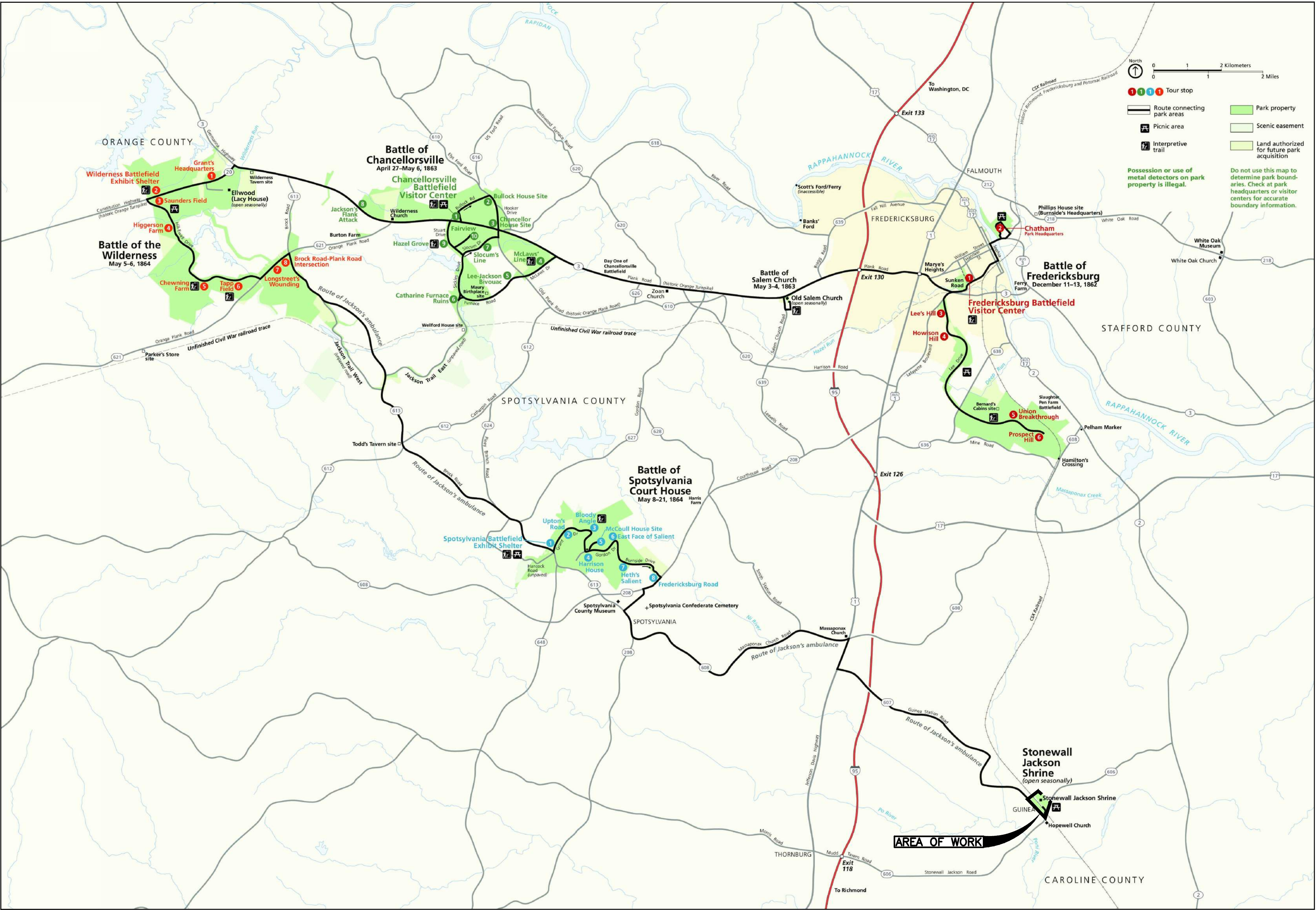




VIRGINIA

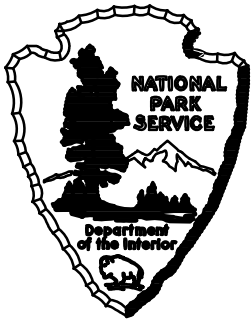


SHEET	SUB SHEET	TITLE OF SHEET
1.	COVER	SHEET
2.	G0.1	CONSTRUCTION STAGING & ACCESS PLAN & EXISTING CONDITIONS PLAN
3.	C0.0	LEGEND & ABBREVIATIONS
4.	C0.1	GENERAL NOTES
5.	C1.0	SURVEY CONTROL
6.	C2.0	DEMOLITION PLAN
7.	C3.0	OVERALL UTILITY PLAN
8.	C5.0	TRENCHING DETAILS
9.	C6.0	UTILITY AND SITE DETAILS
10.	L1.0	DEMOLITION, LAYOUT & PLANTING PLAN
11.	L2.0	PLANTING DETAILS
12.	G001	GENERAL NOTES
13.	AS101	ARCHITECTURAL SITE PLAN
14.	AD001	EXISTING CONDITIONS & DEMOLITION FLOOR PLANS
15.	A101	CONSTRUCTION FLOOR PLANS
16.	A131	REFLECTED CEILING PLAN
17.	A140	ROOF PLAN
18.	A200	ELEVATIONS
19.	A300	BUILDING SECTIONS
20.	M000	MECHANICAL LEGENDS AND NOTES
21.	M101	MECHANICAL DEMO PLAN – LEVEL 1
22.	M102	MECHANICAL DEMO PLAN – LEVEL 2
23.	M111	MECHANICAL FLOOR PLAN – LEVEL 1
24.	M112	MECHANICAL FLOOR PLAN – LEVEL 2
25.	M121	MECHANICAL PIPING PLAN – LEVEL 1
26.	M300	MECHANICAL SECTIONS
27.	M500	MECHANICAL DETAILS
28.	M600	MECHANICAL SCHEDULES
29.	M700	MECHANICAL CONTROLS
30.	M800	MECHANICAL CALCS AND COMCHECK
31.	GT0.0	GEO THERMAL SYMBOLS ABBREVIATIONS
32.	GT1.0	GEO THERMAL SITE PLAN
33.	GT2.0	GEO THERMAL SECTIONS DETAILS
34.	E0.0	ELECTRICAL COVER SHEET
35.	E1.0	ELECTRICAL POWER PLANS
36.	E6.0	ELECTRICAL ONE—LINE DIAGRAM
37.	E6.1	ELECTRICAL SCHEDULE

DESIGN GEOTHERMAL HVAC SYSTEM FOR
JACKSON SHRINE DEATH SITE (JSDS)
DRAFT CONSTRUCTION DOCUMENTS

305/41,029A 2/90; 305/40,003C; PARK MINI FOLDER 1990; REVISED & REDRAWN 2/94. UPDATED 11/98.SGS.

Mark	Sheet	REVISION	Date	Initial	QUALITY DESIGN CERTIFICATION
					☐ Prepared in Accordance with Design Development (Title I) _____ OR ☐ Variance from Design Development (Title I) _____ Approved by Superintendent on _____ Date _____ OR ☐ Construction Drawing Not Preceded by Design Development (Title I) _____ Project Manager _____ Date _____



DRAFT CONSTRUCTION DOCUMENTS

UNITED STATES
DEPARTMENT OF THE INTERIOR

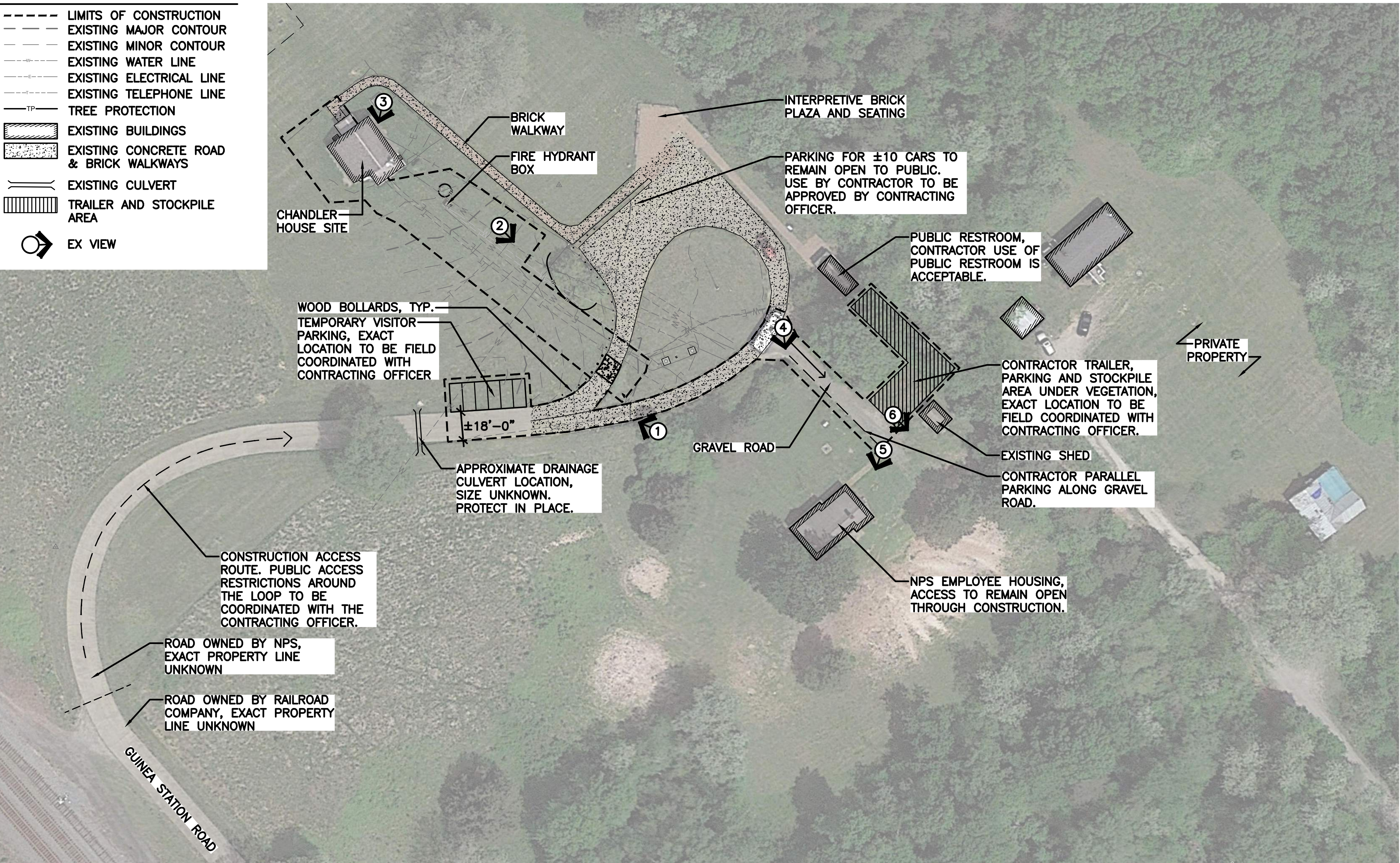
NATIONAL PARK SERVICE
DENVER SERVICE CENTER

TITLE OF DRAWING
COVER SHEET
LOCATION WITHIN PARK
DESIGN GEOTHERMAL HVAC SYSTEM FOR JSDS
NAME OF PARK
FREDERICKSBURG & SPOTSYLVANIA NATIONAL MILITARY PARK
REGION: NORTHEAST COUNTY: CAROLINE STATE: VIRGINIA

DRAWING NO.
XXX
XXXXXX
PKG. NO.
314741
SHEET
1
OF 37

PMIS 314741

- LEGEND**
- LIMITS OF CONSTRUCTION
 - - - EXISTING MAJOR CONTOUR
 - - - EXISTING MINOR CONTOUR
 - - - EXISTING WATER LINE
 - - - EXISTING ELECTRICAL LINE
 - - - EXISTING TELEPHONE LINE
 - TP - TREE PROTECTION
 - [Hatched Box] EXISTING BUILDINGS
 - [Stippled Box] EXISTING CONCRETE ROAD & BRICK WALKWAYS
 - [Double Line] EXISTING CULVERT
 - [Vertical Lines] TRAILER AND STOCKPILE AREA
 - [Circle with Arrow] EX VIEW



CONSTRUCTION STAGING & ACCESS PLAN & EXISTING CONDITIONS PLAN



CONTEXT MAP



IMAGE 1: ROADWAY TO PARKING LOT



IMAGE 2: EXISTING PARKING LOT



IMAGE 3: CHANDLER HOUSE SITE



IMAGE 4: GRAVEL ROAD TO EMPLOYEE HOUSING



IMAGE 5: EMPLOYEE HOUSING



IMAGE 6: EXISTING SHED

GENERAL NOTES:

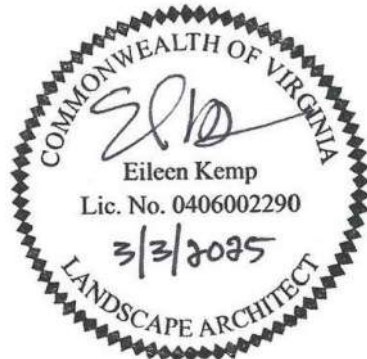
1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING THEMSELVES WITH THE CONTRACT DOCUMENTS, VERIFYING FIELD CONDITIONS AND DIMENSIONS, AND CONFIRMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. CONTRACTOR SHALL NOTIFY THE CONTRACTING OFFICER IN WRITING OF ANY DISCREPANCY WITHIN THE CONTRACT DOCUMENTS AND REQUEST CLARIFICATION PRIOR TO PROCEEDING WITH CONSTRUCTION.
2. CONTRACTOR SHALL NOT WILLFULLY PROCEED WITH CONSTRUCTION AS DESIGNED WHEN IT IS OBVIOUS THAT UNKNOWN OBSTRUCTIONS, AREA DISCREPANCIES AND/OR GRADE DIFFERENCES EXIST. SUCH CONDITIONS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE CONTRACTING OFFICER. THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ALL NECESSARY REVISIONS DUE TO FAILURE TO GIVE SUCH NOTIFICATIONS.
3. THE LOCATIONS OF EXISTING UTILITIES ARE SHOWN IN THE APPROXIMATE LOCATION BASED ON THE SITE SURVEY AND NPS PROVIDED AS-BUILT DRAWINGS. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES FAR ENOUGH IN ADVANCE OF NEW CONSTRUCTION TO ALLOW FOR POSSIBLE GRADE, DEPTH, ALIGNMENT, OR MATERIAL CHANGES. THE CONTRACTOR SHALL PROTECT EXISTING UTILITIES DURING ALL DEMOLITION AND CONSTRUCTION OPERATIONS. CONTRACTOR SHALL TAKE SOLE RESPONSIBILITY FOR COSTS INCURRED DUE TO DAMAGE AND REPLACEMENT OF UTILITIES TO REMAIN. THE CONTRACTOR SHALL IMMEDIATELY CONTACT GOVERNMENT UPON DISCOVERY OF A UTILITY DISCREPANCY OR CONFLICT AT LEAST ONE WEEK PRIOR TO CONSTRUCTION.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AS NECESSARY TO SATISFY ALL PERTINENT LOCAL, STATE AND FEDERAL CODES AND REGULATIONS.

SITE CONSTRUCTION ACCESS NOTES:

1. CONTRACTOR SHALL MINIMIZE SITE DISTURBANCE TO THE EXTENT POSSIBLE.
2. ALL WORK IS WITHIN A HISTORIC SITE AND ARCHEOLOGICALLY SENSITIVE AREA. GROUND DISTURBANCE IS TO BE LIMITED TO THE AREAS OF CONSTRUCTION, NPS SHALL PROVIDE ARCHEOLOGICAL MONITORING, IN THE EVENT NEEDED.
3. PRIOR TO CONSTRUCTION, CONTRACTOR IS TO COMPLETE PRE-CONSTRUCTION MEETINGS AND PROVIDE PROTECTION, ACCESS AND MAINTENANCE PLANS AND SCHEDULES FOR THE CONTRACTING OFFICER'S APPROVAL OF ALL EQUIPMENT CONSTRUCTION ACCESS, ROUTES, METHODS, PLANS AND SCHEDULES. REFERENCE DIVISION 01 AND TECHNICAL SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
4. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS AT AND ADJACENT TO THE JOB SITE, INCLUDING SECURITY AND SAFETY OF ALL PERSONS AND PROPERTY DURING THE PERFORMANCE OF THE WORK. THE CONTRACTOR SHALL ERECT AND MAINTAIN ALL PROTECTIVE DEVICES AS NECESSARY OR REQUIRED TO PROTECT ALL PERSONS ON THE SITE THROUGHOUT THE DURATION OF THE PROJECT. SAFETY DEVICES SHALL BE USED IN CONFORMANCE WITH CURRENT APPLICABLE FEDERAL, STATE, AND LOCAL BUILDING CODES AND ORDINANCES IN FORCE. PRIOR TO CONSTRUCTION, CONTRACTOR TO PROVIDE A TRAFFIC CONTROL PLAN, IDENTIFYING VEHICULAR AND PEDESTRIAN DETOURS.
5. REFER TO THIS SHEET FOR TREE PROTECTION LOCATIONS.
6. STAGING AREA IS TO BE LOCATED ON EXISTING GRAVEL, AS APPROVED BY THE CONTRACTING OFFICER. DO NOT EXCAVATE OR DISTURB BEYOND WHAT IS REQUIRED FOR STAGING AND UNLESS APPROVED BY THE CONTRACTING OFFICER. DAMAGE TO PAVEMENTS, GRAVEL, UNDERGROUND UTILITIES, AND OTHER IMPROVEMENTS AND AREAS OF PROTECTION, CAUSED DURING THIS WORK, SHALL BE REPAIRED TO ORIGINAL CONDITION OR BETTER AT NO ADDITIONAL COST TO THE GOVERNMENT.
8. CONTRACTOR SHALL RECOMMEND CONCRETE WASHOUT AREA(S) AND VEHICLE TRACKING DEVICE LOCATIONS, AS REQUIRED, FOR CONTRACTING OFFICER APPROVAL.

ABBREVIATIONS

&	AND
'	FEET
"	INCHES
DEMO	DEMOLITION
LOC	LIMITS OF CONSTRUCTION
MIN.	MINIMUM
MAX.	MAXIMUM
NTS	NOT TO SCALE
NPS	NATIONAL PARK SERVICE
QTY	QUANTITY
RE:	REFERENCE
SPECS	SPECIFICATIONS
SOI	SECRETARY OF INTERIOR



CONSTRUCTION DOCUMENTS

A/E FIRM	DESIGNED:	SUB SHEET NO.
PRIME & LA: DHM DESIGN DENVER, CO	MK Eileen Kemp SK/MK TECH. REVIEW: EK DATE: 3/03/2025	G0.1

TITLE OF SHEET	
CONSTRUCTION STAGING & ACCESS PLAN & EXISTING CONDITIONS PLAN	
GEOTHERMAL HVAC SYSTEM FOR JACKSON SHRINE DEATH SITE FREDERICKSBURG & SPOTSYLVANIA NMP	

DRAWING NO.	XXX XXXXXX
PKG. NO.	314741
SHEET	2
OF	37

PLOT DATE: Monday, March 3, 2025 5:04 PM LAST SAVED BY: PST/ADT
DRAWING LOCATION: g:\SULLIVAN\24.0935-nps - frsp geothermal hvac\314741\cad drawings\CIVIL\CD\CO.0 LEGEND & ABBREVIATIONS.dwg

BENCHMARK:

ELEVATIONS AND PROJECT COORDINATES ARE BASED ON CONTROL POINT 400, A 60D SPIKE, LOCATED APPROXIMATELY 97.0’ EAST OF THE SOUTHEAST CORNER OF THE EXISTING BUILDING.

ELEVATION = 149.40 (NAVD 1988 DATUM)

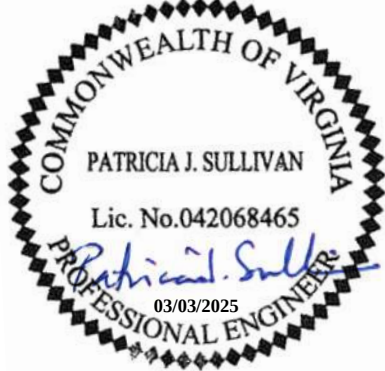
LEGEND	
EXISTING	PROPOSED
-----5500-----	-----5500-----
----->-----	
MAPPED WATER LINE	
-----W-----	
WATER VALVE	
WATER BLIND FLANGE	
-----E-----	
ELECTRIC LINE	FW
-----T-----	
MAPPED TELECOMMUNICATION LINE	E
-----T-----	
TELECOMMUNICATION LINE	
-----T-----	
GEO SUPPLY	
GEO RETURN	
GEO BOREHOLE	
-----T-----	
COMMUNICATIONS LINE	O
DRIVE	
FLAG POLE	
SIGN	
BOLLARD	
DECIDUOUS TREE	
CONTROL POINT	
CONCRETE/ SIDEWALK	

ABBREVIATIONS:

ABC	AGGREGATE BASE COURSE
APPROX	APPROXIMATE
APT	ANGLE POINT
ARCH	ARCHITECT
BLDG	BUILDING
BM	BENCHMARK
BOC	BACK OF CURB
CG	CAMPGROUND
CIP	CAST IRON PIPE
CL	CENTERLINE
CLIN	CONTRACT LINE ITEM
CMP	CORRUGATED METAL PIPE
CO*	CLEANOUT
CON	CONTOUR
CONC	CONCRETE
CONT	CONTINUOUS
COR	CORNER
CU	COPPER
C&G	CURB AND GUTTER
DEMO	DEMOLITION
DIA OR Ø	DIAMETER
DIM	DIMENSION
DIP	DUCTILE IRON PIPE
DTL.	DETAIL
EB	EAST BOUND
EL/ELEV	ELEVATION
ELEC	ELECTRICAL
ESMT	EASEMENT
EX	EXISTING
FDC	FIRE DEPARTMENT CONNECTION
FES	FLARED END SECTION
FFE	FINISHED FLOOR ELEVATION
FGW	FINISHED GRADE AT WALL
FHY	FIRE HYDRANT
FL	FLOW LINE
FT	FOOT
GB	GRADE BREAK
GR	GRATE (AREA OR VALLEY INLETS)
GV	GATE VALVE
HACP	HOT MIX ASPHALT CONCRETE PAVEMENT
HERCP	HORIZONTAL ELLIPTICAL REINFORCED CONCRETE PIPE
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HGL	HYDRAULIC GRADE LINE
HORZ	HORIZONTAL
HP	HIGH POINT
INV	INVERT
LF	LINEAL FEET
LP	LOW POINT
MAX	MAXIMUM
MECH	MECHANICAL
MEP	MECHANICAL, ELECTRICAL AND PLUMBING

MH	MANHOLE
MIN	MINIMUM
MOT	MAINTENANCE OF TRAFFIC
N.I.C.	NOT IN CONTRACT
NTS	NOT TO SCALE
PC	POINT OF HORIZONTAL CURVE
PCC	POINT OF COMPOUND CURVE
PERF	PERFORATED
PERIM	PERIMETER
PERP	PERPENDICULAR
PI	POINT OF HORIZONTAL INTERSECTION
PIV	PRESSURE INDICATOR VALVE
PL	PROPERTY LINE
PLBG	PLUMBING
POC	POINT OF CURVE
POT	POINT OF TANGENT
PRC	POINT OF REVERSE CURVE
PRKG	PARKING
PR	PROPOSED
PRV	PRESSURE REDUCING VALVE
PT*	POINT OF HORIZONTAL TANGENCY
PVC	POLYVINYL CHLORIDE PIPE
PVI	POINT OF VERTICAL INTERSECTION
PVMT	PAVEMENT
PVT	POINT OF VERTICAL TANGENCY
RCP*	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
R.O.W.	RIGHT OF WAY
SSWR	SANITARY SEWER
SF	SQUARE FOOT
STA	STATION
STRM	STORM SEWER
STRC	STRUCTURAL
SWLK	SIDEWALK
SY	SQUARE YARD
TELE	TELEPHONE
TB	THRUST BLOCK
TEMP	TEMPORARY
TOC	TOP OF CURB
TOW	TOP OF WALL (RE: NOTE BELOW)
TYP.	TYPICAL
UD	UNDER DRAIN
UG	UNDERGROUND
VERT	VERTICAL
VC	VERTICAL CURVE
WB	WEST BOUND

- NOTES:
- TOW SHALL BE TOP OF WATER ON UTILITY SHEETS ONLY AND TOP OF WALL ON ALL OTHER SHEETS.
 - THIS ABBREVIATION LIST IS APPLICABLE TO ALL C SHEETS.



CONSTRUCTION DOCUMENTS					
A/E FIRM	DESIGNED:	SUB SHEET NO.	TITLE OF SHEET		DRAWING NO.
PRIME: DHM DESIGN DENVER, CO	SKL	CO.0	LEGEND & ABBREVIATIONS		XXX
	CAD				XXXXXX
	PLS				
SUBCONTRACTOR: MARTIN/MARTIN	TECH. REVIEW:				PKG. NO.
	PJS				314741
	DATE:				SHEET
	03/17/2025		GEO THERMAL HVAC SYSTEM FOR JACKSON SHRINE DEATH SITE FREDERICKSBURG & SPOTSYLVANIA NMP		3
					OF 38

1. ALL MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS. ALL CONSTRUCTION SHALL BE SUBJECT TO GOVERNMENT INSPECTION.
2. THE CONTRACTOR SHALL HAVE ONE [1] SIGNED COPY OF PLANS APPROVED BY THE GOVERNMENT AND ONE COPY OF THE APPROPRIATE DESIGN AND CONSTRUCTION STANDARDS AND SPECIFICATIONS ON THE JOB SITE AT ALL TIMES.
3. CONTRACTOR SHALL NOTIFY THE CONTRACTING OFFICER PRIOR TO THE START OF CONSTRUCTION. A PRE-CONSTRUCTION MEETING SHALL BE SCHEDULED WITH THE CONTRACTING OFFICER PRIOR TO START OF WORK.
4. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS AT AND ADJACENT TO THE JOB SITE, INCLUDING, BUT NOT LIMITED TO, SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK, TRENCH EXCAVATION AND SHORING, TRAFFIC CONTROL AND SECURITY. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.
5. ALL TRENCHES SHALL BE ADEQUATELY SUPPORTED AND THE SAFETY OF WORKERS PROVIDED FOR AS REQUIRED BY THE MOST RECENT OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION [OSHA] "SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION." THESE REGULATIONS ARE DESCRIBED IN SUBPART P, PART 1926 OF THE CODE OF FEDERAL REGULATIONS. SHEETING AND SHORING SHALL BE UTILIZED WHERE NECESSARY TO PREVENT ANY EXCESSIVE WIDENING OR SLOUGHING OF THE TRENCH WHICH MAY BE DETRIMENTAL TO HUMAN SAFETY, TO THE PIPE BEING PLACED, OR TO ANY EXISTING SITE IMPROVEMENTS OR STRUCTURES. THE CONTRACTOR MAY BE REQUIRED TO USE AN APPROVED PILING INSTEAD OF SHEETING AND SHORING.
6. CONTRACTOR SHALL OBTAIN ALL APPLICABLE PERMITS FOR THE WORK SHOWN HEREIN.
7. ALL TRENCH BACKFILL AND SUBGRADE PREPARATION SHALL BE TESTED TO ENSURE COMPLIANCE WITH THE PROJECT SPECIFICATIONS AND SHALL BE TESTED AT REQUIRED FREQUENCIES BY AN APPROVED PRIVATE SOILS TESTING FIRM HIRED AND PAID FOR BY THE CONTRACTOR. TEST RESULTS SHALL BE REVIEWED AND APPROVED BY THE GOVERNMENT PRIOR TO INITIATION OF THE WARRANTY PERIOD.
8. CONTRACTOR SHALL CONFORM TO ALL FEDERAL, STATE AND LOCAL HEALTH AND SAFETY RULES AND REGULATIONS.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL UTILITIES DURING CONSTRUCTION AND FOR COORDINATING WITH THE APPROPRIATE UTILITY COMPANY FOR ANY UTILITY CROSSINGS REQUIRED. REPAIR OF DAMAGED UTILITIES SHALL BE AT THE CONTRACTORS EXPENSE, INCLUDING BUT NOT LIMITED TO UNKNOWN UNDERGROUND UTILITIES.
10. EXISTING FENCES, TREES, SIDEWALKS, CURBS AND GUTTERS, LANDSCAPING, STRUCTURES, AND IMPROVEMENTS DESTROYED, DAMAGED OR REMOVED DUE TO CONSTRUCTION OF THIS PROJECT SHALL BE REPLACED OR RESTORED IN KIND AT THE CONTRACTOR'S EXPENSE, UNLESS OTHERWISE INDICATED ON THESE PLANS.
11. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR MAINTAINING REASONABLE ACCESS TO AND FROM ALL OF THE ADJACENT PROPERTIES OR AREAS WITHIN THE PARK THROUGHOUT THE COURSE OF THE WORK.
12. CONTRACTOR SHALL OBTAIN A DEWATERING DISCHARGE PERMIT FROM THE VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY FOR ALL AREAS WHERE DEWATERING IS REQUIRED FROM AN EXCAVATION AND WATER IS DISCHARGED INTO A STORM SEWER, CHANNEL, IRRIGATION DITCH OR ANY WATERS OF THE UNITED STATES. A COPY OF THE APPROVED PERMIT MUST BE SUBMITTED TO THE CONTRACTING OFFICER PRIOR TO THE START OF ANY DEWATERING. A COPY OF THE APPROVED PERMIT MUST ALSO BE AVAILABLE ON THE PROJECT SITE AT ALL TIMES DURING CONSTRUCTION.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING STORM RUNOFF AND ANY GROUNDWATER ENCOUNTERED DURING THE CONSTRUCTION OF ANY PORTION OF THIS PROJECT. GROUNDWATER SHALL BE PUMPED, PIPED, REMOVED AND DISPOSED OF IN A MANNER WHICH DOES NOT CAUSE FLOODING OF EXISTING STREETS NOR EROSION ON ABUTTING PROPERTIES IN ORDER TO CONSTRUCT THE IMPROVEMENTS SHOWN ON THESE PLANS. NO CONCRETE SHALL BE PLACED WHERE GROUNDWATER IS VISIBLE OR UNTIL THE GROUNDWATER TABLE HAS BEEN LOWERED BELOW THE PROPOSED IMPROVEMENTS. ANY UNSTABLE AREAS, AS A RESULT OF GROUNDWATER, ENCOUNTERED DURING THE CONSTRUCTION OF THE PROPOSED IMPROVEMENTS SHALL BE STABILIZED AS AGREED UPON BY THE CONTRACTOR, THE CONTRACTING OFFICER, AND THE GEOTECHNICAL ENGINEER AT THE TIME OF OCCURRENCE.
14. THE CONTRACTOR IS RESPONSIBLE FOR FIELD LOCATING AND VERIFYING ELEVATIONS OF ALL EXISTING UTILITIES SHOWN ON THE PLANS, AND AT ANY HORIZONTAL AND VERTICAL UTILITY CROSSINGS PRIOR TO INSTALLING ANY OF THE NEW IMPROVEMENTS. IF A CONFLICT EXISTS AND/OR A DESIGN MODIFICATION IS REQUIRED, THE CONTRACTOR SHALL COORDINATE WITH THE GOVERNMENT TO MODIFY THE DESIGN PRIOR TO CONSTRUCTION.
15. PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION, THE CONTRACTOR SHALL CONTACT ALL UTILITIES TO COORDINATE SCHEDULES.
16. CONTRACTOR SHALL NOTIFY CONTRACTING OFFICER IN WRITING 48 HOURS PRIOR TO ANY SHUT-OFF IN SERVICE. THE NOTICES MUST HAVE CONTRACTOR'S PHONE NUMBER AND NAME OF CONTACT PERSON, AND EMERGENCY PHONE NUMBER FOR AFTER HOURS CALLS. ALL SHUT OFFS MUST BE APPROVED BY THE CONTRACTING OFFICER, UNLESS WRITTEN PERMISSION IS GIVEN OTHERWISE.
17. THE CONTRACTOR SHALL NOT OPERATE ANY CONSTRUCTION VEHICLES NOR PERFORM ANY CONSTRUCTION OPERATIONS BEFORE 7:30 AM OR AFTER 4:30 PM, MONDAY THROUGH FRIDAY. NO WORK WILL BE ALLOWED ON SUNDAYS OR HOLIDAYS WITHOUT PRIOR WRITTEN AUTHORIZATION FROM THE CONTRACTING OFFICER. THE CONTRACTING OFFICER RESERVES THE RIGHT TO FURTHER RESTRICT OR MODIFY THESE HOURS OF OPERATION IF CONDITIONS WARRANT.

- WATER NOTES:

1. ALL MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND DRAWINGS. ALL MAIN INSTALLATIONS/SYSTEM MODIFICATIONS SHALL BE APPROVED AND INSPECTED BY THE GOVERNMENT.
2. ALL FIRE SERVICE PIPE CONSTRUCTION SHALL BE PERFORMED BY A CONTRACTOR LICENSED IN THE STATE OF VIRGINIA. THE CONTRACTING OFFICER SHALL BE NOTIFIED [48] HOURS IN ADVANCE OF ANY PLANNED CONSTRUCTION.
3. ALL FIRE SERVICE PIPING 4-INCH AND LARGER SHALL BE DUCTILE IRON, MANUFACTURED IN ACCORDANCE WITH AWWA STANDARD C151 OR AWWA C110 OR AWWA C153 AND CLASS 52. OTHER PIPE MATERIALS CAN BE USED WITH WRITTEN APPROVAL FROM THE CONTRACTING OFFICER. CAST IRON PIPE AND FITTINGS SHALL BE CEMENT-MORTAR LINED IN ACCORDANCE WITH AWWA C104. THE EXTERIOR OF THE PIPE AND FITTINGS SHALL HAVE STANDARD COATING OF BITUMINOUS MATERIAL.
4. ALL FIRE SERVICE PIPING SHALL BE INSTALLED WITH NO. 12 AWG COPPER CLAD STEEL (CCS) TAPED ON TOP OF PIPE AS A TRACER WIRE. TRACER WIRE IS TO BE LOOPED UP TO GATE VALVE. A CATHODIC PROTECTION BOX IS TO BE SET ON THE RIGHT HAND SIDE OF EACH GATE VALVE. THE BOX SHALL HAVE A CAST IRON LOCKING LID WITH A THREE AND ONE-HALF INCH 3-1/2" DIAMETER, EIGHTEEN INCH [18"] LONG PVC BODY. THE CAP WILL NEED A TWO-WIRE CONNECTION POST AS A MINIMUM.
5. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ADJUST ALL WATER VALVE BOXES TO THE REQUIRED FINAL GRADE. CONTRACTOR TO PROVIDE ONE STEEL, TEE-HANDLE WITH ONE POINTED END, STEM OF LENGTH TO OPERATE DEEPEST BURIED VALVE, AND SOCKET MATCHING VALVE OPERATING NUT.
6. NO PIPE SHALL BE BACKFILLED UNTIL IT HAS BEEN INSPECTED BY THE GOVERNMENT.
7. THE CONTRACTOR SHALL FURNISH A CERTIFIED STATEMENT THAT ALL OF THE SPECIFIED TESTS AND INSPECTIONS HAVE BEEN MADE AND THE RESULTS THEREOF COMPLY WITH THE REQUIREMENT OF THE APPLICABLE STANDARDS HEREIN SPECIFIED. A COPY OF THE CERTIFICATION WILL BE SENT BY THE CONTRACTOR TO THE CONTRACTING OFFICER UPON REQUEST.
8. DISTANCES FOR WATER ARE THE HORIZONTAL DISTANCE BETWEEN CENTER OF FITTING TO CENTER OF VALVE, ETC. THEREFORE, DISTANCES SHOWN ON THE PLANS ARE APPROXIMATE AND COULD VARY DUE TO VERTICAL ALIGNMENT AND FITTING DIMENSIONS.
9. MAINTAIN A MINIMUM OF TEN FEET [10'] HORIZONTAL SEPARATION BETWEEN ALL SANITARY SEWER AND POTABLE WATER MAINS AND SERVICES.
10. FOR ALL PIPE INSTALLATIONS, THE DEPTH OF COVER OVER THE PIPE MEASURED FROM FINAL GRADE TO THE TOP OF THE PIPE SHALL BE A MINIMUM OF 48 INCHES AND SHALL BE KNOWN AS THE COVER OVER THE PIPE. IF DIFFICULTIES ARISE WHEN CROSSING INTERFERENCE AND WHERE SPECIFICALLY APPROVED BY THE GOVERNMENT, DEVIATIONS FROM 48 INCHES OF COVER REQUIRE WRITTEN APPROVAL FROM THE CONTRACTING OFFICER UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
11. INSTALL THRUST BLOCKS AT ALL BENDS, STUBS AND VALVES IN WATER LINES. ALL VALVES AND BENDS SHALL BE MECHANICALLY RESTRAINED PER PROJECT SPECIFICATIONS.
12. WHEN IT IS NECESSARY TO LOWER OR RAISE WATER LINES AT UTILITY CROSSINGS, A MINIMUM CLEARANCE OF 18 INCHES SHALL BE MAINTAINED BETWEEN THE OUTSIDE OF PIPES.
13. THE WATER QUALITY CONTROL DIVISION OF THE VIRGINIA DEPARTMENT OF HEALTH REQUIRES ALL WATER LINE CONTRACTORS TO POSSESS A CURRENT DISCHARGE PERMIT FOR DISCHARGES OF CHLORINATED AND PROCESS WATERS ASSOCIATED WITH THE INSTALLATION OF NEW MAINS OR CONDUITS.
14. CONTRACTOR TO INSTALL WATER MAINS AS SHOWN ON PLANS IN ACCORDANCE WITH MANUFACTURES RECOMMENDATION FOR JOINT INSERTION, VERTICAL AND HORIZONTAL DEFLECTIONS. IF DESIGN ALIGNMENT REQUIRES A HORIZONTAL OR VERTICAL DEFLECTION IN EXCESS OF PIPE MANUFACTURES ALLOWANCES, CONTRACTOR TO SUBMIT TO CONTRACTING OFFICER PROPOSED ALTERNATIVE SOLUTIONS TO ACHIEVE THE INTENT OF THE DESIGN ALIGNMENT.

1. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS AND IMPLEMENTING AND MAINTAINING EROSION AND SEDIMENT CONTROL MEASURES AT ALL TIMES DURING CONSTRUCTION TO PREVENT DAMAGING FLOWS ON THE SITE AND IN THE WATERSHED BELOW THE SITE. CONTROL SYSTEMS SHALL BE INSTALLED PRIOR TO STRIPPING OF NATIVE VEGETATIVE COVER AND AS GRADING PROGRESSES.
2. NATURAL VEGETATION SHALL BE RETAINED AND PROTECTED WHEREVER POSSIBLE. EXPOSURE OF SOIL TO EROSION BY REMOVAL OR DISTURBANCE OF VEGETATION SHALL BE LIMITED TO THE AREA REQUIRED FOR IMMEDIATE CONSTRUCTION OPERATION AND FOR THE SHORTEST PRACTICAL PERIOD OF TIME.
3. TOPSOIL SHALL BE STOCKPILED TO THE EXTENT PRACTICABLE ON THE SITE FOR USE ON AREAS TO BE REVEGETATED. ANY AND ALL STOCKPILES SHALL BE LOCATED AND PROTECTED FROM EROSION ELEMENTS.
4. PERMANENT OR TEMPORARY SOIL STABILIZATION MEASURES SHALL BE APPLIED TO DISTURBED AREAS WITHIN 30 DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. UNLESS SPECIFIED OTHERWISE, TEMPORARY VEGETATION SHALL BE INSTALLED ON ALL DISTURBED AREAS WHERE PERMANENT SURFACE IMPROVEMENTS ARE NOT SCHEDULED FOR INSTALLATION WITHIN THREE MONTHS. TEMPORARY VEGETATION SHALL BE A VIGOROUS, DROUGHT TOLERANT, NATIVE SPECIES MIX. APPROVED FOR USE BY THE GOVERNMENT OR AS SPECIFIED IN THE CONTRACT DOCUMENTS. PROJECT SCHEDULING SHOULD TAKE ADVANTAGE OF SPRING OR FALL PLANTING SEASONS FOR NATURAL GERMINATION, BUT SEEDING AREAS SHALL BE IRRIGATED, IF CONDITIONS MERIT. REFER TO THE SPECIFICATIONS FOR ADDITIONAL INFORMATION.
5. TEMPORARY FENCES SHALL BE INSTALLED ALONG ALL BOUNDARIES OF THE CONSTRUCTION LIMITS. IN ADDITION, THE CONTRACTING OFFICER MAY REQUIRE ADDITIONAL TEMPORARY FENCES IF FIELD CONDITIONS WARRANT.
6. THE CONTRACTOR SHALL PREVENT SEDIMENT, DEBRIS AND ALL OTHER POLLUTANTS FROM ENTERING THE STORM SEWER SYSTEM DURING ALL DEMOLITION, EXCAVATION, TRENCHING, OR OTHER CONSTRUCTION OPERATIONS THAT ARE PART OF THIS PROJECT. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR REMEDIATION OF ANY ADVERSE IMPACTS TO ADJACENT WATERWAYS, ROADWAYS, WETLANDS, ETC., RESULTING FROM WORK DONE AS PART OF THIS PROJECT.
7. THE CONTRACTOR AND/OR THEIR AUTHORIZED AGENTS SHALL REMOVE ALL SEDIMENT, MUD, CONSTRUCTION DEBRIS, OR OTHER POTENTIAL POLLUTANTS THAT MAY HAVE BEEN INADVERTENTLY DISCHARGED TO, OR ACCUMULATED IN, AREAS BEYOND THE PROJECT LIMITS AS A RESULT OF CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS CONSTRUCTION PROJECT.
8. APPROVED EROSION AND SEDIMENT CONTROL "BEST MANAGEMENT PRACTICES" [BMP] SHALL BE MAINTAINED AND KEPT IN GOOD REPAIR FOR THE DURATION OF THIS PROJECT. AT A MINIMUM, THE CONTRACTOR OR HIS AGENT SHALL INSPECT ALL BMPs WEEKLY AND AFTER SIGNIFICANT PRECIPITATION EVENTS. ALL NECESSARY MAINTENANCE AND REPAIR SHALL BE COMPLETED IN A TIMELY MANNER. ACCUMULATED SEDIMENT AND DEBRIS SHALL BE REMOVED FROM A BMP WHEN THE SEDIMENT LEVEL REACHES ONE HALF THE HEIGHT OF THE BMP OR, AT ANY TIME THAT SEDIMENT OR DEBRIS ADVERSELY IMPACTS THE FUNCTIONING OF THE BMP.
9. WATER USED IN THE CLEANING OF CONCRETE TRUCK DELIVERY CHUTES SHALL BE DISCHARGED INTO A PREDEFINED, BERMED CONTAINMENT AREA ON THE JOB SITE. THE REQUIRED CONTAINMENT AREA IS TO BE BERMED SO THAT WASH WATER IS TOTALLY CONTAINED. WASH WATER DISCHARGED INTO THE CONTAINMENT AREA SHALL BE ALLOWED TO INFILTRATE OR EVAPORATE. DRIED CONCRETE WASTE SHALL BE REMOVED FROM THE CONTAINMENT AREA AND PROPERLY DISPOSED OF. SHOULD A PREDEFINED BERMED CONTAINMENT AREA NOT BE AVAILABLE DUE TO THE PROJECT SIZE, OR LACK OF AN AREA WITH A SUITABLE GROUND SURFACE FOR ESTABLISHING A CONTAINMENT AREA, A PREMANUFACTURED CONTAINMENT AREA SHALL BE UTILIZED.
10. THE CONTRACTOR SHALL PROTECT ALL STORM SEWER FACILITIES ADJACENT TO ANY LOCATION WHERE PAVEMENT CUTTING OPERATIONS INVOLVING WHEEL CUTTING, SAW CUTTING OR ABRASIVE WATER JET CUTTING ARE TO TAKE PLACE. THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL WASTE PRODUCTS GENERATED BY SAID CUTTING OPERATIONS ON A DAILY BASIS. THE DISCHARGE OF ANY WATER CONTAMINATED BY WASTE PRODUCTS FROM CUTTING OPERATIONS TO THE STORM SEWER SYSTEM IS PROHIBITED.
11. PAVED SURFACES WHICH ARE ADJACENT TO CONSTRUCTION SITES SHALL BE SWEEPED IN A TIMELY MANNER WHEN SEDIMENT AND OTHER MATERIALS ARE TRACKED OR DISCHARGED ON TO THEM. EITHER SWEEPING BY HAND OR USE OF STREET SWEEPERS IS ACCEPTABLE. STREET SWEEPERS USING WATER WHILE SWEEPING IS PREFERRED IN ORDER TO MINIMIZE DUST. FLUSHING OFF PAVED SURFACES WITH WATER IS PROHIBITED.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PREPARING AN EROSION AND SEDIMENT CONTROL PLAN AND SUBMITTING IT TO THE CONTRACTING OFFICER FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION ACTIVITIES. THE PLAN SHALL, AT A MINIMUM, DEPICT THE LOCATION OF PERIMETER CONTROL BEST MANAGEMENT PRACTICES, CONCRETE WASHOUT AREAS, MATERIALS STORAGE, LAYDOWN AREAS, AND OTHER RELATED SEDIMENT CONTROL MEASURES.



CONSTRUCTION DOCUMENTS					
A/E FIRM PRIME: DHM DESIGN DENVER, CO SUBCONTRACTOR: MARTIN/MARTIN	DESIGNED:	SUB SHEET NO. C0.1	TITLE OF SHEET GENERAL NOTES GEOTHERMAL HVAC SYSTEM FOR JACKSON SHRINE DEATH SITE FREDERICKSBURG & SPOTSYLVANIA NMP	DRAWING NO. XXX XXXXXX	
	SKL			PKG. NO. 314741 _____ _____	SHEET 4 OF 38
	CADD				
	PLS				
	TECH. REVIEW:				
	PJS				
	DATE: 03/17/2025				

LEGEND

---	W	---	MAPPED WATER LINE
---	W	---	WATER LINE
---	E	---	ELECTRIC LINE
---	T	---	MAPPED TELECOMMUNICATION LINE
---	T	---	TELECOMMUNICATION LINE
---	DRIVE	---	DESCRIPTIONS
□			FLAG POLE
□			BOLLARDS
□			SIGN
█			CONCRETE/SIDEWALK

NOTES:

1. SEE SHEET C0.0 FOR ADDITIONAL NOTES, LEGENDS AND ABBREVIATIONS.
2. CONTRACTOR SHALL RESET EXISTING MONUMENTS THAT ARE DISTURBED BY CONSTRUCTION ACTIVITIES. REFER TO DIVISION 31 SECTION "SITE CLEARING" FOR ADDITIONAL REQUIREMENTS.
3. THE EXISTING SURVEY AND CONTROL POINTS SHOWN HEREON ARE BASED ON TOPOGRAPHIC SURVEY INFORMATION PROVIDED BY B&B CONSULTANTS, INC. ON AUGUST 27, 2024.

CONTRACTOR SHALL NOTIFY CONTRACTING OFFICER OF ANY DISCREPANCIES WITH EXISTING OR PROPOSED ELEVATIONS SHOWN IN THESE PLANS PRIOR TO CONSTRUCTION.

THE UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS, HOWEVER, THE CONTRACTORS RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF ALL UTILITIES (VERTICAL & HORIZONTAL) PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION.



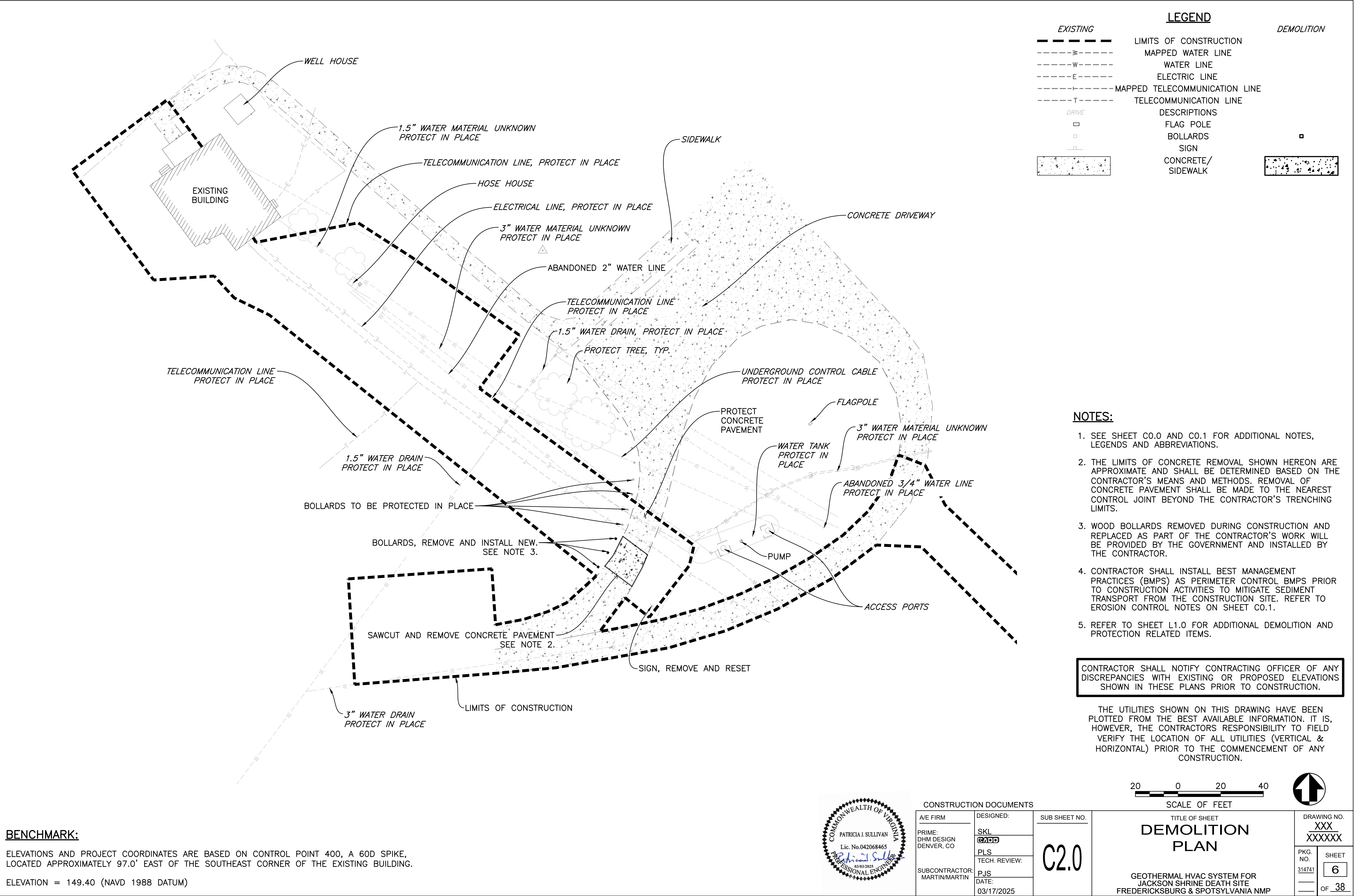
BENCHMARK:

ELEVATIONS AND PROJECT COORDINATES ARE BASED ON CONTROL POINT 400, A 60D SPIKE, LOCATED APPROXIMATELY 97.0' EAST OF THE SOUTHEAST CORNER OF THE EXISTING BUILDING.

ELEVATION = 149.40 (NAVD 1988 DATUM)

CONSTRUCTION DOCUMENTS

A/E FIRM PRIME: DHM DESIGN DENVER, CO SUBCONTRACTOR: MARTIN/MARTIN	DESIGNED: PLS TECH. REVIEW: LEH DATE: 03/17/2025	SUB SHEET NO. C1.0	TITLE OF SHEET SURVEY CONTROL GEOTHERMAL HVAC SYSTEM FOR JACKSON SHRINE DEATH SITE FREDERICKSBURG & SPOTSYLVANIA NMP	DRAWING NO. XXX XXXXXX PKG. NO. 314741 SHEET 5 OF 38
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LEGEND

EXISTING		DEMOLITION
---	LIMITS OF CONSTRUCTION	
---	MAPPED WATER LINE	
---	WATER LINE	
---	ELECTRIC LINE	
---	MAPPED TELECOMMUNICATION LINE	
---	TELECOMMUNICATION LINE	
---	DRIVE	
---	DESCRIPTIONS	
---	FLAG POLE	
---	BOLLARDS	
---	SIGN	
---	CONCRETE/	
---	SIDEWALK	

NOTES:

- SEE SHEET C0.0 AND C0.1 FOR ADDITIONAL NOTES, LEGENDS AND ABBREVIATIONS.
- THE LIMITS OF CONCRETE REMOVAL SHOWN HEREON ARE APPROXIMATE AND SHALL BE DETERMINED BASED ON THE CONTRACTOR'S MEANS AND METHODS. REMOVAL OF CONCRETE PAVEMENT SHALL BE MADE TO THE NEAREST CONTROL JOINT BEYOND THE CONTRACTOR'S TRENCHING LIMITS.
- WOOD BOLLARDS REMOVED DURING CONSTRUCTION AND REPLACED AS PART OF THE CONTRACTOR'S WORK WILL BE PROVIDED BY THE GOVERNMENT AND INSTALLED BY THE CONTRACTOR.
- CONTRACTOR SHALL INSTALL BEST MANAGEMENT PRACTICES (BMPS) AS PERIMETER CONTROL BMPS PRIOR TO CONSTRUCTION ACTIVITIES TO MITIGATE SEDIMENT TRANSPORT FROM THE CONSTRUCTION SITE. REFER TO EROSION CONTROL NOTES ON SHEET C0.1.
- REFER TO SHEET L1.0 FOR ADDITIONAL DEMOLITION AND PROTECTION RELATED ITEMS.

CONTRACTOR SHALL NOTIFY CONTRACTING OFFICER OF ANY DISCREPANCIES WITH EXISTING OR PROPOSED ELEVATIONS SHOWN IN THESE PLANS PRIOR TO CONSTRUCTION.

THE UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS, HOWEVER, THE CONTRACTORS RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF ALL UTILITIES (VERTICAL & HORIZONTAL) PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION.

BENCHMARK:

ELEVATIONS AND PROJECT COORDINATES ARE BASED ON CONTROL POINT 400, A 60D SPIKE, LOCATED APPROXIMATELY 97.0' EAST OF THE SOUTHEAST CORNER OF THE EXISTING BUILDING.

ELEVATION = 149.40 (NAVD 1988 DATUM)



CONSTRUCTION DOCUMENTS

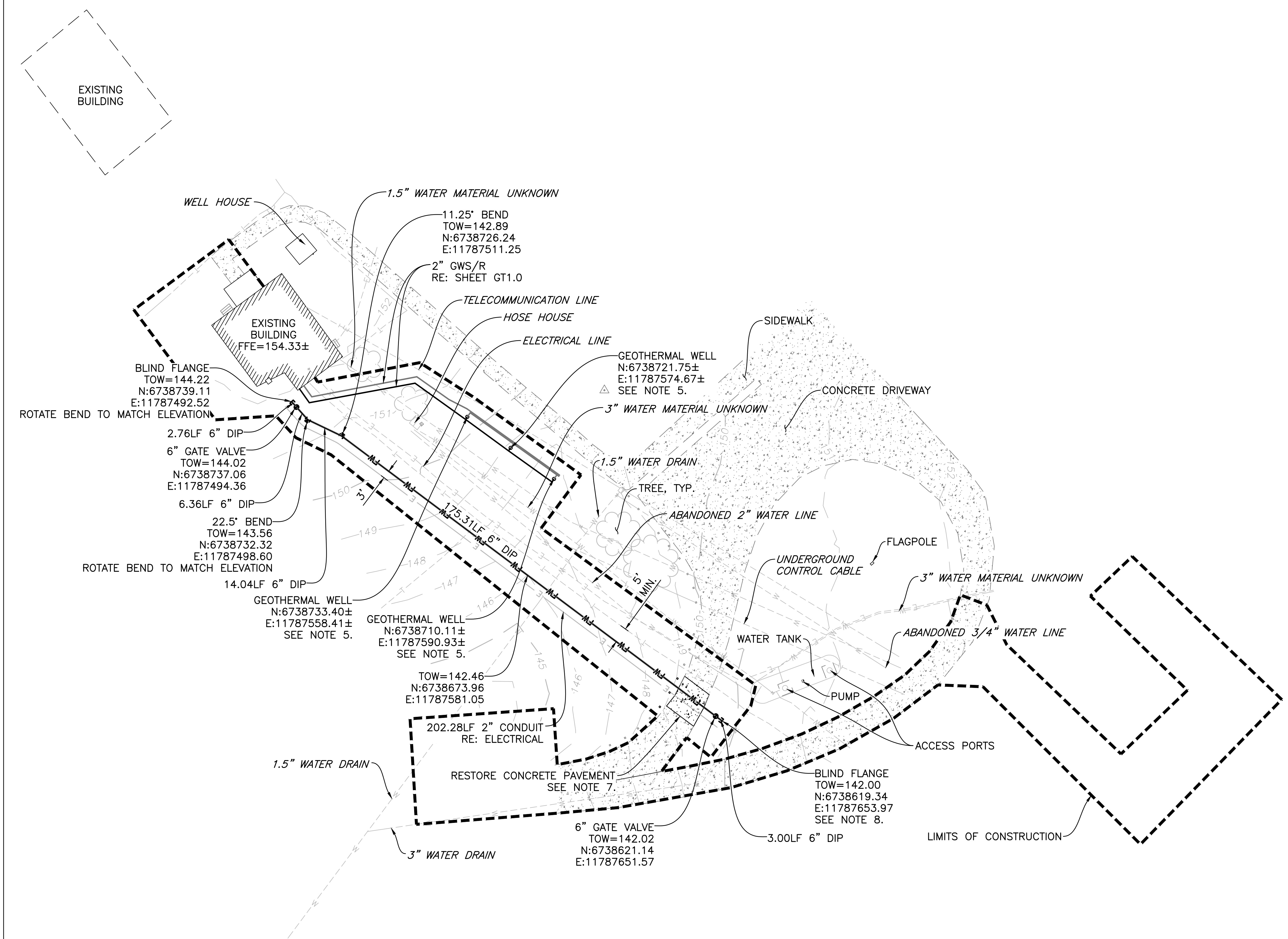
A/E FIRM	DESIGNED:	SUB SHEET NO.
PRIME: DHM DESIGN DENVER, CO	SKL CADD PLS TECH. REVIEW:	C2.0
SUBCONTRACTOR: MARTIN/MARTIN	PJS DATE: 03/17/2025	



DEMOLITION PLAN

GEOTHERMAL HVAC SYSTEM FOR JACKSON SHRINE DEATH SITE FREDERICKSBURG & SPOTSYLVANIA NMP

DRAWING NO. XXX XXXXXX	PKG. NO. 314741	SHEET 6 OF 38
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LEGEND		
EXISTING		PROPOSED
---	LIMITS OF CONSTRUCTION	---
---	WATER LINE	---
---	FIRE WATER LINE	FW
---	WATER VALVE	⊙
---	WATER BLIND FLANGE	⌈
---	ELECTRIC LINE	E
---	GEO SUPPLY	---
---	GEO RETURN	---
---	GEO BOREHOLE	○
---	COMMUNICATIONS LINE	---
---	TELEPHONE LINE	---
---	DRIVE	---
---	DESCRIPTIONS	---
---	FLAG POLE	---
---	SIGN	---
---	BOLLARD	---
---	CONCRETE/	---
---	SIDEWALK	---

- NOTES:**
- SEE SHEET C0.0 AND C0.1 FOR ADDITIONAL NOTES, LEGENDS AND ABBREVIATIONS.
 - SEE SHEET C5.0 FOR TRENCHING DETAILS.
 - SEE SHEET C6.0 FOR TYPICAL THRUST BLOCK CONSTRUCTION.
 - SEE SHEET C6.0 FOR TYPICAL GATE VALVE DETAIL.
 - THE GEOTHERMAL WELL LOCATIONS SHOWN HEREON ARE APPROXIMATE AND ARE INTENDED TO DEPICT THE PROPOSED LOCATION. FINAL LOCATION SHALL BE AS INDICATED ON THE GEOTHERMAL PLANS OR AS DETERMINED IN THE FIELD BY THE GEOTHERMAL CONTRACTOR. SEE SHEET GT1.0 FOR ADDITIONAL INFORMATION.
 - HORIZONTAL FITTINGS ON THE FIRE SERVICE LATERAL SHALL BE INSTALLED WITH MECHANICAL JOINT FITTINGS AND CONCRETE THRUST BLOCKS. IN ADDITION, ALL PIPE JOINTS SHALL BE MECHANICALLY RESTRAINED.
 - RECONSTRUCT CONCRETE PAVEMENT TO THE NEAREST CONTROL JOINT. CONSTRUCT DOWELED EXPANSION JOINT WHERE NEW CONCRETE ABUTS EXISTING CONCRETE SURFACES. CONTRACTOR SHALL PROVIDE MINIMUM 3'X3' CONCRETE MOCK-UP FOR THE GOVERNMENT'S REVIEW AND APPROVAL PRIOR TO PAVEMENT RECONSTRUCTION. RE: DETAILS AND SPECIFICATIONS.
 - CONTRACTOR TO LOCATE ALL EXISTING UTILITIES PER GENERAL NOTE 14 ON SHEET C0.1. PROVIDE MINIMUM 5-FOOT HORIZONTAL SEPARATION BETWEEN PROPOSED BLIND FLANGE AND ANY/ALL EXISTING UTILITIES. PROVIDE MINIMUM 18-INCHES VERTICAL SEPARATION BETWEEN THE OUTSIDE OF EXISTING UTILITIES AND THE OUTSIDE OF THE PROJECTED PROFILE OF THE PROPOSED WATER/FIRE LINE. COORDINATE DEPTH OF EXISTING LINES AND PROPOSED LINES AT CROSSINGS WITH CONTRACTING OFFICER PRIOR TO CONSTRUCTION.

CONTRACTOR SHALL NOTIFY CONTRACTING OFFICER OF ANY DISCREPANCIES WITH EXISTING OR PROPOSED ELEVATIONS SHOWN IN THESE PLANS PRIOR TO CONSTRUCTION.

THE UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS, HOWEVER, THE CONTRACTORS RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF ALL UTILITIES (VERTICAL & HORIZONTAL) PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION.

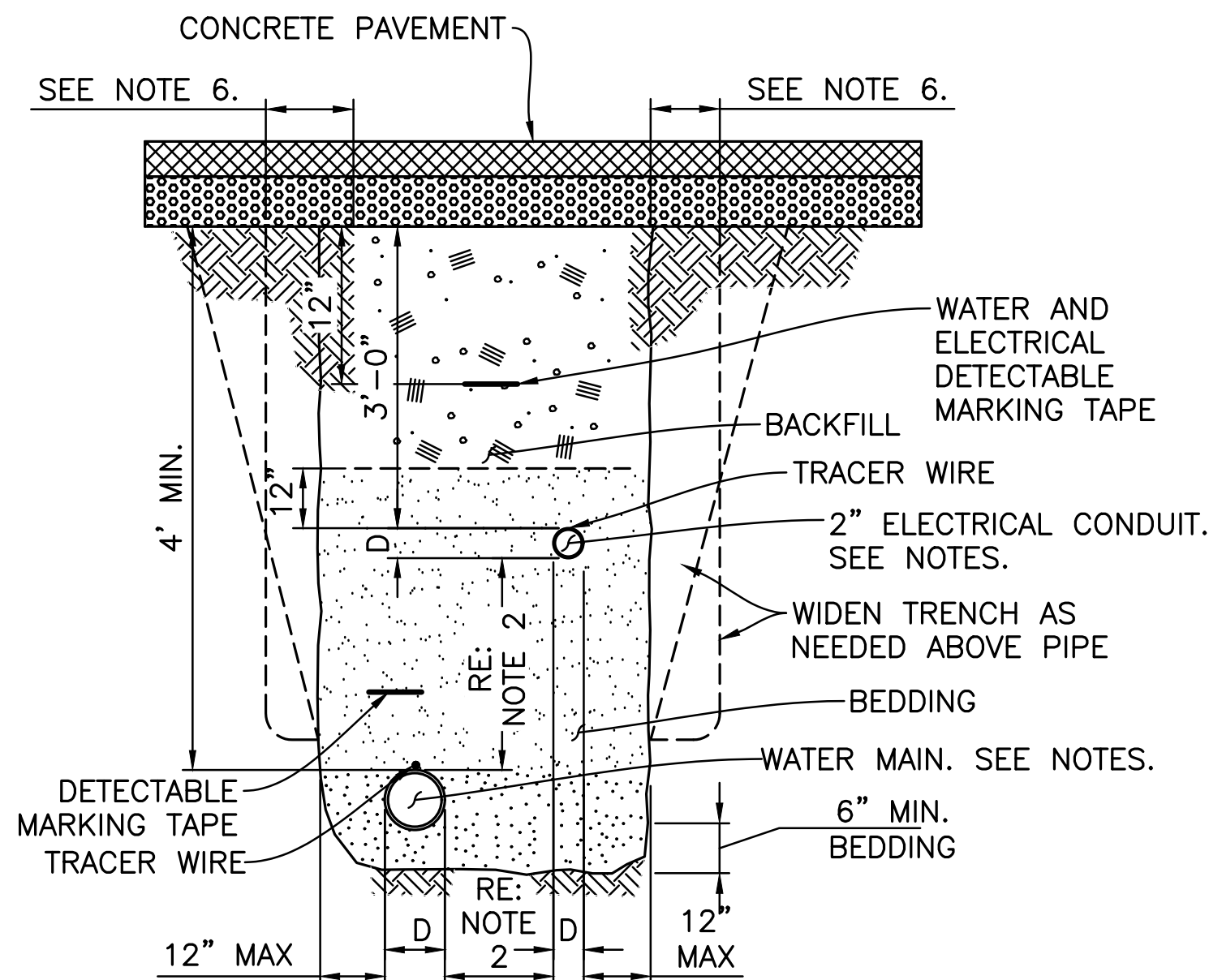
BENCHMARK:

ELEVATIONS AND PROJECT COORDINATES ARE BASED ON CONTROL POINT 400, A 60D SPIKE, LOCATED APPROXIMATELY 97.0' EAST OF THE SOUTHEAST CORNER OF THE EXISTING BUILDING.

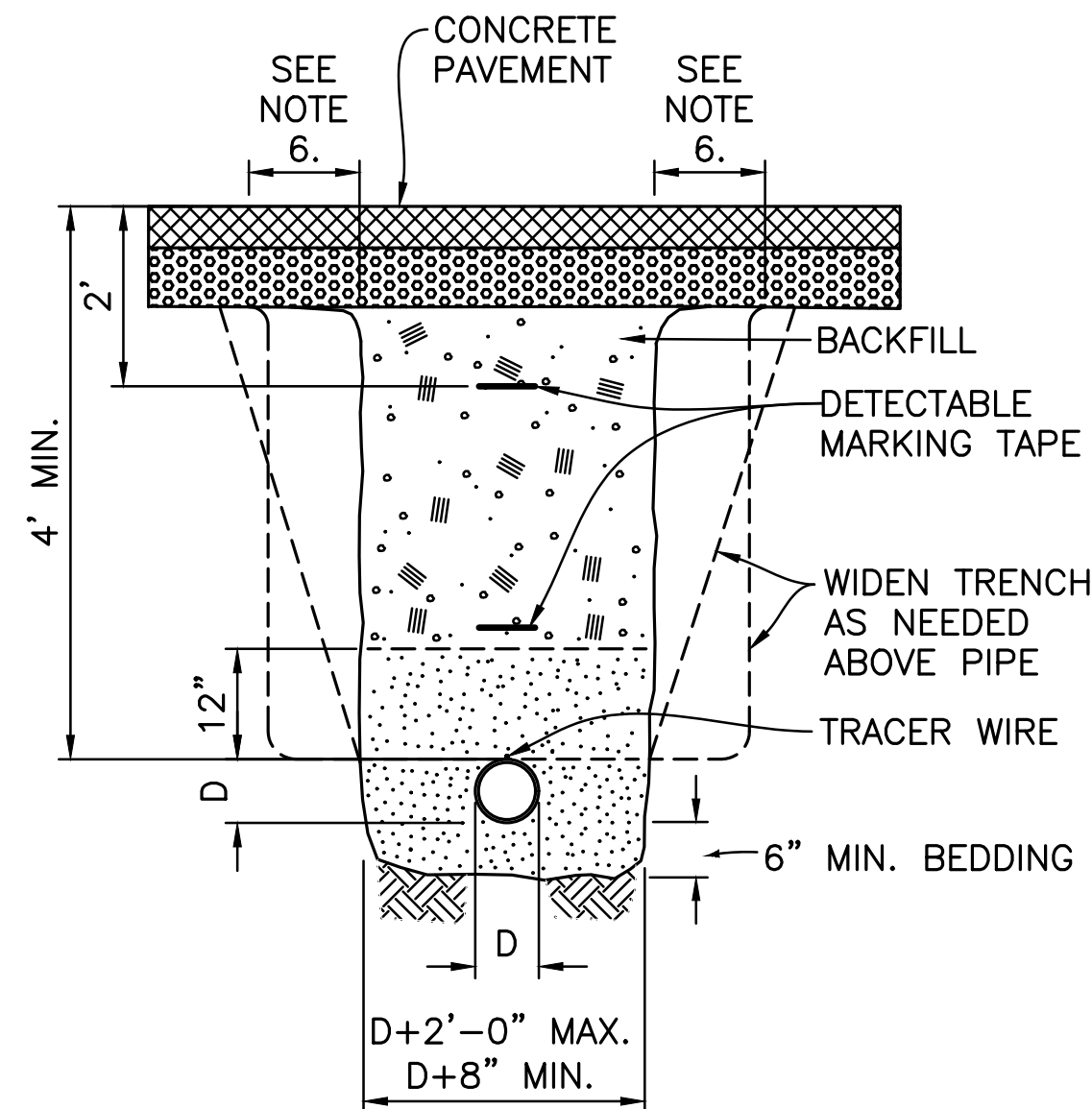
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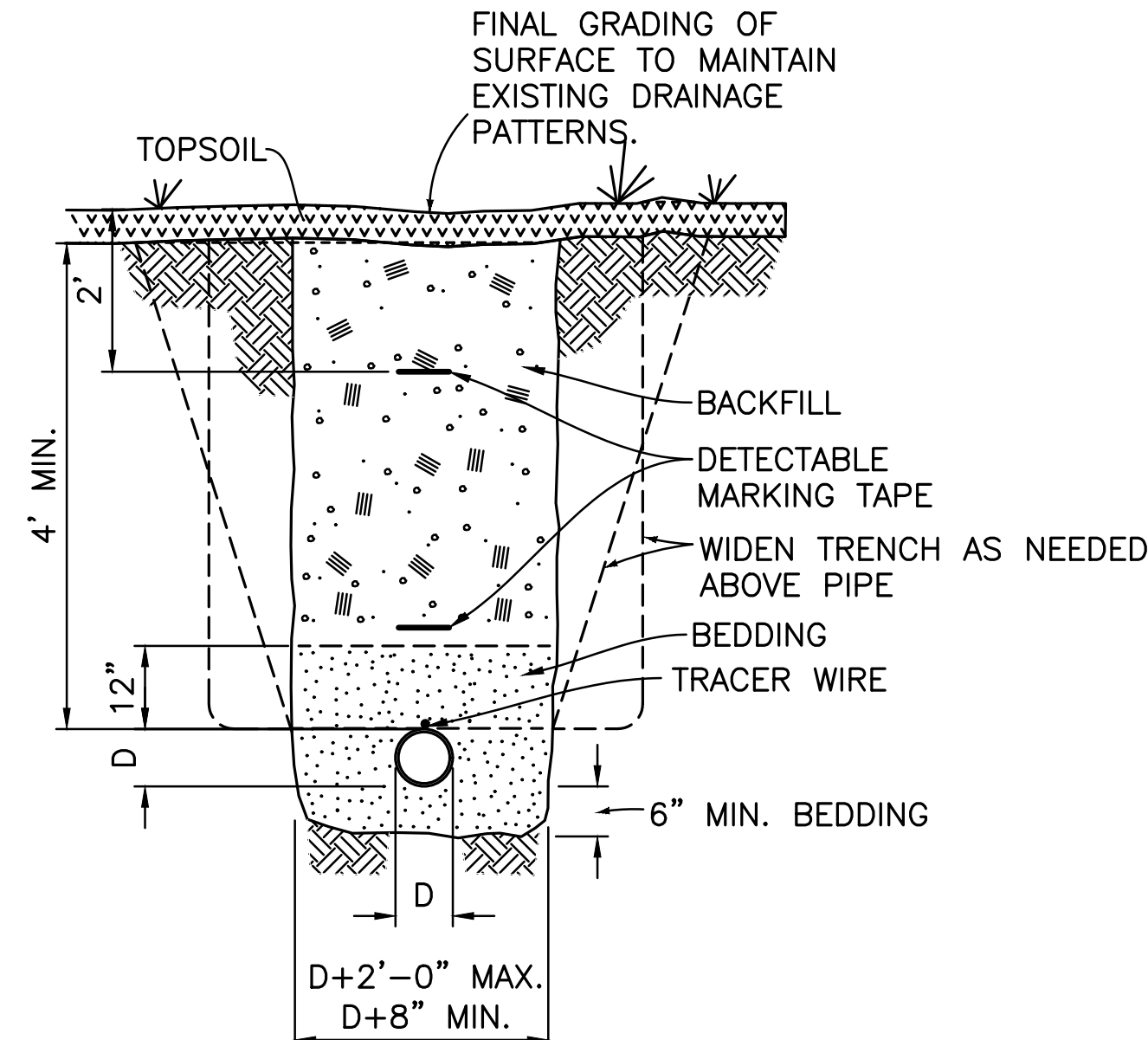
CONSTRUCTION DOCUMENTS			SCALE OF FEET		DRAWING NO. XXX XXXXXX
A/E FIRM PRIME: DHM DESIGN DENVER, CO SUBCONTRACTOR: MARTIN/MARTIN	DESIGNED: SKL PLS TECH. REVIEW: PJS DATE: 03/17/2025	SUB SHEET NO. C3.0	20 0 20 40		
TITLE OF SHEET OVERALL UTILITY PLAN			GEOHERMAL HVAC SYSTEM FOR JACKSON SHRINE DEATH SITE FREDERICKSBURG & SPOTSYLVANIA NMP		PKG. NO. 314741 SHEET 7 OF 38



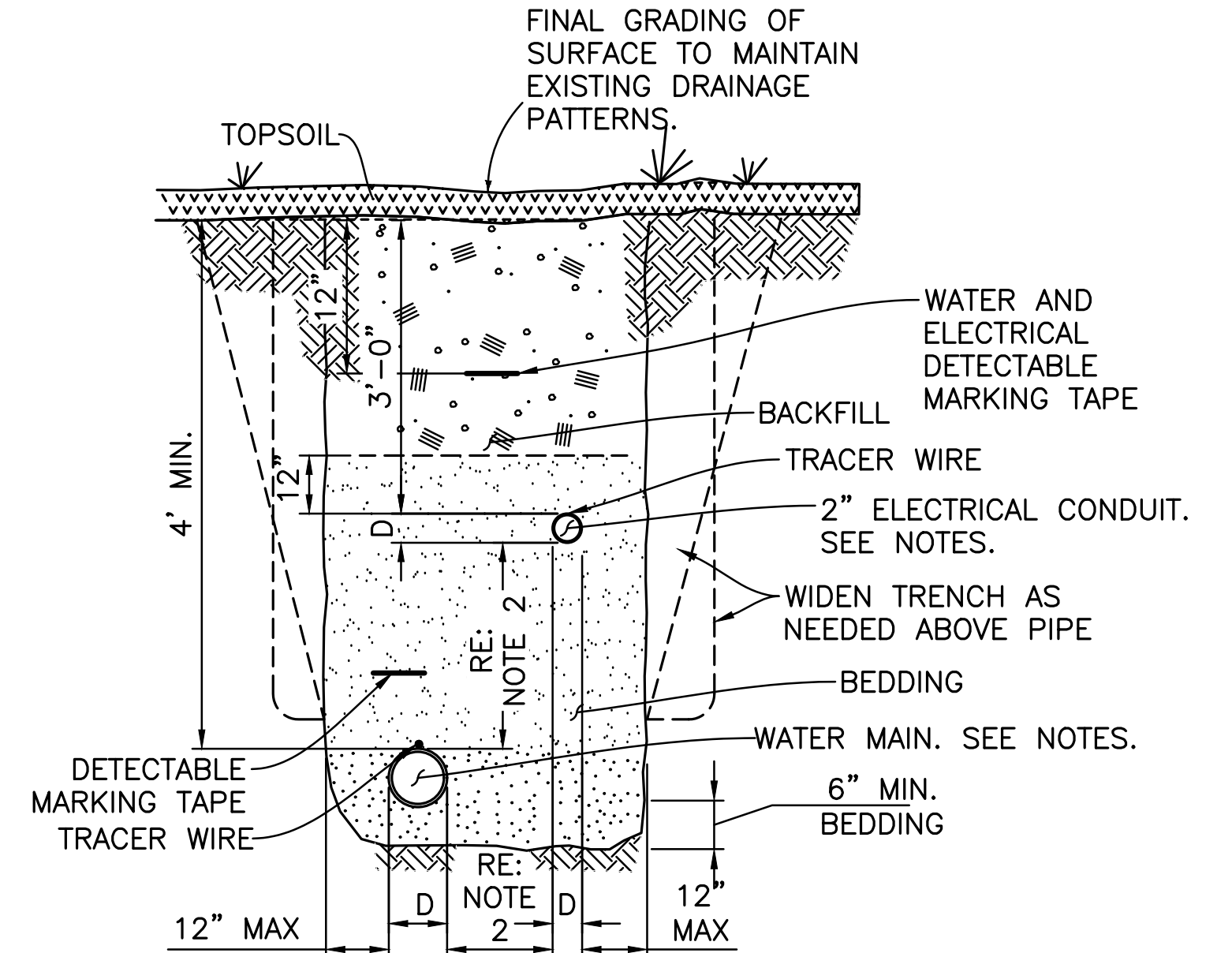
1 TRENCH DETAIL WATER/ELECTRICAL
IN COMMON TRENCH, PAVED AREA
C5.0 NO SCALE



2 TRENCH DETAIL SINGLE PIPE,
PAVED AREA
C5.0 NO SCALE



3 TRENCH DETAIL SINGLE PIPE,
NON-TRAFFIC AREA
C5.0 NO SCALE



4 TRENCH DETAIL WATER/ELECTRICAL IN
COMMON TRENCH, NON-PAVED AREA
C5.0 NO SCALE

TRENCH NOTES:

1. COMPACT BACKFILL PER SPECS.
2. FOR WATER AND ELECTRICAL:
MAINTAIN MINIMUM 36" HORIZONTAL SEPARATION AND 18" VERTICAL SEPARATION BETWEEN OUTSIDE OF PIPE TO OUTSIDE OF PIPE. SEPARATION CAN BE REDUCED IF APPROVED BY THE CONTRACTING OFFICER.
3. FOR WATER:
MAINTAIN MINIMUM BURIAL DEPTHS FROM EXISTING/PROPOSED GRADES INDICATED BELOW
MINIMUM BURY DEPTH:
WATER = 48" BURY DEPTH (MIN.)
4. RAMPS SHALL BE PROVIDED EVERY 20-FT TO 50-FT ALONG TRENCH LENGTH AT SLOPES LESS THAN 45° TO ALLOW ANIMALS TO ESCAPE SHOULD THEY FALL IN. ALTERNATIVELY, TRENCHES MAY BE COVERED, WHEN WORK IS NOT BEING PERFORMED, IN SUCH WAY AS TO PREVENT ANIMALS FROM FALLING IN. CONTRACTOR TO VERIFY NO ANIMALS IN TRENCH PRIOR TO COVERING.
5. DRY UTILITIES MAY BE PLACED IN SAME TRENCH. TRENCH SHALL MEET PROJECT SPECIFICATIONS, CODE AND/OR UTILITY AGENCY REQUIREMENTS.
6. WHERE TRENCHES ARE CUT INTO EXISTING PAVEMENTS, EXTEND PAVEMENT REMOVALS TO THE NEAREST JOINT BEYOND THE TRENCHING LIMITS SUCH THAT FULL CONCRETE PANELS ARE REMOVED. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
7. REFER TO SHEET GT2.0 FOR ADDITIONAL TRENCHING REQUIREMENTS FOR GEOTHERMAL PIPING SYSTEMS.

BENCHMARK:

ELEVATIONS AND PROJECT COORDINATES ARE BASED ON CONTROL POINT 400, A 60D SPIKE, LOCATED APPROXIMATELY 97.0' EAST OF THE SOUTHEAST CORNER OF THE EXISTING BUILDING.

ELEVATION = 149.40 (NAVD 1988 DATUM)



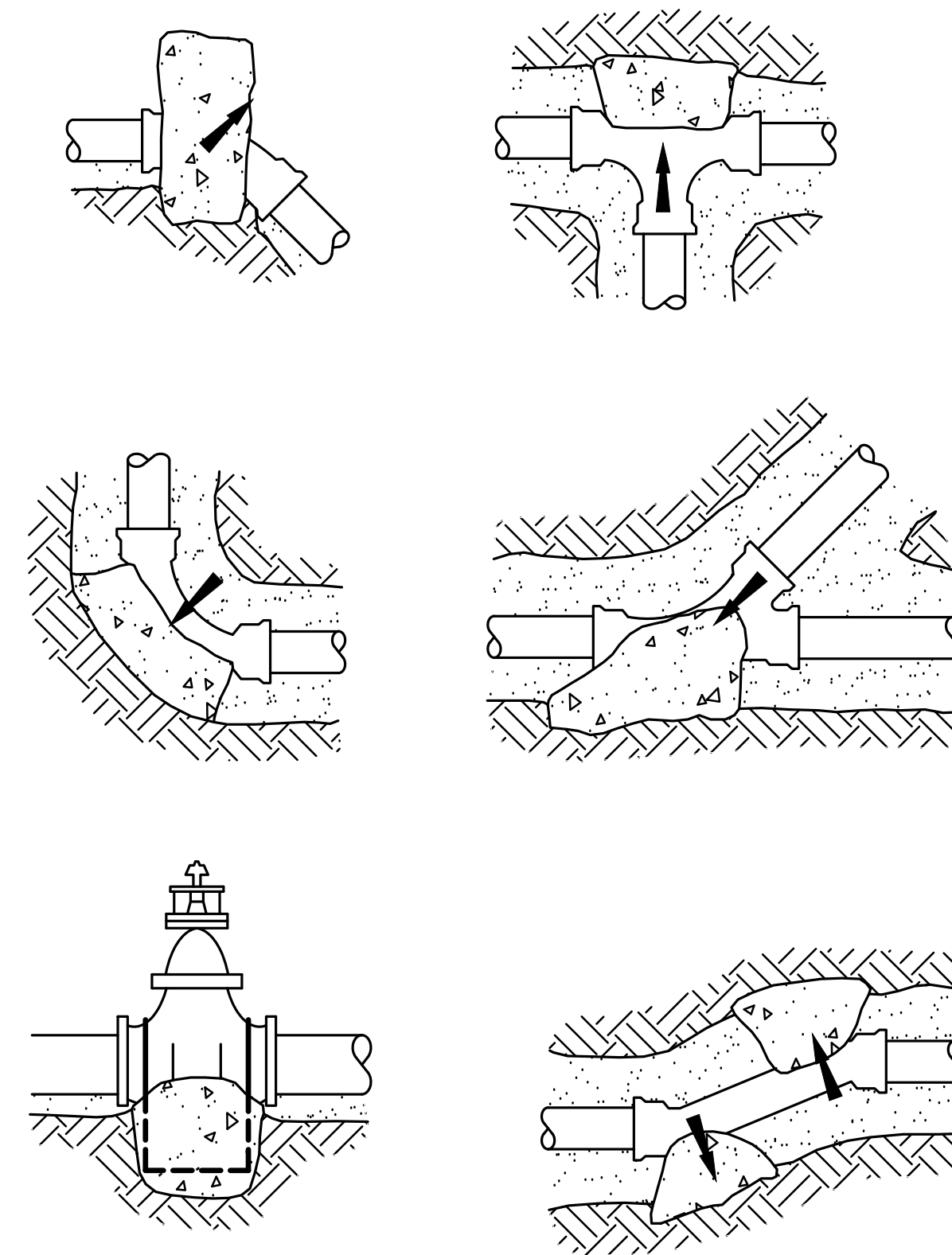
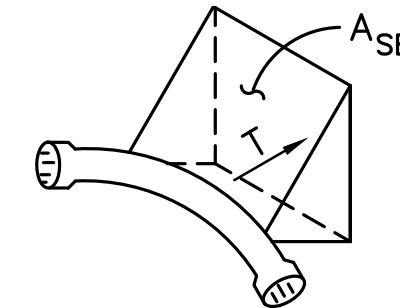
CONSTRUCTION DOCUMENTS

A/E FIRM	DESIGNED:	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
PRIME: DHM DESIGN DENVER, CO	SKL GAD PLS TECH. REVIEW:	C5.0	TRENCHING DETAILS	XXX XXXXXX
SUBCONTRACTOR: MARTIN/MARTIN	PJS DATE: 03/17/2025		GEOTHERMAL HVAC SYSTEM FOR JACKSON SHRINE DEATH SITE FREDERICKSBURG & SPOTSYLVANIA NMP	PKG. NO. 314741 SHEET 8 OF 38

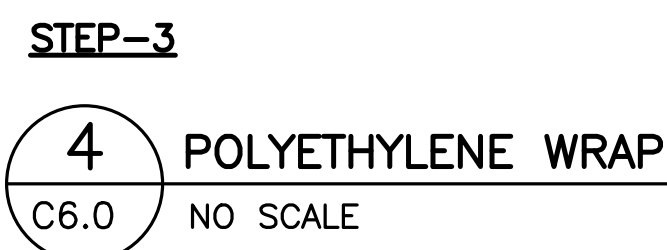


SOIL	SAFE BEARING LOAD, POUNDS PER SQ. FT.
SOUND SHALE	10000
CEMENTED SAND AND GRAVEL	4000
COARSE AND FINE COMPACTED SAND	3000
MEDIUM CLAY (CAN BE SPADED)	2000
SOFT CLAY	1000
MUCK	0

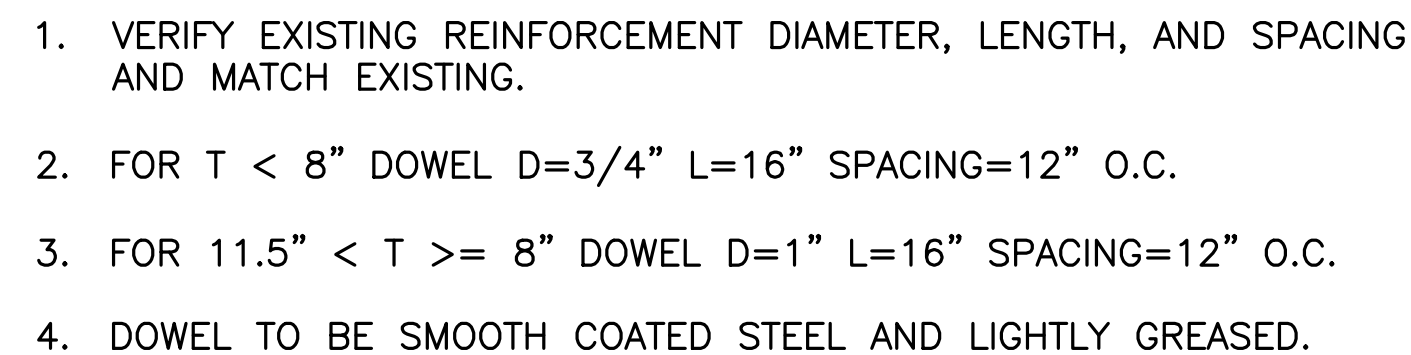
A_{SB}	= AREA OF BLOCK BEARING AGAINST UNDISTURBED TRENCH MATERIAL IN SQ. FT.
T	= THRUST FACTOR FROM TABLE I IN POUNDS AT 100 P.S.I.
B	= SAFE BEARING LOAD FROM TABLE II IN POUNDS/SQ.FT.
P_T	= PRESSURE USED FOR PIPELINE TEST IN P.S.I.



3 LOCATION OF THRUST BLOCKS



STEP-3 ADJACENT TUBE OVERLAPS FIRST TUBE AND IS SECURED WITH PLASTIC ADHESIVE TAPE. THE POLYETHYLENE TUBE MATERIAL COVERING THE PIPE WILL BE LOOSE. EXCESS MATERIAL SHALL BE NEATLY DRAWN UP AROUND THE PIPE BARREL, FOLDED INTO AN OVERLAP ON TOP OF THE PIPE AND HELD IN PLACE BY MEANS OF PIECES OF THE PLASTIC TAPE AT APPROXIMATELY THREE TO FIVE FOOT INTERVALS.



5 DOWELED EXPANSION TO
EXISTING CONCRETE SIDEWALK
C6.0 NO SCALE



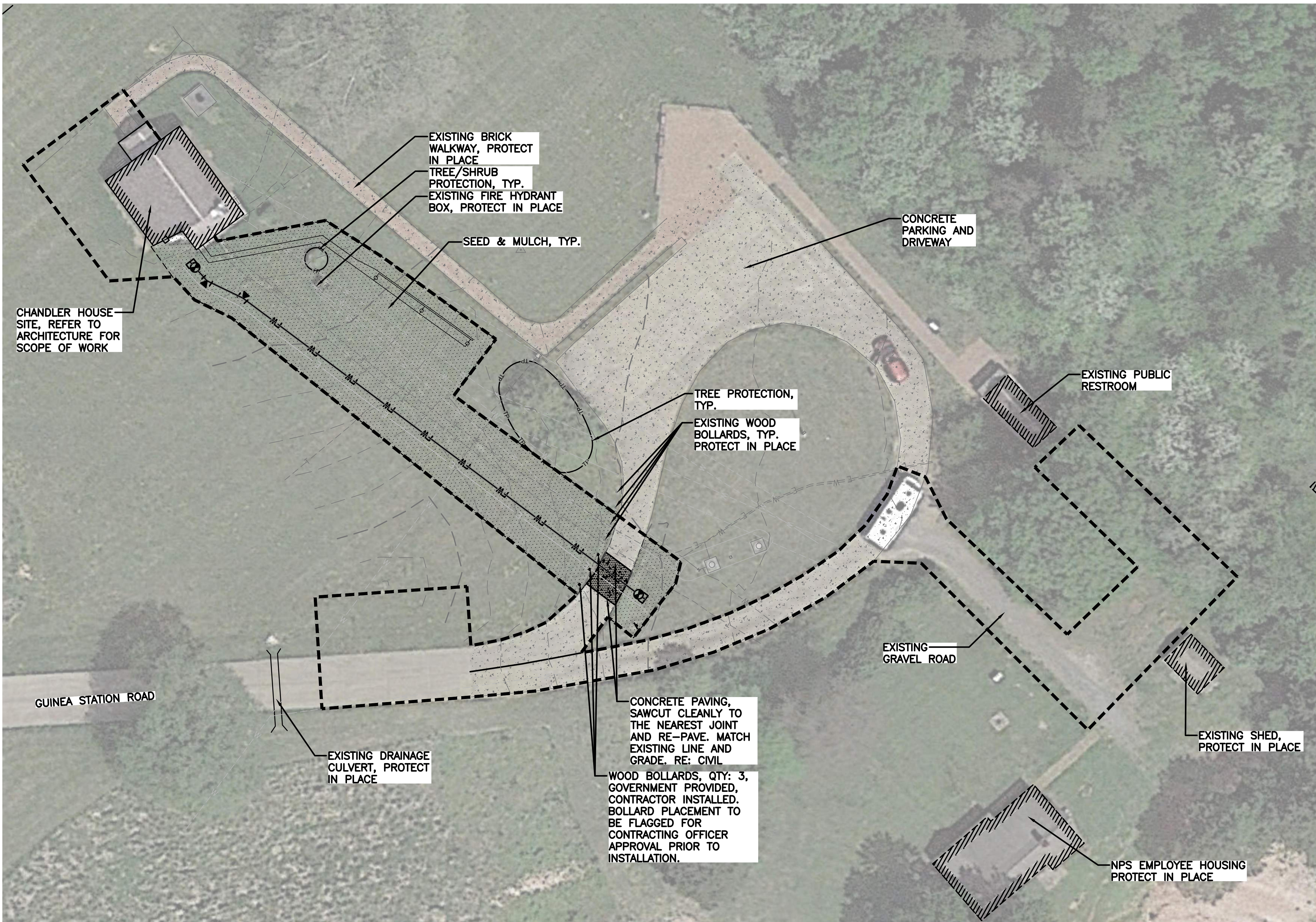
1. VERIFY JOINT DEPTH TO WIDTH RATIO WITH JOINT SEALANT MANUFACTURER FOR FILLER MATERIAL REQUIREMENTS.
2. JOINT TO BE FREE AND CLEAN OF ALL DEBRIS PRIOR TO SEALING.
3. EXCESS SEALANT TO BE REMOVED FROM SURFACE.

6 CONCRETE EXPANSION JOINT
C6.0 NO SCALE



CONSTRUCTION DOCUMENTS			
A/E FIRM	DESIGNED:	SUB SHEET NO.	TITLE OF SHEET
PRIME: DHM DESIGN DENVER, CO	SKL CADD	C6.0	UTILITY AND SITE DETAILS
	PLS		
	TECH. REVIEW:		
SUBCONTRACTOR: MARTIN/MARTIN	PJS DATE: 03/17/2025		DRAWING NO. XXX XXXXXX PKG. NO. 314741 SHEET 9 OF 38

3/6/25 10:40 SKERSTEVENS R24 P:\DENVER\NPS FRSP GEOTHERMAL-240837_DRAFT\CD\A\A\1_1_FRSP_PLANTING.DWG XREFS: ..\BASES\VL-TITLE INFO.DWG; ..\BASES\VL-LAYOUT.DWG; ..\BASES\XV-SITE.DWG; ..\BASES\XV-TOP.DWG; ..\BASES\XC-SITE.DWG; IMAGES: ..\IMAGES\AERIAL2.JPG;

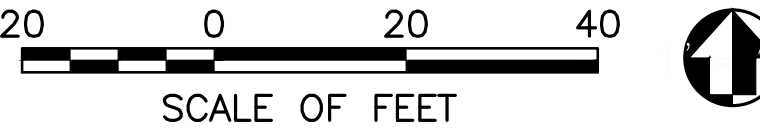


LEGEND	
	LIMITS OF CONSTRUCTION
	EXISTING MAJOR CONTOUR
	EXISTING MINOR CONTOUR
	EXISTING WATER LINE
	EXISTING ELECTRICAL LINE
	EXISTING TELEPHONE LINE
	TREE PROTECTION
	EXISTING BUILDINGS
	EXISTING CONCRETE ROAD & BRICK WALKWAYS
	EXISTING CULVERT
	UTILITY ELECTRICAL LINE
	UTILITY FIRE LINE
	SEEDING
	CONCRETE REMOVAL AND REPLACEMENT, RE: CIVIL

- DEMOLITION NOTES**
1. TEMPORARY DISTURBANCE AREAS TO BE APPROVED BY THE CONTRACTING OFFICER.
 2. REFER TO CIVIL SHEETS FOR UTILITY DEMOLITION.
 3. REFER TO ARCHITECTURE FOR ARCHITECTURE DEMOLITION.
 4. REMOVE AND SALVAGE UPPER GROUND SURFACE, 4" DEPTH, PER SPECIFICATIONS. SALVAGED MATERIAL TO BE LOCATED WITHIN THE PARK BOUNDARIES, EXACT LOCATION TO BE DETERMINED BY CONTRACTING OFFICER.
 5. ENSURE POSITIVE DRAINAGE AT ALL TIMES.
 6. VERIFY EXISTING TREE LOCATIONS, CONSTRUCTION FENCING, AND TREE PROTECTION WITH THE CONTRACTING OFFICER PRIOR TO CONSTRUCTION.
 7. CONTRACTOR TO PROVIDE TREE PROTECTION PLAN PER SPECIFICATION.

- LAYOUT NOTES**
1. ALL WORK MUST BE IN KEEPING WITH THE SECRETARY OF THE INTERIOR (SOI) STANDARDS.
 2. REFER TO CIVIL & GEOTHERMAL DRAWINGS FOR UTILITY IMPROVEMENTS.
 3. REFER TO CIVIL FOR CONCRETE DETAILS AND SPECIFICATIONS.
 - 3.1. NEW CONCRETE PAVING TO RECEIVE COLOR PIGMENT TO MATCH EXISTING. FINAL SELECTION BY CONTRACTING OFFICER.
 - 3.2. FINISH EXPOSED SURFACES OF CONCRETE PAVING TO MATCH EXISTING. ASSUME EXPOSED AGGREGATE FINISH FOR BIDDING PURPOSES.
 - 3.3. CONTRACTOR SHALL PROVIDE A SHOP DRAWING WITH LOCATIONS OF ALL EXISTING CONCRETE EXPANSION JOINTS FOR REVIEW AND APPROVAL PRIOR TO PROPOSED CONCRETE PLACEMENT.

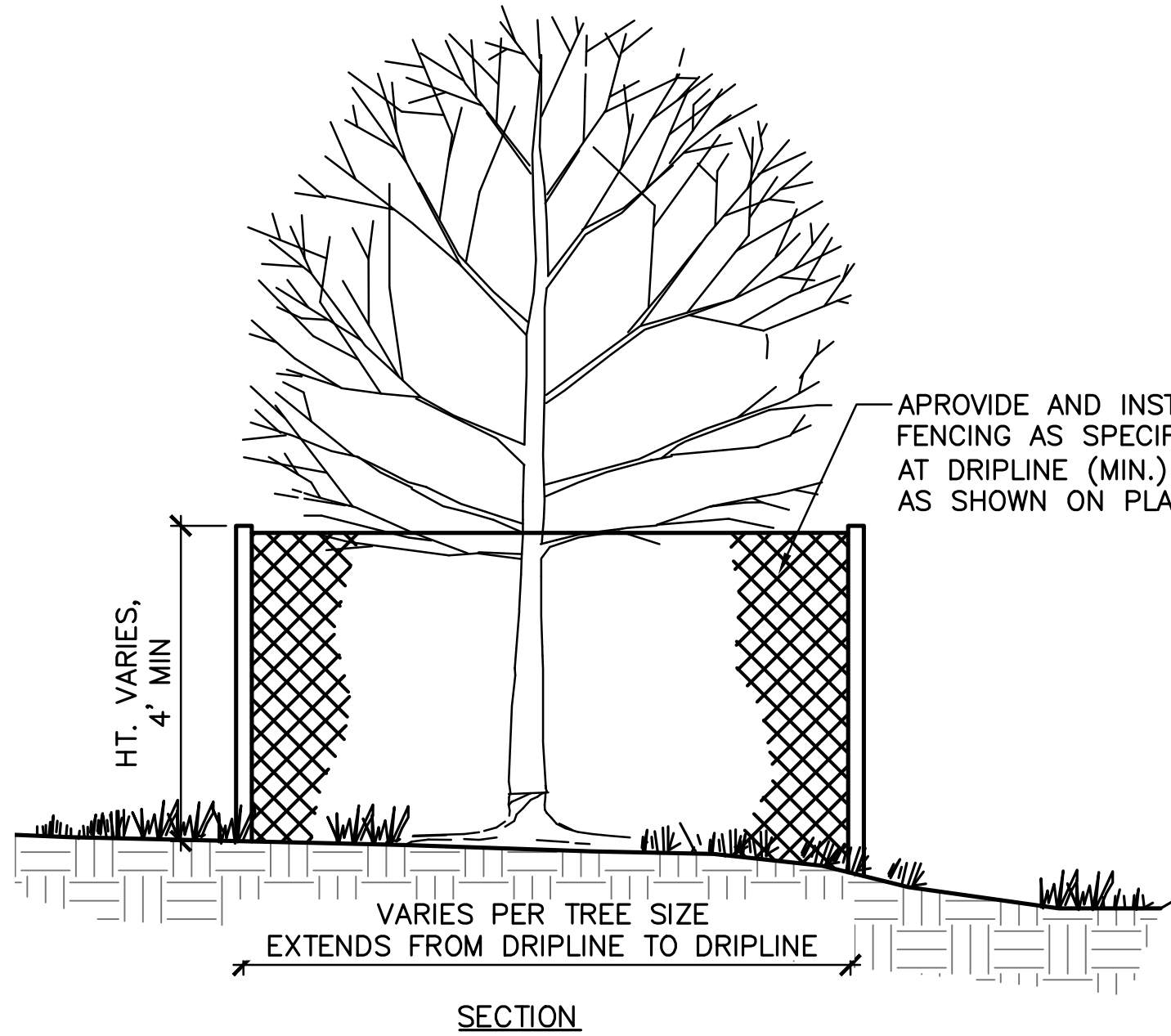
- PLANTING NOTES**
1. TEMPORARY SEEDING IS NOT ALLOWED. COORDINATION OF TIMING & PLACEMENT OF SEED TO BE APPROVED BY THE CONTRACTING OFFICER.
 2. CONTRACTOR TO REPAIR LANDSCAPE AT AREAS OF DISTURBANCE TO PRE-CONSTRUCTION CONDITIONS OR BETTER.



CONSTRUCTION DOCUMENTS

A/E FIRM	DESIGNED:	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
PRIME & LA: DHM DESIGN DENVER, CO	MK EADP SK/MK TECH. REVIEW: EK DATE: 3/03/2025	L1.0	DEMOLITION, LAYOUT & PLANTING PLAN	XXX XXXXXX
			GEOTHERMAL HVAC SYSTEM FOR JACKSON SHRINE DEATH SITE FREDERICKSBURG & SPOTSYLVANIA NMP	PKG. NO. 314741 SHEET 10 OF 37

3/6/25 10:40 SKERSTIENS R24 P:\DENVER\NPS FRSP GEOTHERMAL-24083\7_DRAFTCD\CAD\LA\L2_FRSP_DETAILS.DWG XREFS: \BASES\XL-TITLE INFO.DWG;



NOTES:

1. EX TREES TO BE PROTECTED DURING DEMOLITION AND CONSTRUCTION.
2. IN AREAS WHERE GRADING EXTENDS INTO EX TREE DRIPLINES CONTRACTOR SHALL HAND GRADE. CONTRACTING OFFICER APPROVAL REQUIRED PRIOR TO HAND GRADING.
3. TREE PROTECTION AREA: THE TREE PROTECTION AREA SHOULD CONSIST OF THE GROUND ENCOMPASSING FROM 1.5 (MINIMUM) TO 2.0 TIMES THE DISTANCE BETWEEN THE TRUNK AND DRIP LINE, OR ONE LINEAR FOOT AWAY FROM THE TRUNK BASE FOR EVERY INCH DIAMETER OF THE TRUNK, WHICHEVER IS GREATER (SEE DEFINITION OF DRIP LINE, BELOW). AREAS OF GROUND COVERED BY PAVEMENT, BUILDINGS, OR OTHER PERMANENT STRUCTURES WHERE THE PRESENCE OF ROOTS IS MINIMAL OR NEGLIGIBLE ARE EXCLUDED. THE AREA UNDER OR WITHIN THE TREE'S DRIP LINE IS ALSO REFERRED TO AS THE "CRITICAL ROOT ZONE" (SEE DEFINITION OF CRITICAL ROOT ZONE, BELOW).
4. DRIP LINE: THE OUTERMOST EDGE OF THE TREE'S CANOPY OR BRANCH SPREAD. THE AREA WITHIN A TREE'S DRIP LINE IS ALL THE GROUND UNDER THE TOTAL BRANCH SPREAD.
5. DIAMETER (CALIPER): THE SIZE (IN INCHES) OF A TREE'S TRUNK IS MEASURED AT:

TRUNK SIZE	WHERE MEASURED
< 4"	6" above grade
4" - 8"	12" above grade
> 8"	54" above grade

NOTE: ALL MEASUREMENTS SHOULD BE ROUNDED UP TO THE NEAREST INCH.

6. CRITICAL ROOT ZONE: SHALL BE DEFINED AS THE TREE PROTECTION AREA ENCOMPASSING FROM 1.5 (MINIMUM) TO 2.0 TIMES THE DISTANCE BETWEEN THE TRUNK AND DRIP LINE, OR ONE LINEAR FOOT AWAY FROM THE TRUNK BASE FOR EVERY INCH DIAMETER OF THE TRUNK, WHICHEVER IS GREATER.
7. MATERIALS AND SUPPLIES SHALL NOT BE STOCKPILED OR STORED WITHIN THE TREE PROTECTION AREA.
8. CONTRACTOR MAY HIRE AN ARBORIST TO REVIEW TREE RETENTION AND PROTECTION METHODS, LOCATIONS, SCHEDULES AND MAINTENANCE AND OVERSEE THE PROJECT.
9. IF IT APPEARS THAT THE COMPLETION OF THE CONSTRUCTION MAY CAUSE DAMAGE TO THE BRANCHES, TRUNK, OR ROOTS OF ANY TREE, THE CONTRACTOR SHALL CONTACT THE CONTRACTING OFFICER'S OFFICE. THE CONTRACTING OFFICER WILL MAKE A DETERMINATION AS TO WHETHER SUCH DAMAGE IS IMMINENT.
10. TREE PROTECTION ZONE (TPZ) SHALL NOT BE RESIZED, MODIFIED, OR ALTERED IN ANY MANNER WITHOUT PRIOR APPROVAL OF THE CONTRACTING OFFICER.
11. ENTRANCE/ACCESS TO THE TPZ IS NOT PERMITTED WITHOUT PRIOR WRITTEN APPROVAL FROM THE CONTRACTING OFFICER.
12. TPZ FENCE WILL BE A MIN. 4' HEIGHT ORANGE SAFETY FENCE, PANELS OR ROLLS ARE ACCEPTABLE. FENCE SHALL BE FASTENED TO HEAVY DUTY STEEL POSTS WITH STAND WHICH SHALL BE STABILIZED WITH CONCRETE BLOCKS OR EQUAL SPACED AT MAX. 5'-10' INTERVALS. NO GROUND PENETRATIONS. FENCING MUST BE KEPT TAUT AT ALL TIMES.

1 TREE PROTECTION
L2.0

SCALE: NTS



CONSTRUCTION DOCUMENTS				TITLE OF SHEET		DRAWING NO.	
A/E FIRM	DESIGNED:	SUB SHEET NO.	L2.0	PLANTING DETAILS	GEOTHERMAL HVAC SYSTEM FOR JACKSON SHRINE DEATH SITE FREDERICKSBURG & SPOTSYLVANIA NMP	XXX XXXXXX	SHEET 11
PRIME & LA: DHM DESIGN DENVER, CO	MK GAD SK/MK TECH. REVIEW:						
	EK DATE:						
	3/03/2025						

APPLICABLE CODES

BUILDING CODE

INTERNATIONAL BUILDING CODE (IBC)	2024
INTERNATIONAL FIRE CODE (IFC)	2024
INTERNATIONAL MECHANICAL CODE (IMC)	2024
INTERNATIONAL PLUMBING CODE (IPC)	2024
NATIONAL ELECTRICAL CODE (NEC)	2023
INTERNATIONAL FUEL GAS COE	2024
INTERNATIONAL ENERGY CONSERVATION CODE	2024
INTERNATIONAL EXISTING BUILDING CODE	2024
ICC ANSI A117.1	2017

TYPES OF CONSTRUCTION - IBC CHAPTER 6
TYPE V - B
SPRINKLED

OCCUPANCY CLASSIFICATION - IBC CHAPTER 3
'B' - BUSINESS*

EXISTING BUILDING - HISTORIC BUILDING

1201.3 SPECIAL OCCUPANCY EXCEPTIONS—MUSEUMS

- WHERE A BUILDING IN GROUP R-3 IS USED FOR GROUP A, B OR M PURPOSES SUCH AS MUSEUM TOURS, EXHIBITS AND OTHER PUBLIC ASSEMBLY ACTIVITIES, OR FOR MUSEUMS LESS THAN 3,000 SQUARE FEET PER FLOOR AND A MAXIMUM OF THREE STORIES, THE OCCUPANCY SHALL BE CLASSIFIED AS GROUP B.
- ADEQUATE MEANS OF EGRESS IN SUCH BUILDINGS, INCLUDING, BUT NOT LIMITED TO, A MEANS OF MAINTAINING DOORS IN AN UNLOCKED POSITION TO PERMIT EGRESS, A LIMIT ON BUILDING OCCUPANCY TO AN OCCUPANT LOAD PERMITTED BY THE MEANS OF EGRESS CAPACITY, A LIMIT ON OCCUPANCY OF CERTAIN AREAS OR FLOORS, OR SUPERVISION BY A PERSON KNOWLEDGEABLE IN THE EMERGENCY EXITING PROCEDURES, SHALL BE PROVIDED.

1202.1 GENERAL

- REPAIRS TO ANY PORTION OF A HISTORIC BUILDING OR STRUCTURE SHALL BE PERMITTED WITH ORIGINAL OR LIKE MATERIALS AND ORIGINAL METHODS OF CONSTRUCTION, SUBJECT TO THE PROVISIONS OF THIS CHAPTER. HAZARDOUS MATERIALS, SUCH AS ASBESTOS AND LEAD-BASED PAINT, SHALL NOT BE USED WHERE THE CODE FOR NEW CONSTRUCTION WOULD NOT PERMIT THEIR USE IN BUILDINGS OF SIMILAR OCCUPANCY, PURPOSE AND LOCATION.

1203.7 ONE-HOUR FIRE-RESISTANT ASSEMBLIES

- WHERE 1-HOUR FIRE-RESISTANCE-RATED CONSTRUCTION IS REQUIRED BY THESE PROVISIONS, IT NEED NOT BE PROVIDED, REGARDLESS OF CONSTRUCTION OR OCCUPANCY, WHERE THE EXISTING WALL AND CEILING FINISH IS WOOD OR METAL LATH AND PLASTER.

1203.9 STAIRWAY RAILINGS

- GRAND STAIRWAYS SHALL BE ACCEPTED WITHOUT COMPLYING WITH THE HANDRAIL AND GUARD REQUIREMENTS, EXISTING HANDRAILS AND GUARDS AT ALL STAIRWAYS SHALL BE PERMITTED TO REMAIN, PROVIDED THEY ARE NOT STRUCTURALLY DANGEROUS.

1204.6 MEANS OF EGRESS

- EXISTING DOOR OPENINGS AND CORRIDOR AND STAIRWAY WIDTHS LESS THAN THOSE THAT WOULD BE ACCEPTABLE FOR NONHISTORIC BUILDINGS UNDER THESE PROVISIONS SHALL BE APPROVED, PROVIDED THAT, IN THE OPINION OF THE CODE OFFICIAL, THERE IS SUFFICIENT WIDTH AND HEIGHT FOR A PERSON TO PASS THROUGH THE OPENING OR TRAVERSE THE EXIT AND THAT THE CAPACITY OF THE EXIT SYSTEM IS ADEQUATE FOR THE OCCUPANT LOAD, OR WHERE OTHER OPERATIONAL CONTROLS TO LIMIT OCCUPANCY ARE APPROVED BY THE CODE OFFICIAL.

ABBREVIATIONS

ABBREV	ABBREVIATION (S)
ABB	ABBREVIATION (S)
A.F.F.	ABOVE FINISHED FLOOR
AD	ACCESS DOOR
ACOUS	ACOUSTICAL
A/C	AIR CONDITIONING
ALUM	ALUMINUM
AB	ANCHOR BOLT
APPR	APPROVED
AC	ASPHALT CONCRETE

BM	BEAM
BLK	BLOCK
BD	BOARD
BOT	BOTTOM
B.O.	BOTTOM OF
B.O.B.	BOTTOM OF BEAM
BLDG	BUILDING

CLG	CEILING
CH	CEILING HEIGHT
CEM	CEMENT
C/C	CENTER TO CENTER
CER	CERAMIC
CLR	CLEAR
CLOS	CLOSET
COL	COLUMN
COMPO	COMPOSITION
CONC	CONCRETE
CMU	CONCRETE MASONRY UNIT
CONN	CONNECTION
CONT	CONTINUOUS
CORD	COORDINATE
CORR	CORRIDOR
CSK	COUNTERSINK

DEL	DELETE
DEMO	DEMOLITION
DET	DETAIL
DIAG	DIAGONAL
DIA	DIAMETER
DIM	DIMENSION
DIR	DIRECTION
DR	DOOR
DO	DOOR OPENING
DBL	DOUBLE
DF	DOUGLAS FIR
DN	DOWN
DS	DOWNSPOUT
DWG	DRAWING
DF	DRINKING FOUNTAIN

EA	EACH
EWC	ELECTRIC WATER COOLER
ELEC	ELECTRICAL
ELEV OR EL	ELEVATION
ELEV	ELEVATOR
EQ	EQUAL
EQUIP	EQUIPMENT
EXIST	EXISTING
EJ	EXPANSION JOINT
EXT	EXTERIOR

FOC	FACE OF CONCRETE
FOS	FACE OF STUD
FOW	FACE OF WALL

FT	FEET
FRP	FIBER REINFORCED PLASTIC
FIN	FINISH
FF	FINISH FLOOR
FO	FINISHED OPENING
FHC	FIRE HOSE CABINET
FLR	FLOOR
FD	FLOOR DRAIN
FS	FLOOR SINK
FDN	FOUNDATION
FH	FULL HEIGHT
FS	FULL SIZE
FSD	FULL SIZE DETAIL

GALV OR GV	GALVANIZED
GA	GAUGE
GC	GENERAL CONTRACTOR
GL	GLASS
GFRC	GLASS FIBER REINFORCED CONCRETE
GR	GRADE
GYP. BD.	GYPSPUM BOARD

HDWD	HARDWOOD
H	HIGH
HP	HIGH POINT
HM	HOLLOW METAL
HORIZ	HORIZONTAL

ID	INSIDE DIAMETER
INSUL	INSULATION
INT	INTERIOR

JAN	JANITOR
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LAV	LAVATORY
LEV	LEVEL
LTWT	LIGHT WEIGHT
LTG	LIGHTING

MAINT	MAINTENANCE
MFG	MANUFACTURER
MO	MASONRY OPENING
MATL	MATERIAL
MAX	MAXIMUM
MECH	MECHANICAL
MB	MECHANICAL BOLT
MET	METAL
MEZZ	MEZZANINE
MIN	MINIMUM
MISC	MISCELLANEOUS
MULL	MULLION

(N)	NEW
NR	NON-RATED
N.I.C.	NOT IN CONTRACT
N.T.S.	NOT TO SCALE
NO.	NUMBER

OFF	OFFICE
OC	ON CENTER
OPN'G	OPENING
OCC	OPERATOR CONTROL CENTER
OPP	OPPOSITE
OH	OPPOSITE HAND

OD	OUTSIDE DIAMETER
OF	OVERFLOW
OFI	OWNER FURNISH ITEM
OFOI	OWNER FURNISHED OWNER INSTALLED

PR	PAIR
PLAS	PLASTIC
PL	PLATE
PLWD	PLYWOOD
PC	PORTLAND CEMENT
PREP	PREPARATION
PT	PRESSURE TREATED
PTDF	PRESSURE TREATED DOUGLAS FIR
PROJ	PROJECTION

QT	QUARRY TILE
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REF	FREFERENCE
R OR RAD	RADIUS
REDWD	REDWOOD
REFL	REFLECTED
RCP	REFLECTED CEILING PLAN
REINF	REINFORCE
REQ'D	REQUIRED
RES	RESILIENT
RR	RESTROOM(S)
R	RISER
RD	ROOF DRAIN
RTU	ROOF TOP UNIT
RM	ROOM
R.O.	ROUGH OPENING

SECT	SECTION
SHT	SHEET
SIM	SIMILAR
SPECS	SPECIFICATIONS
SQ	SQUARE
SS	STAINLESS STEEL
STD	STANDARD
STA	STATION
STL	STEEL
STG	STORAGE
STRUCT	STRUCTURAL
SIMUL	SUMULATED
SUSP	SUSPENDED
SYM	SYMMETRICAL

TEL	TELEPHONE
TEMP	TEMPERED
THK	THICK
T&G	TONGUE & GROOVE
TBC	TOP BACK OF CURB
T.O.	TOP OF
T.O.C.	TOP OF CONCRETE OR CURB
T.O.F	TOP OF FOOTING
T.O.P.	TOP OF PARAPET
T.O.S.	TOP OF STEEL
T.O.W.	TOP OF WALL
TDC	TRAFFIC DECK COVERING
T	TREAD
TYP	TYPICAL

UNO	UNLESS NOTED OTHERWISE
-----	------------------------

V.I.F.	VERIFY IN FIELD
VER	VERTICAL

WC	WATER CLOSET
WL	WATER LEVEL
WP	WATERPROOFING
W	WIDE
W/	WITH
WD	WOOD
WP	WORKING POINT
WI	WROUGHT IRON

GENERAL NOTES:

- THE GENERAL CONTRACTOR SHALL HEREAFTER BE REFERRED TO AS "GENERAL CONTRACTOR" OR "GC". THE OWNER MAY HEREAFTER BE REFERRED TO AS "CONTRACTING OFFICER".
- THE GENERAL CONTRACTOR IS RESPONSIBLE FOR ALL WORK REGARDLESS OF THE LOCATION OF THE INFORMATION IN THE DOCUMENTS. THE GENERAL CONTRACTOR SHALL UTILIZE THE COMPLETE & ENTIRE CONSTRUCTION DRAWINGS AND WRITTEN SPECIFICATIONS FOR ALL REQUIRED INFORMATION TO PROVIDE COMPLETE CONSTRUCTION OF THIS PROJECT AND IS RESPONSIBLE TO COORDINATE ALL DRAWINGS AND SPECIFICATIONS WITH ALL SUBCONTRACTORS REGARDLESS OF LOCATION IN CONTRACT DOCUMENTS. ITEMS LISTED IN DRAWINGS MAY NOT BE INCLUDED IN SPECIFICATIONS. ITEMS LISTED IN SPECIFICATIONS MAY NOT BE INCLUDED IN DRAWINGS.
- UNLESS OTHERWISE INDICATED IN THE CONSTRUCTION DOCUMENTS AS BEING NOT IN CONTRACT (N.I.C.) OR EXISTING, ALL ITEMS, MATERIALS AND INSTALLATION OF SAME ARE PART OF THE CONTRACT AS DEFINED BY THE ENTIRE CONSTRUCTION DOCUMENTS AND SPECIFICATIONS. THE GC SHALL PROVIDE AND INSTALL ALL ACCESSORIES, COMPONENTS AND ASSEMBLIES REQUIRED FOR THE WORK DEPICTED OR SPECIFIED.
- THE GENERAL CONTRACTOR SHALL FIELD VERIFY ALL CONDITIONS AND DIMENSIONS PRIOR TO BEGINNING ANY WORK AND SHALL BE RESPONSIBLE FOR ALL WORK AND MATERIALS INCLUDING THOSE FURNISHED BY SUBCONTRACTORS. THE GC SHALL ACCEPT PREMISES AS FOUND. CONTRACTING OFFICER WILL MAINTAIN THE EXISTING CONDITION OF THE SITE AND EXISTING STRUCTURES AT THE TIME OF BIDDING.
- DISCREPANCIES BETWEEN PORTIONS OF THE CONTRACT DOCUMENTS ARE NOT INTENDED. THE GENERAL CONTRACTOR IS TO CLARIFY WITH THE CONTRACTING OFFICER ANY SUCH DISCREPANCIES DURING BIDDING AND PRIOR TO COMMENCING WORK.
- DIMENSIONS TAKE PRECEDENCE OVER DRAWINGS: DO NOT SCALE DRAWINGS TO DETERMINE ANY LOCATIONS. CONTRACTING OFFICER SHALL BE NOTIFIED OF ANY DISCREPANCY PRIOR TO CONTINUING WITH WORK. CHANGES IN THE WORK TO BE DOCUMENTED IN WRITING AND APPROVED IN WRITING PRIOR TO BEING STARTED - (IMPLEMENTED)
- THE CONTRACTOR SHALL REPORT TO THE CONTRACTING OFFICER ALL CONDITIONS REQUIRING COORDINATION/ CHANGES WITH THE CONTRACT DOCUMENTS. COORDINATION / APPROVAL SHALL TAKE PLACE BEFORE THE WORK BEGINS. ALL CHANGES TO THE CONTRACT COST SHALL BE APPROVED THROUGH A CHANGE ORDER.
- DETAILED DRAWINGS AND LARGER SCALE DRAWINGS TAKE PRECEDENCE OVER SMALL SCALE DRAWINGS.
- THE CONTRACTING OFFICER WILL REVIEW SHOP DRAWINGS AND SAMPLES FOR CONFORMANCE WITH DESIGN CONCEPT OF THE PROJECT. THE CONTRACTING OFFICER'S REVIEW OF A SEPARATE ITEM SHALL NOT INDICATE APPROVAL OF AN ASSEMBLY IN WHICH THE ITEM FUNCTIONS. THE CONTRACTING OFFICER WILL NOT REVIEW SHOP DRAWINGS UNTIL THE GC HAS REVIEWED AND STAMPED THE SHOP DRAWING/SUBMITAL. THE GC IS RESPONSIBLE FOR FIELD VERIFYING ALL DIMENSIONS SHOWN ON THE SHOP DRAWINGS. THE CONTRACTING OFFICER'S REVIEW OF THE SHOP DRAWINGS SHALL NOT OVERRIDE THE CONDITIONS DESCRIBED IN THE CONTRACT DOCUMENTS UNLESS SPECIFICALLY NOTED OTHERWISE BY THE CONTRACTING OFFICER. WORK SHALL NOT PROCEED WITHOUT RETURNED REVIEWED SUBMITTALS.
- FOR CONSTRUCTION DETAILS NOT SHOWN, USE THE MANUFACTURER'S STANDARD DETAILS OR APPROVED SHOP DRAWINGS / DATA SHEETS IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
- FOR GRADING, TRENCHING ETC., CONTACT THE CONTRACTING OFFICER FOR INSTRUCTIONS PRIOR TO THE CONTINUATION OF WORK SHOULD ANY UNUSUAL CONDITIONS BECOME APPARENT DURING GRADING OR FOUNDATION CONSTRUCTION. EXISTING ELEVATIONS AND LOCATIONS TO BE JOINED SHALL BE VERIFIED BY THE GENERAL CONTRACTOR BEFORE CONSTRUCTION.
- ALL WORK, MATERIALS AND METHODS SHALL BE IN CONFORMANCE WITH THE CODES, ORDINANCES AND REGULATIONS OF ALL GOVERNMENTAL AGENCIES HAVING JURISDICTION AT THE PROJECT LOCATION. THE GENERAL CONTRACTOR MUST COMPLY WITH THE CONTRACTOR REGISTRATION REQUIREMENTS OF ALL GOVERNING AUTHORITIES.
- ALL PROJECT CONSTRUCTION SHALL CONFORM WITH ABAA'S STANDARDS 2015 (ARCHITECTURAL BARRIERS ACT ACCESSIBILITY STANDARDS).
- THE GENERAL CONTRACTOR SHALL NOTIFY ALL APPLICABLE LOCAL GOVERNING AUTHORITIES AND UTILITIES PRIOR TO COVERING UP ANY WORK REQUIRING INSPECTION.
- THE GENERAL CONTRACTOR SHALL MAINTAIN ALL REQUIRED EXITS AND FIRE LANES IN WORKING ORDER.
- A GENERAL BUILDING PERMIT IS NOT REQUIRED, PERMITTING BY GOVERNMENT. ALL PERMITS OR CONNECTION FEES SHALL BE SECURED BY THE GENERAL CONTRACTOR.
- THE GENERAL CONTRACTOR SHALL PROVIDE AND INSTALL FIRE EXTINGUISHERS WHERE SHOWN ON PLAN.
- MINIMUM FLAME SPREAD CLASSIFICATION OF INTERIOR FINISH SHALL CONFORM TO THE BUILDING CODE AND LOCAL GOVERNING BUILDING CODES/ORDINANCES.
- THE GENERAL CONTRACTOR SHALL PROVIDE AND IS SOLELY RESPONSIBLE AND LIABLE FOR PUBLIC AND EMPLOYEE PROTECTION AS NECESSARY AND AS REQUIRED BY THE CODES, INCLUDING EXTERIOR AND INTERIOR PEDESTRIAN TRAFFIC BARRIERS. ALL WORK SHALL CONFORM TO THE ORDINANCES AND REGULATIONS OF GOVERNMENTAL AGENCIES HAVING JURISDICTION AT THE PROJECT.
- THE GENERAL CONTRACTOR SHALL PROVIDE TEMPORARY BARRICADES FOR DUST AND NOISE CONTROL, AND ALL REQUIRED ENVIRONMENTAL PROTECTION WHERE WORK JOINS EXISTING CONDITIONS.

- ALL DEBRIS SHALL BE REMOVED FROM PREMISES AND ALL AREAS SHALL BE LEFT IN A CLEAN (BROOM) CONDITION DAILY.
- IT SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO COORDINATE AND OR CALL LOCAL UTILITIES TO LOCATE ALL EXISTING UTILITIES, WHETHER SHOWN HEREIN OR NOT, AND WHEN IDENTIFIED TO PROTECT THEM FROM DAMAGE. THE GENERAL CONTRACTOR SHALL BEAR ALL EXPENSE OF REPAIR OR REPLACEMENT OF IDENTIFIED UTILITIES OR OTHER PROPERTY DAMAGED BY OPERATIONS IN CONJUNCTION WITH THE EXECUTION OF THE WORK.
- APPROVED PLANS SHALL BE KEPT IN A PLAN BOX AND SHALL NOT BE USED BY WORKMEN. ALL CONSTRUCTION SETS SHALL REFLECT THE SAME INFORMATION. THE GENERAL CONTRACTOR SHALL ALSO MAINTAIN, IN GOOD CONDITION, ONE COMPLETE SET OF PLANS WITH ALL REVISIONS, ADDENDA AND CHANGE ORDERS, ON THE PREMISES AT ALL TIMES. THESE ARE TO BE KEPT UNDER THE CARE OF THE JOB SUPERINTENDENT.
- THE GENERAL CONTRACTOR IS RESPONSIBLE FOR RECEIVING, UNLOADING, UNCRATING, INSTALLATION AND HOOK-UP OF ALL GOVERNMENT FURNISHED ITEMS UNLESS NOTED OTHERWISE ON THE DRAWINGS.
- THE GENERAL CONTRACTOR IS TO ASSURE THAT NO REBAR OR REINFORCEMENT IS PRESENT PRIOR TO CORE DRILLING OR PLACING BOLTS OR ANY OTHER ITEM WHICH COULD DISTURB THE STRUCTURAL SLAB OR FOUNDATION WALLS.
- PROVIDE GALVANIC PROTECTION BETWEEN DISSIMILAR MATERIALS WHERE REQUIRED.
- PROVIDE METAL TRIM OR CASING AT ALL EDGES OF PLASTER AND DRYWALL SURFACES WHERE IT TERMINATES OR MEETS ANY OTHER MATERIAL, UNLESS NOTED OTHERWISE.
- PROVIDE METAL CORNER TRIM AT ALL OUTSIDE CORNERS OF PLASTER AND DRYWALL SURFACES.
- ALL PENETRATIONS THROUGH ANY SURFACE SHALL BE THOROUGHLY SEALED WITH APPROPRIATE SEALANT MATERIAL.
- UNLESS OTHERWISE NOTED, ALL EXTERIOR AND INTERIOR METAL, TRIM, SHALL BE PAINTED.
- THE GC SHALL VERIFY THE LOCATIONS OF ALL CEILING & WALL ACCESS PANELS WITH MECHANICAL. ACCESS PANELS SHALL BE FURNISHED AND INSTALLED WITH A FIRE RATING EQUAL TO THE WALL OR CEILING ASSEMBLY INTO WHICH THEY ARE TO BE INSTALLED. FINISH AND LOCATION SHALL BE APPROVED BY THE CONTRACTING OFFICER.
- THE GC SHALL VERIFY DIMENSIONS OF ALL EQUIPMENT PADS & BASES WITH EQUIPMENT MANUFACTURERS & SHALL VERIFY ALL SIZES AND LOCATIONS OF DUCT OPENINGS ON ROOF AND INTERIOR SHAFTS.

FIRE PROTECTION NOTES

REQUIRED MEANS OF EGRESS AND FIRE PROTECTION SYSTEMS SHALL BE MAINTAINED DURING CONSTRUCTION AND DEMOLITION, REMODELING OR ALTERATIONS AND ADDITIONS TO THE BUILDING. FIRE PREVENTION BUREAU STAFF SHALL APPROVE REVIEW OF ANY EXITING ALTERATIONS, AS REQUIRED IN IFC SECTION 331

AUTOMATIC FIRE SPRINKLER, FIRE SUPPRESSION AND FIRE ALARM SYSTEMS WHEN TAKEN OUT OF SERVICE ARE REQUIRED TO HAVE THE FIRE PREVENTION BUREAU NOTIFIED. THE DURATION OF TIME AND THE DATE MUST BE STATED TO INCLUDE THE DATE WHICH THE FIRE PROTECTION EQUIPMENT WILL BE PLACED IN SERVICE, AS REQUIRED IN IFC CHAPTER 33.

ALL DEFERRED (IBC 107.3.4.1) SUBMITTAL ITEM(S) NEED TO BE SUBMITTED WITHIN A TIMELY MANNER (30 CALENDAR DAYS OF THE ORIGINAL BUILDING PERMIT ISSUANCE DATE), THE FINAL INSPECTION APPROVAL (IBC 110.3.10) CANNOT BE ISSUED AND NO BUILDING OR STRUCTURE CAN BE USED OR OCCUPIED (IBC 111.1) UNTIL ALL THE DEFERRED SUBMITTED ITEMS ARE APPROVED BY THE BUILDING OFFICIAL.

SCOPE OF WORK:

MINOR ARCHITECTURAL REPAIRS DUE TO UPGRADED MECHANICAL SYSTEMS WILL BE MADE WITHIN THE EXISTING STONEWALL JACKSON DEATH SITE BUILDING. THE GENERAL CONTRACTOR WILL COORDINATE WITH THE CONTRACTING OFFICER TO ENSURE ANY NEW PENETRATIONS ARE DISCREETLY LOCATED AND COMPLEMENT THE BUILDING'S CURRENT ARCHITECTURAL STYLE.

THE EXISTING SPACE WILL NEED TO BE FIELD-VERIFIED, MEASURED, AND MODIFIED TO COMPLETE THE PROJECT, INCLUDING MECHANICAL PENETRATIONS. THE CONTRACTOR MUST ENSURE THE SPACE IS UPDATED TO NEW QUALITY AND FINISH STANDARDS, WITH ALL EXISTING EXPOSED SURFACES RECEIVING PAINT OR NEW FINISHES AS SPECIFIED IN THE FINISH PLANS.



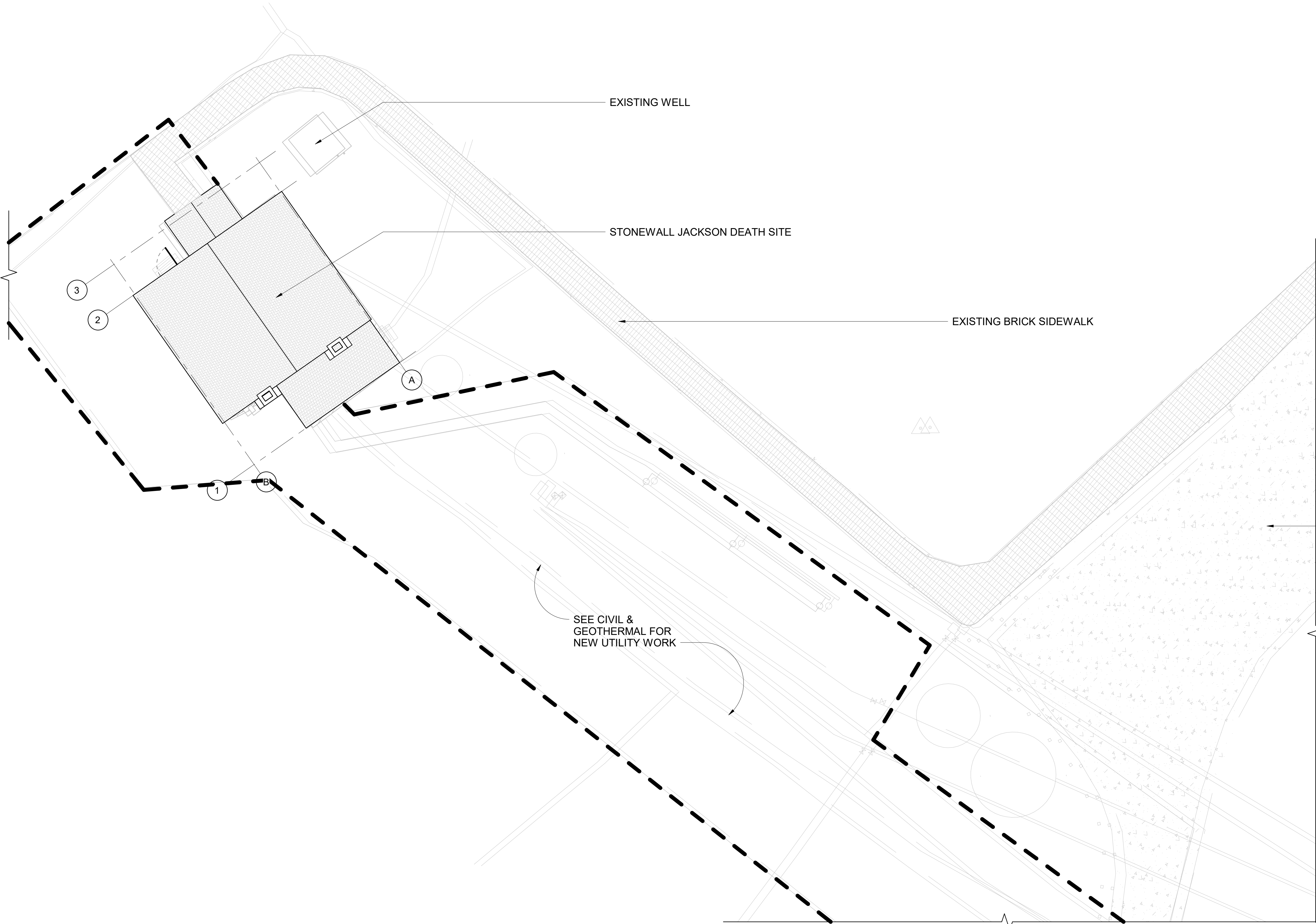
1 EXISTING PLAN LEVEL 1
1/8" = 1'-0", DWG REF: A200

2 EXISTING PLAN LEVEL 2
1/8" = 1'-0", DWG REF: A200

CONSTRUCTION DOCUMENTS

	A/E FIRM	DESIGNED:	SUB SHEET NO. G001	TITLE OF SHEET GENERAL NOTES	DRAWING NO. FRSP 314741	
	PRIME: DHM DESIGN DENVER, CO	ajc ajc			PKG NO. 314741	SHEET 12 OF 37
	SUBCONTRACTOR: ajc architects	TECH. REVIEW: K. RIGBY				
	DATE: 03/17/2025					
	GEOTHERMAL HVAC SYSTEMS FOR JACKSON SHRINE DEATH SITE FREDERICKSBURG & SPOTSLVANIA NMP					

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GENERAL NOTES:

SEE SHEET G001 FOR GENERAL NOTES AND ABBREVIATIONS.

DO NOT SCALE DRAWINGS.

CONTRACTOR / SUBCONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS BEFORE BEGINNING WORK, AND SHALL REPORT TO THE CONTRACTING OFFICER ANY ERRORS, INCONSISTENCIES OR OMISSIONS BEFORE BEGINNING WORK. SEE GENERAL NOTES AND SPECIFICATIONS.

CONTRACTOR TO COORDINATE AND VERIFY LIGHTING LOCATIONS TO ENSURE NO CONFLICTS WITH MECHANICAL PENETRATIONS.

KEY

— LIMIT OF DISTURBANCE

A1 SITE PLAN
1" = 10'-0"

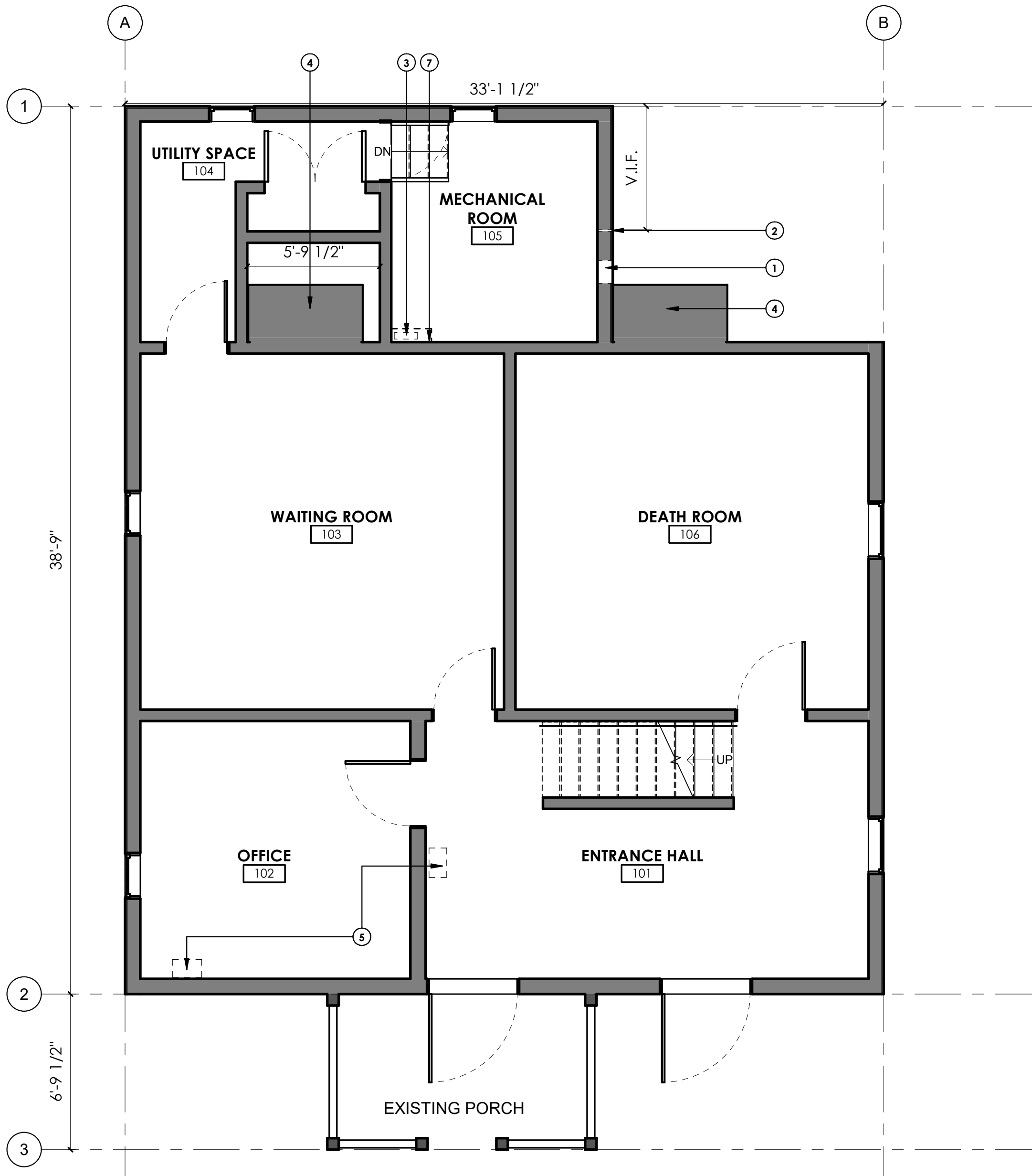


SCALE : 1" = 10'-0"

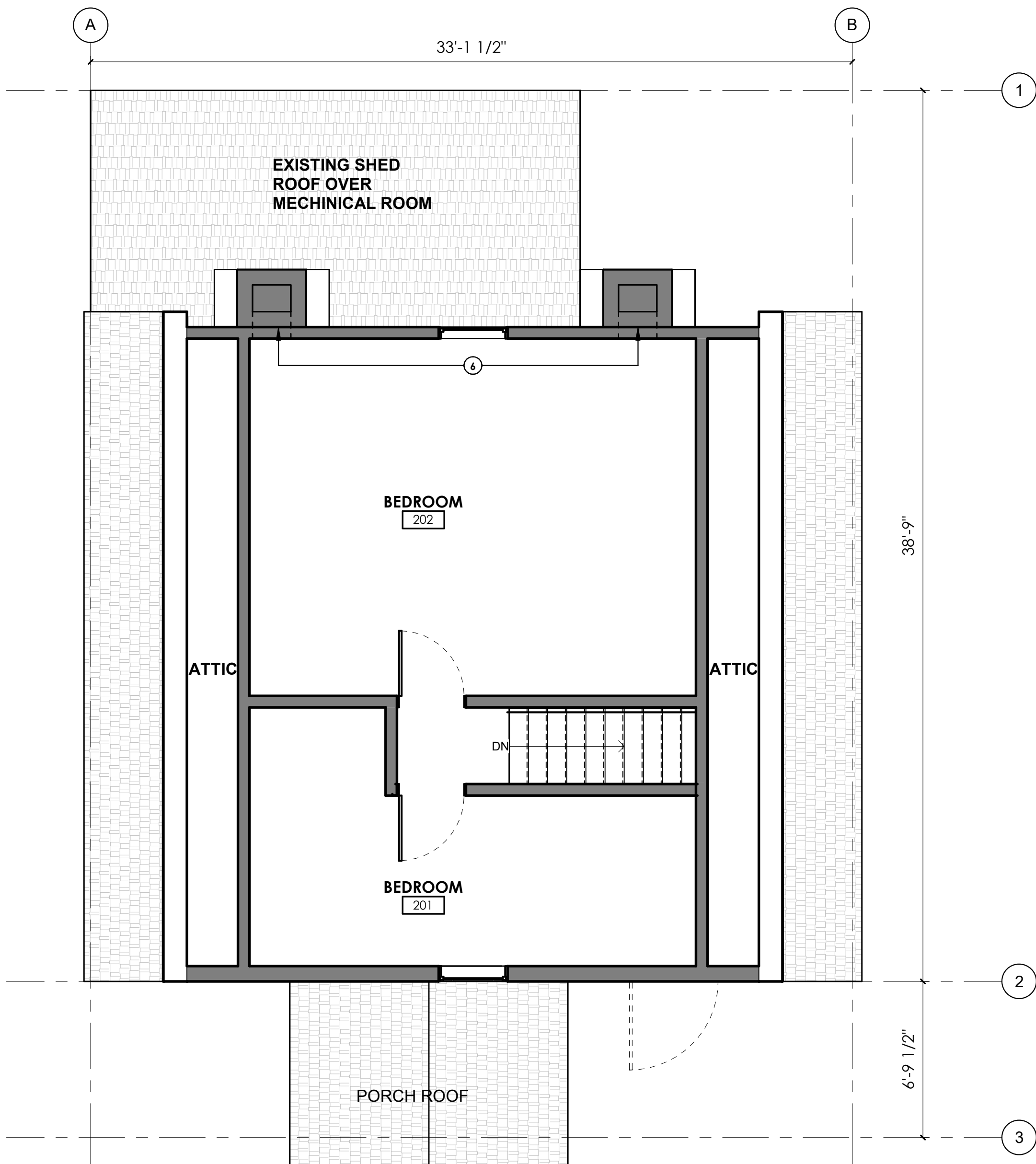
CONSTRUCTION DOCUMENTS						
	A/E FIRM	DESIGNED:	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.	
	PRIME: DHM DESIGN DENVER, CO	a c a c	AS101	ARCHITECTURAL SITE PLAN GEOTHERMAL HVAC SYSTEMS FOR JACKSON SHRINE DEATH SITE FREDERICKSBURG & SPOTSLVANIA NMP	FRSP 314741	
	SUBCONTRACTOR: a c architects	TECH. REVIEW: K. RIGBY			PKG NO. 314741	SHEET 13
		DATE: 03/17/2025				OF 37



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A1 EXISTING CONDITIONS DEMOLITION FLOOR PLAN LEVEL 01
1/4" = 1'-0"



A2 EXISTING CONDITIONS DEMOLITION FLOOR PLAN LEVEL 02
1/4" = 1'-0"

GENERAL NOTES:

SEE SHEET G001 FOR GENERAL NOTES AND ABBREVIATIONS.

DO NOT SCALE DRAWINGS.

CONTRACTOR / SUBCONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS BEFORE BEGINNING WORK, AND SHALL REPORT TO THE CONTRACTING OFFICER ANY ERRORS, INCONSISTENCIES OR OMISSIONS BEFORE BEGINNING WORK. SEE GENERAL NOTES AND SPECIFICATIONS.

CONTRACTOR TO COORDINATE AND VERIFY LIGHTING LOCATIONS TO ENSURE NO CONFLICTS WITH MECHANICAL PENETRATIONS.

DEMOLITION NOTES

ALL ITEMS SHOWN THIS PAGE ARE EXISTING TO REMAIN UNLESS NOTED OTHERWISE GRAPHICALLY OR BY KEYED NOTE. EXTENTS OF THIS SELECTIVE DEMOLITION PACKAGE ARE THE BUILDING'S ENVELOPE AND ANY SMALL PENETRATIONS TO BE SEALED TO MAINTAIN AN AIRTIGHT ENVELOPE. CONTRACTOR TO PROVIDE ANY TEMPORARY CONSTRUCTION TO MAINTAIN ENVELOPE INTEGRITY.

STANDARD GRAPHIC REPRESENTATIONS OF WALLS, DOORS, PLUMBING FIXTURES & TOILET ACCESSORIES INDEPENDENTLY REFERENCE DEMO OR EXISTING TO REMAIN CONDITIONS WITH OR WITHOUT AN ATTACHED KEYED NOTE. PROVIDE DEMO OF ALL ITEMS SHOWN DASHED. (SEE PRECEDING NOTE).

SEE MECHANICAL/PLUMBING (MD/PD) DEMO & ELECTRICAL (ED) DEMO SHEETS AND SPECIFICATIONS FOR ADDITIONAL DEMOLITION OR EXISTING CONDITIONS INFORMATION. WHERE PLUMBING, MECHANICAL OR ELECTRICAL ITEMS ARE SHOWN DEMO'D ON THIS PAGE, THE INFORMATION IS SUPPLIED AS A SUPPLEMENT TO THE MECHANICAL SHEETS AND ELECTRICAL SHEETS. THE EXTENT OF THE DEMOLITION IS AS PER REQUIRED BY THE SPECIFICATIONS, MECHANICAL SHEETS AND ELECTRICAL SHEETS.

DISPOSE OF ALL MATERIALS MARKED AS "REMOVE" OR "DEMO" RECYCLE REMOVED MATERIALS WHENEVER PRACTICAL." CONDITIONS MARKED "SALVAGED" ARE REUSED DURING NEW CONSTRUCTION AND SHOULD BE PROTECT UNTIL REINSTALLATION. COORDINATE WITH CONTRACTING OFFICER ANY DISCREPENCIES.

EXISTING RAIN GUTTER DOWN SPOUTS & ROOF DRAIN LINE DROPS TO REMAIN U.N.O. PROTECT.

REMOVE EXISTING (STUBBED OUT OR PARTIALLY DEMO'D) PIPING AS PER SPEC. & MECHANICAL/PLUMBING SHEETS. CAP AT BUILDING ENVELOPE WHERE OCCURS.

REMOVE EXISTING ELECTRICAL AND LIGHTING WHERE SHOWN. SEAL PENETRATIONS THROUGH BUILDING ENVELOPE WHERE OCCURS.

REFLECTED CEILING PLANS (SEE A131) ARE NOT INTENDED TO BE A LIGHTING DEMOLITION PLAN. NO WALL MOUNTED LIGHTING FIXTURES OR OTHER WALL MOUNTED APPURTENANCES ARE SHOWN. SEE THE LIGHTING DEMO PLAN FOR ALL LIGHTING AND EGRESS SIGNS, SIZE AND TYPES OF ELECTRICAL FIXTURES ETC. SEE MECHANICAL PLANS FOR ALL CEILING MOUNTED DIFFUSERS /GRILLES ETC.

KEYED NOTES

- REMOVE PORTION OF EXISTING WALL FOR NEW MECHANICAL LOUVER INSTALLATION. SEE MECHANICAL DRAWINGS.
- REMOVE PORTION OF EXISTING WALL FOR INSTALLATION OF NEW CONDENSATE LINE.
- REMOVE PORTION OF WALL FOR NEW SUPPLY AIR DUCT IN CRAWL SPACE.
- EXISTING CHIMNEY TO REMAIN FOR NEW DUCTWORK INSTALLATION.
- NEW FLOOR PENETRATION R.A. GRILLE. SEE MECHANICAL.
- V.I.F. FOR NEW PENETRATIONS OR DEMOLITION. NOTIFY CONTRACTING OFFICER IF REQUIRED. SEE M112.
- EXISTING CRAWL SPACE ACCESS POINT.

1/4" = 1'-0"

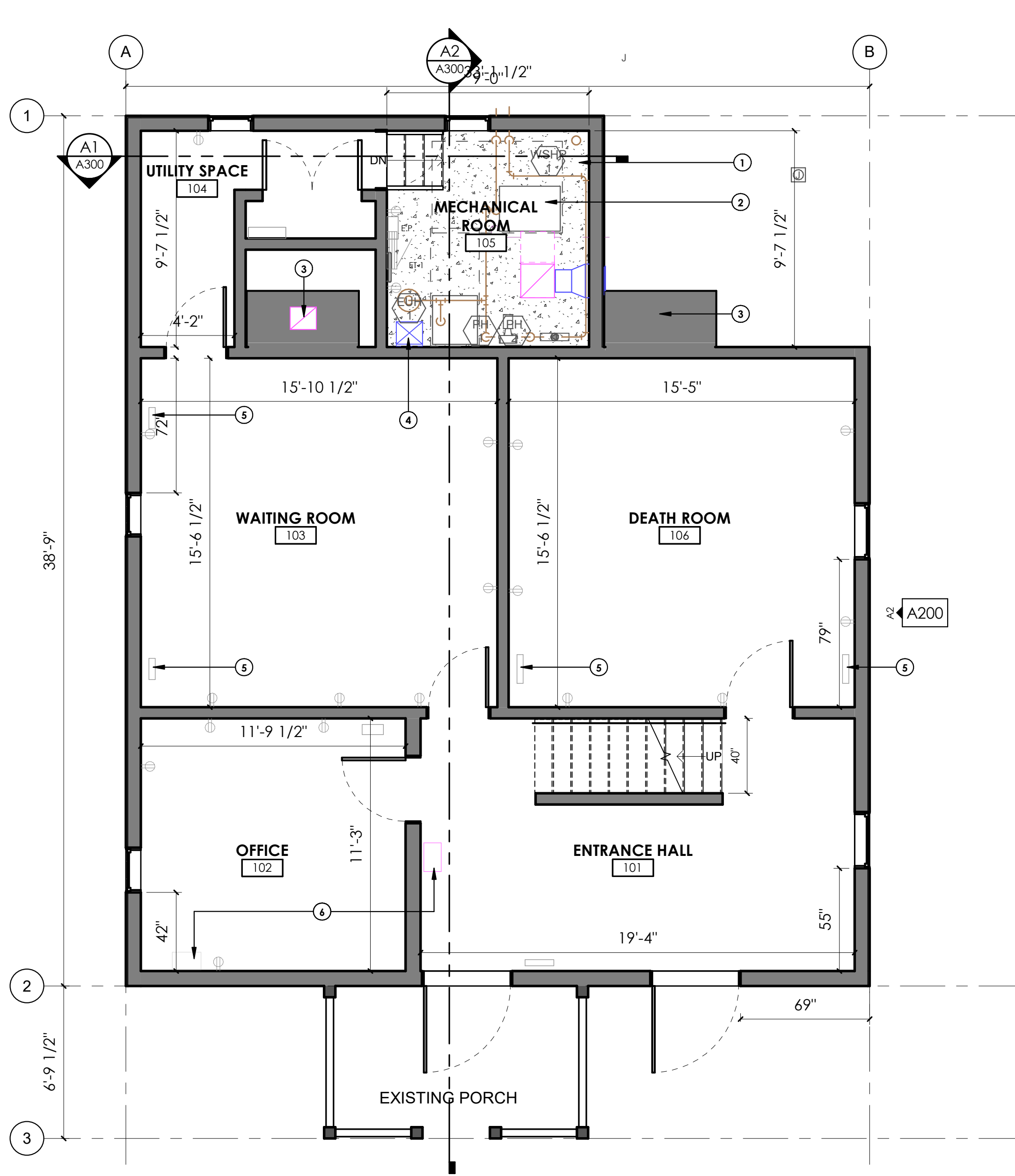


CONSTRUCTION DOCUMENTS

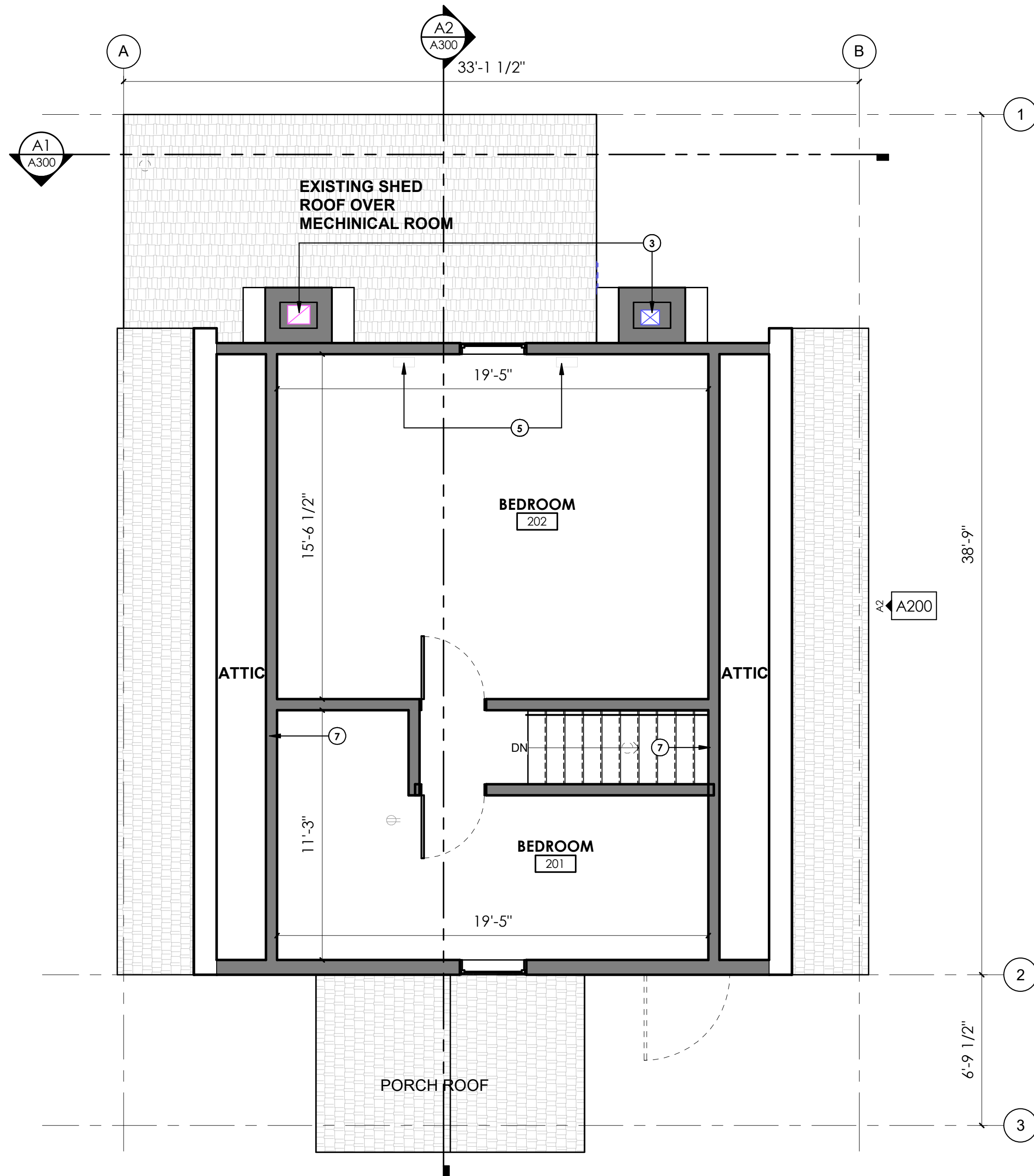
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	PRIME:	ajc			FRSP	314741
	DHM DESIGN					
	DENVER, CO	ajc				
	SUBCONTRACTOR:	TECH. REVIEW:				
	ajc architects	K. RIGBY			314741	14
		DATE:				
		03/17/2025				OF 37

EXISTING CONDITIONS & DEMOLITION FLOOR PLANS	
GEOTHERMAL HVAC SYSTEMS FOR JACKSON SHRINE DEATH SITE	
FREDERICKSBURG & SPOTSLVANIA NMP	

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A1 CONSTRUCTION FLOOR PLAN LEVEL 01
1/4" = 1'-0"



A2 CONSTRUCTION FLOOR PLAN LEVEL 02
1/4" = 1'-0"

GENERAL NOTES:

SEE SHEET G001 FOR GENERAL NOTES AND ABBREVIATIONS.

DO NOT SCALE DRAWINGS.

CONTRACTOR / SUBCONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS BEFORE BEGINNING WORK, AND SHALL REPORT TO THE CONTRACTING OFFICER ANY ERRORS, INCONSISTENCIES OR OMISSIONS BEFORE BEGINNING WORK. SEE GENERAL NOTES AND SPECIFICATIONS.

CONTRACTOR TO COORDINATE AND VERIFY LIGHTING LOCATIONS TO ENSURE NO CONFLICTS WITH MECHANICAL PENETRATIONS.

KEYED NOTES

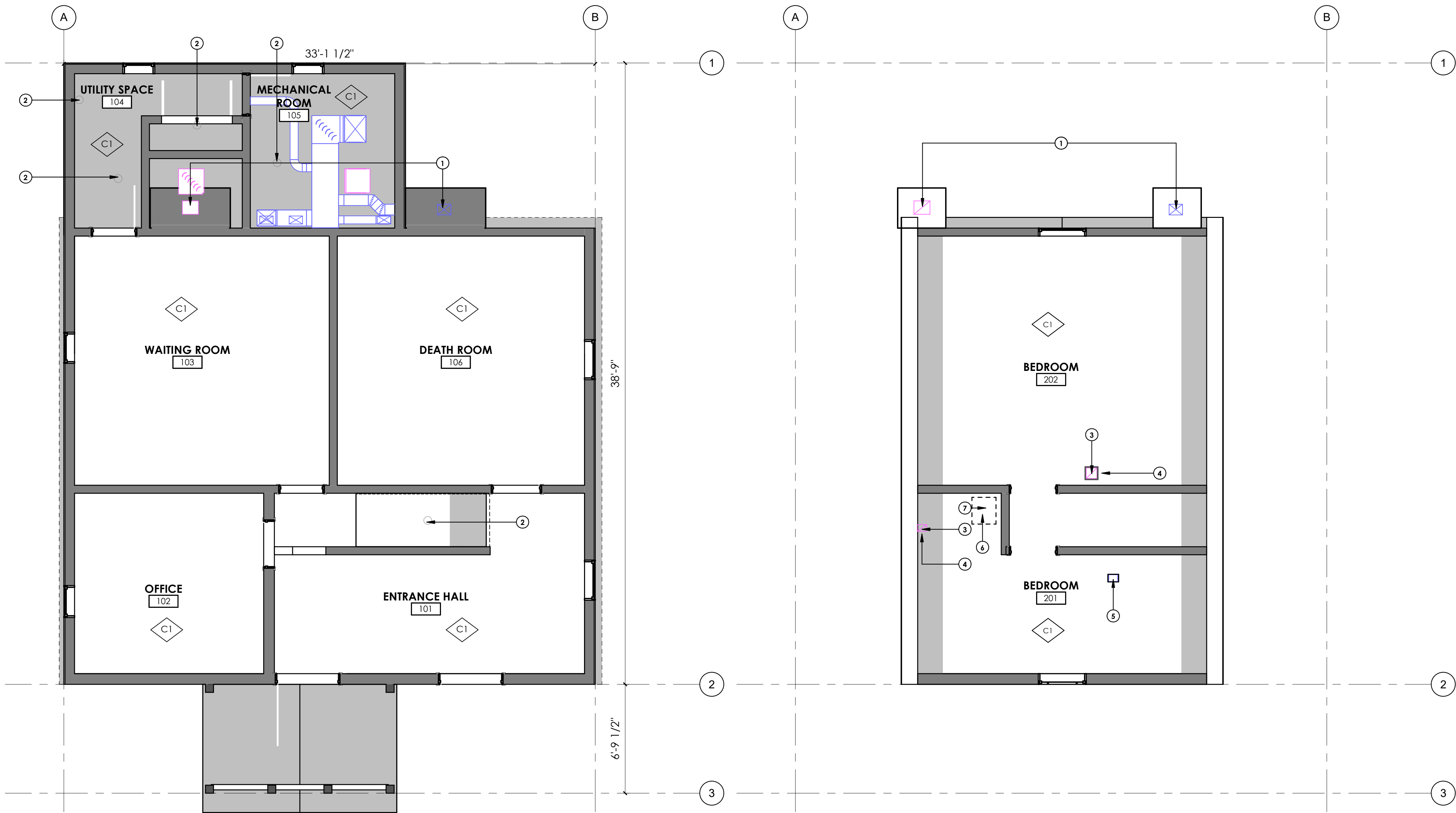
- 1 NEW 6" CAST-IN-PLACE CONCRETE SLAB, 9' X 9'-7 1/2".
- 2 NEW NSHP-1. SEE MECHANICAL DRAWINGS.
- 3 NEW DUCT WORK IN CHIMNEYS. SEE MECHANICAL DRAWINGS.
- 4 NEW S.A DUCT DROP TO CRAWL SPACE.
- 5 EXISTING FLOOR GRILLE. SEE MECHANICAL DRAWINGS.
- 6 NEW FLOOR PENETRATION R.A. GRILLE. SEE MECHANICAL.
- 7 EXISTING ATTIC ACCESS PANEL LOCATION.



CONSTRUCTION DOCUMENTS

	A/E FIRM	DESIGNED:	SUB SHEET NO. A101	TITLE OF SHEET CONSTRUCTION FLOOR PLANS GEOTHERMAL HVAC SYSTEMS FOR JACKSON SHRINE DEATH SITE FREDERICKSBURG & SPOTSLVANIA NMP	DRAWING NO. FRSP 314741	
	PRIME: DHM DESIGN DENVER, CO	ajc 			PKG NO. 314741	SHEET 15
	SUBCONTRACTOR: ajc architects	TECH. REVIEW: K. RIGBY				OF 37
		DATE: 03/17/2025				

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A1 REFLECTED CEILING PLAN LEVEL 01
1/4" = 1'-0"

A2 REFLECTED CEILING LEVEL PLAN 02
1/4" = 1'-0"

GENERAL NOTES:

SEE SHEET G001 FOR GENERAL NOTES AND ABBREVIATIONS.

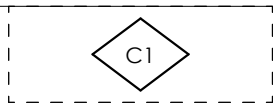
DO NOT SCALE DRAWINGS.

CONTRACTOR / SUBCONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS BEFORE BEGINNING WORK, AND SHALL REPORT TO THE CONTRACTING OFFICER ANY ERRORS, INCONSISTENCIES OR OMISSIONS BEFORE BEGINNING WORK. SEE GENERAL NOTES AND SPECIFICATIONS.

CONTRACTOR TO COORDINATE AND VERIFY LIGHTING LOCATIONS TO ENSURE NO CONFLICTS WITH MECHANICAL PENETRATIONS.

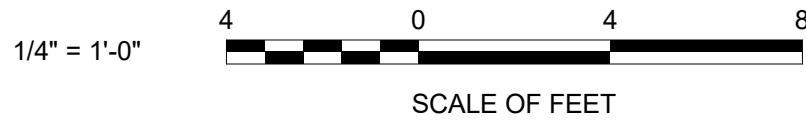
CEILING TYPE:

EXISTING GYP. CEILING



KEYED NOTES

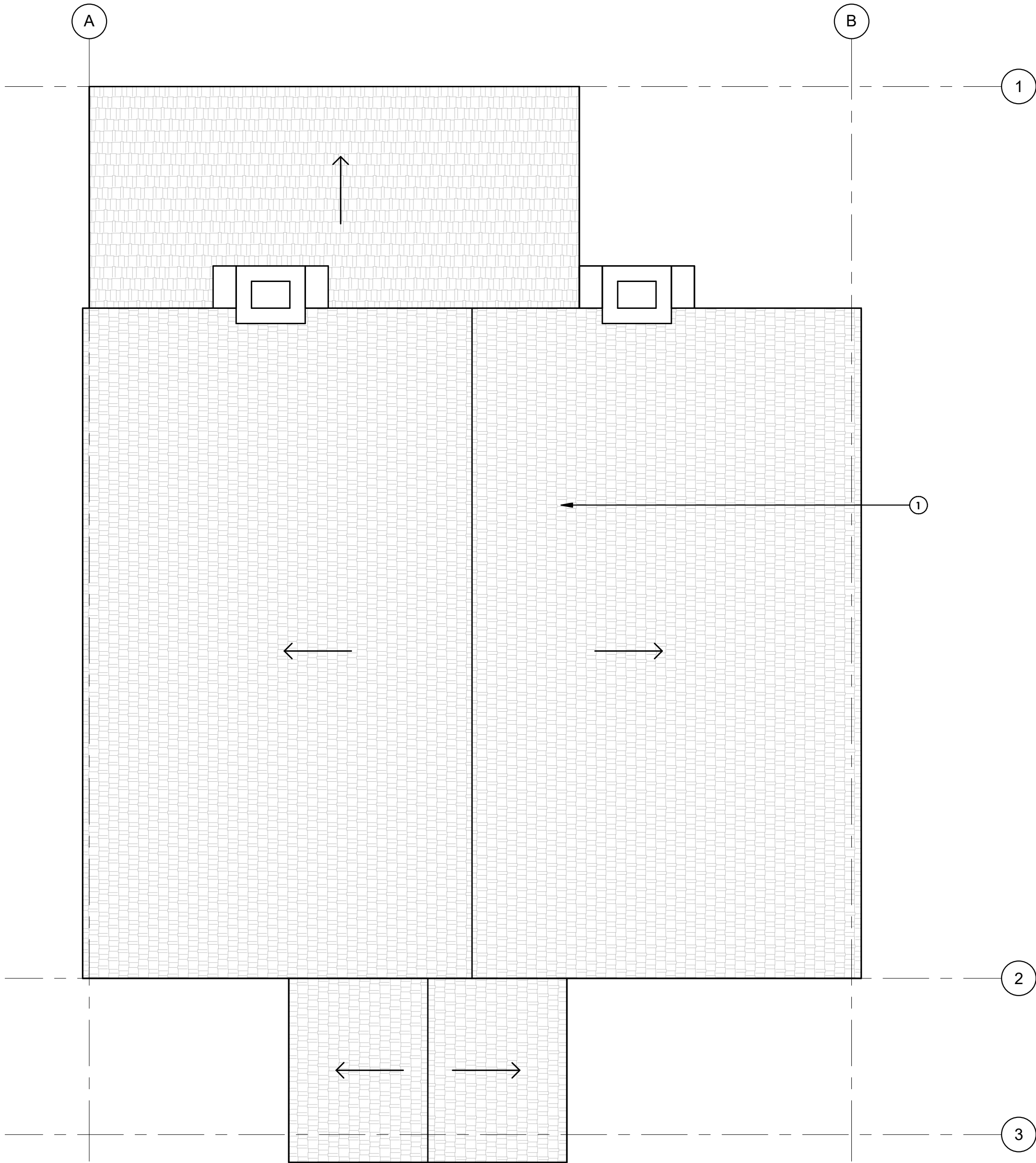
- 1 NEW DUCT WORK IN CHIMNEYS, SEE MECHANICAL DRAWINGS.
- 2 EXISTING LIGHTING, SEE ELECTRICAL DRAWINGS.
- 3 NEW CEILING GRILLE, SEE MECHANICAL DRAWINGS.
- 4 PATCH AND REPAIR, REPAINT ENTIRE CEILING AREA TO MATCH EXISTING.
- 5 EXISTING CEILING GRILLE, SEE MECHANICAL DRAWINGS.
- 6 EXISTING ATTIC ACCESS PANEL LOCATION.
- 7 CONTRACTOR TO PROVIDE A TEMPORARY WORK WALKWAY ON THE EXISTING CEILING JOISTS IN ATTIC.



CONSTRUCTION DOCUMENTS

	A/E FIRM	DESIGNED:	SUB SHEET NO. A131	TITLE OF SHEET REFLECTED CEILING PLAN		DRAWING NO. FRSP		
	PRIME: DHM DESIGN DENVER, CO	a c a c				314741		
	SUBCONTRACTOR: a c architects	TECH. REVIEW:				PKG NO. 314741	SHEET 16	
		K. RIGBY						OF 37
		DATE:						
03/17/2025								
				GEOHERMAL HVAC SYSTEMS FOR JACKSON SHRINE DEATH SITE FREDERICKSBURG & SPOTSLVANIA NMP				

EXISTING ROOF PLAN SHOWN FOR REFERENCE ONLY



A1 ROOF PLAN
1/4" = 1'-0"

GENERAL NOTES:

SEE SHEET G001 FOR GENERAL NOTES AND ABBREVIATIONS.

DO NOT SCALE DRAWINGS.

CONTRACTOR / SUBCONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS BEFORE BEGINNING WORK, AND SHALL REPORT TO THE CONTRACTING OFFICER ANY ERRORS, INCONSISTENCIES OR OMISSIONS BEFORE BEGINNING WORK. SEE GENERAL NOTES AND SPECIFICATIONS.

CONTRACTOR TO COORDINATE AND VERIFY LIGHTING LOCATIONS TO ENSURE NO CONFLICTS WITH MECHANICAL PENETRATIONS.

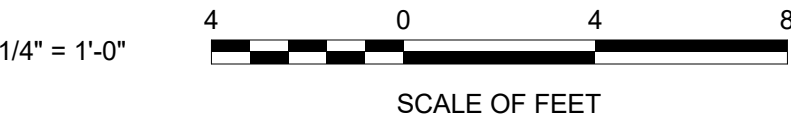
SYMBOLS LEGEND

EXISTING ROOFING

KEYED NOTES

1 ROOF PLAN SHOWN FOR REFERENCE ONLY; NO ARCHITECTURAL WORK REQUIRED.

1 ROOF PLAN SHOWN FOR REFERENCE ONLY; NO ARCHITECTURAL WORK REQUIRED.



CONSTRUCTION DOCUMENTS				TITLE OF SHEET		DRAWING NO.	
	A/E FIRM	DESIGNED:	SUB SHEET NO.	ROOF PLAN		FRSP 314741	
	PRIME: DHM DESIGN DENVER, CO	a c a c	A140				
	SUBCONTRACTOR: a c architects	TECH. REVIEW: K. RIGBY					
		DATE: 03/17/2025					
				GEO THERMAL HVAC SYSTEMS FOR JACKSON SHRINE DEATH SITE FREDERICKSBURG & SPOTSLVANIA NMP		PKG NO. 314741	SHEET 17
							OF 37



NORTH



SOUTH



EAST



WEST

GENERAL NOTES:

SEE SHEET G001 FOR GENERAL NOTES AND ABBREVIATIONS.

DO NOT SCALE DRAWINGS.

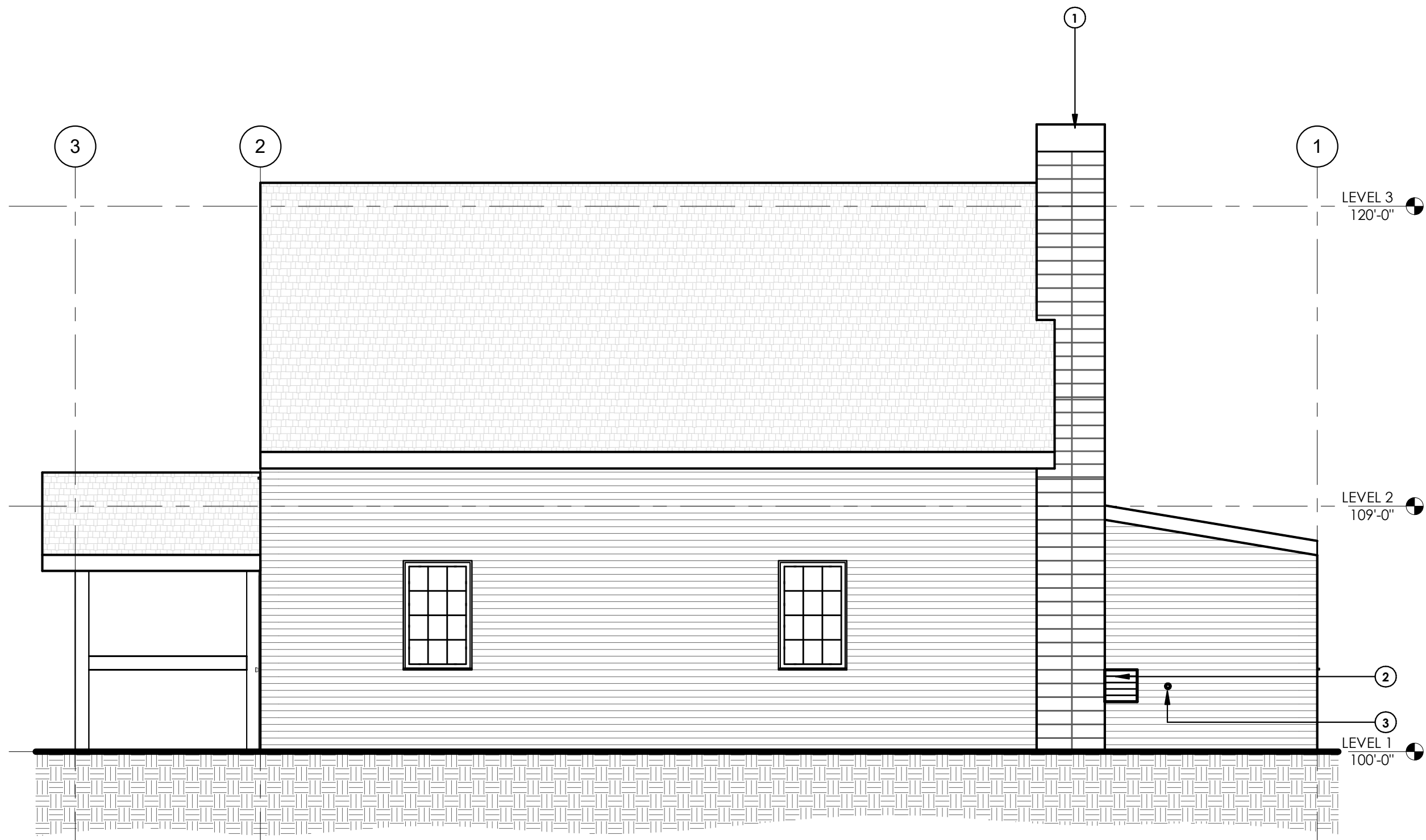
CONTRACTOR / SUBCONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS BEFORE BEGINNING WORK, AND SHALL REPORT TO THE CONTRACTING OFFICER ANY ERRORS, INCONSISTENCIES OR OMISSIONS BEFORE BEGINNING WORK. SEE GENERAL NOTES AND SPECIFICATIONS.

CONTRACTOR TO COORDINATE AND VERIFY LIGHTING LOCATIONS TO ENSURE NO CONFLICTS WITH MECHANICAL PENETRATIONS.

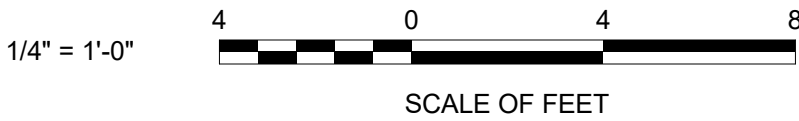
KEYED NOTES

- 1
- EXISTING CHIMNEY IS CURRENTLY "CAPPED". GC TO REMOVE CAP TO ALLOW NEW MECHANICAL RELIEF AIR PATH. SEE MECHANICAL DRAWINGS.
- 2
- NEW MECHANICAL PENETRATION, PATCH AND REPAIR TO MATCH EXISTING SURFACES.
- 3
- 3/4" CONDENSATE LINE WALL PENETRATION, SEALANT AND PIPE ESCUTCHEON. REFER TO SHEET M121.

A1 EXISTING PHOTOS:



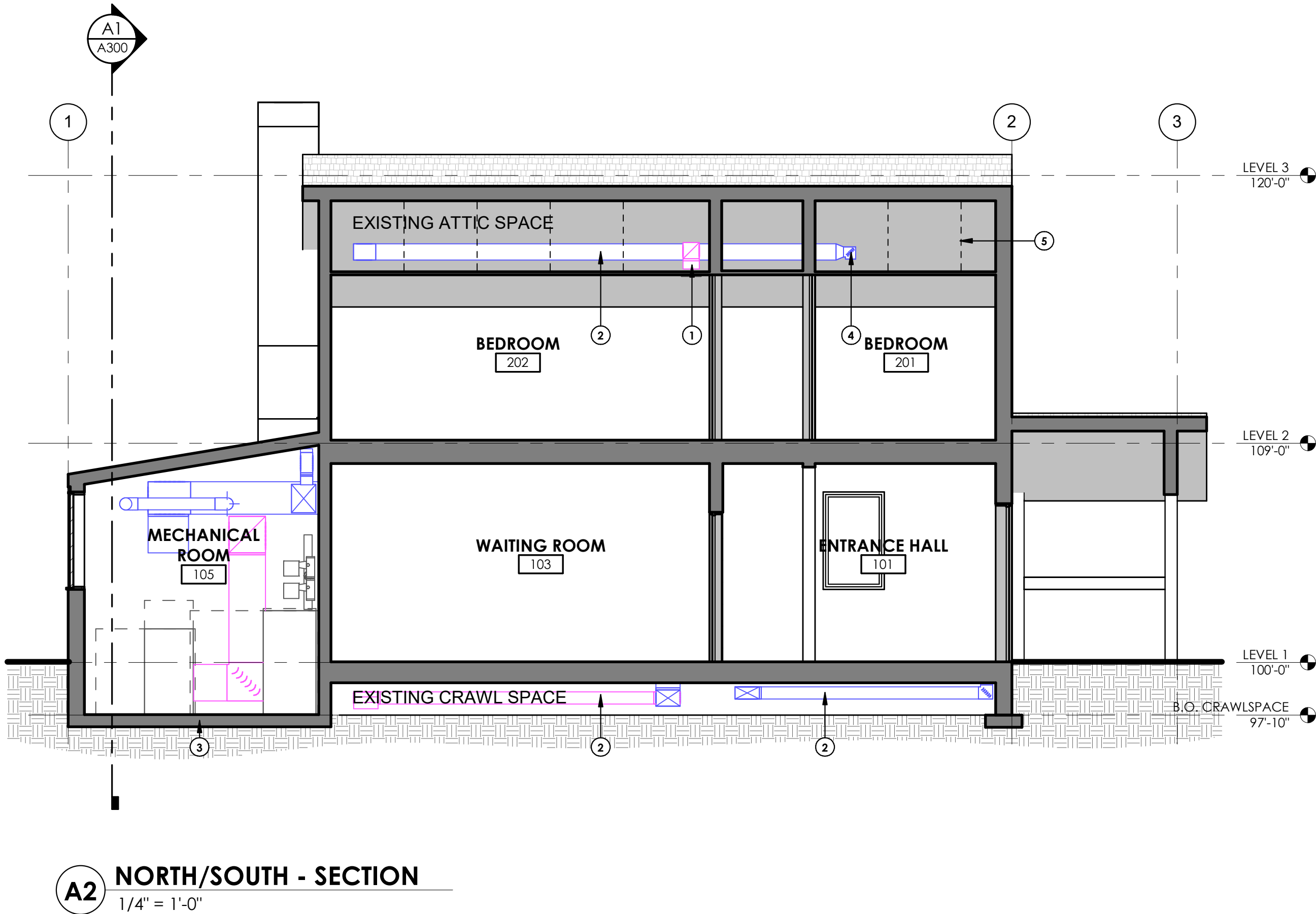
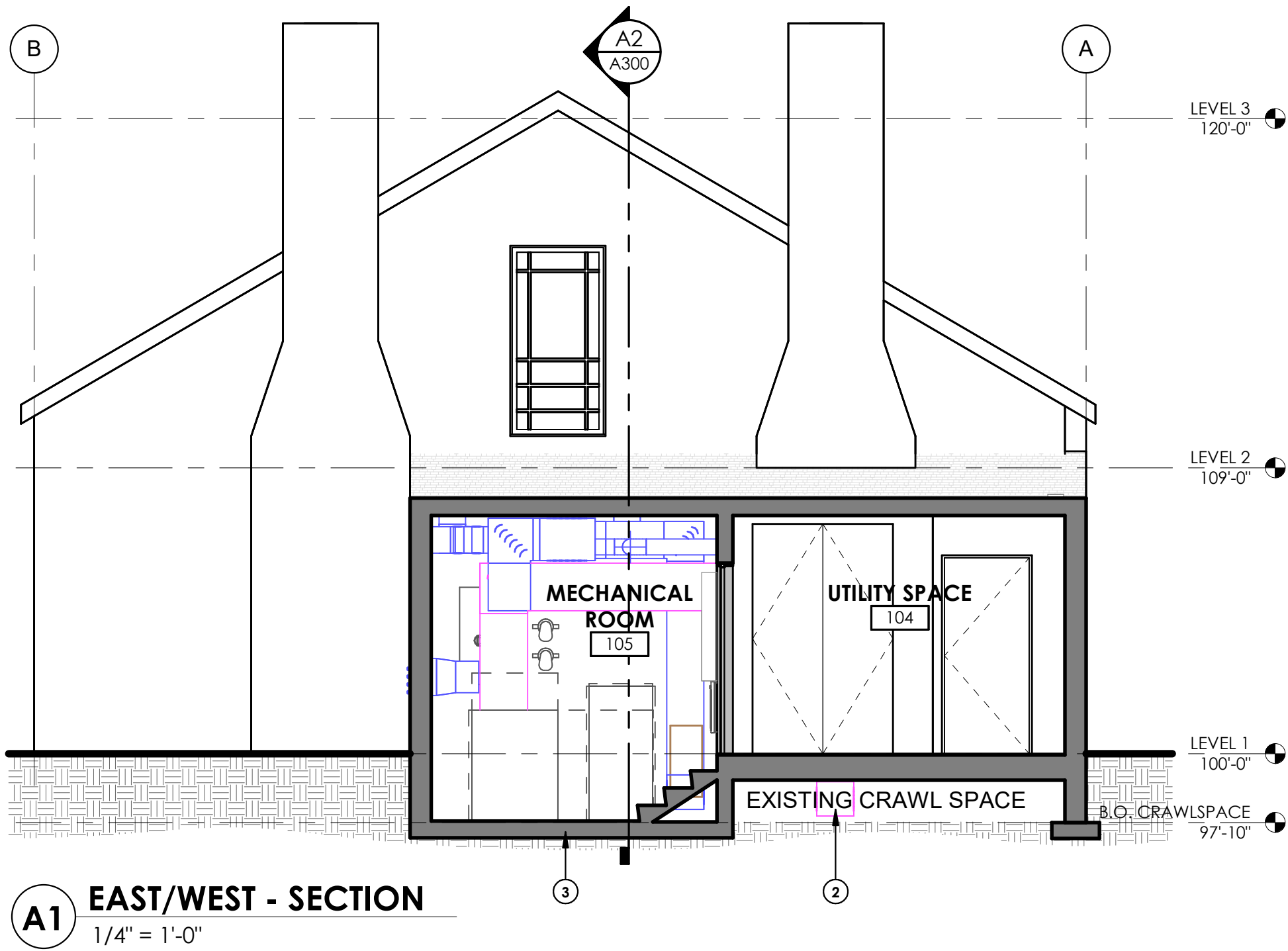
A2 WEST ELEVATION
1/4" = 1'-0" , DWG REF: A101



CONSTRUCTION DOCUMENTS

	A/E FIRM	DESIGNED:	SUB SHEET NO. A200	TITLE OF SHEET ELEVATIONS GEOTHERMAL HVAC SYSTEMS FOR JACKSON SHRINE DEATH SITE FREDERICKSBURG & SPOTSLVANIA NMP	DRAWING NO. FRSP 314741		
	PRIME: DHM DESIGN DENVER, CO	a c  a c			PKG NO. 314741	SHEET 18	
	SUBCONTRACTOR: a c architects	TECH. REVIEW: K. RIGBY					OF 37
		DATE: 03/17/2025					

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GENERAL NOTES:

SEE SHEET G001 FOR GENERAL NOTES AND ABBREVIATIONS.

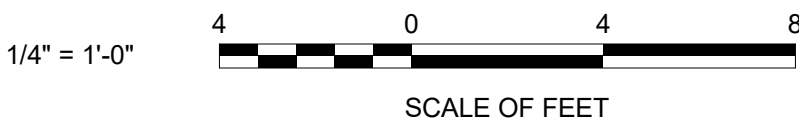
DO NOT SCALE DRAWINGS.

CONTRACTOR / SUBCONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS BEFORE BEGINNING WORK, AND SHALL REPORT TO THE CONTRACTING OFFICER ANY ERRORS, INCONSISTENCIES OR OMISSIONS BEFORE BEGINNING WORK. SEE GENERAL NOTES AND SPECIFICATIONS.

CONTRACTOR TO COORDINATE AND VERIFY LIGHTING LOCATIONS TO ENSURE NO CONFLICTS WITH MECHANICAL PENETRATIONS.

KEYED NOTES

- 1 NEW CEILING GRILLE, SEE MECHANICAL DRAWINGS.
- 2 NEW DUCTWORK, SEE MECHANICAL DRAWINGS.
- 3 NEW 6" CAST-IN-PLACE CONCRETE SLAB, 9' X 9'-7 1/2".
- 4 EXISTING CEILING GRILLE, SEE MECHANICAL DRAWINGS.
- 5 EXISTING ROOF STRUCTURE.



CONSTRUCTION DOCUMENTS

	A/E FIRM	DESIGNED:	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.	
	PRIME: DHM DESIGN DENVER, CO	ajc  ajc	A300	BUILDING SECTIONS	FRSP 314741	
	SUBCONTRACTOR: ajc architects	TECH. REVIEW:			PKG NO. 314741	SHEET 19
		K. RIGBY DATE: 03/17/2025				
				GEOTHERMAL HVAC SYSTEMS FOR JACKSON SHRINE DEATH SITE FREDERICKSBURG & SPOTSLVANIA NMP		

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MECHANICAL NOTES

1. GENERAL
1.

ALL WORK SHALL BE IN ACCORDANCE WITH SMACNA STANDARDS AND SPECIFICATIONS, AND LOCAL AUTHORITY HAVING JURISDICTION.
2.

THESE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND NOT INTENDED TO SHOW ALL TRANSITIONS, OFFSETS, ETC. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND PROVIDE ALL NECESSARY FITTINGS TO COMPLETE THE INTENT OF THE DRAWINGS. ANY DISCREPANCIES BETWEEN DRAWINGS AND FIELD CONDITIONS SHALL BE REPORTED TO THE CONTRACTING OFFICER FOR RESOLUTION. CONTRACTOR MAY LOCATE MECHANICAL EQUIPMENT DIFFERENTLY THAN SHOWN ON DRAWINGS DUE TO CONFLICTS, AS LONG AS FUNCTION AND/OR APPEARANCE ARE NOT AFFECTED.
3.

COORDINATE SPACE REQUIREMENTS, SUPPORTS, AND INSTALLATION OF MECHANICAL WORK, WHICH ARE INDICATED DIAGRAMMATICALLY ON THE DRAWINGS. FOLLOW ROUTING SHOWN FOR PIPES AND DUCTS AS CLOSELY AS PRACTICABLE; PLACE RUNS PARALLEL WITH LINES OF BUILDING. UTILIZE SPACES EFFICIENTLY TO MAXIMIZE ACCESSIBILITY FOR OTHER INSTALLATIONS, FOR MAINTENANCE, AND FOR REPAIRS.
4.

COMPLY WITH MANUFACTURER'S INSTRUCTIONS INCLUDING EACH STEP IN SEQUENCE. SHOULD MANUFACTURERS' INSTRUCTIONS CONFLICT WITH THE DRAWINGS REQUEST CLARIFICATION FROM THE CONTRACTING OFFICER BEFORE PROCEEDING.
5.

DUCT SIZES ARE INSIDE DIMENSION.
6.

CONTRACTOR SHALL REVIEW THESE DOCUMENTS CAREFULLY. CONTRACTOR SHALL CONTACT THE CONTRACTING OFFICER, FOR RESOLUTION OF ANY DISCREPANCIES, OMISSIONS, OR CLARIFICATIONS, BEFORE BID DATE. IN THE EVENT THAT AN INTERPRETATION OF BID DOCUMENTS IS NECESSARY AFTER THE BID DATE, THE DECISION OF THE CONTRACTING OFFICER SHALL BE FINAL AND BINDING.
7.

PRODUCT DELIVERY, STORAGE, AND HANDLING: PROVIDE EQUIPMENT AND PERSONNEL TO HANDLE PRODUCTS BY METHODS TO PREVENT DAMAGE. PROMPTLY INSPECT SHIPMENTS TO ENSURE THAT PRODUCTS ARE UNDAMAGED. STORE AND PROTECT PRODUCTS IN ACCORDANCE WITH MANUFACTURERS' INSTRUCTIONS.
8.

ALL REMOVED EQUIPMENT SHALL REMAIN THE PROPERTY OF THE GOVERNMENT AND SHALL BE STORED PER THEIR DIRECTION.
9.

THE CONTRACTOR IS RESPONSIBLE FOR THE COSTS OF ALL CHANGE ORDERS, WHICH THE NATIONAL PARK SERVICE (NPS) AND CONTRACTING OFFICER HAVE NOT APPROVED IN WRITING PRIOR TO THE EXECUTION OF THE ASSOCIATED WORK.
10.

IN THE CASE OF A CONFLICT, UNLESS OTHERWISE NOTED, KEYNOTES ON MECHANICAL PLANS SHALL SUPERCEDE ANY GENERAL NOTES ON THE PLANS.
11.

CONTRACTOR SHALL COORDINATE WORK WITH OTHER TRADES AND NOTIFY THE CONTRACTING OFFICER IF ANY CONFLICTS OCCUR.
12.

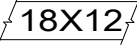
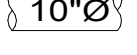
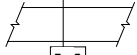
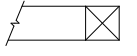
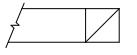
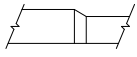
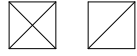
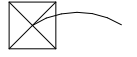
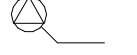
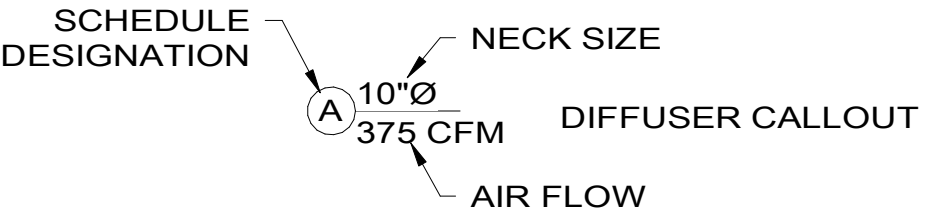
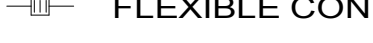
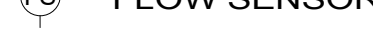
THERMOSTAT LOCATIONS TO BE COORDINATED AND VERIFIED BY THE CONTRACTING OFFICER. THERMOSTAT HEIGHTS SHALL BE 48" AFF TO MATCH LIGHTSWITCH HEIGHTS AND INSTALLED TO MEET ICC A117.1. CONTRACTOR TO CALIBRATE ALL THERMOSTATS SHOWN ON THIS PLAN. IT SHALL BE THE GENERAL CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT ALL EXISTING THERMOSTATS REMAIN INTACT DURING DEMOLITION.
13.

PROVIDE VOLUME DAMPERS AT ALL DIFFUSER TAKEOFFS.
14.

ALL TAKEOFFS, RUNOUTS, AND FLEX DUCTWORK TO DIFFUSERS SHALL BE THE SAME SIZE AS DIFFUSER INLET UNLESS OTHERWISE NOTED.
15.

PROVIDE EXTERNAL INSULATION ON ALL NEW DUCTWORK.
16.

ALL PIPE AND DUCT PENETRATIONS THOUGH RATED WALLS SHALL BE SEALED PER 2024 IBC.

MECHANICAL LEGEND		
PIPING SERVICES		HVAC SYSTEM COMPONENTS
	CWS	CONDENSER WATER SUPPLY
	CWR	CONDENSER WATER RETURN
	CD	CONDENSATE DRAIN
		RECTANGULAR DUCT
		ROUND DUCT
		MANUAL DAMPER
		MOTORIZED DAMPER
		RECT. SUPPLY DUCT
		RECT. RETURN DUCT
		ECCENTRIC REDUCER
		DUCT SLOPE
		SUPPLY DIFFUSER/RETURN GRILLE
		SUPPLY DIFFUSER W/ FLEX CONNECTION
		FIRE/SMOKE DAMPER (F/S) SMOKE DAMPER (SD)
		
PIPING SYSTEM COMPONENTS		VALVES
	ELBOW DOWN	 GATE VALVE
	ELBOW UP	 BALL VALVE
	TEE DOWN	 PLUG VALVE
	TEE UP	 CHECK VALVE
	CAP	 2WAY ATC VALVE
	UNION	 3WAY ATC VALVE
	FLEXIBLE CONNECTION	 PRESSURE REDUCING VALVE
	DRAIN VALVE	 SAFETY RELIEF VALVE
	STRAINER	 BACK FLOW PREVENTER
	FLOW SENSOR	 BALANCING VALVE
	HUMIDITY SENSOR	 BUTTERFLY VALVE
	AUTOMATIC AIR CENT	
	GAUGE	
	THERMOMETER	
	MANUAL AIR VENT	
	P&T TAP	
	IN LINE PUMP	
	METER	
	THERMOSTAT	
	PRESSURE SENSOR	
	CARBON DIOXIDE SENSOR	
	CARBON MONOXIDE SENSOR	

MECHANICAL ABBREVIATIONS

AC	AIR CONDITIONER
ADJ	ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
BAS	BUILDING AUTOMATION SYSTEM
BTU	BRITISH THERMAL UNIT
BLDG	BUILDING
BTUH	BRITISH THERMAL UNIT PER HOUR
CHWS	CHILLED WATER SUPPLY
CHWR	CHILLED WATER RETURN
CA	COMPRESSED AIR
CD	CONDENSATE DRAIN
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CWS	CONDENSER WATER SUPPLY
CWR	CONDENSER WATER RETURN
Cx	COMMISSIONING
(D)	DEMOLISH
DIA	DIAMETER
DN	DOWN
DX	DIRECT EXPANSION
(E)	EXISTING
EA	EXHAUST AIR
FFA	FROM FLOOR ABOVE
FFB	FROM FLOOR BELOW
FD	FIRE DAMPER
FPM	FEET PER MINUTE
F/S	COMBINATION FIRE+SMOKE DAMPER
GPM	GALLONS PER MINUTE
HPC	HIGH PRESSURE CONDENSATE RETURN
HPS	HIGH PRESSURE STEAM SUPPLY
HWR	HEATING WATER RETURN
HWS	HEATING WATER SUPPLY
I.D.	INSIDE DIAMETER
LPC	LOW PRESSURE CONDENSATE RETURN
LPG	LIQUEFIED PROPANEPETROLEUM GAS (PROPANE)
LPS	LOW PRESSURE STEAM SUPPLY
MAX	MAXIMUM
MIN	MINIMUM
MVD	MANUAL VOLUME DAMPER
(N)	NEW
NG	NATURAL GAS
NIC	NOT IN CONTRACT
N.O.	NORMALLY OPEN
N.C.	NORMALLY CLOSED
OA	OUTSIDE AIR
O.C.	ON CENTER
O.D.	OUTSIDE DIAMETER
PSIA	POUNDS PER SQUARE INCH (ABSOLUTE)
PSIG	POUNDS PER SQUARE INCH (GAUGE)

MECHANICAL ABBREVIATIONS CONT.

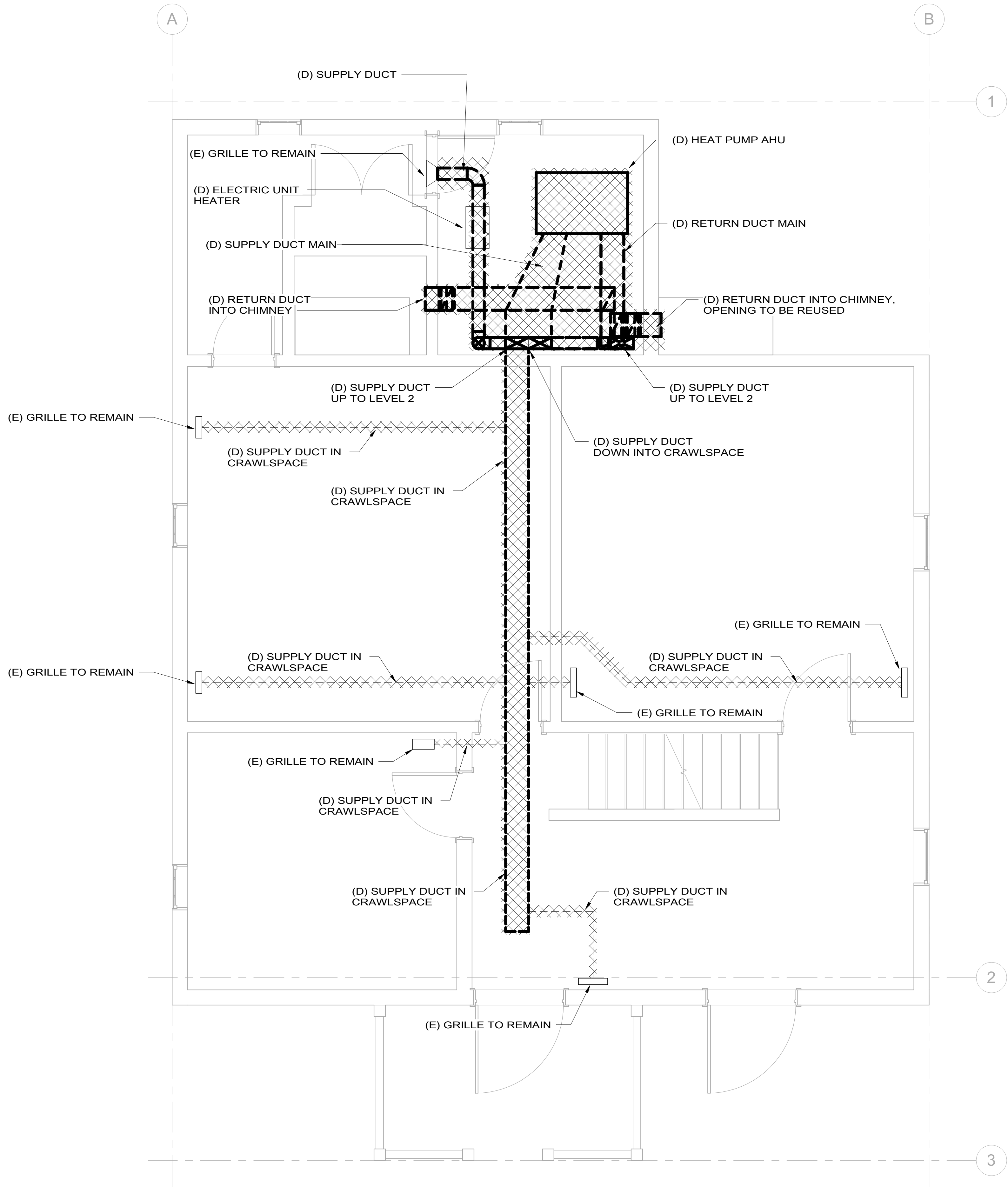
(R)	RELOCATED
RA	RETURN AIR
RE:___	REFERENCE ____
REQ	REQUIRED/REQUIREMENT
RL	REFRIGERANT LIQUID
RS	REFRIGERANT SUCTION
SA	SUPPLY AIR
SD	SMOKE DAMPER
SF	SQUARE FEET
SL	SEA LEVEL
S.S.	STAINLESS STEEL
STD	STANDARD
TA	TRANSFER AIR
TFA	TO FLOOR ABOVE
TFB	TO FLOOR BELOW
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VA	VENTILATION AIR

CONSTRUCTION DOCUMENTS

A/E FIRM PRIME: DHM DESIGN DENVER, CO SUBCONTRACTOR: 360 Engineering	DESIGNED: JPK  JPK TECH. REVIEW: BG DATE: 03/17/2025	SUB SHEET NO. M000	TITLE OF SHEET MECHANICAL LEGENDS AND NOTES GEOTHERMAL HVAC SYSTEMS FOR JACKSON SHRINE DEATH SITE FREDERICKSBURG & SPOTSLVANIA NMP		DRAWING NO. XXX XXXXXX	
					PKG NO. 314741	SHEET 20
						OF 37

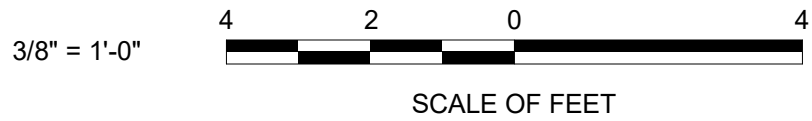


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GENERAL NOTES:
1. ALL EXISTING MECHANICAL EQUIPMENT TO BE DEMOLISHED, INCLUDING EXISTING AIR-SOURCE HEAT PUMP AHU, ALL ASSOCIATED DUCTWORK AND CONTROLS, AND ELECTRIC UNIT HEATER IN MECHANICAL ROOM. ALL EXISTING GRILLES IN SPACES TO REMAIN FOR RECONNECTION TO NEW MECHANICAL SYSTEM.

1 MECHANICAL DEMO PLAN - LEVEL 1
M101 SCALE (A)



CONSTRUCTION DOCUMENTS

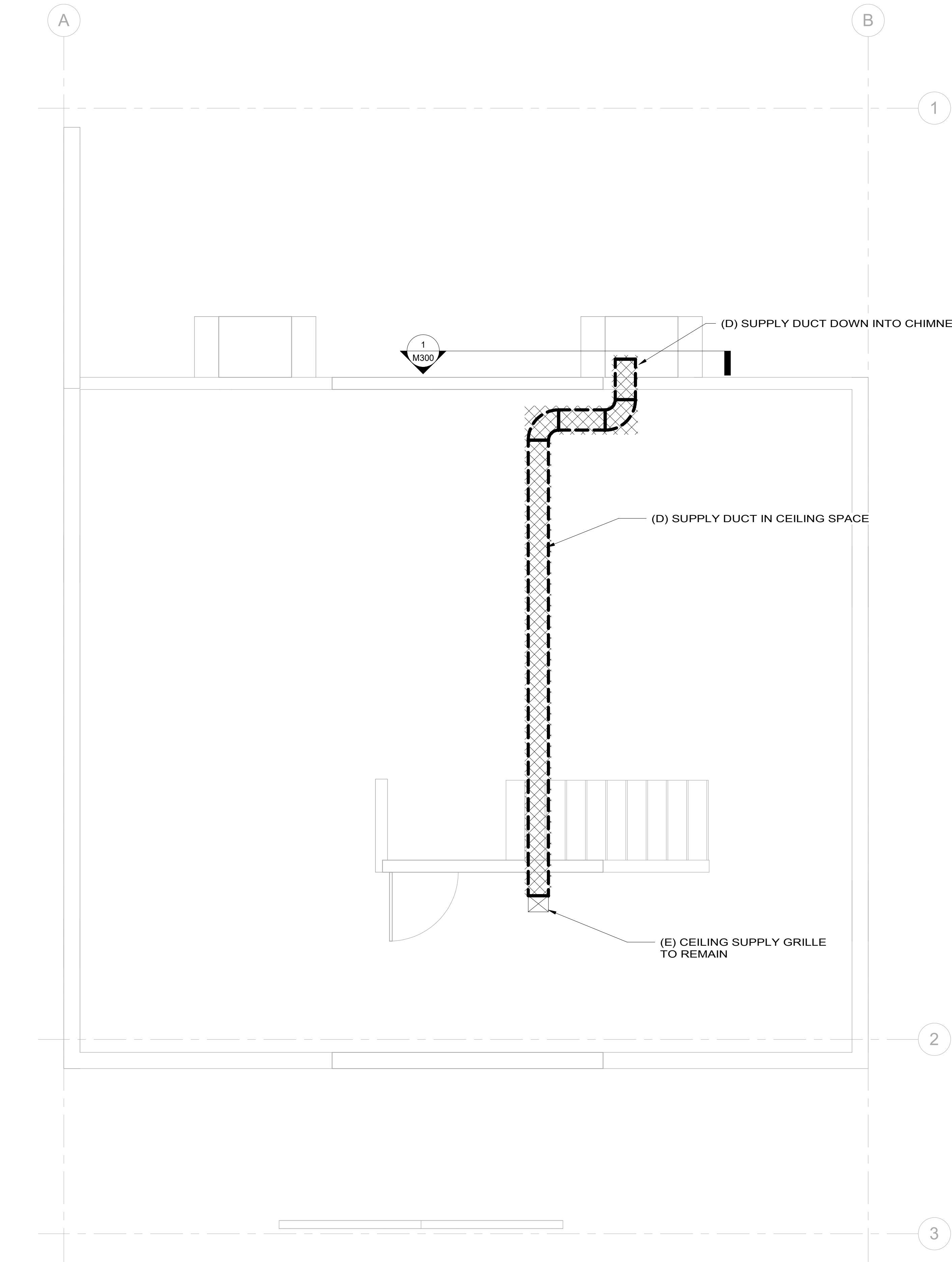
A/E FIRM	DESIGNED:
PRIME: DHM DESIGN DENVER, CO	JPK JPK JPK
SUBCONTRACTOR: 360 Engineering	TECH. REVIEW: BG DATE: 03/17/2025

SUB SHEET NO.
M101

TITLE OF SHEET
**MECHANICAL DEMO
PLAN - LEVEL 1**
GEOTHERMAL HVAC SYSTEMS FOR
JACKSON SHRINE DEATH SITE
FREDERICKSBURG & SPOTSLVANIA NMP

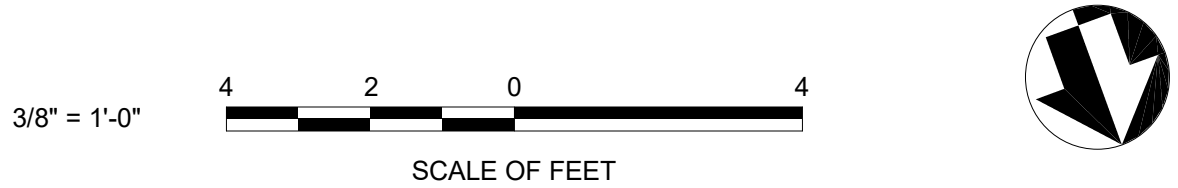
DRAWING NO. XXX XXXXXX	
PKG NO. 314741	SHEET 21
OF 37	

8/13/24 15:20 MKAISER R24 P:/DENVER/NPS FRSP GEOTHERMAL-240836-DDCAD/LA1/BSHEET_TEMPLATE_DWG XREFS: BASESXL-TITLE INFO. DWG;



GENERAL NOTES:
1. ALL EXISTING MECHANICAL EQUIPMENT TO BE DEMOLISHED, INCLUDING EXISTING AIR-SOURCE HEAT PUMP AHU, ALL ASSOCIATED DUCTWORK AND CONTROLS, AND ELECTRIC UNIT HEATER IN MECHANICAL ROOM. ALL EXISTING GRILLES IN SPACES TO REMAIN FOR RECONNECTION TO NEW MECHANICAL SYSTEM.

1 MECHANICAL DEMO PLAN - LEVEL 2
M102 SCALE (A)



CONSTRUCTION DOCUMENTS

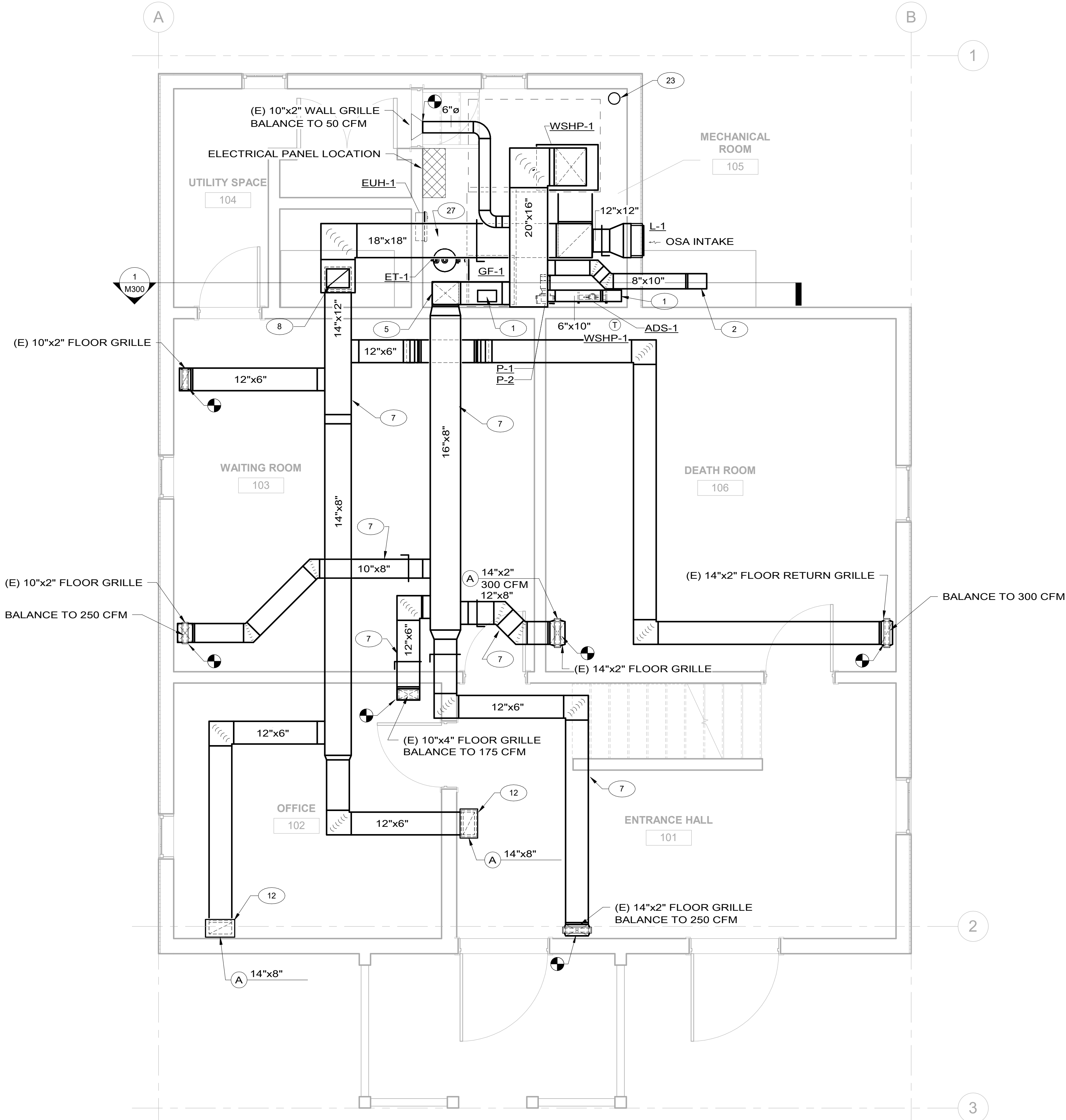
A/E FIRM	DESIGNED:
PRIME: DHM DESIGN DENVER, CO	JPk JPk JPk
SUBCONTRACTOR: 360 Engineering	TECH. REVIEW: BG DATE: 03/17/2025

SUB SHEET NO.
M102

TITLE OF SHEET
**MECHANICAL DEMO
PLAN - LEVEL 2**
GEOTHERMAL HVAC SYSTEMS FOR
JACKSON SHRINE DEATH SITE
FREDERICKSBURG & SPOTSLVANIA NMP

DRAWING NO. XXX XXXXXX	SHEET 22 OF 37
PKG NO. 314741	

8/13/24 15:20 MKAISER R24 P:/DENVER/NPS FRSP GEOTHERMAL-240836-DD/CAD/LAITS/Sheet_Template.dwg XREFS: BASESXL-TITLE INFO.DWG;

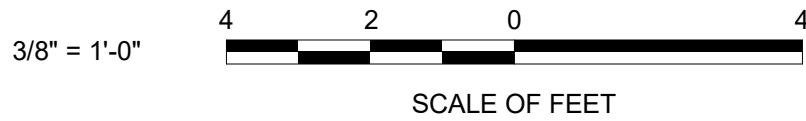


GENERAL NOTES:

1. DUCTWORK IN CRAWLSPACE TO BE PROVIDED WITH EXTERNAL R-8 INSULATION.
2. CONTRACTOR TO CLEAN ALL GRILLE FACES.

KEYNOTES:

- 1 NEW 10"x6" DUCT TO CONNECT TO EXISTING FLOOR GRILLE IN BEDROOM 202 ON LEVEL ABOVE.
- 2 8"x10" DUCT ROUTED UP THROUGH EXISTING CHIMNEY TO 2ND FLOOR CEILING SPACE.
- 5 14"x12" DUCT ROUTED DOWN INTO CRAWLSPACE TO SERVE 1ST FLOOR SPACES.
- 7 DUCT ROUTED BELOW FLOOR IN CRAWLSPACE.
- 8 12"x10" RETURN DUCT ROUTED UP THROUGH CHIMNEY TO 2ND FLOOR. DUCT TO TAP OFF TOP OF 18"x18" RETURN MAIN.
- 12 PROVIDE NEW 14"x8" FLOOR RETURN GRILLE AND CONNECT TO NEW 12"x6" RETURN DUCT AS SHOWN.
- 23 LOCATION FOR FUTURE 6" FIRE DOUBLE-CHECK BACKFLOW PREVENTER RISER.
- 27 LOCATION FOR DUCT MOUNTED HUMIDITY SENSOR.



1 MECHANICAL FLOOR PLAN - LEVEL 1
M111 SCALE(A)



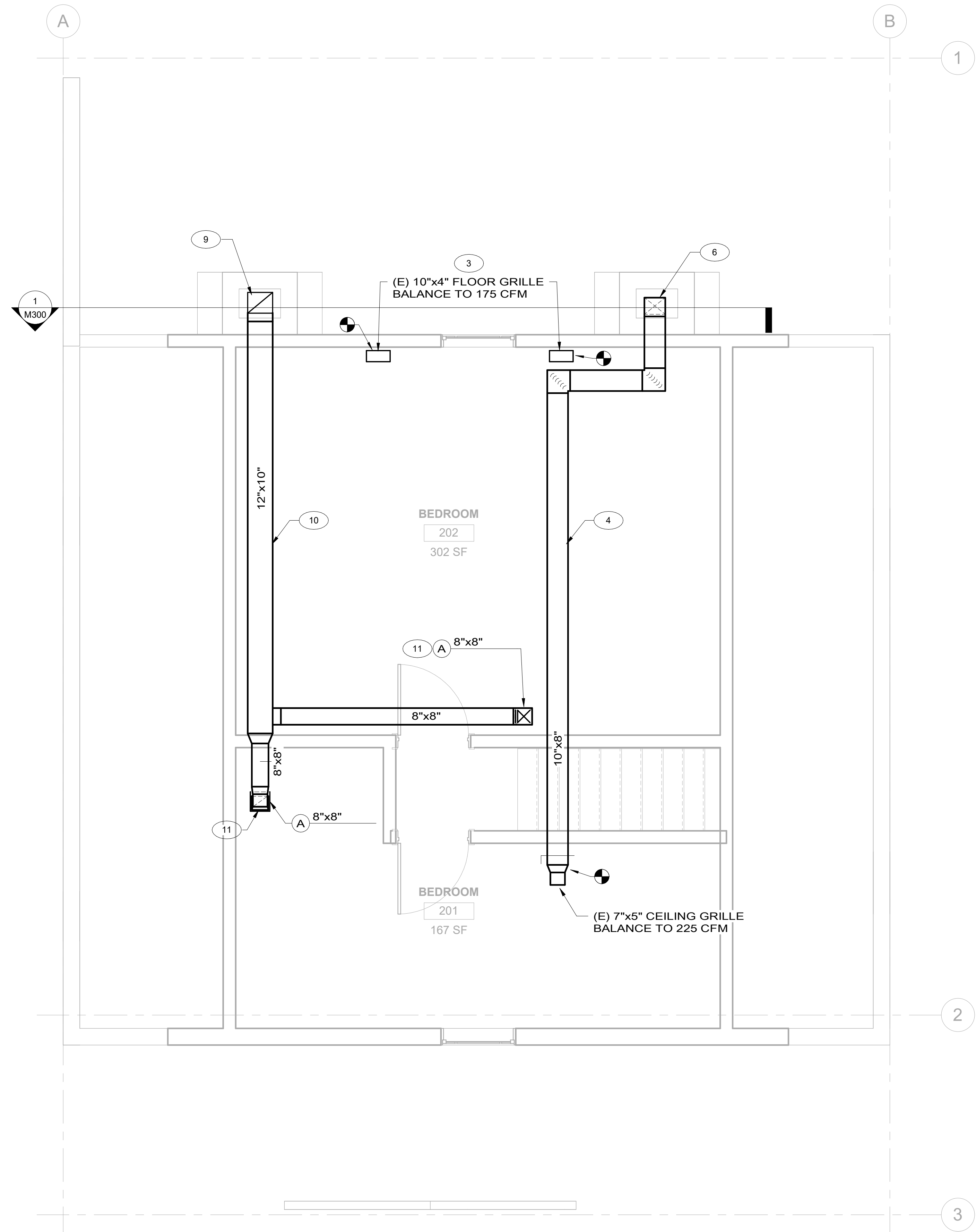
CONSTRUCTION DOCUMENTS

A/E FIRM	DESIGNED:	SUB SHEET NO.
PRIME: DHM DESIGN DENVER, CO	JPK CADD JPK TECH. REVIEW:	M111
SUBCONTRACTOR: 360 Engineering	BG DATE: 03/17/2025	

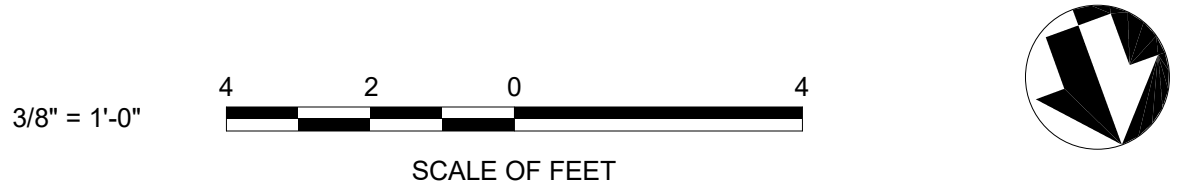
TITLE OF SHEET	
MECHANICAL FLOOR PLAN - LEVEL 1	
GEOTHERMAL HVAC SYSTEMS FOR JACKSON SHRINE DEATH SITE FREDERICKSBURG & SPOTSLVANIA NMP	

DRAWING NO. XXX XXXXXX	SHEET 23 OF 37
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8/13/24 15:20 MKAISER R24 P:/DENVER/NPS FRSP GEOTHERMAL-2408306-DD/CAD/LAITSHEET_TEMPLATE_DWG XREFS: BASESXL-TITLE INFO. DWG;



- GENERAL NOTES:**
1. DUCTWORK ABOVE LEVEL 2 CEILING TO BE PROVIDED WITH EXTERNAL R-8 INSULATION.
- KEYNOTES:**
- 3 (E) 10"x4" FLOOR GRILLE TO BE SERVED BY 10"x6" DUCT FROM LEVEL BELOW.
- 4 ROUTE INDICATED 10"x8" DUCT ABOVE CEILING TO (E) 7"x5" CEILING GRILLE.
- 6 10"x8" DUCT DOWN TO THROUGH CHIMNEY TO LEVEL 1 MECHANICAL ROOM.
- 9 12"x10" RETURN ROUTED INTO CEILING SPACE OF LEVEL 2 AS SHOWN. 12"x10" RELIEF TO CONTINUE UP IN CHIMNEY FOR RELIEF AIR PATH OUT CHIMNEY. RELIEF DUCT TO TERMINATE CHIMNEY CAP FOR RELIEF. SEAL AROUND CHIMNEY PENETRATION PER 2024 IBC. PROVIDE RELIEF DUCT WITH BACKDRAFT DAMPER. CHIMNEY CAP TO BE MASTER FLOW CC1313 OR SIMILAR. CONTRACTOR TO CONFIRM FINAL SIZING OF CHIMNEY CAP WITH CONTRACTING OFFICER.
- 10 12"x10" RETURN ROUTED IN CEILING SPACE AS SHOWN.
- 11 CONNECT 8"x8" TO NEW 8"x8" SINGLE DEFLECTION RETURN GRILLE.



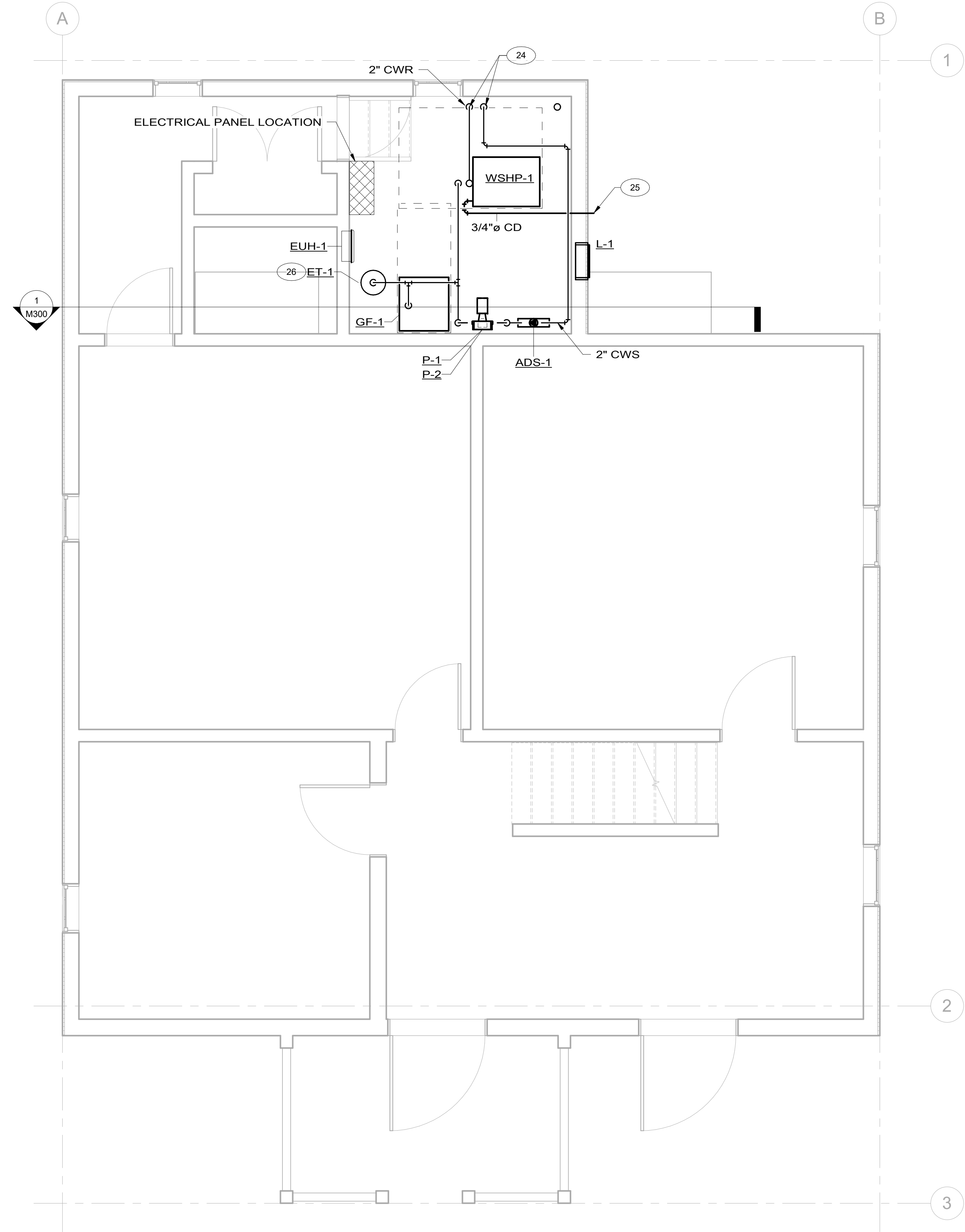
1 MECHANICAL FLOOR PLAN - LEVEL 2
M112 SCALE (A)



CONSTRUCTION DOCUMENTS

A/E FIRM PRIME: DHM DESIGN DENVER, CO SUBCONTRACTOR: 360 Engineering	DESIGNED: JPK CADED JPK	SUB SHEET NO. M112	TITLE OF SHEET MECHANICAL FLOOR PLAN - LEVEL 2 GEOTHERMAL HVAC SYSTEMS FOR JACKSON SHRINE DEATH SITE FREDERICKSBURG & SPOTSLVANIA NMP	DRAWING NO. XXX XXXXXX	
	TECH. REVIEW: BG			PKG NO. 314741	SHEET 24
	DATE: 03/17/2025				OF 37

8/13/24 15:20 MKAISER R24 P:/DENVER/NPS FRSP GEOTHERMAL-2408306-DD/CAD/LAITS/HEET_TEMPLATE_DWG XREFS: BASESXL-TITLE INFO. DWG;



GENERAL NOTES:
1. CHEMICAL POT FEEDER, PF-1, TO BE MOUNTED TO SLAB BELOW PUMPS. SEE DETAIL 2, M-500 FOR PIPING DETAIL.

KEYNOTES:
24 2" CWS AND CWR UP THRU SLAB FROM WELL FIELD. SEE GEOTHERMAL DRAWINGS FOR CONTINUATION. ROUTE PIPING AT 6" ABOVE CRAWLSPACE SLAB.
25 3/4" CONDENSATE FROM WSHP-1 TO DAYLIGHT WHERE INDICATED. PROVIDE WITH 45 DEGREE ELBOW DOWN AND STAINLESS STEEL BUGSCREEN. PROVIDE WITH SPLASHPAD, COORDINATE WITH ARCHITECT.
26 EXPANSION TANK TO BE FLOOR MOUNTED.



CONSTRUCTION DOCUMENTS

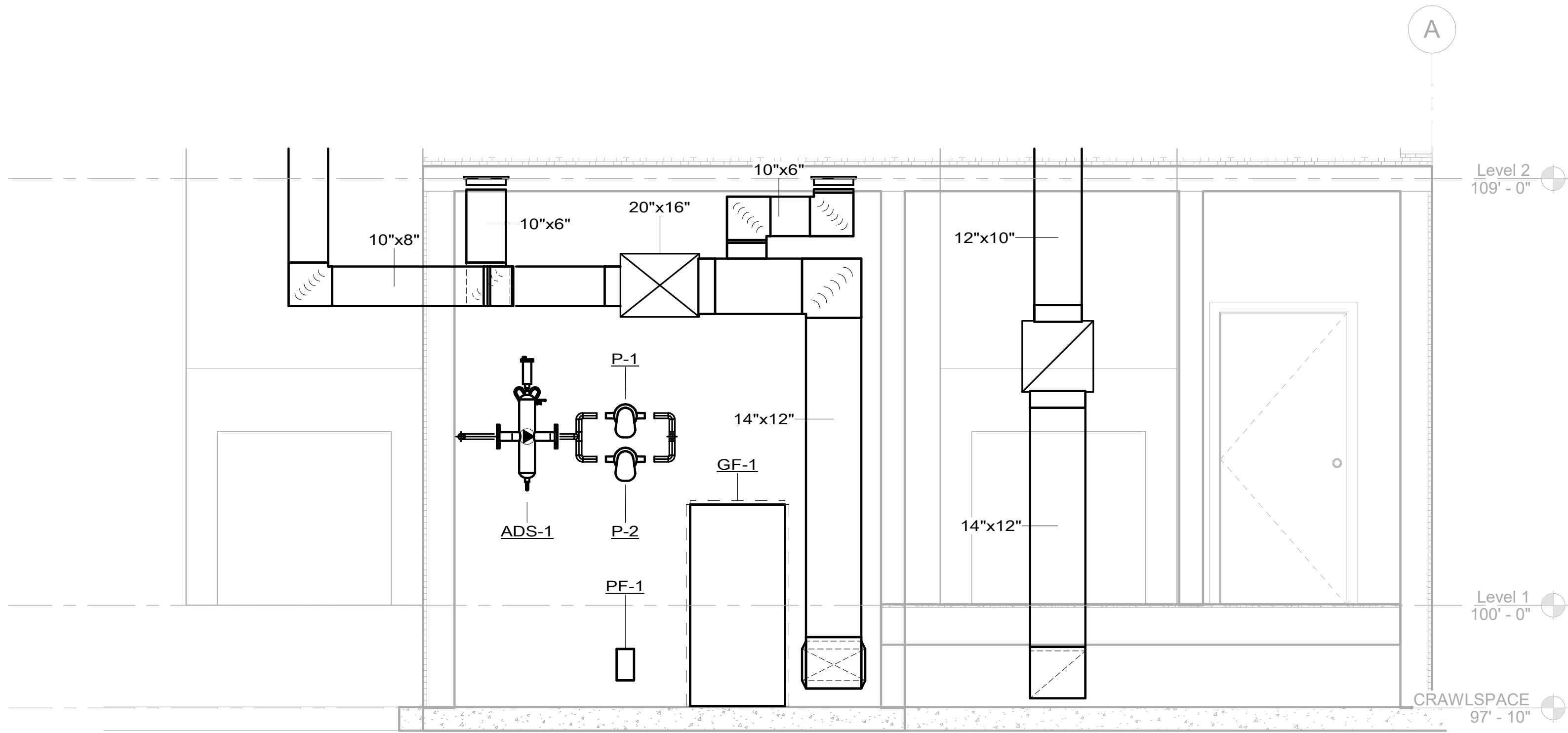
A/E FIRM	DESIGNED:
PRIME: DHM DESIGN DENVER, CO	JPB JPB JPB
SUBCONTRACTOR: 360 Engineering	TECH. REVIEW: BG DATE: 03/17/2025

SUB SHEET NO.
M121

TITLE OF SHEET
**MECHANICAL PIPING
PLAN - LEVEL 1**
GEOTHERMAL HVAC SYSTEMS FOR
JACKSON SHRINE DEATH SITE
FREDERICKSBURG & SPOTSLVANIA NMP

DRAWING NO. XXX XXXXXX	SHEET 25 OF 37
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8/13/24 15:20 MKAISER R24 P:/DENVER/NPS FRSP GEOTHERMAL-2408316-DDCAD/LA1/BSHEET_TEMPLATE_DWG XREFS: BASESXL-TITLE INFO. DWG;



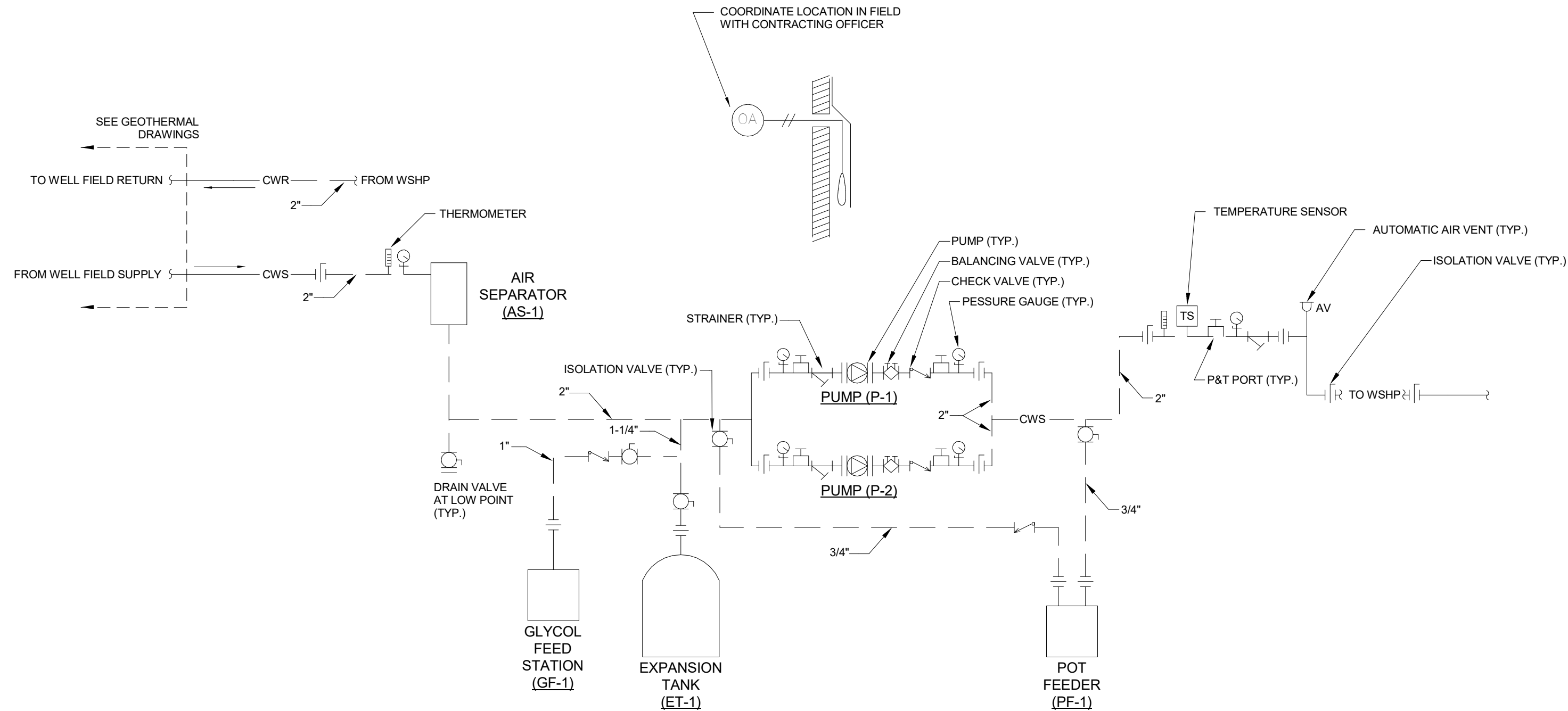
1 Mechanical Section 1
M300 SCALE (A)



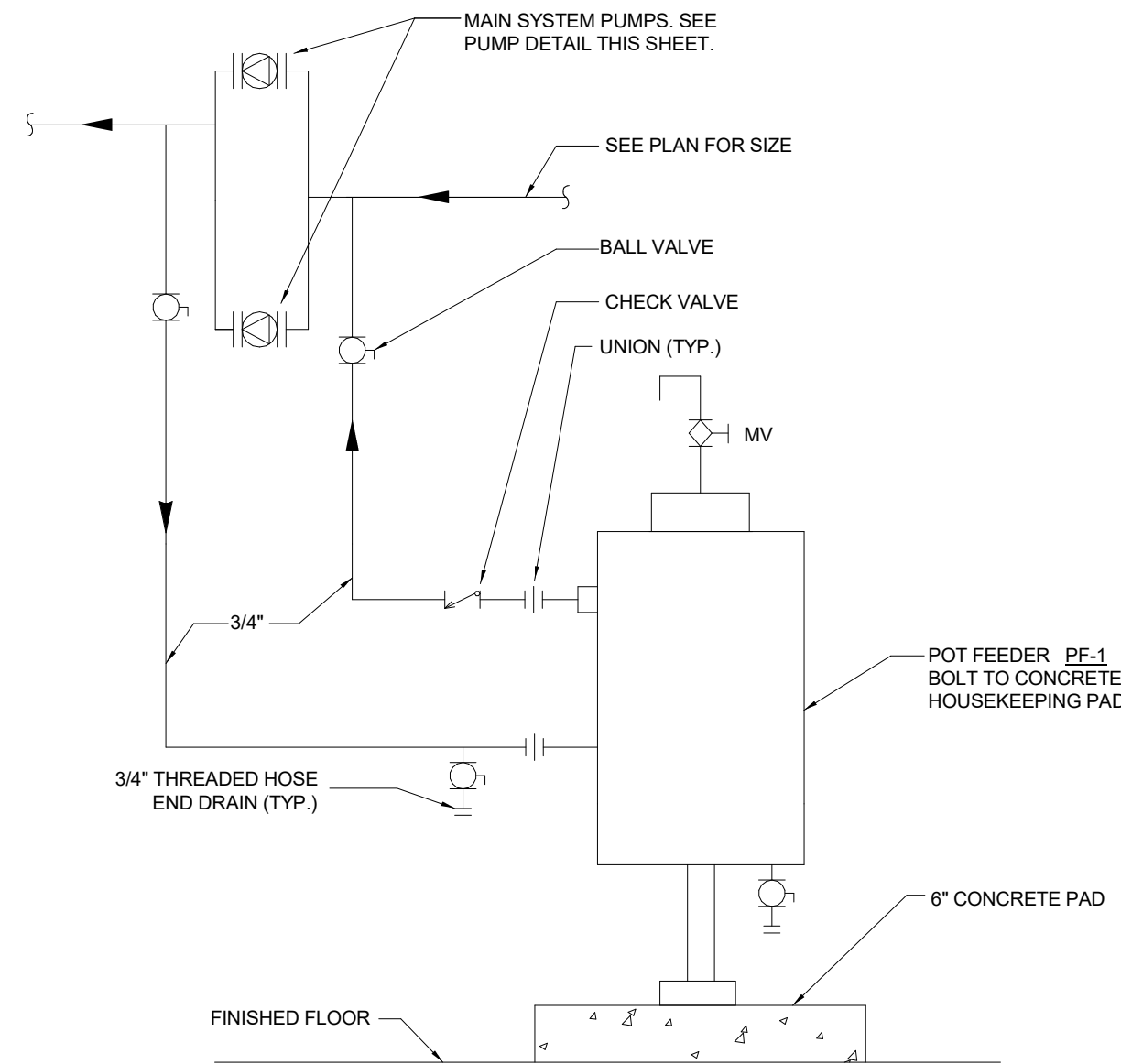
CONSTRUCTION DOCUMENTS

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SUBCONTRACTOR: 360 Engineering	TECH. REVIEW: BG DATE: 03/17/2025		GEOTHERMAL HVAC SYSTEMS FOR JACKSON SHRINE DEATH SITE FREDERICKSBURG & SPOTSLVANIA NMP	PKG NO. 314741
				SHEET OF 37

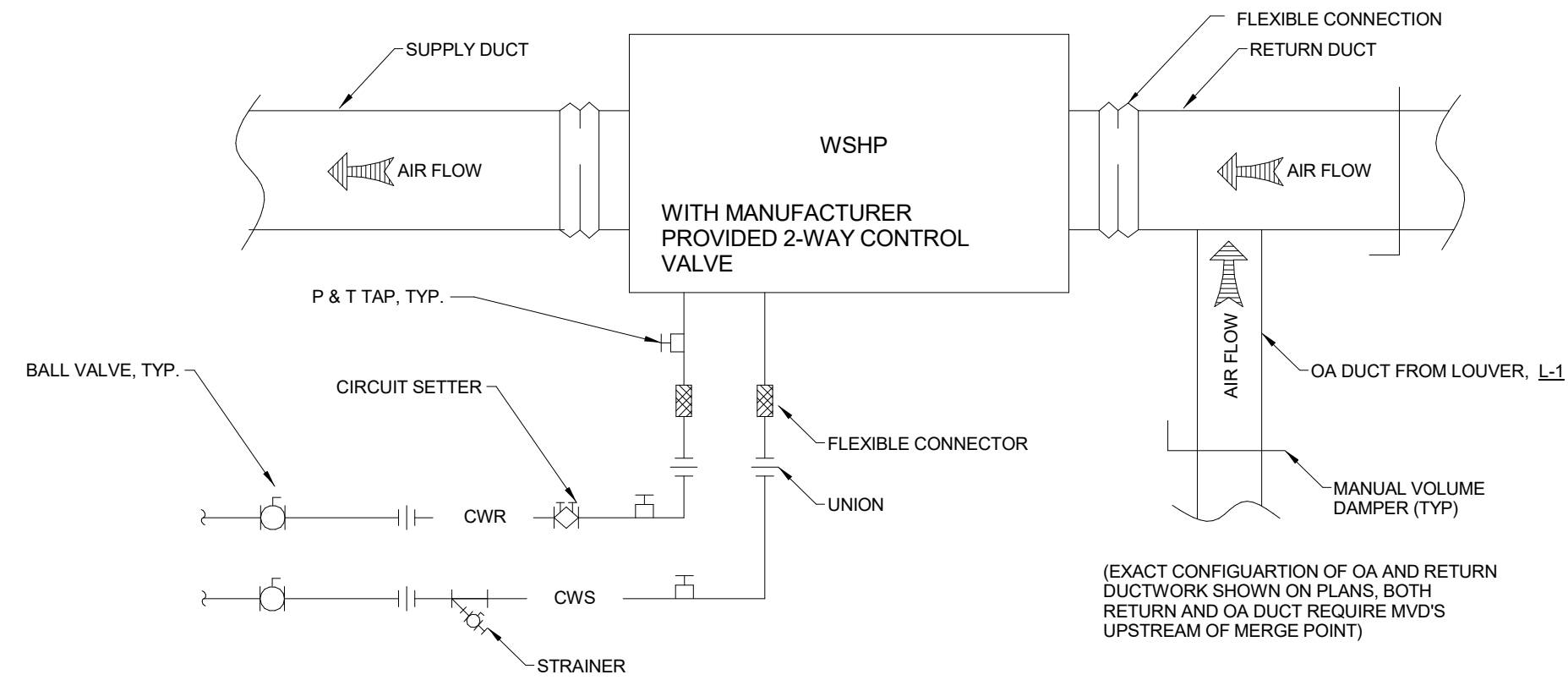




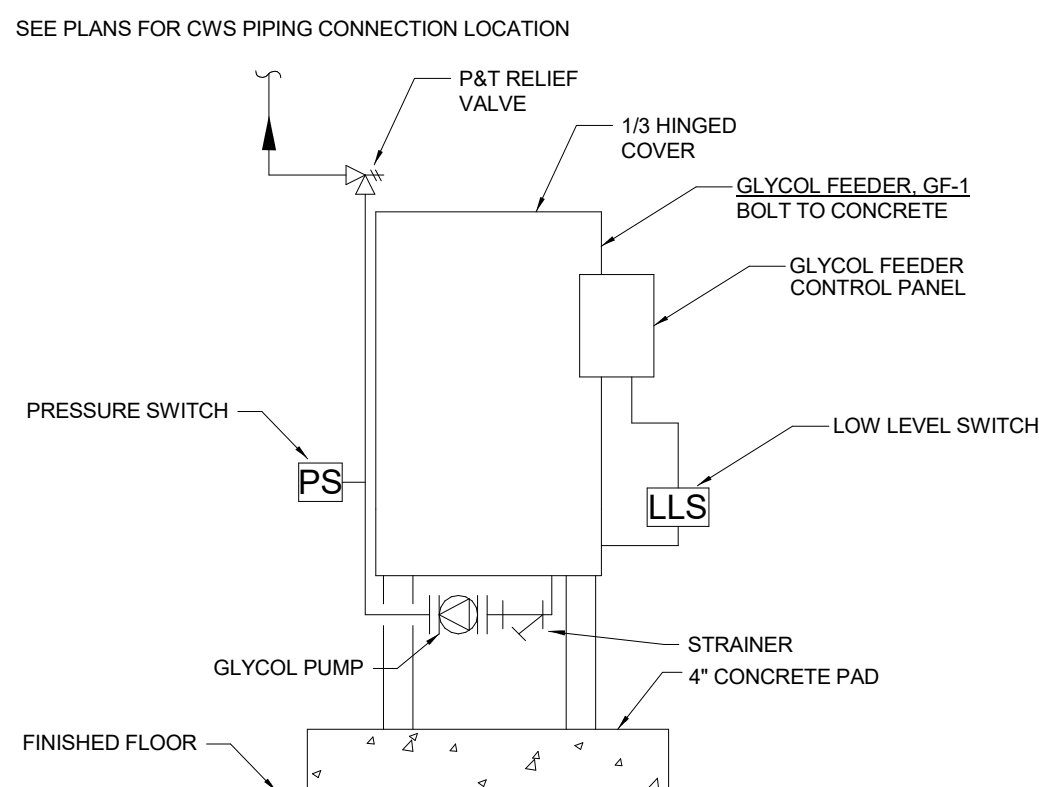
2 CONDENSER WATER SECONDARY LOOP PIPING DIAGRAM
M500 SCALE: NOT TO SCALE



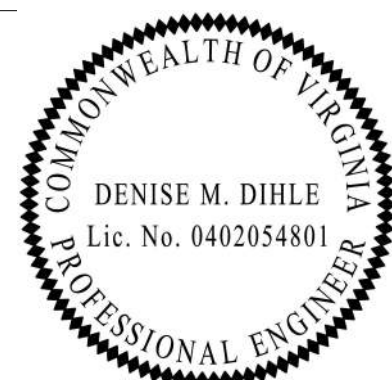
4 CHEMICAL POT FEEDER DETAIL
M500 SCALE: NOT TO SCALE



1 WSHP UNIT PIPING AND RETURN DUCT DETAIL
M500 SCALE: NOT TO SCALE



3 GLYCOL FEEDER DETAIL
M500 SCALE: NOT TO SCALE



CONSTRUCTION DOCUMENTS

A/E FIRM	DESIGNED:	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
PRIME: DHM DESIGN DENVER, CO	JKP JKP	M500	MECHANICAL DETAILS	XXX XXXXXX
SUBCONTRACTOR: 360 Engineering	TECH. REVIEW: BG DATE: 03/17/2025		GEOTHERMAL HVAC SYSTEMS FOR JACKSON SHRINE DEATH SITE FREDERICKSBURG & SPOTSLVANIA NMP	PKG NO. 314741 SHEET 27 OF 37

8/13/24 15:20 MKAISER R24 P:/DENVER/NPS FRSP GEOTHERMAL-2408306-DD/CAD/LAITS/HEET_TEMPLATE_DWG XREFS: BASESXL-TITLE INFO. DWG;

WATER SOURCE HEAT PUMP SCHEDULE																																		
GENERAL			COOLING									HEATING					CONDENSER			SUPPLY FAN				EFFICIENCY	ELECTRICAL					PHYSICAL				NOTES
TAG	MFR	MODEL	SENSIBLE CAPACITY [MBH]	CAPACITY [MBH]	HEAT REJECTED [MBH]	EAT DB [°F]	EAT WB [°F]	LAT DB [°F]	LAT WB [°F]	EWT [°F]	LWT [°F]	CAPACITY [MBH]	EAT [°F]	LAT [°F]	EWT [°F]	LWT [°F]	FLOW [GPM]	P.D. [FT W.C.]	CONNECTION [IN]	AIRFLOW [CFM]	OA [CFM]	ESP IN. W.C.]	COMP. QTY.	COP	VOLTAGE [V]	PHASE	MCA [A]	MOCP [A]	FLA [A]	LENGTH [IN]	WIDTH [IN]	HEIGHT [IN]	WEIGHT [LB]	
WSHP-1	TRANE	GEVK060A	39.6	52.9	65.9	76.9	65.6	55.9	52.4	85	99	51.7	65.1	94.5	40	32.5	10	16.1	1"	1600	225	0.8"	1	4.7	230	1	40	60	32.5	32"	24"	42"	400	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15

- NOTES
1. PROVIDE WITH 2" MERV 8 FILTER.

2. PROVIDE AS VERTICAL TYPE UNIT.

3. PROVIDE WITH 2" HOSE KIT.

4. PROVIDE WITH FACTORY WIRED HUMIDITY SENSOR. SENSOR TO BE DUCT MOUNTED.

5. PERFORMANCE AT 60' ALT.

6. 15% PROPYLENE GLYCOL.

7. CONTROL VALVE AND REVERSIBLE VALVE INTERNAL TO UNIT.

8. PROVIDE WITH COIL DRAIN PAN.

9. PROVIDE WITH VARIABLE SPEED COMPRESSOR.

10. MANUFACTURER LISTED AS BASIS OF DESIGN OR APPROVED EQUAL PER SALIENT CHARACTERISTICS IN SPECIFICATION SECTION 238146 - WATER SOURCE HEAT PUMPS.

12. PROVIDE WITH HOT GAS REHEAT FOR DEHUMIDIFICATION.

13. PROVIDE WITH HONEYWELL VISIONPRO 8000 WIRED THERMOSTAT. UNIT TO OPERATE AS STANDALONE.

14. PROVIDE WITH FACTORY REFRIGERANT LEAK DETECTION.

15. PROVIDE WITH FACTORY ENTERING WATER TEMPERATURE SENSOR.

GRILLES, REGISTERS, AND DIFFUSERS SCHEDULE

GENERAL							NOTES
TAG	MANUFACTURER	MODEL	SERVICE	MATERIAL	FACE SIZE	FINISH	
A	PRICE INDUSTRIES	610Z	RETURN	ALUMINUM	SEE PLANS	BY CONTRACTING OFFICER	1,2

- NOTES
1. BLADES PARALLEL WITH LONG DIMENSION.

2. MANUFACTURER LISTED AS BASIS OF DESIGN OR APPROVED EQUAL PER SALIENT CHARACTERISTICS IN SPECIFICATION SECTION 233713 - DIFFUSERS, REGISTERS, AND GRILLES.

MISCELLANEOUS HVAC EQUIPMENT SCHEDULE

GENERAL							NOTES
TAG	MANUFACTURER	MODEL	LOCATION	SERVICE	DESCRIPTION	WEIGHT [LB]	
ADS-1	ARMSTRONG	DAS-2	MECHANICAL ROOM		AIR/DIRT SEPARATOR	91	7
ET-1	ARMSTRONG	AX-20V	MECHANICAL ROOM		EXPANSION TANK	52	6,7
GF-1	ARMSTRONG	GLA-S-HP-1	MECHANICAL ROOM		GLYCOL FEEDER	150	1,2,3,4,5,8
PF-1	WESSELS	CPFTA-5	MECHANICAL ROOM		POT FEEDER	35	8

- NOTES
1. PROVIDE AS 120V/1PH. PROVIDE WITH 10A RELAY.

2. DISCONNECT BY DIV 26.

3. PROVIDE WITH PUMP SUCTION ISOLATION VALVE AND STRAINER.

4. PROVIDE WITH LOW MIXTURE CUTOUT LEVEL SWITCHES TO MONITOR MIXING TANK STATUS.

5. PROVIDE WITH LOW LEVEL INDICATOR LIGHTS.

6. 11-GALLON ACCEPTANCE VOLUME, PRE-CHARGE DIAPHRAGM TYPE.

7. MANUFACTURER LISTED AS BASIS OF DESIGN OR APPROVED EQUAL PER SALIENT CHARACTERISTICS IN SPECIFICATION SECTION 232116 - HYDRONIC PIPING SPECIALTIES.

8. MANUFACTURER LISTED AS BASIS OF DESIGN OR APPROVED EQUAL PER SALIENT CHARACTERISTICS IN SPECIFICATION SECTION 232500 - HVAC WATER TREATMENT.

LOUVER SCHEDULE

GENERAL						PERFORMANCE				PHYSICAL				NOTES
TAG	MANUFACTURER	MODEL	FINISH	LOCATION	SERVICE	AIRFLOW [CFM]	FREE AREA [SF]	FACE VELOCITY [FPM]	PRESSURE DROP [IN. W.C.]	DEPTH [IN]	WIDTH [IN]	HEIGHT [IN]	WEIGHT [LB]	
L-1	GREENHECK	EHH-601	BY ARCH	MECHANICAL ROOM	OUTSIDE AIR	225	0.5	582	0.07	6	18	14	15	1,2,3,4,5

- NOTES
1. PROVIDE WITH STAINLESS STEEL BIRDSCREEN.

2. PROVIDE WITH 2 COATS OF KYNAR PAINT. COORDINATE FINAL COLOR SELECTION WITH CONTRACTING OFFICER PRIOR TO ORDERING.

3. PROVIDE WITH CONTROL DAMPER AND NORMALLY CLOSED 2-POS ACTUATOR AND END SWITCH, GREENHECK MODEL VCD-23, MATCH LOUVER SIZE.

4. MANUFACTURER LISTED AS BASIS OF DESIGN OR APPROVED EQUAL PER SALIENT CHARACTERISTICS IN SPECIFICATION SECTION 089119 - FIXED LOUVERS.

ELECTRIC HEATER SCHEDULE

GENERAL					PERFORMANCE			ELECTRICAL		PHYSICAL				NOTES
TAG	MANUFACTURER	MODEL	LOCATION	TYPE/MOUNTING	AIRFLOW [CFM]	EAT [°F]	LAT [°F]	POWER [kW]	VOLTAGE [V]	LENGTH [IN]	WIDTH [IN]	HEIGHT [IN]	WEIGHT [LB]	
EUH-1	Q-MARK	CWH-31 50F	MECHANICAL ROOM	SURFACE	100	40	97	1.5 KW	120	16	5	20	30	1,2,3,4,5

- NOTES
1. PROVIDE WITH INTEGRAL THERMOSTAT.

2. PROVIDE WITH INTEGRAL ELECTRICAL DISCONNECT.

3. PROVIDE WITH MANUFACTURER'S MOUNTING BRACKET AND HARDWARE.

4. COORDINATE MOUNTING HEIGHT ON WALL WITH CONTRACTING OFFICER.

5. MANUFACTURER LISTED AS BASIS OF DESIGN OR APPROVED EQUAL PER SALIENT CHARACTERISTICS IN SPECIFICATION SECTION 238239.19 - WALL AND CEILING UNIT HEATERS.

PUMP SCHEDULE

GENERAL					PERFORMANCE		ELECTRICAL			PHYSICAL				NOTES
TAG	MANUFACTURER	MODEL	SERVICE	CONFIGURATION	FLOW [GPM]	HEAD [FT]	POWER [HP]	VOLTAGE [V]	PHASE	LENGTH [IN]	WIDTH [IN]	HEIGHT [IN]	WEIGHT (DRY) [LB]	
P-1	GRUNDFOS	MAGNA 3	CONDENSER WATER	HORIZONTAL INLINE	15	45	452 WATTS	120	1	14	10	9	31	1,2,3,4
P-2	GRUNDFOS	MAGNA 3	CONDENSER WATER	HORIZONTAL INLINE	15	45	452 WATTS	120	1	14	10	9	31	1,2,3,4

- NOTES
1. PUMP TO BE PROVIDED WITH INTEGRAL VFD/SPEED CONTROL.

2. PROVIDE WITH FLEXIBLE CONNECTION AND SUCTION DIFFUSER.

3. PROVIDE FACTORY AUTHORIZED REPRESENTATIVE START-UP.

4. MANUFACTURER LISTED AS BASIS OF DESIGN OR APPROVED EQUAL PER SALIENT CHARACTERISTICS IN SPECIFICATION SECTION 232123 - HYDRONIC PUMPS.

CONSTRUCTION DOCUMENTS

	A/E FIRM	DESIGNED:	SUB SHEET NO. M600	TITLE OF SHEET MECHANICAL SCHEDULES GEOTHERMAL HVAC SYSTEMS FOR JACKSON SHRINE DEATH SITE FREDERICKSBURG & SPOTSLVANIA NMP	DRAWING NO. XXX XXXXXX
PRIME: DHM DESIGN DENVER, CO	JKP  JKP	TECH. REVIEW:			
SUBCONTRACTOR: 360 Engineering	BG	DATE:			
		03/17/2025			
					PKG NO. 314741
					SHEET 28
					OF 37

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WATER SOURCE HEAT PUMPS SEQUENCE OF OPERATIONS

RUN CONDITIONS - SCHEDULED:
THE UNIT SHALL RUN UNDER ITS OWN INTERNAL CONTROLS ACCORDING TO A USER DEFINABLE TIME SCHEDULE IN THE FOLLOWING MODES VIA THE FACTORY PROVIDED 7-DAY PROGRAMMABLE THERMOSTAT:

OCCUPIED MODE: THE UNIT SHALL MAINTAIN:
A 75F (ADJ.) COOLING SETPOINT
A 70F (ADJ.) HEATING SETPOINT

UNOCCUPIED MODE: THE UNIT SHALL MAINTAIN:
A 85F (ADJ.) COOLING SETPOINT
A 60F (ADJ.) HEATING SETPOINT

ZONE SETPOINT ADJUST:
THE OCCUPANT SHALL BE ABLE TO ADJUST THE ZONE TEMPERATURE HEATING AND COOLING SETPOINTS AT THE ZONE SENSOR.

ZONE OPTIMAL START:
THE UNIT SHALL USE AN OPTIMAL START ALGORITHM FOR MORNING START-UP. THIS ALGORITHM SHALL MINIMIZE THE UNOCCUPIED WARM-UP OR COOL-DOWN PERIOD WHILE STILL ACHIEVING COMFORT CONDITIONS BY THE START OF THE SCHEDULED OCCUPIED PERIOD.

ZONE UNOCCUPIED OVERRIDE:
A TIMED LOCAL OVERRIDE CONTROL SHALL ALLOW AN OCCUPANT TO OVERRIDE THE SCHEDULE AND PLACE THE UNIT INTO AN OCCUPIED MODE FOR AN ADJUSTABLE PERIOD OF TIME. AT THE EXPIRATION OF THIS TIME, CONTROL OF THE UNIT SHALL AUTOMATICALLY RETURN TO THE SCHEDULE.

THE FAN SHALL RUN ANYTIME THE UNIT IS COMMANDED TO RUN, UNLESS SHUTDOWN ON SAFETIES. CONTINUOUS DURING OCCUPIED HOURS AND UPON A CALL FOR HEATING OR COOLING DURING UNOCCUPIED HOURS.

HEATING AND COOLING:
THE UNIT SHALL RECEIVE A SIGNAL FROM THE FACTORY ENTERING WATER TEMPERATURE INDICATING THAT THE WATER TEMPERATURE IS WITHIN ACCEPTABLE LIMITS FOR HEATING OR COOLING.

THE PROVIDED THERMOSTAT SHALL MEASURE THE ZONE TEMPERATURE AND START OR STOP THE COMPRESSOR TO MAINTAIN ITS SETPOINT. UPON A CALL FOR HEATING OR COOLING, CONDENSER WATER CONTROL VALVE TO OPEN. THE COMPRESSOR SHALL RUN SUBJECT TO ITS OWN INTERNAL SAFETIES AND CONTROLS.

THE HEATING SHALL BE ENABLED WHENEVER:
THE FAN IS ON.
AND THE REVERSING VALVE IS IN HEATING MODE.

THE COOLING SHALL BE ENABLED WHENEVER:
THE FAN IS ON.
AND THE REVERSING VALVE IS IN COOLING MODE.

ON MODE CHANGE, THE COMPRESSOR SHALL BE DISABLED AND REMAIN OFF UNTIL AFTER THE REVERSING VALVE HAS CHANGED POSITION.

DEHUMIDIFICATION:
THE UNIT SHALL RECEIVE A SIGNAL FROM THE PROVIDED RELATIVE HUMIDITY SENSOR. WHEN THE RELATIVE HUMIDITY IN THE SPACE RISES ABOVE 55%, THE HOT GAS REHEAT MODE FOR THE UNIT SHALL ACTIVATE THE REDUCE THE RELATIVE HUMIDITY IN THE SPACE. WHEN THE SPACE RELATIVE HUMIDITY DROPS TO 45%, THE HOT GAS REHEAT MODE SHALL END.

CONDENSER WATER PRIMARY / SECONDARY LOOP SEQUENCE OF OPERATIONS

GENERAL DESCRIPTION: THE CONDENSER WATER SYSTEM CONSISTS OF A SINGLE LOOP CONNECTED TO THE GEOTHERMAL WELL FIELDS AND THE WATER SOURCE HEAT PUMP.

CONDENSER WATER PUMP START/STOP: PUMPS SHALL OPERATE IN A RUN/STANDBY FASHION SUCH THAT ONLY A SINGLE PUMP SHALL BE OPERATING AT A TIME. BOTH PUMPS SHALL OPERATE UNDER THEIR OWN INTERNAL CONTROLS TO MAINTAIN SYSTEM DIFFERENTIAL PRESSURE. THE INTERNAL PUMP VFDS SHALL MODULATE PUMP OUTPUT TO MAINTAIN SYSTEM DESIGN DIFFERENTIAL PRESSURE SETPOINT OF 3.5 PSIG (ADJ.).

MECHANICAL ROOM ELECTRIC UNIT HEATER SEQUENCE OF OPERATIONS

GENERAL DESCRIPTION: THE UNIT SHALL OPERATE ITS FAN AND ELECTRIC HEATING ELEMENT VIA INTERNAL CONTROLS TO MAINTAIN A HEATING SETPOINT OF 50F (ADJ.).

CONSTRUCTION DOCUMENTS

	A/E FIRM	DESIGNED:	SUB SHEET NO. M700	TITLE OF SHEET MECHANICAL CONTROLS GEOTHERMAL HVAC SYSTEMS FOR JACKSON SHRINE DEATH SITE FREDERICKSBURG & SPOTSLVANIA NMP		DRAWING NO. XXX XXXXXX PKG NO. 314741 SHEET 29 OF 37	
	PRIME: DHM DESIGN DENVER, CO	JPk  JPk					
	SUBCONTRACTOR: 360 Engineering	TECH. REVIEW: BG					
		DATE: 03/17/2025					

8/19/24 15:20 MKAISER R24 P:\DENVER\NPS FRSP GEOTHERMAL-240836-DDCAD\LAITSHEET_TEMPLATE_DWG.XRFFS: BASESXL-TITLE INFO.DWG:

COMcheck Software Version COMcheckWeb
Mechanical Compliance Certificate

Project Information

Energy Code: 2021 IECC
Project Title: NPS FRSP - Geothermal HVAC Systems for Jackson Shrine Death Site
Location: Fredericksburg (Fredericksburg (city)), Virginia
Climate Zone: 4a
Project Type: Alteration

Construction Site: Owner/Agent: Designer/Contractor:

Mechanical Systems List

QuantitySystem Type & Description

- 1 HVAC System (Single Zone):
Water Source Heat Pump
Heating Mode: Capacity = 51 kBtu/h,
Proposed Efficiency = 4.70 COP, Required Efficiency = 4.30 COP
Cooling Mode: Capacity = 52 kBtu/h,
Proposed Efficiency = 13.80 EER, Required Efficiency = 13.00 EER
Proposed Part Load Efficiency = 0.00, Required Part Load Efficiency = 0.00
Fan System: Supply Fan - Compliance (Motor nameplate HP and fan efficiency method) : Passes
Fans:
FAN 1 Supply, Constant Volume, 1500 CFM, 1.0 motor nameplate hp, 0.00 fan energy index , fan exception: Part of code listed equipment

Mechanical Compliance Statement

Compliance Statement: The proposed mechanical alteration project represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2021 IECC requirements in COMcheck Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Name - Title Signature Date

Project Title: NPS FRSP - Geothermal HVAC Systems for Jackson Shrine Death Site Report date: 01/14/25
Data filename: Page 1 of 8

Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C403.7.5 [ME116]†	Kitchen exhaust systems comply with replacement air and conditioned supply air limitations, and satisfy hood rating requirements and maximum exhaust rate criteria.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement does not apply.
C403.12.1 [ME60]†	HVAC ducts and plenums insulated in accordance with C403.11.1 and constructed in accordance with C403.11.2, verification may need to occur during Foundation Inspection.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C403.4.3.3 [ME121]†	Closed-circuit cooling tower within heat pump loop have either automatic bypass valve or lower leakage positive closure dampers. Open- or closed-circuit cooling towers used in conjunction with a separate heat exchanger have heat loss by shutting down the circulation pump on the cooling tower loop. Open- or closed circuit cooling towers have a separate heat exchanger to isolate the cooling tower from the heat pump loop, and heat loss is controlled by shutting down the circulation pump on the cooling tower loop.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement does not apply.
C403.4.1.4 [ME63]†	Heating for vestibules and air curtains with integral heating include automatic controls that shut off the heating system when outdoor air temperatures > 45°F. Vestibule heating and cooling systems controlled by a thermostat in the vestibule with heating setpoint ≤ 60°F and cooling setpoint ≥ 80°F.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement does not apply.
C408.2.2.1 [ME53]†	Air outlets and zone terminal devices have means for air balancing.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C403.11.3.1, C403.11.3.2 [ME123]†	Refrigerated display cases, walk-in coolers or walk-in freezers served by remote compressors and remote condensers not located in a condensing unit, have fan-powered condensers that comply with Sections C403.11.3.1 and refrigeration compressor systems that comply with C403.11.3.2.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement does not apply.

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)
Project Title: NPS FRSP - Geothermal HVAC Systems for Jackson Shrine Death Site Report date: 01/14/25
Data filename: Page 5 of 8

COMcheck Software Version COMcheckWeb
Inspection Checklist

Energy Code: 2021 IECC

Requirements: 100.0% were addressed directly in the COMcheck software
Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
C103.2 [FR2]†	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the mechanical and service water heating systems and document where exceptions to the standard are claimed. Load calculations per acceptable engineering standards and handbooks. Hot water system sized per manufacturer's sizing guide.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)
Project Title: NPS FRSP - Geothermal HVAC Systems for Jackson Shrine Death Site Report date: 01/14/25
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Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.7 [EL26]†	Low-voltage dry-type distribution electric transformers meet the minimum efficiency requirements of Table C405.6.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
C405.8 [EL27]†	Electric motors meet the minimum efficiency requirements of Tables C405.7(1) through C405.7(4). Efficiency verified through certification under an approved certification program or the equipment efficiency ratings shall be provided by motor manufacturer (where certification programs do not exist).	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
C405.9.1, C405.9.2 [EL28]†	Escalators and moving walks comply with ASME A17.1/CSA B44 and have automatic controls configured to reduce speed to the minimum permitted speed in accordance with ASME A17.1/CSA B44 or applicable local code when not conveying passengers.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
C405.10 [EL29]†	Total voltage drop across the combination of feeders and branch circuits ≤ 5%.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
C405.11.1 [EL30]†	At least 90% of dwelling unit permanently installed lighting shall have lamp efficacy ≥ 65 lm/W or luminaires with efficacy ≥ 45 lm/W or comply with C405.2.4 or C405.3.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	
C405.11.1 [EL31]†	50% of 15/20 amp receptacles installed in enclosed offices, conference rooms, copy rooms, break rooms, classrooms and workstations and > 25% of branch circuit feeders for modular furniture will have automatic receptacle control in accordance with C405.11.1.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)
Project Title: NPS FRSP - Geothermal HVAC Systems for Jackson Shrine Death Site Report date: 01/14/25
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Section # & Req.ID	Plumbing Rough-In Inspection	Complies?	Comments/Assumptions
C404.5, C404.5.1, C404.5.2 [PL6]†	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement does not apply.

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)
Project Title: NPS FRSP - Geothermal HVAC Systems for Jackson Shrine Death Site Report date: 01/14/25
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Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C303.3, C408.2.5.3 [F18]†	Furnished O&M manuals for HVAC systems within 90 days of system acceptance.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C408.2.3.1 [F150]†	HVAC systems and equipment design loads calculated in accordance with ANSI/ASHRAE/ACCA Standard 183 or by an approved equivalent computational procedure.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C403.3.1 [F127]†	HVAC systems and equipment capacity does not exceed calculated loads.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C403.4.1 [F147]†	Heating and cooling to each zone is controlled by a thermostat control. Minimum one humidity control device per installed humidification/dehumidification system.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C403.4.1.1 [F142]†	Heat pump controls prevent supplemental electric resistance heat from coming on when not needed.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement does not apply.
C403.4.1.2 [F138]†	Thermostatic controls have a 5 °F deadband.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C403.4.1.3 [F120]†	Temperature controls have setpoint overlap restrictions.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C403.4.2 [F139]†	Each zone equipped with setback controls using automatic time clock or programmable control system.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C403.4.2.1, C403.4.2.2 [F140]†	Automatic Controls: Setback to 55°F (heat) and 55°F (cool); 7-day clock, 2-hour occupant override, 10-hour backup.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C403.4.2.3 [F141]†	Systems include optimum start controls.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement does not apply.
C408.1.1 [F157]†	Building operations and maintenance documents will be provided to the owner. Documents will cover manufacturers' information, specifications, programming procedures and means of illustrating to owner how building, equipment and systems are intended to be installed, maintained, and operated.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)
Project Title: NPS FRSP - Geothermal HVAC Systems for Jackson Shrine Death Site Report date: 01/14/25
Data filename: Page 7 of 8

Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C402.2.6 [ME41]†	Thermally ineffective panel surfaces of sensible heating panels have insulation ≥ R-2.5.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C403.8.4 [ME142]†	Motors for fans that are not less than 1/2 hp and less than 1 hp are electronically commutated motors or have a minimum motor efficiency of 70 percent. These motors have the means to adjust motor speed.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C403.8.6 [ME143]†	Each DX cooling system > 65 kBtu and chiller water/evaporative cooling system with fans > 1/4 hp are designed to vary the indoor fan airflow as a function of load and comply with detailed requirements of this section.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement does not apply.
C403.9 [ME144]†	Large diameter fans where installed shall be tested and labeled in accordance with AMCA 230.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement does not apply.
C403.13.1 [ME71]†	Systems that heat outside the building envelope are radiant heat systems controlled by an occupancy sensing device or timer switch.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement does not apply.
C403.3 [ME55]†	HVAC equipment efficiency verified.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	See the Mechanical Systems list for values.
C403.2.2 [ME59]†	Natural or mechanical ventilation is provided in accordance with international Mechanical Code Chapter 4. Mechanical ventilation has capability to reduce outdoor air supply to minimum per IMC Chapter 4.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C403.7.1 [ME59]†	Demand control ventilation provided for spaces >500 ft² and >15 people/1000 ft² occupant density and served by systems with air side economizer, auto modulating outside air damper control, or design airflow >3,000 cfm.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement does not apply.
C403.7.2 [ME115]†	Enclosed parking garage ventilation has automatic contaminant detection and capacity to stage or modulate fans to 50% or less of design capacity.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C403.7.6 [ME141]†	HVAC systems serving guestrooms in Group R-1 buildings with > 50 guestrooms: Each guestroom is provided with controls that automatically manage temperature setpoint and ventilation (see sections C403.7.6.1 and C403.7.6.2).	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement does not apply.
C403.7.4 [ME57]†	Exhaust air energy recovery on systems meeting Table C403.7.4(1) and C403.7.4(2).	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Exception: Requirement does not apply.

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)
Project Title: NPS FRSP - Geothermal HVAC Systems for Jackson Shrine Death Site Report date: 01/14/25
Data filename: Page 4 of 8

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C408.2.1 [F128]†	Commissioning plan developed by registered design professional or approved agency.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C408.2.3.1 [F111]†	HVAC equipment, systems and system-to-system relationships have been tested to ensure proper operation.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C408.2.3.2 [F110]†	HVAC and service water heating control systems have been tested to ensure proper operation, calibration and adjustment of controls.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C408.2.4 [F129]†	Preliminary commissioning report completed and certified by registered design professional or approved agency.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C408.2.5 [F17]†	Furnished HVAC as-built drawings submitted within 90 days of system acceptance.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C408.2.5.1 [F143]†	An air and/or hydronic system balancing report is provided for HVAC systems.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.
C408.2.5.2 [F130]†	Final commissioning report due to building owner within 90 days of receipt of certificate of occupancy.	☐ Complies ☐ Does Not ☐ Not Observable ☐ Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)
Project Title: NPS FRSP - Geothermal HVAC Systems for Jackson Shrine Death Site Report date: 01/14/25
Data filename: Page 8 of 8

CONSTRUCTION DOCUMENTS

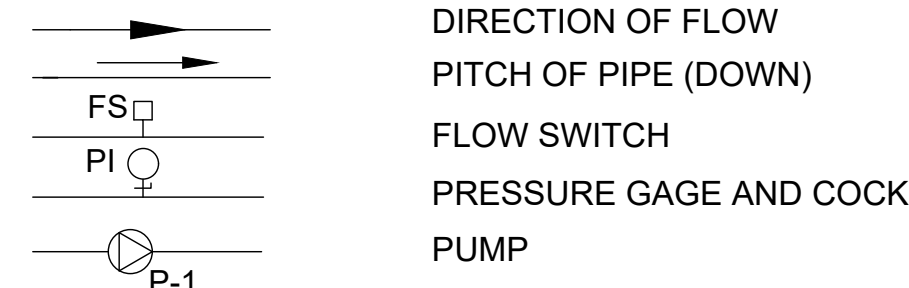
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SUBCONTRACTOR: 360 Engineering	DATE: 03/17/2025		GEOTHERMAL HVAC SYSTEMS FOR JACKSON SHRINE DEATH SITE FREDERICKSBURG & SPOTSLVANIA NMP	OF 37



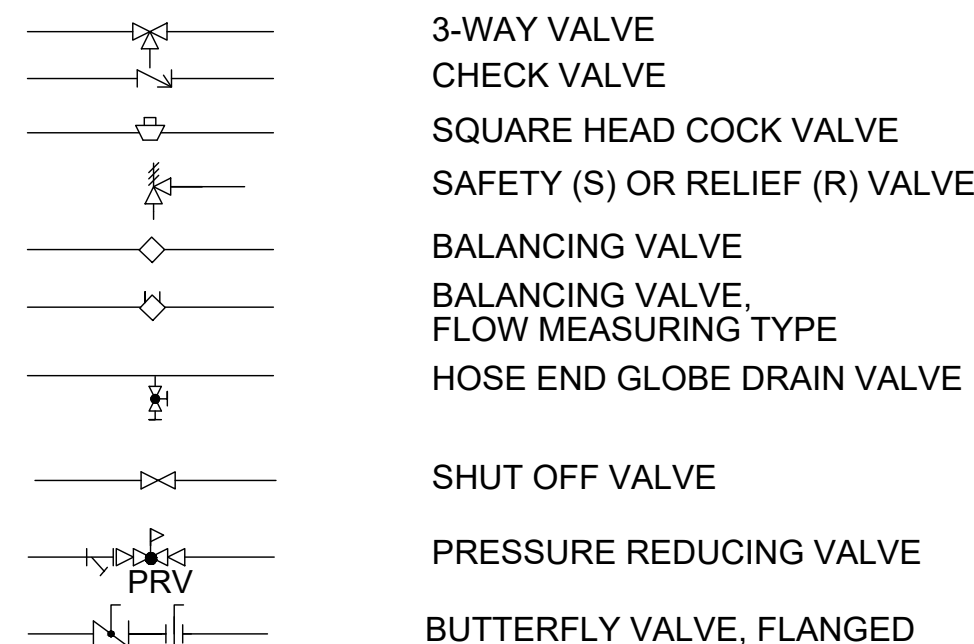
SYMBOLS, LEGENDS, AND NOTES

PIPING LEGEND

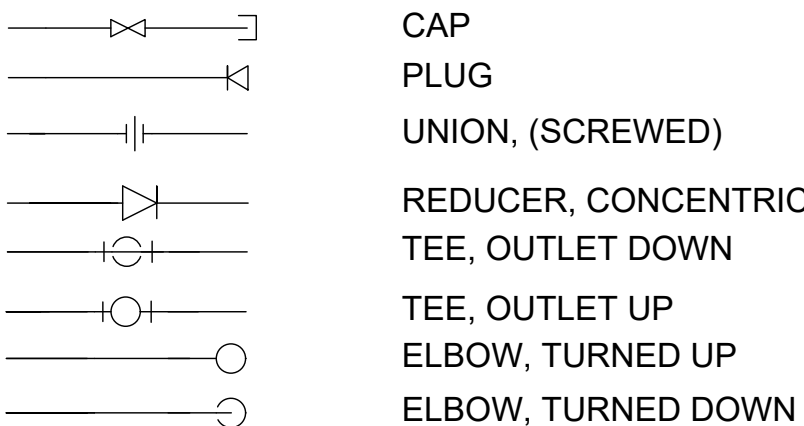
PIPING SPECIALTIES



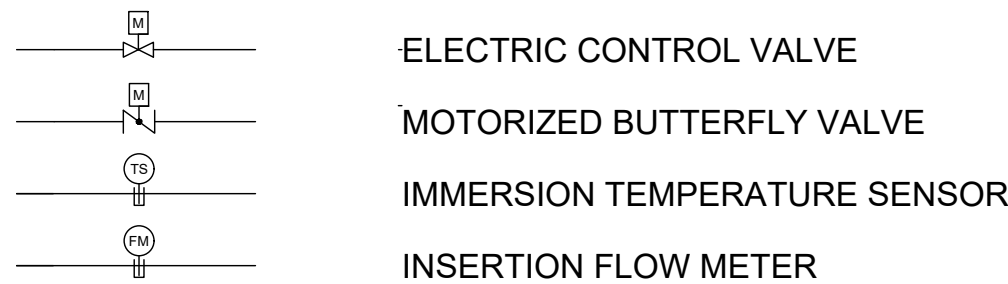
VALVES



FITTINGS



CONTROLS



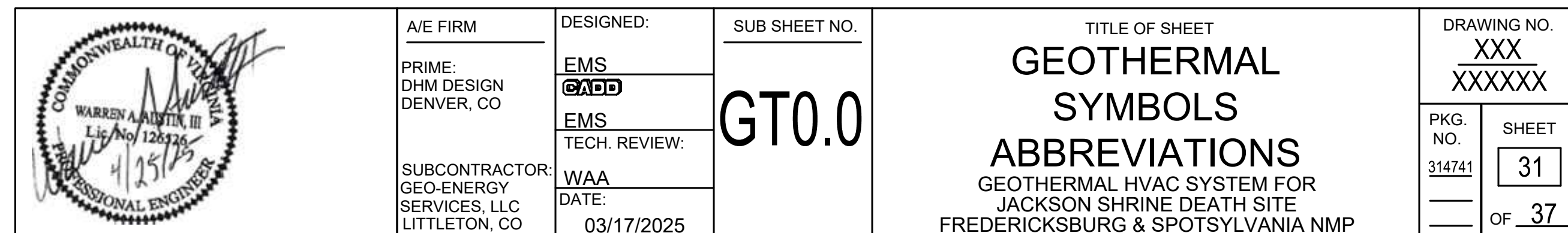
ABBREVIATIONS LEGEND

AHU	AIR HANDLING UNIT
AS	AIR SEPARATOR
B	BACK
BWP	BUILDING WATER PUMP
BWS/BWR	BUILDING WATER SUPPLY/BUILDING WATER RETURN
CF	CHEMICAL FEEDER
CHWS/CHWR	CHILLED WATER SUPPLY/CHILLED WATER RETURN
CW	COLD WATER / CITY WATER
DCWS	DOMESTIC COLD WATER SUPPLY
DHP	DOMESTIC HOT WATER HEAT PUMP
DHW	DOMESTIC HOT WATER
DHWS	DOMESTIC HOT WATER SUPPLY
DLWP	DOMESTIC LOAD WATER PUMP
DST	DOMESTIC HOT WATER STORAGE TANK
DWRP	DOMESTIC HOT WATER RECIRCULATION PUMP
(E)	EXISTING
ET	EXPANSION TANK
F	FRONT
FC	FLUID COOLER
GFE	GOVERNMENT FURNISHED EQUIPMENT
GHXS/GHXR	GROUND HEAT EXCHANGER SUPPLY/GROUND HEAT EXCHANGER RETURN
GSHP	GROUND SOURCE HEAT PUMP
GXHP	GROUND HEAT EXCHANGER PUMP
HO	HEATING ONLY
HP	HEAT PUMP
LWP	LOAD WATER PUMP
LWS/LWR	LOAD WATER SUPPLY/LOAD WATER RETURN
P	PUMP
ST	STORAGE TANK (BUFFER TANK)
UH	UNIT HEATER

PROJECT GENERAL NOTES:

1. ALL GROUND HEAT EXCHANGER WORK SHALL BE INSTALLED ONLY BY AN INTERNATIONAL GROUND SOURCE HEAT PUMP ASSOCIATION (IGSHPA) ACCREDITED OR IGSHPA/NATE CERTIFIED CONTRACTOR. CONTRACTOR SHALL MAINTAIN COPIES OF SAID DOCUMENTS ON FILE AT JOB SITE DURING CONSTRUCTION FOR ONE (1) SITE DRILLING SUPERINTENDENT AND ONE (1) SITE FUSION HEADERING SUPERINTENDENT AND SHALL MAINTAIN CURRENT STATUS WITH IGSHPA REGISTRATIONS. SUBMISSIONS ARE REQUIRED, SEE SPECIFICATIONS FOR DOCUMENTATION REQUIREMENTS.
2. ALL GROUND HEAT EXCHANGER INSTALLATION WORK SHALL CONFORM TO ALL STANDARDS AND PROCEDURES SET FORTH BY THE INTERNATIONAL GROUND SOURCE HEAT PUMP ASSOCIATION (IGSHPA) AND LOCAL GOVERNING AGENCIES.
3. CONTRACTOR SHALL CONTACT UTILITY LOCATION SERVICE PRIOR TO ANY EXCAVATION TO MARK UNDERGROUND UTILITIES.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY DAMAGE THAT OCCURS DURING DRILLING TO ANY UTILITIES THAT ARE SHOWN ON ANY DRAWINGS INCLUDED IN THE PROJECT OR HAVE BEEN IDENTIFIED IN THE UTILITY LOCATE. IF THE CONTRACTOR DAMAGES ANY LINES THAT HAVE NOT BEEN IDENTIFIED IN EITHER DRAWINGS OR BY THE LOCATE, THEN THE OWNER IS RESPONSIBLE FOR REPAIRS.
5. ALL PIPE TURNS SHALL NOT BE LESS THAN THE MINIMUM BEND RADIUS OF THE PIPE MANUFACTURER'S SPECIFICATIONS, EXCEPT WITH USE OF 90°F ELBOW PIPE FITTINGS
6. ALL HDPE PIPING CONNECTIONS SHALL BE FUSED BY A QUALIFIED IGSHPA CONTRACTOR AND PERFORMED IN ACCORDANCE TO ASTM D2657. ELECTROFUSION JOINTS ARE NOT ACCEPTABLE.
7. PROVIDE METALLIC LOCATING TAPE OVER ALL GROUND HEAT EXCHANGER PIPING FOR UNDERGROUND SURVEYING AND MARKING. MARKING TAPE SHALL BE BURIED MINIMUM OF 6" BELOW GRADE FOR PIPING IN ALL TRENCHES. TRACER WIRE SHALL BE IN CONTINUOUS LENGTH FOR EACH RUN OF NONMETALLIC PIPE. PROVIDE TRACER WIRE SYSTEM WITH LOCATOR DEVICE FOR LOCATING BOREFIELD.
8. ALL BOREHOLE SPACING SHALL BE NO LESS THAN ±1 FOOT OF SPECIFIED BOREHOLE SPACING IN BOREHOLE SCHEDULE. FINAL BOREHOLE LOCATIONS SHALL BE SURVEYED. SURVEYED LOCATIONS SHALL BE SUBMITTED TO CONTRACTING OFFICER FOR APPROVAL PRIOR TO BACKFILLING AND/OR COMPACTION OF TRENCHES. IN THE EVENT BOREHOLE SPACINGS ARE NOT PROPERLY MAINTAINED, LOOP CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADDITIONAL NUMBER OF BOREHOLES AT THEIR SPECIFIED DEPTH TO MATCH THE NUMBER OF BOREHOLES THAT DO NOT MEET THE SPACING REQUIREMENTS.
9. DRILLING CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING INDIVIDUAL BOREHOLE CIRCUIT INSTALLATION FOR THE SPECIFIED LENGTH OF THE BOREHOLE. IN THE EVENT INDIVIDUAL CIRCUITS DO NOT MAINTAIN SPECIFIED DEPTH, DRILLING CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING CONTRACTING OFFICER PRIOR TO TAKING ACTION. CONTRACTING OFFICER SHALL DETERMINE FINAL COURSE OF ACTION.
10. GROUND LOOP CONTRACTOR SHALL BE RESPONSIBLE FOR GROUND LOOP SYSTEM FILL, FLUSH, AND PURGING, AND ANTIFREEZE MIXING (15% PROPYLENE GLYCOL).
11. GROUND LOOP CONTRACTOR SHALL COORDINATE WITH TESTING, ADJUSTING, AND BALANCING (TAB) CONTRACTOR FOR FINAL FLOW BALANCE OF EACH HEADER CIRCUIT WHERE REQUIRED FLOW BALANCE DEVICES ARE SHOWN. FLOW BALANCING REQUIREMENTS OF EACH CIRCUIT AT HEADER MANIFOLD SHALL BE EXECUTED BY TAB CONTRACTOR. GENERAL TAB CONTRACTOR REQUIREMENTS SHALL BE OUTLINED IN MECHANICAL SPECIFICATION.
12. ALL BOREHOLE PIPING STUB-UPS SHALL BE PROPERLY CAPPED AND SEALED. DUCT TAPE IS NOT ALLOWED AND IS NOT CONSIDERED ACCEPTABLE SEALING METHOD.
13. EXCAVATION CONTRACTOR SHALL BACKFILL TRENCH WITH COARSE SAND 6" ABOVE AND BELOW PIPING IN THE EVENT ROCKS OR OTHER DEBRIS ARE PRESENT THAT ARE GREATER THAN 1" IN SIZE. TRENCH CUTTINGS SHALL BE SEPARATED BETWEEN FINES AND SHALL BE SEPARATED FROM LARGER DEBRIS SUCH THAT EXCAVATION CONTRACTOR MAY BACKFILL ENTIRE TRENCH WITH THE FINES OF TRENCH CUTTINGS, HYDRATING AS NECESSARY FOR COMPACTION REQUIREMENTS OF PARKING LOT OR LANDSCAPING. ONCE COVERED 6" ABOVE, ALL LARGER DEBRIS CUTTINGS CAN BE USED.
14. EXCAVATION CONTRACTOR SHALL COMPACT ALL TRENCH AREAS SHALL BE TO 90% COMPACTION TO PREVENT PIPE DAMAGE IN TRAFFIC AND NON-TRAFFIC AREAS.
15. CONTRACTOR SHALL FOLLOW SPECIFICATION SECTIONS 23 57 33, 23 57 33.16 AND 23 57 33.19.

CONSTRUCTION DOCUMENTS



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GENERAL NOTES:

1. REFERENCE GENERAL NOTES ON SHEET GT0.0.
2. REFERENCE ALL NOTES AND SYMBOLS ON GT0.0 AND GT2.0.

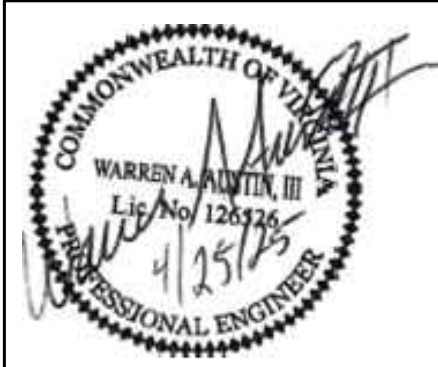
X KEY NOTES:

1. IF A FLOW CENTER IS NOT USED THEN AN "H" BRIDLE MUST BE USED TO ALLOW FOR FLUSHING AND PURGING OF FIELD SIDE AND BUILDING SIDE.

BOREHOLE SCHEDULE	
NUMBER OF BOREHOLES	3
BOREHOLE SPACING (FT)	20
BOREHOLE DEPTH (FT)	400
U-BEND BOREHOLE PIPE - SDR 11 - NOMINAL DIAMETER (IN)	1-1/4"
TOTAL FEET OF BORE (FT)	1200
BOREHOLE DIAMETER	5"
AVERAGE ESTIMATED DEEP EARTH TEMPERATURE (°F)	59
ESTIMATED FORMATION EFFECTIVE THERMAL CONDUCTIVITY (BTU/HR-FT-°F)	1.0
MINIMUM GROUT CONDUCTIVITY REQUIRED (BTU/HR-FT-°F)	0.88
TOTAL FLUID FLOW RATE (GPM)	15
PROPYLENE GLYCOL (PERCENT VOLUME)	15%
PRESSURE DROP ACROSS SUPPLY/RETURN IN MECH ROOM (FT-HD)	20'
FOR HEADER PIPE SIZES < 2" USE PIPE WITH THE FOLLOWING MIN. SDR RATING	11
FOR HEADER PIPE SIZES 2" AND GREATER USE PIPE WITH THE FOLLOWING MIN. SDR RATING	15.5 or 17

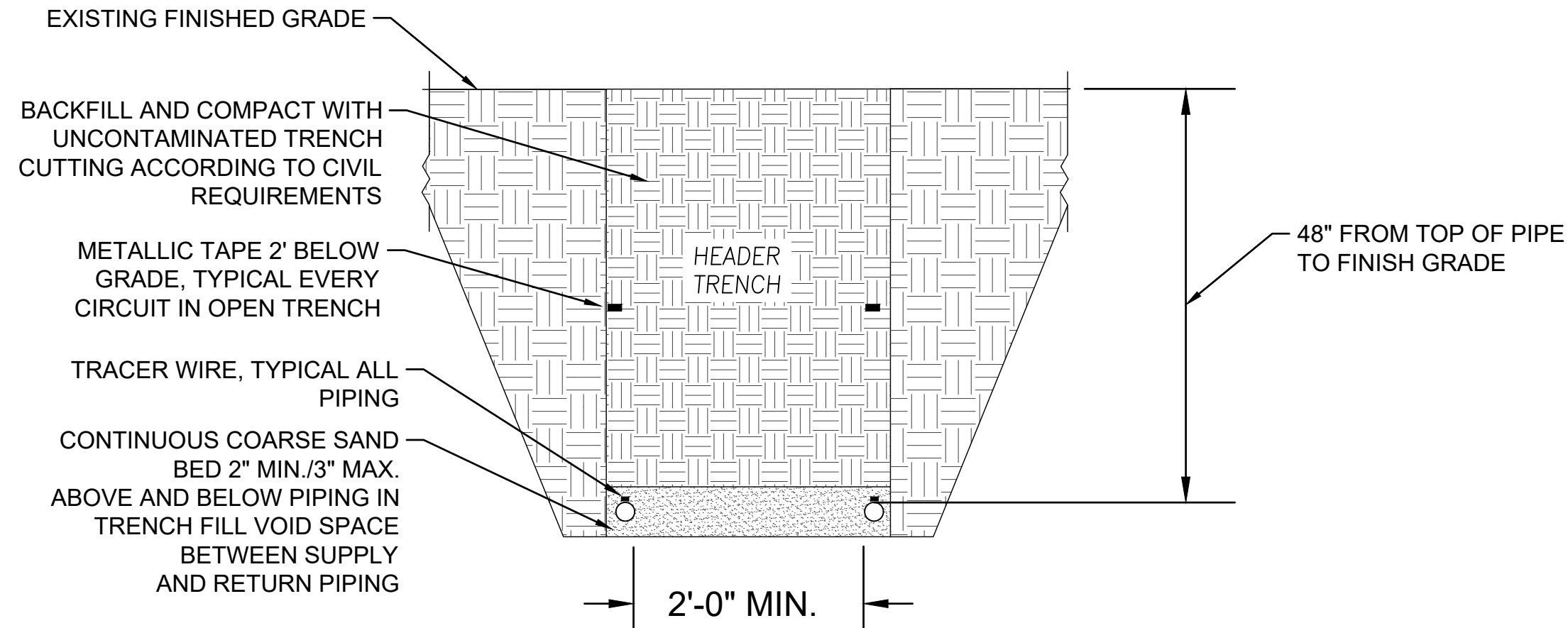
1 GEOTHERMAL SITE PLAN
GT1.0 1/16" = 1'=0"

CONSTRUCTION DOCUMENTS

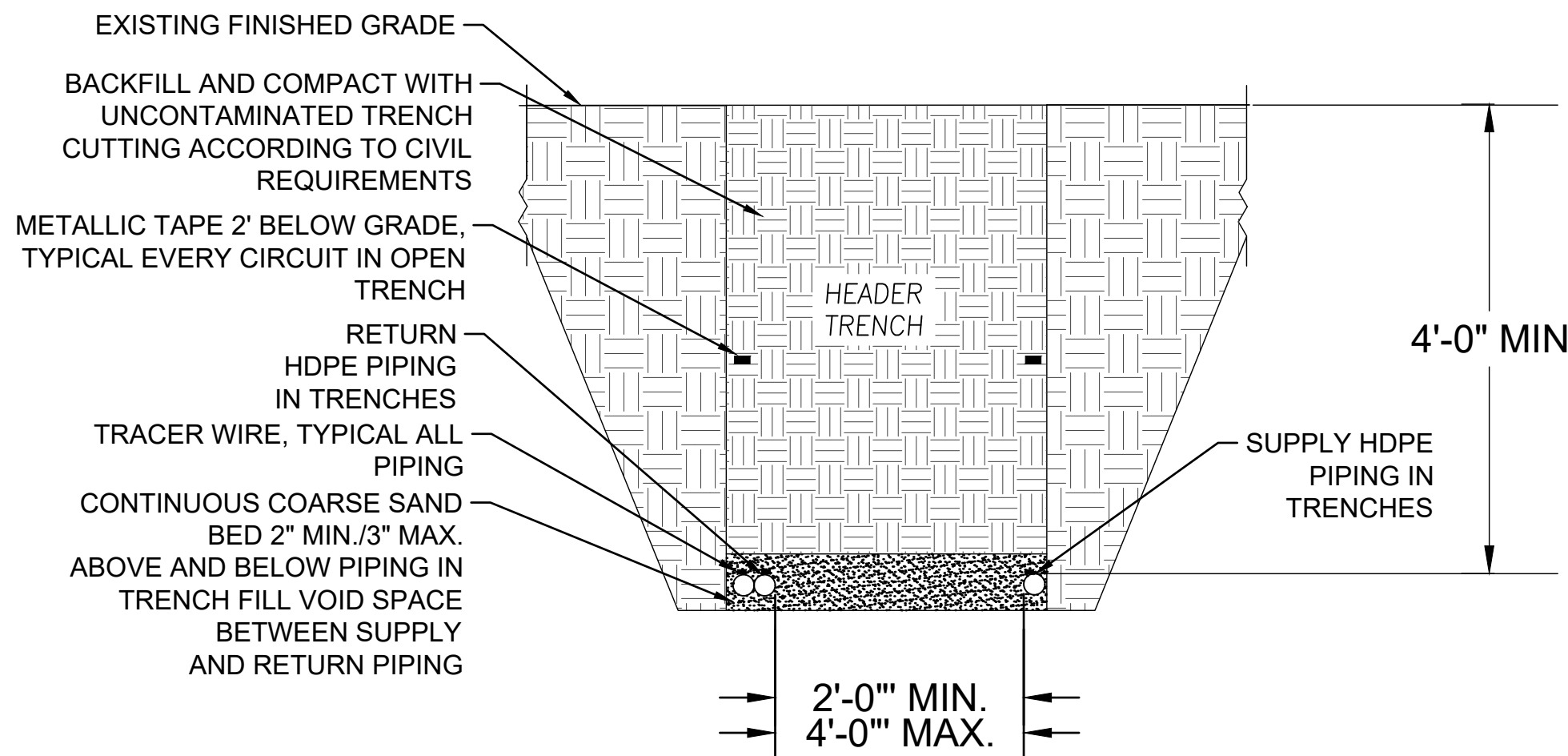


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	GADD				XXXXXX
	EMS				
	TECH. REVIEW:				
SUBCONTRACTOR: GEO-ENERGY SERVICES, LLC LITTLETON, CO	WAA				PKG. NO.
	DATE:				314741
	03/17/2025				
					SHEET
					32
					OF 37

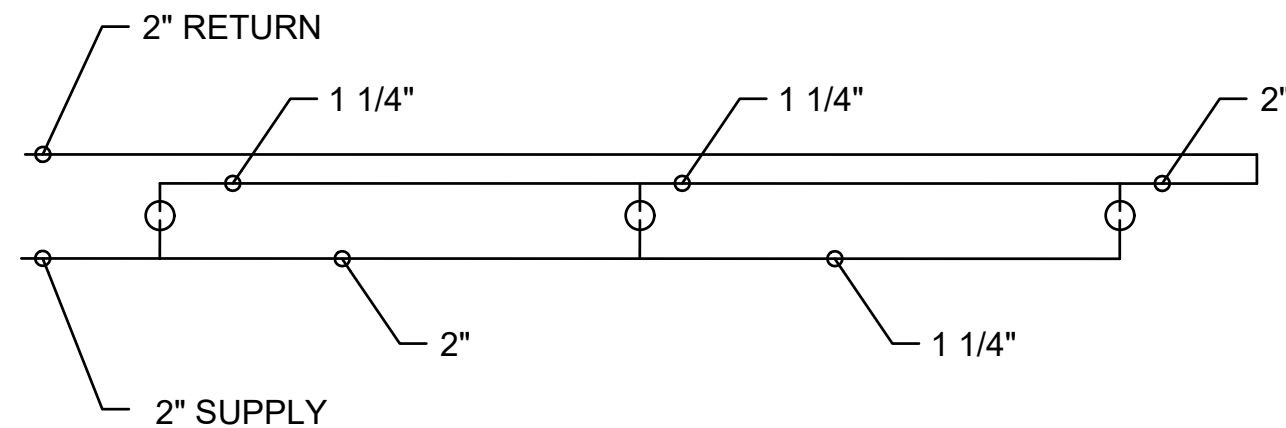
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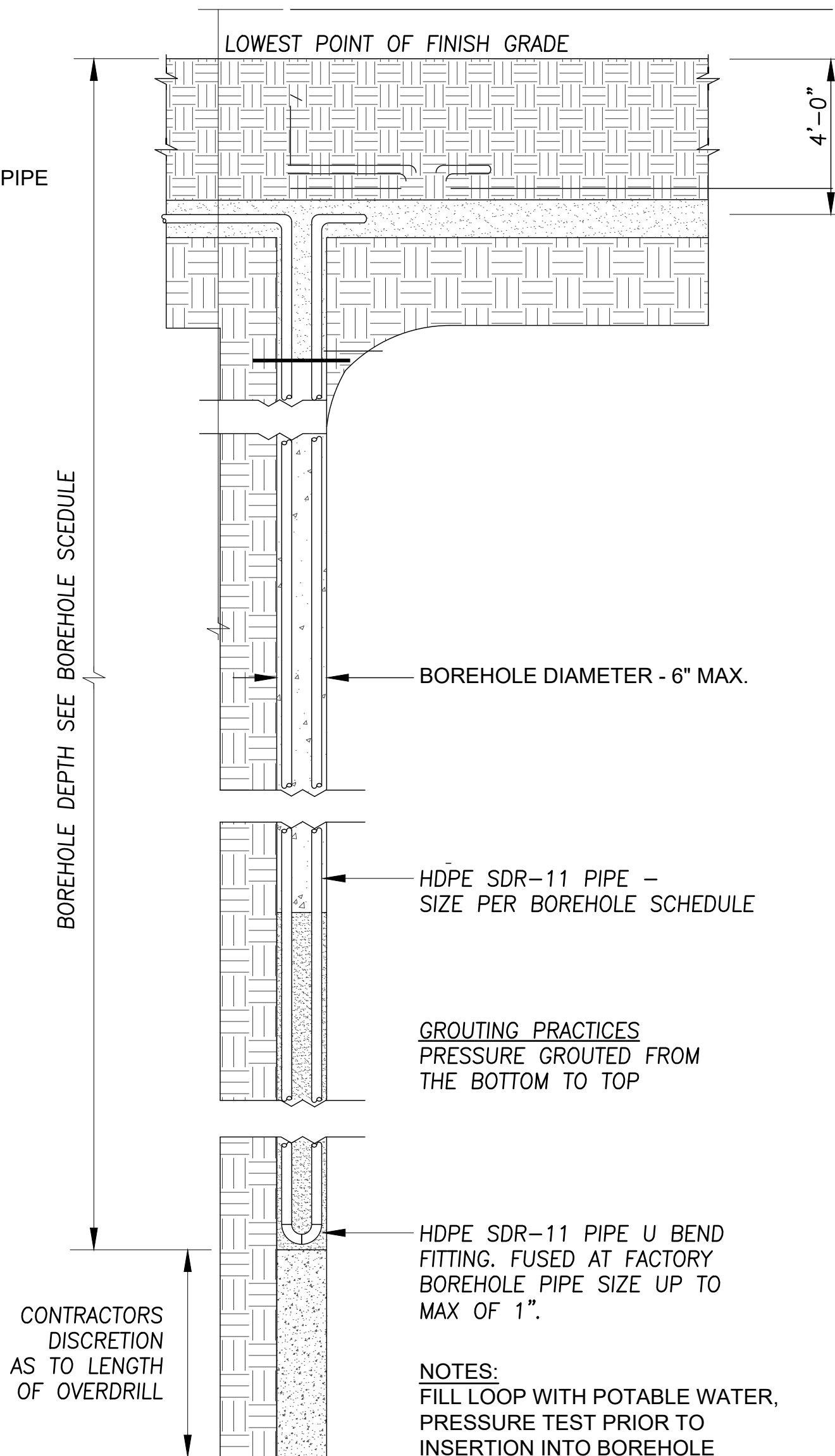
1 TYPICAL TRENCH PIPING DEPTH DETAIL
NOT TO SCALE



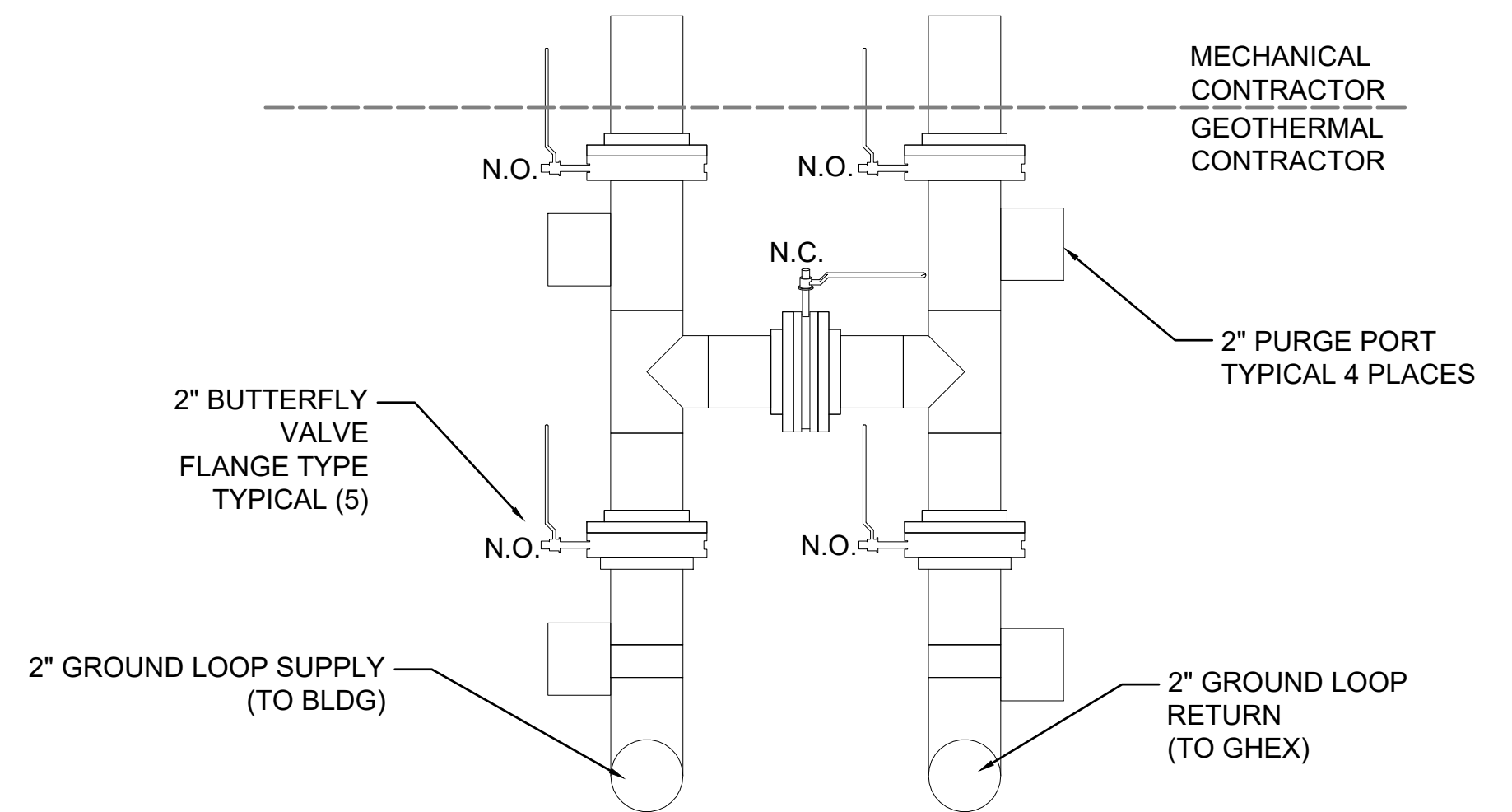
2 TYPICAL CIRCUIT TRENCH SECTION DETAIL
NOT TO SCALE



4 HEADER DETAIL
NOT TO SCALE



3 BOREHOLE DETAIL
NOT TO SCALE



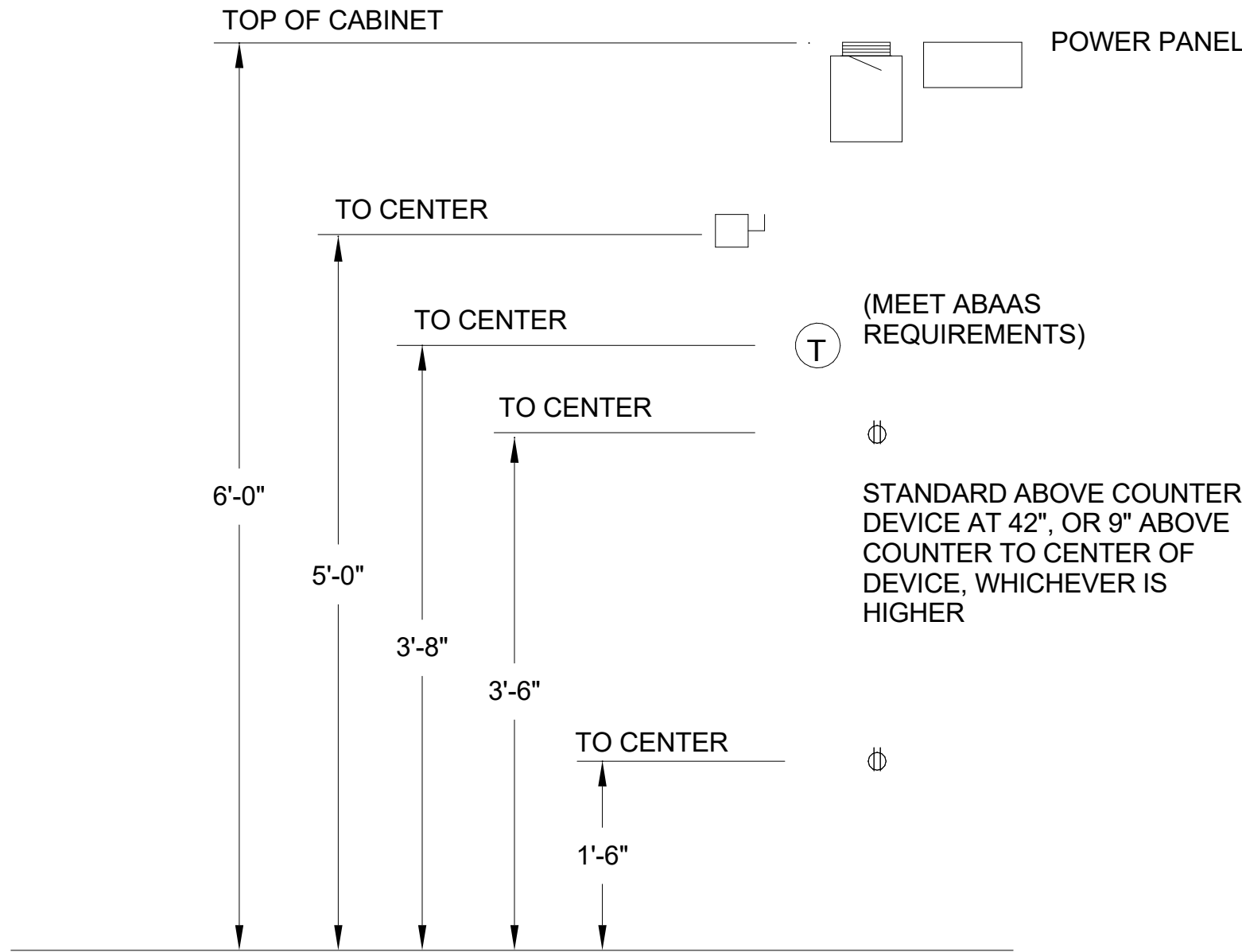
5 GEOTHERMAL PIPE ENTRY INTO BUILDING "H" BRIDLE
NOT TO SCALE

CONSTRUCTION DOCUMENTS

	A/E FIRM	DESIGNED:	SUB SHEET NO. GT2.0	TITLE OF SHEET GEOTHERMAL SECTIONS DETAILS GEOTHERMAL HVAC SYSTEM FOR JACKSON SHRINE DEATH SITE FREDERICKSBURG & SPOTSYLVANIA NMP	DRAWING NO. XXX XXXXXX	
	PRIME: DHM DESIGN DENVER, CO	EMS GADD EMS			PKG. NO. 314741 _____ 	

BASESXL-TITLE INFO. DWG.

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NOTES:

- WHERE MULTIPLE LINE VOLTAGE DEVICES ARE SHOWN ADJACENT TO EACH OTHER, THEY ARE ALL TO SHARE THE SAME JUNCTION BOX, UP TO FOUR GANGS.
- WHERE MORE THAN FOUR DEVICES ARE SHOWN ADJACENT TO EACH OTHER, DEVICES ARE TO STACK VERTICALLY ABOVE ONE ANOTHER IN TWO ROWS IN AS SMALL OF GANG BOXES AS POSSIBLE. I.E. SIX DEVICES WILL USE TWO THREE GANG BOXES, FIVE DEVICES WILL USE ONE THREE GANG AND ONE TWO GANG BOX.
- SEPARATELY GANGED DEVICES ARE NOT ALLOWED TO BE INSTALLED ADJACENT TO ONE ANOTHER HORIZONTALLY WITHIN THE SAME STUD BAY.
- ALL ELECTRICAL BOXES INSTALLED IN A WALL OR CEILING WITH A MINIMUM 1-HOUR FIRE-RESISTANCE RATING SHALL BE WRAPPED WITH AN INTUMESCENT MOLDABLE FIRESTOP PUTTY PAD DESIGNED TO HELP PROTECT ELECTRICAL OUTLET BOXES. INSTALL PER MANUFACTURERS LITERATURE.
- ALL ELECTRICAL BOXES INSTALLED ON OPPOSITE SIDES OF A COMMON WALL, LESS THAN 24" HORIZONTAL SPACING, SHALL BE INSTALLED WITH A LAYER OF EXPANDABLE SPRAY FOAM INSULATION AROUND EACH ELECTRICAL BOX.
- ALL ELECTRICAL BOXES/DEVICES SHALL BE INSTALLED TO MEET ABAAS MOUNTING HEIGHT REQUIREMENTS.

1
E0.0

DEVICE MOUNTING DETAIL

WIRING DEVICES	
	DUPLEX RECEPTACLE
	FOUR PLEX RECEPTACLE
	SINGLE RECEPTACLE WITH NIGHTLIGHT
	SINGLE RECEPTACLE
	SWITCHED DUPLEX RECEPTACLE
	SPLIT-WIRED RECEPTACLE
	SPECIAL PURPOSE RECEPTACLE
	FLOOR MOUNTED SPECIAL PURPOSE RECEPTACLE
	FLOOR RECEPTACLE (DUPLEX, QUAD)
	WIREMOLD SURFACE RACEWAY
	SURFACE PLUGMOLD
	CLOCK RECEPTACLE
	JUNCTION BOX
	WALL MOUNTED J-BOX
	FLOOR MOUNTED JUNCTION BOX
	NON-FUSED DISCONNECT SWITCH
	FUSED DISCONNECT SWITCH

ABBREVIATIONS AND SYMBOLS	
EC	ELECTRICAL CONTRACTOR
CCT	CIRCUIT
N	NEUTRAL
G	GROUND
GFI	GROUND FAULT INTERRUPTOR
WP	WEATHER PROOF
AC	ABOVE COUNTER - VERIFY HEIGHT
AFF	ABOVE FINISH FLOOR
UON	UNLESS OTHERWISE NOTED
EM	EMERGENCY
EF	EXHAUST FAN
(E)	EXISTING TO REMAIN
(EL)	EXISTING LOCATION TO REMAIN
(ER)	EXISTING TO BE RELOCATED
(R)	EXISTING TO BE REMOVED
(RL)	RELOCATED LOCATION
(N)	NEW DEVICE
CT	CURRENT TRANSFORMER
	MECHANICAL EQUIPMENT SCHEDULE NOTATION
	DETAIL NOTE
	DELTA REVISION NOTE
	ELECTRICAL WIRE SIZE

ELECTRICAL DEMOLITION REQUIREMENTS

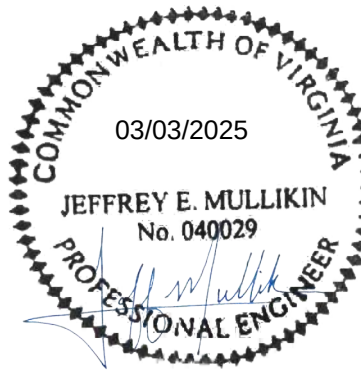
- THE BASIS OF THESE DRAWINGS WERE SITE OBSERVATIONS, ORIGINAL BUILDING DRAWINGS AND VARIOUS OTHER SOURCES. EVERY ATTEMPT HAS BEEN MADE TO DOCUMENT THE ACTUAL CONDITIONS. HOWEVER, THE CONTRACTOR SHALL CAREFULLY EXAMINE THE CONTRACT DOCUMENTS AND THOROUGHLY BECOME FAMILIAR WITH THE BUILDING/NPS STANDARDS RELATING TO THE WORK. FAILURE TO DO SO WILL NOT RELIEVE THE CONTRACTOR OF THE OBLIGATIONS OF THE CONTRACT.
- THE ELECTRICAL CONTRACTOR SHALL NOTIFY THE CONTRACTING OFFICER OF ANY MATERIALS OR APPARATUS BELIEVED TO BE INADEQUATE, UNSUITABLE, IN VIOLATION OF LAWS, ORDINANCES, RULES OR REGULATIONS OF AUTHORITIES HAVING JURISDICTION.
- THE ELECTRICAL CONTRACTOR SHALL INCLUDE IN HIS COST THE REMOVAL OF ALL EXISTING ELECTRICAL DEVICES, CONDUITS, FIXTURES AND EQUIPMENT AS REQUIRED, DISCARD ALL EQUIPMENT AS REQUIRED, UNLESS NOTED OTHERWISE. EC SHALL TAKE EXTRA CARE WHEN REMOVING MATERIAL TO MINIMIZE DAMAGE TO EXISTING FINISHES AND FEATURES TO REMAIN, REFER TO ARCHITECTURAL DRAWINGS AND DIVISION 1 SPECS FOR MORE INFORMATION.
- EXISTING DEVICES NOT NOTED AS EXISTING (E) OR INDICATED ON PLANS SHALL REMAIN, AS THEY PRESENTLY EXIST. FOR DEMOLISHED DEVICES IN WALLS WHICH ARE TO REMAIN, THE ELECTRICAL CONTRACTOR SHALL INSTALL A BLANK FACE PLATE ON THE BACKBOX. FOR DEMOLISHED DEVICES INSTALLED IN THE FLOOR, THE ELECTRICAL CONTRACTOR SHALL CUT THE FLOOR BOX FLUSH WITH THE FLOOR AND FILL WITH CONCRETE; COORDINATE WITH THE GENERAL CONTRACTOR.
- THE DEMOLITION OF SOME DEVICES MAY INTERRUPT POWER TO DEVICES DOWN STREAM. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR REWORKING THESE CIRCUITS TO MAINTAIN POWER TO THE DOWN STREAM DEVICES WHICH WILL REMAIN.
- ALL UNENERGIZED/DEMOLISHED CIRCUITRY SHALL HAVE THE CONDUCTORS REMOVED FROM THE CONDUIT AND THE CONDUIT SHALL BE MARKED "EMPTY" WITH INDELIBLE MARKER.

DISTRIBUTION AND RACEWAY

	MAIN DISTRIBUTION CENTER (MDC)
	SURFACE MTD PANELBOARD
	RECESSED PANELBOARD
	TRANSFORMER
	BRANCH CIRCUIT HOMERUN
	CONDUIT CONCEALED IN FLOOR OR UNDERGROUND
	CONDUIT EXPOSED OR CONCEALED IN WALL OR CEILING
	RACEWAY UP
	RACEWAY DOWN
	CAPPED CONDUIT
	CURRENT TRANSFORMER
	CIRCUIT BREAKER SWITCH
	FUSED SWITCH
	METER
	GROUND

ELECTRICAL GENERAL NOTES

- THE CONTRACTOR SHALL PROVIDE ALL LABOR AND MATERIAL NECESSARY FOR A COMPLETE AND FUNCTIONING ELECTRICAL SYSTEM.
- MATERIALS AND INSTALLATION SHALL COMPLY WITH CODES, LAWS AND ORDINANCES OF FEDERAL, STATE AND LOCAL GOVERNING BODIES HAVING JURISDICTION. CODES FOR THIS SCOPE OF WORK INCLUDE THE 2021 IBC AND IEBC, 2023 NEC, 2021 IFC, AND 2019 ASHRAE 90.1.
- MATERIALS AND EQUIPMENT SHALL BE LISTED AND/OR LABELED BY U.L., ETL, CSA OR ANOTHER RECOGNIZED TESTING LAB.
- ALL WORK REQUIRED FOR THE INSTALLATION AS SHOWN ON DRAWINGS INCLUDING LABOR, EQUIPMENT AND MATERIALS SHALL BE IN STRICT COMPLIANCE WITH THE BUILDING STANDARDS, EXCEPT AS NOTED OTHERWISE.
- THE CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS, GOVERNMENTAL FEES, TAXES AND LICENSES NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE ELECTRICAL WORK.
- THE CONTRACTOR SHALL PREPARE AND SUBMIT TO GOVERNMENTAL AGENCIES AND UTILITY COMPANIES SHOP DRAWINGS, WHICH ARE REQUIRED BY THESE AGENCIES, FOR THEIR APPROVAL.
- FOR ALL JOBS THAT INCLUDE DEMOLITION WORK BY THE ELECTRICAL CONTRACTOR, DURING AND AFTER DEMOLITION, EC SHALL MAINTAIN CIRCUIT CONTINUITY TO ALL EXISTING DEVICES THAT ARE TO REMAIN. EC SHALL REMOVE, RELOCATE, AND/OR REWORK ANY CONDUIT AND WIRING TO FACILITATE THE NEW CONSTRUCTION SCOPE OF WORK. FOR ALL LUMINAIRES THAT ARE EXISTING TO REMAIN OR EXISTING TO BE RELOCATED, EC SHALL CLEAN LENSES AND REPLACE ALL EXTINGUISHED LAMPS, UON.
- ALL MATERIALS, AND EQUIPMENT SHALL BE ERECTED, INSTALLED, CONNECTED, CLEANED, ADJUSTED, TESTED, CONDITIONED, AND PLACED IN SERVICE IN ACCORDANCE WITH THE MANUFACTURER'S DIRECTIONS AND RECOMMENDATIONS.
- ALL CUTTING, DRILLING AND PATCHING OF MASONRY, STEEL OR IRON WORK BELONGING TO THE BUILDING MUST BE DONE BY THIS CONTRACTOR IN ORDER THAT HIS WORK MAY BE PROPERLY INSTALLED, BUT UNDER NO CONDITIONS MAY STRUCTURAL MEMBERS BE CUT, EXCEPT AT THE DIRECTION OF THE CONTRACTING OFFICER.
- ALL MATERIAL, EQUIPMENT, WIRING DEVICES, ETC. SHALL BE NEW, UNLESS SPECIFICALLY INDICATED AS EXISTING TO BE REUSED.
- THE CONTRACTOR SHALL PROVIDE NEW TYPE WRITTEN PANEL DIRECTORIES FOR ALL EXISTING PANELS WHICH HAVE CHANGED, ETC. PANELBOARD SHALL BE MARKED WHERE THE SOURCE OF POWER SUPPLY ORIGINATES.
- DO NOT SHARE NEUTRAL CONDUCTORS FOR MULTIWIRED BRANCH CIRCUITS. WHERE THE E.C. PROPOSES THE USE OF SHARED NEUTRAL CONDUCTORS OR SHARED NEUTRAL CONDUCTORS ARE REQUIRED (SUCH AS POWERED FURNITURE SYSTEMS), HANDLE TIES SHALL BE PROVIDED ON THE CIRCUIT BREAKERS, WITH SHARED NEUTRALS, SUCH THAT IT WILL SIMULTANEOUSLY DISCONNECT ALL UNGROUNDED CONDUCTORS. ALL HANDLE TIES ARE REQUIRED TO BE INDICATED ON THE PANELBOARD SHOP DRAWINGS.
- SHOULD ACTUAL FIELD CONDITIONS REQUIRE INDICATED CIRCUIT DESIGNATIONS TO VARY, INDICATE THE CIRCUIT NUMBER USED ON THE "AS-BUILT" DRAWINGS.
- ALL NEW CIRCUITS SHALL HAVE A GROUND WIRE INSTALLED.
- PER NPS REQUIREMENTS, ALL WIRING MUST BE INSTALLED IN CONDUIT (MINIMUM SIZE 3/4").
- IN EXPOSED AND SUSPENDED CEILING APPLICATIONS, ROUTE CONDUIT AS CLOSE TO STRUCTURAL SLAB OR DECK AS POSSIBLE, AND SUPPORT CONDUIT AND JUNCTION BOXES DIRECTLY FROM THE STRUCTURAL SLAB, DECK, OR FRAMING PROVIDED FOR THAT PURPOSE. BRANCH CIRCUIT CONDUITS SHALL NOT BE CLIPPED TO THE CEILING SYSTEM, UNLESS IT HAS BEEN SPECIFICALLY DESIGNED FOR THAT PURPOSE.
- ALL EXPOSED CONDUIT SHALL BE CONCEALED TO THE GREATEST EXTENT POSSIBLE, AND SHALL BE INSTALLED PARALLEL AND CLOSE TO STRUCTURAL MEMBERS. GENERAL CONTRACTOR SHALL PAINT CONDUIT TO MATCH ADJACENT FINISHES.
- ROUGH-IN FOR MECHANICAL EQUIPMENT SHALL ONLY OCCUR AFTER MECHANICAL EQUIPMENT SUBMITTALS ARE THOROUGHLY REVIEWED FOR CHANGES. NOTIFY CONTRACTING OFFICER OF ANY DISCREPANCIES.



A/E FIRM
PRIME:
DHM DESIGN
DENVER, CO
SUBCONTRACTOR:
AE DESIGN
DENVER, CO

DESIGNED:
AE DESIGN
BJLV, RCS
TECH. REVIEW:
BJJ
DATE:
03/17/2025

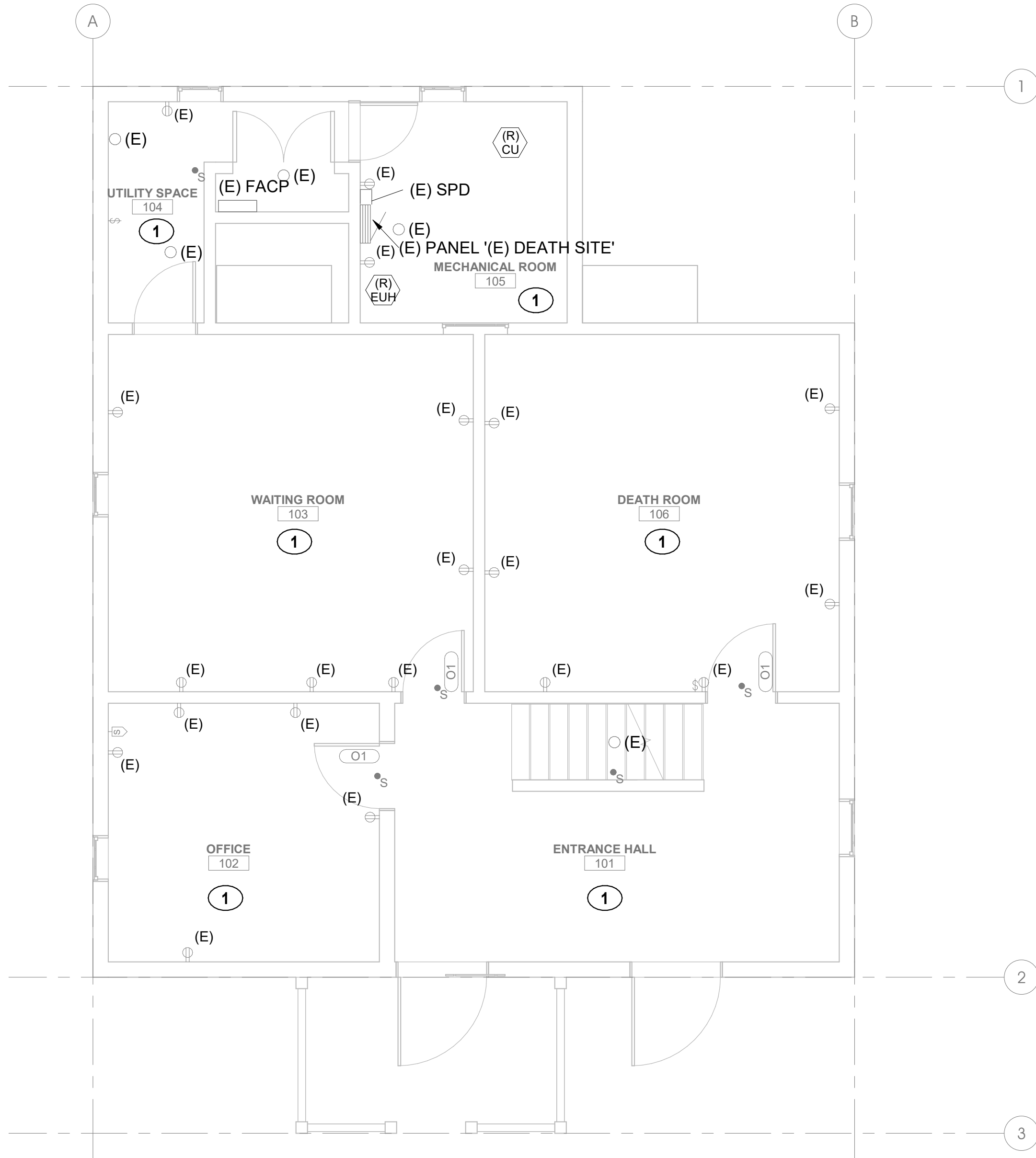
SUB SHEET NO.

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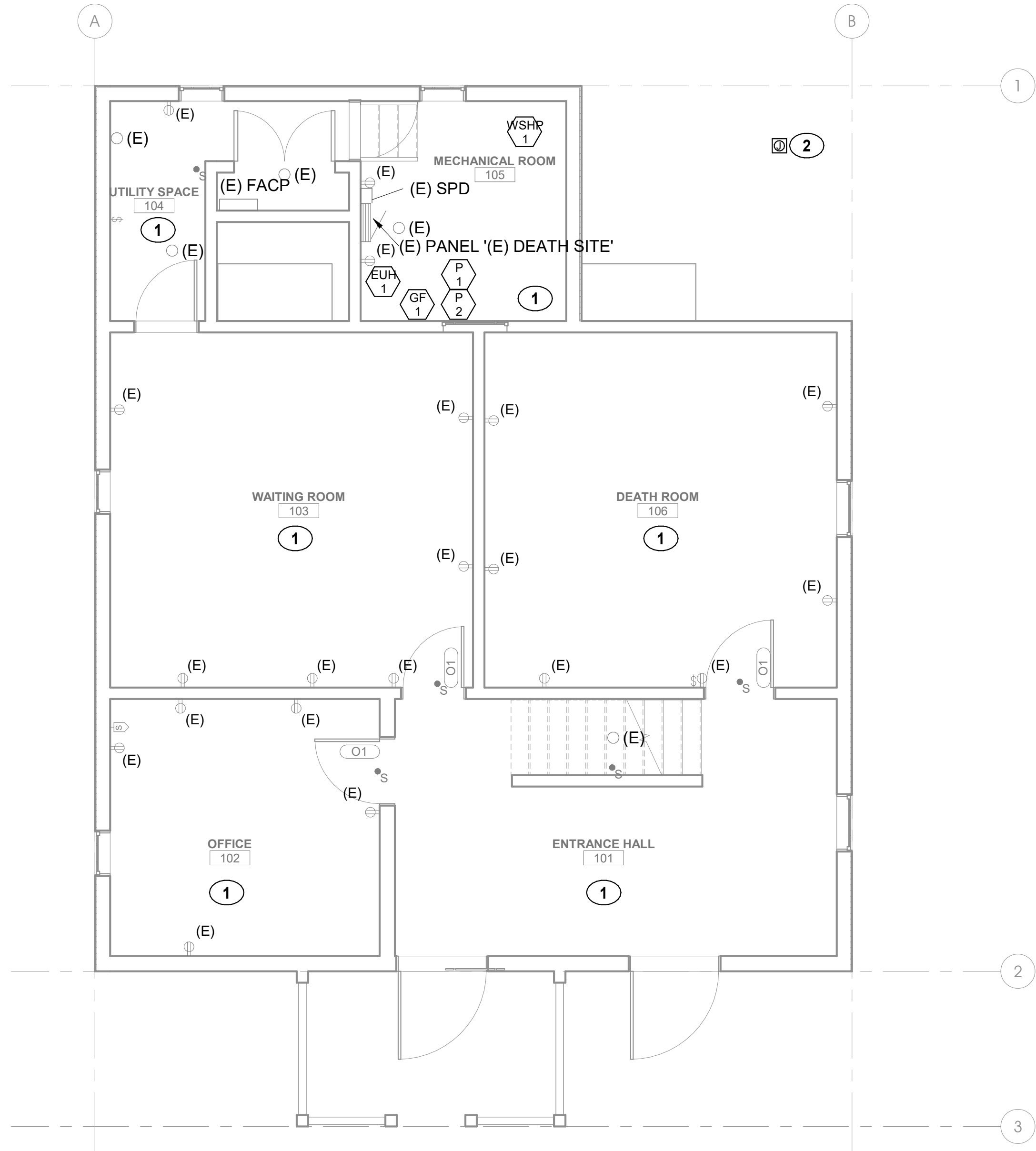
TITLE OF SHEET
ELECTRICAL COVER SHEET
GEOTHERMAL HVAC SYSTEMS FOR JACKSON SHRINE DEATH SITE
FREDERICKSBURG & SPOTSLVANIA NMP

DRAWING NO.
XXXX
XXXXXX
PKG NO.
314741
SHEET
34
OF 37

8/13/24 15:20 MKAISER R24 P:/DENVER/NPS FRSP GEOTHERMAL-2408306-DDCAD/LA1/TSHEET_TEMPLATE_DWG.XREFS: BASESXL-TITLE INFO.DWG;



2 ELECTRICAL DEMOLITION PLAN FIRST FLOOR
E1.0 SCALE (A)



1 ELECTRICAL PLAN FIRST FLOOR
E1.0 SCALE (A)

KEYNOTE LEGEND	
KEY VALUE	KEYNOTE TEXT
1	ALL LIGHTING AND ELECTRICAL DEVICES IN THIS ROOM SHALL REMAIN UNLESS OTHERWISE NOTED.
2	EC SHALL PROVIDE 2" CONDUIT TO FIRE TANK IN TRENCH WITH WATER LINE. EC SHALL PROVIDE (2) 13"X24"X12" OPEN BOTTOM ELECTRICAL GRADE LEVEL BOXES AT EACH END OF RUN, ONE AT THE FIRE TANK AND ONE NEAR DEATH SITE BUILDING FOR FUTURE CONNECTION. SEE CIVIL PLANS FOR ROUTING AND LOCATION.



03/03/2025 JEFFREY E. MULLIKIN No. 040029 PROFESSIONAL ENGINEER	A/E FIRM PRIME: DHM DESIGN DENVER, CO SUBCONTRACTOR: AE DESIGN DENVER, CO	DESIGNED: AE DESIGN BJLV, RCS TECH. REVIEW: BJJ DATE: 03/17/2025	SUB SHEET NO. E1.0	TITLE OF SHEET ELECTRICAL POWER PLANS GEOTHERMAL HVAC SYSTEMS FOR JACKSON SHRINE DEATH SITE FREDERICKSBURG & SPOTSLVANIA NMP	DRAWING NO. XXXX XXXXXX PKG NO. 314741 SHEET 35 OF 37

SINGLE PHASE FEEDER SCHEDULE

KEY/ AMPS	FEEDER CONDUIT AND CONDUCTORS	KEY/ AMPS	FEEDER CONDUIT AND CONDUCTORS
SERVICE ENTRANCE FEEDERS		SDS XFMR FEEDERS (NOTE 1)	
200A	3#3/0, 2" C		
400A	2[3#3/0, 2" C]	30AS	3#10, 1#8G, 3/4" C
600A	2[3#350, 3" C]	50AS	3#6, 1#8G, 1-1/4" C
800A	2[3#500, 3-1/2" C]	100AS	3#1, 1#6G, 1-1/2" C
1000A	3[3#400, 3-1/2" C]	150AS	3#1/0, 1#6G, 2" C
1200A	4[3#350, 3" C]	250AS	3#250, 1#2G, 3" C
1600A	5[3#400, 3-1/2" C]	400AS	2[3#3/0, 1#2G, 2" C]
2000A	6[3#400, 3-1/2" C]	500AS	2[3#250, 1#1/0G, 3" C]
2500A	7[3#500, 3-1/2" C]	800AS	2[3#500, 1#2/0G, 3-1/2" C]
3000A	8[3#500, 3-1/2" C]	1000AS	3[3#400, 1#4/0G, 3-1/2" C]
3500A	10[3#500, 3-1/2" C]	1600AS	5[3#400, 1#350G, 3-1/2" C]
4000A	11[3#500, 3-1/2" C]	2500AS	7[3#500, 1#500G, 3-1/2" C]
EQUIPMENT FEEDERS			
20ANG	3#12, #12G, 3/4" C	20AG	2#12, #12G, 3/4" C
30ANG	3#10, #110G, 3/4" C	30AG	2#10, #110G, 3/4" C
40ANG	3#8, #110G, 1" C	40AG	2#8, #110G, 1" C
50ANG	3#6, #110G, 1-1/4" C	50AG	2#6, #110G, 1" C
60ANG	3#4, #110G, 1-1/4" C	60AG	2#4, #110G, 1" C
60ANGP	3#4, #110G, 1-1/2" C	70AG	2#4, 1#8G, 1-1/4" C
70ANG	3#4, #18G, 1-1/4" C	80AG	2#3, 1#8G, 1-1/4" C
80ANG	3#3, #18G, 1-1/4" C	90AG	2#2, 1#8G, 1-1/4" C
90ANG	3#2, #18G, 1-1/2" C	100AG	2#1, #18G, 1-1/2" C
100ANG	3#1, #18G, 1-1/2" C	110AG	2#1, 1#6G, 1-1/2" C
110ANG	3#1, #16G, 2" C	125AG	2#1/0, #16G, 1-1/2" C
125ANG	3#1/0, #16G, 2" C	150AG	2#1/0, #16G, 1-1/2" C
150ANG	3#1/0, #16G, 2" C	175AG	2#2/0, #16G, 2" C
175ANG	3#2/0, #16G, 2" C	200AG	2#3/0, #16G, 2" C
200ANG	3#3/0, #16G, 2-1/2" C	225AG	2#4/0, #14G, 2" C
225ANG	3#4/0, #14G, 2-1/2" C	250AG	2#250, #14G, 2-1/2" C
250ANG	3#250, #14G, 3" C	300AG	2#350, #14G, 2-1/2" C
300ANG	3#350, #14G, 3" C	350AG	2#500, #13G, 3" C
350ANG	3#500, #13G, 3-1/2" C	400AG	2[2#3/0, #13G, 2" C]
400ANG	2[3#3/0, #13G, 2-1/2" C]	450AG	2[2#4/0, #12G, 2" C]
450ANG	2[3#400, #12G, 3-1/2" C]	500AG	2[2#250, #12G, 2-1/2" C]
500ANG	2[3#250, #12G, 3" C]	600AG	2[2#350, #11G, 2-1/2" C]
600ANG	2[3#350, #11G, 3" C]	700AG	2[2#500, #11/0G, 3" C]
700ANG	2[3#500, #11/0G, 3-1/2" C]	800AG	2[2#500, #11/0G, 3" C]
800ANG	2[3#500, #11/0G, 3-1/2" C]	1000AG	3[2#400, #12/0G, 3" C]
1000ANG	3[3#400, #12/0G, 3-1/2" C]	1200AG	4[2#350, #13/0G, 3" C]
1200ANG	4[3#350, #13/0G, 3" C]	1600AG	5[2#400, #14/0G, 3" C]
1600ANG	5[3#400, #14/0G, 3-1/2" C]	2000AG	6[2#400, #1#250G, 3" C]
2000ANG	6[3#400, #1250G, 3-1/2" C]		
GROUNDING CONDUCTORS		ABBREVIATIONS	
G8	1#8, 3/4" C	MECH	SEE MECH SCHEDULE
G6	1#6, 3/4" C	XFMR	SEE XFMR SCHEDULE
G4	1#4, 3/4" C		
G2	1#2, 3/4" C		
G10	1-1/0, 3/4" C		
G20	1-2/0, 3/4" C		
G30	1-3/0, 3/4" C		
NOTES:			
1. FEEDER FOR SECONDARY OF SEPARATELY DERIVED SYSTEM (SDS). GROUND SIZE PER NEC 250.66.			
2. ALL CONDUCTORS ARE SINGLE CONDUCTOR COPPER THWN UNLESS NOTED OTHERWISE. AMPACITY BASED ON NEC TABLE 310.16.			
3. ALL CONDUTS ARE EMT UNLESS NOTED OTHERWISE, FILL RATIOS BASED ON NEC ANNEX C TABLE C1.			

FAULT CURRENT CALCULATION SCHEDULE

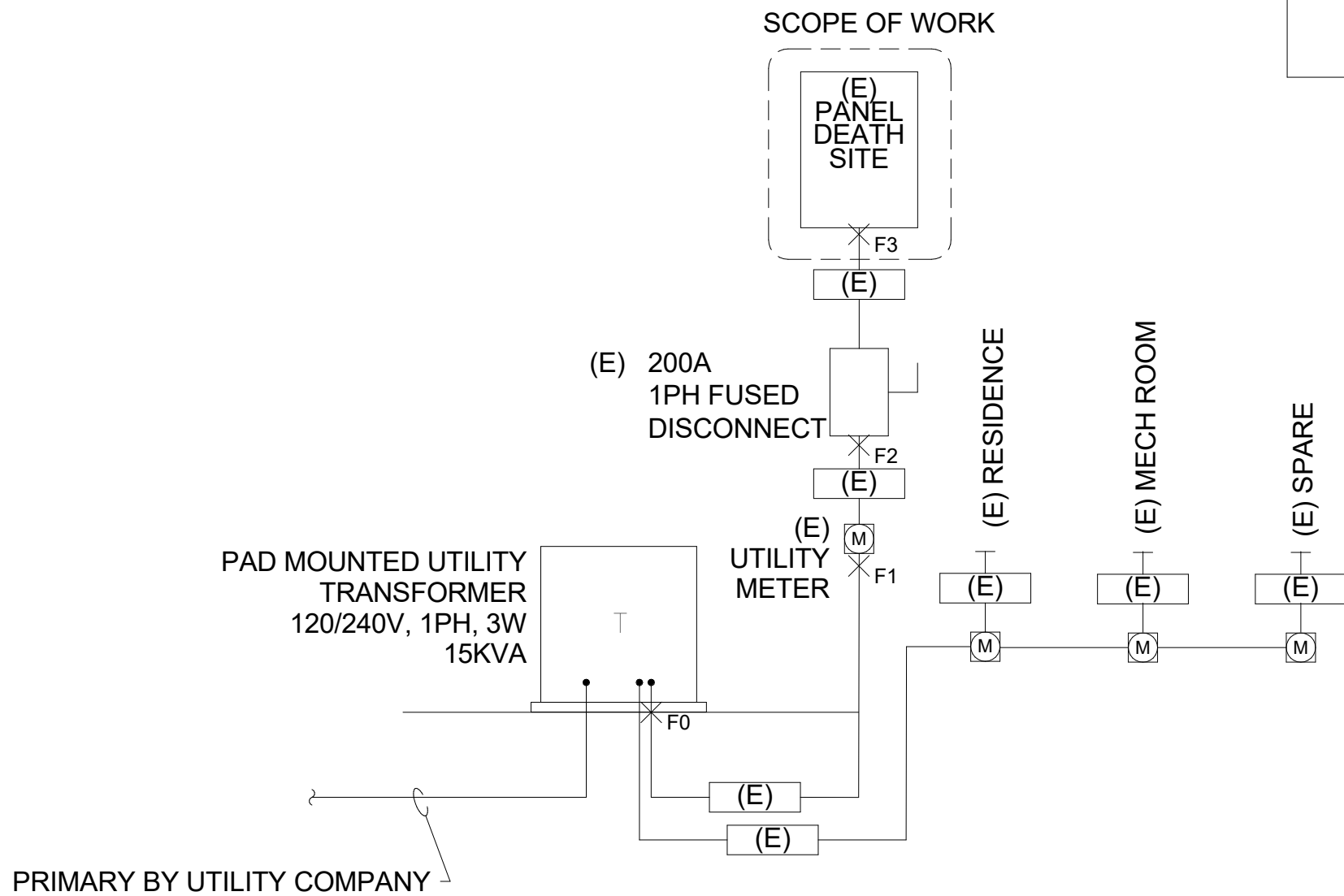
POINT	LOCATION DESCRIPTION	LENGTH (L) (ft)	VOLTAGE (EL-L)	VOLTAGE (EL-N)	PHASE	WIRE SIZE	CONDUCTOR MATERIAL	CONDUCTOR TYPE	CONDUIT MATERIAL	VOLTAGE CLASS	C VALUE	# OF PARALLEL RUNS	Isc AVAILABLE UPSTREAM	Isc AT EQUIP (13ph) OR (IL-L)	POINT
F0	UTILITY XFMR												--	7,400	F0
F1	UTILITY METER	5	240	120	1	3X	COPPER	THREE SINGLE CONDUCTORS	NONMAGNETIC	600V	13923	1	7,400	7,240	F1
F2	200A DISCONNECT	5	240	120	1	3X	COPPER	THREE SINGLE CONDUCTORS	STEEL	600V	12843	1	7,240	7,074	F2
F3	PANEL 'DEATH SITE'	200	240	120	1	3X	COPPER	THREE SINGLE CONDUCTORS	STEEL	600V	12843	1	7,074	3,688	F3

NOTES:

1. ALL CALCULATIONS WERE DONE USING BUSSMAN "POINT-TO-POINT" METHOD.
2. REFER TO PLANS FOR ASSUMED UTILITY TRANSFORMER SIZE UTILIZED FOR CALCULATIONS.
3. TRANSFORMER IMPEDANCES USED IN THE CALCULATIONS WERE TAKEN FROM EATON'S PUBLISHED IMPEDANCES FOR DOE 2016 DRY-TYPE TRANSFORMERS.
4. CONDUCTOR LENGTHS INDICATED IN THIS SCHEDULE ARE FOR THE PURPOSES OF FAULT CURRENT CALCULATIONS ONLY. THESE LENGTHS ASSUME WORST CASE SHORTEST DISTANCE CONDITIONS AND SHOULD NOT BE UTILIZED BY THE ELECTRICAL CONTRACTOR FOR BIDDING PURPOSES. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ESTIMATING AND MEASURING ACTUAL FIELD CONDITION LENGTHS AS PART OF THE BID PROCESS.

GENERAL NOTES

1. ALL EQUIPMENT IS EXISTING TO REMAIN. ONE-LINE DIAGRAM PROVIDED FOR REFERENCE ONLY.



1 ONLINE DIAGRAM
E6.0



A/E FIRM

PRIME:
DHM DESIGN
DENVER, CO

SUBCONTRACTOR:
AE DESIGN
DENVER, CO

DESIGNED:
AE DESIGN

BJLV, RCS
TECH. REVIEW:
BJJ
DATE:
03/17/2025

SUB SHEET NO.

E6.0

TITLE OF SHEET

ELECTRICAL ONE-LINE DIAGRAM

GEOTHERMAL HVAC SYSTEMS FOR
JACKSON SHRINE DEATH SITE
FREDERICKSBURG & SPOTSLVANIA NMP

DRAWING NO.
XXXX
XXXXXXX

PKG
NO. 314741

SHEET 36
OF 37

MECHANICAL EQUIPMENT SCHEDULE										
KEY		EQUIPMENT DESCRIPTION	LOAD	ELECTRICAL	MOC/P/ MFS	FEEDER	DISCONNECT	PANEL	CIRCUIT	NOTES
EUH	1	ELECTRIC UNIT HEATER	1.5KW	120 V/1-1500 VA	20A/1P	2#12, 1#12G, 3/4"C	INTEGRAL	(E) DEATH SITE	19	
GF	1	GLYCOL FEEDER	80W	120 V/1-452 VA	20A/1P	2#12, 1#12G, 3/4"C	30A/1P	(E) DEATH SITE	23	1
P	1	PUMP	452W	120 V/1-452 VA	20A/1P	2#12, 1#12G, 3/4"C	30A/1P	(E) DEATH SITE	21	
P	2	PUMP	452W	120 V/1-452 VA	20A/1P	2#12, 1#12G, 3/4"C	30A/1P	(E) DEATH SITE	21	
WSHP	1	WATER SOURCE HEAT PUMP	32.5 FLA	240 V/1-7800 VA	60A/2P	2#4, 1#10G, 1"C	60A/2P	(E) DEATH SITE	18,20	

MECHANICAL EQUIPMENT GENERAL NOTES	
A	REFER TO MECHANICAL PLANS FOR SPECIFIC EQUIPMENT LOCATIONS AND REQUIREMENTS.
B	PRIOR TO ROUGH-IN, COORDINATE ALL MECHANICAL EQUIPMENT POWER AND CONNECTION REQUIREMENTS WITH MECHANICAL CONTRACTOR'S FINAL SHOP DRAWINGS.
C	PROVIDE ALL 120V CONTROL WIRING, REFER TO SPECIFICATIONS FOR FURTHER CONTROL WIRING CLARIFICATION.
D	EC TO PROVIDE HAND/OFF/AUTO STARTERS FOR ALL MOTORS WHEN NOT INDICATED AS TO BE PROVIDED BY THE MECHANICAL CONTRACTOR ON THE MECHANICAL PLANS. SIZE OF STARTER TO BE BASED UPON SIZE OF MOTOR HORSEPOWER INDICATED.
MECHANICAL EQUIPMENT KEYED NOTES	
1	EC SHALL PROVIDE NEMA 5-20R RECEPTACLE FOR GF-1 COORDINATE FINAL CONNECTIONS AND LOCATION WITH CO AND MECHANICAL CONTRACTOR.

PANEL: (E) DEATH SITE													
LOCATION: MECHANICAL ROOM 105						VOLTS: 120/240 SINGLE				A.I.C. RATING: 10K AIC			
SUPPLY FROM:						PHASES: 1				MAINS TYPE: MCB			
MOUNTING: SURFACE						WIRES: 3				MAINS RATING: 200 A			
ENCLOSURE: TYPE 1										MCB RATING: 200 A			
CKT	CCT TYPE	LOAD DESCRIPTION	TRIP	POLES	A		B		POLES	TRIP	LOAD DESCRIPTION	CCT TYPE	CKT
1	--	SPARE (N2)	70	2	0	0			2	50	TVSS (N1)	E	2
3	--	--	--	--			0	0	--	--	--	--	4
5	R	LEAN TO EAST POWER (N1)	20	1	1080	1080			1	20	OFFICE OUTLETS (N1) (AFCI)	R	6
7	L	LEAN TO EAST LIGHT (N1) (AFCI)	20	1			1000	1000	1	20	HALL LIGHT (N1) (AFCI)	L	8
9	R	LEAN TO WEST POWER (N1) (AFCI)	20	1	1080	1080			1	20	OFFICE OUTLETS (N1) (AFCI)	R	10
11	--	FACP (N1)	20	1			0	1080	1	20	DEATH ROOM (N1) (AFCI)	R	12
13	--	SPARE (N1)	30	2	0	1080			1	20	MAIN ROOM (N1) (AFCI)	R	14
15	--	--	--	--			0	1080	1	20	ROOM 5 POWER (N1) (AFCI)	R	16
17	R	EXISTING LOAD (N1)	20	1	1080	3900			2	60	WSHP-1 (N3)	M	18
19	E	EUH-1 (N3) (AFCI)	20	1			1500	3900	--	--	--	--	20
21	M	P-1.2 (N3) (AFCI)	20	1	904	--			1	--	BUSSED SPACE	--	22
23	M	GF-1 (N3) (AFCI)	20	1			452	--	1	--	BUSSED SPACE	--	24
25	--	BUSSED SPACE	--	1	--	--			1	--	BUSSED SPACE	--	26
27	--	BUSSED SPACE	--	1			--	--	1	--	BUSSED SPACE	--	28
29	--	BUSSED SPACE	--	1	--	--			1	--	BUSSED SPACE	--	30
31	--	BUSSED SPACE	--	1			--	--	1	--	BUSSED SPACE	--	32
33	--	BUSSED SPACE	--	1	--	--			1	--	BUSSED SPACE	--	34
35	--	BUSSED SPACE	--	1			--	--	1	--	BUSSED SPACE	--	36
37	--	BUSSED SPACE	--	1	--	--			1	--	BUSSED SPACE	--	38
39	--	BUSSED SPACE	--	1			--	--	1	--	BUSSED SPACE	--	40
41	--	BUSSED SPACE	--	1	--	--			1	--	BUSSED SPACE	--	42
					TOTAL LOAD:		11284 VA		10012 VA				
					TOTAL AMPS:		94 A		83 A				
LEGEND: AFCI=ARC FAULT CIRCUIT INTERRUPTER													
CCT TYPE:		LOAD		DEMAND LOAD		PANEL TOTALS							
LIGHTING:		2000 VA		2500 VA						TOTAL CONN. LOAD: 21296 VA			
RECEPTACLE:		8640 VA		8640 VA						TOTAL EST. LOAD: 23746 VA			
MOTOR:		9156 VA		11106 VA						TOTAL CONN.: 89 A			
EQUIPMENT:		1500 VA		1500 VA						TOTAL EST. DEMAND: 99 A			
KITCH EQUIP:													
NOTES:													
N1. EXISTING LOAD EXISTING CIRCUIT BREAKER.													
N2. NEW LOAD ON EXISTING CIRCUIT BREAKER.													
N3. NEW LOAD ON NEW CIRCUIT BREAKER. CIRCUIT BREAKER TYPE AND AIC RATING TO MATCH EXISTING.													

	A/E FIRM	DESIGNED:	SUB SHEET NO.	TITLE OF SHEET		DRAWING NO.	
	PRIME: DHM DESIGN DENVER, CO	AE DESIGN  BJLV, RCS				XXXX	
	SUBCONTRACTOR: AE DESIGN DENVER, CO	TECH. REVIEW: BJJ				XXXXXX	
		DATE: 03/17/2025					
	E6.1						
				ELECTRICAL SCHEDULES		PKG NO. 314741	SHEET 37
				GEOTHERMAL HVAC SYSTEMS FOR JACKSON SHRINE DEATH SITE FREDERICKSBURG & SPOTSLVANIA NMP		OF 37	