

one eighth inch = one foot

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VA FORM 08 - 6231

GENERAL NOTES:

- A. ASSUMPTION IS THAT ENTIRE AREA SERVED BY EXISTING AHU WILL BE VACATED SIMULTANEOUSLY AND CAN BE REMOVED AND REPLACED WITHOUT REQUIRING A TEMPORARY SERVICE FOR VENTILATION.
- B. IF WORK ON AHU REPLACEMENT IS BEING PERFORMED DURING PERIODS OF HIGH OUTDOOR TEMPERATURES (OR HUMIDITY), OR DURING PERIODS AT RISK OF FREEZING, THAN CONTRACTOR WILL BE RESPONSIBLE TO PROVIDE TEMPORARY HEATING OR COOLING WITHIN CONSTRUCTION AREA TO PREVENT ANY POTENTIAL DAMAGE CAUSED

BY HIGH HUMIDITY, OR LOW TREMPERATURE, CONDITIONS.

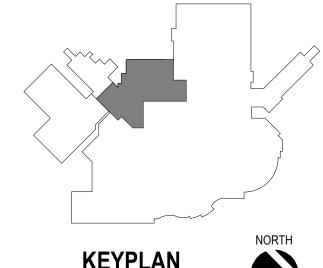
- COORDINATE DELIVERY PATH FOR INCOMING EQUIPMENT AND MATERIALS. SUGGESTED ROUTE IS TO CRANE MATERIALS ONTO ROOF AND TRANSPORT IN THROUGH DOUBLE DOORS AT EAST END OF MECHANICAL ROOM. CONTRACTOR TO NOTE THAT THERE ARE SEVERAL EXISTING ELEVATION CHANGES ALONG THIS ROUTE THAT WILL NEED TO BE ACCOUNTED FOR WHILE TRANSPORTING LARGE PIECES OF EQUIPMENT. REVIEW SITE CONDITIONS PRIOR TO BIDS.
- D. COORDINATE REMOVAL OF ALL DEMOLISHED MATERIALS WITH INFECTION CONTROL REPRESENTATIVE. ANY HAZARDOUS MATERIAL ENCOUNTERED SHALL BE BROUGHT TO THE ATTENTION OF THE CONTRACT OFFICE REPRESENTATIVE FOR COORDINATION OF REMOVAL. REFER TO SPECIFICATIONS FOR REPLACEMENT OF ANY INSULATION REMOVED DURING ABATEMENT PROCESS.
- PART OF THE PROJECT'S WORK SCOPE IS TO APPLY EPOXY FLOORING THROUGHOUT MECHANICAL ROOM (BY OTHERS). ALL DEMOLITION SHALL TAKE THIS INTO CONSIDERATION WITH UNUSED EQUIPMENT CURBS, OR FLOOR PENETRATIONS, SHALL ALL BE REMOVED AND PATCHED TO CREATE A SMOOTH FLOOR SURFACE FOR FINISHING. TRANSPORTING OF NEW MATERIALS AND/OR EQUIPMENT MAY OCCUR OVER THIS NEW EPOXY FLOOR AND CONTRACTOR WILL BE RESPONSIBLE FOR ANY DAMAGE OR SCRATCHING OF EPOXY FLOOR.
- CONTRACTOR WILL HAVE CONTINUAL ACCESS TO THIS MECHANICAL SPACE BUT STILL MUST COORDINATE ANY WORK THAT CREATES EXCESSIVE NOISE AND/OR VIBRATION WITH ADJACENT AREAS. ASSUME THAT SOME NOISE/VIBRATION PRODUCING ACTIVITES WILL BE REQUIRED TO BE PERFORMED DURING PREMUIM HOURS.
- MAINTAINING NEGATIVE PRESSURIZATION WITHIN MECHANICAL ROOM DURING CONSTRUCTION, ALONG WITH FOLLOWING ALL OTHER ICRA REQUIREMENTS, WILL BE ENFORCED THROUGHOUT PROJECT SCHEDULE. IF CONTRACTOR WANTS TO USE SPACE WITHIN MECHANICAL ROOM FOR STAGING MATERIALS, OR SETTING UP TEMPORARY WORK SPACE, IT SHOULD BE COORDINATED AND APPROVED BY VA COTRACTING OFFICER REPRESENTATIVE.

KEY NOTES:

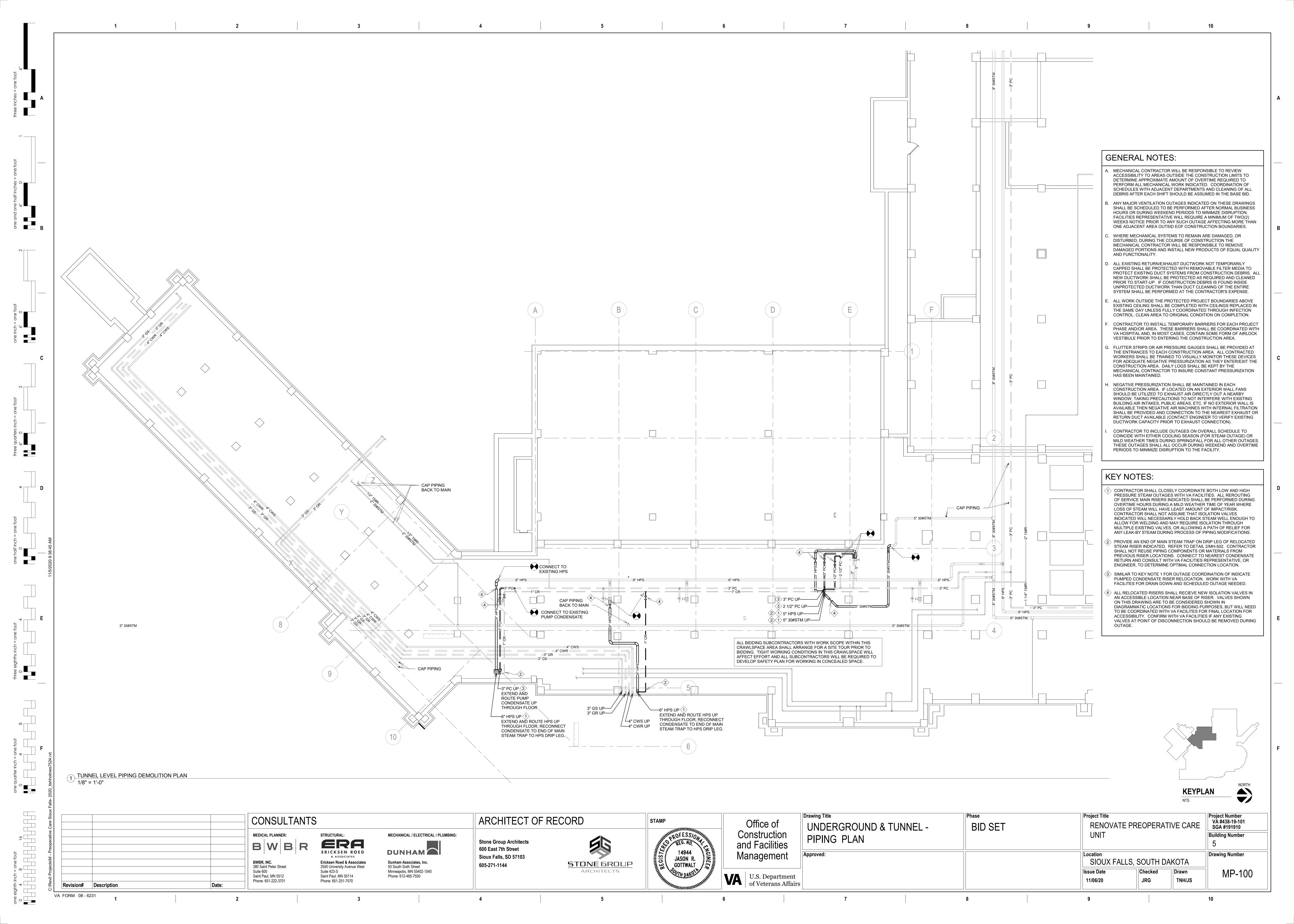
- REMOVE EXISTING ENERGY RECOVERY COIL, SUPPORTS, ETC.
- REMOVE ALL STEAM PIPING AND ASSOCIATED SUPPORT HANGERS AS REQUIRED, DOWN THROUGH FLOOR.
- REMOVE CONDENSATE PIPING AND ASSOCIATED SUPPORT HANGERS AS REQUIRED, DOWN THROUGH FLOOR.
- 4 REMOVE EXISTING (GR & GS) GLYOL PIPING AND ASSOCIATED
- REMOVE EXISTING (CWR & CWS) CHILLED WATER PIPING AND ASSOCIATED SUPPORT HANGERS AS REQUIRED, DOWN THROUGH
- REMOVE EXISTING REHEAT PUMP, PIPING, AND ASSOCIATED

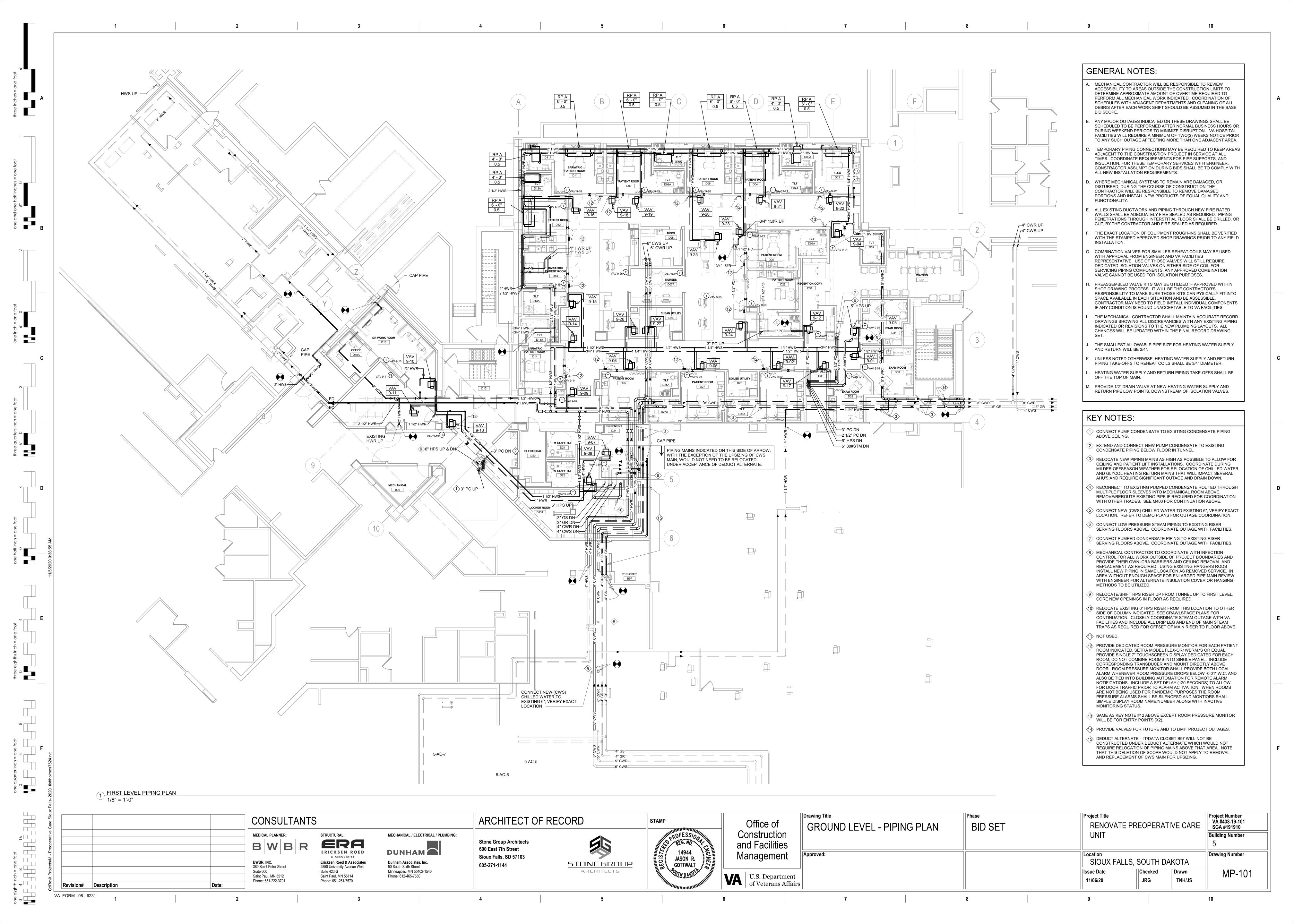
SUPPORT HANGERS AS REQUIRED, DOWN THROUGH FLOOR.

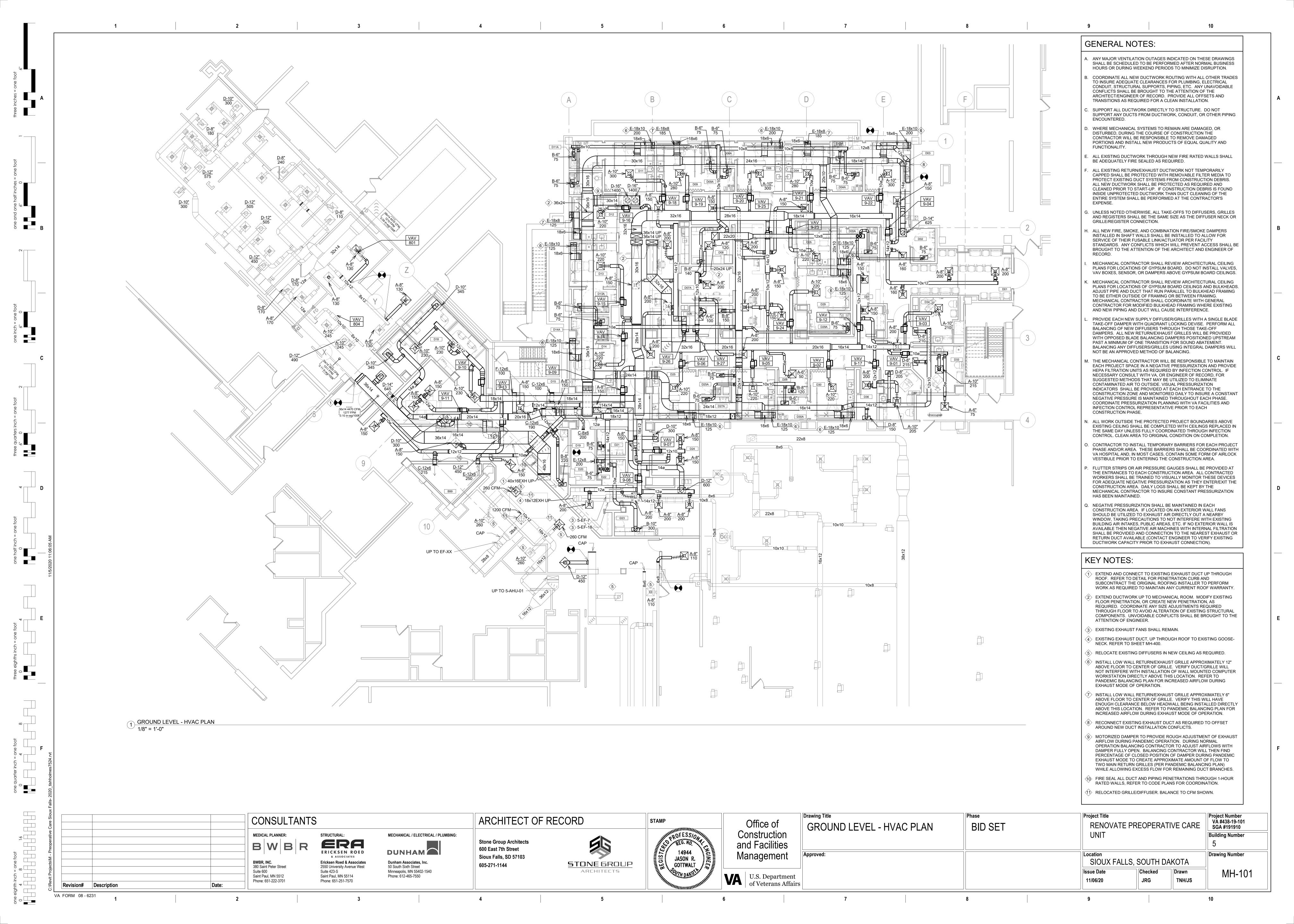
- SUPPORT HANGERS AS REQUIRED. COORDINATE POWER DISCONNECT AND RELATED CONTROLS MODIFICATIONS NEEDED.
- 7 EXISING PIPING ON ROOF TO REMAIN. (8) DEMOLISH EXISTING FLOOR DRAIN.
- 9 DEMOLISH 4" WASTE IN BEWEEN POINTS OF DISCONNECT FOR
- INSTALLATION OF NEW DUCTWORK AND AIR HANDLING UNIT.
- DEMOLISH HOT WATER PIPING TO EXISTING UNIT HEATER AND DOWN THROUGH FLOOR. REUSE AND RELOCATE EXISTING UNIT HEATER, REFER TO SHEET MH-400 FOR NEW LOCATION.

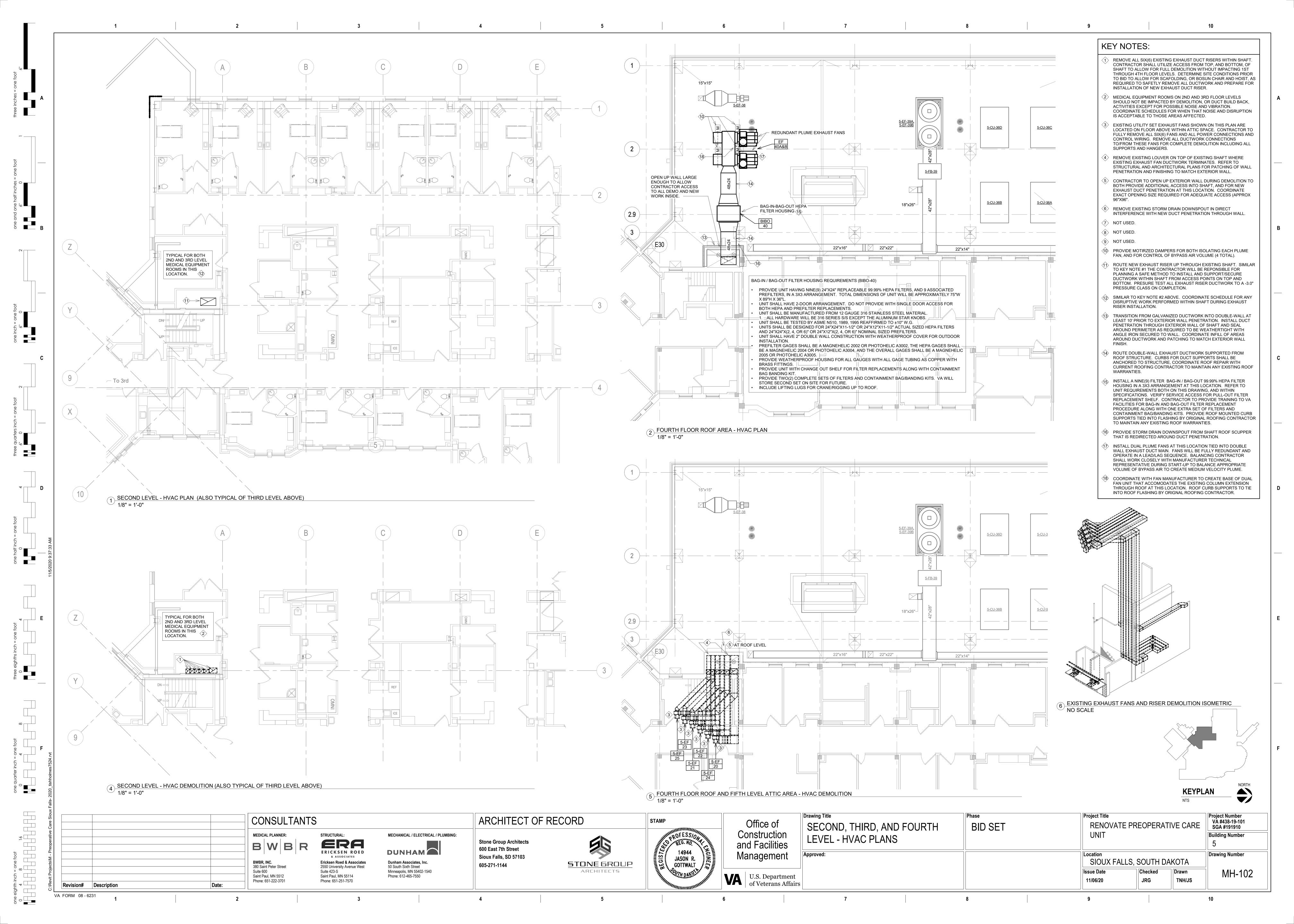


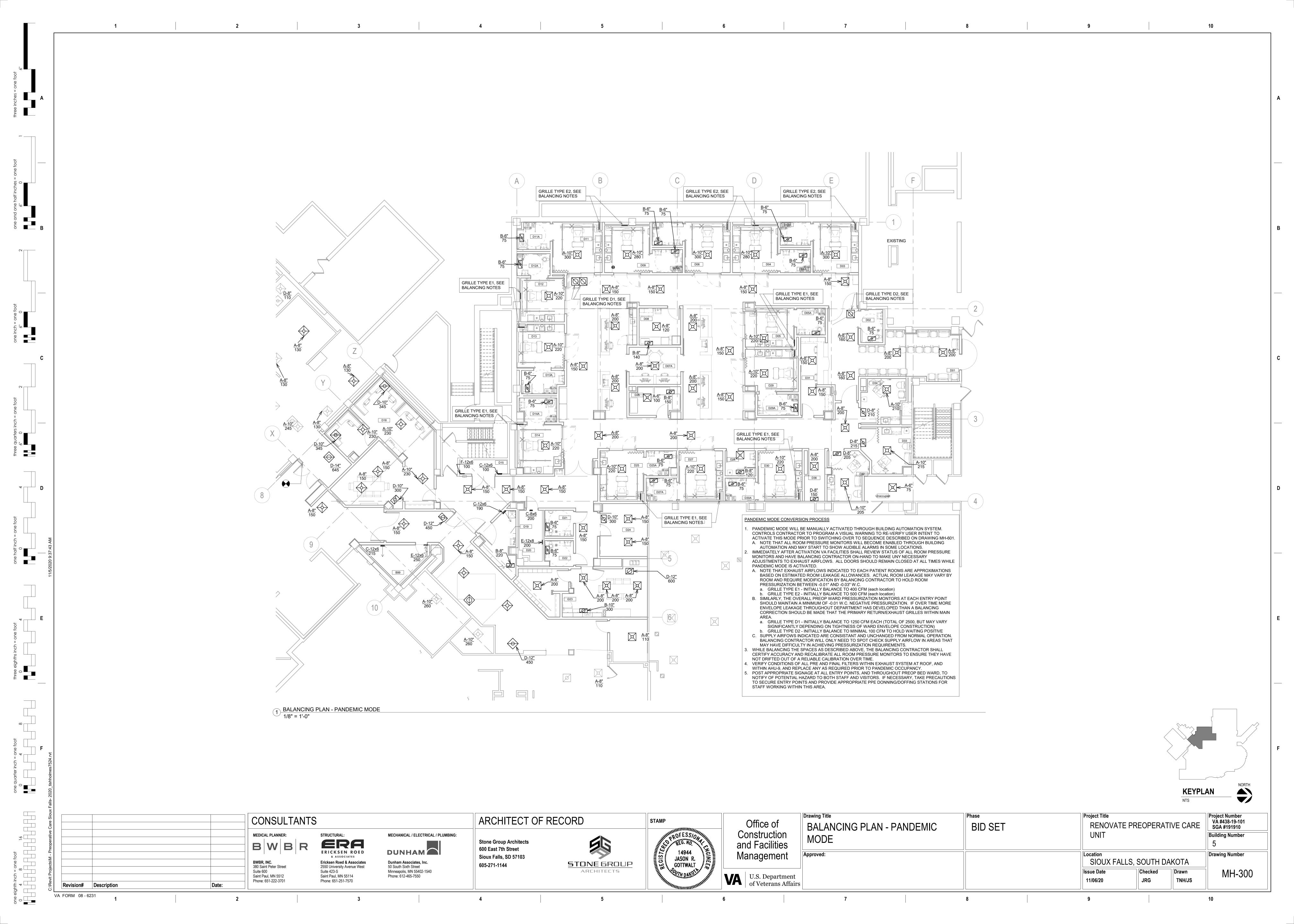
() Drawing Title Project Title **Project Number** CONSULTANTS ARCHITECT OF RECORD STAMP VA #438-19-101 Office of RENOVATE PREOPERATIVE CARE FIRST LEVEL - PIPING DEMOLITION | BID SET Construction and Facilities UNIT **Building Number** STRUCTURAL: MECHANICAL / ELECTRICAL / PLUMBING: **MEDICAL PLANNER:** PLAN 够 ERA **Stone Group Architects** BWBR 600 East 7th Street DUNHAM 🕋 ERICKSEN ROED Drawing Number Management Location Sioux Falls, SD 57103 & ASSOCIATES JASON R. SIOUX FALLS, SOUTH DAKOTA **Dunham Associates, Inc.** 50 South Sixth Street Minneapolis, MN 55402-1540 BWBR, INC. Ericksen Roed & Associates STONE GROUP GOTTWALT 605-271-1144 380 Saint Peter Street 2550 University Avenue West ARCHITECT5 Checked Drawn MDP-111 **VA** U.S. Department of Veterans Affairs Saint Paul, MN 5512 Saint Paul, MN 55114 Phone: 612-465-7550 TNH/JS JRG Phone: 651-222-3701 Phone: 651-251-7570 Revision# Description

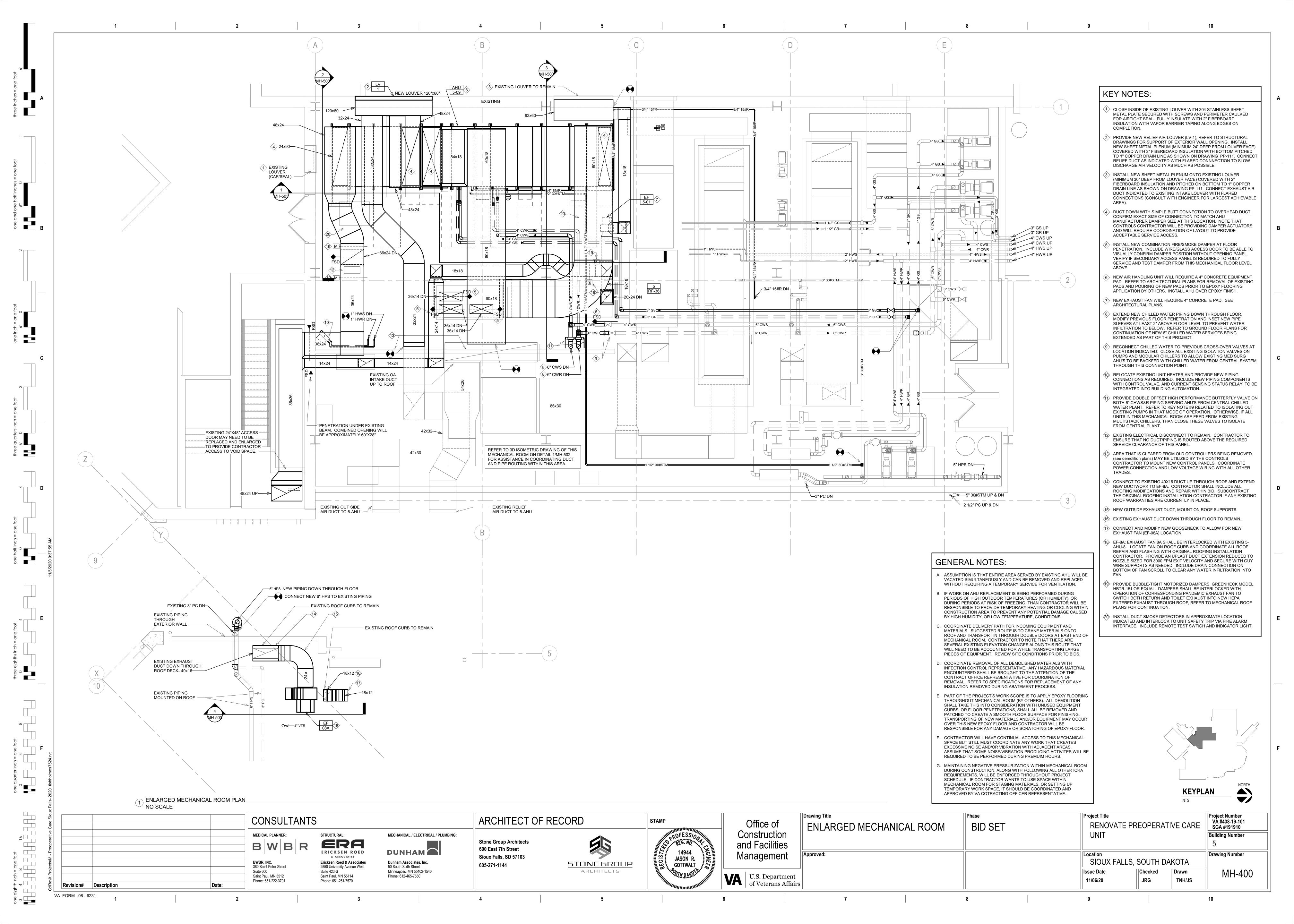


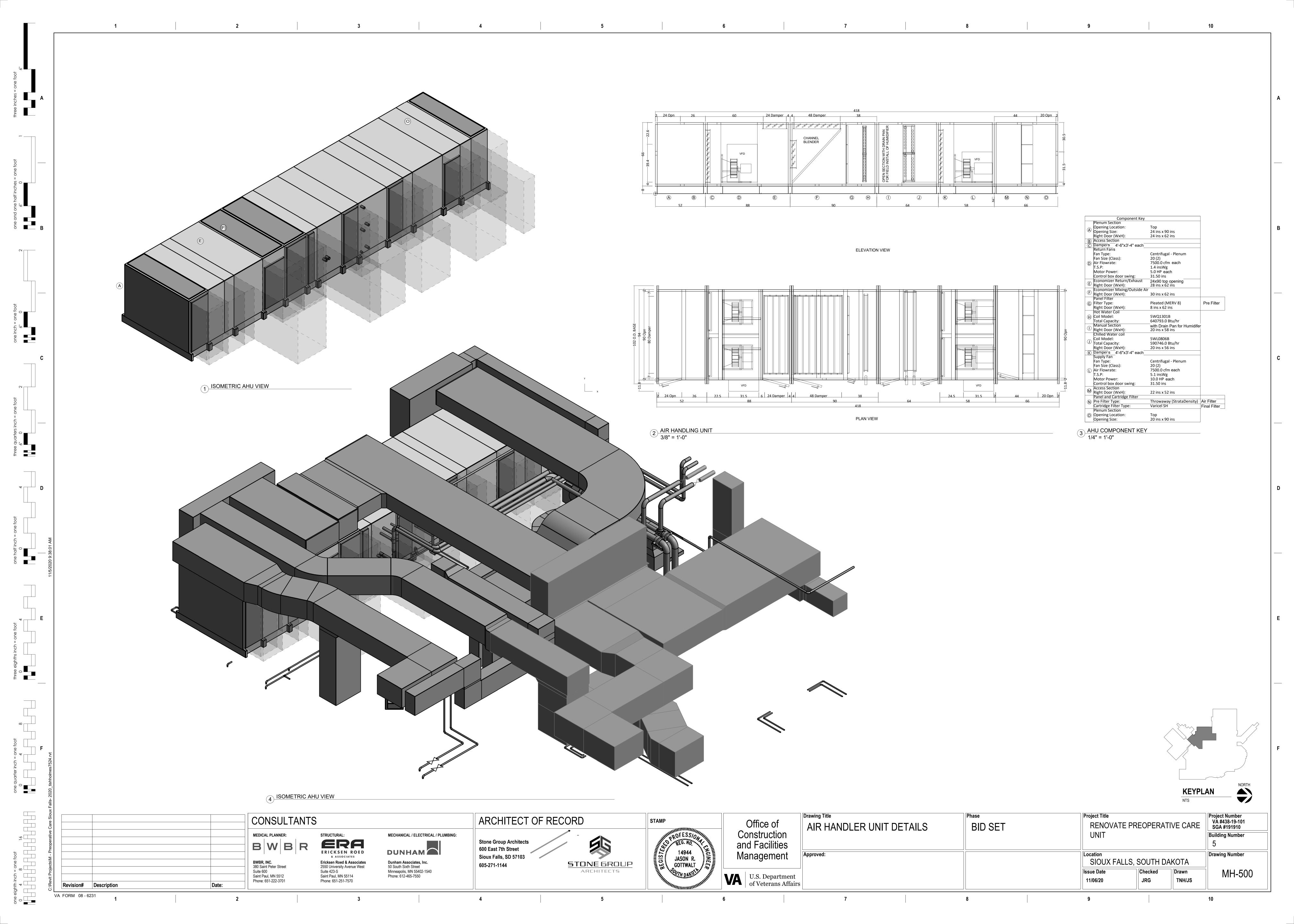


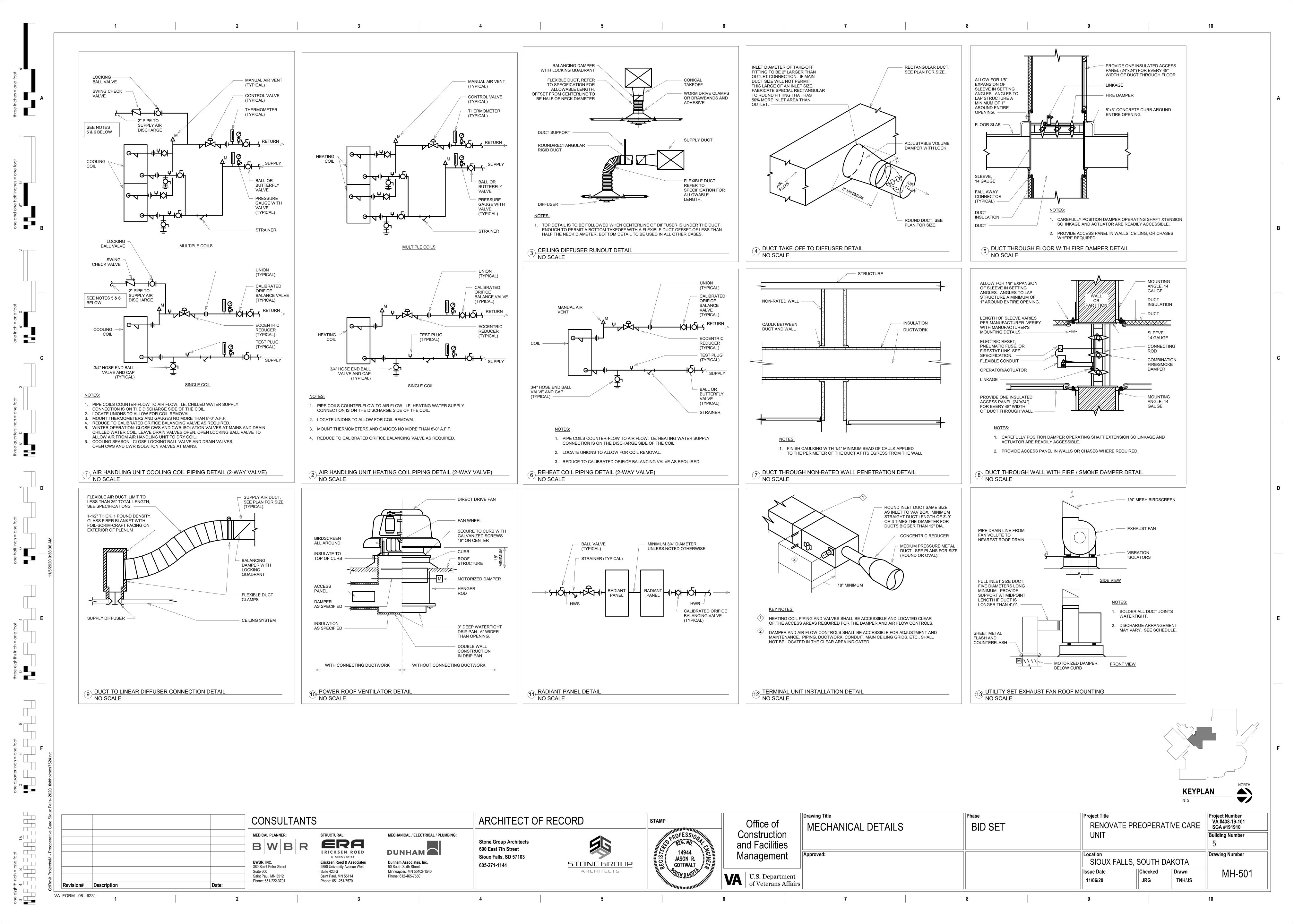


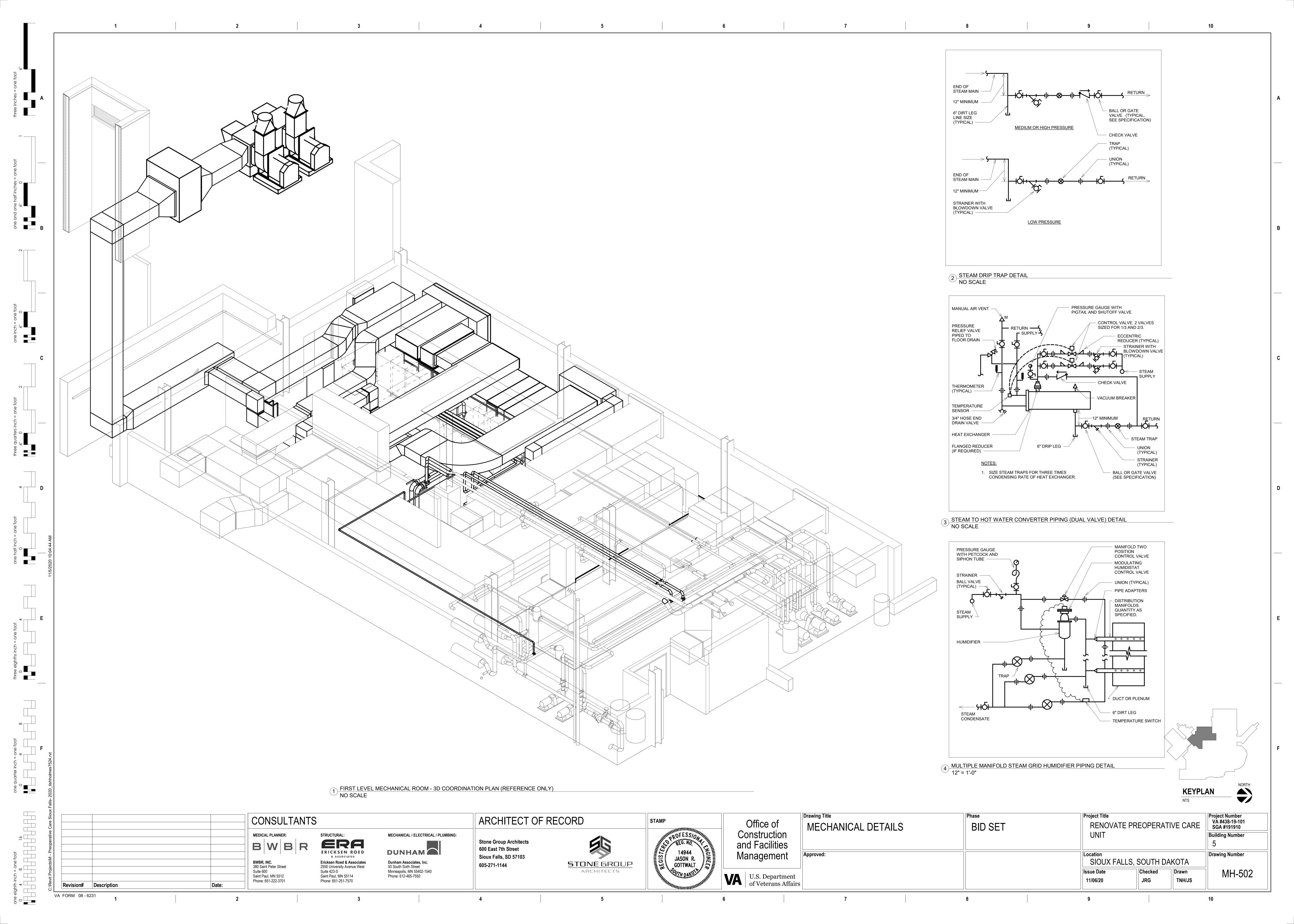


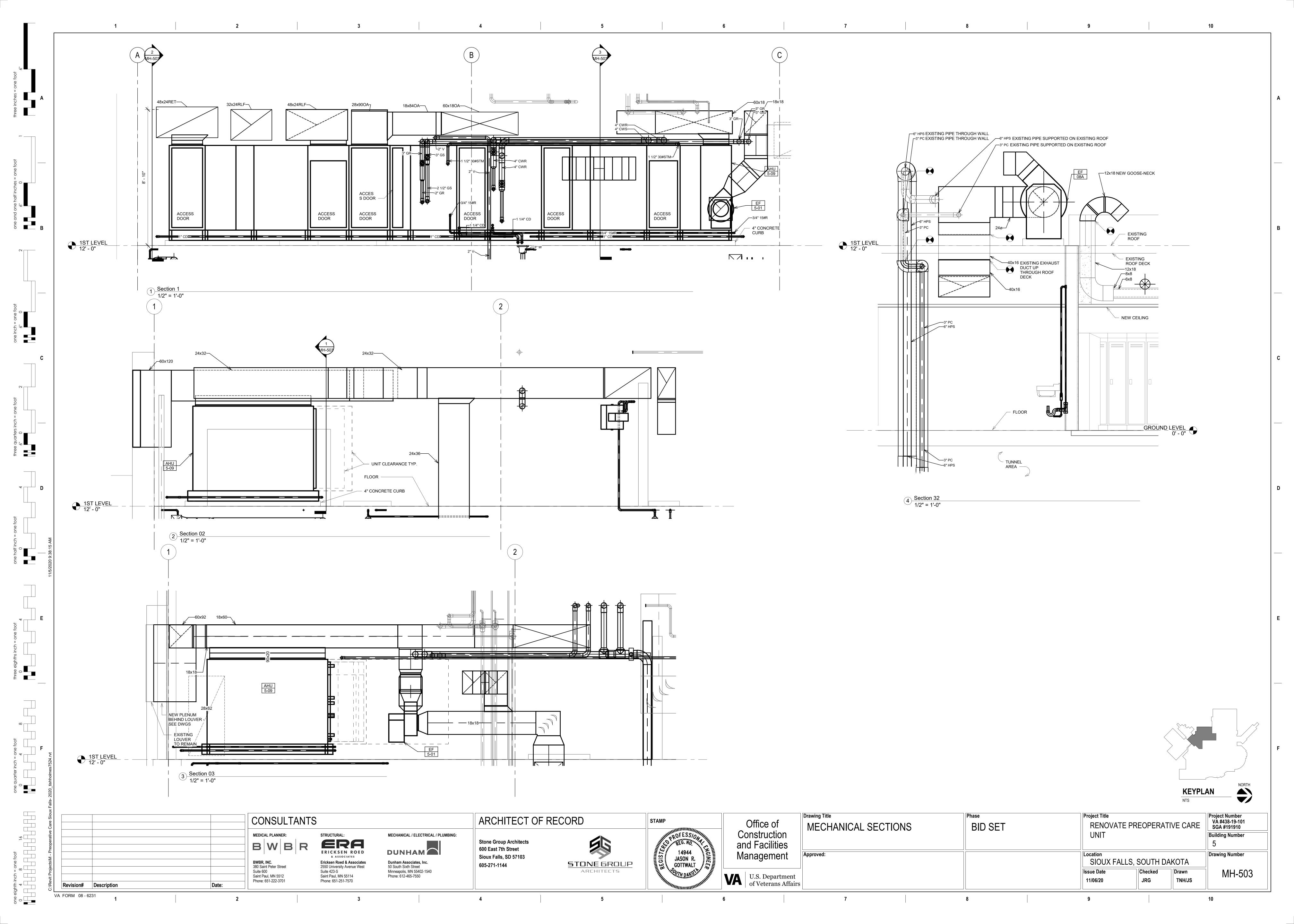


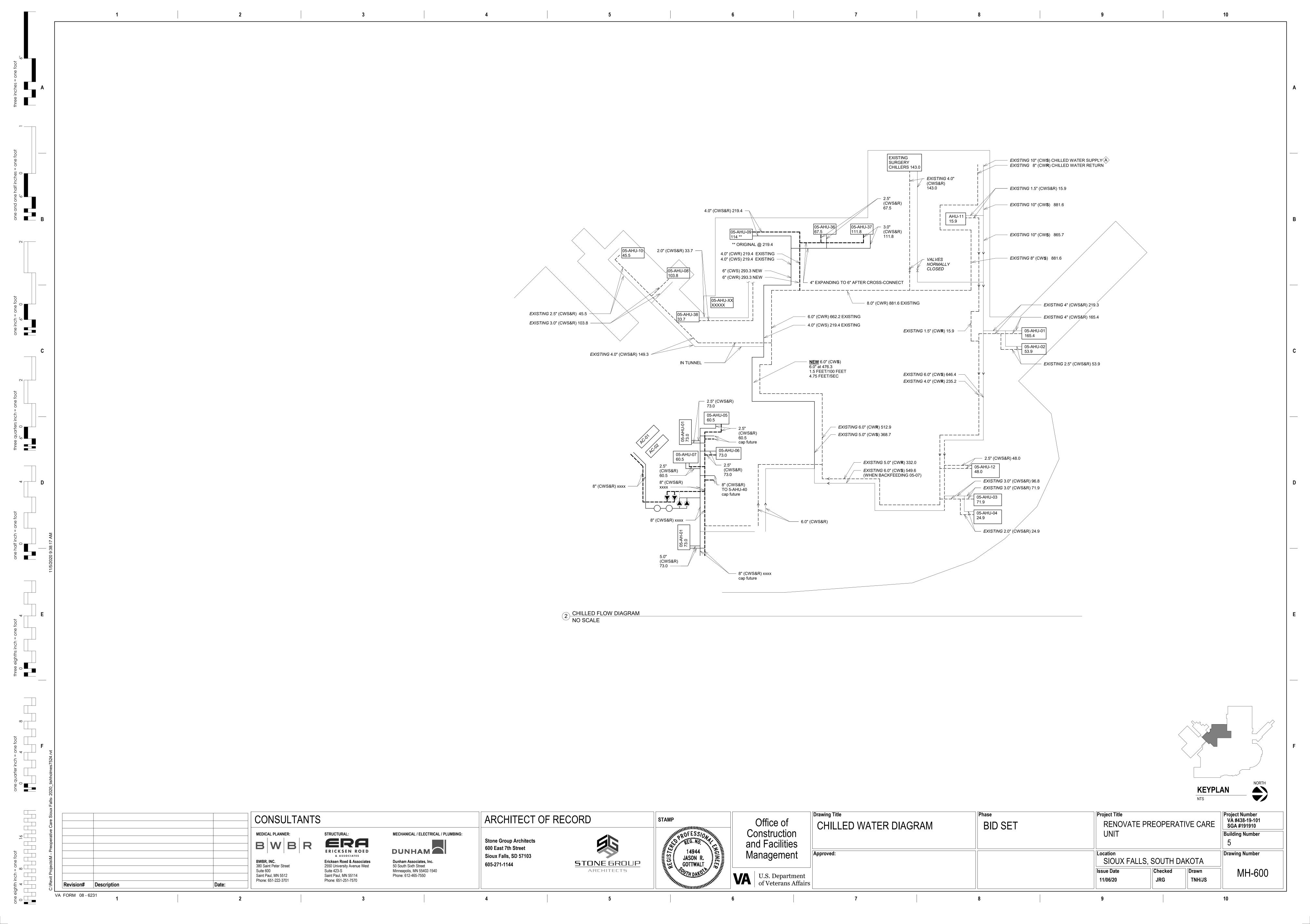












G. <u>COOLING COIL VALVE</u>: a. <u>NORMAL POSITION</u>: CLOSED. SEQUENCES OF OPERATION b. ACTION: INCREASING CHILLED WATER FLOW AS DISCHARGE AIR TEMPERATURE RISES THROUGH COOLING PROPORTIONAL BAND PANDEMIC MODE: CHILLED WATER COIL IS OVERSIZED TO ACCOMODATE 100% OUTDOOR AIR. NO CHANGE IN SEQUENCING SHOULD BE A. FAN & PUMP MOTOR CONTRO VARIABLE AIR VOLUME BOX SCHEDULE - HEATING WATER a. <u>1-PHASE MOTORS START/STOP CONTRO</u> REQUIRED DURING THIS MODE OF OPERATION. WITH MAGNETIC STARTERS: CONTROL RELAY CONTACTS WIRED THROUGH "AUTO" LEG OF HAND-OFF-AUTO SWITCH IN CONTROL CIRCUIT H. PREHEAT COIL VALVE MECHANICAL (233600) OF MAGNETIC STARTER FURNISHED UNDER DIVISION 16 OR WITH EQUIPMENT. a. NORMAL POSITION: OPEN WITHOUT MAGNETIC STARTERS: CONTACTOR, CONTROL RELAY, THERMOSTAT, MANUAL START/STOP STATION, OR OTHER DEVICE b. ACTION: INCREASING GLYCOL FLOW RATE TO FULL FLOW AS DISCHARGE AIR TEMPERATURE FALLS THROUGH HEATING PROPORTIONAL BAND. APPROPRIATE FOR SEQUENCE OF OPERATION WITH CONTACTS RATED FOR LOAD TO CONTROL MOTOR. E. PANDEMIC MODE: PREHEAT COIL IS OVERSIZED TO ACCOMODATE 100% OUTDOOR AIR. NO CHANGE IN SEQUENCING SHOULD BE REQUIRED QUIPMENT MAXIMUM DURING THIS MODE OF OPERATION. TAG 3-PHASE MOTORS: GLYCOL % CFM UNIT SERVED WPD (FT) MANUFACTURER NUMBER OUTSIDE AIR ECONOMIZER CYCLE: ENABLED WHEN UNIT OUTSIDE AIR ENTHALPY IS BELOW RETURN AIR ENTHALPY SWITCH-OVER POINT MINUS A CONSTANT SPEED: VAV 9-01 .0 BTU/LB. DIFFERENTIAL, AND OUTSIDE AIR DRY-BULB TEMPERATURE IS BELOW SWITCH-OVER SET POINT MINUS A 2°F DIFFERENTIAL. THE OA START/STOP CONTROL: CONTROL RELAY CONTACTS WIRED THROUGH "AUTO" LEG OF HAND-OFF-AUTO SWITCH IN CONTROL CIRCUIT VAV 9-02 DESV OF MAGNETIC STARTER FURNISHED UNDER DIVISION 16 OR WITH EQUIPMENT. DAMPER SHALL HAVE AN ADJUSTABLE ABSOLUTE MINIMUM POSITION SET IN CONJUNCTION WITH THE BALANCE CONTRACTOR. VAV 9-03 0.35 **DESV** a. <u>SWITCH-OVER ENTHALPY SET POINT</u>: RETURN AIR ENTHALPY MINUS 1.0 BTU/LB
 b. <u>SWITCH-OVER TEMPERATURE SET POINT</u>: 58 °F.
 c. <u>ENTHALPY VALUE</u>: CALCULATED USING OUTSIDE AIR DRY-BULB AND RELATIVE HUMIDITY VALUES. ABNORMAL POWER PROTECTION: 3-PHASE POWER MONITORS. WIRE CONTROL CONTACTS IN SERIES WITH MOTOR START/STOP VAV 9-04 CONTROL RELAY CONTACTS. 3. ALARM: WIRE ALARM CONTACTS TO DDC SYSTEM POINTS SPECIFIED IN PART 2. VAV 9-05 180 4.5 DESV 5-AHU-09 FAILURE MODE: ECONOMIZER OFF. DAMPER POSTIONS: 4. SAFETIES: WIRE CONTACTS FOR SAFETY DEVICES SUCH AS FREEZE-PROTECTION THERMOSTATS, AND END SWITCHES IN SERIES WITH MOTOR START/STOP CONTROL RELAY CONTACTS. VAV 9-06 5-AHU-09 VAV 9-07 SMOKE DETECTOR OR FIRE ALARM INTERFACE: WIRE CONTACTS IN SERIES WITH MOTOR START/STOP CONTROL RELAY CONTACTS. OUTSIDE AIR DAMPER: MODULATE OPEN VAV 9-08 0.35 4.5 **RELIEF AIR DAMPERS: MODULATE OPEN** VERIFY LOCATION OF CONTACTS PROVIDED UNDER FIRE ALARM CONTRACT. 0.35 VAV 9-09 RETURN AIR DAMPER: MODULATE CLOSED SPEED CONTROLLER: AS SPECIFIED IN SECTION 232923 PANDEMIC MODE: ECOMONIZER SEQUENCING SHALL BE OVER-RIDDEN DURING PANDEMIC MODE WITH 100% OUTDOOR AIR VAV 9-10 MOTOR DISCONNECT AUXILIARY CONTACTS: WIRED TO PREVENT DRIVE OPERATION IF DISCONNECT IS OPEN • OUTSIDE AIR DAMPER: FULLY OPEN VAV 9-11 4.5 SAFETIES: WIRE CONTACTS FOR SAFETY DEVICES SUCH AS FREEZE-PROTECTION THERMOSTATS, AND END SWITCHES TO DISABLE RELIEF AIR DAMPERS: FULLY CLOSED VAV 9-12 RETURN AIR DAMPER: FULLY CLOSED VAV 9-13 4. SMOKE DETECTOR OR FIRE ALARM INTERFACE: WIRE CONTACTS TO DISABLE DRIVE. VERIFY LOCATION OF CONTACTS PROVIDED RETURN FAN BUBBLE TIGHT ISOLATION DAMPER: CLOSED VAV 9-14 PLUME EXHAUST FAN BUBBLE TIGHT ISOLATION DAMPER: OPEN SMOKE DAMPERS: PROVIDE WIRING FOR SMOKE DAMPERS AND COMBINATION FIRE/SMOKE DAMPERS PROVIDED UNDER THIS DIVISION VAV 9-15 J. MINIMUM OUTSIDE AIR DAMPER: 5-AHU-09 a. MODULATE DAMPER TO FULLY OPEN POSITION TO MAINTAIN MINIMUM AIRFLOW SETPOINT IN OCCUPIED MODE. DATA BASE GENERATION: COMPLETE WITH DYNAMIC GRAPHIC DISPLAYS AND ALARM ASSIGNMENTS VAV 9-16 PROVIDE END SWITCH TO PROVE DAMPER IS FULLY OPEN. TITUS VAV 9-17 **DESV** b. CLOSED IN SHUTDOWN MODE. 180 160 VAV 9-18 4.5 DESV K. RETURN AIR AND RELIEF AIR DAMPERS: CONTROLLED TO REGULATE OUTSIDE AIR FLOW RATE TO SATISFY DEMANDS OF DISCHARGE AIR 2.01 AIR HANDLING UNIT OPERATING SEQUENCE (FOR 05-AHU-09) 160 VAV 9-19 SYSTEMS' PERFORMANCE INTENT: THIS AHU PROVIDES VAV CONTROL FOR OCCUPIED GROUND FLOOR PREOPERATIVE AND ASSOCIATED AREAS TEMPERATURE CONTROL LOOP (OUTSIDE AIR ECONOMIZER) AND MINIMUM OUTSIDE AIR FLOW RATE CONTROL LOOP. MMEDIATELY ADJACENT TO. AHU IS EQUIPPED WITH CHILLED WATER COOLING COILS, GLYCOL HEATING COILS, FILTER SECTIONS, MIXING BOXES, a. <u>RETURN AIR DAMPER NORMAL POSITION</u>: OPEN. VAV 9-20 b. RELIEF AIR DAMPERS NORMAL POSITION: CLOSED. HUMIDIFIERS, SUPPLY FAN ARRAYS, AND RETURN FAN ARRAY AND OTHER ELEMENTS AS SHOWN ON THIS DRAWING. UNITS SHALL HAVE VARIABLE VAV 9-21 c. OUTSIDE AIR FLOW RATE: MAINTAINED ABOVE LOW LIMIT SET POINT BY POSITIONING RETURN AIR AND RELIEF AIR DAMPERS WHEN UNIT IS VOLUME FLOW WITH CONSTANT MINIMUM OUTDOOR AIR INTAKES BASED ON SCHEDULED AIRFLOWS SHOWN ON DRAWINGS (EXCEPT IN VAV 9-22 ECONOMIZER MODE). VAV 9-23 ACTION: INCREASING OUTSIDE AIR AS FLOW RATE FALLS THROUGH DEADBAND AROUND SET POINT INTO PROPORTIONAL BAND. NETWORK ARCHITECTURE: AIR HANDLING UNIT CONTROLLER, SUPPLY FAN MOTOR SPEED CONTROLLER, AND RETURN FAN MOTOR SPEED TITUS VAV 9-24 0.35 4.5 **DESV** CONTROLLER CONNECTED VIA COMMON SECONDARY CONTROL NETWORK SUPERVISED BY A MASTER CONTROL UNIT. • <u>INTEGRAL FUNCTION</u>: ADDED TO CONTROL LOOP TO ELIMINATE PROPORTIONAL BAND OFFSET. VAV 9-25 0.35 525 DESV MINIMUM OUTSIDE AIR FLOW SET POINT: REFER TO EQUIPMENT SCHEDULES 0.35 SUPPLY FAN MSC HARDWARE POINT SUMMARY 180 160 UNIT SMOKE ISOLATION DAMPERS VAV 9-26 19.5 DESV a. CLOSED WHEN UNIT IS IN SHUTDOWN MODE. DESCRIPTION VAV 9-27 5-AHU-09 0.35 310 13.5 180 DESV AIR FLOW STATIONS (INTEGRAL WITH FAN ARRAY) **ANALOG INPUTS** b. PROVED OPEN VIA END SWITCHES BEFORE FAN OPERATION IS PERMITTED. SUPPLY FAN STATUS/SPEED ** ANALOG OUTPUT MOTOR SPEED CONTROLLERS (MULTIPLE) M. <u>SYSTEM SMOKE DAMPERS</u> a. CLOSED WHENEVER UNIT IS OFF. SUPPLY DUCT STATIC PRESSURE ANALOG INPUT DUCT MOUNTED PRESSURE SENSOR MECHANICAL NOTES HIGH LIMIT DUCT STATIC SAFETY ANALOG INPUT PRESSURE SENSOR b. PROVED OPEN VIA END SWITCHES BEFORE STARTING UNIT. ALL VAV BOXES SHALL BE PROVIDED WITH FIBER FREE CLOSED CELL FOAM LINER THAT IS FULLY WASHABLE THROUGH ACCESS PANEL PROVIDED BY MANUFACTURER.
PROVIDE TWO(2) ACCESS PANELS, ONE ON BOTH SIDES OF REHEAT COIL, FOR CLEANING PURPOSES. ACCESS PANELS SHALL HAVE CAM LATCHES, SCREWED PLATES ARE NOT ACCEPTABLE.
COORDINATE MOUNTING OF VAV CONTROLLERS, AND ASSOCIATED CONTROL BOX COVER, WITH CONTROLS CONTRACTOR. VERIFY LEFT/RIGHT HANDED SERVICE CONFIGURATION BASED ON SEVICE ACCESS VERIFIED ON SITE.
ALL REHEAHEAT COILS SHALL BE PROVIDE WITH PIPING COMPONENTS INDICATED ON DRAWING DETAILS.
PRE-PIPED PACKAGES, AND/OR COMBINATION VALVES, ARE ACCEPTABLE GIVEN THAT THERE ARE DEDICATED ISOLATION VALVES ON BOTH SIDES OF ASSEMBLY (COMBO VALVES SHOULD NOT BE USED FOR ISOLATION). PREFILTER ANALOG INPUT DIFFERENTIAL PRESSURE SENSOR a. DUCT SMOKE DETECTION, SPACE SMOKE DETECTION, HIGH PRESSURE SAFETIES, LOW PRESSURE SAFETIES AND LOW TEMPERATURE LIMIT FINAL FILTER **ANALOG INPUT** DIFFERENTIAL PRESSURE SENSOR TRIPS SHALL DE-ENERGIZE THE AIR HANDLING UNIT AND CLOSE THE OUTSIDE AIR AND EXHAUST AIR DAMPERS. MANUAL RESET OF THE SAFETIES INTERLOCK DIGITAL INPUTS MULTIPLE CONTACTS **DIGITAL INPUT** AHU CONTROLLER OUTPUT VFD ENABLE/OFF ** TRIPPED DEVICE SHALL BE REQUIRED TO RESTART THE SYSTEM b. WHEN THE OA TEMPERATURE IS BELOW 40° F (ADJUSTABLE) AND THE AIR-HANDLING UNIT HAS SHUT DOWN IN ALARM, THE HEATING AND COOLING VALVES SHALL FUNCTION AS DESCRIBED IN UNOCCUPIED MODE. FIELD INTERFACE
AIR FLOW STATIONS (INTEGRAL WITH FAN ARRAY) **COMMUNICATIONS FAILURE RESPONSES:** ANALOG INPUTS a. <u>UPON MSC COMMUNICATIONS FAILURE DETECTED BY MC</u> MOTOR SPEED CONTROLLERS (MULTIPLE) RETURN FAN STATUS/SPEED(X2) ANALOG OUTPUT AHU CONTROLLER: COMMANDED TO SHUTDOWN MODE BY MCU. RADIANT CEILING PANEL SCHEDULE - LINEAR FAN MOTOR SPEED CONTROLLERS: COMMANDED OFF BY AHU CONTROLLER. SAFETIES INTERLOCK **DIGITAL INPUT** MULTIPLE CONTACTS b. <u>UPON MCU COMMUNICATION FAILURE DETECTED BY AHU CONTROLLER</u>: MSC ENABLE/OFF DIGITAL INPUT AHU CONTROLLER OUTPUT MECHANICAL (238213) AHU CONTROLLER: INDEXED TO SHUTDOWN MODE. HARDWARE POINT SUMMARY <u>FAN MOTOR SPEED CONTROLLERS</u>: COMMANDED OFF BY AHU CONTROLLER. EQUIPMENT WIDTH NUMBER OF EWT LWT GLYCOL | WPD PER 100 FT | PER LINEAR MODEL **MECHANICAL** TEMPERATURE SENSOR ANALOG INPU MATERIAL (IN) PASSES (F) (F) GLYCOL TYPE % OF TUBING (FT) FT (BTUH) MANUFACTURER NUMBER NOTES RETURN AIR TEMPERATURE ANALOG INPUT TEMPERATURE SENSOR 2.02 DDC SUPPLY AIR VAV BOX WITH REHEAT RP A ALUMINUM 24 MIXED AIR TEMPERATURE ANALOG INPUT TEMPERATURE SENSOR RETURN AIR HUMIDITY **ANALOG INPUT** A. GENERAL: PRESSURE INDEPENDENT CONTROL OF UNIT SUPPLY AIR QUANTITY BETWEEN MAXIMUM AND MINIMUM VOLUME SET POINTS BY MECHANICAL NOTES: SUPPLY AIR HIGH LIMIT HUMIDITY ANALOG INPUT HUMIDISTAT MONITORING SPACE TEMPERATURE AND USING PID ALGORITHMS TO MAINTAIN SPACE TEMPERATURE SET POINTS BY MODULATING THE SUPPLY PROVIDE WITH MUD RING TO MATCH PANEL FINISH WHERE INSTALLED IN GYSUM CEILINGS. ANALOG INPUT LOW TEMPERATURE ALARM FRFFZFSTAT AIR DAMPER AND CONTROL VALVE(S) FOR REHEAT COIL. AIR FLOW STATION a. OCCUPIED/UNOCCUPIED MODE INDEXING: BY MASTER CONTROL UNIT, WITH TIMED OVERRIDE OF UNOCCUPIED CYCLE INITIATED BY MANUAL OUTSIDE AIR CFM ANALOG INPUT OUTSIDE AIR TEMPERATURE TEMPERATURE SENSOR SWITCH AT SPACE TEMPERATURE SENSOR/CONTROLLER. ANALOG INPUT EXHAUST PLENUM PRESSURE ANALOG INPUT PRESSURE SENSOR b. OPERATION: DIRECT ACTING CONTROL WITH ADJUSTABLE DEAD BAND BETWEEN HEATING AND COOLING SET POINTS COOLING COIL VALVE ANALOG OUTPUT **VALVE ACTUATOR** SPACE TEMPERATURE: COMPARED TO SET POINTS. GRILLES, REGISTERS, AND DIFFUSERS SCHEDULE • SUPPLY AIR DAMPER: MODULATED TO MAINTAIN FIXED AIRFLOW SET POINT (CONSTANT FLOW - REFER TO EQUIPMENT SCHEDULE FOR ANALOG OUTPUT **VALVE ACTUATOR** PREHEAT VALVE IFB COIL BYPASS DAMPER **ANALOG OUTPUT** DAMPER ACTUATOR OCCUPIED/UNOCCUPIED AIRFLOW RATES) MECHANICAL (233713) HUMIDIFIER CONTROL ANALOG OUTPUT VALVE ACTUATOR SUPPLY AIR VOLUME: LIMITED BY FIXED AIRFLOW VOLUME SET POINTS. • HEATING VALVE(S): MODULATED TO MAINTAIN SPACE TEMPERATURE HEATING SET POINT. ANALOG OUTPUT RETURN DAMPER DAMPER ACTUATORS DAMPER ACTUATORS APPLICATION | MOUNTING TYPE DESCRIPTION MATERIAL ACCESSORIES FINISH MANUFACTURER NUMBER ANALOG OUTPUTS RELIEF DAMPER DAMPER ACTUATORS SPACE TEMPERATURE COOLING **TMSA** STEEL SUPPLY LAYIN / SURFACE **CONE - 3 CONCENTRIC** #26 WHITE OCCUPIED: 70°F OR AS ESTABLISHED BY USER. SMOKE ISOLATION DAMPERS DIGITAL OUTPUT DAMPER ACTUATORS EGGCRATE -CODE B **ALUMINUM** 50F **EXHAUST** LAYIN / SURFACE #26 WHITE MSC ENABLE/OFF DIGITAL OUTPUT CONTROL RELAY SUPPLY SINGLE DEFLECTION STEEL #26 WHITE 301RL WALL 3,4,5 OCCUPIED: COOLING SET POINT MINUS DEAD BAND. ISOLATION DAMPERS STATUS DIGITAL INPUT **ACTUATOR END SWITCHES** RETURN LAYIN / SURFACE EGGCRATE -CODE B **ALUMINUM** #26 WHITE 1,2,3 A. <u>SPACE TEMPERATURE DEAD BAND</u>: 2°F d. UNOCCUPIED MODE: SUPPLY VAV BOX WILL REDUCE CONSTANT VOLUME AIRFLOW SETPOINT TO THE MINIMUM AIR POSITION INDICATED ON 350RL LOUVERED STEEL #26 WHITE TITUS **EXHAUST** WALL 3,4,5 FIELD INTERFACE QUIPMENT SCHEDULES. RETURN AIR VALVE WILL AUTOMATICALLY COMPENSATE TO MAINTAIN SAME DIFFERENTIAL PRESSURE SETTING FOR SINGLE DEFLECTION 350RL RETURN WALL STEEL #26 WHITE TITUS ITSIDE AIR RELATIVE HUMIDITY ANALOG INPUT **EXTERIOR RH SENSOR** EACH PARTICULAR SPACE. OUTSIDE AIR TEMPERATURE ANALOG INPUT TEMPERATURE SENSOR B. <u>DDC POINTS SUMMARY</u>: MECHANICAL NOTES: QUANTITY TYPE FIELD INTERFACE FIRE/SMOKE DAMPERS O/C DIGITAL OUTPUT CONTROL RELAY REFER TO ARCHITECTURAL CEILING PLAN FOR REQUIRED MOUNTING TYPE IN EACH SPACE. DAMPER END SWITCHES FIRE/SMOKE DAMPER STATUS DIGITAL INPUT REFER TO DRAWINGS FOR NECK SIZE AND CFM. REFER TO DRAWINGS FOR GRILLE SIZE AND CFM. * FANWALL, OR ACOUSTIFLO FAN ARRAY, SUPPLY FANS WILL HAVE MULTIPLE FANS OPERATING IN UNISON WITH SEPARATE CONTROL POINTS FOR SPACE TEMPERATURE ANALOG INPUT SPACE CONTROL MODULE 1/ZONE SUPPLY AIR FLOW RATE EACH INDIVIDUAL FAN MODULE. COORDINATE WITH MANUFACTURER SHOP DRAWING WIRING DIAGRAMS. 1/BOX VAV BOX AIR FLOW SENSOR COLOR SHALL BE SELECTED BY ARCHITECT FROM MANUFACTURERS STANDARD COLOR CHART. WITH BAKED ENAMEL FINISH. **ANALOG INPUT** REFER TO DRAWINGS FOR WALL MOUNTED EXHAUST GRILLS, COORDINATE EXACT HEIGHT WITH ENGINEER OF RECORD AND / OR VETERAN'S ADMINISTRATION REPRESENTATIVE. VAV BOX DUCT TEMP SENSOR SUPPLY DISCHARGE AIR TEMP 1/BOX ANALOG INPUT VAV BOX AIR DAMPER 1/BOX **ANALOG OUTPUT** VAV BOX DAMPER ACTUATOR OCCUPIED/UNOCCUPIED: THE OCCUPANCY MODE (OCCUPIED OR UNOCCUPIED) SHALL BE DETERMINED THROUGH A USER-ADJUSTABLE. SPACE TEMPERATURE SET POINT 1/ZONE ANALOG INPUT SPACE CONTROL MODULE GRAPHICAL, SEVEN-DAY SCHEDULE WITH A HOLIDAY SCHEDULE. THE START TIME SHALL BE ADJUSTED BY AN OPTIMUM START ROUTINE SUCH ANALOG OUTPUT HEATING VALVE(S) 1/BOX VALVE ACTUATOR(S) THAT THE UNIT IS STARTED AT THE LATEST POSSIBLE TIME TO ALLOW THE SPACE TEMPERATURES TO BE AT THE OCCUPIED SET POINT AT THE b. <u>UNOCCUPIED</u>: N/A - UNIT SHALL OPERATE IN OCCUPIED MODE 24/7. 2.03 ENVIRONMENTAL CONDITION MONITORING AND TREND LOG STORAGE SHUTDOWN: BY COMMAND FROM MASTER CONTROL UNIT VIA SECONDARY CONTROL NETWORK, AND BY LOCAL SAFETY CONTROLS. A. GENERAL: THE FOLLOWING ROOMS WILL BE CONTINUALLY MONITORED VIA THE BUILDING AUTOMATION SYSTEM. TREND LOGS FOR SPACE WHENEVER THE SUPPLY FAN IS DE-ENERGIZED, AS SENSED BY THE STATUS SWITCH, THE RETURN FAN SHALL BE DE-ENERGIZED, THE TEMPERATURE AND RELATIVE HUMIDITY WILL BE RECORDED EVERY 15 MINUTES (ADJUSTABLE) AND RECORDED TO A DATABASE WHERE DIRECTED OUTSIDE AND EXHAUST AIR DAMPERS SHALL BE CLOSED AND THE RETURN AIR DAMPER SHALL BE OPEN. THE HEATING AND COOLING VALVES SHALL BE CLOSED OR POSITIONED AS DESCRIBED BELOW BY VA IT REPRESENTATIVES FOR LONG TERM STORAGE AND RECORD KEEPING. THIS APPLIES TO THE FOLLOWING ROOMS; SUPPLY AND RETURN FAN OPERATION: a. STERILE STORAGE (SPS B. ROOM TEMPERATURE: RECEIVE INPUT FROM BAS THERMOSTATS TO INDICATE TEMPERATURE IN EACH SPACE AND ALARM AS FOLLOWS: a. CONTINUOUS DURING OCCUPIED MODE (REFER TO 'FAN SPEED' CONTROL SEQUENCES). SYSTEM STARTUP SEQUENCE: COMMANDED BY MCU. THE SUPPLY FAN SHALL BE ENERGIZED. THE SUPPLY AIR DUCT STATIC PRESSURE SET a. STERILE STORAGE: ALARM WHENEVER TEMPERATURE EXCEEDS 78 DEGREES (ADJ). POINT SHALL BE SLOWLY RAMPED FROM ZERO TO THE FINAL SET POINT VALUE WHEN THE SUPPLY FAN IS STARTED. THE AIR HANDLING UNIT C. RELATIVE HUMIDITY: RECEIVE INPUT FROM BAS HUMIDISTAT (MONITORING ONLY) TO INDICATE RH SUPPLY FAN SPEED SHALL MODULATE TO MAINTAIN DUCT STATIC PRESSURE SET POINT THE SUPPLY FAN SPEED SHALL NOT DROP BELOW 30% a. STERILE STORAGE: ALARM WHENEVER RH EXCEEDS 65% RH (ADJ) OR FALLS BELOW 25% RH (ADJ) (ADJUSTABLE) TO ASSURE ADEQUATE FAN MOTOR COOLING THE STATIC PRESSURE SET POINT SHALL BE RESET SO THAT AT LEAST ONE OF THE D. BAC INTEGRATION: ALL POINTS AVAILABLE SHALL BE INTEGRATED INTO THE CENTRAL BUILDING AUTOMATION SYSTEM THROUGH THE FACTORY VAV BOXES IS AT 90% (ADJUSTABLE) OF ITS CFM FLOW SET POINT AND MAINTAINING ITS SPACE TEMPERATURE SET POINT E. ROOM PRESSURIZATION (DURING PANDEMIC MODE ONLY): EACH PATIENT BED ROOM (X13) WILL BE PROVIDED WITH A DEDICATED ROOM . <u>UNIT SMOKE ISOLATION DAMPERS</u>: COMMANDED TO OPEN BY AHU CONTROLLER AND PROVED OPEN, VIA DAMPER END SWITCHES, BEFORE PRESSURE MONITOR, ALONG WITH PRESSURE MONITORS AT EACH OF THE TWO(2) ENTRY POINTS. THESE RPM'S SHALL BE TIED INTO BAS TO ENABLING FAN MOTOR SPEED CONTROLLERS. SYSTEM SMOKE DAMPERS: COMMANDED OPEN BY AHU CONTROLLER. CREATE TREND LOG DATA FILES IN SAME WAY AS TEMPERATURE AND HUMIDITY DESCRIBED ABOVE. RPM'S SHALL ALARM BOTH LOCALLY FAN MOTOR SPEED CONTROLLERS: ENABLED BY AHU CONTROLLER. THROUGH TOUCHSCREEN DISPLAY, AND PROVIDE REMOTE ALARM NOTIFICATIONS THROUGH BAS FOR IMMEDIATE RESPONSE. a. ALARM WHENEVER PRESSURE FALLS OUTSIDE OF RANGE FROM -0.01" W.C. TO A MAXIMUM OF -0.05" W.C. (ADJ) UPPLY FAN VFD: ENABLED BY AHU CONTROLLER. MOTOR SPEED CONTROLLERS: RAMP UP FAN SPEEDS TO ACHIEVE INITIAL SET POINTS DOWNLOADED FROM AHU CONTROLLER. (INSTALL b. PROVIDE SET TIME DELAY PRIOR TO ACTIVATING ALARM STATUS. INITIALLY SET FOR 120 SECOND (ADJ). UCT STATIC PRESSURE SENSOR 2/3 DOWN SUPPLY MAIN, VERIFY EXACT LOCATION WITH ENGINEER OF RECORD.) F. DDC POINTS SUMMARY: f. <u>SUPPLY DUCT STATIC PRESSURE SET POINT</u>: 1.0" W.G <u>SUPPLY FAN SPEED</u>: REGULATED BY ITS VFD TO MAINTAIN SUPPLY DUCT STATIC PRESSURE SET POINT DOWNLOADED FROM MCU. IN THE EVENT DESCRIPTION QUANTITY FIELD INTERFACE OF LOSS OF COMMUNICATION WITH ONE OR MORE VAV CONTROLLERS THE SYSTEM SHALL REVERT TO MODULATING THE FAN SPEED TO ROOM NAME/NUMBER ROOM PRESSURE CONTROL PANEL SEE DRAWINGS USER INPUT PRIMARY ROOM TEMPERATURE 1/SENSOR MAINTAIN THE DUCT STATIC PRESSURE SET POINT OF 1.0" W.G. (ADJUSTABLE). A HIGH LIMIT FUNCTION SHALL REDUCE THE SUPPLY FAN SPEED ANALOG INPUT TEMPERATURE SENSOR TO KEEP THE SUPPLY DUCT PRESSURE FROM EXCEEDING 3.0" INCHES OF WATER REGARDLESS OF THE DEMAND FROM THE VAV BOXES. THE PRIMARY HUMIDITY 1/SENSOR ANALOG INPUT HUMIDISTAT FINAL DUCT STATIC PRESSURE SET POINT SHALL BE DETERMINED IN CONSULTATION WITH THE BALANCING CONTRACTOR. WHEN THE SUPPLY **ANALOG INPUT** ROOM PRESSURE MONITOR ROOM PRESSURIZATION 13 RPM'S FAN IS DE-ENERGIZED THE STATIC SET POINT SHALL BE ZERO. 2 RPM'S WARD PRESSURIZATION ANALONG INPUT ROOM PRESSURE MONITOR a. OPERATING SET POINT: OPTIMIZED USING AN ALGORITHM THAT REPEATEDLY POLLS VAV BOX CONTROLLERS TO DETERMINE MINIMUM PRESSURE THAT WILL SATISFY AIR FLOW DEMANDS. INITIAL STATIC PRESSURE SETPOINT SHALL BE 1.5" W.C. (ADJ). 2.04 EXHAUST FAN CONTROL SEQUENCES SAFETY HIGH LIMIT: DIFFERENTIAL PRESSURE SWITCH ACROSS FAN WIRED TO VFD SAFETY INTERLOCK TO CAUSE FAN SHUTDOWN WHEN DIFFERENTIAL PRESSURE EXCEEDS SET POINT. A. EXHAUST FAN EF 5-01 IS AN UTILITY SET TYPE FANS SERVING THE PATIENT ROOM TOILET EXHAUSTS. RETURN FAN SPEED: REGULATED BY ITS VFD TO MAINTAIN A FAN SPEED OFFSET DURING MINIMUM OUTDOOR AIR MODE (WITH ALL VAV'S AT SHALL BE OPERATED CONTINUOUSLY AND OFF ONLY FOR MAINTENANCE AND REPAIR ONLY. INCLUDE A VFD FOR BALANCING PURPOSES AND SHOULD INTEGRATE INTO BAS. MINIMUM POSITION) OF THE AHU DOWNLOADED FROM MCU. A SECOND MEASURED SPEED OFFSET RECORDING (WITH ALL VAV'S AT MAXIMUM POSITION) WILL BE TAKEN BY BALANCING CONTRACTOR. CONTROLS CONTRACTOR SHALL TAKE BOTH THESE SPEED OFFSET READINGS AND BAS SHALL ALARM ON FAILURE OF EXHAUST FAN. SLIPPLY AIR DUCT MAIN SENSORS BAS SHALL INDICATE STATUS AND REMOTE ENABLE/DISABLE FUNCTIONALITY CREATE A LINEAR RELATIONSHIP DEPENDING ON VAV POLLING OF OVERALL AVERAGE AIRFLOW POSITIONS. IN THE EVENT OF LOSS OF - SUPPLY DUCT STATIC PRESSURE COMMUNICATION WITH ONE OR MORE VAV CONTROLLERS THE SYSTEM SHALL REVERT TO MODULATING THE FAN SPEED OFFSET FOR A FIXED PROVIDE WITH MOTORIZED DAMPER WITH END SWITCH TO PROOVE OPEN BEFORE STARTING FAN. CLOSE ON SHUT-DOWN. - SUPPLY DUCT AIRFLOW SENSOR OFFSET MINIMUM OUTDOOR AIR MODE VALUE. LASTLY, ANOTHER OPERATING POINT OFFSET WITH AHU IN FULL ECONOMIZER MODE WILL BE - HIGH LIMIT HUMIDITY SENSOR ESTABLISHED AND SET-UP BY CONTROLS CONTRACTOR FOR ADJUSTMENT OF SPEED OFFSET IN A LINEAR RELATIONSHIP WHILE TRANSITIONING B. EXHAUST FAN EF-08A INTO AIRSIDE ECONOMIZING. A HIGH LIMIT FUNCTION SHALL REDUCE THE RETURN FAN SPEED TO KEEP THE INCOMING PRESSURE FROM SAME AS SEQUENCE ABOVE, EXCEPT THIS FAN SERVES AN EXISTING AHU WILL NOT REQUIRE VFD FOR BALANCING. BALANCING CONTRACTOR EXCEEDING -2.5 INCHES OF WATER REGARDLESS OF THE DEMAND SIGNAL FROM BAS. THE FINAL STATIC PRESSURE SET POINT SHALL BE TO RESHEAVE AS REQUIRED DETERMINED IN CONSULTATION WITH THE BALANCING CONTRACTOR. WHEN THE SUPPLY FAN IS DE-ENERGIZED THE STATIC SET POINT SHALL BE PROVIDE WITH MOTORIZED DAMPER WITH END SWITCH TO PROOVE OPEN BEFORE STARTING FAN. CLOSE ON SHUT-DOWN. a. OPERATING SET POINT: WHENEVER THE SUPPLY FAN IS ENERGIZED, THE RETURN FAN SHALL BE ENERGIZED. THE RETURN FAN SPEED SHALL C. PLUME EXHAUST FANS, EF-40A AND EF-40B REDUNDANT FANS SHALL SEQUENCE IN A LEAD/LAG MODE OF OPERATION. VERIFY PRESSURES CAN BE MAINTAINED DURING SWITCHOVER. MODULATE TO MAINTAIN A FIXED VFD FREQUENCY OFFSET (ADJUSTABLE). BALANCING CONTRACTOR SHALL WORK CLOSELY WITH THE INCLUDE SEPARATE VFD'S FOR EACH FANS TO PROVIDE REDUNDANCY IN CASE OF FAILURE. CONTROLS CONTRACTOR TO DETERMINE THE FOLLOWING OPERATIONAL POINTS BELOW FOR PROGRAMMING THE LINEAR RELATIONSHIPS TO ADJUST FAN SPEED OFFSET DURING TRANSITION PERIODS BETWEEN 3 MODES OF OPERATION. BALANCING CONTRACTOR TO SET FANS AT FIXED SPEED BASED ON PANDEMIC MODE EXHAUST REQUIREMENTS. MINIMUM OUTDOOR AIR MODE (ALL VAV'S IN MAXIMUM POSITION): VFD OFFSET = • FANS SHALL ONLY ENGAGE AFTER END SWITCHES FROM BOTH BUBBLE TIGHT DAMPERS, AND CORRESPODNING FAN ISOLATION DAMPERS, ARE CONFIRMED TO BE IN CORRECT POSITIONS • FULL ECONOMIZER MODE OF OPERATION: VFD OFFSET = RETURN FAN BUBBLE TIGHT DAMPER: CLOSED SAFETY HIGH LIMIT: DIFFERENTIAL PRESSURE SWITCH ACROSS FAN WIRED TO MSC SAFETY INTERLOCK TO CAUSE FAN SHUTDOWN WHEN PLUME EXHAUST BUBBLE TIGHT DAMPER: OPEN FAN ISOLATION DAMPERS (AT DUPLEX FAN): OPEN ONE IN SERVICE, OTHER WOULD BE CLOSED. DIFFERENTIAL PRESSURE EXCEEDS SET POINT. BAS SHALL ALARM ON FAILURE OF EXHAUST FAN. <u>INITIAL SET POINT</u>: 3.0" W.G. BAS SHALL INDICATE STATUS AND REMOTE ENABLE/DISABLE FUNCTIONALITY PANDEMIC MODE: DURING PANDEMIC MODE ACTIVATION THE BUBBLE-TIGHT MOTORIZED DAMPER INTO RETURN FAN SECTION OF AHU SHALL CLOSE, AND CORRESPONDING MOTORIZED DAMPER TO ROOFTOP PLUME EXHAUST FAN SYSTEM SHALL ENGAGE (REFER TO PLUME EXHAUST SEQUENCE). SHUT-DOWN RETURN FAN COMPLETELY IN THIS MODE OF OPERATION. D. DDC MINIMUM POINTS SUMMARY (EACH FAN AS REQUIRED): DISCHARGE AIR TEMPERATURE SET POINT: THE HEATING COIL VALVE, MIXED AIR DAMPERS, AND COOLING COIL VALVE SHALL MODULATE IN TYPE (QUANTITY) SEQUENCE TO MAINTAIN SUPPLY AIR TEMPERATURE SET POINT. PROVIDE DEADBAND BETWEEN HEATING AND ECONOMIZER COOLING. FAN STATUS DIGITAL INPUT (X4) FAN MOTOR CURRENT SENSOR a. OUTPUT TO CONTROLLED DEVICES: RANGED FROM 0 TO 100% AS DISCHARGE TEMPERATURE VARIES THROUGH HEATING AND COOLING FAN START/STOP DIGITAL OUTPUT (X4) MOTOR STARTER OR VFD ANALOG OUTPUT (X3) VFD CONTROLLER FAN SPEED INTEGRAL FUNCTION: ADDED TO CONTROL LOOP TO ELIMINATE PROPORTIONAL BAND OFFSET. DAMPER ACTUATORS DIGITAL OUTPUT (X6) DAMPER ACTUATOR DISCHARGE AIR TEMPERATURE RESET UPWARD: IF MORE THAN 90% OF POLLED VAV BOXES ARE AT MINIMUM POSIITON (OR CONSTANT DAMPER POSITIONS DIGITAL INPUT (X6) END SWTICHES VOLUME VAV'S IN HEATING MODE) THAN ALLOW DISCHARGE AIR TEMPERATURE SET POINT TO ADJUSTED UP BY 1 DEGREE. INCLUDE ADEQUATE DELAY BETWEEN SETPOINT ADJUSTMENTS TO ACCOUNT FOR VAV REACTION TIME 3.01 CONTROL CONTRACTOR ASSISTANCE IN COMMISSIONING OF ALL SYSTEMS <u>DISCHARGE AIR TEMPERATURE RESET DOWNWARD:</u> IF MORE THAN 90% OF POLLED VAV BOXES ARE AT MAXIMUM POSITION (OR CONSTANT VOLUME VAV REHEAT COILS MORE THAN 75% CLOSED) THAN ALLOW DISCHARGE AIR TEMPERATURE SET POINT TO BE ADJUSTED DOWN BY 1 A. GENERAL: CONTROLS CONTRACTOR WILL BE REQUIRED TO FULLY PARTICIPATE IN ALL COMMISSIONING ACTIVITIES. COORDINATE SCHEDULE WITH BOTH COMMISSIONING AGENT AND MECHANICAL CONTRACTOR FOR TESTING OF ALL SYSTEMS EITHER NEWLY INSTALLED, OR SIGNIFICANTLY CONTROL DIAGRAM FOR 05-AHU-09 DEGREE. INCLUDE ADEQUATE DELAY BETWEEN SETPOINT ADJUSTMENTS TO ACCOUNT FOR VAV REACTION TIME. MODIFIED. AS PART OF THIS PROJECT. HUMIDITY CONTROL: MAINTAIN DEWPOINT TEMPERATURE OF DISCHARGE AIR AT OR BELOW 50 DEGREES. IF OUTDOOR AIR DEWPOINT IS HIGHER DURING ECONOMIZER THAN THE COOLING COIL SHALL BE ENABLED TO ACT SIMULTANEOUSLY TO CONTROL HUMIDITY LEVELS WITHIN PREOP AREAS. IF DISCHARGE AIR SETPOINT IS BEING RAISED DUE TO VAV BOX POLLING, LIMIT TEMPERATURE INCREASE ALLOWED TO MAINTAIN DISCHARGE AIR DEWPOINT BELOW 50 DEGREES. f. DEFAULT DISCHARGE AIR SETPOINT: 54 DEGREES **Drawing Title Project Title Project Number** CONSULTANTS ARCHITECT OF RECORD STAMP VA #438-19-101 Office of RENOVATE PREOPERATIVE CARE MECHANICAL SCHEDULES AND **BID SET** SGA #191910 Construction **MECHANICAL / ELECTRICAL / PLUMBING: Building Number** STRUCTURAL: MEDICAL PLANNER: SEQUENCE OF OPERATIONS ERA % Stone Group Architects and Facilities BWB 600 East 7th Street DUNHAM A 14944 ERICKSEN ROED **Drawing Number** Management Approved: Sioux Falls, SD 57103 & ASSOCIATES JASON R. SIOUX FALLS, SOUTH DAKOTA BWBR, INC. Ericksen Roed & Associate STONE GROUP **GOTTWALT** 605-271-1144 380 Saint Peter Street 2550 University Avenue West 50 South Sixth Street Minneapolis, MN 55402-1540 ARCHITECTS Drawn MH-601 Checked Suite 600 Suite 423-S U.S. Department of Veterans Affairs Saint Paul, MN 5512 Saint Paul, MN 55114 Phone: 612-465-7550 JRG TNH/JS Phone: 651-222-3701 Phone: 651-251-7570 Revision# Description VA FORM 08 - 6231

one eighth inch = one foot

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AIR HANDLING UNIT SCHEDULE MECHANICAL (237313, 237316, 237333, 237339) UNIT MOUNTED SOUND MIXING BOX | MINIMUM OUTDOOR | COOLING | HEATING | AIR | AIR AIR CFM COIL COIL FILTER PRE-FILTER FINAL-FILTER HUMIDIFIER AIR BLENDER ATTENUATOR FAN FAN MANUFACTURER NUMBER MECHANICAL NOTES YES 2535 CFM (see note #5) AHUCC AHUHC 3 BANKS AHUPF AHUSF AHUR AHU 5-09 AHUFF NONE DAIKIN 1,2,3,4 **GENERAL MECHANICAL NOTES:** A. REFER TO ELECTRICAL SECTION BELOW FOR CALCULATED SHORT-CIRCUIT CURRENT AT EQUIPMENT. REFER TO DRAWING MH-500 FOR DIMENSIONS OF AHU CASING AND REQUIRED DISTANCES BETWEEN COMPOENENTS. APPROVED EQUIVALENT MANUFACTURERS TO MATCH THESE DIMENSIONS AS CLOSE AS POSSIBLE. CONTRACTOR TO VERIFY ACCESSIBILITY OF COMPONENTS. PROVIDE WITH 4" CONCRETE EQUIPMENT PAD UNDER ENTIRE UNIT. FIELD VERIFY PLACEMENT OF EQUIPMENT PAD AND UPDATE ARCHITECTURAL AS-BUILT DRAWINGS WITH DIMENSIONAL INFORMATION.

AHU MANUFACTURER TO PROVIDE INSULATED BLADE DAMPERS AT EACH POINT OF DUCT CONNECTION (SUPPLY/RETURN/RELIEF/OA). DAMPERS TO BE TAMCO 9000 SERIES OR EQUAL. CONTROLS CONTRACTOR TO PROVIDE ACTUATORS FOR ALL DAMPERS.

BALANCING CONTRACTOR TO VERIFY FAN SPEED TRACKING REQUIRED TO MAINTAIN MINIMUM OUTDOOR AIR FLOW RATE AT BOTH MAXIMUM AND MINIMUM VAV ARIFLOW VOLUMES. REFER TO SEQUENCE OF OPERATION FOR ADDITIONAL INFORMATION.

DURING PANDEMIC MODE OUTDOOR AIR WILL INCREASE TO 100%. NOTE THAT BOTH PREHEAT AND COOLING COILS ARE BEING OVERSIZED FOR THIS 100% OUTDOOR AIR INTAKE CONDITION. **| AIR HANDLING UNIT - RETURN FAN SCHEDULE** MECHANICAL (233416) TYPE BHP AHU SERVED FANS CLASS | CFM PER FAN | TOTAL CFM | ESP (IN W.C.) | (IN W.C.) (YES/NO) RPM (BELT/DIRECT) MANUFACTURER NUMBER MECHANICAL NOTES AHU 5-09 SWSI / 1X2 | AIRFOIL / 2 | 7500 15000 1.25 YES 1864 3.45 1,2,3,4 GENERAL MECHANICAL NOTES: A. REFER TO ELECTRICAL SECTION BELOW FOR CALCULATED SHORT-CIRCUIT CURRENT AT EQUIPMENT. PROVIDE EACH FAN WITH DEDICATED VFD WITHIN A FULLY VENTILATED ENCLOSURE. VFD CONTROL PANEL SHALL BE REMOTELY MOUNTED ON OUTSIDE OF ENCLOSURE TO ALLOW VERIFICATION AND ADJUSTMENT WITHOUT OPENING ENCLOSURE.
PROVIDE EACH FAN WITH BACKDRAFT DAMPER TO ALLOW TO REMOVAL FROM SERVICE WITHOUT AFFECTING ADJACENT FANS. EACH FAN MOTOR SHALL ALSO HAVE A DEDICATED TOUCH-SAFE DISCONNECT SWITCH.
CHECK FAN ALIGNMENT AND VIBRATION ON START UP. FAN ARRAY IS NOT ANTICIPATED TO REQUIRE VIBRATION ISOLATION. SEE SPECIFICATION FOR ACCEPTABLE VIBRATION LIMITS.
COORDINATE WIRING CONNECTIONS BETWEEN VFD ENCLOSURE AND EACH INDIVIDUAL FAN MOTOR WITH ELECTRICAL CONTRACTOR TO ENSURE SCOPE OF WORK IS COVERED WITHIN BID. INCLUDE SHAFT GROUNDING KITS FOR ALL FANS. **ELECTRICAL** NEMA TYPE | INSTALLED BY LOCATION TAG VOLTAGE PHASE INSTALLED BY LOCATION CTRL WIRE BY AMPS/TYPE (AMPS) NUMBER CONDUIT/FEEDER SIZE ELECTRICAL NOTES AHU 5-9R1 5 HP VFD **INTEGRAL** INTEGRAL DIV 23 20A/3P DIV 26/DIV 26 AT UNIT DP (HN) 49,51,53 3/4"C. 3#10AWG & 1#10 GND VFD DP (HN) AHU 5-9R2 5 HP 480 V INTEGRAL INTEGRAL DIV 26/DIV 26 AT UNIT 3/4"C. 3#10AWG & 1#10 GND 44,46,48 **GENERAL ELECTRICAL NOTES:** CONTROLLER TYPES: A. WHEN THE CONTROLLER TYPE IS A VFD OR MAGNETIC STARTER, REFER TO THE VARIABLE FREQUENCY DRIVE CONTROLLER MAGS - MAGNETIC STARTER VFD - VARIABLE FREQUENCY MOTOR CONTROLLER SCHEDULE OR THE MAGNETIC STARTER SCHEDULE FOR MORE INFORMATION. MMS - MANUAL MOTOR STARTER (WITH OVERLOADS) MRS/MS - MOTOR RATED SWITCH (WITHOUT OVERLOADS) \mid B. MECHANICAL EQUIPMENT AND CORRESPONDING ELECTRICAL DISCONNECTS/CONTROLLERS SHALL HAVE A STANDARD SHORT-CP - CONTROL PANEL CIRCUIT CURRENT RATING HIGHER THAN THE CALCULATED VALUE SHOWN IN THIS SCHEDULE, DETAILED BY THE "CALCULATED AFC" COLUMN. **ELECTRICAL NOTES:** VARIABLE FREQUENCY MOTOR CONTROLLER SCHEDULE MECHANICAL/ELECTRICAL (230923) VFD BYPASS HARMONIC CONTROL ENCLOSURE MULTIPLE DAMPER SERVICE/FIRE PLENUM BYPASS TYPE | BYPASS CONTROL MOTOR STARTING IN MOTOR CONTROL FIGHTER VARIABLE TORQUE/ INPUT AC LINE LINE CONTROL MODE REQUIREMENTS ENCLOSURE TYPE RATED BRACING **BYPASS** (CONTACTOR/ TYPE (MANUAL/ BYPASS MODE (YES/NO) (YES/NO) CONSTANT TORQUE (YES/NO) (YES/NO) VFD) AUTOMATIC) JLL/REDUCED VOLTAGE) (YES/NO) (YES/NO) (YES/NO) (YES/NO) VOLTAGE PHASE (NEMA 1/4X/12) YES CONTACTOR AHU 5-9R1 VARIABLE REDUCED VOLTAGE MANUAL YES AHU 5-9R2 NEMA 1 VARIABLE CONTACTOR REDUCED VOLTAGE AHU 5-9S1 VARIABLE YES CONTACTOR MANUAL REDUCED VOLTAGE NEMA 1 **VARIABLE** YES CONTACTOR AHU 5-9S2 480 V MANUAL REDUCED VOLTAGE YES CONTACTOR VARIARI F MANUAL REDUCED VOLTAGE EF 08A 480 V NO EF 40A CONTACTOR NO NO 480 V NEMA 4 **VARIABLE** YES MANUAL REDUCED VOLTAGE NO YES CONTACTOR REDUCED VOLTAGE EF 40B 480 V 3 NEMA 4 **GENERAL NOTES:** A. FOR VFD'S WITH BYPASS PROVISIONS, SEPARATE MOTOR OVERLOAD PROTECTION REQUIRED FOR EACH MOTOR, WHEN IN THE BYPASS POSITION. B. VFD EQUIPMENT SHALL HAVE STANDARD SHORT-CIRCUIT CURRENT RATING HIGHER THAN THE CALCULATED VALUE SHOWN IN THE MOTOR SCHEDULE. C. VFDS TO HAVE INTEGRAL DISCONNECT UNLESS NOTED OTHERWISE. AIR HANDLING UNIT - HEATING COIL SCHEDULE - HEATING WATER MECHANICAL (238216) NUMBER | EACH COIL SIZE FINS PER FACE VELOCITY CAPACITY MODEL EQUIPMENT AHU MECHANICA APD (IN W.C.) | (F) | LWT (F) | GPM (W"xH") ROWS INCH EAT (F) LAT (F) GLYCOL % (FT) SERVED CFM OF COILS (FPM) (MBH) MANUFACTURER NUMBER NOTES AHUHC AHU 5-09 15000 27"X78" 2 8 30 / -15 72.6 / 66.1 513 0..17" 180 | 118 / 160.5 | 23.8 / 143.4 | PROPYLENE (FUTURE) | 35% (FUTURE) | 0.3' / 8.4' | 698 / 1330 DAIKIN 5WS0802B DUAL DATA IS SHOWN FOR FLOW AND CAPACITY VALUES FOR THE ENTIRE AHU (NOT PER COIL) AT BOTH NORMAL MINIMUM O.A. MODE / 100% OUTDOOR AIR INTAKE FOR PANDEMIC MODES OF OPERATION.
REFER TO PIPING DETAILS WITHIN THESE DRAWING FOR REQUIRED VALVE AND PIPING COMPOENENTS. PROVIDE EACH COIL WITH A CIRCUIT SETTER BALANCING VALVE TO EQUALIZE FLOW BETWEEN COIL SECTIONS.
INCLUDE TURBOSPIRAL OPTION, OR EQUAL, FOR ALL TUBING TO PREVENT LAMINAR FLOW CONDITION DURING MINIMUM OUTDOOR AIR INTAKE MODE OF OPERATION. AIR HANDLING UNIT - COOLING COIL SCHEDULE - CHILLED WATER MECHANICAL (238216) **SENSIBLE** NUMBER | EACH COIL SIZE VELOCITY | APD (IN | EWT **CAPACITY** CAPACITY MODEL MECHANICA ROWS | INCH | DB (F) | WB (F) | DB (F) | WB (F) | (FPM) | W.C.) | (F) | LWT (F) | GPM | GLYCOL TYPE | % | WPD (FT) | CFM OF COILS (W"xH") (MBH) SERVED (MBH) MANUFACTURER NUMBER NOTES 8 8 80.0 / 95 67 / 76 54.0 / 55.0 53.5 / 54.5 494 0.84" 44.0 54.9 / 54.1 114 / 220 PROPYLENE 35% 3.7 / 12.4 426 / 655 DAIKIN 5WM0808B 1,2,3 AHU 5-09 | 15000 619 / 1112 (FUTURE) | FUTURE MECHANICAL NOTES DUAL DATA IS SHOWN FOR FLOW AND CAPACITY VALUES FOR THE ENTIRE AHU (NOT PER COIL) AT BOTH THE NORMAL MINIMUM O.A. MODE / 100% OUTDOOR AIR INTAKE FOR PANDEMIC MODES OF OPERATION.
PROVIDE COIL WITH 304 STAINLESS STEEL CASING AND SUPPORT RACK. DRAIN PAN SHALL BE DOUBLE SLOPED AND CONSTRCUTED OF 316 STAINLESS STEEL OF HEAVY ENOUGH GAUGE TO NOT 'OIL CAN' DEFLECT AT FULL SPAN.
REFER TO PIPING DETAILS WITHIN THESE DRAWINGS FOR REQUIRED VALVES AND PIPING COMPONENTS. EACH COIL SHALL BE PROVIDED WITH INDIVIDUAL CIRCUIT SETTER BALANCING VALVES SO THAT FLOW IS EQUALLY DISTRIBUTED TO EACH COIL SECTION. AIR HANDLING UNIT - SUPPLY FAN SCHEDULE MECHANICAL (233416) TYPE CLASS | CFM PER FAN | TOTAL CFM | ESP (IN W.C.) (YES/NO) FAN RPM BHP MANUFACTURER NUMBER MECHANICAL NOTES TAG AHU SERVED FANS (BELT/DIRECT) W.C.) (IN) YES AHU 5-09 2375 AHUSF SWSI / 1x2 | AIRFOIL / 2 7500 1,2,3,4

GENERAL MECHANICAL NOTES:

A. REFER TO ELECTRICAL SECTION BELOW FOR CALCULATED SHORT-CIRCUIT CURRENT AT EQUIPMENT

PROVIDE EACH FAN WITH DEDICATED VFD WITHIN A FULLY VENTILATED ENCLOSURE. VFD CONTROL PANEL SHALL BE REMOTELY MOUNTED ON OUTSIDE OF ENCLOSURE TO ALLOW VERIFICATION AND ADJUSTMENT WITHOUT OPENING ENCLOSURE.
PROVIDE EACH FAN WITH BACKDRAFT DAMPER TO ALLOW TO REMOVAL FROM SERVICE WITHOUT AFFECTING ADJACENT FANS. EACH FAN MOTOR SHALL ALSO HAVE A DEDICATED TOUCH-SAFE DISCONNECT SWITCH.
CHECK FAN ALIGNMENT AND VIBRATION ON START UP. FAN ARRAY IS NOT ANTICIPATED TO REQUIRE VIBRATION ISOLATION. SEE SPECIFICATION FOR ACCEPTABLE VIBRATION LIMITS.
COORDINATE WIRING CONNECTIONS BETWEEN VFD ENCLOSURE AND EACH INDIVIDUAL FAN MOTOR WITH ELECTRICAL CONTRACTOR TO ENSURE SCOPE OF WORK IS COVERED WITHIN BID. INCLUDE SHAFT GROUNDING KITS WITH ALL FANS.

ELECTRICAL

ELECTRICAL NOTES:

VA FORM 08 - 6231

one eighth inch = one foot

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FURNISHED BY FURNISHED BY/ **FUSE SIZE** LOCATION CTRL WIRE BY HP/LOAD | VOLTAGE | PHASE | TYPE INSTALLED BY (AMPS) NEMA TYPE | INSTALLED BY PANEL NUMBER CONDUIT/FEEDER SIZE **ELECTRICAL NOTES** AHU 5-9S1 VFD 10 HP 480 V 3 INTEGRAL INTEGRAL **DIV 23** 40A/3P DIV 26/DIV 26 AT UNIT DP (HN) 38,40,42 1"C. 3#8AWG & 1#10 GND VFD INTEGRAL INTEGRAL DIV 26/DIV 26 AHU 5-9S2 10 HP | 480 V | 3 DIV 23 40A/3P AT UNIT DP (HN) 1"C. 3#8AWG & 1#10 GND

GENERAL ELECTRICAL NOTES:

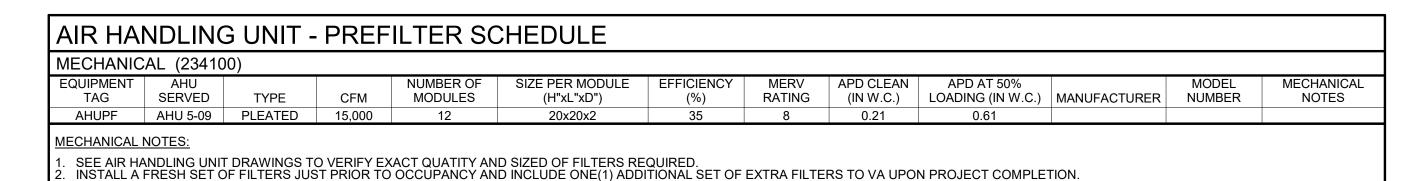
A. WHEN THE CONTROLLER TYPE IS A VFD OR MAGNETIC STARTER, REFER TO THE VARIABLE FREQUENCY DRIVE CONTROLLER

SCHEDULE OR THE MAGNETIC STARTER SCHEDULE FOR MORE INFORMATION. B. MECHANICAL EQUIPMENT AND CORRESPONDING ELECTRICAL DISCONNECTS/CONTROLLERS SHALL HAVE A STANDARD SHORT-CIRCUIT CURRENT RATING HIGHER THAN THE CALCULATED VALUE SHOWN IN THIS SCHEDULE, DETAILED BY THE "CALCULATED AFC" COLUMN.

VFD - VARIABLE FREQUENCY MOTOR CONTROLLER MRS/MS - MOTOR RATED SWITCH (WITHOUT OVERLOADS) MMS - MANUAL MOTOR STARTER (WITH OVERLOADS) CP - CONTROL PANEL

ARCHITECT OF RECORD

14938 CURTIS D. BARLAGE



MECHANIC			<u>- 1 1197</u>		R SCHEDU	<u>LL</u>						
EQUIPMENT	AHU	,		NUMBER OF	SIZE PER MODUL	-	MERV	APD CLEAN	APD AT 50%		MODEL	MECHANICAL
TAG	SERVED	TYPE	CFM	MODULES	(H"xL"xD")	EFFICIENCY (%)	RATING	(IN W.C.)	LOADING (IN W.C.)	MANUFACTURER	NUMBER	NOTES
AHUFF	AHU 5-09	PLEATED	1500	12	20x20x12	90-95	14	0.54	1.02	AAF	VARICEL SH	1,2
MECHANICAL	NOTES:											

					STEAM	INLET STEAM		MANIFOLD		ABSORPTION			
QUIPMENT				EAT DB		PRESSURE	NUMBER OF	LENGTH	TUBE	DISTANCE			MECHANICAL
TAG	AHU SERVED	TYPE	CFM	(F)	(LBS/HR)	(PSIG)	MANIFOLDS	(IN)	SPACING (IN)	(FT)	MANUFACTURER	MODEL NUMBER	NOTES
AHUH	AHU 5-09	PRESSURIZED PAN	15000	60	150	15	1	SEE AHU	9"	<18"	DRISTEEM	ULTRASORB XV	1,2,3,4

FAN SC	CHEDULE											
MECHANIC	CAL (233413, 233416, 2	233423)										
EQUIPMENT						FAN	DRIVE	WHEEL	VFD			
TAG	APPLICATION	TYPE	CFM	ESP (IN W.C.)	BHP	RPM	TYPE	DIAMETER	(YES/NO)	MANUFACTURER	MODEL NUMBER	MECHANICAL NOTES
EF 5-01	GENERAL EXHAUST	UTILITY	2535	2.0"	1.35	1875	DIRECT	12.25"	YES	GREENHECK	15 USF-BI-300	1,2,3
EF 08A	R/E FOR AHU-08	UTILITY	4470	2.0"	2.42	1610	DIRECT	18.25"	YES	GREENHECK	18 USF-BI-300	1,2,3,4
EF 40A&B	PANDEMIC EXHAUST	DUAL PLUME FAN	16,000	4.0"	21.0	1850	BELT	27" (X2)	YES (X2)	GREENHECK	VECTOR-CD-27-TF2 (X2)	3,4,5,6,7

GENERAL MECHANICAL NOTES:

480 V

480 V

 λ . REFER TO ELECTRICAL SECTION BELOW FOR CALCULATED SHORT-CIRCUIT CURRENT AT EQUIPMENT. **MECHANICAL NOTES:**

EQUIPMENT

EF 08A

EF 40A

PROVIDE EACH NEW EXHAUST FAN WITH A VFD FOR BALANCING PURPOSES. (NOTE THAT EF-08A WILL BE CONNECTED TO PREVIOUS CONTROL SIGNAL FROM AHU-08)
PROVIDE FANS WITH POWDER COATED ENAMEL FINISH FOR BOTH EXTERIOR AND INTERIOR APPLICATIONS. FURNISH WITH DRAIN LINE ON BOTTOM OF SCROLL WITH CAPPED CONNECTION FOR WATER INFILTRATION.
PROVIDE EACH FAN WITH SRING TYPE VIBRATION ISOLATORS. INTERIOR FAN SHALL BE MOUNTED ON CONCRETE HOUSEKEEPING PAD AND EXTERNAL FAN MOUNTED ON ROOF RAILS AS REQUIRED.
PROVIDE WEATHER RESISTANT MOTOR HOUSING. VFD SHALL BE REMOTE MOUNTED ON FLOOR BELOW IN AN ACCESSIBLE LOCATION.
PROVIDE PLUME FAN IN A DUAL FAN CONFIGURATION WITH SHARED INLET PLENUM AND BYPASS AIR DAMPERS. TOTAL AIRFLOW WITH BYPASS AIR SHALL BE APPROXIMATELY 24,000 CFM TO BE ADJUSTED BY BALANCING CONTRACTOR.
PROVIDE PLUME FAN WITH SPECIAL LABCOAT FINISH THAT INCLUDES AN EPOXY BASE COAT AND ELECTROSTATIC POWDER COATED HI-PRO POLYESTER TOPCOAT.
INCLUDE BOTH ISOLATION DAMPERS, AND BYPASS DAMPERS, INSTALLED AT FACTORY. CONTROLS CONTRACTOR TO PROVIDE ACTUATORS AND END SWITCHES FOR ALL DAMPERS AND CONFIRM POSITION PRIOR TO START-UP SEQUENCING.

ELECTRICAL CIRCUIT FURNISHED BY/ FUSE SIZE **FURNISHED BY** INSTALLED BY LOCATION PANEL NUMBER 1 1/2 HP VFD 50,52,54

DIV 23

DIV 23

DIV 23

20A/3P

80A/3P

80A/3P

EF 40B 30 HP 480 V **GENERAL ELECTRICAL NOTES:**

1 1/2 HP

30 HP

.. WHEN THE CONTROLLER TYPE IS A VFD OR MAGNETIC STARTER, REFER TO THE VARIABLE FREQUENCY DRIVE CONTROLLER

INTEGRAL

INTEGRAL

INTEGRAL

SCHEDULE OR THE MAGNETIC STARTER SCHEDULE FOR MORE INFORMATION. . MECHANICAL EQUIPMENT AND CORRESPONDING ELECTRICAL DISCONNECTS/CONTROLLERS SHALL HAVE A STANDARD SHORT-CIRCUIT CURRENT RATING HIGHER THAN THE CALCULATED VALUE SHOWN IN THIS SCHEDULE, DETAILED BY THE "CALCULATED AFC" COLUMN.

INTEGRAL

INTEGRAL

INTEGRAL

ELECTRICAL NOTES:

CONTROLLER TYPES: VFD - VARIABLE FREQUENCY MOTOR CONTROLLER MMS - MANUAL MOTOR STARTER (WITH OVERLOADS) CP - CONTROL PANEL

MAGS - MAGNETIC STARTER MRS/MS - MOTOR RATED SWITCH (WITHOUT OVERLOADS)

DIV 26/DIV 26 AT UNIT

AT UNIT

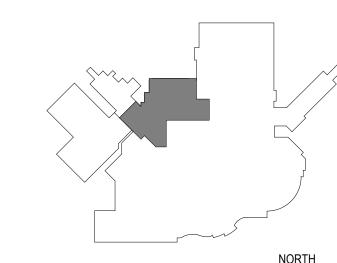
DIV 26/DIV 26

DP (HN)

DP QH2 55,57,59

DIV 26/DIV 26 AT UNIT DP QH2 62,64,66 1"C. 3#8AWG & 1#10 GND

20,22,24



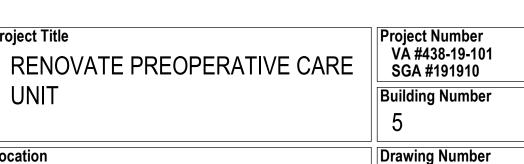
ELECTRICAL NOTES

3/4"C. 3#10AWG & 1#10 GND

3/4"C. 3#10AWG & 1#10 GND

1"C. 3#8AWG & 1#10 GND





Drawn

TNH/JS

Drawing Title

Office of Construction and Facilities Management

ECHANICAL/ELECTRICAL CHEDULES	Phase BID SET
oved:	

Revision# Description

CONSULTANTS MEDICAL PLANNER: STRUCTURAL: ERA BWB ERICKSEN ROED & ASSOCIATES BWBR, INC. Ericksen Roed & Associate 380 Saint Peter Street 2550 University Avenue West Saint Paul, MN 5512 Saint Paul, MN 55114

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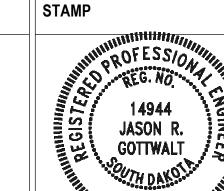
Phone: 651-222-3701

MECHANICAL / ELECTRICAL / PLUMBING: DUNHAM 50 South Sixth Street Minneapolis, MN 55402-1540

Phone: 612-465-7550

Stone Group Architects 600 East 7th Street Sioux Falls, SD 57103 605-271-1144





VA U.S. Department of Veterans Affairs

SIOUX FALLS, SOUTH DAKOTA Checked JRG

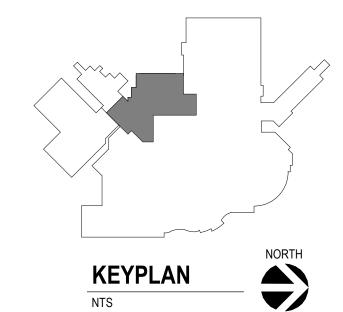
Project Title

MH-602

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ELECTRICAL SYMBOLS LEGEND **ELECTRICAL ABBREVIATIONS** A, AMP AMPERES MTG SYMBOL **DESIGNATIONS DESIGNATIONS DESIGNATIONS** SYMBOL ABOVE MOMENTARY CONTACT OR HT ABOVE GRADE MECHANICAL CONTRACTOR SYMBOL SCHEDULE NOTES **POWER** FIRE ALARM AUDIBLE ALARM MAIN CIRCUIT BREAKER BRANCH CIRCUIT PANEL ABOVE COUNTER MOTOR CONTROL CENTER VERIFY MANUAL PULL STATION THESE SYMBOLS COMPRISE A STANDARD LIST, NOT ALL SYMBOLS MAY ABOVE COUNTER HEIGHT MAN HOLE APPEAR ON THESE DRAWINGS. VERIFY HEAT DETECTOR (#=FIXED TEMP, R=RATE OF RISE) EQUIPMENT CABINET **ADDENDUM** MAIN LUG ONLY VERIFY SMOKE DETECTOR (P=PHOTOELECTRIC, I=IONIZATION) TRANSFORMER MOUNTING HEIGHTS INDICATED ARE STANDARD. DIMENSIONAL NUMBERS INDICATED AT DEVICES SHALL OVERRIDE THESE STANDARDS. MOUNTED AVAILABLE FAULT CURRENT MULTI MODE FIBER OPTIC DUCT MOUNTED PHOTOELECTRIC DETECTOR MOTOR OR MOTOR CONNECTION VERIFY HEIGHTS ARE TO THE CENTER OF THE DEVICE, UNLESS NOTED OTHERWISE ARC FAULT CIRCUIT INTERRUPTER MOTOR RATED SWITCH BEAM DET (B-T=TRANSMITTER, B-R=RECEIVER) VERIFY MOTOR CONTROLLER, STARTER OF VFD ABOVE FINISHED FLOOR MAIN SWITCHBOARD COMBINATION SMOKE DETECTOR AND ALARM WHEN BLOCK OR BRICK CONSTRUCTION IS USED, ADJUST MOUNTING COMBINATION STARTER & DISCONNECT SWITCH **VERIFY** HEIGHTS TO ALIGN DEVICE PLATES WITH RUNNING JOINT. AIR HANDLING UNIT FRS | REMOTE STATION - WALL/CEILING MOUNT VERIFY DISCONNECT SWITCH ALUMINUM NEUTRAL REFER TO SPECIFICATIONS FOR FURTHER INFORMATION. FRI REMOTE INDICATOR LAMP - WALL/CEILING MOUNT MOTOR RATED TOGGLE **ANTENNA** NORMALLY CLOSED FLOW SWITCH **VERIFY** MANUAL MOTOR STARTER SWITCH WITH THERMAL GENERAL AUTOMATIC TRANSFER SWITCH NATIONAL ELECTRICAL CODE TAMPER SWITCH **AUDIO VISUAL** NOT IN CONTRACT ⇒ ⇒ DUPLEX RECEPTACLE - WALL/CEILING MOUNT MONITOR MODULE HEAVY DASHED LINE WEIGHT INDICATES AMERICAN WIRE GUAGE NORMALLY OPEN EMERGENCY DUPLEX RECEPTACLE - WALL/CEILING MOUNT CONTROL MODULE EXISTING ITEM TO BE REMOVED. **BUILDING AUTOMATION SYSTEM** NOT TO SCALE FIRE/SMOKE DAMPER CONNECTION ⇔ SPLIT DUPLEX RECEPTACLE - WALL/CEILING MOUNT LIGHT SOLID LINE WEIGHT INDICATES EXISTING BELOW FINISHED CEILING ON CENTER DOOR HOLD OR DOOR HOLD CONNECTION VERIFY ITEM TO REMAIN. PULL BOX OR PUSHBUTTON EMERGENCY SPLIT DUPLEX RECEPTACLE -BOLTED PRESSURE SWITCH FIREMAN'S STATION - WALL MOUNT WALL/CEILING MOUNT HEAVY SOLID LINE WEIGHT INDICATES NEW CONDUIT OR CONTROLLED RECEPT PNEUMATIC ELECTRIC STROBE - WALL/CEILING MOUNT (# = CANDELA) ITEM OR NEW LOCATION. → SIMPLEX RECEPTACLE - WALL/CEILING MOUNT CABINET POWER FACTOR OF OF BELL - WALL/CEILING MOUNT REMOVE EXISTING ITEM EMERGENCY SIMPLEX RECEPTACLE - WALL/CEILING CIRCUIT BREAKER BELL/STROBE - WALL/CEILING MOUNT (# = CANDELA) REMOVE EXISTING ITEM AND RELOCATE AS INDICATED CLOSED CIRCUIT TV CF-CF CHIME - WALL/CEILING MOUNT 82" EXISTING ITEM TO REMAIN ♦ c♦ QUADPLEX RECEPTACLE - WALL/CEILING MOUNT CKT CIRCUIT PRIMARY CHIME/STROBE - WALL/CEILING MOUNT (# = CANDELA) NL NEW LOCATION FOR RELOCATED ITEM EMERGENCY QUADPLEX RECEPTACLE - WALL/CEILING CEILING POTENTIAL TRANSFORMER HORN - WALL/CEILING MOUNT NOTES & TAGS COMM COMMUNICATIONS RACEWAY HORN/STROBE - WALL/CEILING MOUNT (# = CANDELA) **CURRENT TRANSFORMER** RECEPT | RECEPTACLE SF-SF SPEAKER - WALL/CEILING MOUNT c昔 c# GFI RECEPTACLE, DUPLEX/QUADPLEX - CEILING MOUNT **EQUIPMENT IDENTIFICATION TAG - SEE EQUIPMENT SCHEDULES** CONTROL REFRIGERATOR SPEAKER/STROBE - WALL/CEILING MOUNT 82" DUPLEX RECEPTACLE - CONTROLLED - WALL/CEILING COPPER ROOF TOP UNIT c**⊖** c⊖ COMBINATION FIRE ALARM/MASS NOTIFICATION: SPEAKER/STROBE -XXX-X FEEDER SIZE TAG - SEE POWER RISER SCHEDULE DISTRIBUTED ANTENNA SYSTEM SECONDARY WALL/CEILING MOUNT(# = CANDELA) 18" SPECIAL PURPOSE RECEPTACLE - WALL/CEILING DEDICATED SERVICE GROUND BAR ELEC EQUIP CONNECTION TAG - SEE EQUIP SCHEDULE FIRE ALARM CONTROL PANEL - WALL MOUNT DOWN SINGLE MODE FIBER OPTIC KEYNOTE SIGNAL AND COMMUNICATIONS EMERGENCY SPECIAL PURPOSE RECEPTACLE -ELECTRICAL CONTRACTOR SPEAKER MISCELLANEOUS NOTE WALL/CEILING MOUNT ELECTRICAL GROUND BAR SHIELDED TWISTED PAIR ● FLOOR BOX - DEVICES AS INDICATED DATA BOX - WALL MOUNT (# = WIRE COUNTS) LIGHTING CONTROL SEQUENCE - SEE SCHEDULE 18" ELECTRIC OR ELECTRICAL SUBSTATION VOICE/DATA BOX - WALL MOUNT/FLOOR POWER POLE - DEVICES AS INDICATED **EMERGENCY SWITCH** BOX (# = WIRE COUNTS) CABLE TRAY TAG GROUND REFERENCE BUS - AS NOTED - WALL/CEILING VERIFY MOUNT X" W - WIDTH OF CABLE TRAY ELECTRICAL METALLIC TUBING G-G SWITCHBOARD VOICE BOX - WALL MOUNT (# = WIRE COUNTS) X" H - HEIGHT OF CABLE TRAY ENCLOSURE X' - X" AFF X' - X" AFF - MOUNTING HEIGHT OF CABLE TRAY (FROM FINISH DOUBLE GANG VOICE BOX - HIGH WALL MOUNT TELEPHONE FLOOR TO BOTTOM OF TRAY) **SWITCHES AND CONTROLS** ELECTRIC PNEUMATIC TELCOM | TELECOMMUNICATIONS ++> ++≥ | WIRELESS ACCESS POINT - WALL/CEILING MOUNT **EMERGENCY POWER OFF** RACEWAYS TELECOMMUNICATIONS GROUND BAR S- S SPEAKER - WALL/CEILING MOUNT SINGLE POLE TOGGLE SWITCH ELECTRIC WATER COOLER TMGB TELECOMMUNICATIONS MAIN GROUND BAR HORN SPEAKER - WALL MOUNT DOUBLE POLE TOGGLE SWITCH CONDUIT CONCEALED IN CEILING OR WALLS FUSE OR FUSED TAMPER RESISTANT VOLUME SWITCH - WALL MOUNT THREE WAY TOGGLE SWITCH CONDUIT CONCEALED IN THE FLOOR OR BELOW FIRE ALARM THERMOSTAT AUDIO JACK (M=MICROPHONE, A=AUXILIARY) FOUR WAY TOGGLE SWITCH CONDUIT EXPOSED ON THE CEILING OR WALLS FIRE ALARM ANNUNCIATOR PANEL WALL INTERCOM STATION (M=MASTER, R=REMOTE) TYPICAL IC⊳™ TOGGLE SWITCH - "a" INDICATES SWITCHING CONDUIT BURIED UNDERGROUND (# = DEPTH) FACP FIRE ALARM CONTROL PANEL UNDER COUNTER □- □ BUZZER - WALL/CEILING MOUNT PILOT LIGHT TOGGLE SWITCH CONDUIT WITH BEND DOWN FLOOR BOX UNDER FLOOR O BELL - WALL/CEILING MOUNT ILLUMINATED TOGGLE - TOGGLE SWITCH CONDUIT WITH BEND UP FIBER OPTIC UNDER GROUND - CHIME - WALL/CEILING MOUNT KEYED SWITCH CONDUIT WITH BUSHED END FIRE-SMOKE DAMPER #C- #C | CLOCK - WALL/CEILING MOUNT (# = DIAMETER) UNIT HEATER MOMENTARY CONTACT TOGGLE SWITCH CONDUIT WITH BREAK OR CONTINUATION FILM VIEWER **UNLESS NOTED OTHERWISE** PROJECTOR/VIDEO CAMERA/DOCUMENT TIMER SWITCH CIRCUIT HOME RUN G, GND GROUND CAMERA - WALL/CEILING MOUNT UNIVERSAL SERIAL BUS $\begin{array}{|c|c|c|c|}\hline L1 & - L1 & INDICAT \\\hline 1,3,5 & - NUMBER \end{array}$ - L1 INDICATES PANEL MULTI SWITCH, MULTI GANG BOX GENERAL CONTRACTOR UNSHIELDED TWISTED PAIR TV SYSTEM OUTLET - WALL/CEILING MOUNT DIMMER SWITCH (# = WATTAGE) GFEP GROUND FAULT EQUIPMENT PROTECTION VOLT OR VOLTAGE PULL BOX, SIZE AS NOTED AUDIO VIDEO SYSTEM OUTLET - WALL/CEILING MOUNT PUSH BUTTON SWITCH GFI, GFCI | GROUND FAULT CIRCUIT INTERRUPTER VOLT-AMP A/V SYSTEMS CONTROLLER - WALL MOUNT OCCUPANCY SENSOR - CLG MOUNT HAND HOLE VOLTS ALTERNATING CURRENT WIREWAY, DUCT BANK, OR FLOOR DUCT AS NOTED A/V MONITOR - WALL MOUNT OCCUPANCY SENSOR WALL SWITCH HAND OFF AUTO CABLE TRAY, TYPE/SIZE AS INDICATED VOLTS DIRECT CURRENT ANNUNCIATOR PANEL - WALL MOUNT VERIFY VERIFY PHOTO ELECTRIC CELL ISOLATED GROUND WATT, WIRE OR WALL PHONE LIGHTING SECURITY TIME CLOCK JUNCTION BOX WIRELESS ACCESS POINT CONTACTOR KILOVOLT WEATHERPROOF S- SECURITY - WALL MOUNT - TYPICAL 48" LIGHT FIXTURE ID - REFER TO LIGHT FIXTURE SCHEDULE RELAY VERIFY (SCHEDULE OVERRIDES SYMBOL ABBREVIATION) KILOVOLT-AMP EXISTING CR - CARD READER EP - EXIT PUSHBUTTON A - INDICATES LIGHT FIXTURE TYPE PUSH BUTTON STATION - BUTTONS AS INDICATED 48" KILOWATT TRANSFORMER # - INDICATES CIRCUIT NUMBER KP - KEYPAD M - MASTER STATION b - INDICATES SWITCHING KILOWATT-HOUR KS - KEY SWITCH PB - DURESS PUSHBUTTON LIGHT FIXTURE CIRCUIT TYPE S SECURITY - CEILING MOUNT - TYPICAL - NO HATCH INDICATES NORMAL CIRCUIT
- ANGLED HATCH INDICATES CRITICAL CIRCUIT RX - REQUEST TO EXIT DC - DOOR CONTACT - SOLID HATCH INDICATES LIFE SAFETY CIRCUIT ES - ELECTRIC STRIKE ODC - OVERHEAD DOOR CONTACT EL - ELECTRIC LOCK MS - MONITOR STRIKE TROFFER TYPE LIGHT FIXTURE, SIZE AS INDICATED -CEILING MOUNT MD - MOTION DETECTOR ML - MAGNETIC LOCK CHANNEL OR INDUSTRIAL, LENGTH AS INDICATED TH - POWER TRANSFER HINGE GB - GLASS BREAKER DETECTOR SECURITY CAMERA - WALL/CEILING MOUNT CHANNEL OR INDUSTRIAL WALL MOUNT, LENGTH AS INDICATED SECURITY PANEL - WALL MOUNT O ROUND DOWNLIGHT, RECESSED OR SURFACE MOUNT **NURSE CALL** SQUARE DOWNLIGHT, RECESSED OR SURFACE MOUNT CEILING WALL WASH FIXTURE OR TRACK HEAD N- NURSE CALL - WALL MOUNT - TYPICAL VERIFY WALL MOUNT FIXTURE OR SCONCE AI - AUXILIARY INPUT STATION D - DUTY STATION LINEAR SUSPENDED , LENGTH AS INDICATED ANN - ANNUNCIATOR PANEL E - EMERGENCY PULL STATION LINEAR RECESSED, LENGTH AS INDICATED **VERIFY BD - PATIENT BED STATION** M - MASTER STATION ROUND OR SQUARE PENDANT C - CODE BLUE STATION M1 - SECONDARY MASTER STATION TAPE OR ROPE LIGHT P - PATIENT STATION (ENHANCED) C/SA - CODE BLUE/STAFF ASSIST UNDER CABINET FIXTURE, LENGTH AS INDICATED COMBINATION STATION P1 - PATIENT STATION (BASIC) † TRACK FIXTURE, NUMBER OF HEADS AS INDICATED SA - STAFF ASSIST STATION C-B - CODE BABY STATION □ VANITY FIXTURE TV - PATIENT TV STATION C-B/SA - CODE BABY/STAFF ASSIST EMERGENCY BATTERY LIGHT - WALL/CEILING MOUNT COMBINATION STATION WF - WORK FLOW (TOUCH SCREEN) EXIT LIGHT, FILLED QUADRANT INDICATES FACES - WALL/CEILING MOUNT WF1 - WORK FLOW (4-BUTTON) CC - CALL CANCEL WF2 - PATIENT HEADWALL (4-BUTTON) O WALL PACK N++ LOCATOR ANTENNA FLAG OR FLOOD LIGHT *N- *ODME LIGHT - WALL/CEILING MOUNT (BLANK = 4 LIGHTS, 96" # = NUMBER OF LIGHTS, Z = ZONE INDICATOR LIGHTS) SITE LIGHTING POLE FIXTURE, ROUND/RECTANGLE HEAD - NUMBER OF HEADS INDICATED NURSE CALL PANEL - WALL MOUNT O 🛛 SITE LIGHTING ROUND OR SQUARE BOLLARD

	ELECTRICAL SHEET LIST
SHEET NUMBER	SHEET NAME
E-000	ELECTRICAL TITLE SHEET
ED-101	GROUND LEVEL LIGHTING DEMOLITION PLAN
ED-102	GROUND LEVEL POWER DEMOLITION PLAN
ED-103	GROUND LEVEL SYSTEM DEMOLITION PLAN
ED-112	FIRST LEVEL POWER AND SYSTEM DEMOLITION PLAN
EL-101	GROUND LEVEL LIGHTING PLAN
EP-101	GROUND LEVEL POWER PLAN
EY-101	GROUND LEVEL SYSTEMS PLAN
EP-111	FIRST LEVEL POWER PLAN
EY-111	FIRST LEVEL SYSTEMS PLAN
EE-142	FOURTH LEVEL ELECTRICAL PLAN
EE-301	ELECTRICAL RISERS
EE-302	ELECTRICAL RISERS
EE-501	ELECTRICAL DETAILS
EE-502	ELECTRICAL DETAILS
EE-503	ELECTRICAL DETAILS
EE-601	ELECTRICAL SCHEDULES
EE-602	ELECTRICAL SCHEDULES
EE-603	ELECTRICAL SCHEDULES



Project Number VA #438-19-101

Building Number

Drawing Number

E-000

Revision# Description VA FORM 08 - 6231

one eighth inch = one foot 0 4 8 16

CONSULTANTS STRUCTURAL: BWB & ASSOCIATES Saint Paul, MN 55114

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380 Saint Peter Street

Saint Paul, MN 5512

Phone: 651-222-3701

ERA ERICKSEN ROED Ericksen Roed & Associate 2550 University Avenue West Phone: 651-251-7570

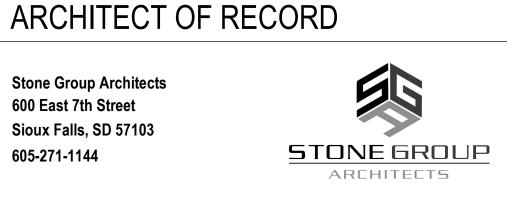
MECHANICAL / ELECTRICAL / PLUMBING: DUNHAM A 50 South Sixth Street Minneapolis, MN 55402-1540 Phone: 612-465-7550

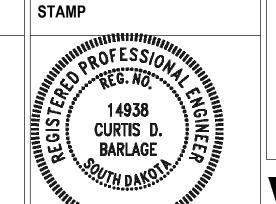
Stone Group Architects

Sioux Falls, SD 57103

600 East 7th Street

605-271-1144





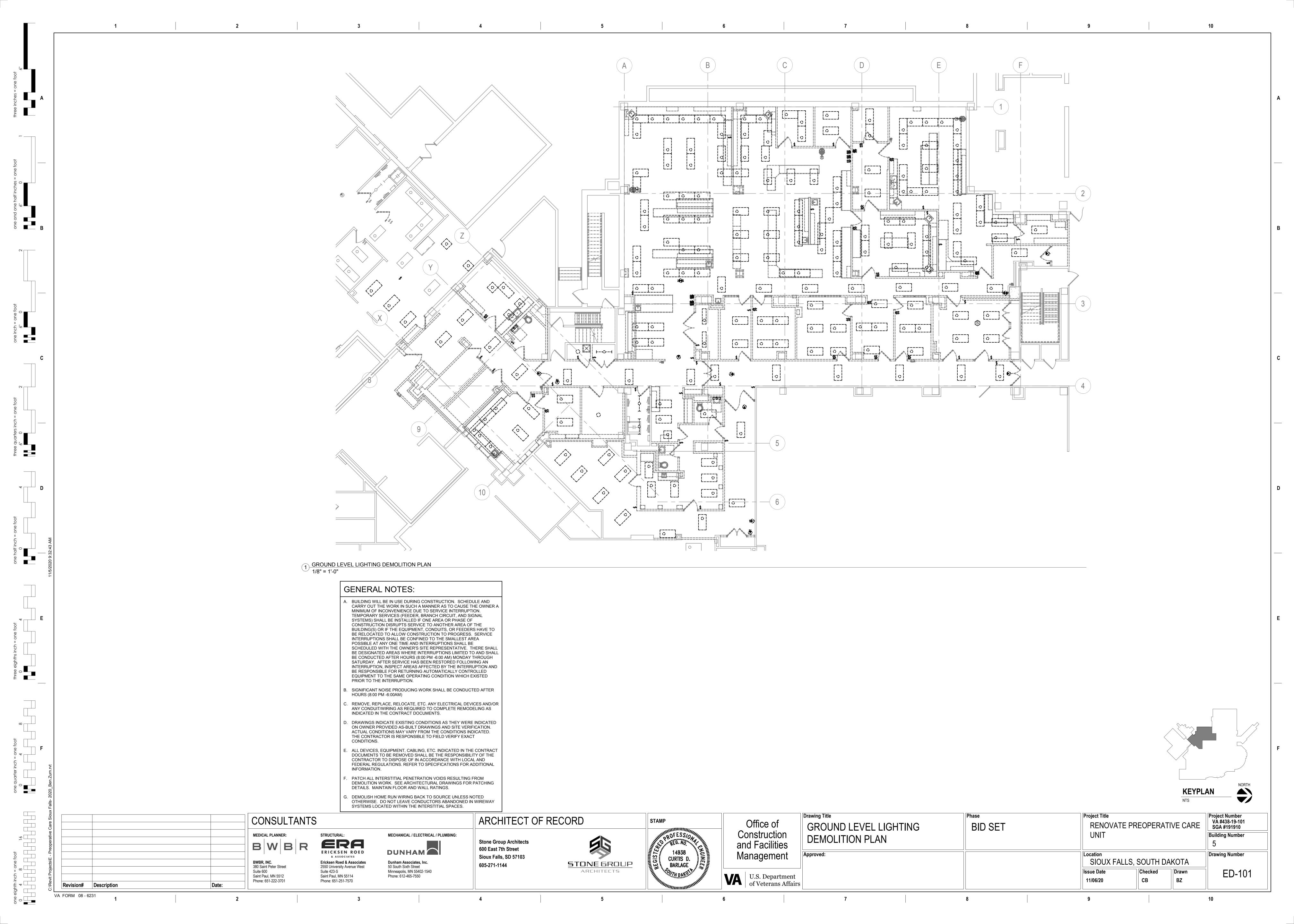
Office of Construction and Facilities Management

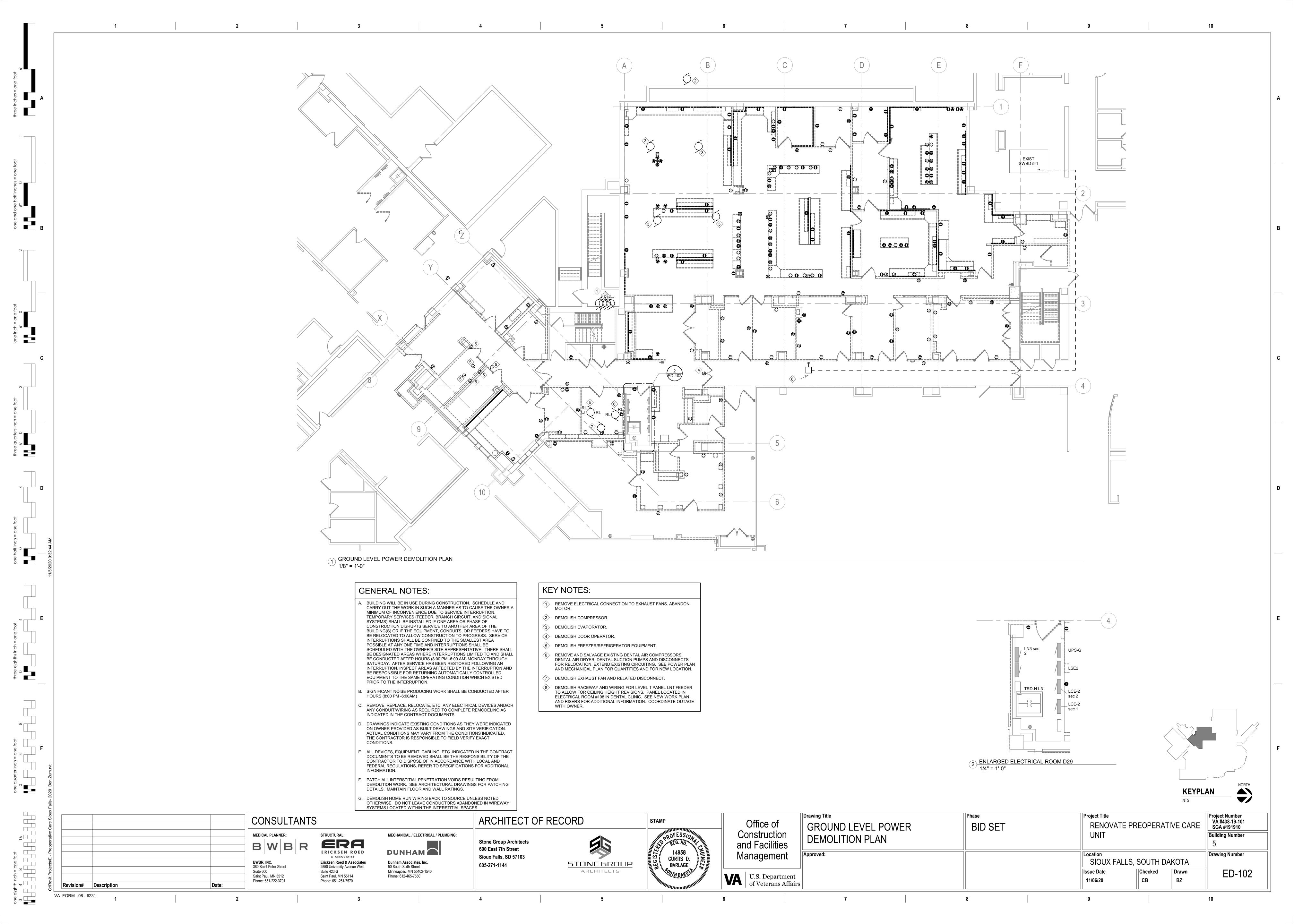
U.S. Department of Veterans Affairs

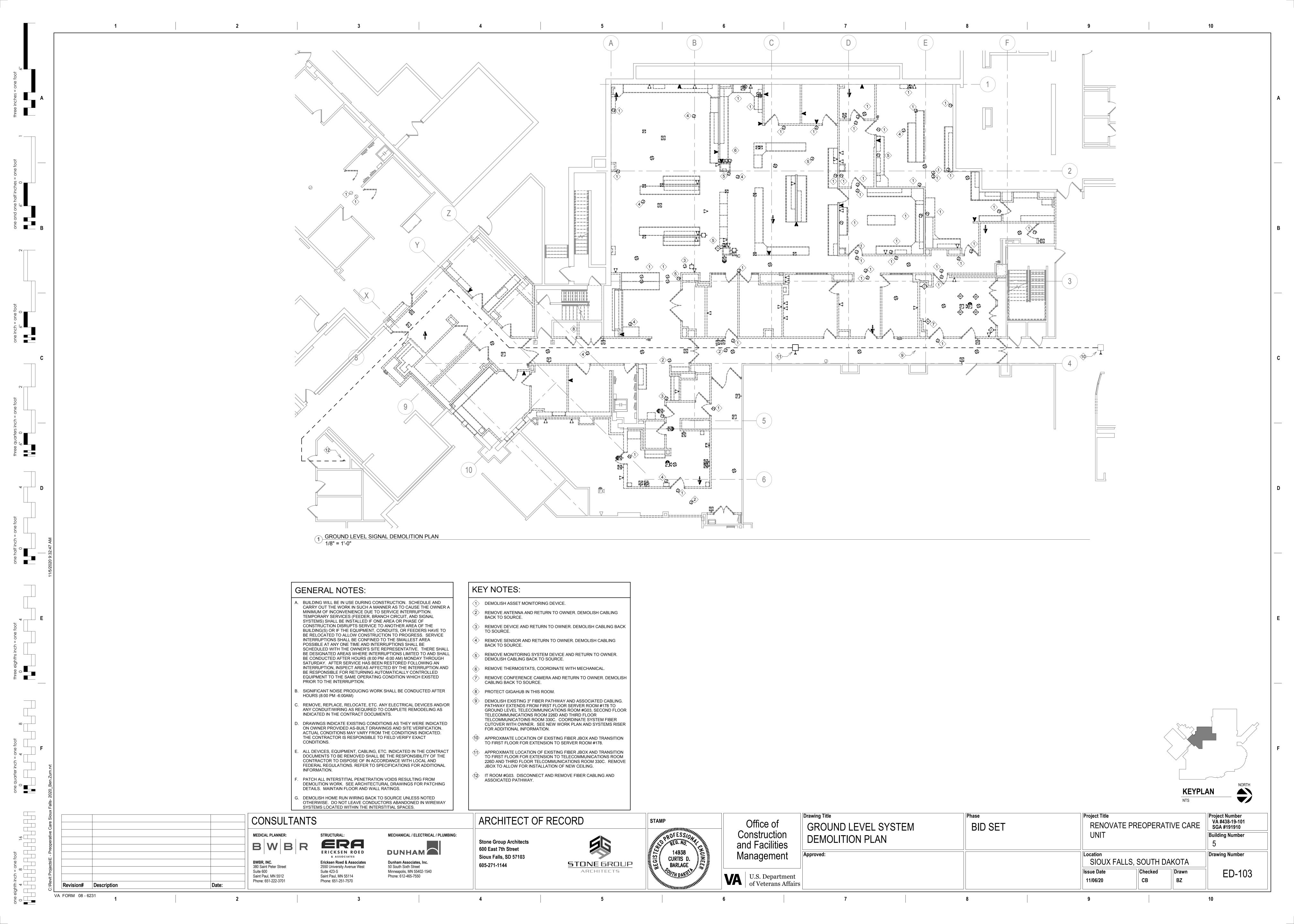
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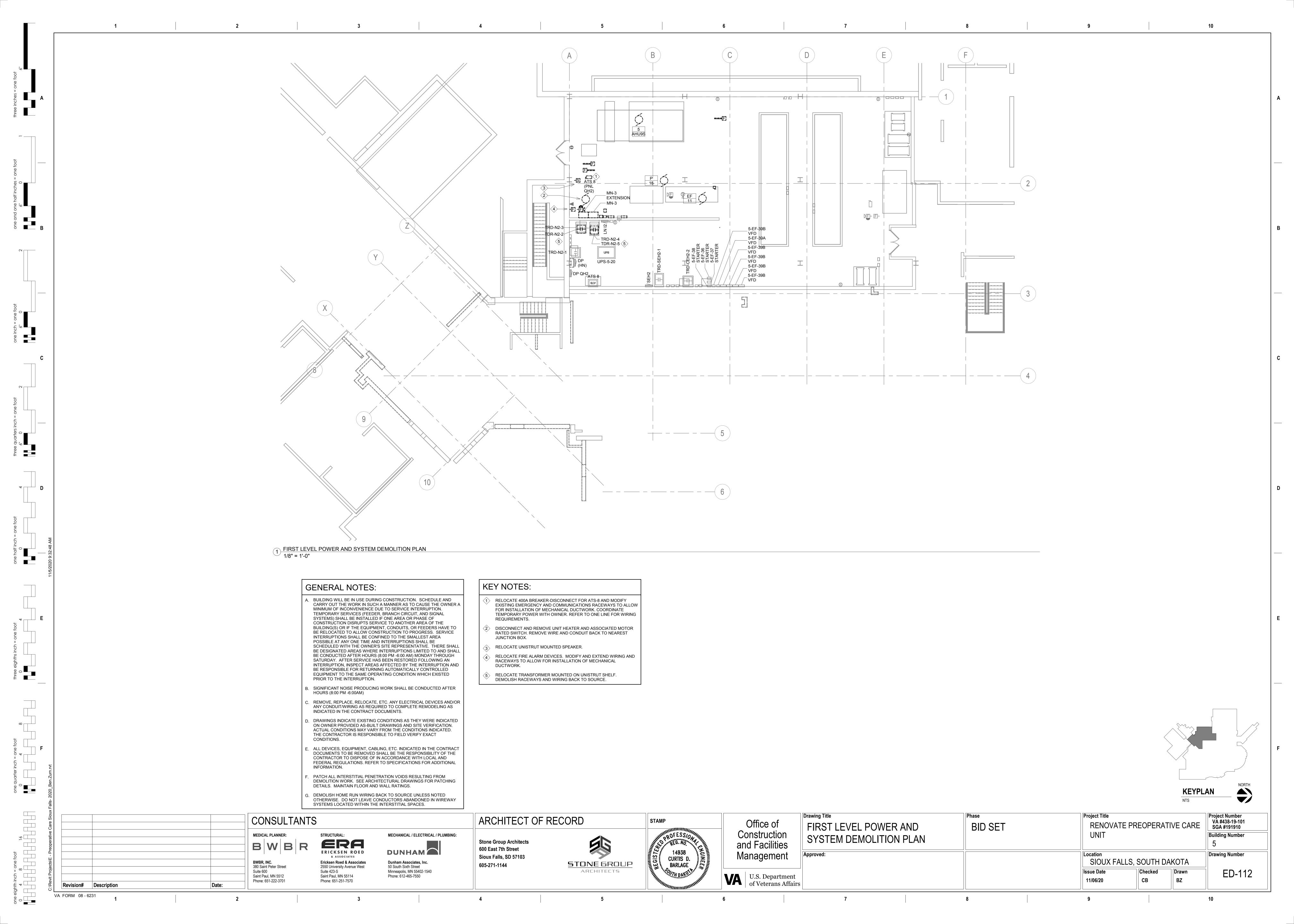
BID SET RENOVATE PREOPERATIVE CARE **ELECTRICAL TITLE SHEET** UNIT Location SIOUX FALLS, SOUTH DAKOTA Checked Drawn СВ BZ

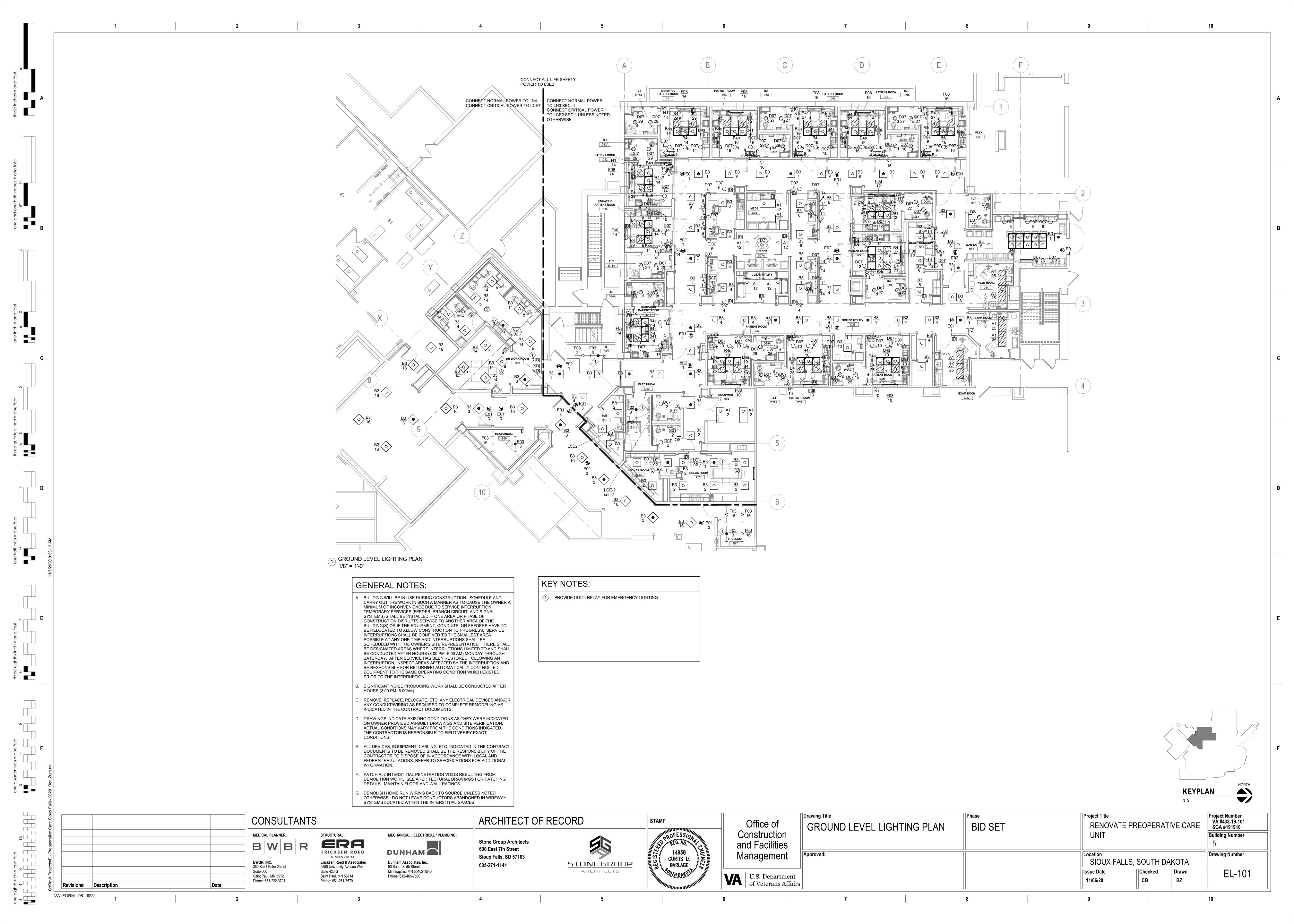
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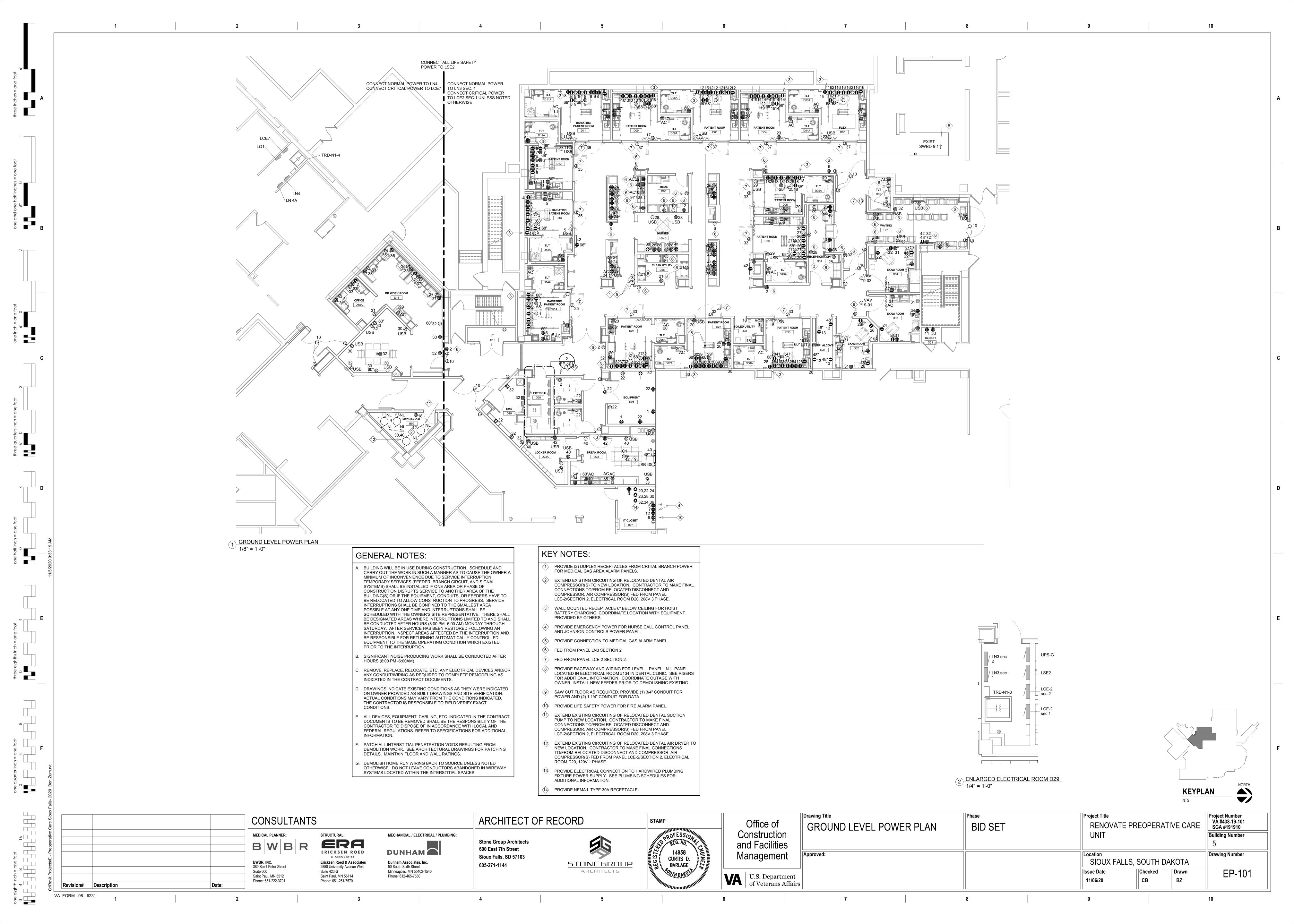


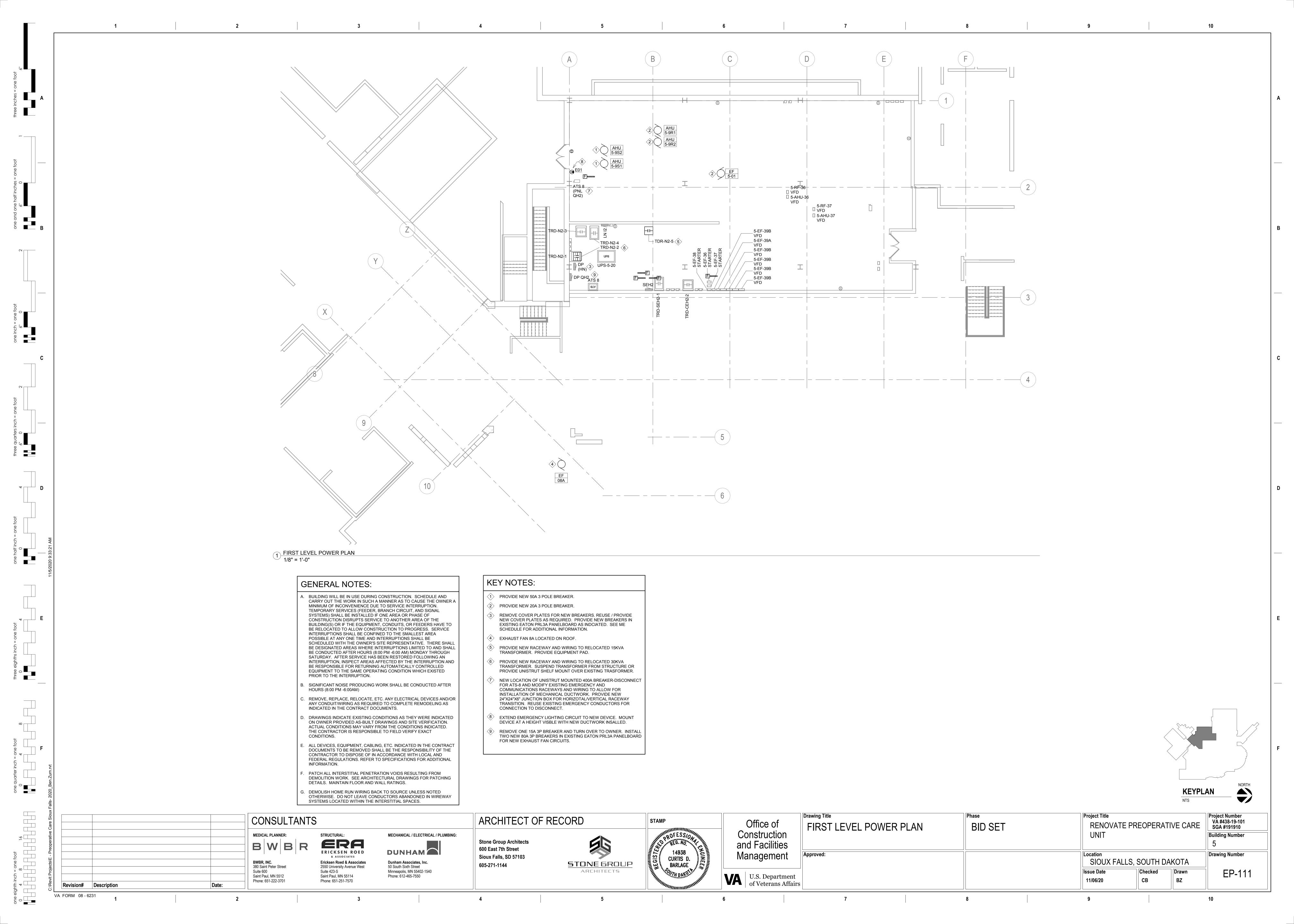


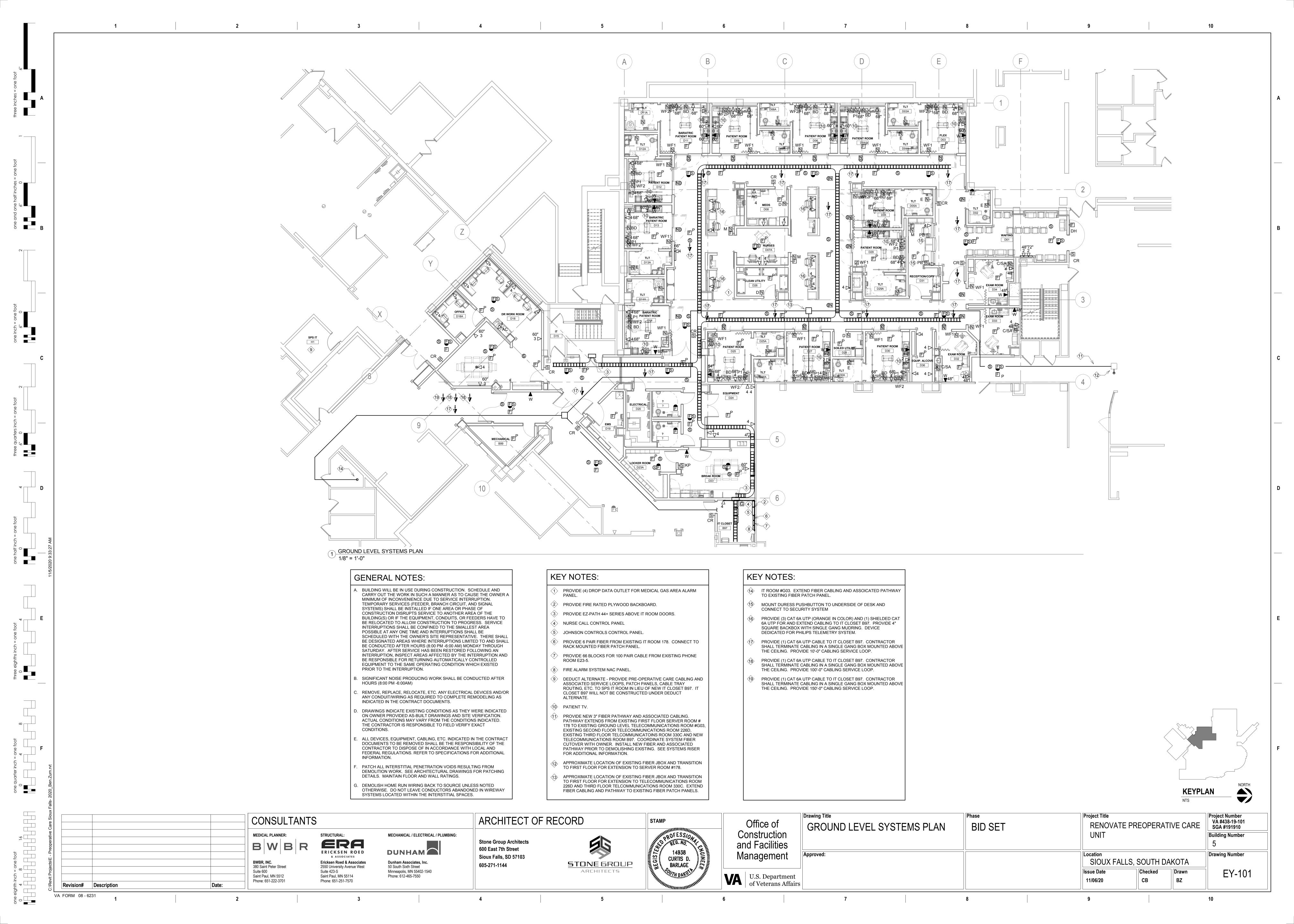


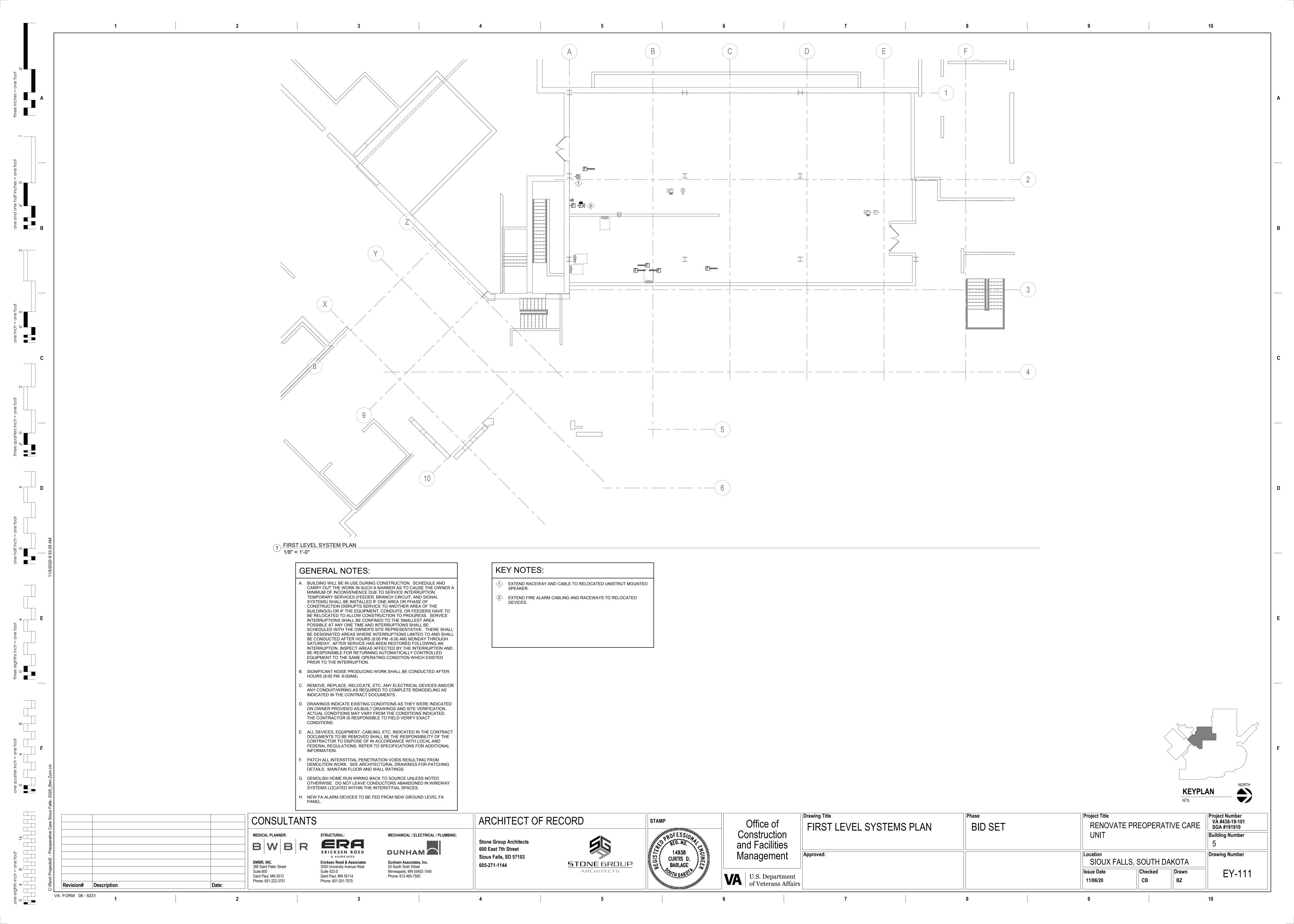


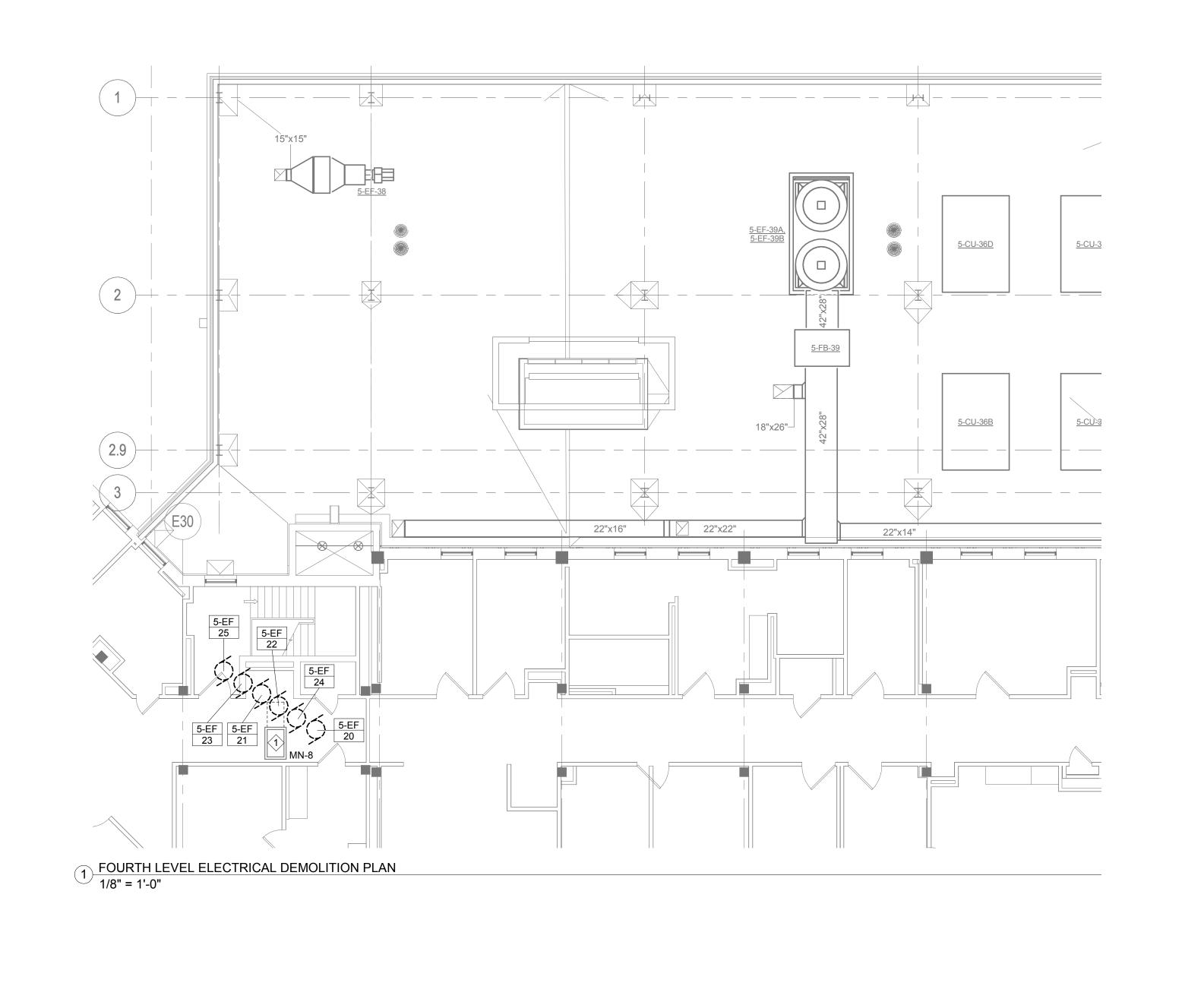


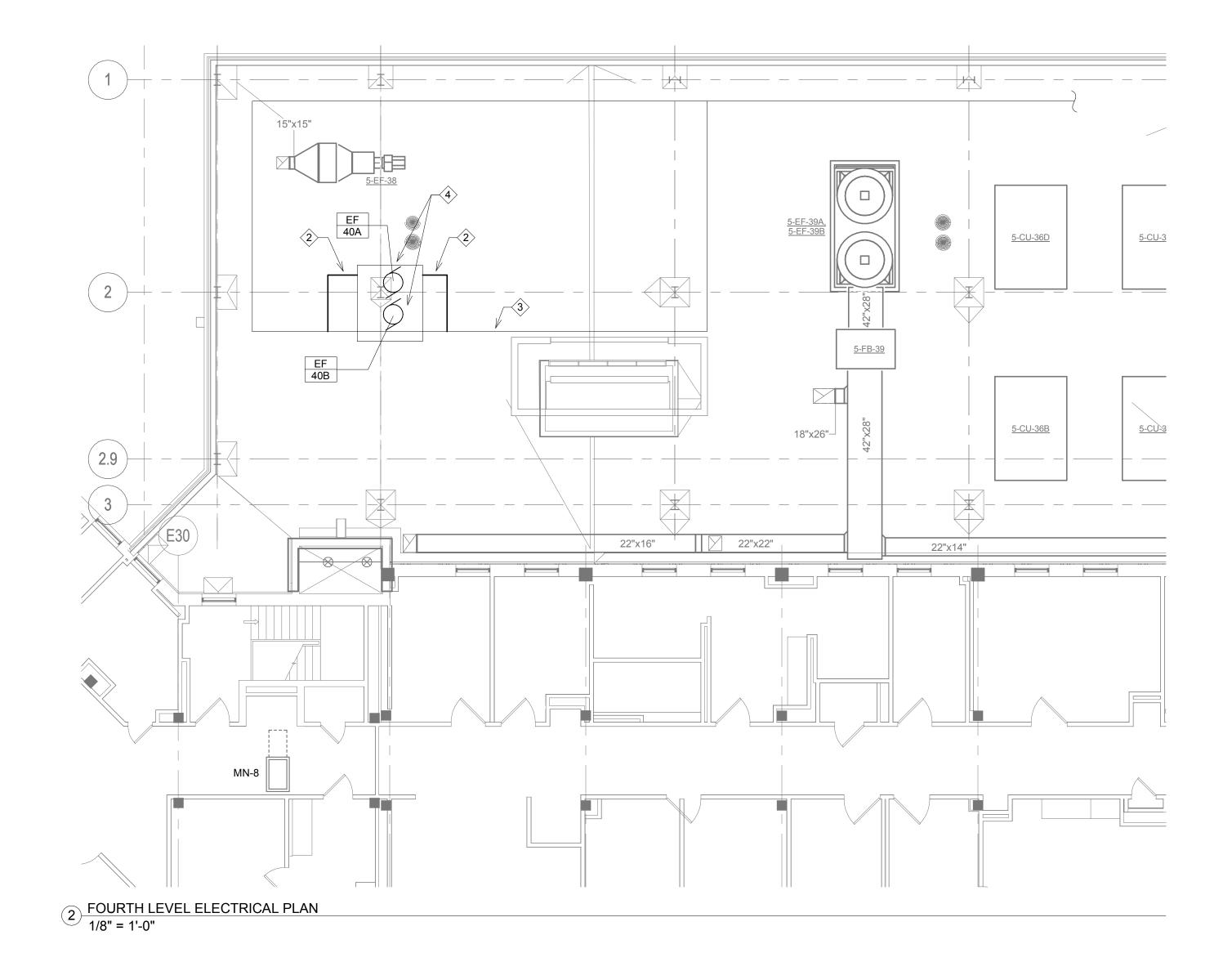










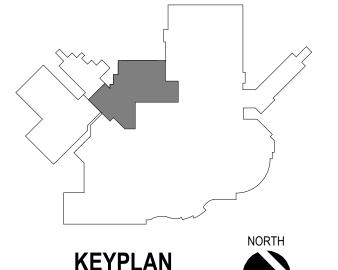


GENERAL NOTES:

- A. BUILDING WILL BE IN USE DURING CONSTRUCTION. SCHEDULE AND CARRY OUT THE WORK IN SUCH A MANNER AS TO CAUSE THE OWNER A MINIMUM OF INCONVENIENCE DUE TO SERVICE INTERRUPTION. TEMPORARY SERVICES (FEEDER, BRANCH CIRCUIT, AND SIGNAL SYSTEMS) SHALL BE INSTALLED IF ONE AREA OR PHASE OF CONSTRUCTION DISRUPTS SERVICE TO ANOTHER AREA OF THE BUILDING(S) OR IF THE EQUIPMENT, CONDUITS, OR FEEDERS HAVE TO BE RELOCATED TO ALLOW CONSTRUCTION TO PROGRESS. SERVICE INTERRUPTIONS SHALL BE CONFINED TO THE SMALLEST AREA
- BE RELOCATED TO ALLOW CONSTRUCTION TO PROGRESS. SERVICE INTERRUPTIONS SHALL BE CONFINED TO THE SMALLEST AREA POSSIBLE AT ANY ONE TIME AND INTERRUPTIONS SHALL BE SCHEDULED WITH THE OWNER'S SITE REPRESENTATIVE. THERE SHALL BE DESIGNATED AREAS WHERE INTERRUPTIONS LIMITED TO AND SHALL BE CONDUCTED AFTER HOURS (8:00 PM -6:00 AM) MONDAY THROUGH SATURDAY. AFTER SERVICE HAS BEEN RESTORED FOLLOWING AN INTERRUPTION, INSPECT AREAS AFFECTED BY THE INTERRUPTION AND BE RESPONSIBLE FOR RETURNING AUTOMATICALLY CONTROLLED EQUIPMENT TO THE SAME OPERATING CONDITION WHICH EXISTED PRIOR TO THE INTERRUPTION.
- B. SIGNIFICANT NOISE PRODUCING WORK SHALL BE CONDUCTED AFTER HOURS (8:00 PM -6:00AM)
- C. REMOVE, REPLACE, RELOCATE, ETC. ANY ELECTRICAL DEVICES AND/OR ANY CONDUIT/WIRING AS REQUIRED TO COMPLETE REMODELING AS INDICATED IN THE CONTRACT DOCUMENTS.
- D. DRAWINGS INDICATE EXISTING CONDITIONS AS THEY WERE INDICATED ON OWNER PROVIDED AS-BUILT DRAWINGS AND SITE VERIFICATION. ACTUAL CONDITIONS MAY VARY FROM THE CONDITIONS INDICATED. THE CONTRACTOR IS RESPONSIBLE TO FIELD VERIFY EXACT CONDITIONS.
- E. ALL DEVICES, EQUIPMENT, CABLING, ETC. INDICATED IN THE CONTRACT DOCUMENTS TO BE REMOVED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO DISPOSE OF IN ACCORDANCE WITH LOCAL AND FEDERAL REGULATIONS. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- F. PATCH ALL INTERSTITIAL PENETRATION VOIDS RESULTING FROM DEMOLITION WORK. SEE ARCHITECTURAL DRAWINGS FOR PATCHING DETAILS. MAINTAIN FLOOR AND WALL RATINGS.
- G. DEMOLISH HOME RUN WIRING BACK TO SOURCE UNLESS NOTED OTHERWISE. DO NOT LEAVE CONDUCTORS ABANDONED IN WIREWAY SYSTEMS LOCATED WITHIN THE INTERSTITIAL SPACES.

KEY NOTES:

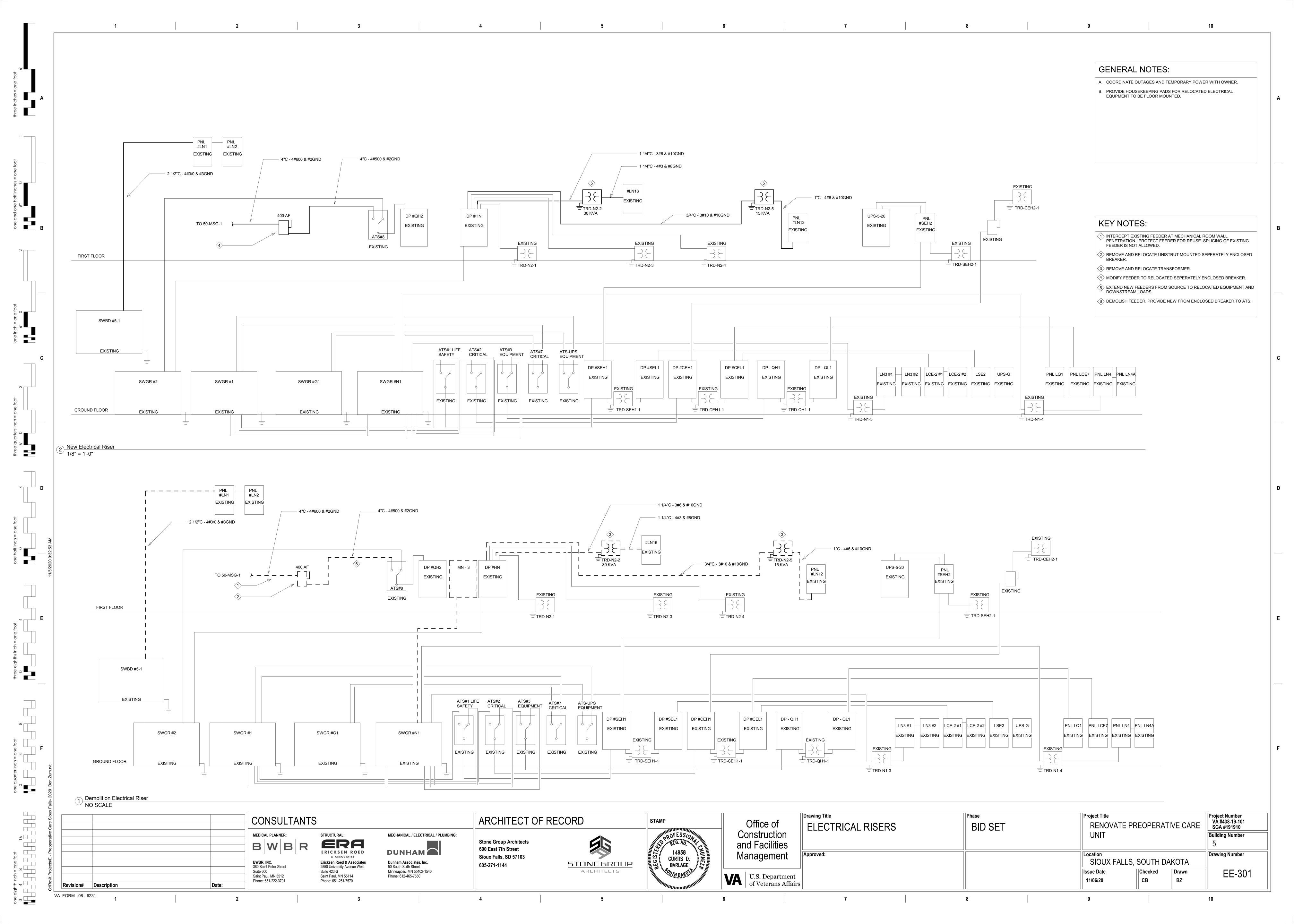
- DEMOLISH EXHAUST FAN(S) CONDUIT AND CONDUCTORS BACK TO MCC. LABEL BREAKERS AS SPARES.
- EXTEND EXISTING LIGHTNING PROTECTION SYSTEM TO NEW MECHANICAL EQUIPMENT. USE ALUMINUM PARALLEL CABLE SLICER TO CONNECT TO EXISTING SYSTEM.
- (3) EXISTING ALUMINUM LIGHTNING PROTECITON CABLE.
- PROVIDE BOND PLATE AND ALUMINUM BLUNT TIP AIR TERMINALS AT NEW MECHANICAL EQUIPMENT. PROVIDE AIR TERMINAL QUANTITY PER LIGHTNING PROTECTION SYSTEM MANUFACTURE RECOMMONDATIONS.

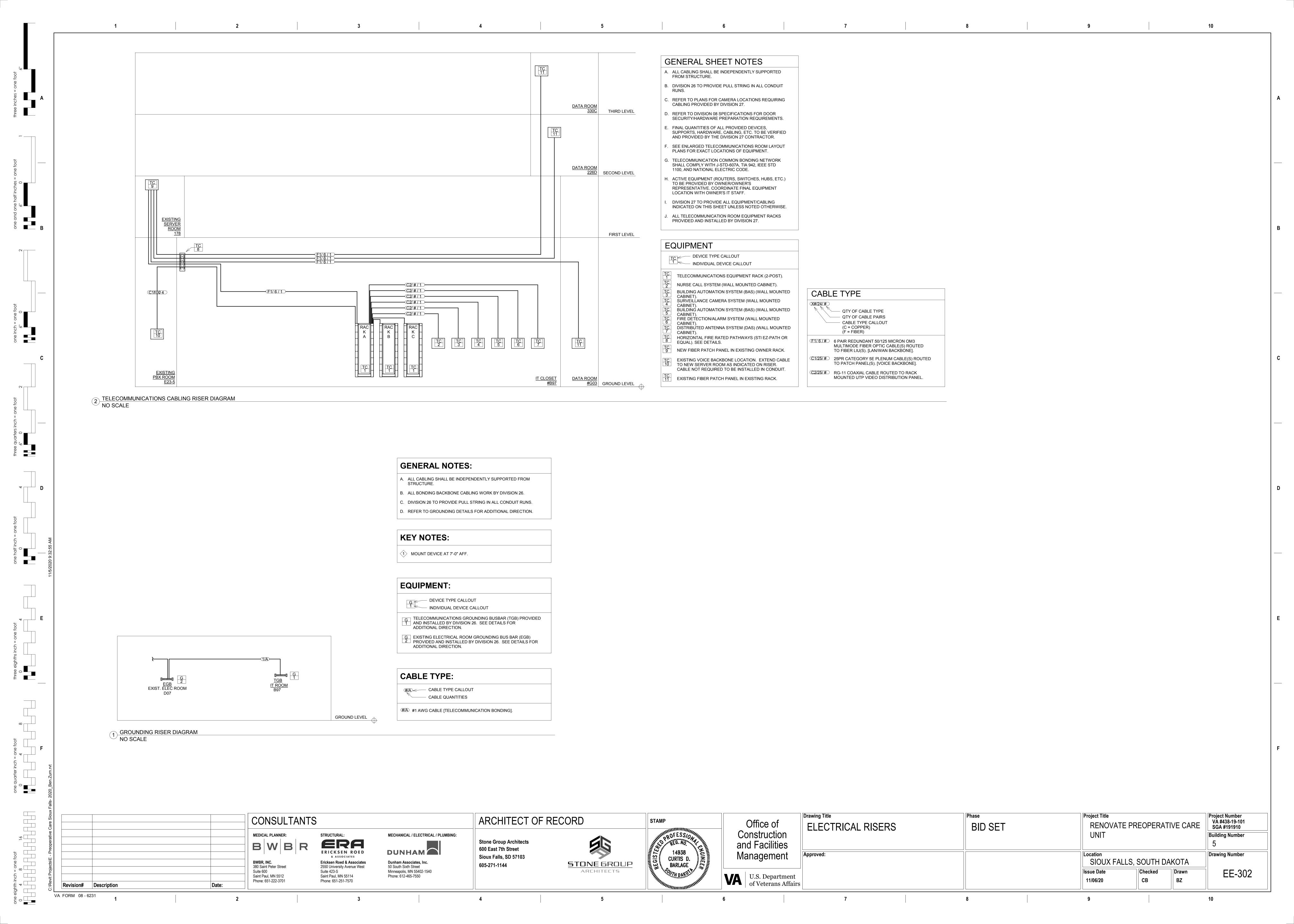


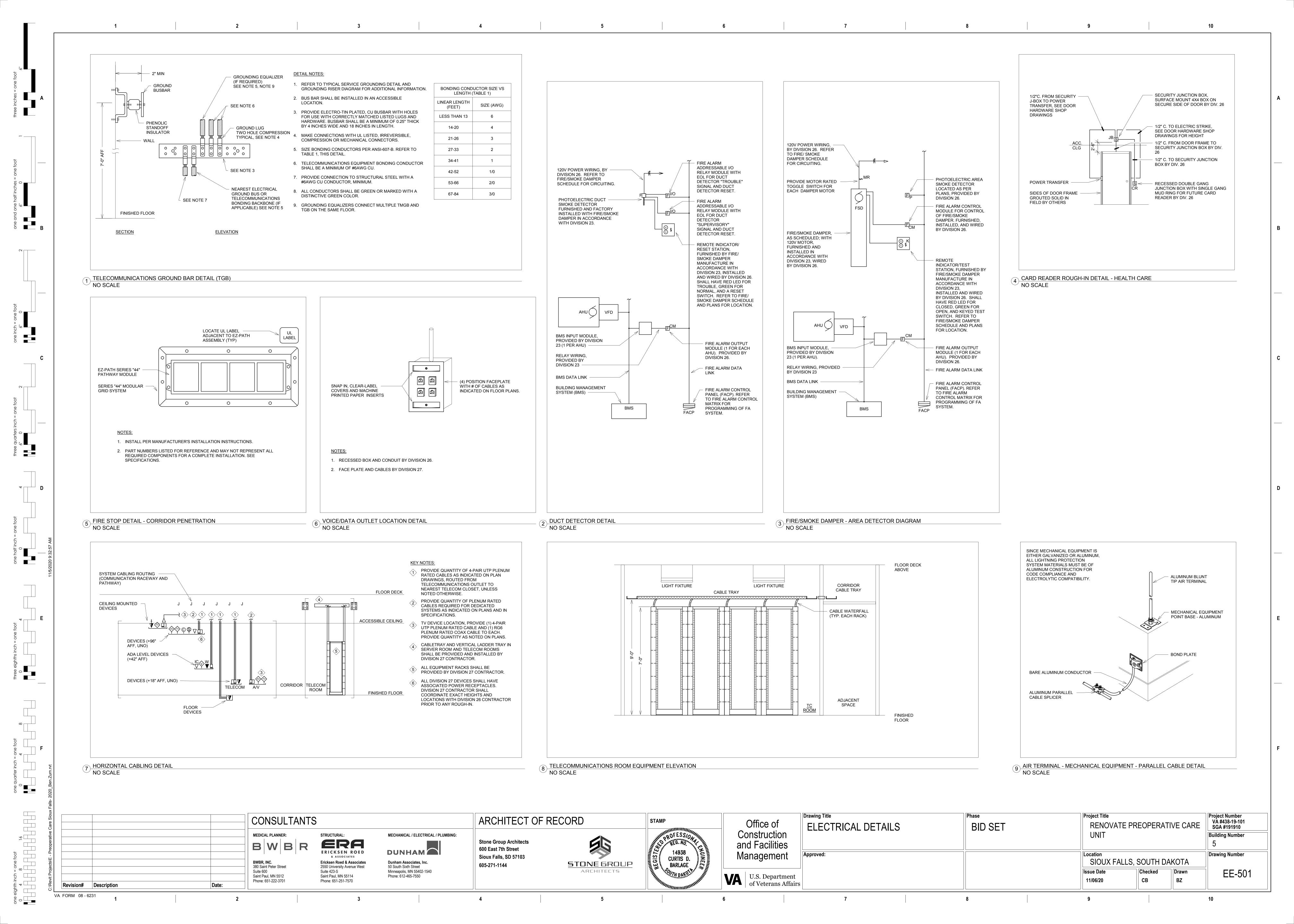
() Project Number VA #438-19-101 SGA #191910 Drawing Title Project Title CONSULTANTS ARCHITECT OF RECORD STAMP Office of FOURTH LEVEL ELECTRICAL PLAN | BID SET RENOVATE PREOPERATIVE CARE Construction and Facilities UNIT MEDICAL PLANNER: STRUCTURAL: MECHANICAL / ELECTRICAL / PLUMBING: 移 ERA **Stone Group Architects** BWBR 600 East 7th Street ERICKSEN ROED
& ASSOCIATES DUNHAM 🖳 14938 CURTIS D. BARLAGE Management Drawing Number Location Sioux Falls, SD 57103 SIOUX FALLS, SOUTH DAKOTA BWBR, INC. 380 Saint Peter Street **Dunham Associates, Inc.** 50 South Sixth Street Minneapolis, MN 55402-1540 Phone: 612-465-7550 Ericksen Roed & Associates STONE GROUP 605-271-1144 2550 University Avenue West EE-142 ARCHITECT5 Checked Drawn VA U.S. Department of Veterans Affairs Saint Paul, MN 5512 Saint Paul, MN 55114 СВ BZ Phone: 651-222-3701 Phone: 651-251-7570 Revision# Description

A Ben Zum vyt

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FIRE ALARM CONTROL MATRIX ACTION FIRE ALARM DEVICE PATIENT DEDICATED FIRE ALARM SPEAKER AHU FA DUCT PHONE DOOR ROOM SMOKE S PULL STATION SMOKE DETECTOR SMOKE DETECTOR DUCT DETECTOR DUCT DETECTOR DETECTOR DETECTOR DUCT DETECTOR LINE LOSS SECONDARY CIRCUIT TONE POWER TROUBLE GENERATOR MONITOR SEND ALARM SIGNAL TO FACP XX XX XX XX XX SEND SUPERVISORY SIGNAL TO FACP XX XX XX SEND TROUBLE SIGNAL TO FACP XX SHUT DOWN ENTIRE SMOKE COMPARTMENT SUPPLY, RETURN, AND XX XX XX XX EXHAUST FANS; & CLOSE ASSOCIATED SMOKE DAMPERS XX XX 5 ACTIVATE NOTIFICATION DEVICES ON ALL FLOORS ACTIVATE NOTIFICATION DEVICES ON FLOOR OF ACTIVATION, FLOOR ABOVE, AND FLOOR BELOW RELEASE DOOR HOLDS, POWERED FIRE DOORS, AND POWERED XX SECURITY DOORS THROUGHOUT BUILDING RELEASE DOOR HOLDS, POWERED FIRE DOORS, AND POWERED XX XX XX SECURITY DOORS IN SMOKE COMPARTMENT OF INITIATION ONLY XX CLOSE DAMPERS ON FAN PROXIMATE TO DETECTOR 2,4 | 4,9 | 6 | 4 | 4 7,10 A. REFER TO DIVISION 28 SPECIFICATIONS FOR ADDITIONAL FIRE ALARM SYSTEM REQUIREMENTS. B. ALL ACTIONS SHALL INDICATE A SPECIFIC DEVICE AND LOCATION TO THE CONTROL PANEL(S), ANNUNCIATOR PANEL(S), DACT, AND SYSTEM PRINTER. C. NOT ALL DEVICES MAY BE REQUIRED. REFER TO PLANS FOR ACTUAL DEVICES.). EACH SMOKE COMPARTMENT SHALL HAVE A SEPARATE NOTIFICATION CIRCUIT TO ALLOW FOR ZONED NOTIFICATION. . SEND SIGNAL TO REMOTE ALARM RECEIVING STATION. 2. IN SOME ROOMS, AREA SMOKE DETECTORS SHALL BE PROGRAMMED SO THAT UPON ACTIVATION OF THE FIRST SMOKE DETECTOR, A SUPERVISORY SIGNAL IS SENT. UPON ACTIVATION OF A SECOND SMOKE DETECTOR AN ALARM SIGNAL WILL BE SENT. REFER TO PLANS FOR DUAL SMOKE DETECTOR LOCATIONS AND ZONING. 3. FACP SHALL SWITCH TO SECOND PHONE LINE AND SEND TROUBLE SIGNAL TO REMOTE ALARM RECEIVING STATION. 4. FOR SMOKE TYPE DETECTORS FOR SMOKE DAMPER CONTROL, FACP SHALL SEND SIGNAL TO BUILDING MANAGEMENT SYSTEM TO SHUT DOWN ONLY SUPPLY, RETURN, AND EXHAUST FANS FOR ENTIRE AFFECTED SMOKE COMPARTMENT (10) SECONDS PRIOR TO CLOSING ASSOCIATED FIRE/SMOKE DAMPERS. REFER TO AHU ZONING PLANS. 5. ACTIVATE ALL EXTERIOR NOTIFICATION DEVICES. 6. RELEASE DOOR HOLD FOR ASSOCIATED DOOR ONLY. REFER TO PLANS FOR DEDICATED DOOR HOLD SMOKE DETECTOR LOCATIONS. 7. FOR OVERHEAD COILING DOORS, PROVIDE TIME DELAY OF AT LEAST 15 SECONDS AFTER LOSS OF POWER BEFORE DOOR HOLDS ARE RELEASED. 9. SMOKE DETECTOR SHALL HAVE AUXILIARY CONTACTS FOR CONNECTION TO PATIENT ROOM NURSE CALL LIGHT, WIRING BY OTHERS. 10. DACT PRIMARY POWER TROUBLE SIGNAL SHALL BE SENT WHEN BATTERY CAPACITY IS BETWEEN 25 & 50%.

Fire Alarm Control Matrix

NO SCALE

one eighth inch = one foot

0 4 8 16

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_ _ _ _ _ _ **EXISTING** PAGING SYSTEM HEAD-END RACK TO EXISTING OVERHEAD PAGING SYSTEM — — — — ACCESS CTRL RELEASE (3) TO BACKGROUND MUSIC — · · · — SES SML AND PAGING ZONES EP EH ERL È **EXIST** FA GRAPHICS WORKSTATION DIGITAL VOICE NEW EVAC/PAGING FACP TO ADDITIONAL DH DOOR HOLDERS - TEL TI CONTROLLER FIRE/SMOKE — DAMPERS (1) (NEW SERVER ROOM) **EXISTING** EXIST VOICE

GROUND FLOOR

GENERAL NOTES

JURISDICTION.

KEY NOTES

SYSTEM.

THE WIRING DIAGRAM IS CONCEPTUAL ONLY AND

DOES NOT INDICATE ALL DEVICES, DEVICE TYPES

FOR DEVICE QUANTITIES AND LOCATIONS.

2. THE SYSTEM DIAGRAM IS BASED ON A DIGITAL,

ALL WIRING AND CABLING SHALL BE IN CONDUIT (MINIMUM 3/4" C.) EMT CONDUIT USED FOR FIRE ALARM WIRING SHALL INCLUDE FACTORY-APPLIED RED TOPCOAT UL-LISTED FOR FIRE ALARM USE.

THE INSTALLATION SHALL BE FROM DRAWINGS

THAT HAVE BEEN SUBMITTED, REVIEWED AND

APPROVED BY THE AUTHORITIES HAVING

EACH SIGNALING CIRCUIT SHALL ALLOW 15% SPARE CAPACITY TO ADD ADDITIONAL AUDIO, VISUAL OR COMBINATION AUDIO/VISUAL SIGNALING

PROVIDE THE CONTROL WIRING FROM FIRE ALARM

DEVICES TO ANY OF THESE CIRCUITS.

CONTROL REQUIREMENTS.

PAGING ZONE SCHEDULE.

SMOKE ZONES.

CONSTRUCTION.

CABLE TYPE

FACP

EXISTING GROUND FLOOR E23

EVAC

SEE FLOOR PLANS FOR MORE

DETAIL IN THIS AREA.

(LEVEL B CENTER)

CABLE TYPE CALLOUT

CABLE QUANTITIES

#/B BRANCH CIRCUIT —

CONTROLLER TO THE HVAC CONTROLLER.

FIREFIGHTERS TELEPHONE SYSTEM FOR COMMUNICATIONS TO FIRE COMMAND CENTER. INTEGRATE NEW FF TELEPHONES WITH EXISTING

DIGITAL VOICE EVACUATION AND PAGING SYSTEM INTERFACE WITH OWNERS' TELEPHONE SYSTEM.

SEE SPECIFICATIONS FOR BACKGROUND MUSIC AND

LIFE SAFETY BRANCH CIRCUIT (REFER TO POWER PLAN

SHALL PROVIDE RELAY AND CIRCUITING. SEE POWER

PLANS FOR 120V CIRCUITING, RELAY LOCATIONS, ETC.)

PROVIDE ONE (1) FIRE ALARM CONTROL MODULE PER

FIRE/SMOKE DAMPER AND (1) ADDITIONAL FIRE ALARM

INTEGRATION WITH SMOKE EVACUATION SEQUENCE OF OPERATIONS. SEE ARCH. LIFE SAFETY PLANS FOR

MULTI-CRITERIA SMOKE DETECTOR TYPICAL IN ALL

DEDICATED OVERHEAD PAGING AUDIO INPUT TO EXISTING FIRE ALARM DIGITAL VOICE CONTROLLER CONNECTION SHALL BE INSTALLED EARLY IN CONSTRUCTION SCHEDULE TO SERVE EXISTING HOSPITAL. COORDINATE FOR SCHEDULING.

DEDICATED OVERHEAD PAGING AUDIO INPUT FOR NEW

#/A INITIATING LINE CIRCUIT — - — -

#C CONTROL CIRCUIT — · · · — · · · —

#ID FIBER OPTIC CONNECTION — — — —

#E SIGNAL LINE CIRCUIT — — — — — —

- · · - · · - · · -

#IG TWO-HOUR RATED REDUNDANT BACKBONE (CLASS A)

#J AUDIO INPUT — — — — — —

#F TWO-HOUR RATED PRIMARY BACKBONE (CLASS A)

##H FUTURE FIRE FIGHTERS TELEPHONE HOMERUN

CONTROL MODULE PER SMOKE ZONE FOR

PATIENT AND PROCEDURE ROOMS.

FIRE/SMOKE AND SMOKE DAMPER MOTORS ARE SHOWN ON MECHANICAL PLANS. VERIFY QUANTITIES AND LOCATIONS. PROVIDE FIRE ALARM CONNECTIONS TO RELAY SO THAT THE FIRE/SMOKE AND SMOKE DAMPERS CLOSE UPON LOSS OF POWER. (DIV. 26

7. REFER TO FIRE ALARM CONTROL MATRIX FOR ALL

ADDRESSABLE FIRE ALARM SYSTEM.

OR QUANTITY OF LOOPS. REFER TO FLOOR PLANS

1 FIRE ALARM CABLING RISER DIAGRAM NO SCALE

BACNET/LON GATEWAY

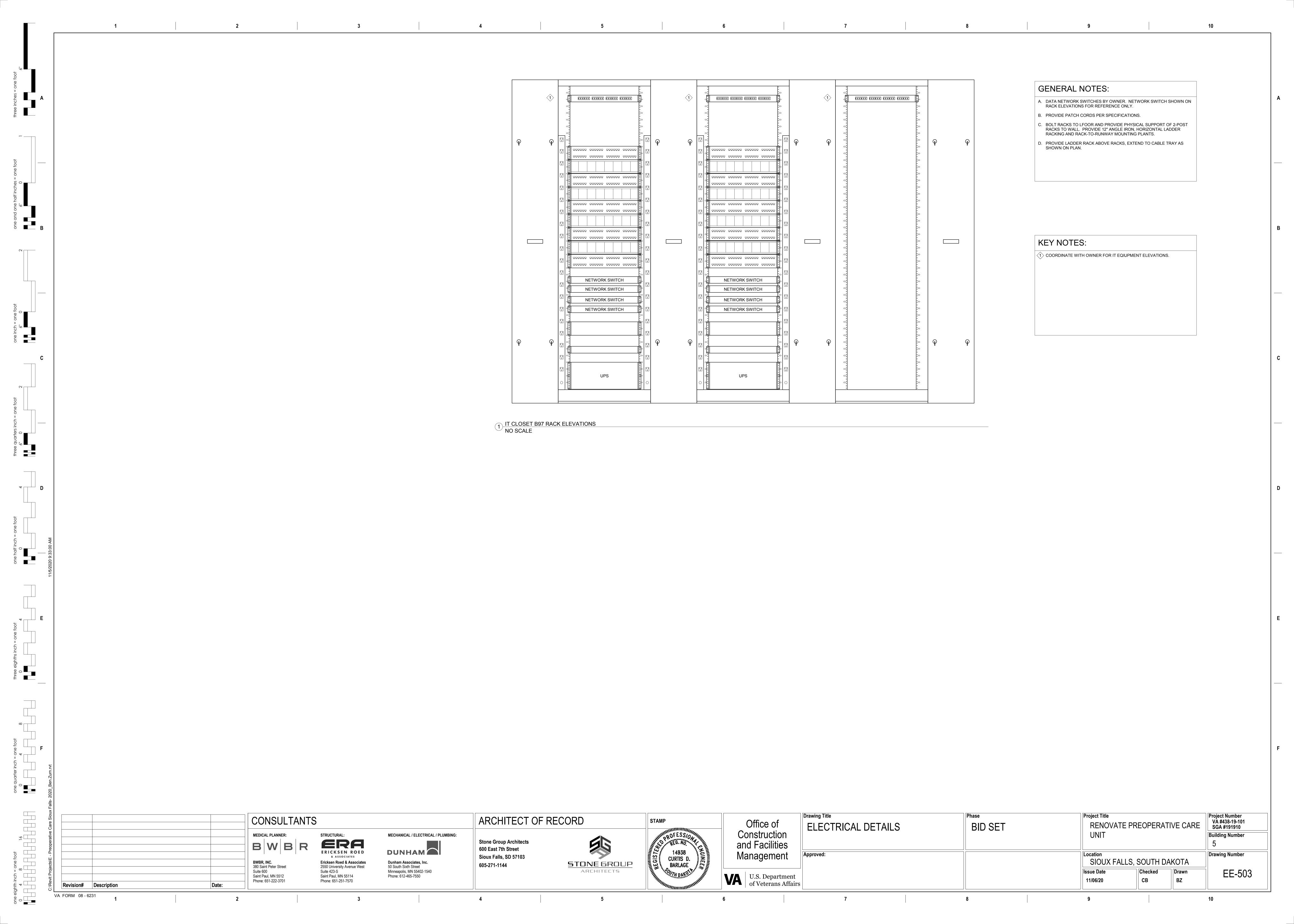
INTEGRATED AUTOMATION SYSTEM

COMMUNICATION CONNECTION TO #/H - - -

Drawing Title **Project Title Project Number** CONSULTANTS ARCHITECT OF RECORD STAMP VA #438-19-101 Office of **BID SET** RENOVATE PREOPERATIVE CARE ELECTRICAL DETAILS SGA #191910 Construction UNIT MECHANICAL / ELECTRICAL / PLUMBING: **Building Number MEDICAL PLANNER:** STRUCTURAL: 鄉 ERA **Stone Group Architects** and Facilities BWB 600 East 7th Street DUNHAM 🕋 ERICKSEN ROED Management **Drawing Number** Location Sioux Falls, SD 57103 & ASSOCIATES CURTIS D. SIOUX FALLS, SOUTH DAKOTA **Dunham Associates, Inc.** 50 South Sixth Street Minneapolis, MN 55402-1540 BWBR, INC. Ericksen Roed & Associates STONE GROUP BARLAGE 605-271-1144 380 Saint Peter Street 2550 University Avenue West EE-502 **ARCHITECTS** Checked Drawn **VA** U.S. Department of Veterans Affairs Saint Paul, MN 55114 Phone: 612-465-7550 Saint Paul, MN 5512 СВ BZ Phone: 651-222-3701 Phone: 651-251-7570 Revision# Description

#/A—DACT IP DIGITAL ALARM COMMUNICATION

TRANSMITTER



LIGHT FIXTURE SCHEDULE LIGHTING CONTROL SEQUENCE SCHEDULE **ELECTRICAL** $\left\langle \frac{\mathsf{LC}}{\mathsf{\#}} \right
angle$ LIGHTING CONTROL SEQUENCE SYMBOL FOUND ON LIGHTING PLAN(S). FIXTURE LETTER FIXTURE STYLE VOLTAGE COLOR BALLAST/ DRIVER MAX VA MOUNTING 2X4 LED LENSED TROFFER 120 RECESSED LED 4500 LUM MIN | 4000K | DIMMING 0-10V | 40 VA DAYLIGHT GYP-BOARD AND/OR AUTO OFF REDUCTION % **HARVEST** LIGHTING LAY-IN GRID CONTROL SWITCHING DIMMING (AUTOMATIC/ VACANCY OCCUPANCY DIMMING MANUAL INVERTED TEE SWITCHED) SEQUENCE (MIN 50%) SENSOR SENSOR (MINUTES) TYPE NOTES LEVEL ON/OFF YES 0-10V AUTO/NO YFS AUTO/NO **GENERAL NOTES:** 2X2 LED INDIRECT TROFFER LED 3000 LUM MIN 4000K DIMMING 0-10V 30 VA SMOOTH, FROSTED ACRYLIC RECESSED PROVIDE ALL PARTS AND PIECES NECESSARY TO MAKE A FUNCTIONAL LIGHTING CONTROL SYSTEM WITH ALL CONTROLS AS MARKED ABOVE. SUPPLIER TO PROVIDE COMPLETE WIRING DIAGRAM PRIOR TO INSTALLATION. GYP-BOARD AND/OR 3. SUPPLIER TO PROVIDE COMPLETE WIRING DIAGRAM PRIOR TO INSTALLATION.
C. IF DIMMING IS CALLED FOR IN SCHEDULE, IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY AND PROVIDE ALL NECESSARY PARTS, BALLASTS, DRIVERS, ETC. TO PROVIDE THE DIMMING FUNCTION.
D. CONTRACTOR TO PROVIDE ALL WIRING NECESSARY INCLUDING ANY 0-10V CONTROL WIRING AS REQUIRED.
E. CONTRACTOR MUST COMPLY WITH THE CONTROLS INTENT AS INDICATED ON THE DRAWINGS.
F. AT MINIMUM, CONTRACTOR SHALL HOLD TWO PRE CONSTRUCTION MEETINGS, PRIOR TO BID, WITH THEIR SELECTED LIGHTING CONTROLS VENDOR OR SUPPLIER.
G. THE INTENT OF (2) PRE CONSTRUCTION MEETINGS IS TO DEVELOP AN UNDERSTANDING OF THE CONTROLS SYSTEM TO ACCURATELY ACCOUNT FOR ALL POWER, CONTROLS, CABLING, EQUIPMENT AND CONNECTION REQUIREMENTS.
F. CONTRACTOR SHALL PROVIDE ALL NECESSARY COMPONENTS, ACCESSORIES AND ASSOCIATED LABOR FOR THEIR SELECTED LIGHTING CONTROLS SYSTEM. LAY-IN GRID INVERTED TEE LED 3000 LUM MIN | 4000K | DIMMING 0-10V | 45 VA | SMOOTH, FROSTED ACRYLIC 2X2 LED EXAM/AMBIENT LIGHT RECESSED GYP-BOARD AND/OR LAY-IN GRID INVERTED TEE **ELECTRICAL NOTES:** LED 3000 LUM MIN 6500K DIMMING 0-10V 24.5 VA ACRYLIC NON-GLARE MATTE 2X2 BACK ILLUMINATED IMAGE LAY-IN GRID TROFFER INVERTED TEE LED 1500 LUM MIN 4000K DIMMING 0-10V 15 VA 6" ROUND DIAMETER RECESSED GYP-BOARD AND/OR DIMMABLE DOWNLIGHT LAY-IN GRID INVERTED TEE EDGE LIT LED EXIT SIGN -RECESSED RED LED 4 VA SINGLE FACE, AC ONLY WALL/CEILING RED EDGE LIT LED EXIT SIGN -RECESSED DOUBLE FACE, AC ONLY WALL/CEILING 4' INDUSTRIAL 120 LED 3500LUM MIN 4000K DIMMING 0-10V SURFACE MOUNTED | LED 10,000 LUM | 4000K 4' LENSED WALL BRACKET 120 DIMMING 0-10V 45 VA PATIENT ROOM MIN 0.5W PATIENT ROOM NIGHT LIGHT 120 SURFACE LED 50 LUM MIN AMBER N/A WALL SCONCE - RESTROOM SURFACE LED 1200 LUM MIN 4000K N/A 16 VA TAPE LIGHT SURFACE/CHANNEL LED 680 LUM/FT 5.5 VA/FT 3500K DIMMING **GENERAL ELECTRICAL NOTES:** A. REFER TO SPECIFICATION SECTIONS 265100 AND 265600 FOR LUMINAIRE REQUIREMENTS. BRING CONFLICTS BETWEEN THE MANUFACTURER'S CATALOG NUMBER AND DESCRIPTIONS TO THE ATTENTION OF THE ENGINEER. PROVIDE LAMPS AND LUMINAIRES FROM THE SAME MANUFACTURER TO ENSURE MATCHING COLOR AND APPEARANCE. LAMPS SHALL HAVE COLOR TEMPERATURE 3500K WITH MINIMUM CRI OF 80 UNLESS OTHERWISE NOTED. . UNLESS A SPECIFIC CATALOG NUMBER OR SERIES IS NAMED, THE MANUFACTURER'S NAMED ALTERNATES MUST SUBMIT CATALOG CUT SHEETS AND IES FORMATTED PHOTOMETRIC REPORT TO THE ENGINEER FOR APPROVAL AT LEAST 10 DAYS PRIOR TO BID DATE. THE ENGINEER MAY REQUEST SAMPLE OF LUMINAIRE TO BE SUPPLIED. MINIMUM LUMENS LISTED FOR SOLID STATE LIGHT LUMINAIRES ARE DELIVERED LUMENS BASED ON PHOTOMETRIC TESTING COMPLETED IN ACCORDANCE WITH IES LM-79 STANDARDS. SUBSTITUTE LUMINAIRE SUBJECT TO ARCHITECT/ENGINEER APPROVAL. FLOORBOX/POKE THRU SCHEDULE POWER DESCRIPTION **MANUFACTURER** MODEL/SERIES GENERAL DESCRIPTION COMMUNICATIONS DESCRIPTION (2) DUPLEX RECEPTACLES. CIRCUIT INDICATED ON PLAN LEGRAND WIREMOLD 4 GANG, SLAB ON GRADE, BLACK EVOLUTION SERIES COVER (1) COVER PLATE WITH UP TO (4) PORTS OF COMMUNICATION DEVICES. INTERNAL RESOURCE RFB E SERIES OR BLANK COVÉRPLATE FOR UNUSED GANGS. APPROVED EQUAL A. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS. B. FLOOR BOX/POKE-THRU FURNISHED AND INSTALLED BY DIVISION 26, UNLESS NOTED OTHERWISE. ON GRADE RATED

one eighth inch = one foot

0 4 8 16

Drawing Title **Project Title Project Number** CONSULTANTS ARCHITECT OF RECORD STAMP VÁ #438-19-101 Office of **BID SET** ELECTRICAL SCHEDULES RENOVATE PREOPERATIVE CARE SGA #191910 Construction UNIT MECHANICAL / ELECTRICAL / PLUMBING: **Building Number MEDICAL PLANNER:** STRUCTURAL: 够 ERA **Stone Group Architects** and Facilities BWB 600 East 7th Street DUNHAM A ERICKSEN ROED Management **Drawing Number** Location Sioux Falls, SD 57103 & ASSOCIATES CURTIS D. SIOUX FALLS, SOUTH DAKOTA **Dunham Associates, Inc.** 50 South Sixth Street Minneapolis, MN 55402-1540 BWBR, INC. Ericksen Roed & Associates STONE GROUP BARLAGE 605-271-1144 380 Saint Peter Street 2550 University Avenue West EE-601 ARCHITECTS Checked Drawn **VA** U.S. Department of Veterans Affairs Saint Paul, MN 55114 Phone: 612-465-7550 Saint Paul, MN 5512 СВ BZ Phone: 651-222-3701 Phone: 651-251-7570 Revision# Description VA FORM 08 - 6231

CONTROL MEDIA (LENS,

LOUVER, ETC.)

0.125" MINIMUM ACRYLIC LENS

SEMI-SPECULAR CLEAR

SELF FLANGED MEDIUM DISTRIBUTION

MOLDED STENCIL LETTERS

MOLDED STENCIL LETTERS

CLEAR ACRYLIC LENS

CLEAR ACRYLIC LENS

LOUVER

VANITY LIGHT

FLEX GRAZE CHANNEL

MANUFACTURER'S SERIES NUMBER

EATON-METALUX 24GR-LD5 SERIES

COLUMBIA LLT SERIES

LITHONIA 2GTL SERIES

EATON-METALUX 22CZ-LD5 SERIES

COLUMBIA LCAT SERIES

LITHONIA 2BLT SERIES

KENALL MPCADE22 SERIES OR EQUAL

SKY FACTORY ES22-CLA SERIES

EATON-PORTFOLIO LD6B SERIES

PRESCOLITE LF6 SERIES

LITHONIA LDN6 SERIES

SURE-LITES EUX6-R SERIES

COMPASS CEL SERIES **EVENLITE SOV SERIES**

SURE-LITES EUX6-R SERIES

COMPASS CEL SERIES **EVENLITE SOV SERIES**

EATON-METALUX SNLED SERIES

COLUMBIA LCL SERIES

KENALL MPWUD SERIES

KENALL MSL SERIES

WAC LIGHTING WS-224

AFX LIGHTING LITHONIA FMVCSL SERIES

ACOLYTE RBHI SERIES

ACCLAIN LIGHTING FLEX ONE HO SERIES

JUNO IO414 SERIES

NOTES

FIXTURE DESCRIPTION

SPRING LATCHES, POST PAINTED

STEEL HOUSING, FLUSH ALUM.

MITERED CORNERED DOOR FRAME.

GASKETED AND/OR WITH METAL

LIGHT BAFFLES, DOOR CAN BE

LATCHED FROM EITHER SIDE OF

HOUSING, DIMMABLE DRIVER. DIMMABLE TO 10%

SPRING LATCHES, POST PAINTED

STEEL HOUSING, FLUSH WHITE

ALUM. MITERED CORNERED DOOR

FRAME, GASKETED

SPRING LATCHES, POST PAINTED STEEL HOUSING, FLUSH WHITE

ALUM. MITERED CORNERED DOOR

FRAME, GASKETED

MOISTURE RESISTANT ALUMINUM

ELEVATOR FRAME, POWDER COATED WHITE MATTE FINISH, BUILT IN TRANSFORMER TO OUTPUT 24V.

WHITE SELF FLANGED TRIM.

PRE-PAINTED WHITE ALUMINUM

27" HANGER BARS

BRUSHED [ALUMINUM][NICKEL],

CLEAR FACE, [MIRROR][WHITE]

BACK, UNIVERSAL, FACE COUNT, AND MOUNTING WITH FLOORPLAN. FULLY RECESSED, AC ONLY UL924

BRUSHED [ALUMINUM][NICKEL],

CLEAR FACE, [MIRROR][WHITE]

BACK, UNIVERSAL, FACE COUNT, AND MOUNTING WITH FLOORPLAN FULLY RECESSED, AC ONLY UL924

STEEL CHANNEL, WHITE POWDER

COAT

POST PAINTED STEEL HOUSING,

ONE ELECTRONIC DRIVER

NON-DIMMING, VERTERICALLY MOUNTED WITH LOUVER, AMBER NIGHT LIGHT

NON-DIMMING 23" FIXTURE. SINGLE RUN CONFIGURATION. WHITE

SEMI-GLOSS FINISH.

ANODIZED ALUMINUM CHANNEL, PROVIDE CONTINUOUS LENGTH AS

INDICATED

THIN FLEXIBLE LED STRIP,

HOUSING, PRE-WIRED J-BOX, TWO

NAME: LCE7 **ENCLOSURE**: NEMA 1 SUPPLY FROM: **VOLTAGE**: 120/208 MIN. BUS RATING: 100 A **PHASE**: 3 MOUNTING: SURFACE MAIN SIZE: 100 A LOCATION: MAIN OPTIONS: WIRE: 4 NOTES TRIP POLES POLES TRIP NOTES CIRCUIT DESCRIPTION CIRCUIT DESCRIPTION 1 EXISTING D18 - DR. WORK ROOM 3 EXISTING EXISTING EXISTING 5 EXISTING 7 EXISTING EXISTING 9 EXISTING SPARE 11 EXISTING EXISTING 13 EXISTING EXISTING 15 EXISTING EXISTING 17 EXISTING EXISTING 19 EXISTING EXISTING 21 SPARE EXISTING 23 EXISTING EXISTING 25 EXISTING 20 1 EXISTING 27 SPACE EXISTING 29 EXISTING EXISTING A. EXISTING PANEL. PANELBOARD AND ASSOCIATED DEVICES WITHIN PANELBOARD ASSEMBLY SHALL HAVE A SHORT CIRCUIT CURRENT RATING HIGHER THAN THE CALCULATED

CIDCUIT DESCRIPTION							4 MAIN OPTIONS:	
CIRCUIT DESCRIPTION	NOTES	TRIP	POLES		POLES	TRIP	NOTES CIRCUIT DESCRIPTION	скт
JIPMENT ROOM D24		20	1		1	20	BARIATRIC PATIENT ROOM D14	2
ACK		20	1		1	20	BARIATRIC PATIENT ROOM D13	4
		20	1		1	20	BARIATRIC PATIENT ROOM D12	6
NSON CONTROL PANEL		20	1		1	20	PATIENT ROOM D11	8
ACK		20	1		1	20	PATIENT ROOM D09	10
RCPT		20	1		1	20	PATIENT ROOM D06	12
JIPMENT PARK RECEPTACLES		20	1		1	20	PATIENT ROOM D04	14
STING		20	1		1	20	FLEX EXAM ROOM D03	16
STING		20	1		1	20	PATIENT BAY D05	18
WEST CEILING		25	1		1	20	PATIENT BAY D29	20
WEST CEILING		25	1		1	20	EXAM ROOM D34	22
STING		20	1		1	20	EXAM ROOM D33	24
D25, D25A, D27, D27,A D30, D30A, D32, D33, D34		20	1		1	20	EXAM ROOM D32	26
, D03A, D04, D04A, D05, D05A, D06, D06A, D29, D29A		20	1		1	20	PATIENT ROOM D30	28
, D09A, D11, D11A, D12, D12A, D13, D13A, D14, D14A		20	1		1	20	PATIENT ROOM D27	30
RE		20	1		1	20	PATIENT ROOM D25	32
TEL TERM BD-D-9		20	1		1	20	SPARE	34
RE		20	1		1	20	REC D-2,6,7	36
RE		20	1		1	20	SPARE	38
RE		20	1		1	20	RECEPTRION DESK	40
RE		20	1		1	20	MONITOR STATION MONITORS	42
	ACK RSE CALL PANEL NSON CONTROL PANEL ACK RCPT IIPMENT PARK RECEPTACLES STING STING WEST CEILING WEST CEILING D25, D25A, D27, D27,A D30, D30A, D32, D33, D34 D03A, D04, D04A, D05, D05A, D06, D06A, D29, D29A D09A, D11, D11A, D12, D12A, D13, D13A, D14, D14A RE TEL TERM BD-D-9 RE RE	ACK RSE CALL PANEL NSON CONTROL PANEL ACK RCPT DIPMENT PARK RECEPTACLES STING STING WEST CEILING WEST CEILING D25, D25A, D27, D27,A D30, D30A, D32, D33, D34 D30A, D04, D04A, D05, D05A, D06, D06A, D29, D29A D09A, D11, D11A, D12, D12A, D13, D13A, D14, D14A RE TEL TERM BD-D-9 RE RE RE	ACK RSE CALL PANEL RSON CONTROL PANEL ACK RCPT RCPT RIPMENT PARK RECEPTACLES STING STING REST CEILING REST CEILING RODS, D25A, D27, D27,A D30, D30A, D32, D33, D34 RD03A, D04, D04A, D05, D05A, D06, D06A, D29, D29A RD03A, D11, D11A, D12, D12A, D13, D13A, D14, D14A RE	ACK RSE CALL PANEL RSON CONTROL PANEL ACK RCPT RCPT RSTING	ACK SSE CALL PANEL NSON CONTROL PANEL ACK RCPT DIPMENT PARK RECEPTACLES STING STING NEST CEILING STING D25, D25A, D27, D27,A D30, D30A, D32, D33, D34 D03A, D04, D04A, D05, D05A, D06, D06A, D29, D29A D09A, D11, D11A, D12, D12A, D13, D13A, D14, D14A RE STEL TERM BD-D-9 RE RE RE 20 1 RE 20 1	ACK RES CALL PANEL RISE CALL PANEL ROON CONTROL PANEL ACK RCPT RCPT RIPMENT PARK RECEPTACLES RESTING REST CEILING REST CEILING REST CEILING REST CEILING RODA, DO4A, DO5, D05A, D06, D06A, D29, D29A REST CEILING, D11, D11A, D12, D12A, D13, D13A, D14, D14A RE RE RE RE RE RE RE RE RE R	ACK ACK ACK ACK ACK ACK ACK ACK	ACK SE CALL PANEL SE CALL PANEL 20 1 1 20 BARIATRIC PATIENT ROOM D13 SE CALL PANEL 20 1 1 20 BARIATRIC PATIENT ROOM D12 NSON CONTROL PANEL 20 1 1 20 PATIENT ROOM D012 RCPT 20 1 1 20 PATIENT ROOM D09 RCPT 20 1 1 20 PATIENT ROOM D09 RCPT 20 1 1 20 PATIENT ROOM D06 IPMENT PARK RECEPTACLES 20 1 20 1 20 PATIENT ROOM D06 IPMENT PARK RECEPTACLES 20 1 20 1 20 PATIENT ROOM D06 IDMENT PARK RECEPTACLES 20 1 20 PATIENT ROOM D06 IDMENT PARK RECEPTACLES 20 1 20 PATIENT ROOM D06 IDMENT PARK RECEPTACLES 20 1 20 PATIENT BOM D03 IDMENT PARK RECEPTACLES 20 1 20 PATIENT BOM D03 IDMENT PARK ROOM D33 IDMENT PARK ROOM D34 IDMENT PARK ROOM D35 IDMENT PARK ROOM D35 IDMENT PARK ROOM D35 IDMENT PARK ROOM D36 IDMENT PARK ROOM D36 IDMENT PARK ROOM D36 IDMENT PARK ROOM D37 IDMENT PARK ROOM D37 IDMENT PARK ROOM D38 IDMENT ROOM D38 IDMENT PARK ROOM D39 IDMENT ROOM D39 ID

	ENCLOSURE: NEMA 1 SUI MOUNTING: SURFACE LOCATION: ELECTRICAL D31	PPLY FROM:						TAGE: PHASE: WIRE:	_	MIN. BUS RATING: 225 A MAIN SIZE: 225 A MAIN OPTIONS:		
СКТ	CIRCUIT DESCRIPTION	NOTES	TRIP	POLES		-	POLES	TRIP	NOTES	CIRCUIT DESCRIPTION	CK.	
1	SPARE		20	1			1	20		TOILET FIXTURE POWER SUPPLIES	2	
3	SPARE		20	1		-	1	20		RELOCATED DENTAL AIR COMPRESSORS	4	
5	LTS D-24		20	1	1		1	20		HEPA FILTERS RMS B93,93A,93B	6	
7	LTS D-6,7,9,20,22		20	1			1	20		RM B93 PASS THRU REFRIGERATOR	8	
9	LCL FUME HOOD D-?		20	1	-	-	1	20		RM B93 PASS THRU REFRIGERATOR	10	
11	SPARE		20	1	1		1	20		LTS - 126A	12	
13	SPARE		20	1	1		1	20		EXIT LT - D-26	14	
15	REC 126A		20	1	-	-	1	20		SPARE	16	
17	DIGITAL CONTROL PANEL - 126A		20	1	1		1	20		RM B-93,B93A,B93B DOOR OPENER	18	
19	120V PRINTER OUTLETS		20	1	1						20	
21	SPACE				-	-	3	30	1	IT RACK	22	
23	NURSE STATION TELEMETRY		20	1	1						24	
25	LTS RM B93,B93A,B93B AND EF RM B93B		20	1]						26	
27	NEW DENTAL CLINIC PANEL (LCE)		60	1	-	-	3	30	1	IT RACK	28	
29	NEW DENTAL CLINIC PANEL (LCE)		60	1	1						30	
31	NEW DENTAL CLINIC PANEL (LCE)		60	1	1						32	
33	PATIENT ROOM D05,D25,D27,D29,D30 DOORS		20	1	-	-	3	30	1	IT RACK	34	
35	PATIENT ROOM D11, D12, D13, D14 DOORS		20	1	1						36	
37	PATIENT ROOM D03, D04, D06, D09 DOORS		20	1				00		DEL COATED DENTAL CLICTION DUMPO	38	
39	NURSE STATION COMP.		20	1	-	-	2	30		RELOCATED DENTAL SUCTION PUMPS	40	
41	NURSE STATION COMP.		20	1	1		1	20		RELOCATED DENTAL AIR DRYER	42	
A	ENERAL NOTES: . EXISTING PANEL. PANELBOARD AND ASSOCIATED VALUE. OTES: . PROVIDE NEW CIRCUIT BREAKER	DEVICES W			ARD ASS	SEMBLY	•		SHORT C			

	MOUNTING: SURFACE LOCATION: ELECTRICAL D31					F	PHASE: WIRE:	-	MIN. BUS RATING: 200 A MAIN SIZE: 200 A MAIN OPTIONS: CB	
СКТ	CIRCUIT DESCRIPTION	NOTES	TRIP	POLES		POLES	TRIP	NOTES	CIRCUIT DESCRIPTION	CK
1	PATIENT ROOM D14 HEADWALL		20	1		1	20		LIGHTING RMS D15, D19, D20, D21, D22, D23, D24	2
3	PATIENT ROOM D13 HEADWALL		20	1		1	20		CORRIDOR LIGHTING	4
5	PATIENT ROOM D13 & D14 GENERAL RECEPTACLES		20	1	 .	1	20		CORRIDOR LIGHTING	6
7	PATIENT ROOM D12 HEADWALL		20	1		1	20		WAITING ROOM LIGHTING	8
9	PATIENT ROOM D11 HEADWALL		20	1		1	20		PATIENT ROOM LIGHTING D25, D27, D30	10
11	PATIENT ROOM D11 & D12 GENERAL RECEPTACLES		20	1		1	20		LIGHTING ROOMS D05, D07A, D08, D26, D29	12
13	PATIENT ROOM D09 HEADWALL		20	1		1	20		PATIENT ROOM LIGHTING D11, D12, D13, D14	14
15	PATIENT ROOM D06 HEADWALL		20	1		1	20		PATIENT ROOM LIGHTING D03, D04, D06, D09	16
17	PATIENT ROOM D06 & D09 GENERAL RECEPTACLES		20	1	-	1	20		GENERAL RECEPTACLES ROOMS D28, D30	18
19	PATIENT ROOM D04 HEADWALL		20	1		1	20		GENERAL RECEPTACLES ROOMS D25, D27	20
21	PATIENT ROOM D03 HEADWALL		20	1		1	20		EQUIPMENT ROOM D24, STAFF RESTROOMS	22
23	PATIENT ROOM D03 & D04 GENERAL RECEPTACLES		20	1	-	1	20		NURSE WORKSTATION RECEPTACLES	24
25	PATIENT ROOM D05 HEADWALL		20	1		1	20		NURSE WORKSTATION RECEPTACLES	26
27	PATIENT ROOM D29 HEADWALL		20	1		1	20		NURSE ROOM D07A RECEPTACLES	28
29	PATIENT ROOM D05 & D29 GENERAL RECEPTACLES		20	1		1	20		SPARE	30
31	EXAM ROOM D32, D33, D34 GENERAL RECEPTACLES		20	1		1	20		RECEPTACLES D19	32
33	C21 RCPT		20	1		1	20		BREAK ROOM FRIDGE	34
35	REC RM D-01		20	1		1	20		BREAK ROOM COFFEE MAKER	36
37	PATIENT ROOM D25 HEADWALL		20	1		1	20		BREAK ROOM GFCI RECEPTACLES	38
39	PATIENT ROOM D27 HEADWALL		20	1		1	20		BREAK ROOM RECEPTACLES	40
	PATIENT ROOM D30 HEADWALL		20	1		1	20		BREAK ROOM RECEPTACLES	42

	ENCLOSURE: NEMA 1 MOUNTING: SURFACE LOCATION:	SUPPLY FROM:			_	LTAGE: PHASE: WIRE:	-	MIN. BUS RATING: 100 A MAIN SIZE: 100 A MAIN OPTIONS:	
СКТ	CIRCUIT DESCRIPTION	NOTES	TRIP	POLES	 POLES	TRIP	NOTES	CIRCUIT DESCRIPTION	СК
1	CENTRIFUGE D27		30	1	 1	20		BSMT SUPPLY FAN 5-SV3	2
3	CENTRIFUGE D27		30	1	 1	20		BSMT SUPPLY FAN 5-SV3	4
5	CENTRIFUGE D27		30	1	 1	20		BSMT SUPPLY FAN 5-SV3	6
7	SPARE		20	1	 1	20		BSMT SUPPLY FAN 5-SV4	8
9	SPARE		20	1	 1	20		BSMT SUPPLY FAN 5-SV4	10
11	SPARE		20	1	 1	20		BSMT SUPPLY FAN 5-SV4	12
13	SPARE		20	1	 			SPACE	14
15	SPARE		20	1	 			SPACE	16
17	SPARE		20	1	 			SPACE	18
19	SPARE		20	1	 			SPACE	20
21	SPACE				 			SPACE	22
23	SPACE				 			SPACE	24

one quarter 0

one eighth inch = one foot

0 4 8 16

	ENCLOSURE: NEMA 1 MOUNTING: SURFACE LOCATION: ELECTRICAL D31	SUPPLY FROM:				TAGE: PHASE: WIRE:		MIN. BUS RATING: 200 A MAIN SIZE: 200 A MAIN OPTIONS:	
KT	CIRCUIT DESCRIPTION	NOTES	TRIP	POLES	 POLES	TRIP	NOTES	CIRCUIT DESCRIPTION	СК
1	SPARE		20	1	1	20		CORRIDOR RECEPTACLES	2
3	VITROS 250		20	1	1	20		LTS	4
5				_	1	20	1	CORRIDOR RECEPTACLES AND D02	6
7	SPARE		30	2	1	20	1	D08 UC FRIDGE & CONV. RECEPTACLE	8
9	SPARE		20	1	1	20		D08 BLANKET WARMER	10
11	SPARE		20	1	1	20		D08 OMNICELL CABINET	12
13	5-EF-7,5-EF-18		20	1	1	20		INTEGRA 400	14
15	REC RM 48,49,50,51		20	1	1	20	1	NURSE ALCOVE FRIDGE	16
17	REC RM 48,49,50,51		20	1	1	20	1	NURSE ALCOVE MICROWAVE & GFI	18
19	5-EF-30,5-EF-32,5-P-14		20	1	1	20	1	NURSE ALCOVE COFFEE MACHINE	20
21	D26 RCPTS		20	1	1	20	1	NURSE ALCOVE ICE MACHINE	22
23	LIGHTS - 126A		20	1	1	20		EXTERIOR LIGHTS	24
25	SPARE		60	1	1	20		RECEPTIONIST DESKS	26
27	SPARE		60	1	1	20	1	RECEPTIONIST RECEPTACLES	28
29	5-AC-34		20	1	1	20	1	WAITING ROOM COFFEE MACHINE	30
31	5-AC-34		20	1	1	20		WAITING ROOM RECEPTACLES	32
33	5-AC-35		20	1	1	20		REC RM D-54,55,56	34
35	SPARE		20	1	1	20		REC RM D-54,55,56	36
37									38
39	SPARE		45	3	3	30		SPARE	40
41									42

	NAME: LQ1 ENCLOSURE: NEMA 1 MOUNTING: SURFACE	SUPPLY FROM:			VC	PHASE:		MIN. BUS RATING: 100 A MAIN SIZE: 100 A	
	LOCATION:					WIRE:	4	MAIN OPTIONS:	
СКТ	CIRCUIT DESCRIPTION	NOTES	TRIP	POLES	 POLES	TRIP	NOTES	CIRCUIT DESCRIPTION	СКТ
1					1	30		SPARE	2
3	DENTAL AIR 1		20	3	1	30		SPARE	4
5					1	20		SPARE	6
7								SPACE	8
9	DENTAL AIR 2		20	3	1	20		EXISTING	10
11					1	20		EXISTING	12
13	SPARE		15	1	1	30		SPARE	14
15	EXISTING		15	1	1	30		SPARE	16
17	SPARE		20	1	1	20		EXISTING	18
19	SPARE		20	1	1	20		EXISTING	20
21	SPARE		20	1	1	20		SPARE	22
23	SPARE		20	1	1	20		SPARE	24
25	SPARE		20	1				SPACE	26
27	SPACE							SPACE	28
29	SPACE							SPACE	30

1. PROVIDE NEW 20 AMP SINGLE POLE BREAKER.

29	SPACE								SPACE
	GENERAL NOTES:				_				
	 A. EXISTING PANEL. PANELBOARD AND ASSOCIATED DEV VALUE. 	ICES W	/ITHIN PA	NELBOA	ARD ASSEMBLY	SHALL F	HAVE A	SHORT (CIRCUIT CURRENT RATING HIGHER THAN THE CALCULATI
	NOTES:								
	1.								
	2.								
	3.								

	ENCLOSURE: NEMA 1 MOUNTING: SURFACE LOCATION:	SUPPLY FROM:					TAGE: PHASE: WIRE:	-	MIN. BUS RATING: 200 A MAIN SIZE: 200 A MAIN OPTIONS: CB	
СКТ	CIRCUIT DESCRIPTION	NOTES	TRIP	POLES		POLES	TRIP	NOTES	CIRCUIT DESCRIPTION	СК
1	REC D18,D24MOA		20	1	-	1	20		SPARE	2
3	REC D21,D24MOA		20	1		1	20		REC D13MOA	4
5	REC D28		20	1		1	20		REC D13MOA	6
7	REC D17,D24 MIDDLE COUNTER		20	1		1	20		REC D24,D27,D25MOA	8
9	REC C17,D22MOA,D24		20	1		1	20		REC D24MOA,D25MOA,D27MOA	10
11	REC D22,D24,D22MOA		20	1		1	20		REC D24MOA,D24MOA,D27MOA,D25 S.WALL	12
13	REC D24MOA		20	1		1	20		DR WORK ROOM LIGHTING	14
15	SPARE		20	1		1	20		CORRIDOR LIGHTING	16
17	LTS D24,D27		20	1		1	20		MECHANICAL ROOM RECEPTACLE	18
19	LTS D22, D17 SMALL STERILIZER		20	1		1	30		HEAT RECOVERY PUMP D28	20
21	LTS D24,D25		20	1		1	30		HEAT RECOVERY PUMP D28	22
23	THRU WALL EX FAN D28		15	1		1	30		HEAT RECOVERY PUMP D28	24
25	THRU WALL EX FAN D28		15	1		1	20		LAWN SPRINKLER D28	26
27	THRU WALL EX FAN D28		15	1		1	20		AIR DRYER D28	28
29	D18 - DR. WORK ROOM PRINTER		20	1		1	20		DR. WORK ROOM RECEPTACLES	30
31	D18 - DR. WORK ROOM WORK STATION		20	1		1	20		DR. WORK ROOM RECEPTACLES	32
33	D18 - DR. WORK ROOM WORK STATION		20	1		1	40		SPARE	34
35	D18 - DR. WORK ROOM WORK STATION		20	1		1	40		SPARE	36
37	D18 - DR. WORK ROOM WORK STATION		20	1		1	100		PANEL LN 4A	38
39	PIPE BASEMENT REC		20	1		1	100		PANEL LN 4A	40
41	PIPE BASEMENT LTS		20	1		1	100		PANEL LN 4A	42

	NAME: LSE2 ENCLOSURE: NEMA 1 SUF MOUNTING: SURFACE LOCATION: ELECTRICAL D31	PPLY FROM:				_	_TAGE: PHASE: WIRE:		MIN. BUS RATING: 100 A MAIN SIZE: 100 A MAIN OPTIONS:	
СКТ	CIRCUIT DESCRIPTION	NOTES	TRIP	POLES		POLES	TRIP	NOTES	CIRCUIT DESCRIPTION	скт
1	EXIT LTS PRE OP CARE		20	1		1	20		LTS - D1,D2,D3A,D4	2
3	EXIT LTS CORRIDOR		20	1		1	20		LTS - D5,D6,C17,C17A	4
5	EXIT LTS - C16,C17,C17A,C20,D1,D24,D29,D29A		20	1		1	20		LTS - C16,C18	6
7	RECPTS ICE MACHINE & 4PLEX D2,D5		20	1		1	20		HUB RECPT RM 21 - HALLWAY	8
9	SPACE					1	20		AUTOMATIC DOORS EGRESS	10
11	SPACE					1	20		FIRE ALARM PANEL	12
A		DEVICES W	ITHIN P	ANELBOA	ARD ASSEMBLY	′ SHALL H	IAVE A	SHORT C	IRCUIT CURRENT RATING HIGHER THAN THE CALC	ULATED

		CONSULTANT	S		ARCHITECT OF	RECORD	STAMP	Office of	ELECTRICAL SCHEDULES	Phase BID SET	Project Title RENOVAT	E PREOPERATIVE CARE	Project Number VA #438-19-101 SGA #191910
		MEDICAL PLANNER:	STRUCTURAL:	MECHANICAL / ELECTRICAL / PLUMBING:	Stone Group Architects 600 East 7th Street		PROFESSION THE	Construction and Facilities	LLLOTTION LL GOTTLEBOLLO		UNIT		Building Number 5
		BWBR, INC. 380 Saint Peter Street	ERICKSEN ROED & ASSOCIATES Ericksen Roed & Associates 2550 University Avenue West	DUNHAM Dunham Associates, Inc. 50 South Sixth Street	Sioux Falls, SD 57103 605-271-1144	STONE GROUP	14938 GINE CURTIS D. BARLAGE	Management	Approved:		Location SIOUX FAI	LLS, SOUTH DAKOTA	Drawing Number
Revision# Description	Date:	Suite 600 Saint Paul, MN 5512 Phone: 651-222-3701	Suite 423-S Saint Paul, MN 55114 Phone: 651-251-7570	Minneapolis, MN 55402-1540 Phone: 612-465-7550		ARCHITECTS	THE SOUTH DAYOUT.	U.S. Department of Veterans Affairs	s		11/06/20	Checked Drawn CB BZ	EE-602

NAME: UPS-G SUPPLY FROM: **VOLTAGE**: 120/208 **ENCLOSURE**: NEMA 1 MIN. BUS RATING: 125 A MOUNTING: SURFACE PHASE: 3 MAIN SIZE: 125 A LOCATION: ELECTRICAL D31 WIRE: 4 MAIN OPTIONS: MLO NOTES TRIP POLES CIRCUIT DESCRIPTION POLES TRIP NOTES CIRCUIT DESCRIPTION
 POLES
 TRIP
 NOTES

 - - - SPACE

 1
 20
 CTR ISLAI

 1
 25
 SPARE

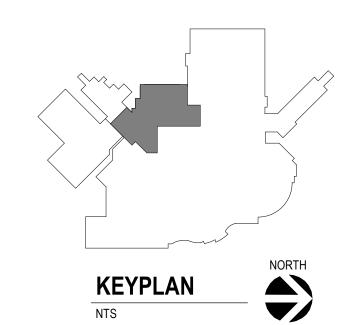
 1
 30
 LAB INSTI

 1
 20
 SPARE

 1
 20
 SPARE

 1
 20
 SPARE

 1
 20
 SPARE
 1 SPACE 3 SPACE 5 SPACE 7 SPACE 9 SPACE 11 SPACE 13 SPACE 15 SPACE 17 SPACE 19 SPACE 21 LAB INSTRUMENT CTR ISLANDS 23 LAB INSTRUMENT 25 SPARE LAB INSTRUMENT 27 SPARE LAB INSTRUMENT 29 SPARE 1 20 1 20 1 20 1 20 1 20 1 20 31 SPARE SPARE 33 SPARE SPARE JOHNSON CONTROL PANEL 35 LITES INFUSION 37 LITES INFUSION VITROS 250 39 LITES INFUSION SPARE 1 20 41 SPARE SPARE GENERAL NOTES: A. EXISTING PANEL. PANELBOARD AND ASSOCIATED DEVICES WITHIN PANELBOARD ASSEMBLY SHALL HAVE A SHORT CIRCUIT CURRENT RATING HIGHER THAN THE CALCULATED VALUE. NOTES:



Project Number

MEDICAL PLANNER: BWBR BWBR, INC. 380 Saint Peter Street Suite 600 Saint Paul, MN 5512 Phone: 651-222-3701 Revision# Description VA FORM 08 - 6231

one eighth inch = one foot

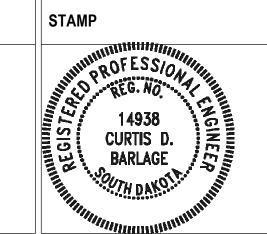
0 4 8 16

CONSULTANTS STRUCTURAL: ERICKSEN ROED
& ASSOCIATES Ericksen Roed & Associates 2550 University Avenue West Suite 423-S Saint Paul, MN 55114 Phone: 651-251-7570

MECHANICAL / ELECTRICAL / PLUMBING: DUNHAM 🕋 **Dunham Associates, Inc.** 50 South Sixth Street Minneapolis, MN 55402-1540 Phone: 612-465-7550

605-271-1144

ARCHITECT OF RECORD 够 **Stone Group Architects** 600 East 7th Street Sioux Falls, SD 57103 STONE GROUP ARCHITECT5



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VA	U.S. Department of Veterans Affairs

ELECTRICAL SCHEDULES	Phase BID SET	Project Title RENOVATE I UNIT	RENOVATE PREOPERATIVE CARE		
Approved:					
t irs		Issue Date 11/06/20	Checked	Drawn BZ	EE-603