE INDICATES DIMENSION OF FACE SHOWN OR INDICATED. ALL DUCT SIZES SHOWN ON DRAWINGS ARE NET INSIDE DIMENSIONS.

F. PROVIDE TURNING VANES IN ALL SQUARE ELBOWS. EXCEPT TRANSFER AIR SOUND ELBOWS.

G. THE CFM OF EACH DIFFUSER, REGISTER, ETC., IS INDICATED IN THE SYMBOL DESIGNATION ON THE DRAWINGS.

H. REFER TO THE ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF ALL FIRE RATED AND/OR SMOKE RATED WALLS AND ASSEMBLIES. PROVIDE APPROVED FIRE AND FIRE/SMOKE DAMPERS IN ALL REQUIRED PENETRATIONS FOR DUCTWORK, GRILLES, REGISTERS AND DIFFUSERS. ALL PIPE AND DUCTWORK PENETRATIONS OF FIRE, SMOKE AND FULL HEIGHT WALLS SHALL BE CAULKED AIR TIGHT TO THE ADJACENT STRUCTURE BY MEANS OF U.L. APPROVED FIRE PROOF CAULKING MATERIAL.

I. CONTRACTOR SHALL COORDINATE ALL DUCTWORK, PIPING, PLUMBING AND FIRE PROTECTION PIPING WITH STRUCTURAL AND ELECTRICAL SYSTEMS AND SHALL PROVIDE NECESSARY OFFSETS TO AVOID CONFLICTS AND TO MAINTAIN EQUIPMENT ACCESS AND SERVICEABILITY.

J. CONTRACTOR SHALL FURNISH ALL NECESSARY STRUCTURES, INSERTS, SLEEVES, AND HANGING DEVICES FOR INSTALLATION OF MECHANICAL AND PLUMBING EQUIPMENT, DUCTWORK AND PIPING. ETC. CONTRACTOR SHALL COORDINATE WITH GENERAL CONTRACTOR AND ALL BUILDING TRADES TO AVOID CONFLICTS AND TO MAINTAIN EQUIPMENT ACCESS AND SERVICEABILITY.

K. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL NECESSARY MISCELLANEOUS ANGLES, CHANNELS, UNISTRUT, ETC., AS MAYBE REQUIRED TO ADEQUATELY SUPPORT THE MECHANICAL PIPING. DUCTWORK, AND EQUIPMENT IN A MANNER APPROVED BY THE ARCHITECT WHICH WILL NOT OVERLOAD THE BUILDING STRUCTURAL SYSTEM.

L. SEAL ALL TRANSVERSE JOINTS, LONGITUDINAL SEAMS, DUCTWALL PENETRATIONS AND FITTING CONNECTIONS ON ALL DUCT SYSTEMS.

CONTROLS GENERAL NOTES:

1. ALL NEW CONTROLS TO COMMUNICATE WITH EXISTING EMS. FIELD INVESTIGATE EXISTING CONTROLS EQUIPMENT TO DETERMINE CAPACITIES AND NETWORK LAYOUT PRIOR TO BID. SUBMIT DETAILED NETWORK DIAGRAM AS REQUIRED BY SPECIFICATIONS.
2. PROVIDE CONTROL CABINET WHERE REQUIRED (SUITABLE FOR INTENDED LOCATION) COMPLETE WITH POWER SUPPLIES, CONDUIT, SENSOR WIRING, COMMUNICATION WIRING AND RELATED HARDWARE AND SOFTWARE. UNLESS NOTED OTHERWISE, THE BUILDING CONTROL SYSTEM SHALL BE CONNECTED TO EMERGENCY POWER.
3. ALL SETPOINTS INDICATED SHALL BE ADJUSTABLE AT THE HOST COMPUTER WORKSTATION AND VIA A LAPTOP COMPUTER CONNECTED TO ANY EMS CONTROL PANEL OR CONTROLLER. ACTUAL POINT NAMES SHALL MATCH NAMING CONVENTION OF EXISTING EMS. POINT NAMES LISTED ON THE CONTROL DIAGRAMS ARE FOR REFERENCE ONLY.
4. COORDINATE ALL SENSOR INSTALLATIONS WITH THE MECHANICAL CONTRACTOR AND SUBMIT PROPOSED LOCATIONS ON PIPING COORDINATION DRAWING SUBMITTAL. COORDINATE TO INSURE THAT THE SENSOR MANUFACTURER'S RECOMMENDED UPSTREAM AND DOWNSTREAM PIPE DIAMETERS ARE PROVIDED (ESPECIALLY FLOW ELEMENTS AND TRANSMITTERS).
5. WHENEVER A UNIT IS SHUTDOWN BECAUSE OF ONE OF ITS SAFETIES, THE BAS SHALL RETAIN IN MEMORY THE READING AND SET POINT OF EACH DEVICE TO HELP THE OPERATOR TO ISOLATE THE CAUSE OF THE SHUTDOWN.
6. IF ANY LOCAL, TERMINAL, OR UNITARY CONTROLLER OR EQUIPMENT MANUFACTURER'S CONTROL SYSTEM LOSES COMMUNICATION WITH THE BAS NETWORK, AN ALARM SHALL BE GENERATED BY THE BAS INDICATING THE LOCATION OF THE FAULT.
7. UNLESS NOTED OTHERWISE, ALL CONTROL VALVES SHALL HAVE PROPORTIONAL CONTROL. NO FLOATING-POINT CONTROLS SHALL BE ALLOWED. VALVES SHALL UTILIZE A 0-10 VDC CONTROL SIGNAL.
8. VFD'S SHALL BE CONNECTED TO THE EMS NETWORK THROUGH A DIRECT NETWORK CONNECTION AS WELL AS THROUGH THE HARDWIRED POINTS INDICATED. IT IS THE RESPONSIBILITY OF THE EMS CONTRACTOR TO COORDINATE AND ADAPT THE EMS NETWORK TO THE COMMUNICATIONS PROTOCOLS AVAILABLE FROM THE VFD MANUFACTURER. THE FOLLOWING POINTS SHALL BE INTEGRATED INTO THE EMS: SPEED FEEDBACK, FREQUENCY OUTPUT, CURRENT, TORQUE, POWER, DC BUS VOLTAGE, OUTPUT VOLTAGE, KWH COUNTER, DRIVE TEMPERATURE, ALARMS, STATUSES
9. DUCT SMOKE DETECTORS PROVIDED AND INSTALLED BY THE FIRE ALARM CONTRACTOR (BELOW IN SPACE). WIRE AND CONDUIT TO THE MOTOR CONTROLLER AND THE FACP BY THE FIRE ALARM CONTRACTOR. POWER TO THE DETECTOR, WIRE, AND CONDUIT BY THE ELECTRICAL CONTRACTOR. COORDINATE WITH ELECTRICAL PLANS AND FIRE ALARM CONTRACTOR FOR REQUIRED POWER.
10. VFD'S SHALL BE CONNECTED TO THE EMS NETWORK THROUGH A RS486 OR BACNET IP CONNECTION AS WELL AS THROUGH THE HARDWIRED POINTS INDICATED. IT IS THE RESPONSIBILITY OF THE EMS CONTRACTOR TO COORDINATE AND ADAPT THE EMS NETWORK TO THE COMMUNICATIONS PROTOCOLS AVAILABLE FROM THE VFD MANUFACTURER.
11. CONTROLS SHALL BE SCHNEIDER ELECTRIC BUILDING AUTOMATION SERVER OR APPROVED EQUAL BY VA FT. HARRISON ENGINEERING DEPARTMENT.

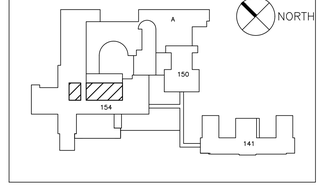
DUCTWORK SYMBOLS

UP / DN	SUPPLY DUCT (UP & DOWN)
UP / DN	RETURN DUCT (UP & DOWN)
	VANED ELBOW & AIR SPLIT TYPE DUCT TAKE-OFF
	CONNECT NEW DUCT TO EXISTING DUCT
R	INCLINED RISE, IN DIRECTION OF AIR FLOW
D	INCLINED DROP, IN DIRECTION OF AIR FLOW
	LIMIT OF DEMOLITION
FC	FLEXIBLE CONNECTION, EQUIPMENT, VIBRATION, OR SEISMIC
	VANED ELBOW (PROVIDE ALL SQUARE OR RECTANGULAR ELBOWS WITH VANES EVEN IF SYMBOL IS MISSING)
10x8	NEW DUCT (INSIDE DIMENSIONS: WIDTH x DEPTH)
	EXISTING DUCT TO REMAIN
	EXISTING DUCT TO BE REMOVED
	LOUVER (LOUVER SPECIFIED IN ARCHITECTURAL SECTION.)
VD	MANUAL VOLUME DAMPER
FD	FIRE DAMPER
F/S DPR	COMBINATION FIRE/SMOKE DAMPER
	AUTOMATIC CONTROL DAMPER MODULATING
45° SUPPLY	STANDARD BRANCH SUPPLY OR RETURN, NO SPLITTER (45° TAP)
45° RETURN	

PIPING SYMBOLS

	DIRECTION OF PIPE PITCH (DOWN)
	DIRECTION OF FLOW
	ANCHOR
	REDUCER OR INCREASER
	ECCENTRIC REDUCER
	TOP CONNECTION, 45° OR 90°
	BOTTOM CONNECTION, 45° OR 90°
	SIDE CONNECTION
	CAPPED OUTLET
	RISE OR DROP IN PIPE
	UNION
	PIPE UP
	PIPE DOWN
	INVERTED BUCKET TRAP SET INCLUDING PIPING ACCESSORIES SEE DETAIL
	FLOAT & THERMOSTATIC TRAP SET INCLUDING PIPING ACCESSORIES SEE DETAIL
	THERMOSTATIC TRAP SET INCLUDING PIPING ACCESSORIES SEE DETAIL
T	THERMOMETER
P	PRESSURE GAGE
FE	FLOW ELEMENT
	REFRIGERANT SIGHT GLASS
	TEST PLUG (PRESSURE/TEMPERATURE)
AV	AUTOMATIC AIR VENT
MV	MANUAL AIR VENT
C	QUICK-COUPLE HOSE CONNECTOR
CHS	CHILLED WATER SUPPLY
CHR	CHILLED WATER RETURN
MW	MAKE-UP WATER
D	DRAIN LINE
V	VENT LINE
X	EXISTING PIPE TO BE REMOVED

KEY PLAN NTS



'BID SET'

Revisions:	Date
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08/06/2018

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Drawing Title: MECHANICAL SYMBOLS AND ABBREVIATIONS

– / – / VAPAHCS PLANNING AND ENGINEERING

Project Title: REPLACE PENTHOUSE HVAC SYSTEMS
CONTRACT NO. VA259-17-C-0212

Location: FT. HARRISON HELENA, MT

Date: 07/21/17 | Checked: OG | Drawn: CR

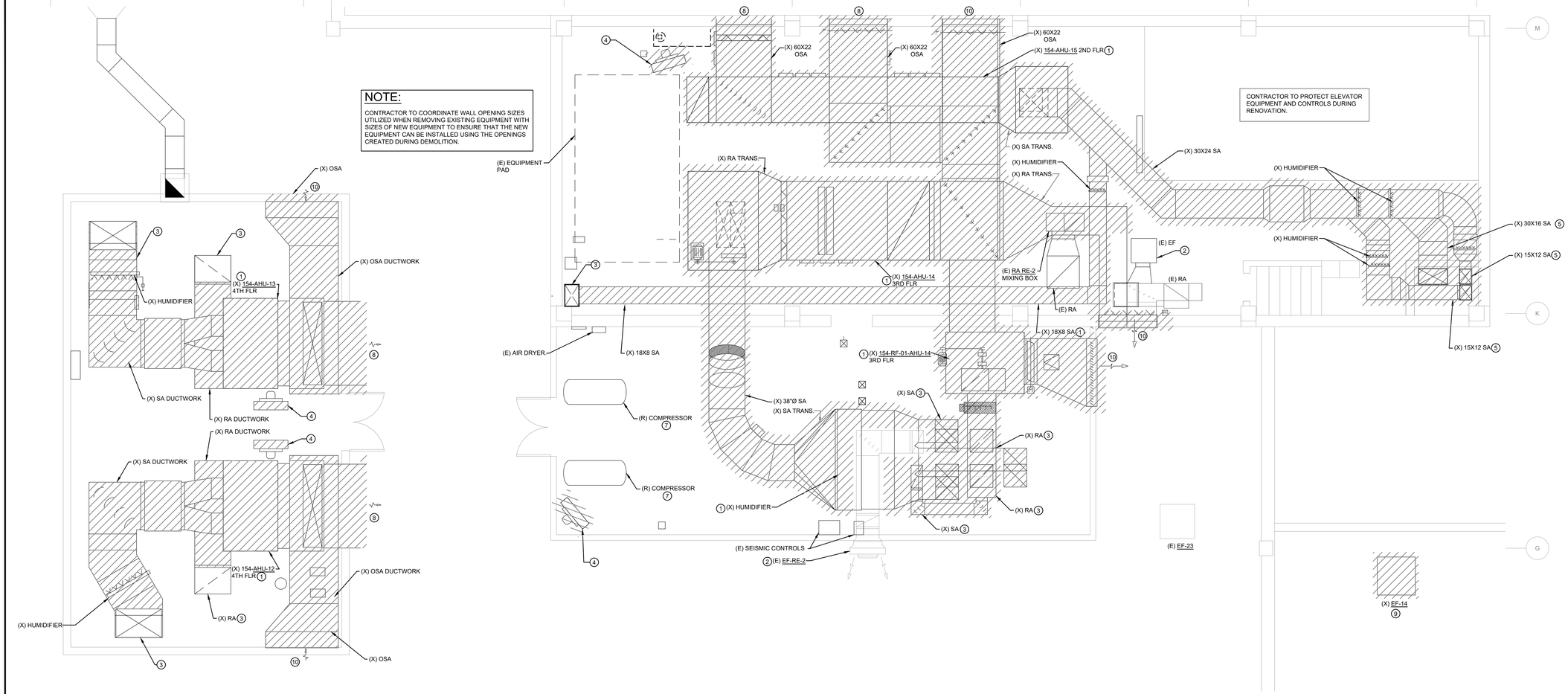
Project Number: 436-17-102

Building Number: 154

Drawing Number: M001 -- --

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231



1 HVAC DEMOLITION PLAN - PENTHOUSE
SCALE: 1/4" = 1'-0"

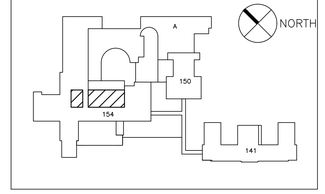
DEMOLITION GENERAL NOTES:

1. ALL WORK SHALL BE PERFORMED IN A CLEAN AND WORKMANLIKE MANNER. CARE SHALL BE EXERCISED TO MINIMIZE ANY INCONVENIENCE OR DISTURBANCE TO OTHER AREAS OF THE BUILDING WHICH ARE TO REMAIN IN OPERATION.
2. REFER TO SHEET G-001 FOR INFECTION CONTROL MEASURES.
3. ALL UTILITY OR SYSTEM SHUTDOWNS SHALL BE COORDINATED WITH THE OWNER AND ENGINEER. NO SHUTDOWNS CAN OCCUR WITHOUT PRIOR PERMISSION FROM THE OWNER.
4. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND FIELD CONDITIONS PRIOR TO PROCEEDING WITH ANY WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER FOR RESOLUTION.
5. THE EXISTING CONDITIONS ARE BASED ON "AS-BUILT" DRAWINGS AND LIMITED FIELD VERIFICATIONS. THE CONTRACTOR SHALL VERIFY ACTUAL FIELD CONDITIONS AND ANY DISCREPANCIES SHALL BE IMMEDIATELY REPORTED TO THE CONTRACTING OFFICER.
6. ALL WORK SHALL CONFORM TO THE LOCAL AND STATE BUILDING CODE AND ORDINANCES.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THEIR PORTION OF THE WORK WITH OTHER PORTIONS OF WORK BY OTHER TRADES.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, AND SAFETY TO THE PUBLIC AND TO PROPERTY BOTH PRIVATE AND PUBLIC.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLETE REMOVAL OF ALL EXISTING EQUIPMENT, PIPING, CONDUIT, WIRING, AND DEVICES NOT REQUIRED FOR THE WORK AND NOT SHOWN AS EXISTING TO REMAIN AS INDICATED ON DRAWINGS. DRAWINGS ARE SCHEMATIC IN NATURE AND INDICATE MAJOR ITEMS OF EXISTING EQUIPMENT AND SYSTEMS.
10. ALL SHUT DOWNS AND DEMOLITION SHALL BE PHASED AND COORDINATED WITH NEW WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION SHUT DOWNS AND REMOVAL OF ITEMS WITH THE OWNER'S REPRESENTATIVE AND THE OWNER'S PHASING REQUIREMENTS.
11. OPENINGS IN FLOORS, WALLS, CEILINGS, ROOFS, ETC. AS A RESULT OF REMOVED PIPING, DUCTWORK, FLUES, EQUIPMENT, FIXTURES, ETC SHALL BE PATCHED TO MATCH EXISTING BUILDING CONSTRUCTION. WORK SHALL BE PERFORMED BY CRAFTSMEN SKILLED IN THEIR RESPECTIVE TRADES.
12. THE INTENT OF THE DEMOLITION IS TO REMOVE THE ITEMS IN THEIR ENTIRETY TO INCLUDE ALL ASSOCIATED SUPPORT BASES, ANCHORAGE, HANGERS, CONTROLS, WIRING, CONDUIT, PIPING, ETC. AND CAP EXISTING SYSTEM TO REMAIN AT MAINS OR OTHER ACTIVE BRANCH LINES. MINIMIZE DEAD-END LENGTHS.
13. EXISTING MATERIALS THAT ARE REMOVED SHALL NOT BE REUSED IN NW SYSTEMS, EXCEPT WHERE INDICATED AS BEING RELOCATED.
14. ITEMS REMOVED SHALL BE LEGALLY DISPOSED OF OFF THE SITE; COORDINATE WITH OWNER, ARCHITECT, AND DIVISION 1 REQUIREMENTS, LIMITS, ETC. ON ON-SITE DUMPSTERS. USE OF OWNER'S TRASH DUMPSTERS FOR DISPOSAL OF DEMOLISHED WILL NOT BE PERMITTED.
15. CONTRACTOR SHALL REMOVE ALL ABANDONED UTILITIES AND ASSOCIATED APPURTENANCES IN AREA OF WORK. PROVIDE AN ESTIMATE IN QUANTITIES, TIME OR COST FOR ABANDONED UTILITIES. PROVIDE DETAILS ON ABANDONED UTILITIES, EG. CONDUIT, HYDRONICS, WIRING, POTABLE PLUMBING, DUCTING, COMPRESSED AIR EQUIPMENT THAT WILL BE FOUND IN THE AREA OF WORK.
16. CONTRACTOR TO REINSTALL ANY UTILITIES THAT MUST BE REMOVED IN ORDER TO PERFORM WORK.

KEY NOTES

1. DEMO EXISTING AHU AND ALL ASSOCIATED SUPPORTS.
2. EXHAUST FAN AND ASSOCIATED DUCTWORK TO REMAIN.
3. DEMO EXISTING DUCTWORK AND ASSOCIATED SUPPORTS TO 6" A.F.F. DEMO EXISTING FIRE SMOKE DAMPERS.
4. DEMO EXISTING UNIT HEATER AND ALL ASSOCIATED SUPPORTS.
5. DEMO EXISTING DUCTWORK AND ASSOCIATED SUPPORTS TO 6" ABOVE TOP OF CHASE. DEMO EXISTING FIRE SMOKE DAMPERS.
6. DEMO EXISTING VOLUMETRIC CONTROL CENTER AND ASSOCIATED SUPPORTS.
7. EXISTING AIR COMPRESSOR AND ALL ASSOCIATED EQUIPMENT TO BE RELOCATED. SEE NEW FLOOR PLAN.
8. EXISTING LOUVER OPENING TO BE MODIFIED AS REQUIRED FOR NEW DUCTWORK.
9. DEMO EXISTING EXHAUST FAN LOCATED ON THIRD FLOOR ROOF. REFER TO SHEET MD102 FOR CONTINUATION.
10. DEMO EXISTING LOUVER. SEAL OPENING WATER TIGHT.

KEY PLAN NTS



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Revisions:	Date
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Drawing Title
MECHANICAL
DEMOLITION PLAN (HVAC)
PENTHOUSE

-
-
VAPAHCS PLANNING AND ENGINEERING

Project Title
REPLACE PENTHOUSE
HVAC SYSTEMS
CONTRACT NO. VA259-17-C-0212

Location
FT. HARRISON HELENA, MT

Date 07/21/17 | Checked OG | Drawn CR

Project Number 436-17-102
Building Number 154
Drawing Number MD100 -- --

Office of Construction and Facilities Management
Department of Veterans Affairs

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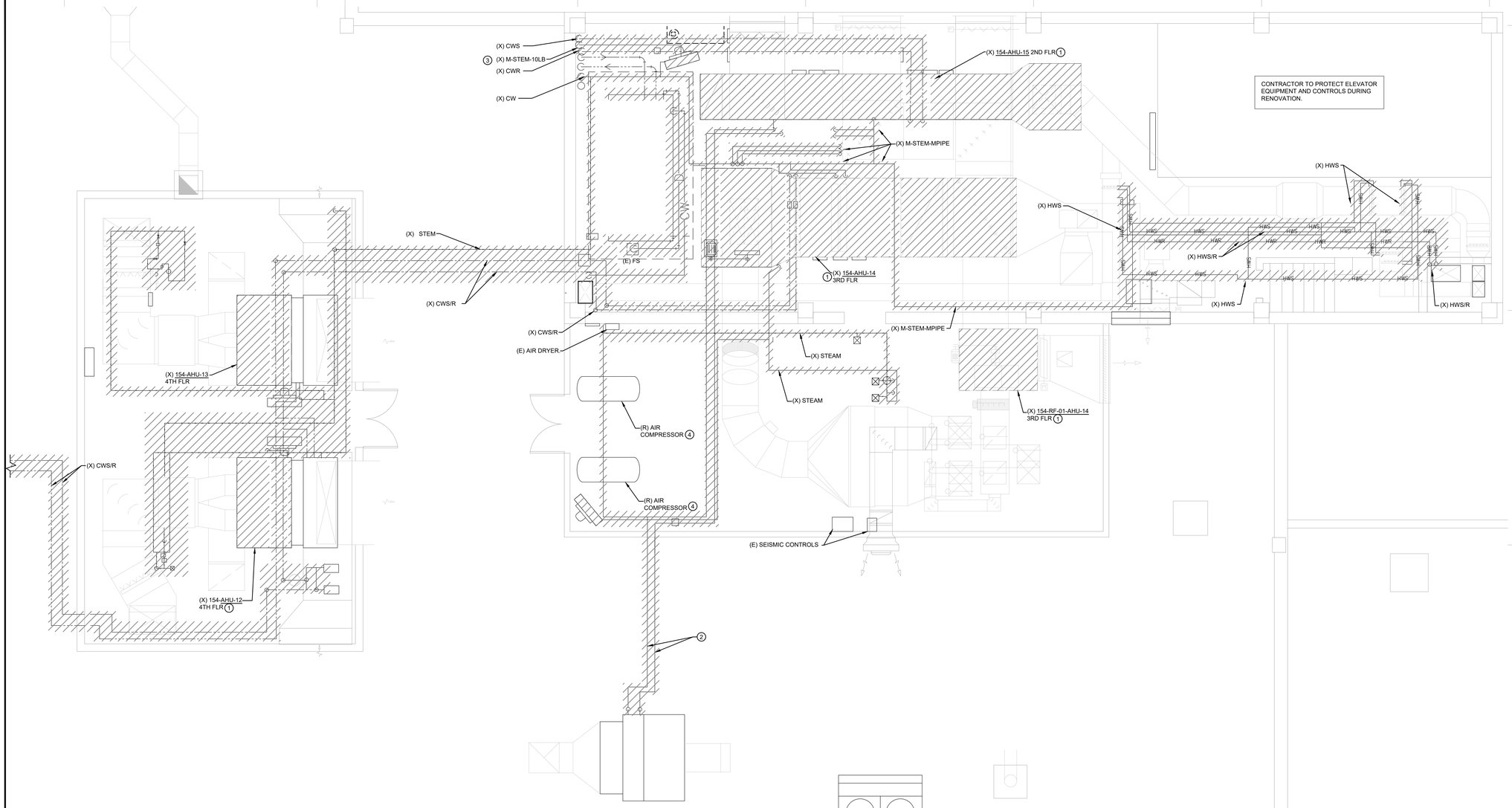
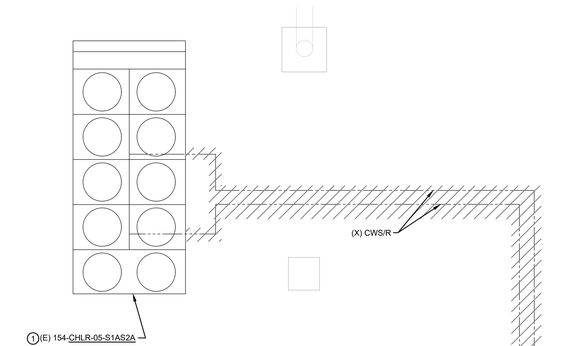


1 MECHANICAL PIPING DEMOLATION PLAN - PENTHOUSE
SCALE: 1/4" = 1'-0"



2 MECHANICAL PIPING DEMOLATION PLAN - PENTHOUSE
SCALE:

DEMOLITION GENERAL NOTES:

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3. ALL UTILITY OR SYSTEM SHUTDOWNS SHALL BE COORDINATED WITH THE OWNER AND ENGINEER. NO SHUTDOWNS CAN OCCUR WITHOUT PRIOR PERMISSION FROM THE OWNER.
4. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND FIELD CONDITIONS PRIOR TO PROCEEDING WITH ANY WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER FOR RESOLUTION.
5. THE EXISTING CONDITIONS ARE BASED ON "AS-BUILT" DRAWINGS AND LIMITED FIELD VERIFICATIONS. THE CONTRACTOR SHALL VERIFY ACTUAL FIELD CONDITIONS AND ANY DISCREPANCIES SHALL BE IMMEDIATELY REPORTED TO THE CONTRACTING OFFICER.
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9. CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLETE REMOVAL OF ALL EXISTING EQUIPMENT, PIPING, CONDUIT, WIRING, AND DEVICES NOT REQUIRED FOR THE WORK AND NOT SHOWN AS EXISTING TO REMAIN AS INDICATED ON DRAWINGS. DRAWINGS ARE SCHEMATIC IN NATURE AND INDICATE MAJOR ITEMS OF EXISTING EQUIPMENT AND SYSTEMS.
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13. EXISTING MATERIALS THAT ARE REMOVED SHALL NOT BE REUSED IN NW SYSTEMS, EXCEPT WHERE INDICATED AS BEING RELOCATED.
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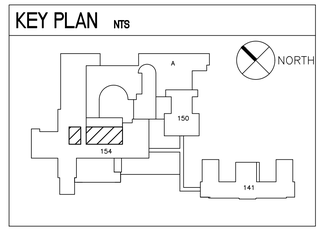
15. CONTRACTOR SHALL REMOVE ALL ABANDONED UTILITIES AND ASSOCIATED APPURTENANCES IN AREA OF WORK.
16. CONTRACTOR TO REINSTALL ANY UTILITIES THAT MUST BE REMOVED IN ORDER TO PERFORM WORK.

KEY NOTES

1. DEMO EXISTING EQUIPMENT PIPING TO PENETRATIONS AND ALL ASSOCIATED SUPPORTS.
2. DEMO EXISTING PIPE TO EXISTING UNIT AND CAP.
3. DEMO EXISTING PIPE TO RISER AND CAP FOR FUTURE USE.
4. RELOCATE EXISTING AIR COMPRESSORS, AIR DRYER, AND ALL OTHER ASSOCIATED EQUIPMENT. REFER TO NEW FLOOR PLAN.

KEY PLAN NTS



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Revisions:	Date
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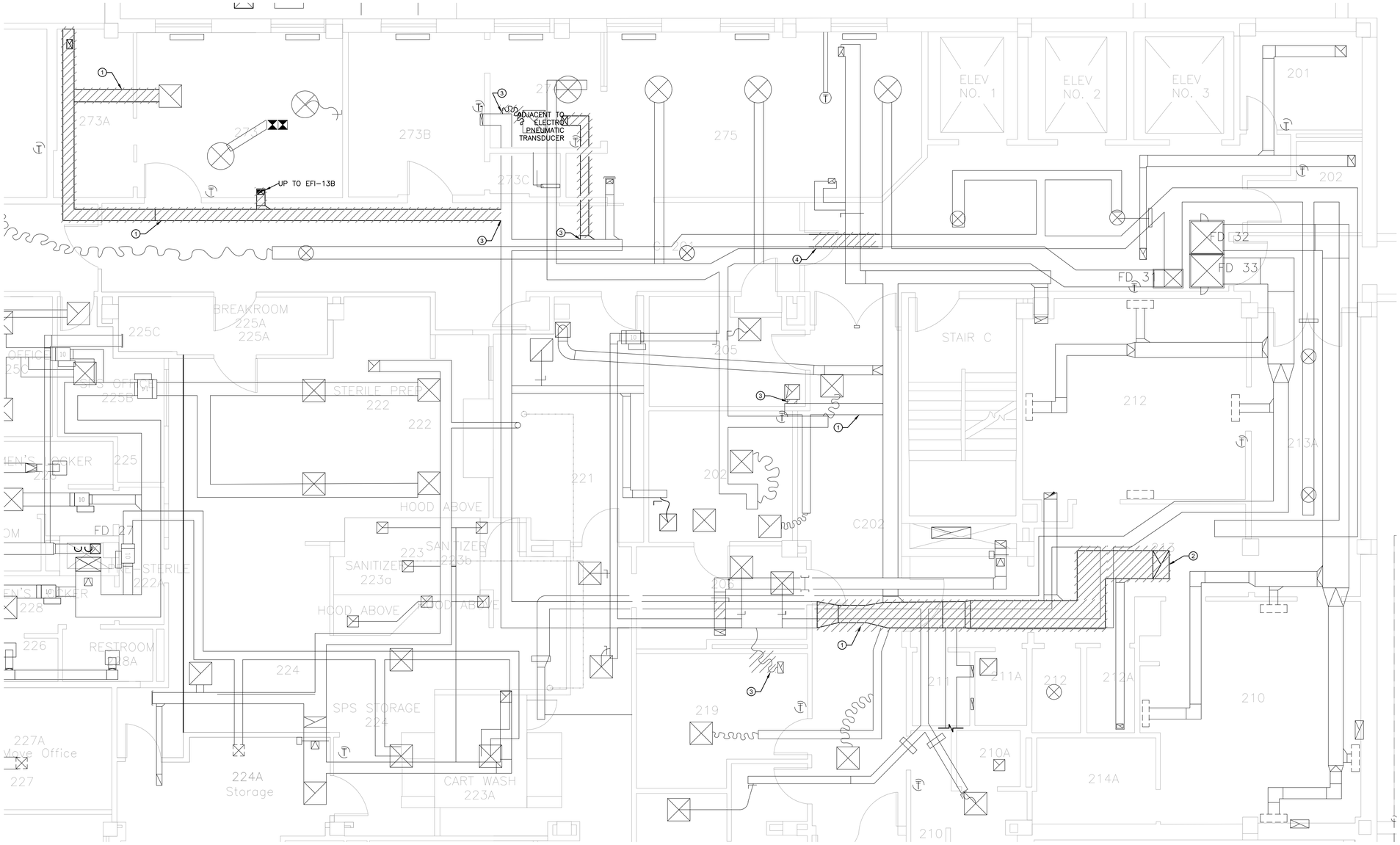
Drawing Title: MECHANICAL DEMOLITION PLAN (MECH PIPING) PENTHOUSE
– – VAPAHCS PLANNING AND ENGINEERING

Project Title: REPLACE PENTHOUSE HVAC SYSTEMS
CONTRACT NO. VA259-17-C-0212
Location: FT. HARRISON HELENA, MT
Date: 07/21/17 | Checked: OG | Drawn: CR

Project Number: 436-17-102
Building Number: 154
Drawing Number: MD101 -- --

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231



1 DEMOLITION PLAN (HVAC) - SECOND FLOOR
SCALE: 1/4" = 1'-0"

DEMOLITION GENERAL NOTES:

1. ALL WORK SHALL BE PERFORMED IN A CLEAN AND WORKMANLIKE MANNER. CARE SHALL BE EXERCISED TO MINIMIZE ANY INCONVENIENCE OR DISTURBANCE TO OTHER AREAS OF THE BUILDING WHICH ARE TO REMAIN IN OPERATION.
2. REFER TO SHEET G-001 FOR INFECTION CONTROL MEASURES.
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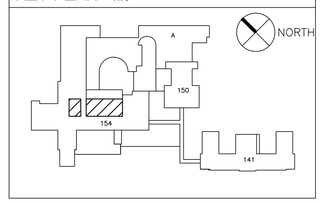
15. CONTRACTOR SHALL REMOVE ALL ABANDONED UTILITIES AND ASSOCIATED APPURTENANCES IN AREA OF WORK.
16. CONTRACTOR TO REINSTALL ANY UTILITIES THAT MUST BE REMOVED IN ORDER TO PERFORM WORK.

KEY NOTES

1. DEMO EXISTING EXHAUST DUCTWORK TO PENETRATIONS AND ALL ASSOCIATED SUPPORTS. EXISTING REGISTERS AND CONNECTIONS ARE TO REMAIN IN CEILING. FIELD VERIFY EXISTING LOCATION AND SIZE.
2. DEMO EXISTING EXHAUST FAN EF-14 (ON ROOF)
3. DEMO EXISTING EXHAUST DUCTWORK AND ASSOCIATED SUPPORTS. SEAL EXISTING DUCTWORK AIR TIGHT. EXISTING REGISTERS AND CONNECTIONS ARE TO REMAIN IN CEILING.
4. DEMO PORTION OF EXISTING SUPPLY AIR DUCT. REFER TO NEW MECHANICAL FLOOR PLAN.

KEY PLAN NTS



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Drawing Title: MECHANICAL SECOND FLOOR DEMOLITION PLAN (HVAC)
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-
VAPAHCS PLANNING AND ENGINEERING

Project Title: REPLACE PENTHOUSE HVAC SYSTEMS
CONTRACT NO. VA259-17-C-0212
Location: FT. HARRISON HELENA, MT
Date: 07/21/17 | Checked: OG | Drawn: CR

Project Number: 436-17-102
Building Number: 154
Drawing Number: MD102 -- --

Office of Construction and Facilities Management
Department of Veterans Affairs

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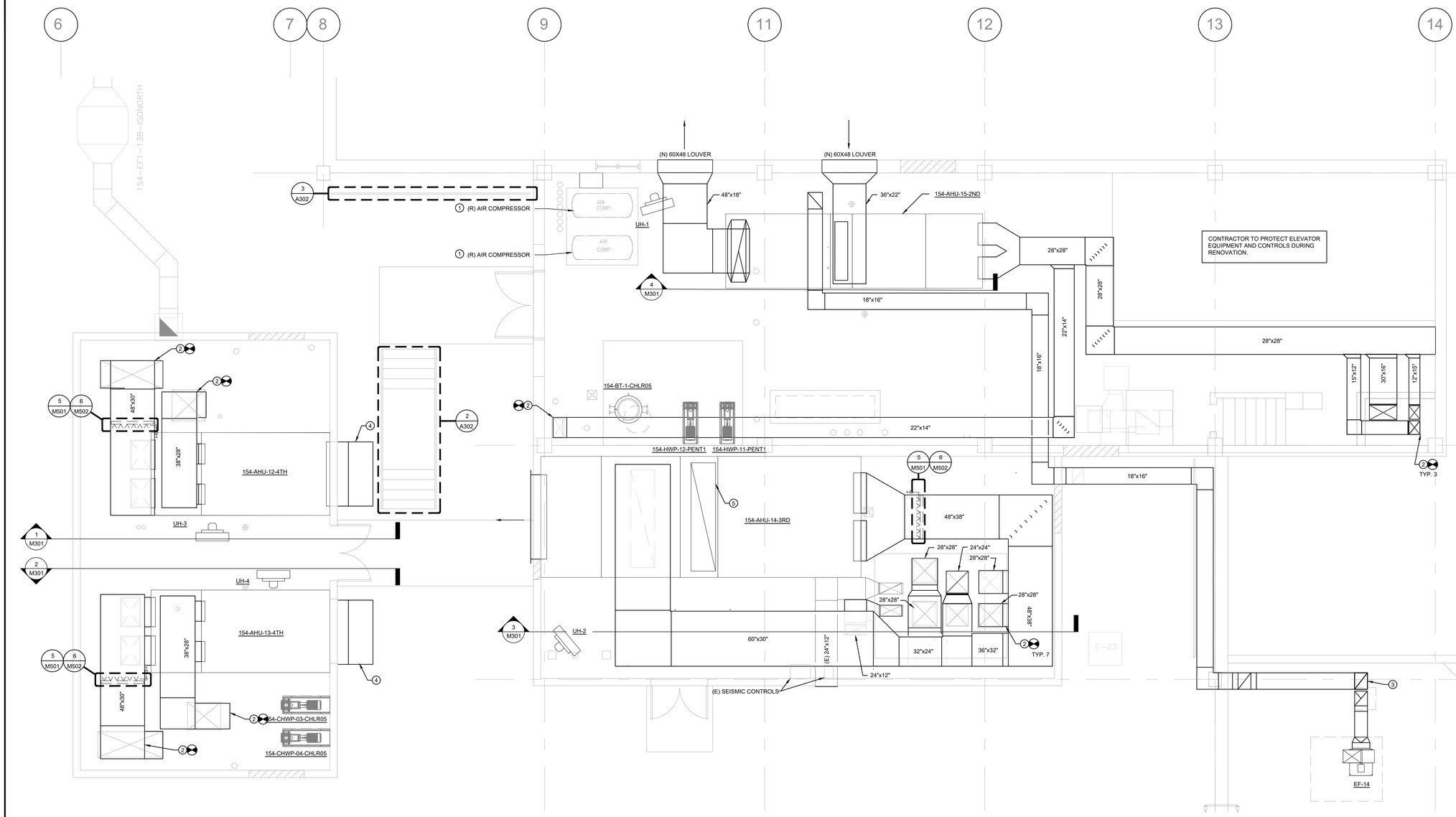


1 PENTHOUSE HVAC PLAN
SCALE: 1/4" = 1'-0"

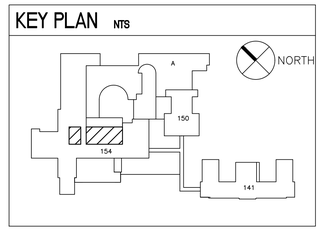
GENERAL NOTES

1. LIGHTING AND SPRINKLER HEADS TAKE PRECEDENCE OVER DIFFUSER LOCATION. CONTRACTOR SHALL MAKE NECESSARY ADJUSTMENT TO DIFFUSERS TO AVOID ANY CONFLICT WITH LIGHTING LAYOUT AND SPRINKLER HEADS.
2. THERMOSTATS SHALL BE MOUNTED PER ADA REQUIREMENTS. MAXIMUM HEIGHT FOR FRONT ACCESS SHALL BE 48" AFF. DO NOT MOUNT ABOVE FIXED COUNTER UNLESS KNEE HOLE ACCESS IS PROVIDED.
3. CONTRACTOR SHALL COORDINATE ALL FINAL THERMOSTAT LOCATIONS WITH OWNER AND ARCHITECT PRIOR TO MOUNTING.
4. THE CONTRACTOR SHALL DO ALL NECESSARY CUTTING OF WALL AND CEILINGS.
5. NO STRUCTURAL MEMBER SHALL BE CUT WITHOUT PERMISSION FROM THE ENGINEER.
6. OPENINGS IN FLOORS, WALLS, CEILINGS, ROOFS, ETC. AS A RESULT OF REMOVED PIPING, DUCTWORK, FLUES, EQUIPMENT, FIXTURES, ETC SHALL BE PATCHED TO MATCH EXISTING BUILDING CONSTRUCTION. WORK SHALL BE PERFORMED BY CRAFTSMEN SKILLED IN THEIR RESPECTIVE TRADES.
7. DUCTWORK CONSTRUCTION AND INSTALLATION INCLUDING SHEET METAL GAUGES, REINFORCEMENT, JOINT SEALING, AIR LEAKAGE, AND DETAILS NOT SPECIFICALLY SHOWN ON DRAWINGS SHALL BE IN ACCORDANCE WITH CURRENT IMC & VA DUCT CONSTRUCTION STANDARDS.
8. CONTRACTOR SHALL PROVIDE COORDINATION FOR DUCTWORK ROUTE DRAWINGS, THIS MUST BE APPROVED BY ENGINEER PRIOR TO CONSTRUCTION.
9. DUCTWORK AND PIPING SHALL BE INSTALLED TIGHT TO THE CRAWL SPACE CEILING WHEN POSSIBLE FOR MAINTENANCE ACCESSIBILITY. CONTRACTOR SHALL WALK THE CRAWL SPACE AND VERIFY THE LAYOUT OF THE DUCTWORK PRIOR TO BIDDING THE PROJECT.
10. ALONG WITH PHASING, THE CONTRACTORS SHALL BE PREPARED TO PROVIDE TEMPORARY HVAC FOR AREAS AFFECTED BY SCOPE OF WORK.
11. REFER TO SHEET G-001 FOR INFECTION CONTROL MEASURES.

KEY NOTES (#)

1. NEW LOCATION FOR EXISTING AIR COMPRESSOR.
2. CONTRACTOR TO CONNECT TO EXISTING DUCTWORK. VERIFY SIZE OF DUCT IN FIELD. PROVIDE NEW FIRE SMOKE DAMPER AT FLOOR PENETRATION. PROVIDE NEW ACCESS DOOR IN DUCTWORK.
3. NEW RETURN DUCTWORK ON ROOF DOWN TO LEVEL 2 ROOF. SEE SHEET MH102 FOR CONTINUATION.
4. PROVIDE MANUFACTURER RECOMMENDED INTAKE AND EXHAUST HOOD.
5. OA DUCT ROUTED THROUGH ROOF. SEE SECTION ON SHEET M301.
6. CONTRACTOR TO ENSURE THAT THE FINAL LOCATION OF THE UNIT HEATER WILL NOT INTERFERE WITH THE OPERATION AND MAINTENANCE OF AHU.

KEY PLAN NTS



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Drawing Title: MECHANICAL PENTHOUSE HVAC PLAN
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CONTRACT NO. VA259-17-C-0212
Location: FT. HARRISON HELENA, MT
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