# X-70 CNSL RENOVATION

## FOR MRD OFFICE

NAVAL STATION - NORFOLK, VIRGINIA



# NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND MID-ATLANTIC

DESIGN AND CONSTRUCTION
FACILITIES ENGINEERING AND ACQUISITION DIVISION
NORFOLK, VIRGINIA

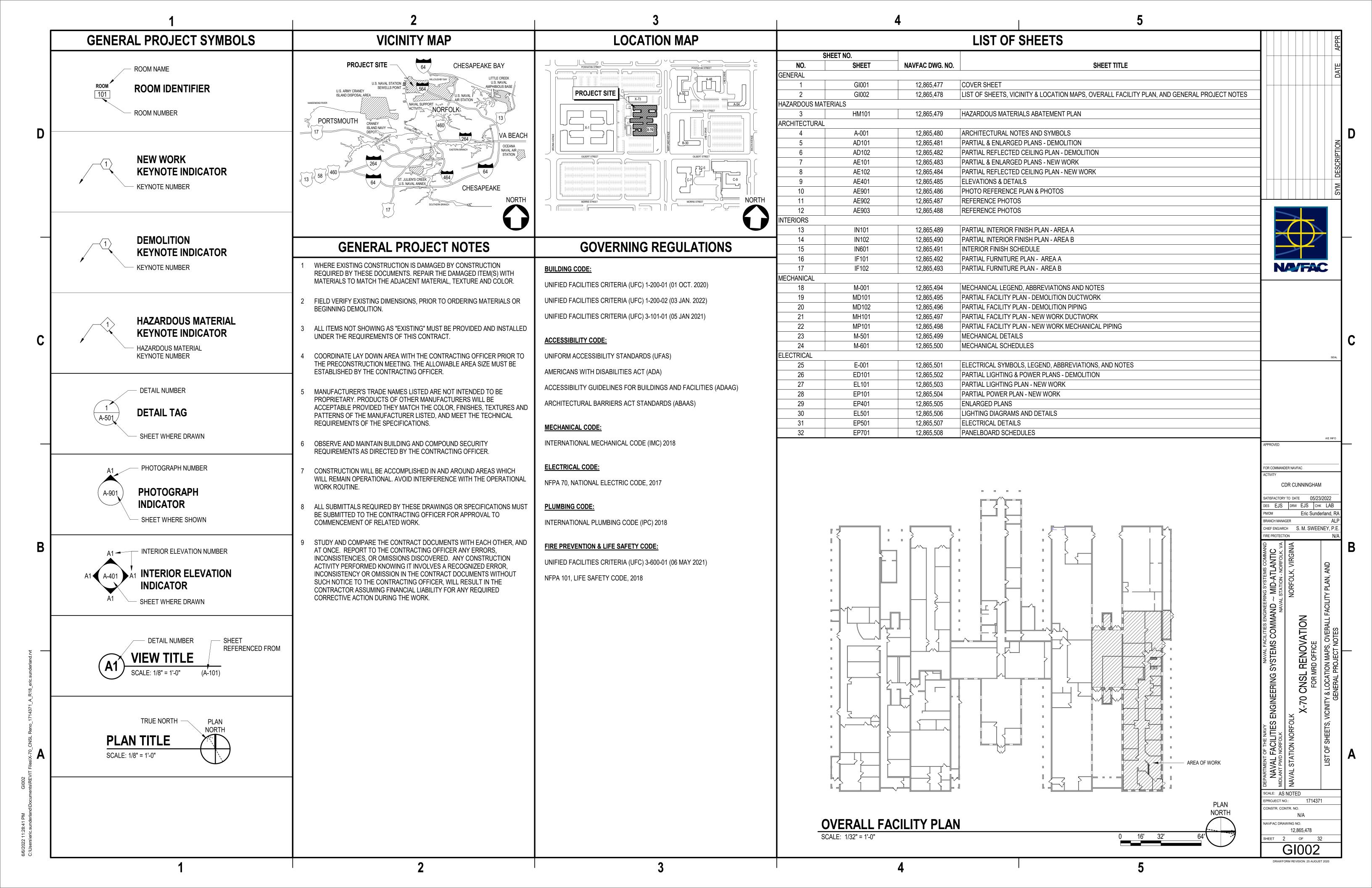
FACILITIES ENGINEERING SYSTEMS COMMAND NORFOLK

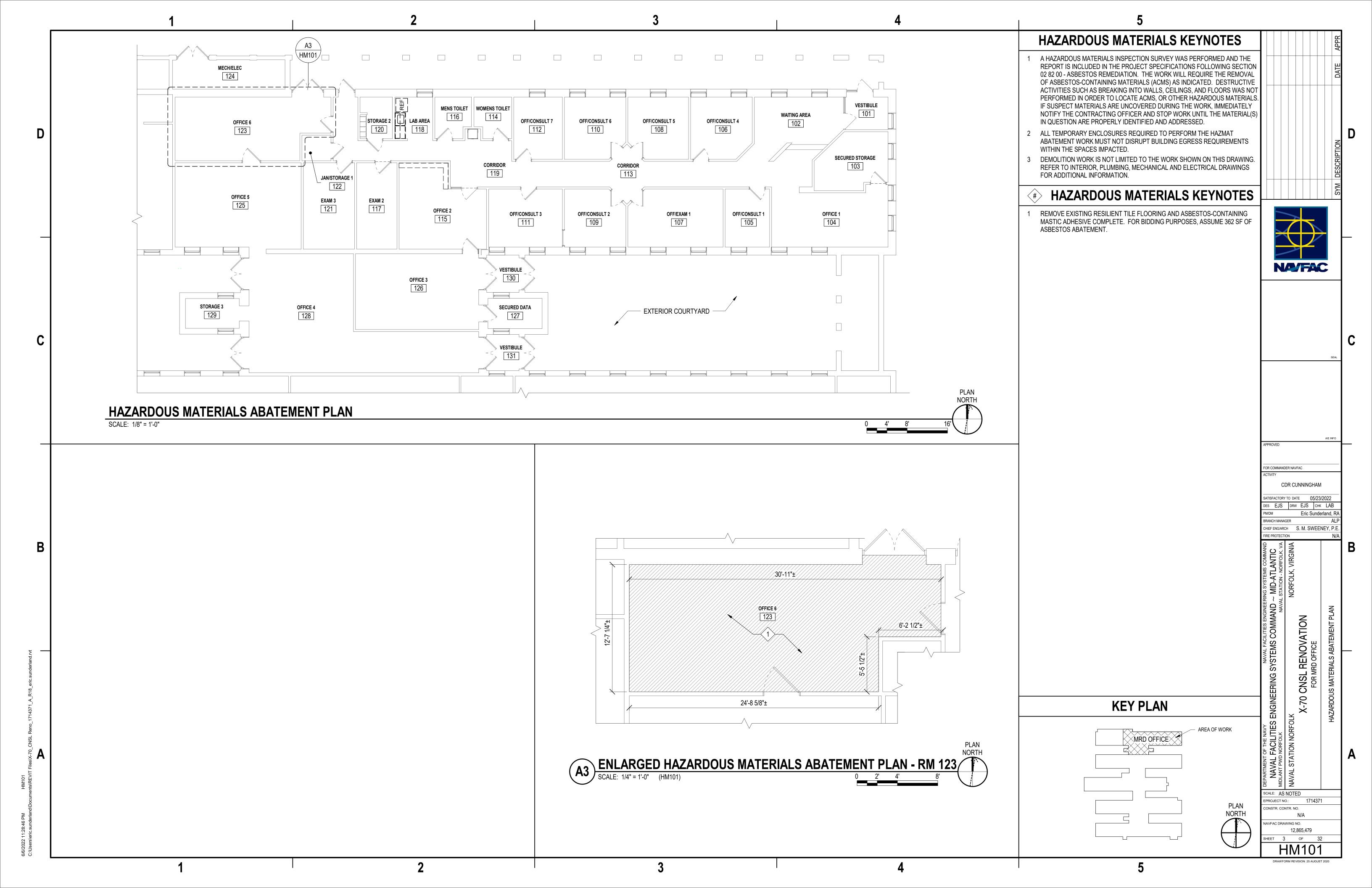
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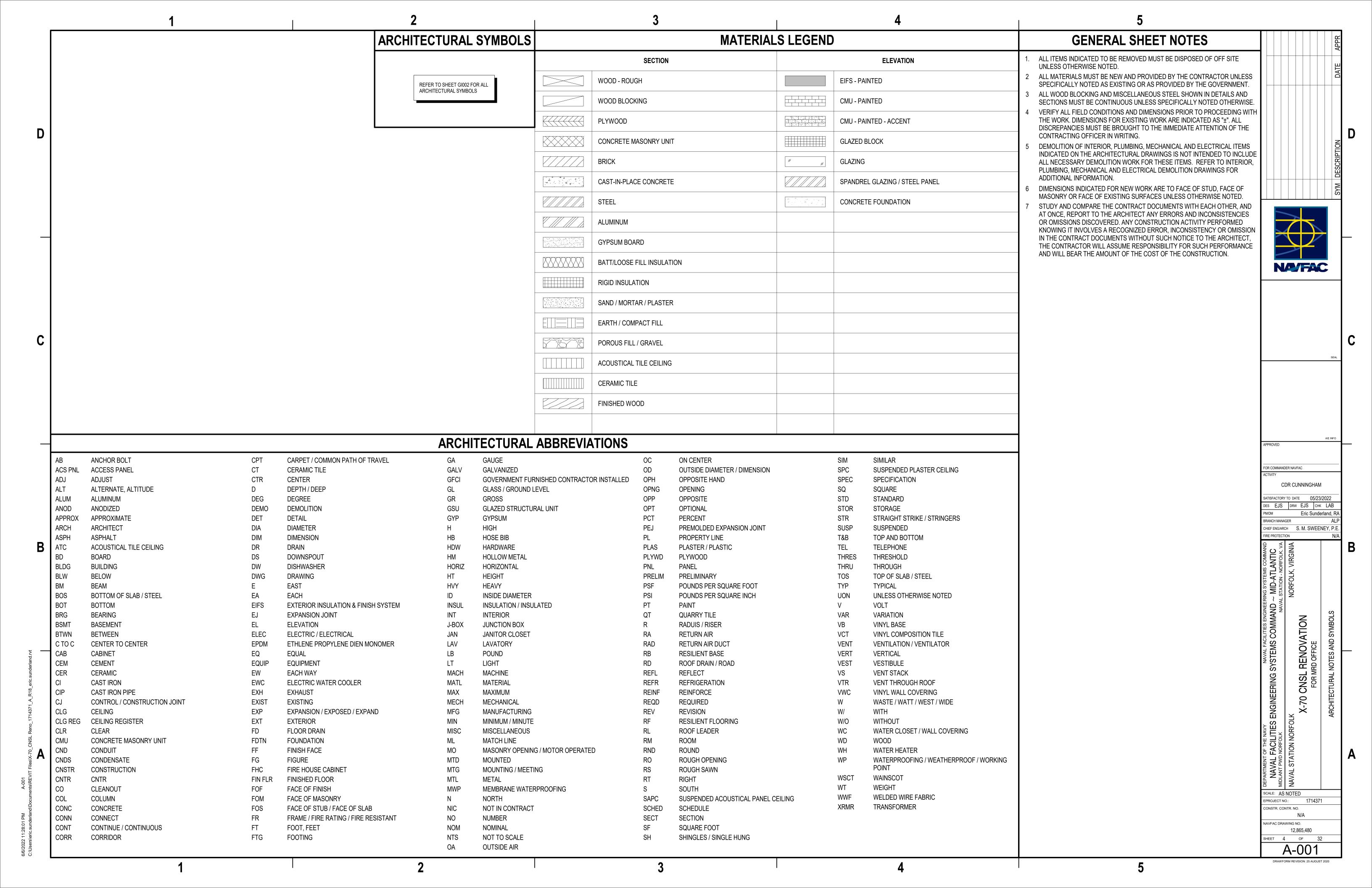
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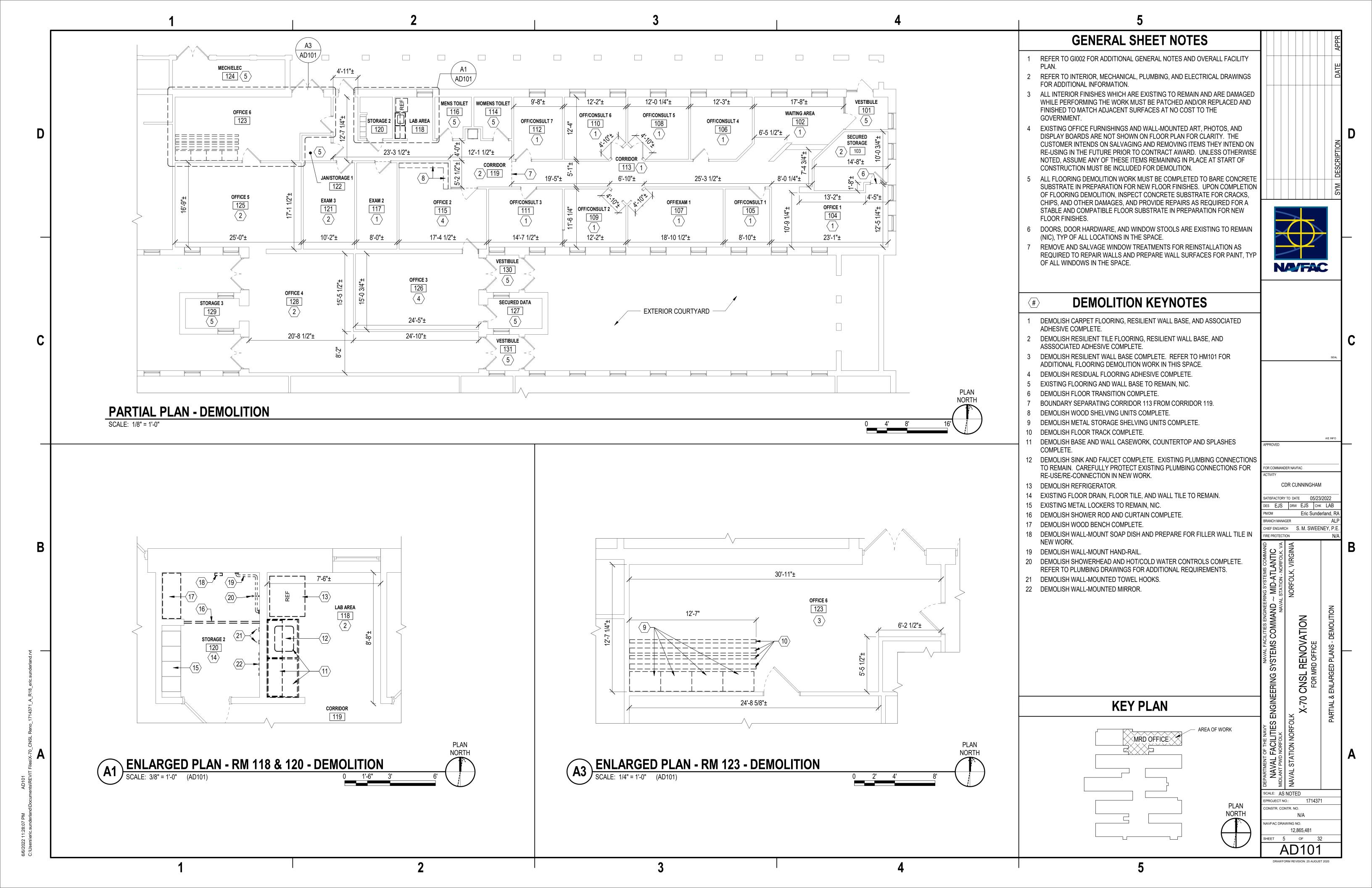
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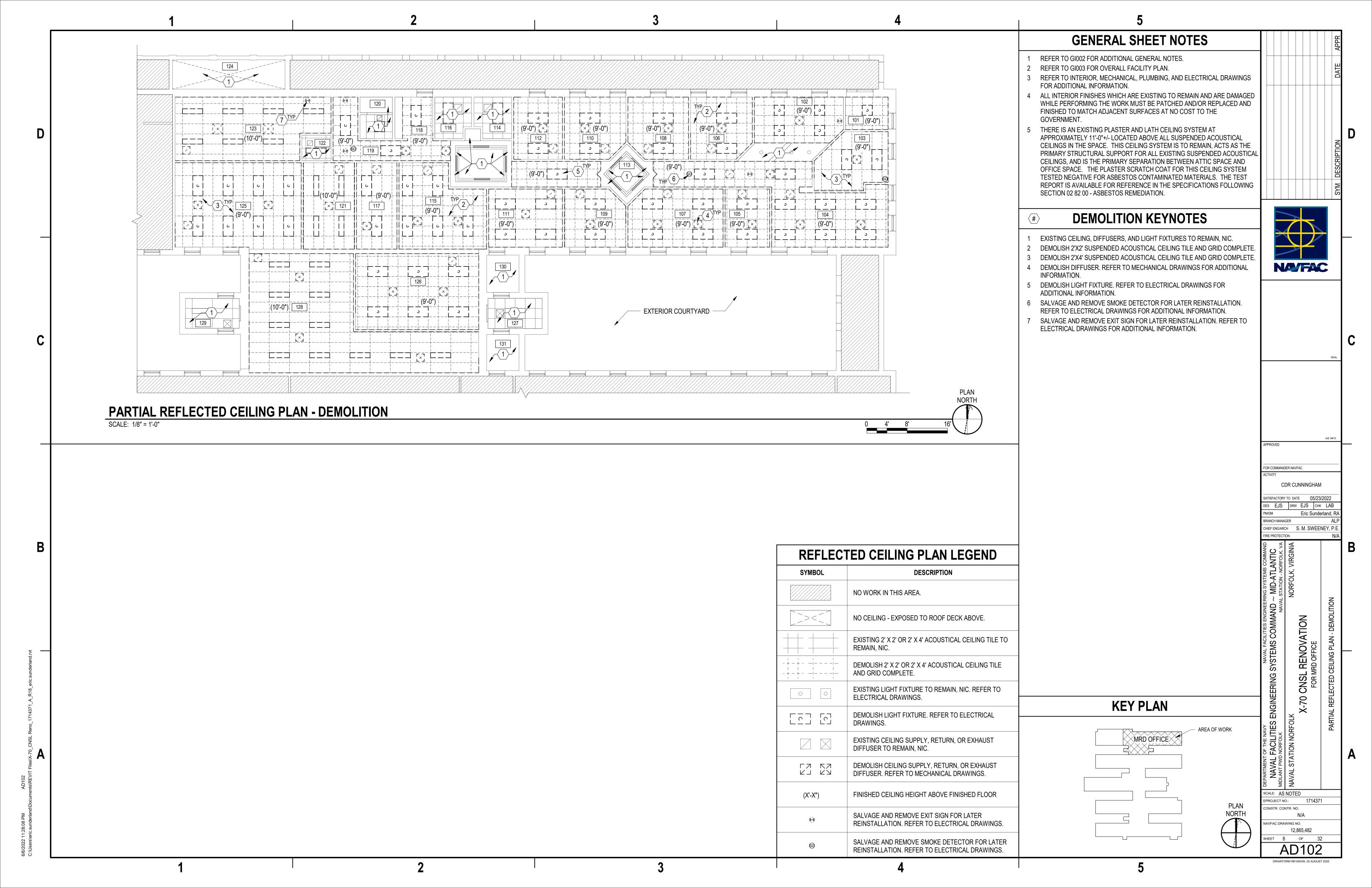
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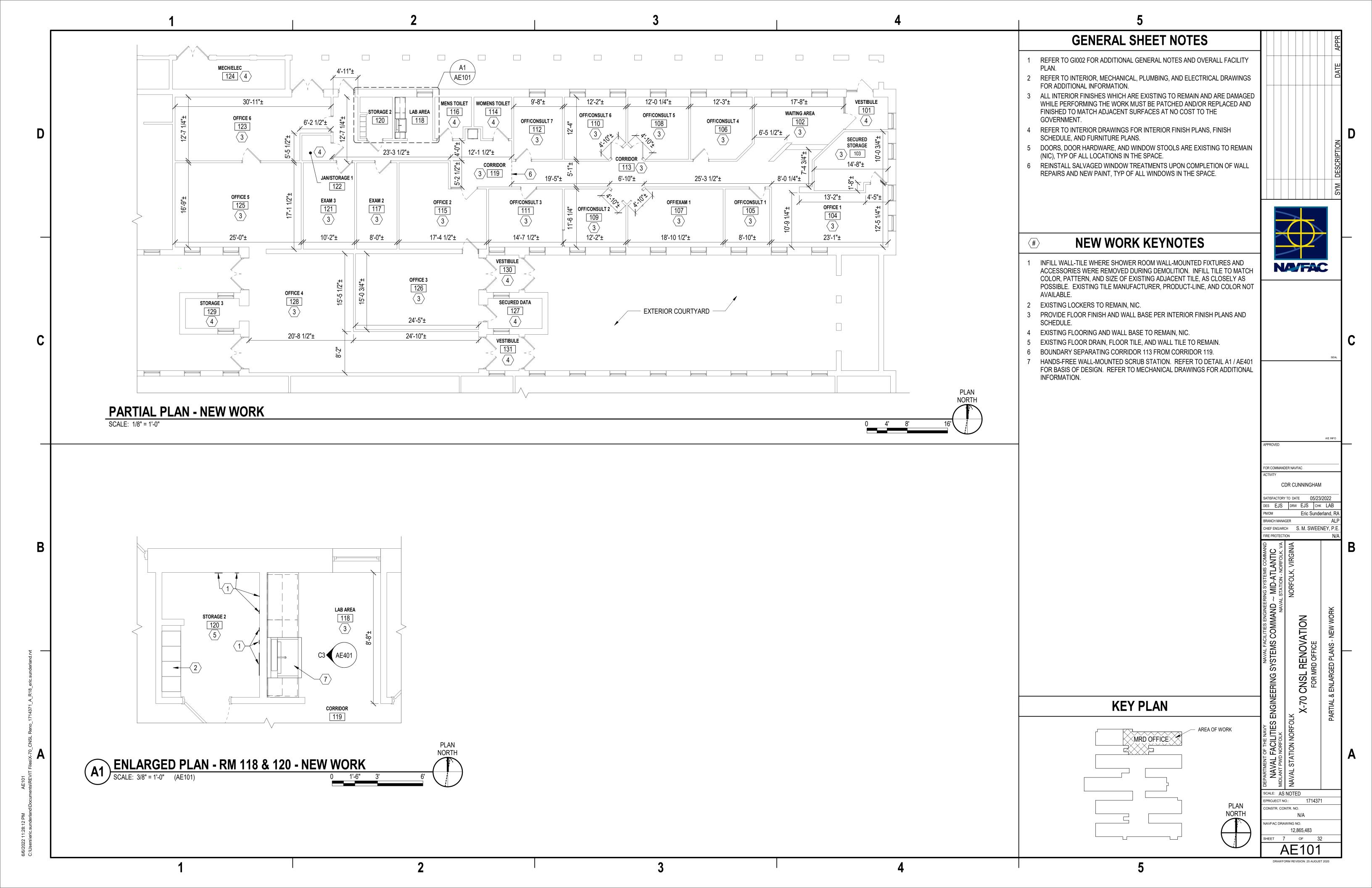


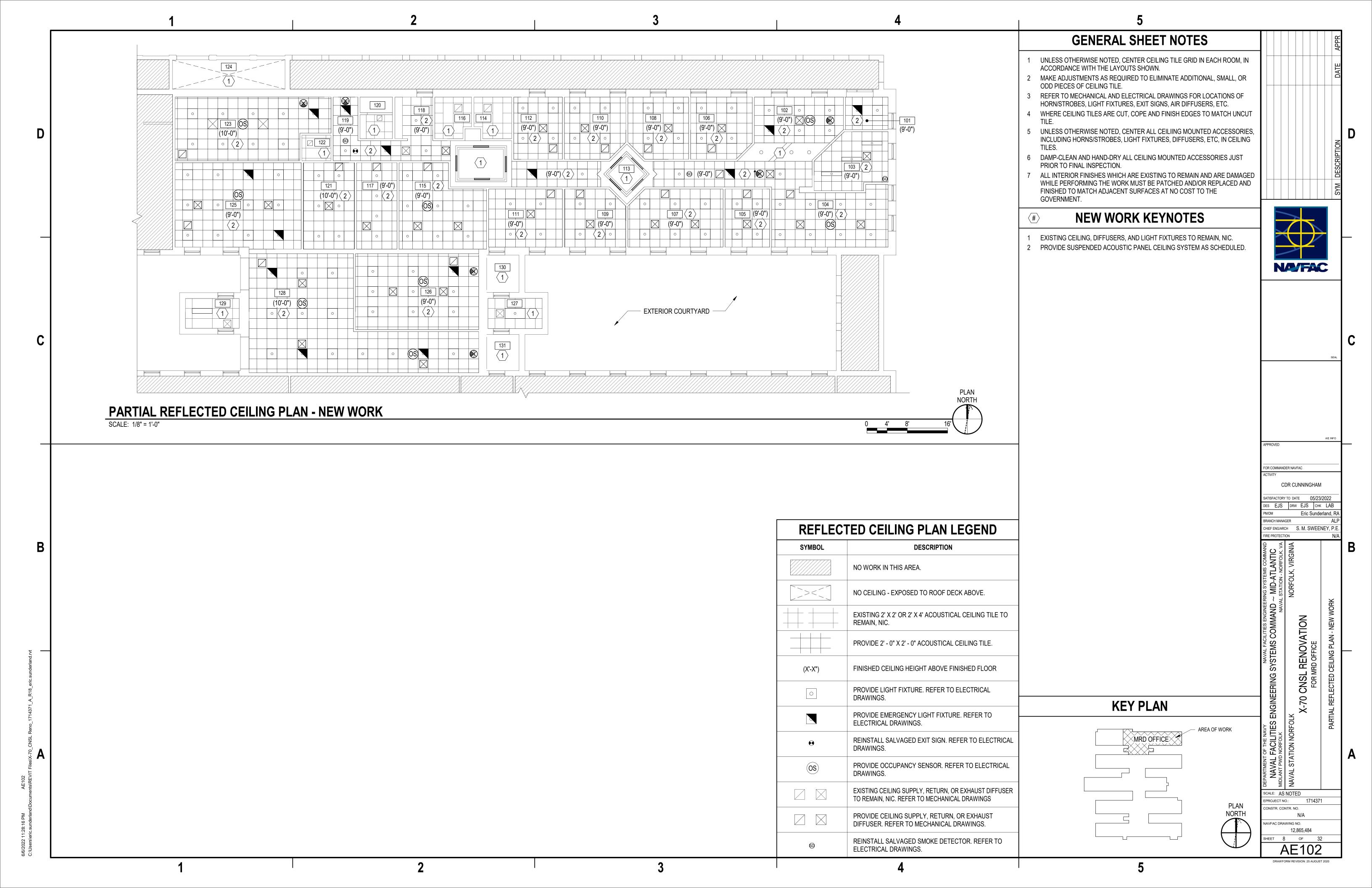


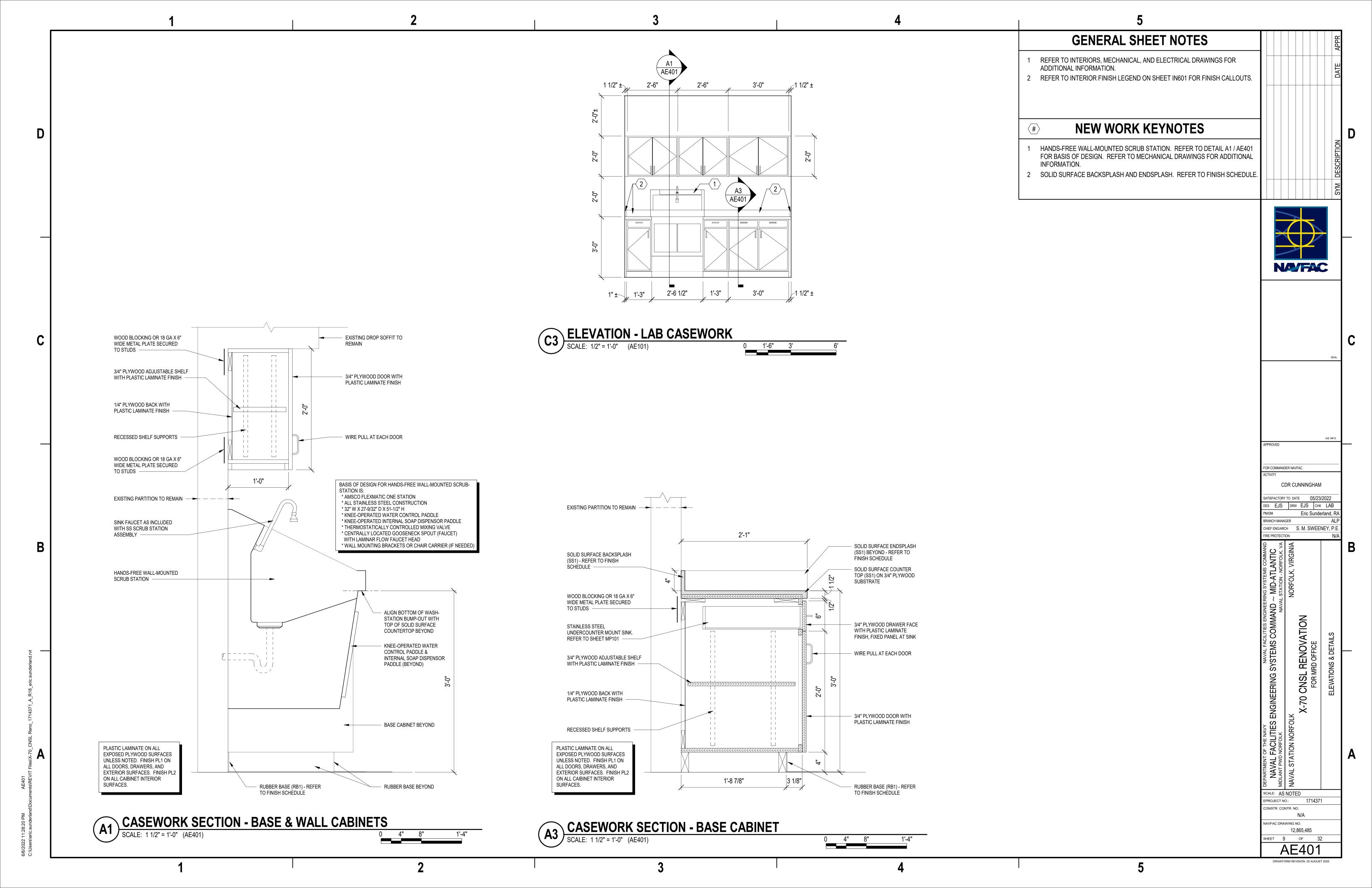


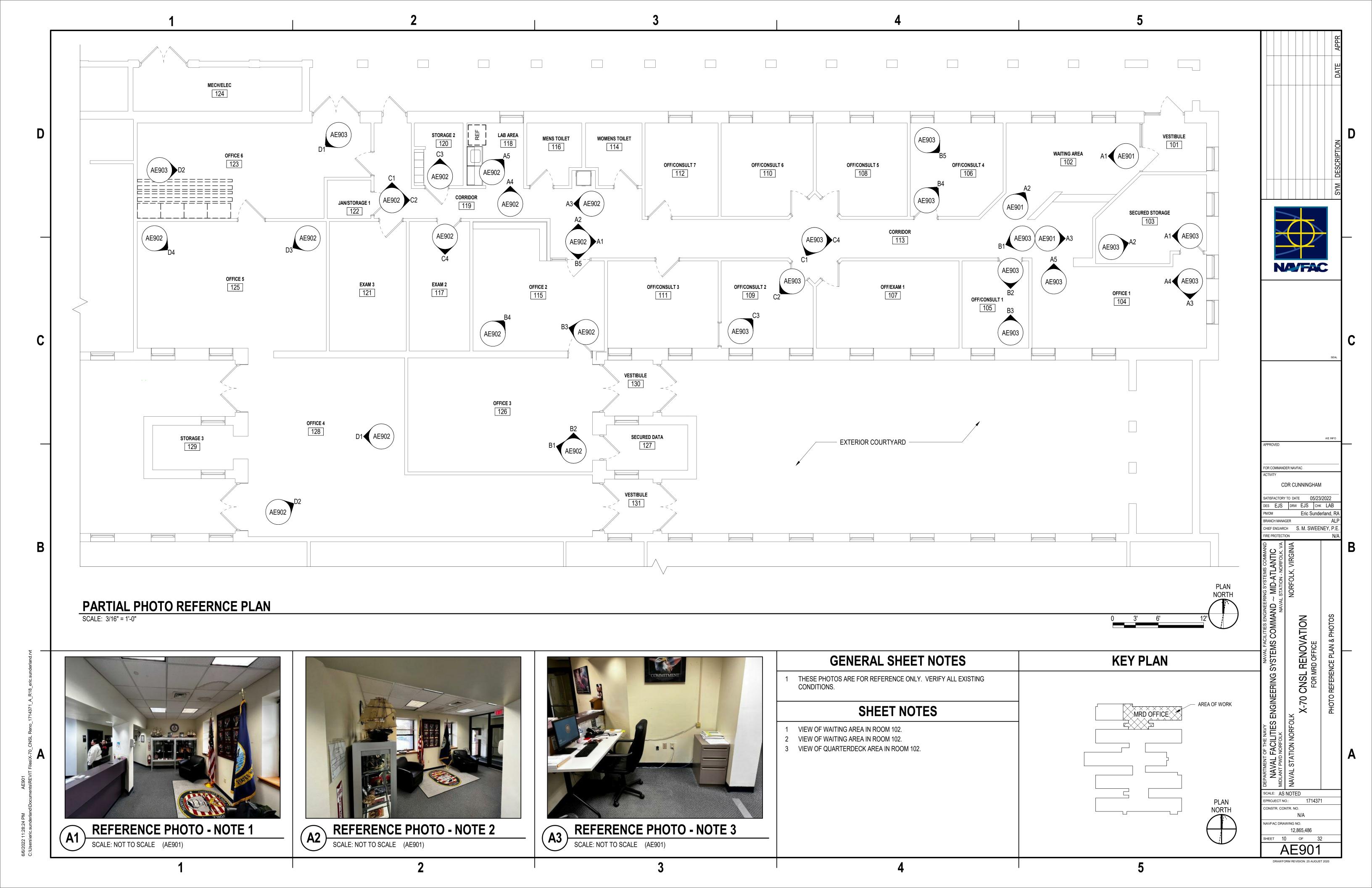


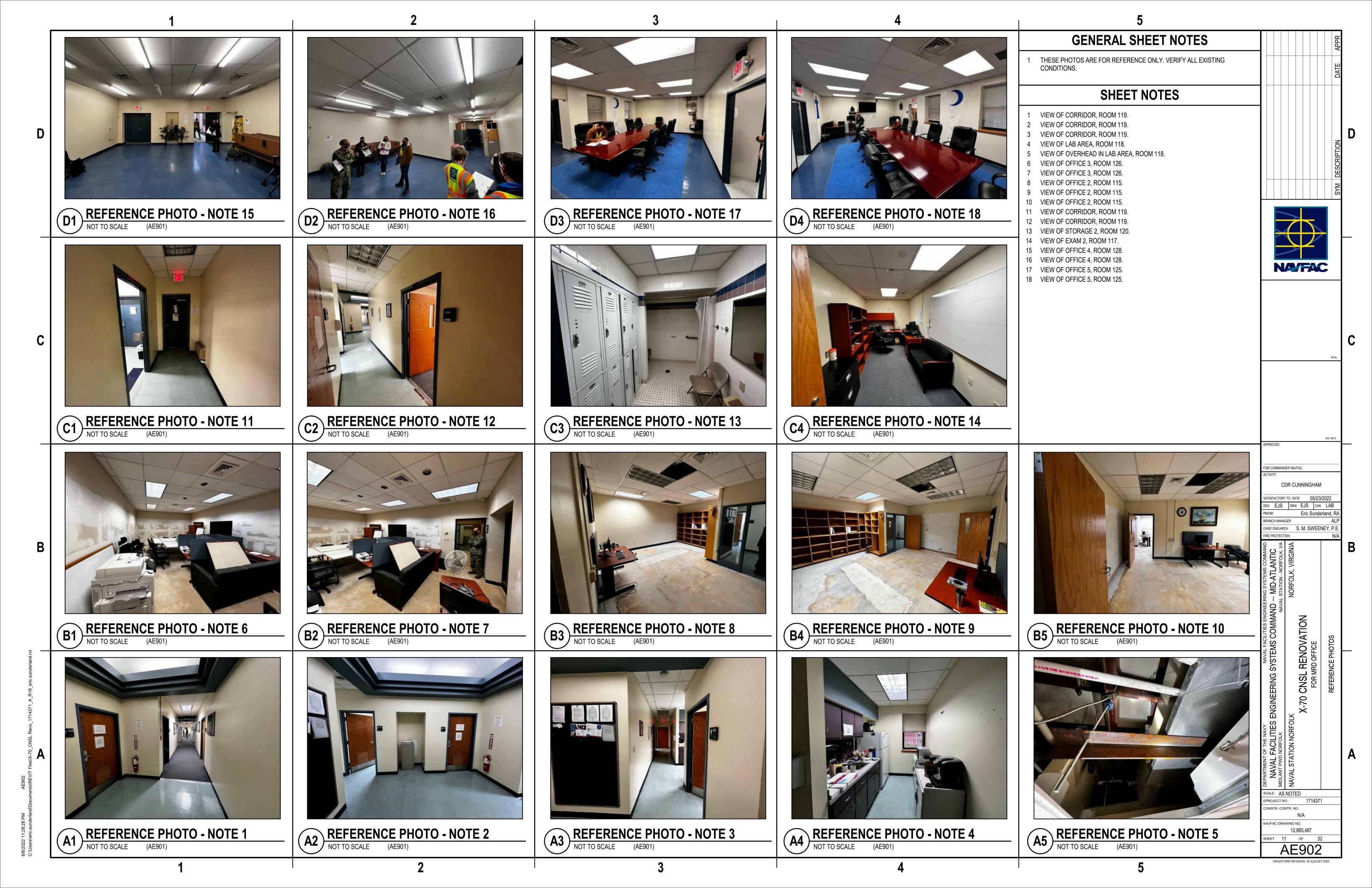


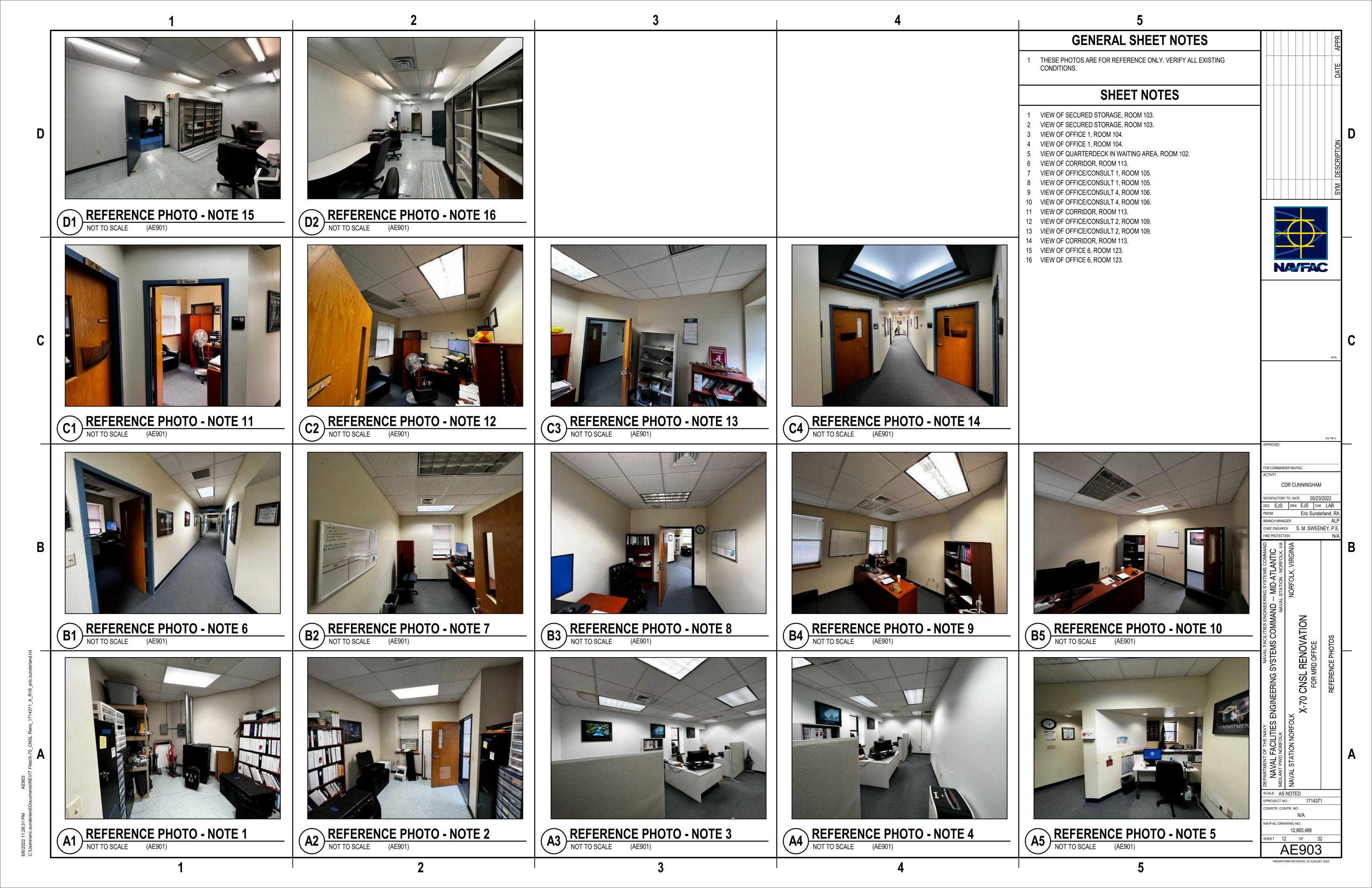


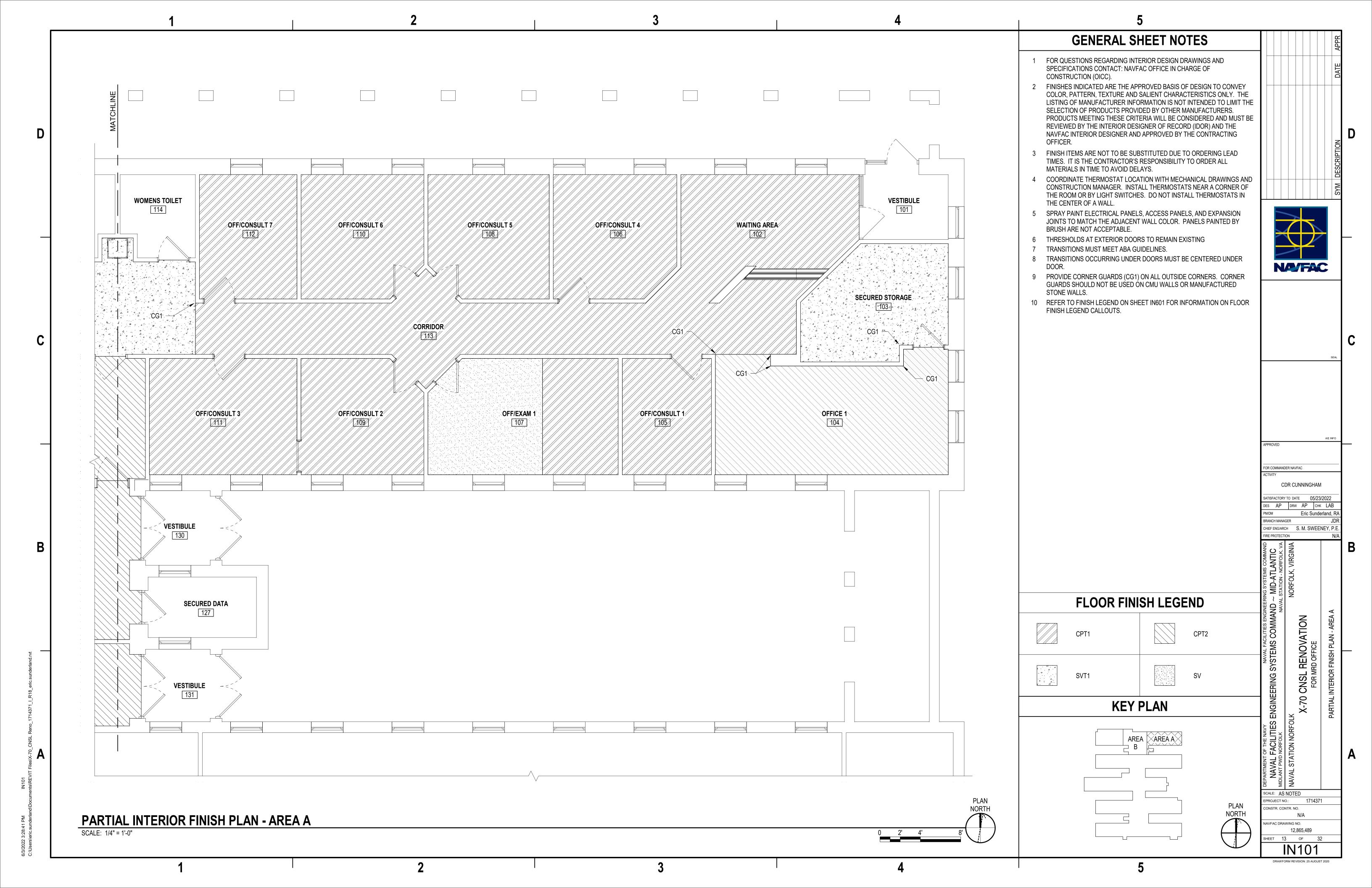


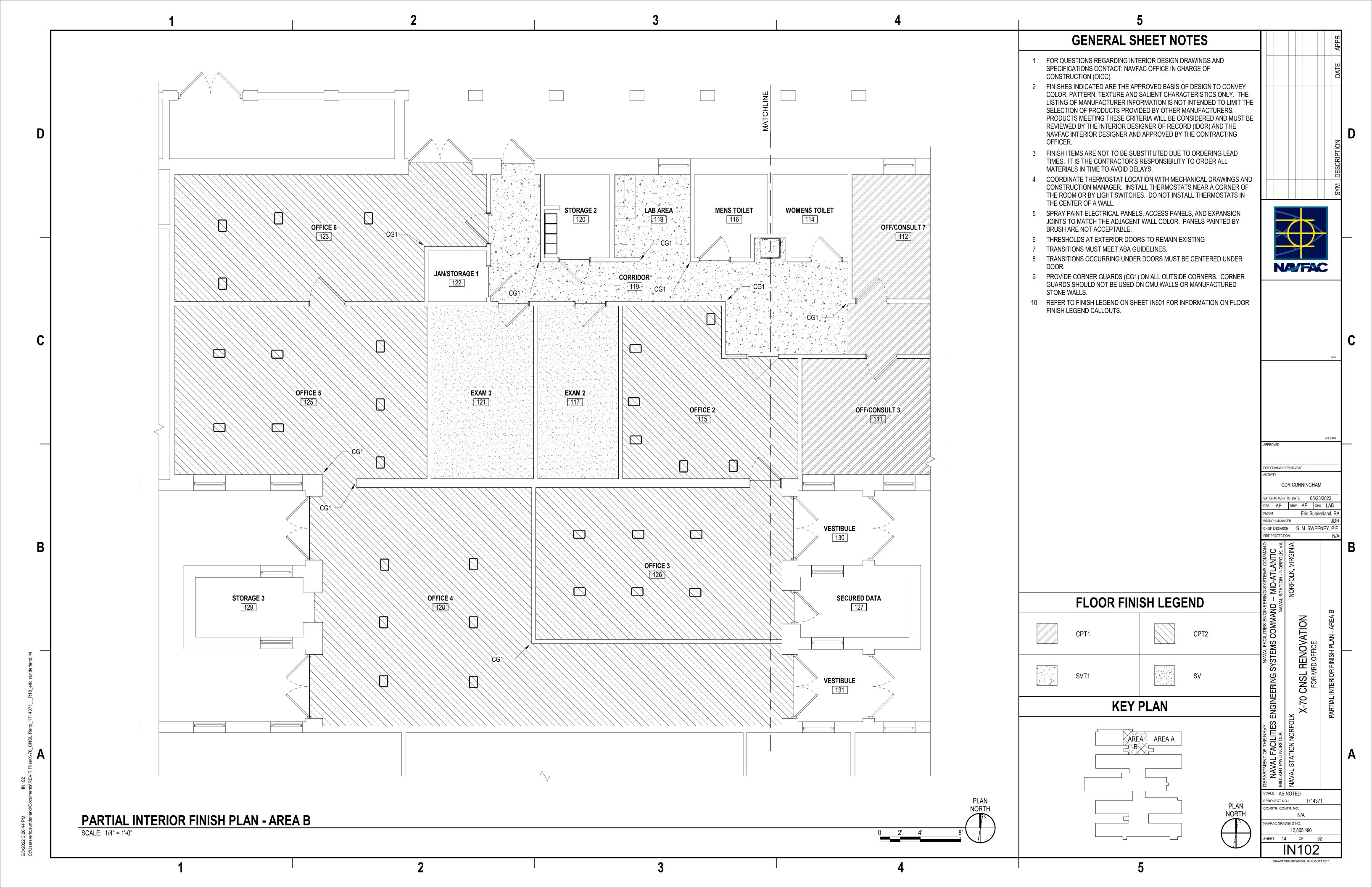


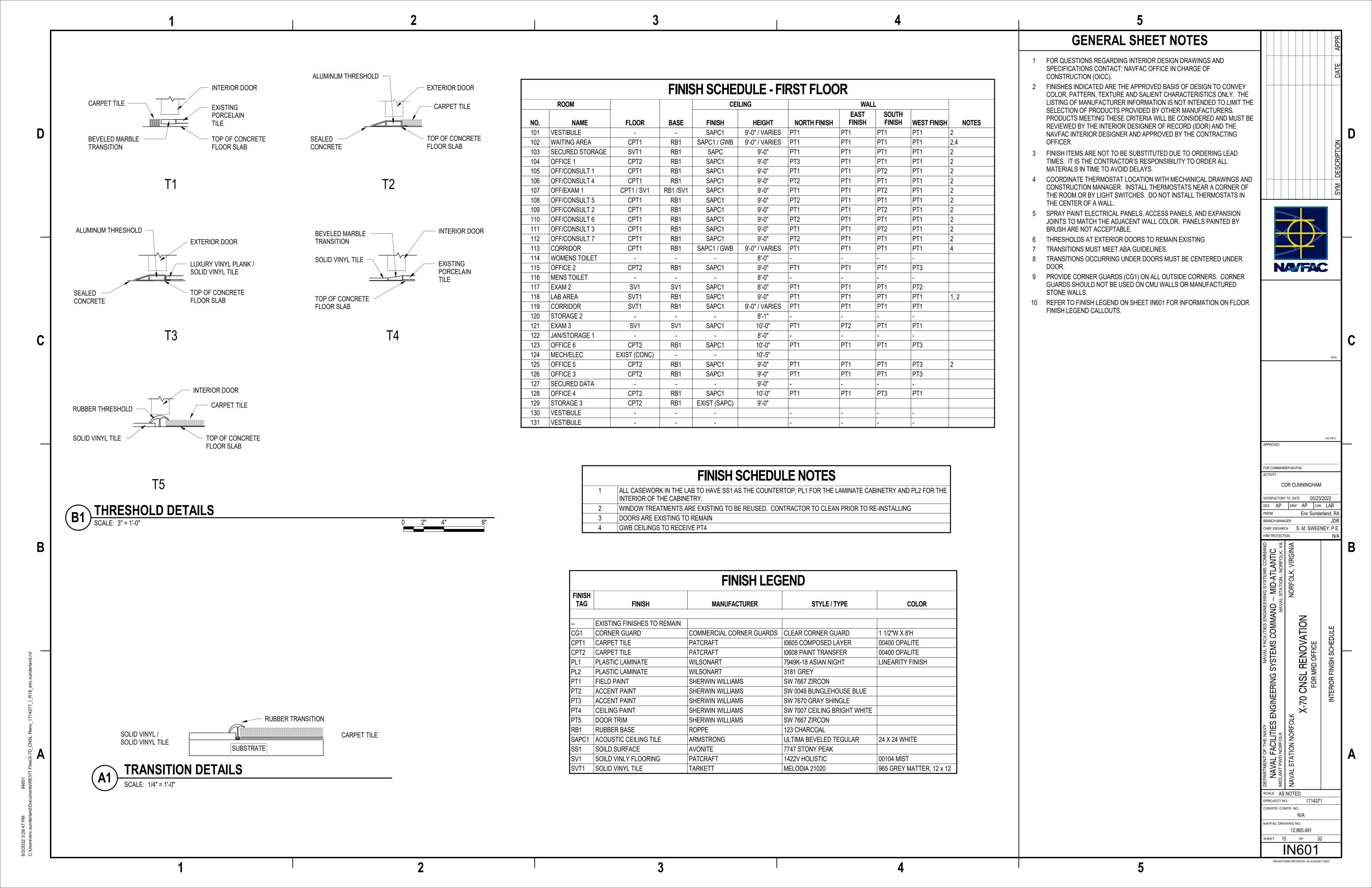


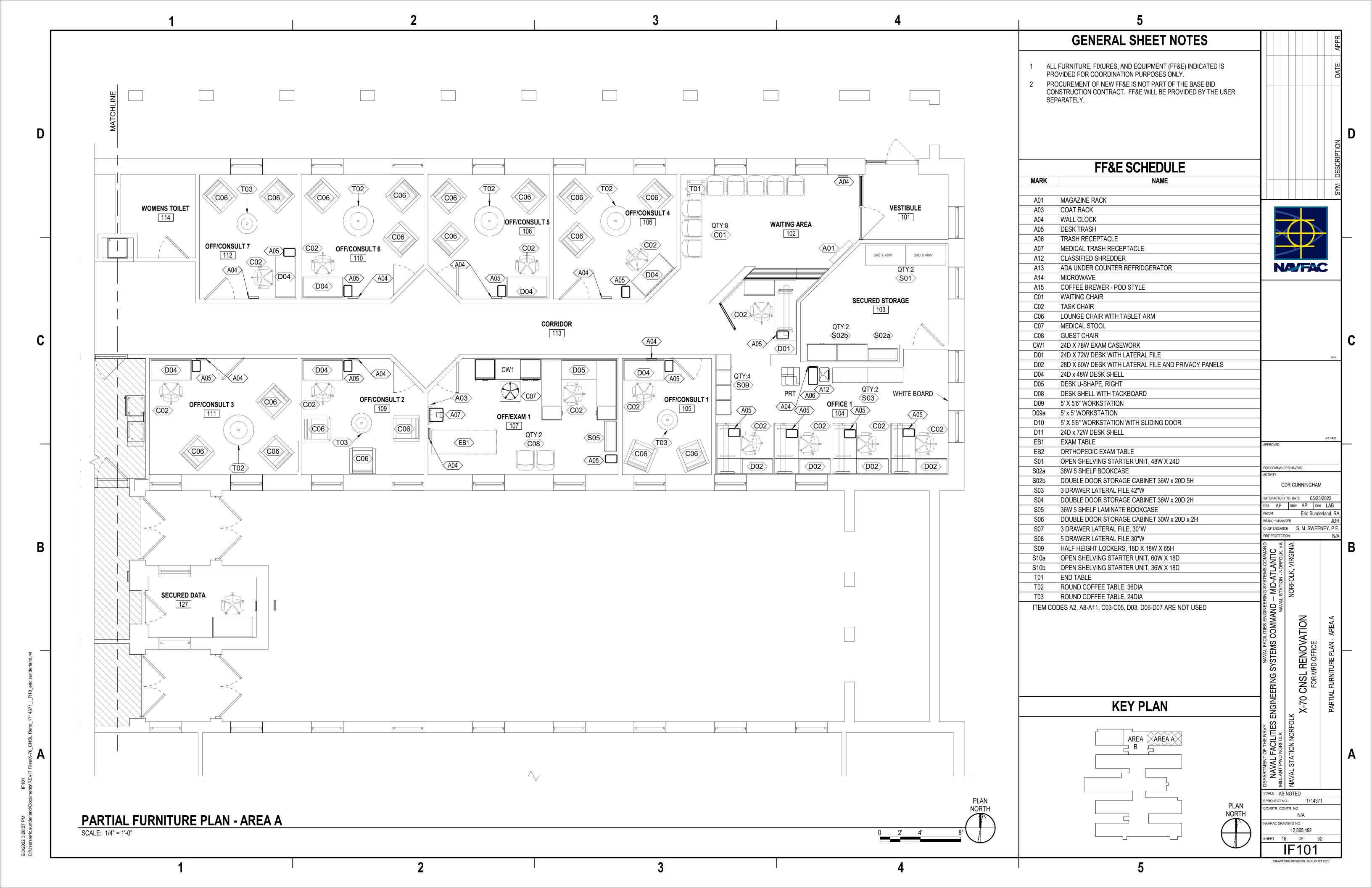


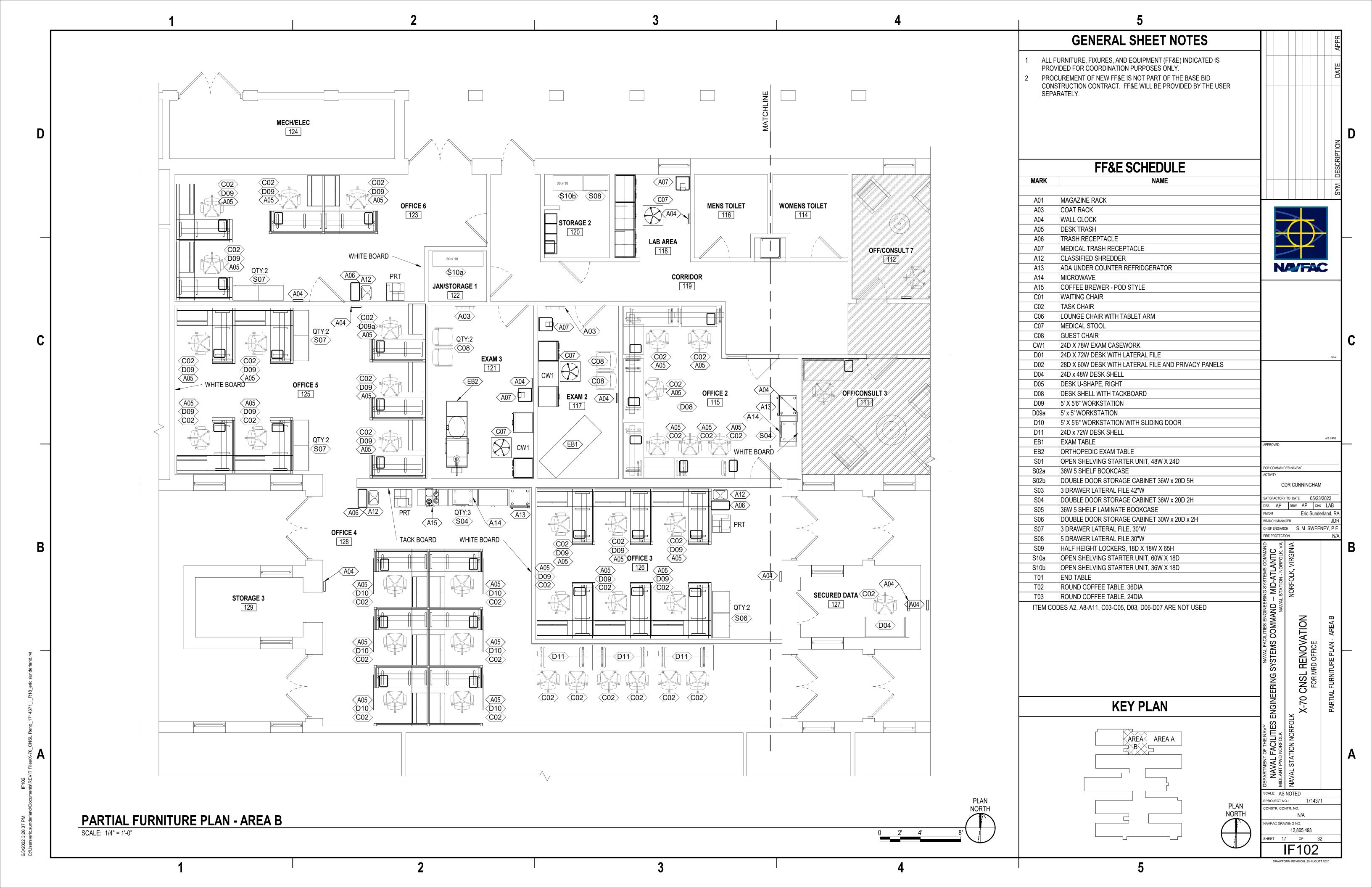




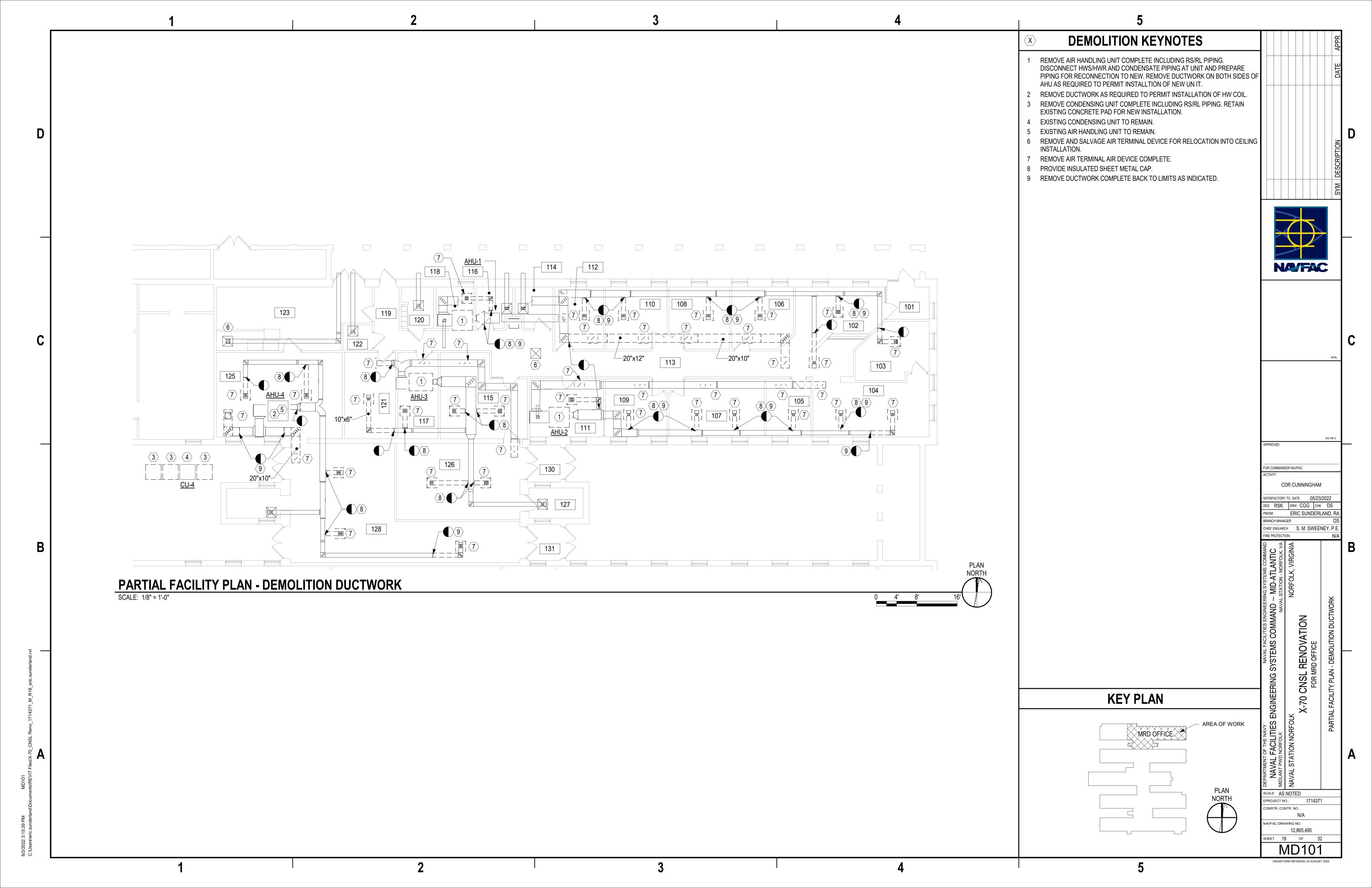


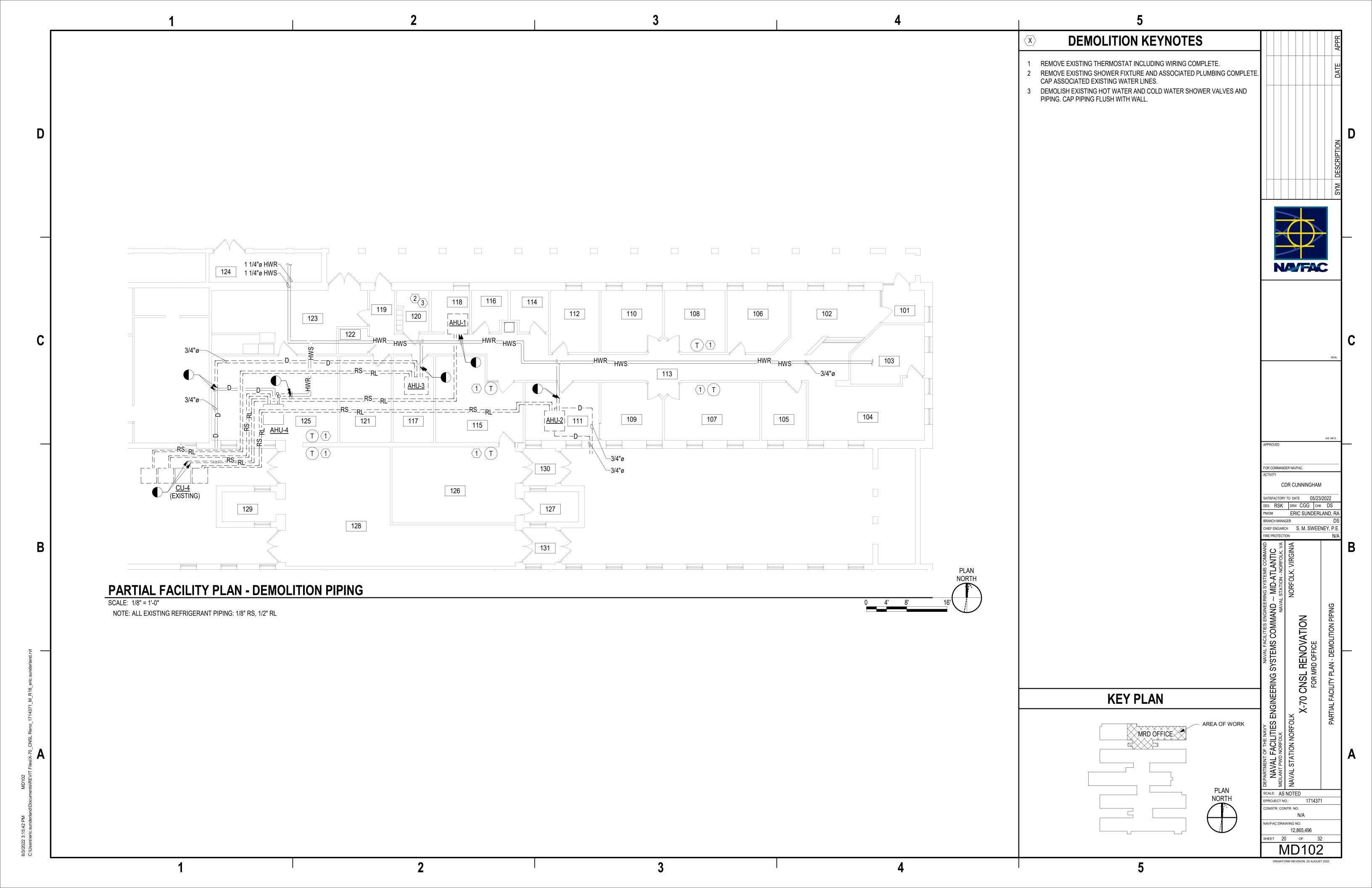


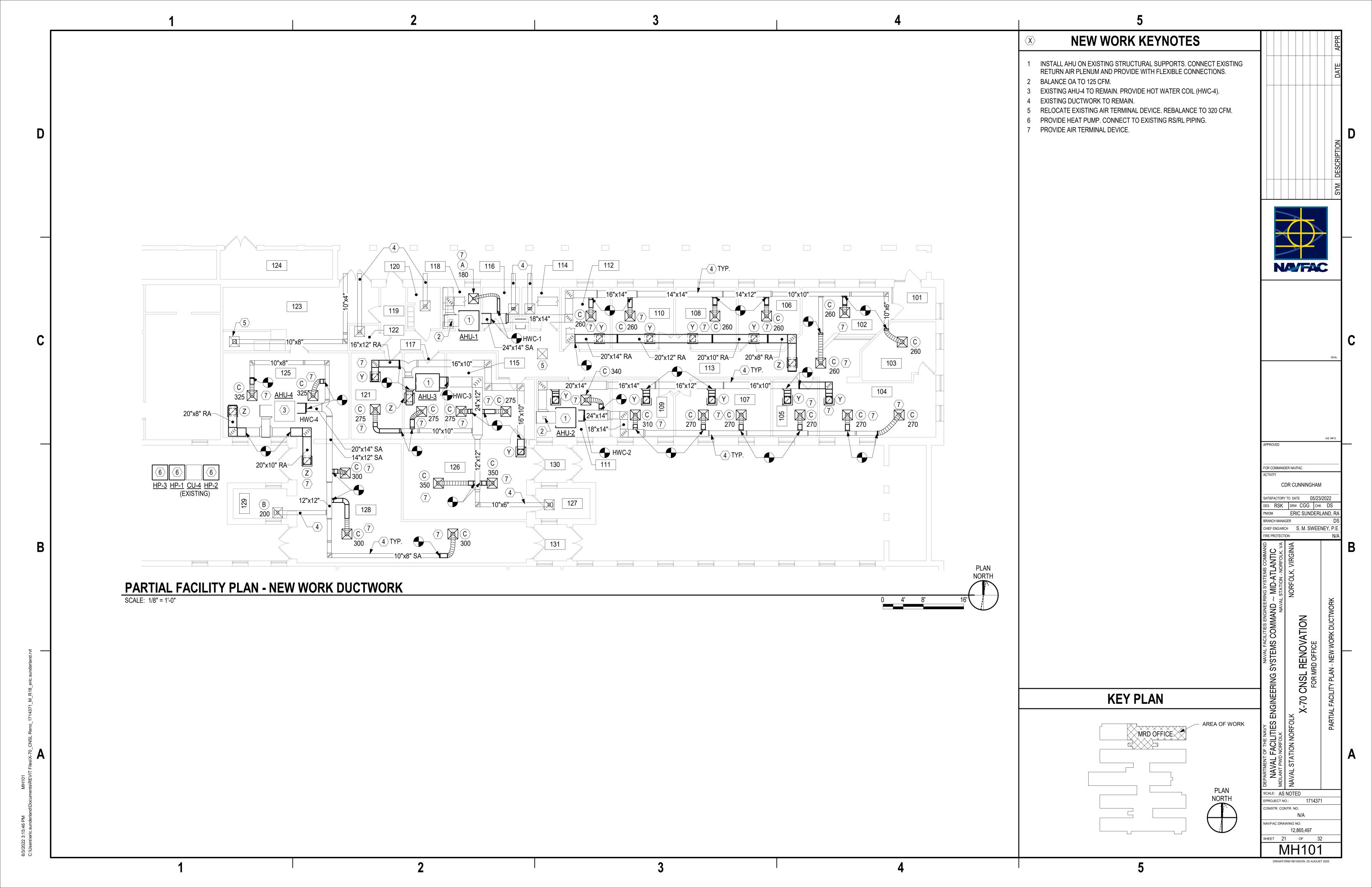


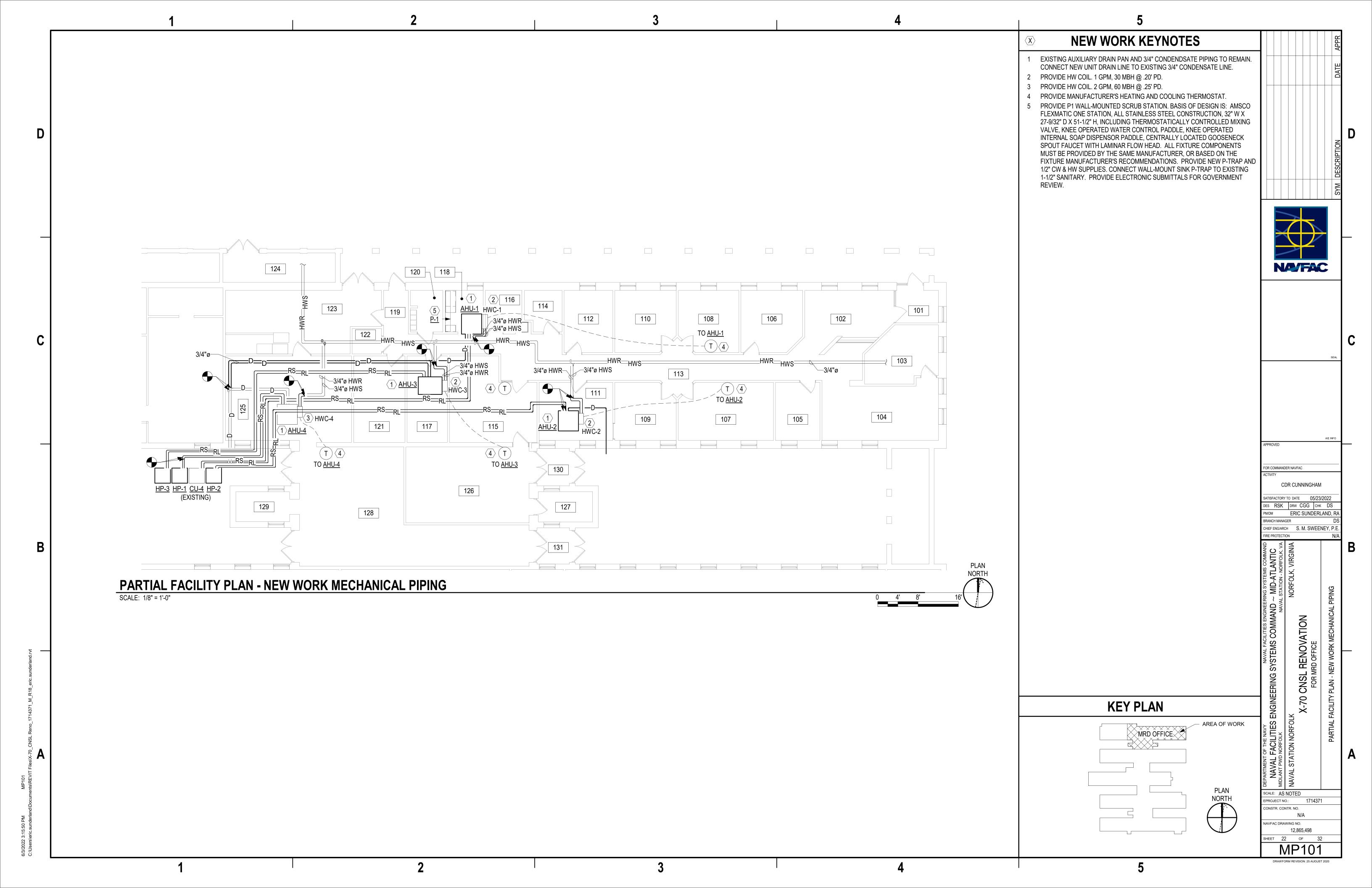


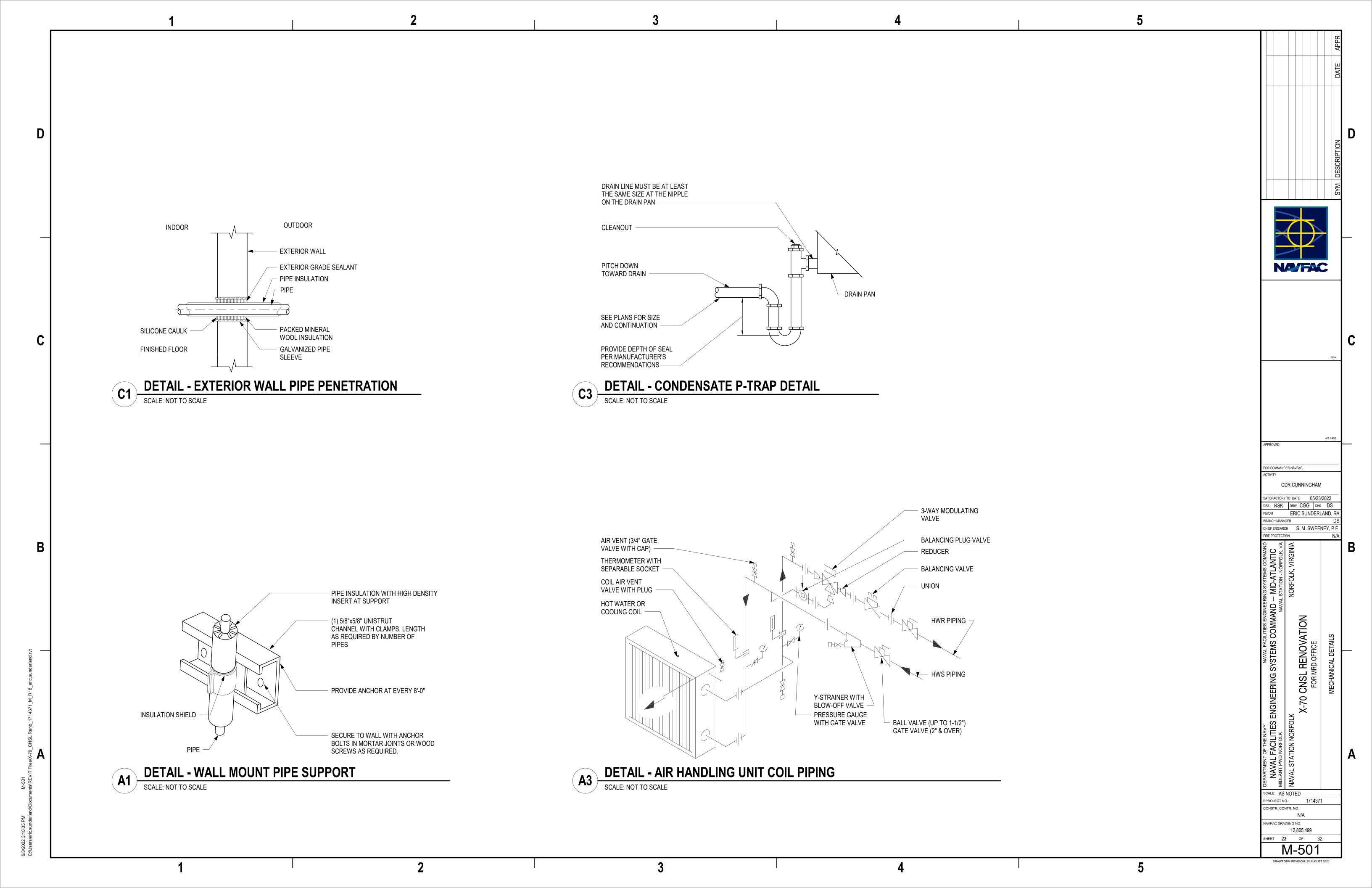
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IECHANICAL	L LEGEND		MECHANICAL SPECIFICATIONS	MECHANICAL ABBREVIATIONS	GENERAL MECHANICAL NOTES	_
(T	THEDMOOTAT		1 DUCTWORK AND ACCESSORIES MUST BE FABRICATED OF GALVANIZED SHEET METAL COMPLYING WITH ASTM A653/A653M HAVING G90 COATING. DUCTWORK	AFF ABOVE FINISHED FLOOR	1 GENERAL NOTES ON THIS DRAWING ARE APPLICABLE TO EACH MECHANICAL DRAWING OF THIS SET.	
T	THERMOSTAT	DEMOLITION / NEW WORK KEYNOTE	MUST BE INSTALLED IN ACCORDANCE TO SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS-METAL AND FLEXIBLE". STATIC PRESSURE, SEAL	AHU AIR HANDLING UNIT APD AIR PRESSURE DROP BTUH BRITISH THERMAL UNIT PER HOUR CFM CUBIC FEET PER MINUTE CU CONDENSING UNIT	2 PATCH ALL HOLES FROM REMOVAL OF PIPING, DUCTWORK OR EQUIPMENT TO	
Т	TEMPERATURE SENSOR		AND LEAKAGE CLASSIFICATIONS ARE SCHEDULED ON THE DRAWINGS.	BTUH BRITISH THERMAL UNIT PER HOUR CFM CUBIC FEET PER MINUTE	MATCH ADJACENT STRUCTURE.  3 ENTIRE INSTALLATION, INCLUDING MATERIALS, EQUIPMENT, AND	
(A) <sub>150</sub>	AIR TERMINAL TAG WITH AIR FLOW (CFM)		PROVIDE NEOPRENE GLASS FABRIC FLEXIBLE CONNECTORS AT ALL CONNECTIONS TO HVAC UNITS AND EXHAUST FANS.	CU CONDENSING UNIT DB DRY BULB	WORKMANSHIP, MUST CONFORM WITH ALL APPLICABLE LAWS, CODES, AND REGULATIONS OF MUNICIPAL, STATE, AND FEDERAL AUTHORITIES, ALSO THE	
	7 ( - 1	LIMIT OF DEMOLITION	2 GRILLES, REGISTERS AND DIFFUSERS MUST BE PROVIDED AS SCHEDULED ON	DEG DEGREE	LATEST EDITION OF THE STATE BUILDING CODES, APPLICABLE ASHRAE, NFPA,	
(EX) <sub>150</sub>	EXISTING AIR TERMINAL WITH AIR FLOW (CFM)	POINT OF CONNECTION NEW TO EXISTING	THE DRAWINGS. GRILLES, REGISTERS AND DIFFUSERS MUST BE FACTORY FABRICATED DEVICES CONSTRUCTED OF ALUMINUM MATERIAL. REGISTERS,	EAT ENTERING AIR TEMPRATURE	AND SMACNA STANDARDS AND OTHER REGULATORY BODIES HAVING JURISDICTION OVER THE CLASS OF WORK. WHERE APPLICABLE, MATERIALS	
12x10	RECTANGULAR DUCT DIMENSIONS (INCHES)		DIFFUSERS AND GRILLES MUST HAVE POWDER COATED OFF-WHITE FINISH.  3 TESTING AND BALANCING OF THE HVAC EQUIPMENT MUST BE PROVIDED.	EER ENERGY EFFICIENCY RATIO ESP EXTERNAL STATIC PRESSURE	AND EQUIPMENT MUST HAVE STAMPS OR SEALS OF ARI, ASME, UL, OR ASTM. THE CONTRACTOR MUST MAKE TESTS FOR ACCEPTANCE AND APPROVAL BY	
1011 0	,	THIN LINE WEIGHT INDICATES EXISTING ITEM TO REMAIN	CONTRACTOR MUST OBTAIN THE SERVICES OF A LICENSED AABC, NEBB	F FAHRENHEIT FLA FULL LOAD AMPS	CODE AND THE REQUIREMENTS OF APPLICABLE REGULATORY AGENCIES. REQUIRED TESTS MUST BE PERFORMED IN THE PRESENCE OF THE	
12"∅	ROUND DUCT DIMENSION	HEAVY LINE WEIGHT INDICATES NEW	ASHRAE CONTRACTOR TO TEST, BALANCE AND ADJUST THE AIR DISTRIBUTION SYSTEMS AND HVAC FAN SPEEDS TO RESULT IN THE SPECIFIED CONDITIONS.	HP-1 HEAT PUMP UNIT	GOVERNMENT UNLESS OTHERWISE WAIVED IN WRITING.	
	FLEXIBLE ROUND DUCT	WORK TO BE PROVIDED	TAB CONTRACTOR MUST SUBMIT A WRITTEN REPORT OF THE RESULTS FOR APPROVAL BY THE GOVERNMENT.	HR HOUR MAX MAXIMUM	4 THE CONTRACTOR MUST OBTAIN AND PAY FOR ALL PERMITS, LICENSES, DOCUMENTS, AND SERVICES RELATED TO INSTALLATION OF THE WORK.	
_	DOWNWARD DIRECTION OF SLOPED PIPING	HEAVY DASHED LINE WEIGHT INDICATES EXISTING ITEM TO REMOVE, REFER TO	4 ELECTRICAL COMPONENTS, DEVICES AND ACCESSORIES MUST BE LISTED AND	MCA MINIMUM CIRCUIT AMPS MFS MAXIMUM FUSE SIZE	5 THE CONTRACTOR MUST COORDINATE HIS WORK WITH OTHER TRADES IN	
		DEMOLITION NOTES.	LABELED AS DEFINED IN NFPA 70, ARTICLE 100, BY A TESTING AGENCY ACCEPTABLE TO THE AUTHORITIES HAVING JURISDICTION, AND MUST BE	MIN MINIMUM NC NOISE CRITERIA	ORDER TO RESOLVE ANY CONFLICTS THAT MIGHT ARISE DUE TO THE LOCATION OF EQUIPMENT OR THE USE OF THE SPACE.	
	SUPPLY DUCT, SUPPLY DUCT DOWN/UP	222 ROOM NUMBER	MARKED FOR INTENDED USE.  5 ALL HVAC SUPPLY AND RETURN DUCTWORK MUST BE INSULATED WITH	OA OUTSIDE AIR PD PRESSURE DROP	6 PROVIDE VIBRATION ISOLATORS FOR ALL MECHANICAL EQUIPMENT TO	
	RETURN DUCT, RETURN DUCT		MINERAL/FIBER BLANKET THERMAL INSULATION COMPLYING WITH ASTM C 553,	PH PHASE	PREVENT TRANSMISSION OF VIBRATION TO BUILDING STRUCTURE.  7 SIZES GIVEN FOR DUCTWORK ON PLANS ARE INSIDE CLEAR DIMENSIONS.	
	DOWN/UP	SQUARE THROAT ELBOW	TYPE II, WITHOUT FACING AND WITH ALL SERVICE JACKET MANUFACTURED FROM KRAFT PAPER, REINFORCING SCRIM, ALUMINUM FOIL AND VINYL FILM.	RH RELATIVE HUMIDITY SEER SEASONAL ENERGY EFFICIENCY RATIO	8 ALL ELBOWS IN DUCTWORK MUST BE RADIUS ELBOWS, UNLESS NOTED	
->>-	GATE VALVE	WITH TURNING VANES	INSULATION THICKNESS MUST BE 2 INCHES. INSULATION MUST BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.	SP STATIC PRESSURE TSP TOTAL STATIC PRESSURE	OTHERWISE. WHERE SQUARE ELBOWS ARE SHOWN, INSTALL TURNING VANES.	NAF
-><-	GLOBE VALVE	VOLUME DAMPER	6 HVAC UNITS MUST BE ARI CERTIFIED AND LISTED. ALL COMPONENTS MUST BE	TYP TYPICAL V VOLTS	9 PROVIDE ADJUSTING HANDLES FOR DUCT MOUNTED VOLUME DAMPERS WITH RODS OF SUFFICIENT STAND-OFF LENGTH, SUCH THAT THE HANDLE DOES	
	MANUAL FLOW CONTROL BALANCING VALVE		FACTORY FABRICATED, INSTALLED AND TESTED. UNIT ENERGY/EFFICIENCY RATION (EER) AND COEFFICIENT OF PERFORMANCE (COP) MUST BE EQUAL TO	WB WET BULB	NOT COMPRESS THE INSULATION, OR DAMAGE THE INSULATION WHEN ADJUSTED.	
	CHECK VALVE	FLEXIBLE DUCT CONNECTOR	OR GREATER THAN PRESCRIBED BY ASHRAE 90.1, "ENERGY EFFICIENT DESIGN OF NEW BUILDINGS EXCEPT LOW RISE RESIDENTIAL BUILDINGS". UNITS MUST	$^{\circ}$ DEGREES $\varnothing$ DIAMETER	10 DO NOT INSTALL DUCTWORK OVER ANY SWITCHGEAR.	
	PRESSURE REDUCING VALVE		INCLUDE MANUFACTURER'S STANDARD, BUT NOT LESS THAN FIVE-YEAR COMPRESSOR WARRANTY.		11 INSTALL MECHANICAL EQUIPMENT TO FACILITATE SERVICING, MAINTENANCE, AND REPAIR OR REPLACEMENT OF EQUIPMENT COMPONENTS. AS MUCH AS	
——————————————————————————————————————	DRAIN VALVE WITH HOSE CONNECTION	SD	7 REQUIRED ELECTRONIC SUBMITTALS FROM THE CONTRACTOR FOR		PRACTICAL, CONNECT EQUIPMENT FOR EASE OF DISCONNECTING, WITH A	
V 7 ]	DIVINA VALVE VVITITIOOL CONTRECTION	DUCT MOUNTED SMOKE DETECTOR	GOVERNMENT REVIEW AND APPROVAL: AIR TERMINAL DEVICES, TESTING AND BALANCING REPORTS, AIR HANDLING UNIT, CONDENSING UNIT AND DUCT		MINIMUM OF INTERFERENCE WITH OTHER INSTALLATIONS. PIPING MUST NOT INTERFERE WITH FILTER PULL SPACE.	
	3-WAY CONTROL VALVE		INSULATION. ALL SUBMITTALS MUST INCLUDE ELECTRONIC COPIES OF		12 ALL MECHANICAL EQUIPMENT MUST BE INSTALLED IN STRICT COMPLIANCE	
	PIPE CAP	RISE IN DUCTWORK	MANUFACTURER'S CUT SHEETS AND/OR SHOP DRAWINGS.  8 PROVIDE COMMERCIAL GRADE MANUAL BALANCING DAMPERS. FURNISH		WITH MANUFACTURER'S WRITTEN/PUBLISHED RECOMMENDATIONS.  13 LOCATE TEMPERATURE SENSORS, THERMOSTATS, AND SPEED CONTROLLERS	
— —	FLANGE		MANUAL BALANCING DAMPERS WITH ACCESSIBLE OPERATING MECHANISMS. USE CHROME PLATED OPERATORS (WITH ALL EXPOSED EDGES ROUNDED).		48" ABOVE FINISHED FLOOR OR AS NOTED ON PLANS.	
— <b>‱</b> —	FLEXIBLE PIPE CONNECTOR  BALL VALVE	Ι ΔΩ Ι	PROVIDE MANUAL VOLUME CONTROL DAMPERS THAT ARE OPERATED BY		14 EXISTING DUCT, PIPE AND EQUIPMENT SIZES NOTED ARE FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. THE CONTRACTOR MUST FIELD	
——D——	CONDENSATE DRAIN PIPING	ACCESS DOOD	LOCKING-TYPE QUADRANT OPERATORS. UNLESS OTHERWISE INDICATED, PROVIDE OPPOSED BLADE TYPE MULTILEAF DAMPERS WITH MAXIMUM BLADE		VERIFY ALL EXISTING DUCT, PIPE AND EQUIPMENT SIZES AND THEIR RESPECTIVE LOCATIONS BEFORE PROCEEDING WITH ANY ASSOCIATED WORK	
D		ACCESS DOOR	WIDTH OF 12 INCHES.  9 CONDENSATE DRAIN PIPING AND COMPONENTS MUST BE SCHEDULE 40 PVC.		15 PRIOR TO SUBMITTING A PROPOSAL, THE CONTRACTOR IS STRONGLY	APPROVED
RS	REFRIGERANT SUCTION		PROVIDE WITH 1" FLEXIBLE ELASTOMERIC INSULATION.		ENCOURAGED TO VISIT THE SITE AND THOROUGHLY INSPECT ALL EXISTING CONDITIONS TO INSURE THAT THE WORK REPRESENTED ON THE DRAWINGS	OI FIVOVED
RL	REFRIGERANT LIQUID		10 ALL CONTROL WIRING MUST BE RUN CONCEALED. WIRING IN WALLS MUST BE IN CONDUIT. ALL WIRING MUST BE PLENUM RATED.		CAN BE INSTALLED AS INDICATED.  16 REFRIGERANT FROM EXISTING AIR CONDITIONING UNITS MUST BE PROPERLY	FOR COMMANDER NAVFAC
			11 SLEEVES: SLEEVES MUST BE INSTALLED WHERE PIPING PASSES THROUGH		DISPOSED OF IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS IN	ACTIVITY  CDR CUNNING
	DOMESTIC COLD WATER PIPING (CW)	VOLUME DAMPER	MASONRY CONSTRUCTION. SLEEVES MUST BE METAL, SIZED TO ACCOMMODATE PIPING. SET SLEEVES FLUSH WITH FINISHED SURFACES.		SEALED AND LEAK TESTED CONTAINERS TO RECLAMATION CENTER FOR DISPOSAL.	SATISFACTORY TO DATE
	PIPE TURNING DOWN	VOLUME DAMPER	12 ALL HWS/R PIPING MUST BE COPPER. INSULATION: PROVIDE WITH 1" THICK MINERAL FIBER.		17 PROVIDE P-TRAPS IN CONDENSATE DRAIN PIPING AT EACH AC UNIT.	DES RSK DRW CGG PM/DM ERIC SUN
	DIDE TUDNING UD		13 NEW REFRIGERANT PIPING TO BE SIZED AND INSTALLED PER		18 MAXIMUM LENGTH OF FLEXIBLE DUCT MUST BE NO LONGER THAN 5'-0". FLEXIBLE DUCT MUST NOT PASS THROUGH WALLS; RIGID DUCT ONLY.	BRANCH MANAGER  CHIEF ENG/ARCH S. M. S
—0	PIPE TURNING UP		MANUFACTURER'S RECOMMENDATIONS.			FIRE PROTECTION
——HWS——	HOT WATER SUPPLY					TIC VIK, V/ GINIA
HWR	HOT WATER RETURN					MS COI
C/N 6	CHILLED WATER SUPPLY					D-AT
CWS	OFFILLED WATER SUFFLI					RING & MI
	CHILLED WATER RETURN					NND ,
——CA——	COMPRESSED AIR					MMA ON
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°FDB

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°FDB °FWB

OUTSIDE 91 76

INSIDE 68 62.4

	GRILLE, REGISTER, AND DIFFUSER SCHEDULE													
MARK	SERVICE	CFM RANGE	MAX. NC	MAX. SP (IN. WG)	NECK SIZE	SHELL	TYPE	THROW FT. (AT 50 FPM TERMINAL VEL.)	REMARKS					
Α	SUPPLY	180	25	.10	6"Ø	24x24	1	8	1,3,5,7					
В	SUPPLY	185 - 250	25	.10	8"Ø	24x24	1	12	1,3,5,7					
С	SUPPLY	255 - 350	25	.15	10"Ø	24x24	1	15	1,3,5,7					
Υ	RETURN	0 - 800	25	.10	14x14	24x24	2	-	2,3,6,7					
Z	RETURN	801 - 1000	25	.10	16x16	24x24	2	-	2,3,6,7					

- 1. LOUVERED FACE, HIGH CAPACITY SQUARE DIFFUSER, ADJUSTABLE DISCHARGE, ALUMINUM.
- EGGCRATE FILTER GRILLE WITH 1"X1"X1" CORE CONSTRUCTED OF ALUMINUM.
- SUITABLE FOR LAY-IN APPLICATION.
- SUITABLE FOR SURFACE MOUNTING. DESIGN BASED ON TITUS TDCA-AA.
- DESIGN BASED ON TITUS 50F.
- 7. PROVIDE WITH STANDARD OFF-WHITE FINISH.

DUCT CONSTRUCTION AND LEAK TEST SCHEDULE														
MARK	DUC	T PRESSUR	E CLASS (IN V	VC.)		SUPPLY	EXHAUST		RETI OUTSI		DUCT TEST			
					ROUN	D/OVAL	RECTANGLE				PRESSURE	NOTES		
	SUPPLY DUCT	RETURN DUCT	EXHAUST DUCT	OA DUCT	SEAL CLASS	LEAK CLASS	SEAL CLASS	LEAK CLASS	SEAL CLASS	LEAK CLASS	(IN WC.)			
AHU'S	+1"	-	-	-1/2"	-	-	Α	12	Α	12	1"	1		

NOTES:

1. SEAL CLASS AND LEAK CLASS PER SMACNA.

	AIR HANDLING UNIT SCHEDULE																							
		SUPPLY FAN DATA HEATING						DX COOLING COIL DATA					ELE	CTRICAL [	DATA									
MARK	LOCATION	SA CFM	OA CFM	ESP (IN WG.)	HP	CFM	EAT (°FDB)	HEAT CAP.(MBH)		HW COIL (MBH)	TOTAL (MBH)	SENSIBLE (MBH)	°FDB °FWI		AT °FWB	FILTER TYPE	MCA	MOCP	VOLTS	PHASE	HERTZ	REFRIGERANT	REMARKS	
AHU-1	RM 118	2000	125	0.7	1.0	2000	60	52.5	86.3	30.0	58.0	45.2	80.0 67.0	58.8	57.5	1" THROW AWAY	10.0	15	208	1	60	R-410A	1,2,3,4	
AHU-2	RM 111	2000	125	0.7	1.0	2000	60	52.5	86.3	30.0	58.0	45.2	80.0 67.0	58.8	57.5	1" THROW AWAY	10.0	15	208	1	60	R-410A	1,2,3,4	
AHU-3	RM 117	2000	125	0.7	1.0	2000	60	52.5	86.3	30.0	58.0	45.2	80.0 67.0	58.8	57.5	1" THROW AWAY	10.0	15	208	1	60	R-410A	1,2,3,4	

1. UNIT SELECTION BASED ON TRANE GAM5B0C60M51 OR APPROVED EQUAL.

- 2. PROVIDE WITH UNIT MANUFACTURER'S INTEGRAL DISCONNECT, MANUFACTURER'S PROGRAMMABLE TEMPERATURE CONTROLLER W/ADJUSTABLE CYCLE RATE DIFFERENTIAL, SINGLE POINT CONNECTION
- AND PROVISIONS FOR LOW AMBIENT COOLING.
- 3. PROVIDE WITH MANUFACTURER'S POLYMER E-COATING ON EVAPORATOR COILS.
- 4. INSTALL REFRIGERANT PIPING IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

## SEQUENCE OF OPERATION

AHU-1,2,3 / HP-1,2,3

WHEN THE SYSTEM IS INDEXED TO COOLING AND THE SPACE TEMPERATURE RISES ABOVE THE SPACE TEMPERATURE SETPOINT, INITIALLY SET AT 68°F (ADJUSTABLE), THE COMPRESSOR WILL BE ENERGIZED AND STAGE ON MECHANICAL COOLING. ON A FALL IN SPACE TEMPERATURE THE REVERSE WILL OCCUR.

WHEN THE SYSTEM IS INDEXED TO HEATING AND THE SPACE TEMPERATURE FALLS BELOW THE SPACE TEMPERATURE SETPOINT, INITIALLY SET AT 70°F (ADJUSTABLE), THE REVERSING VALVE WILL BE ENERGIZED AND STAGE ON HEATING. ON A CONTINUED FALL IN SPACE TEMPERATURE THE HOT WATER HEATING COIL WILL BE ENERGIZED. ON A RISE IN SPACE TEMPERATURE THE REVERSE WILL OCCUR.

ADDITIONAL CONTROLS MUST INCLUDE DEFROST CYCLE AND EMERGENCY HEAT.

	HEAT PUMP UNIT SCHEDULE													
MARK	LOCATION				NO. OF FANS		ELEC	TRICAL	DATA					
		TYPE	EAT (°FDB)	NO. OF COMP.		MCA	MOCP	VOLTS	PHASE	HERTZ	REFRIGERANT	REMARKS		
HP-1	GRADE	HEAT PUMP	95	1	1	21	35	208	3	60	R-410A	1,2,3,4,5		
HP-2	GRADE	HEAT PUMP	95	1	1	21	35	208	3	60	R-410A	1,2,3,4,5		
HP-3	GRADE	HEAT PUMP	95	1	1	21	35	208	3	60	R-410A	1,2,3,4,5		

- 1. UNIT SELECTION BASED ON TRANE 4TWA4060A3 OR APPROVED EQUAL.
- PROVIDE WITH UNIT MANUFACTURER'S INTEGRAL DISCONNECT.
- PROVIDE WITH MANUFACTURER'S CONTROL PACKAGE AND SINGLE POINT CONNECTION.
- PROVIDE WITH MANUFACTURER'S POLYMER E-COATING ON CONDENSER COILS.
- 5. INSTALL REFRIGERANT PIPING IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.



CDR CUNNINGHAM

SATISFACTORY TO DATE 05/23/2022 DES RSK DRW CGG CHK DS PM/DM ERIC SUNDERLAND, RA BRANCH MANAGER CHIEF ENG/ARCH S. M. SWEENEY, P.F FIRE PROTECTION

RING SYSTEMS COMMANI

MID-ATLANTIC

L STATION - NORFOLK, V.

NORFOLK, VIRGINI

DEPARTMENT OF THE NAVY

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ~

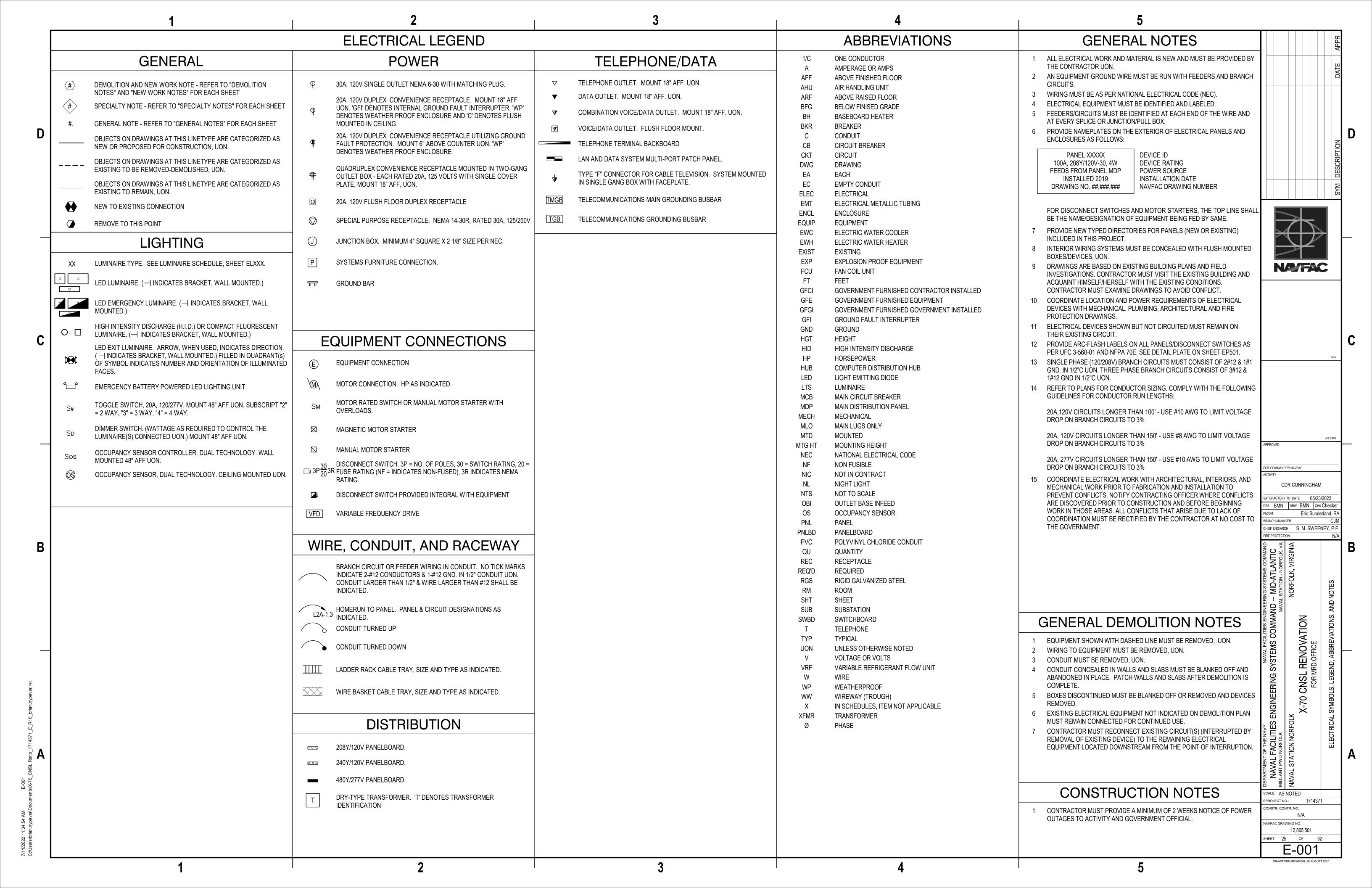
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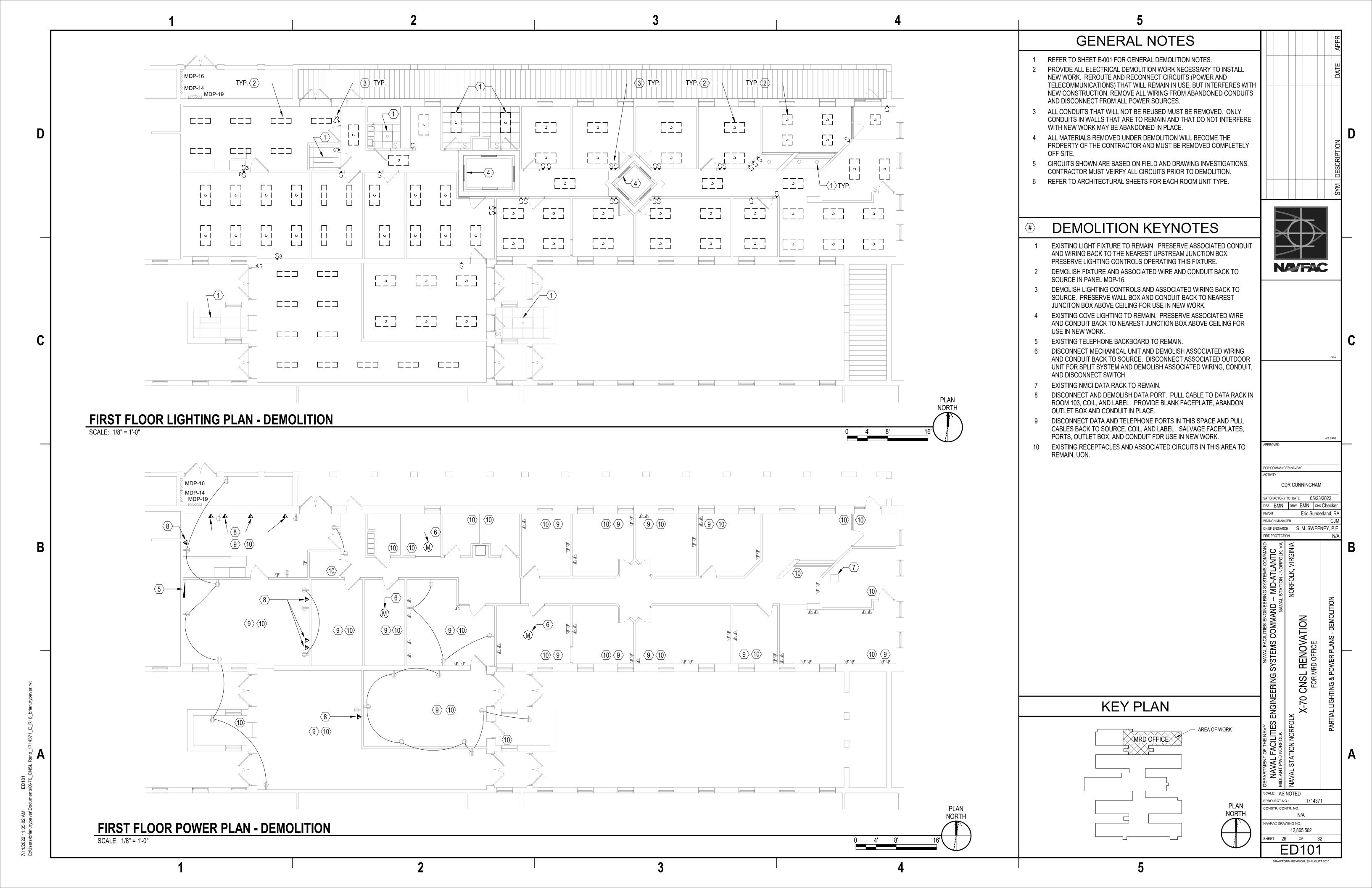
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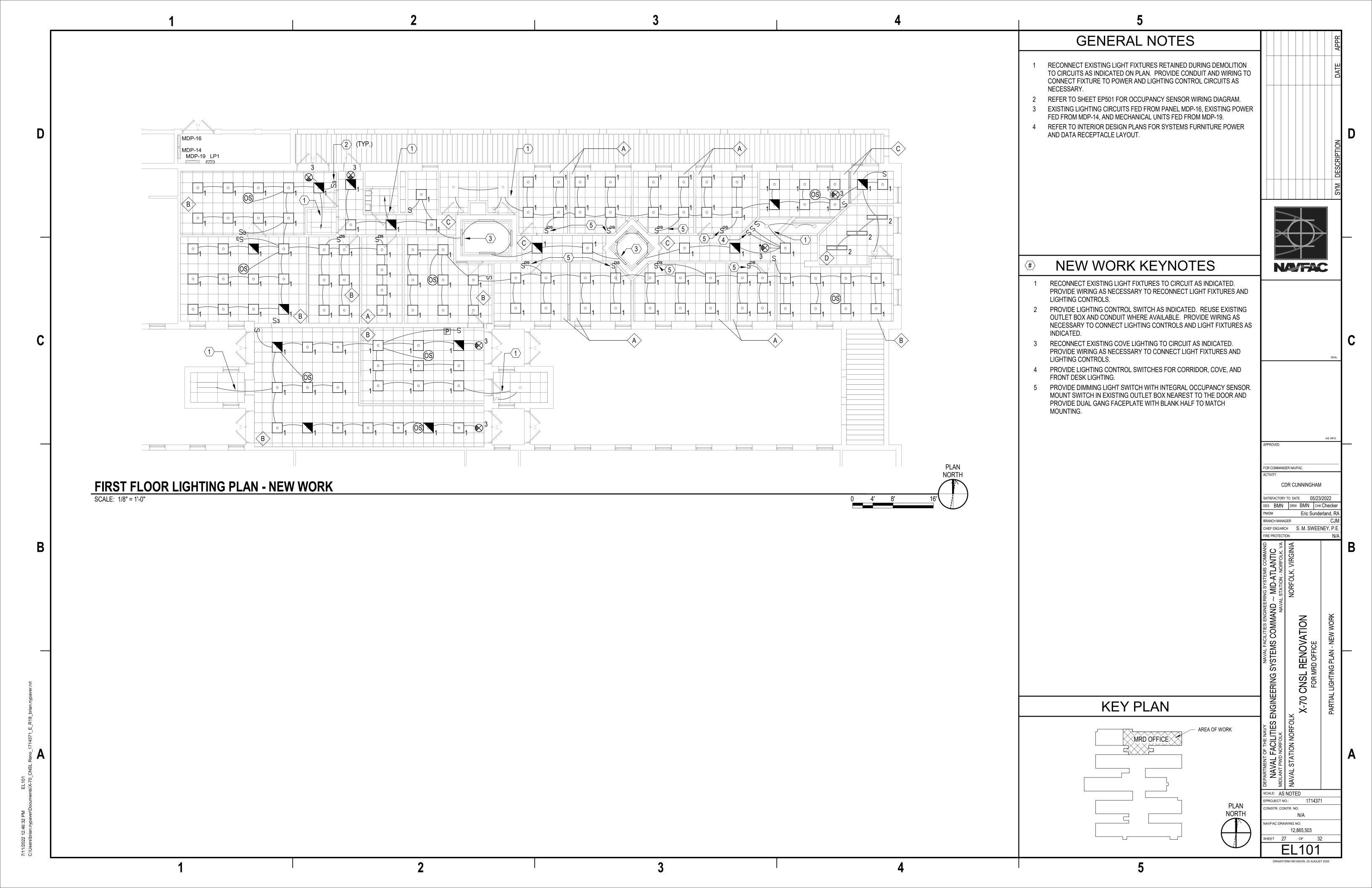
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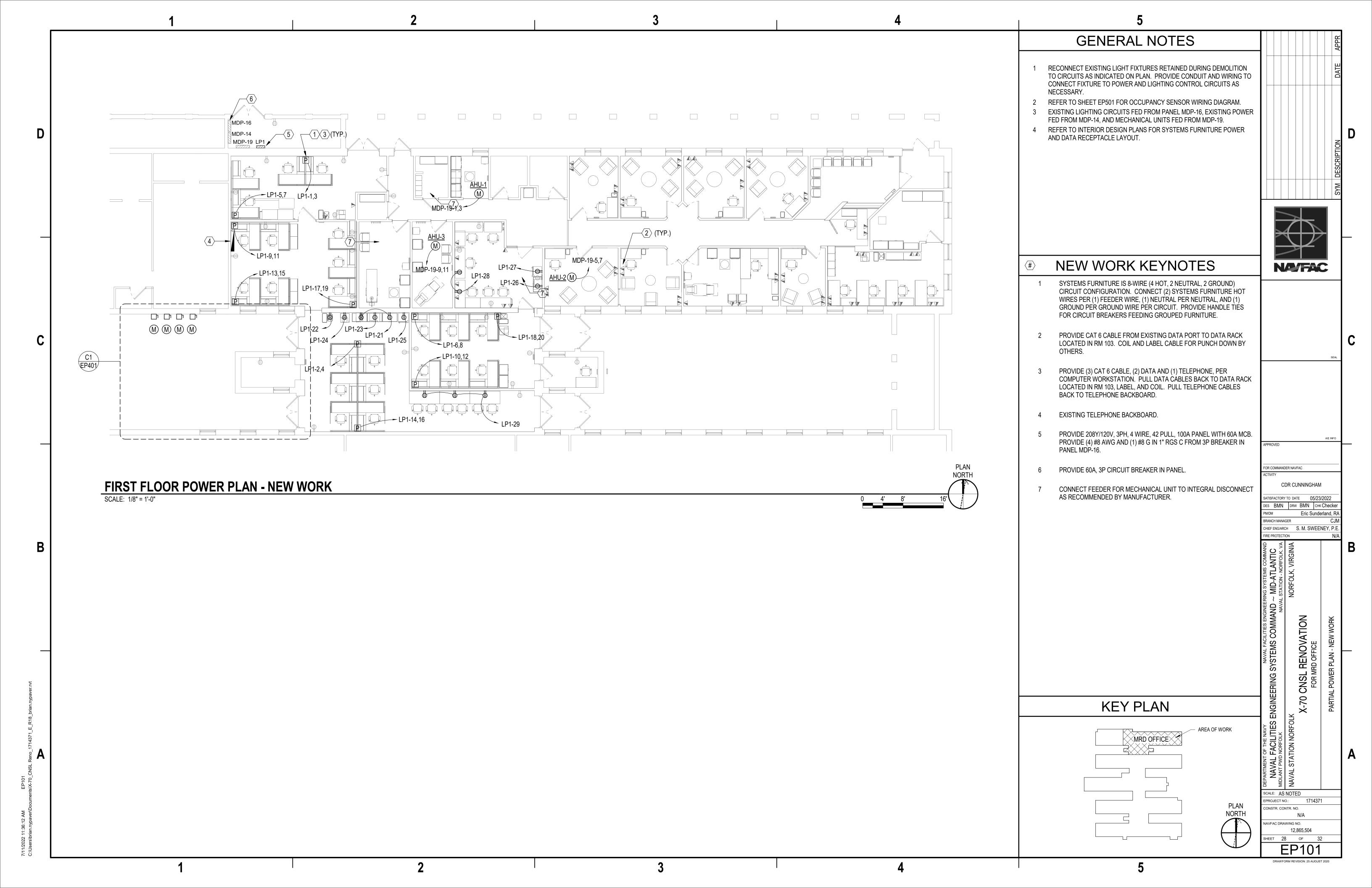
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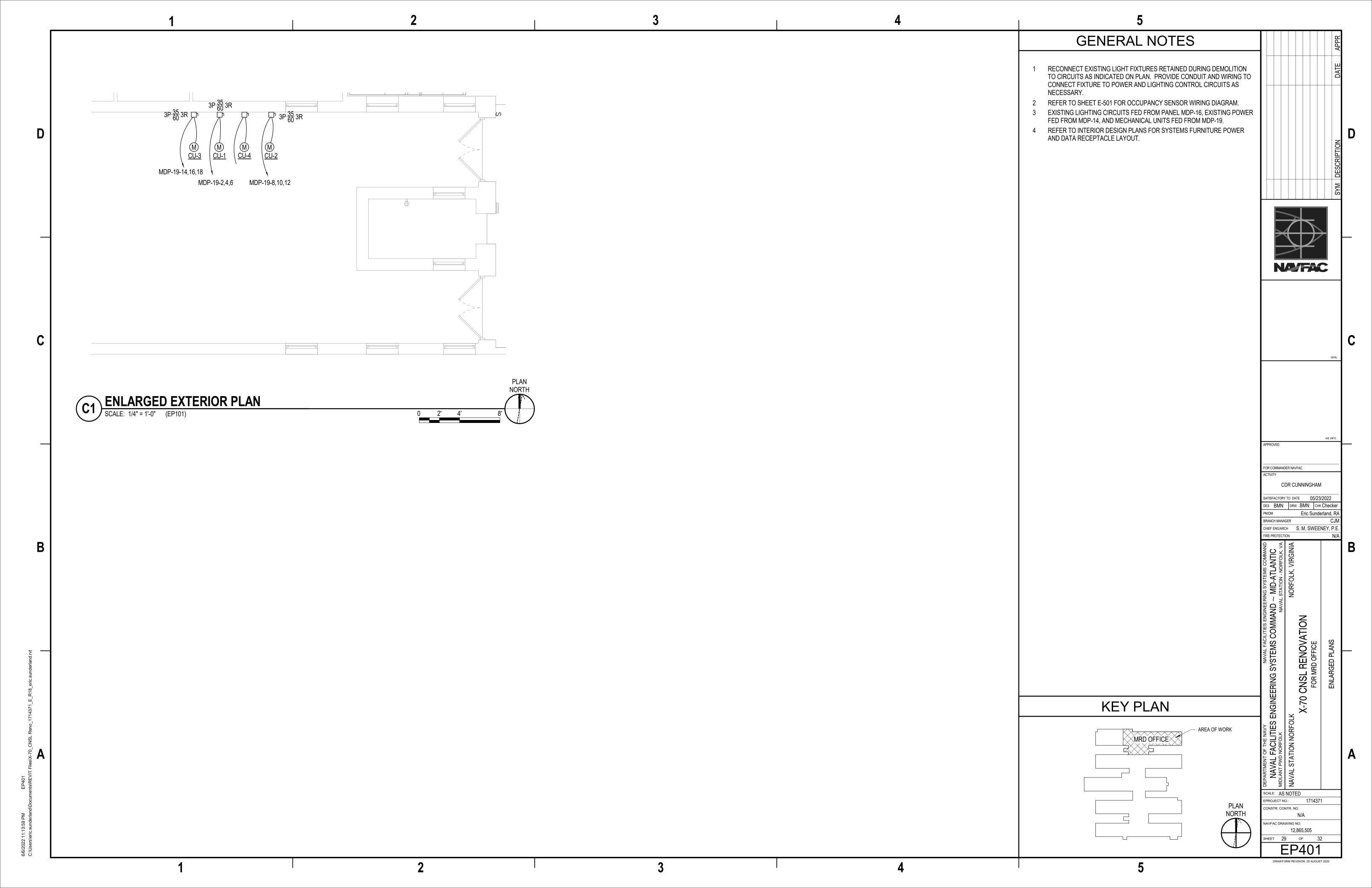
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NOTE: THIS SKETCH IS A NON-PROPRIETARY GRAPHIC REPRESENTATION OF A LUMINAIRE THAT MAY MEET THE SPECIFICATION REQUIREMENTS. IT IS NOT INTENDED TO INDICATE A CERTAIN MANUFACTURER OR PREFERENCE.

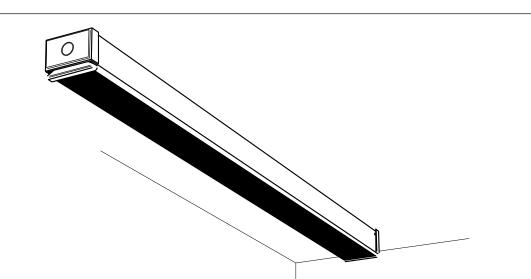
## LUMINAIRE REQUIREMENTS:

- HOUSING HEAVY GAUGE COLD ROLLED STEEL OR DIE CAST ALUMINUM. SIZE SHOWN AS INDICATED IN LUMINAIRE SCHEDULE.
- 2. OPTICS FROSTED ACRYLIC OR POLYCARBONATE LENS WITH DIE FORMED COLD ROLLED SHEET STEEL REFLECTORS.
- 3. LIGHT SOURCE SOLID STATE LEDS, 3500K CCT UON, MINIMUM 80 CRI UON, AND MINIMUM EFFICACY OF 100 LUMENS/WATT UON. INITIAL LUMEN OUTPUT AS INDICATED IN LUMINAIRE SCHEDULE.
- 4. DRIVER REPLACEABLE, INTEGRAL, HIGH-EFFICIENCY DIMMABLE DRIVER WITH MINIMUM 0.9 PF. OPERATING VOLTAGE OF 120-277V. THERMAL MANAGEMENT. AND < 20% THD. ON/OFF CONTROL AND FULLY DIMMABLE DOWN TO 10% MINIMUM OR AS INDICATED IN LUMINAIRE SCHEDULE.
- 5. CERTIFICATION UL LISTED FOR DRY OR DAMP LOCATION, ROHS COMPLIANT. DLC QUALIFIED. COMPLIES WITH IES LM79, LM80 AND TM21 TESTING STANDARDS.
- 6. MOUNTING RECESSED IN HARD OR ACOUSTICAL TILE CEILING.
- 7. OPTIONS EMERGENCY BATTERY BACK-UP, INTEGRAL OCCUPANCY/VACANCY SENSOR, VARIOUS SIZE AND OUTPUT OPTIONS, SURFACE-MOUNTING KIT.

## DIRECT/INDIRECT LED LUMINAIRE

REVISED:

NOVEMBER 2020 | LIGHTING PLATE:



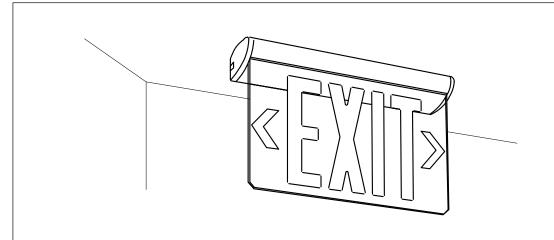
NOTE: THIS SKETCH IS A NON-PROPRIETARY GRAPHIC REPRESENTATION OF A LUMINAIRE THAT MAY MEET THE SPECIFICATION REQUIREMENTS. IT IS NOT INTENDED TO INDICATE A CERTAIN MANUFACTURER OR PREFERENCE.

### **LUMINAIRE REQUIREMENTS:**

- HOUSING EXTRUDED ALUMINUM OR WELDED STEEL HOUSING WITH SNAP-ON END CAPS. SIZE AS INDICATED IN LUMINAIRE SCHEDULE.
- 2. OPTICS DIFFUSE ACRYLIC LENS.
- 3. LIGHT SOURCE SOLID STATE LEDS, 3500K CCT UON, MINIMUM 80 CRI UON, AND MINIMUM EFFICACY OF 90 LUMENS/WATT UON. INITIAL LUMEN OUTPUT AS INDICATED IN LUMINAIRE SCHEDULE.
- DRIVER REPLACEABLE, INTEGRAL, HIGH-EFFICIENCY DIMMABLE DRIVER WITH MINIMUM 0.9 PF, OPERATING VOLTAGE OF 120-277V, THERMAL MANAGEMENT, AND < 20% THD. ON/OFF CONTROL AND FULLY DIMMABLE DOWN TO 10% MINIMUM OR AS INDICATED IN LUMINAIRE SCHEDULE.
- CERTIFICATION UL LISTED FOR DAMP OR WET LOCATION, ROHS COMPLIANT. DLC QUALIFIED. COMPLIES WITH IES LM79, LM80 AND TM21 TESTING STANDARDS.
- MOUNTING PENDANT, STEM, OR SURFACE MOUNTED WITH STAINLESS STEEL MOUNTING HARDWARE.
- OPTIONS INTEGRAL OCCUPANCY SENSOR, EMERGENCY BATTERY BACK-UP, VARIOUS PROFILE DIMENSIONS AND RUN LENGTHS, AND VARIOUS CLEAR OR FROSTED POLYCARBONATE LENSES.

## LED INDUSTRIAL LIGHT

NL-1 REVISED: NOVEMBER 2020 LIGHTING PLATE: NL-23 | REVISED:



NOTE: THIS SKETCH IS A NON-PROPRIETARY GRAPHIC REPRESENTATION OF A LUMINAIRE THAT MAY MEET THE SPECIFICATION REQUIREMENTS. IT IS NOT INTENDED TO INDICATE A CERTAIN MANUFACTURER OR PREFERENCE.

## LUMINAIRE REQUIREMENTS:

- 1. HOUSING EXTRUDED ALUMINUM WITH CLEAR ACRYLIC EDGE-LIT PANEL.
- 2. LIGHT SOURCE SOLID STATE LEDS.
- 3. DRIVER INTEGRAL, HIGH-EFFICIENCY DRIVER WITH MINIMUM 0.9 PF, OPERATING VOLTAGE OF 120-277V, THERMAL MANAGEMENT, AND < 20% THD.
- 4. CERTIFICATION NFPA 101, UL LISTED FOR DAMP OR WET LOCATION, AND ROHS COMPLIANT.
- 5. MOUNTING SURFACE MOUNTED ON CEILING AND/OR WALL.
- 6. OPTIONS RED OR GREEN LETTERING, ONE- OR TWO-SIDED. BATTERY BACKUP.

## **EDGE-LIT EXIT SIGN**

NOVEMBER 2020 | LIGHTING PLATE:

	LUMINAIRE SCHEDULE												
LUMINAIRE TYPE	PLATE	LAMP TYPE	WATTS	LUMENS	VOLTAGE	MOUNTING	NOTES	DESCRIPTION					
1	NL-1	LED	28 W	2000	120 V	RECESSED	1	2x2 RECESSED DIRECT/INDIRECT TROFFER					
2	NL-23	LED	40 W	3200	120 V	PENDANT		4' SUSPENDED INDUSTRIAL					
3		LED			120 V	CEILING		LED EDGE LIT EXIT SIGN					

LIGHTING CONTROL SEQUENCE SCHEDULE											
SEQUENCE ID	ROOM TYPE	LIGHTING SEQUENCE	ROOM LIGHTING SEQUENCEOF OPERATIONS								
A	EXAM ROOM	MANUAL ON/VACANCY OFF	LIGHTS ARE MANUALLY TURNED ON AND AUTOMATICALLY TURNED OFF UPON SENSING VACANCY AFTER A SET PERIOD OF TIME.								
В	OPEN OFFICE	MANUAL ON/VACANCY OFF	LIGHTS ARE MANUALLY TURNED ON AND AUTOMATICALLY TURNED OFF UPON SENSING VACANCY AFTER A SET PERIOD OF TIME.								
С	CORRIDOR	OCCUPANCY ON/ VACANCY OFF	LIGHTS ARE TURNED ON UPON SENSING OCCUPANCY AND TURNED OFF UPON SENSING VACANCY AFTER A SET PERIOD OF TIME.								
D	TELECOM/STORAGE	MANUAL ON/MANUAL OFF	LIGHTS ARE MANUALLY TURNED ON AND MANUALLY TURNED OFF.								

## **GENERAL NOTES**

PROVIDE LIGHT FIXTURE WITH EMERGENCY BATTERY PACK WHERE INDICATED ON PLAN.

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NATAC

FOR COMMANDER NAVFAC

CDR CUNNINGHAM

SATISFACTORY TO DATE 05/23/2022 s BMN | DRW BMN | CHK Checke BRANCH MANAGER

CHIEF ENG/ARCH S. M. SWEENEY, P.F

DEPARTMENT OF THE NAVY

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ~

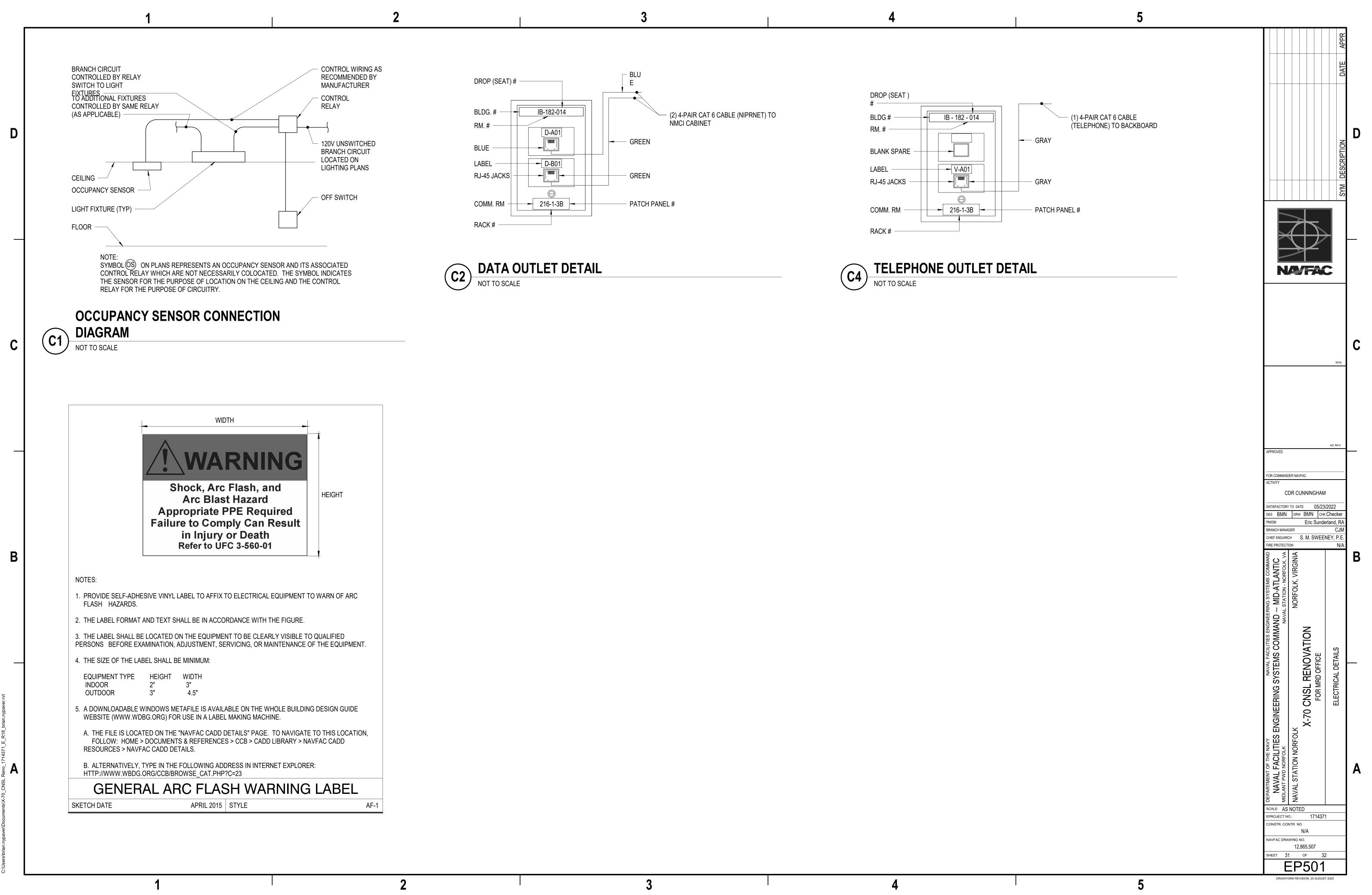
MIDLANT PWD NORFOLK

NAVAL STATION NORFOLK

SCALE: AS NOTED PROJECT NO.: CONSTR. CONTR. NO. NAVFAC DRAWING NO.

HEET 30 OF

NL-27



7/11/2022 11:38:38 AM EP501

