PROJECT DESCRIPTION AND SCOPE OF WORK (SOW) SUMMARY

THE FOLLOWING IS A SUMMARY OF THE NATURE AND INTENT OF THE WORK

- 1) DEMOLITION OF EXISTING HVAC SYSTEM IN ENTIRETY.
- 2) DEMOLITION OF EXISTING ACOUSTICAL CEILING.
- 3) DEMOLITION OF EXISTING BUILDING LIGHTING.
- 4) INSTALLATION OF NEW HVAC SYSTEM IN ENTIRETY.
- 5) SPRAY FOAM ROOF INSULATION TO THE UNDERSIDE OF THE EXISTING ROOF DECK.
- 6) INSTALLATION OF NEW 2X2 DROPPED ACCOUNTICAL CEILING.
- 7) INSTALLATION OF NEW BUILDING LIGHTS.
- 8) REWORK EXISTING ELECTRICAL TO ACCOMMODATE NEW LIGHTING AND HVAC EQUIPMENT.
- 9) MISC. OTHER WORK AS INDICATED ON THE PLANS OR REQUIREMENTS FOR A COMPLETE INSTALLATION.

L.S. GRIM CONSULTING ENGINEERS
PRIME CONSULTANT AND DESIGNER OF
RECORD

BFM ARCHITECTS

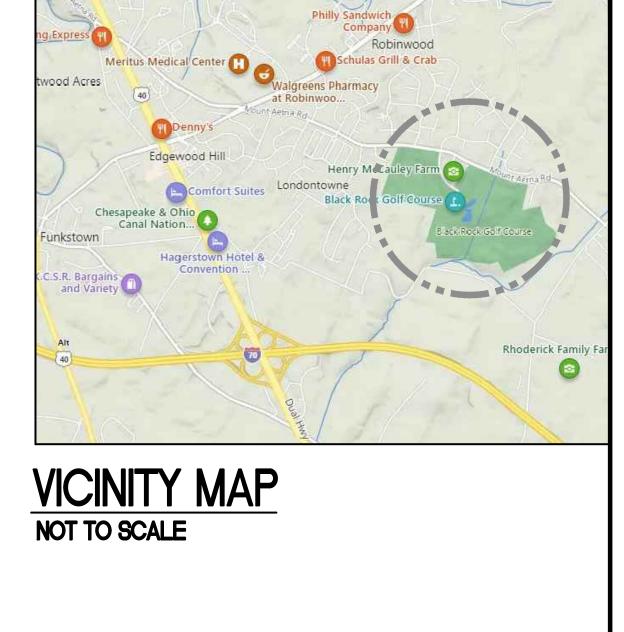
ARCHITECTURAL CONSULTANT

MATONAK AND ASSOCIATES
STRUCTURAL CONSULTANT

WASHINGTON COUNTY MARYLAND

BOARD OF COUNTY COMMISSIONERS
BLACK ROCK CLUBHOUSE
WASHCO HVAC UPGRADE
(BID SET)
PUR-1575





DRAWING LIST

C-0.0	PROJECT COVER SHEET
D-1.0	DEMOLITION PLAN - 1ST FLOOR
D-1.1	DEMOLITION PLAN - BASEMENT
A-1.1	1ST FLOOR PLAN
A-4.1	SECTIONS
A-8.1	1ST FLOOR REFLECTED CEILING PLAN
M-0.0	MECHANICAL COVER SHEET
M-0.1	TYPICAL MECHANICAL DETAILS
M-1.0	BASEMENT MECHANICAL PLAN
M-1.1	1ST FLOOR MECHANICAL PLAN
M-2.0	MECHANICAL SCHEDULES + VRF
	INSTALLATION DETAILS
E-0.0	ELECTRICAL COVER SHEET
E-0.1	TYPICAL ELECTRICAL DETAILS
E-1.0	BASEMENT ELECTRICAL PLAN
E-1.1	1ST FLOOR ELECTRICAL PLAN

BOARD OF COUNTY COMMISSIONERS:

JEFFREY A. CLINE, PRESIDENT TERRY L. BAKER, VICE PRESIDENT WAYNE K. KEEFER RANDALL E. WAGNER CHARLES A. BURKETT JR.

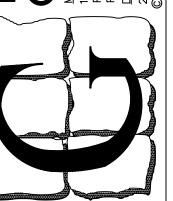
JOHN M. MARTIRANO, COUNTY ADMINISTRATOR
ANDREW ESHLEMAN, DIRECTOR OF PUBLIC WORKS
DANIEL HIXON, ASSISTANT DIRECTOR OF PUBLIC WORKS BG+F

21-105

L.S. GRIM, INC.

Consulting Engineers

19922 JEFFERSON BLVD., HAGERSTOWN, MD 21742-4367
PHONE: 301.797.1702 FAX: 301.797.4931
PHONE: TOLL FREE: 1-888-797-GRIM (4746)



CK ROCK CLUBHOUS
3025 MOUNT AETNA ROAD
LACEBETCHALLACE

Professional Certification
I certify that these documents were prepared or approved by me, and that I am a duly licensed engineer under the laws of the State of Maryland License Number: 14401

LESLIE SCOTT GRIM, F
CO PROF. ENG. NO. PE0050461
DC PROF. ENG. NO. PE901201
DE PROF. ENG. NO. 19513
GA PROF. ENG. NO. PE0322582
HI PROF. ENG. NO. PE13943
MD PROF. ENG. NO. 14401
NC PROF. ENG. NO. 033364
NJ PROF. ENG. NO. 033364
NJ PROF. ENG. NO. 075414
PA PROF. ENG. NO. 075414
PA PROF. ENG. NO. 023240
WV PROF. ENG. NO. 023240
WV PROF. ENG. NO. 10764

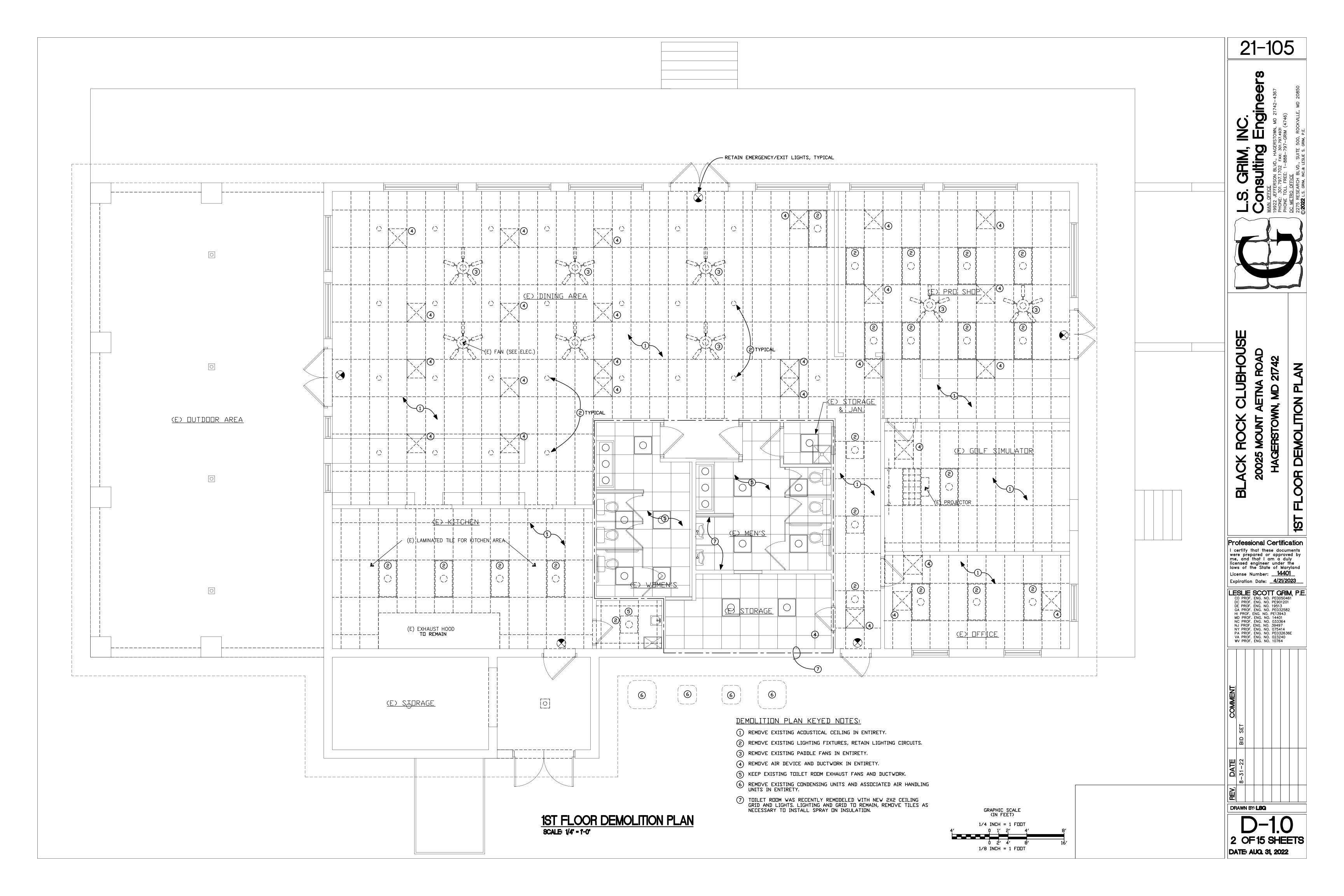
COMMENT						
	BID SET					
DATE	8-31-22					
		BID SET				

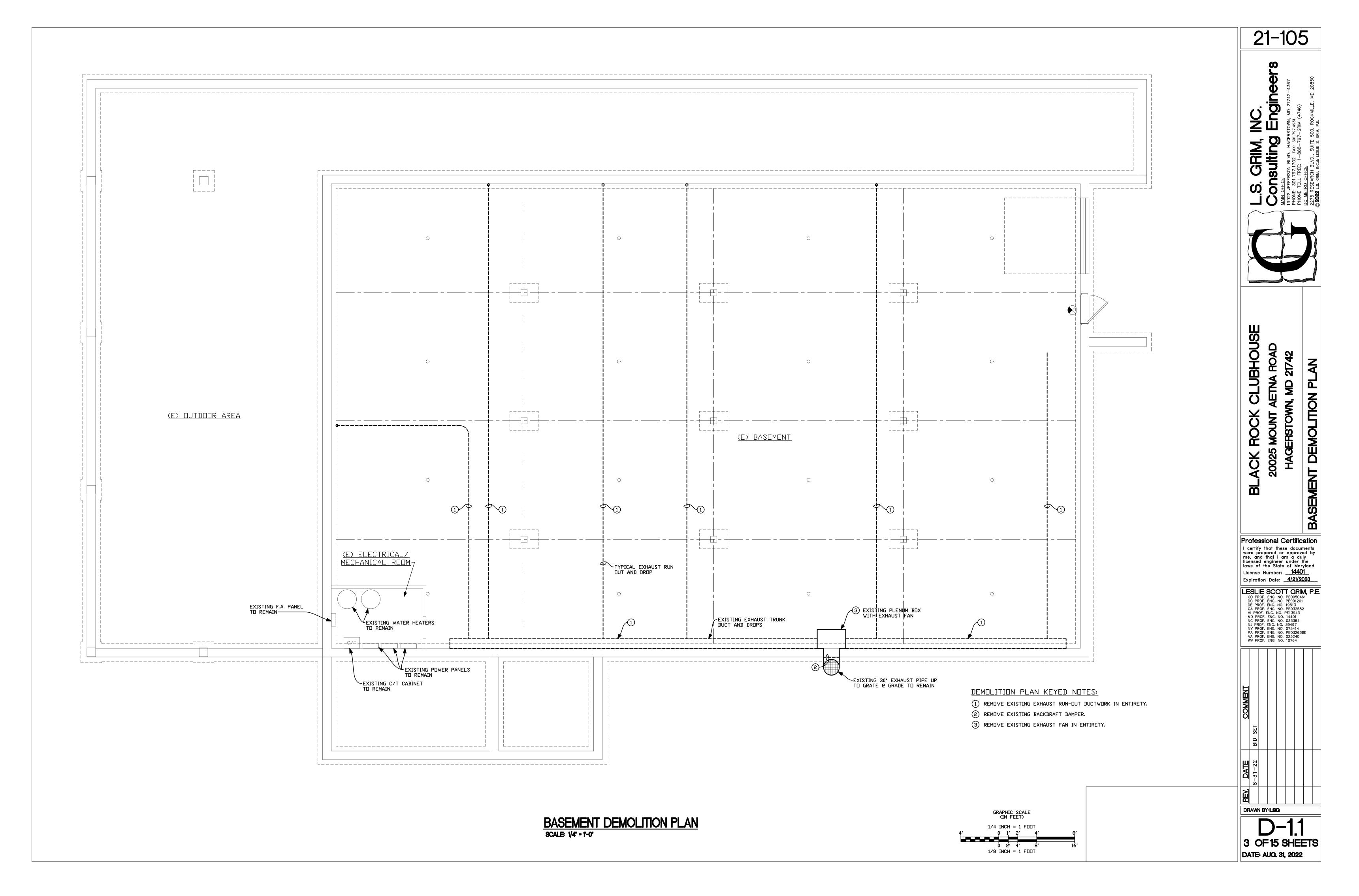
DRAWN BY: LSQ

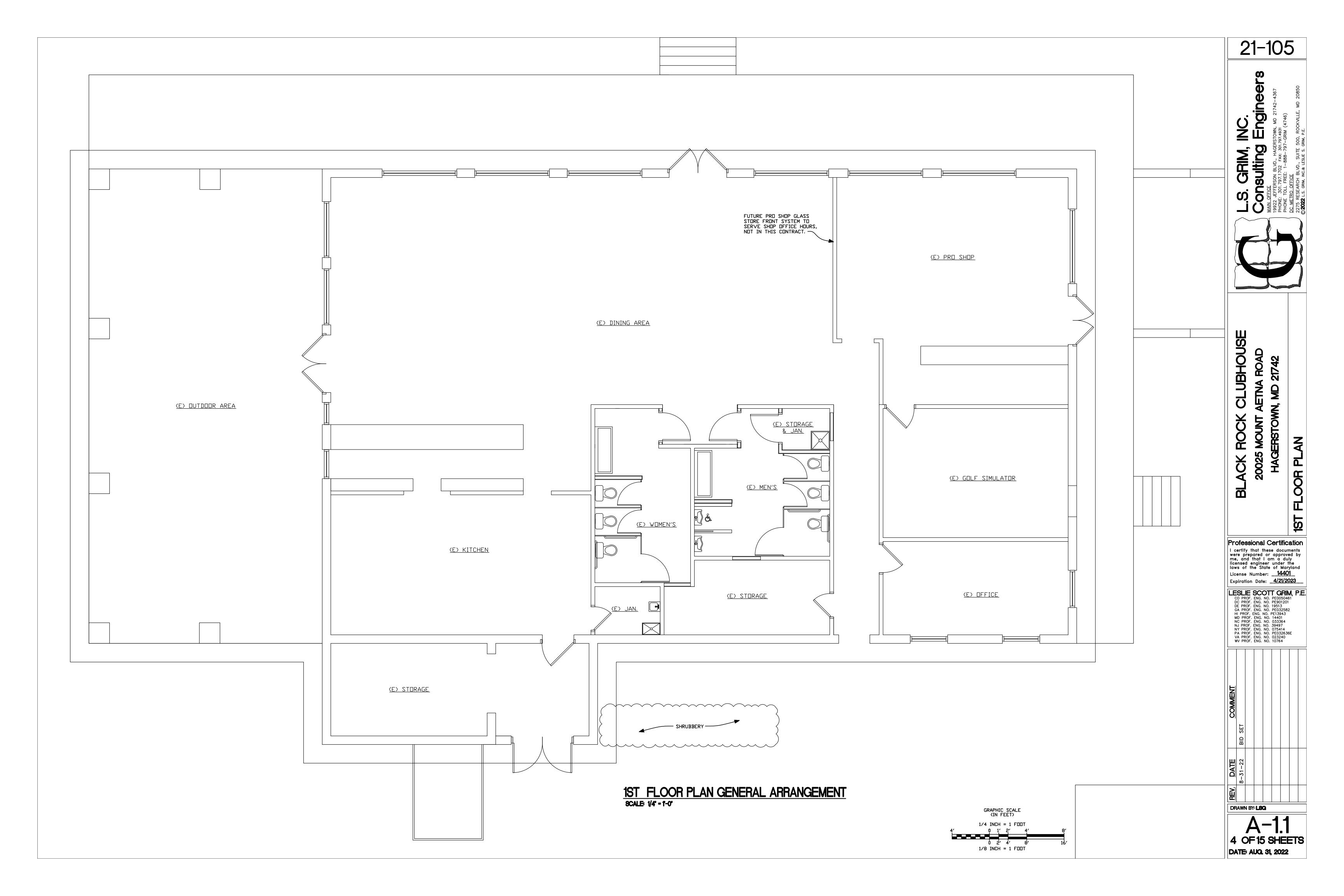
C-O.O

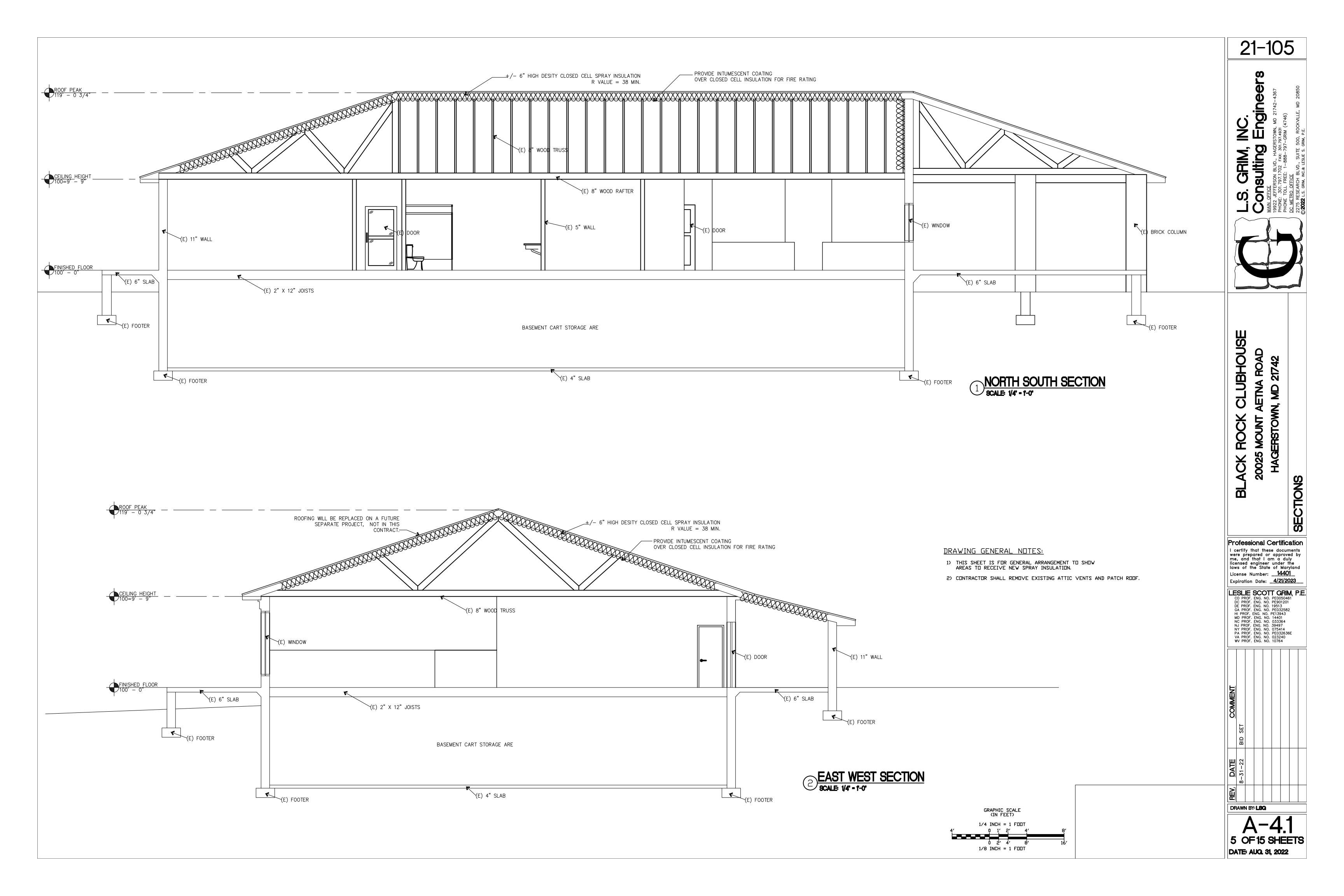
1 OF 15 SHEETS

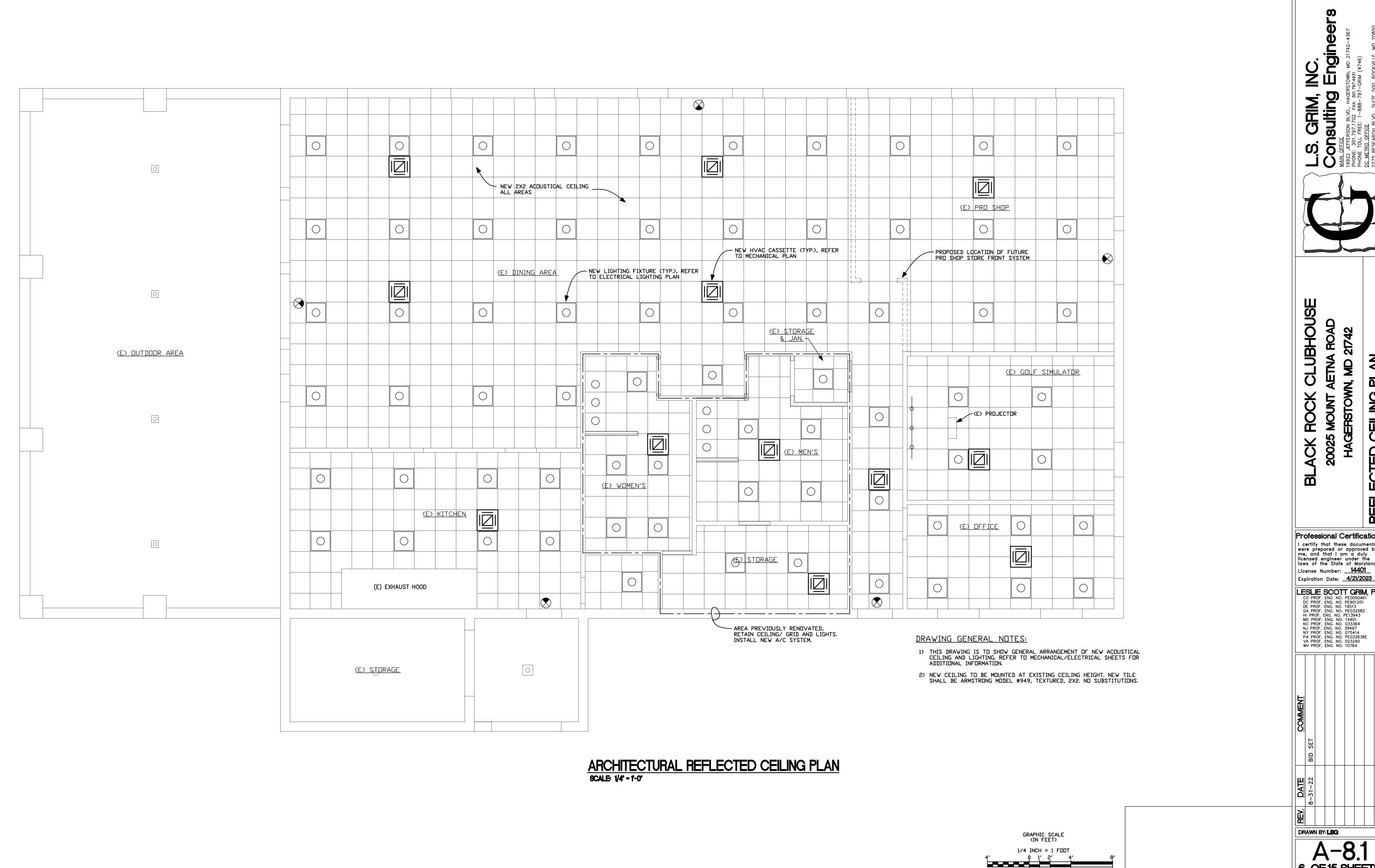
DATE: AUG. 31, 2022

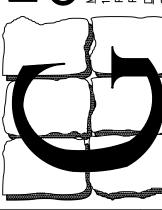












Professional Certification I certify that these documents were prepared or approved by me, and that I am a duly licensed engineer under the laws of the State of Maryland

LESLIE SCOTT GRIM, P.E.

CO PROF. ENG. NO. PE0050461
DC PROF. ENG. NO. PE901201
DE PROF. ENG. NO. 19513
GA PROF. ENG. NO. PE032582
HI PROF. ENG. NO. PE13943
MD PROF. ENG. NO. 14401
NC PROF. ENG. NO. 033364
NJ PROF. ENG. NO. 39497
NY PROF. ENG. NO. 075414
PA PROF. ENG. NO. 075414
PA PROF. ENG. NO. 075414
PA PROF. ENG. NO. 023240
WV PROF. ENG. NO. 023240
WV PROF. ENG. NO. 10764

6 OF 15 SHEETS DATE: AUG. 31, 2022

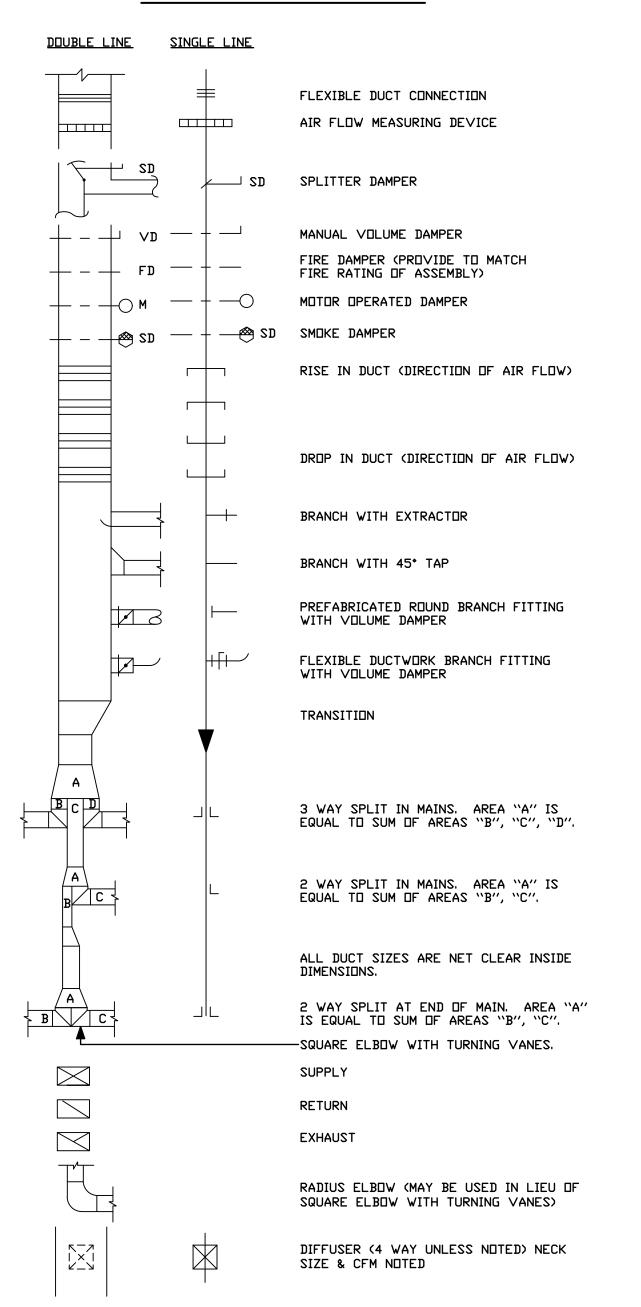
1/8 INCH = 1 FOOT

MECHANICAL SYMBOLS

SUPPLY RETURN EXHAUST FLEXIBLE DUCT SPIRAL DUCT VOLUME DAMPER - - -FIRE DAMPER SPLITTER DAMPER TURNING VANES CANVAS CONNECTION ——CD—— CONDENSATE LINE —— G —— NATURAL GAS LINE ——LP—— LP GAS LINE ► POINT OF CONNECTION SUPPLY DIFFUSER D-# RETURN AIR GRILLE WITH FILTER SUPPLY GRILLE G-# AIR FLOW INDICATION ──────── GAS C□CK EXHAUST FAN E.F. AIR HANDLING UNIT ELECTRIC BASEBOARD □ WIT HEATER ELECTRIC WALL HEATER (T)**⊿** THERMOSTAT AVERAGING THERMOSTAT REMOTE SENSOR CONDENSING UNIT

UNDERCUT DOOR

DUCTWORK SYMBOLS



MECHANICAL NOTES AND REQUIREMENTS

- 1. FOR RENOVATION WORK THE MECHANICAL CONTRACTOR SHALL INSPECT ANY EXISTING MECHANICAL ITEMS TO BE REUSED FOR DEFECTS AND REPORT TO THE ARCHITECT/ENGINEER AND THE OWNER ANY DIFICIENCIES PRIOR TO PERFORMING ANY WORK.
- CONTRACTOR SHALL BALANCE THE AIR DISTRIBUTION SYSTEM TO AIR QUANTITIES INDICATED ON THE DRAWINGS AND SUBMIT (3) COPIES OF THE BALANCE REPORT TO THE ENGINEER FOR APPROVAL.
- 3. CONTRACTOR SHALL SPRAY PAINT INSIDE OF DUCT BLACK, BEHIND ALL GRILLES AND REGISTERS.
- 4. ALL DUCTWORK SHALL BE GALVANIZED SHEET METAL, FABRICATED AND INSTALLED IN ACCORDANCE WITH ASHRAE STANDARDS AND SMACNA "HVAC DUCT CONSTRUCTION STANDARDS" EXCEPT THAT DUCTWORK SHALL BE A MINIMUM THICKNESS OF 24 GAUGE. TRUNK DUCTS OVER 18" SHALL BE "DUCTMATE" OR EQUIVALENT GASKETED JOINTS.
- 5. FLEXIBLE DUCTWORK SHALL BE RATED CLASS I, WHEN TESTED UNDER THE REQUIREMENTS OF UL 181. FLEXIBLE DUCT SHALL NOT EXCEED (6) FEET IN LENGTH. FLEX DUCT SHALL BE EQUAL TO CERTAINTEED "CERTAFLEX" G25 FLEXIBLE HOSE PREINSULATED WITH 1-1/2 INCH THICK FIBERGLASS INSULATION WITH POLYETHYLENE JACKET. HOSE SHALL BE POLYESTER WITH EMBEDDED HELICAL STEEL WIRE.
- 6. HVAC UNIT FLEXIBLE DUCT CONNECTIONS SHALL BE A MINIMUM OF 6 INCHES LONG AND HELD IN PLACE WITH HEAVY METAL BANDS, SECURELY ATTACHED TO PREVENT ANY LEAKAGE AT THE CONNECTION POINTS. FLEXIBLE CONNECTIONS SHALL BE FABRICATED FROM APPROVED FLAME PROOF FABRIC CONFORMING TO NFPA 90A.
- 7. ALL PIPING SHALL BE INSTALLED AS INDICATED ON THE DRAWINGS IN A NEAT WORKMANSHIP-LIKE MANNER AND BE SUPPORTED AS REQUIRED BY CODES. PIPING SHALL BE SET UP AND DOWN AND OFFSET AS REQUIRED TO SUIT FIELD CONDITIONS. DIELECTRIC COUPLINGS SHALL BE USED WHERE DISSIMILAR METALS ARE JOINED.
- 8. PIPING HANGERS SHALL BE SPACED SO AS TO PREVENT SAG AND PERMIT PROPER DRAINAGE AND SHALL NOT BE SPACED MORE THAN EIGHT FEET APART UNLESS A GREATER SPACE IS INDICATED ON THE DRAWINGS. A HANGER SHALL BE PLACED WITHIN (1) FOOT OF EACH HORIZONTAL ELBOW.
- 9. ISOLATE AND DRAIN EXISTING PIPING SYSTEM AS REQUIRED TO ACCOMMODATE INSTALLATION OF THE NEW WORK.
- 10. HOT WATER AND CHILLED WATER SUPPLY AND RETURN PIPING SHALL BE BLACK STEEL PIPE, SCHEDULE 40 FOR 2-1/2 INCH AND LARGER, SEAMLESS COPPER TYPE "L" FOR 2 INCH AND BELOW.
- 11. REFRIGERANT PIPING OTHER THAN PRECHARGED TUBING SETS FURNISHED BY AIR CONDITIONING MANUFACTURER SHALL BE TYPE 'ACR' HARD DRAWN COPPER TUBING WITH WROUGHT COPPER FITTINGS. PIPING SHALL BE INSTALLED IN ACCORDANCE WITH ARI STANDARDS. USE EASY-FLO OR SAFETY SILVER BRAZING ALLOY TO MAKE JOINTS. RUN ALL HORIZONTAL LINES DEAD LEVEL TO ENSURE PROPER GAS RETURN TO COMPRESSOR.
- 12. CONDENSATE DRAIN PIPING AND FITTINGS SHALL BE SCHEDULE 40 PVC OR TYPE M COPPER, COPPER SHALL BE USED IN PLENUM CEILINGS.
- 13. THE TOP OF ALL DUCTWORK EXPOSED TO WEATHER SHALL BE PITCHED TO PREVENT PONDING OF WATER ON DUCTWORK.
- 14. THE INSTALLATION OF ALL INSULATION SHALL BE PERFORMED BY A EXPERIENCED CRAFTSMAN IN A NEAT WORKMANSHIP-LIKE MANNER AND SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN PUBLISHED RECOMMENDATIONS FOR SERVICE INTENDED.
- 15. ALL MATERIALS OF INSULATION SHALL BE OF THE TYPE AND QUALITY AS MANUFACTURED BY ARMSTRONG, CERTAINTEED, OWENS-CORNING OR MANVILLE. ALL MATERIAL AND EQUIPMENT SPECIFIED TO BE INSULATED SHALL BE THOROUGHLY TESTED AND APPROVED PRIOR TO APPLYING THE INSULATION.
- 16. ACOUSTICALLY LINED DUCTWORK DIMENSIONS SHOWN ON DRAWINGS ARE INSIDE CLEAR DIMENSIONS. SHEET METAL DIMENSIONS SHALL BE INCREASED TO ACCOMMODATE LINING THICKNESS.
- 17. REFRIGERATION SUCTION AND HOT GAS BY-PASS SHALL BE INSULATED WITH 1 INCH THICK ARMSTRONG "ARMAFLEX" OR EQUAL. EXTERIOR INSULATION SHALL BE COATED WITH ULTRAVIOLET RESISTANT MATERIAL IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS, OR USE UL RATED PRODUCT. DO NOT INSULATE THE LIQUID LINE.
- 18. ALL EXTERIOR EXPOSED WATER PIPING SHALL BE INSULATED WITH 2 INCH PREFORMED FIBERGLASS INSULATION WITH VAPOR JACKET AND SELFSEALING TAPE EQUAL TO OWENS-CORNING ASJ/SSL-II. COVER INSULATION WITH .016 INCH THICK ALUMINUM JACKET.
- 19. MECHANICAL CONTRACTOR SHALL FURNISH A COMBINATION STARTER SIZED IN ACCORDANCE WITH THE MOTOR RATING OF THE MECHANICAL EQUIPMENT STARTER SHALL BE SUPPLIED WITH FUSES OR CIRCUIT BREAKERS, CONTROL TRANSFORMER, OVERLOADS, ONE N.O. AND ONE N.C. AUXILIARY CONTACT AND H.O.A. SWITCH MOUNTED IN THE COVER. STARTER ENCLOSURE SHALL BE NEMA RATED FOR ITS LOCATION. STARTER SHALL BE INSTALLED AND WIRED BY THE ELECTRICAL CONTRACTOR.
- 20. CONTRACTOR SHALL PROVIDE ALL AIR TEMPERATURE CONTROLS INCLUDING WIRING, TUBING AND THERMOSTATS (WITH LOCKING COVERS) AND ALL MISCELLANEOUS APPURTENANCES TO MEET THE INTENT OF THESE DOCUMENTS.
- 21. EQUIPMENT AND MAINS SHUT DFF VALVES SHALL BE EQUAL TO NIBCO MODEL S-113 LF SOLDERED JOINT, MODEL T-113 LF THREADED JOINT, BRONZE GATE VALVE NONRISING STEM, 300 PSI W.O.G., 125 PSI S.W.P. CONTRACTOR MAY SWAP AN EQUIVALENT BALL VALVE FOR THE GATE
- 22. BALL VALVES SHALL BE EQUAL TO NIBCO, S-585-66-LF, BRONZE, RATED FOR 600 W.O.G.
- 23. VIBRATION ISOLATORS FOR HANGING EQUIPMENT SHALL BE EQUAL TO MASON INDUSTRIES MODEL 30N, COMBINATION SPRING AND DOUBLE DEFLECTION NEOPRENE HANGER, OR DEFLECTION AS RECOMMENDED BY MANUFACTURER.
- 24. VIBRATION ISOLATORS FOR BASE MOUNTED EQUIPMENT SHALL BE EQUAL TO MASON INDUSTRIES MODEL SLF, DEFLECTION AS RECOMMENDED BY MANUFACTURER.
- 25. KITCHEN RANGE HOOD EXHAUST DUCTS SHALL BE CONSTRUCTED WITH 16 GAUGE STEEL UP TO 155 SQUARE INCHES, 14 GAUGE UP TO 225 SQUARE INCHES AND 10 GAUGE FOR GREATER CROSS SECTION DUCT AREA, AND SHALL BE PROVIDED WITH WELDED SEAMS AND JOINTS. PROVIDE CLEANOUTS AT ALL CHANGES IN DIRECTION AND CLEANOUT DOORS EVERY 20 LINEAR FEET OF RUN OR AS PER CODE REQUIREMENTS, WHICHEVER IS THE MOST STRINGENT. HORIZONTAL DUCT SHALL BE GRADED BACK TO HOOD FOR DRAINAGE. PROVIDE RESIDUE TRAP AND CLEANOUT AT BASE OF ALL VERTICAL RISERS. PROVIDE FIRE WRAP INSULATION AS REQUIRED.
- 26. DUCTWORK EXPOSED TO WEATHER SHALL BE WEATHERPROOFED AS FOLLOWS: RUBBER ROOFING OR EQUIVALENT OVERDUCT INSULATION.
- 27. ALL EQUIPMENT AND MATERIAL FURNISHED SHALL BE FREE FROM DEFECTS IN WORKMANSHIP AND MATERIAL. ALL EQUIPMENT AND MATERIALS SHALL MEET THE REQUIREMENTS OF ALL CODES AND STANDARDS OF LOCAL AND STATE AGENCIES HAVING JURISDICTION.
- 28. WHERE A SUBCONTRACTOR PROPOSES TO USE AN ITEM OR EQUIPMENT OTHER THAN THE SPECIFIED OR DETAILED ITEM ON THE DRAWINGS THAT IS APPROVED BY THE ENGINEER AND THAT REQUIRES REDESIGN OF THE STRUCTURE PARTITIONS, FOUNDATIONS, PIPING, WIRING OR ANY OTHER PART OF THE MECHANICAL, ELECTRICAL, OR ARCHITECTURAL LAYOUT, THEN SUCH REDESIGN, NEW DRAWINGS, AND DETAILING REQUIRED FOR IT SHALL BE PREPARED BY THE SUBCONTRACTOR WITHOUT EXTRA COMPENSATION.
- 29. THE SUBMITTAL WHICH HAS BEEN REVIEWED BY THE ENGINEER, WITH OR WITHOUT COMMENTS, DOES NOT RELIEVE THE CONTRACTOR FROM THE REQUIREMENTS OF COMPLYING WITH THE CONTRACT DOCUMENTS. ONLY SUBMITTALS WHICH EXPLICITY REQUEST THE ENGINEER TO REVIEW DEVIATIONS WITH THE CONTRACT DOCUMENTS RELIEVE THE CONTRACTOR FROM THE SPECIFIC ITEM OF COMPLIANCE.
- 30. THE LOCATIONS SHOWN ON THE DRAWINGS ARE APPROXIMATE, AND ARE TO SERVE AS GUIDE FOR THE INSTALLATION. THE SHIFTING OF LOCATIONS TO MEET CONDITIONS (BEFORE INSTALLATION) WILL BE EXPECTED, AND THIS SHALL DONE AT NO INCREASED COST.
- 31. FOR PURPOSES OF CLEARNESS AND LEGIBILITY, MECHANICAL DRAWINGS ARE ESSENTIALLY DIAGRAMMATIC AND INDICATE ONLY SIZES, CONNECTION POINTS, AND ROUTES. IT IS NOT INTENDED OR IMPLIED THAT ALL OFFSETS, RISES, AND DROPS ARE AS SHOWN.
- 32. PROVIDE HOLLOW-FORMED CURVED METAL TURNING VANES IN ALL RECTANGULAR ELBOWS.
- 33. THE CONTRACTOR SHALL BALANCE THE SYSTEM IN ACCORDANCE WITH THE AIR VOLUMES AS SHOWN ON THE DRAWINGS AND MAKE OTHER MINOR ADJUSTMENTS AS DIRECTED.
- 34. CONTRACTOR SHALL PROVIDE SMOKE DETECTOR WITH RESET AND ONE SET OF DRY CONTACTS FOR ALL HVAC OVER 2000 CFM EACH OR SERVING A COMMON PLENUM EXCEEDING 2000 CFM IN PLENUM. PROVIDE DETECTOR ON RETURN AND SUPPLY OF EACH UNIT (2 PER UNIT)
- 35. CONTRACTOR SHALL SUBMIT A MINIMUM OF TWO AIR BALANCING CONTRACTORS. THE ENGINEER WILL MAKE THE FINAL SELECTION OF THE AIR BALANCING CONTRACTOR TO BE USED. REFER TO SPECIFICATIONS.

GENERAL MECHANICAL NOTES - WORKMANSHIP/COORDINATION

- 1. ALL WORK SHALL BE PERFORMED IN A CLEAN AND WORKMANLIKE MANNER. CARE SHALL BE EXERCISED TO MINIMIZE ANY INCONVENIENCE OR DISTURBANCE TO OTHER AREAS OF THE BUILDING WHICH ARE TO REMAIN IN OPERATION. ISOLATE WORK AREAS BY MEANS OF TEMPORARY PARTITIONS AND/OR TARPS TO DEEP DUST AND DIRT WITHIN THE CONSTRUCTION AREA.
- 2. NO PIPING, EQUIPMENT, ETC. SHALL BE REMOVED, DISCONNECTED OR SHUT DOWN WITHOUT PRIOR REVIEW WITH THE OWNER AND/OR ENGINEER TO CONFIRM THAT AREAS TO REMAIN IN OPERATION WILL NOT BE AFFECTED. IF ANY AREAS NOT WITHIN THE SCOPE OF WORK ARE AFFECTED BY ANY SHUTDOWN, REMOVAL OR DISCONNECTION, SUFFICIENT ADVANCE NOTICE MUST BE GIVEN TO THE OWNER INDICATING WHICH AREAS WILL BE AFFECTED, WHEN THE PROPOSED SHUTDOWN WILL OCCUR, AND FOR HOW LONG
- 3. ALL ITEMS REMOVED SHALL BECOME PROPERTY OF THE OWNER AND SHALL BE DISPOSED OF AS PER THE OWNER'S INSTRUCTIONS, UNLESS INDICATED OTHERWISE. ALL ITEMS WHICH ARE NOT TO BE STORED ON SITE BY OWNERS SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR.
- 4. THIS CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS PRIOR TO PROCEEDING WITH ANY WORK, WHERE DISCREPANCIES OCCUR BETWEEN THESE DOCUMENTS AND EXISTING CONDITIONS, THE DISCREPANCY SHALL BE REPORTED TO THE OWNER AND/OR ENGINEER FOR EXPEDITING AND RESOLVE.
- 5. ALL SHUT DOWNS OF EXISTING SYSTEMS SHALL BE SCHEDULED AND APPROVED BY THE OWNER PRIOR TO COMMENCING WITH
- 6. CLEAN THE JOB SITE DAILY AND REMOVE FROM THE PREMISES ANY DIRT AND DEBRIS CAUSED BY THE PERFORMANCE OF THE WORK INCLUDED IN THIS CONTRACT.
- 7. USE OF THE OWNER'S ELEVATORS AND BUILDING CORRIDORS FOR FOR HANDLING OF THE OWNER AND REMOVED EQUIPMENT AND MATERIALS SHALL BE AT THE DIRECTION OF THE OWNER AND SHALL BE COORDINATED WITH HIS OPERATIONS.
- 8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFEKEEPING OF HIS OWN PROPERTY ON THE JOB SITE. OWNER ASSUMES NO RESPONSIBILITY FOR PROTECTION OF PROPERTIES AGAINST FIRE, THEFT AND ENVIRONMENTAL CONDITIONS.
- SUCCESSFULLY PRESSURE TEST ALL PIPING SYSTEMS. TEST SHALL BE PERFORMED AT NORMAL SYSTEM OPERATING PRESSURES. REPAIR AND RETEST AS REQUIRED UNITL SYSTEMS PROVE TIGHT.
- 10. EXISTING MATERIALS THAT ARE REMOVED SHALL NOT BE REUSED IN NEW SYSTEMS, EXCEPT WHERE INDICATED AS BEING
- 11. PROVIDE ALL NECESSARY TEMPORARY OR PERMANENT CAPS OR PLUGS FOR PIPING. DO NOT LEAVE PIPING OPEN ENDED.
- 12. WHERE USED, THE TERM 'PROVIDE' SHALL MEAN 'FURNISH AND INSTALL'.
- 13. THIS CONTRACTOR SHALL COORDINATE HIS WORK WITH ALL OTHER TRADES PRIOR TO FABRICATION, PURCHASE AND/OR INSTALLATION OF ALL WORK.
- 14. MECHANICAL CONTRACTOR SHALL COORDINATE ELECTRICAL REQUIREMENT OF ANY EQUIPMENT WITH G.C. AND ELECTRICAL CONTRACTOR PRIOR TO ROUGH-IN.
- 15. THE CONTRACTOR SHALL REFER TO PROJECT SPECIFICATIONS FOR ANY ADDITIONAL PROJECT REQUIREMENTS



21-105

S. GRIM, INC.

Shaulting Engineers

FEICE

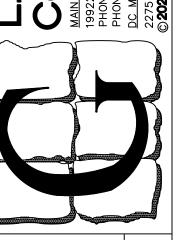
SOL 792. 1702 FAX: 301.797.4931

SOL 792. 1702 FAX: 301.797.4931

TO FEET FOR EACH STATE FAXER

FOR THE FEET FAXER

FOR THE



LACK ROCK CLUBHOUS
20025 MOUNT AETNA ROAD
HAGERSTOWN, MD 21742

Professional Certification

I certify that these documents were prepared or approved by me, and that I am a duly licensed engineer under the laws of the State of Maryland License Number: 14401

Expiration Date: 4/21/2023

LESLIE SCOTT GRIM, P.E

CO PROF. ENG. NO. PE0050461
DC PROF. ENG. NO. PE901201
DE PROF. ENG. NO. 19513
GA PROF. ENG. NO. PE032582
HI PROF. ENG. NO. PE13943
MD PROF. ENG. NO. 033364
NJ PROF. ENG. NO. 033364
NJ PROF. ENG. NO. 03497
NY PROF. ENG. NO. 075414
PA PROF. ENG. NO. 075414
PA PROF. ENG. NO. 023240
WV PROF. ENG. NO. 10764

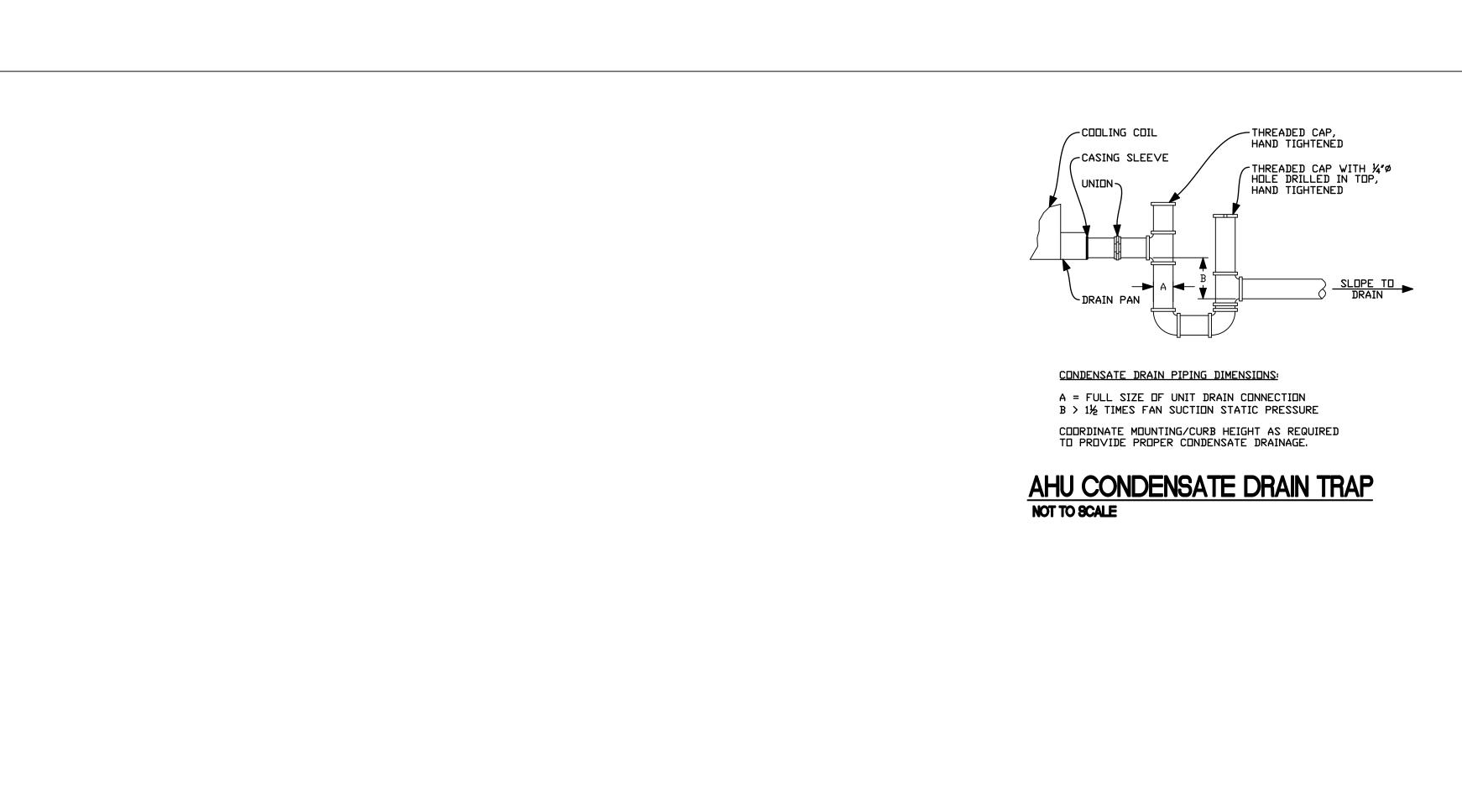
COMMENT				
	BID SET			
DATE	8-31-22			
REV.				

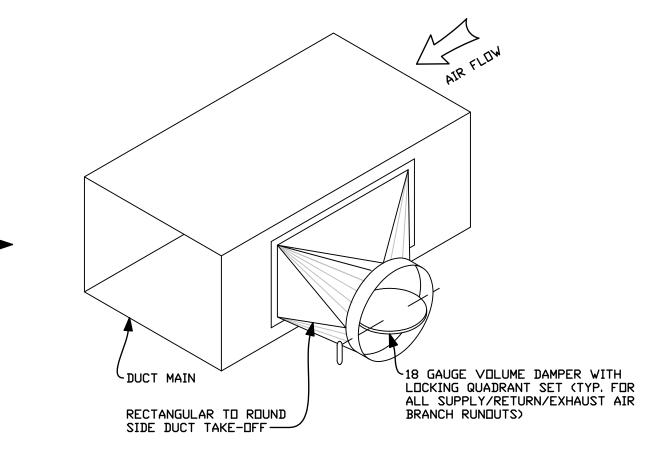
DRAWN BY: LSQ

MODIO

7 OF 16 SHEET

DATE: AUG. 31, 2022

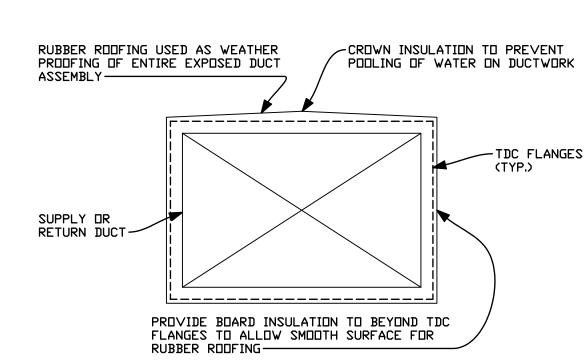




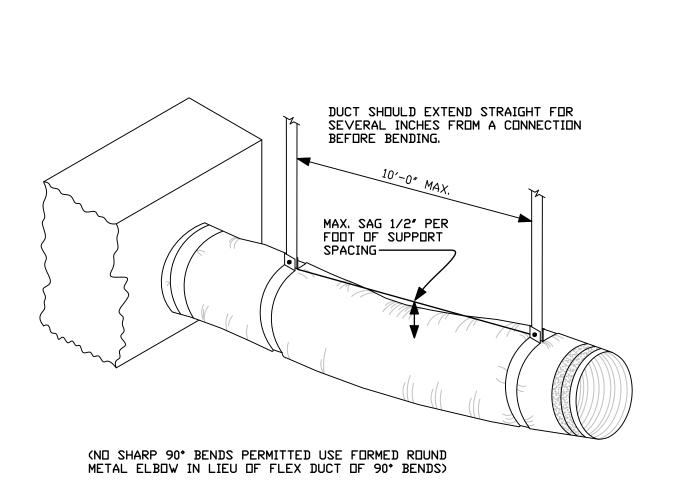
DUCT TAKE OFF DETAIL

(TOP/BOTTOM TAKE OFF SIMILAR)

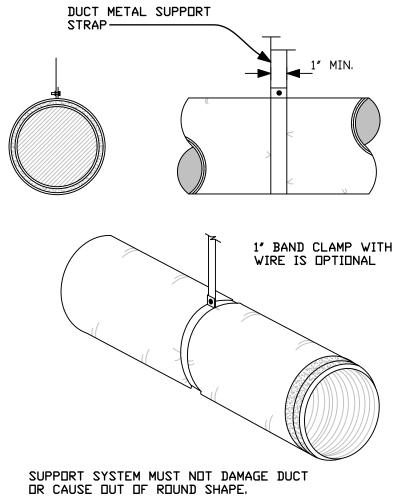
NOT TO SCALE



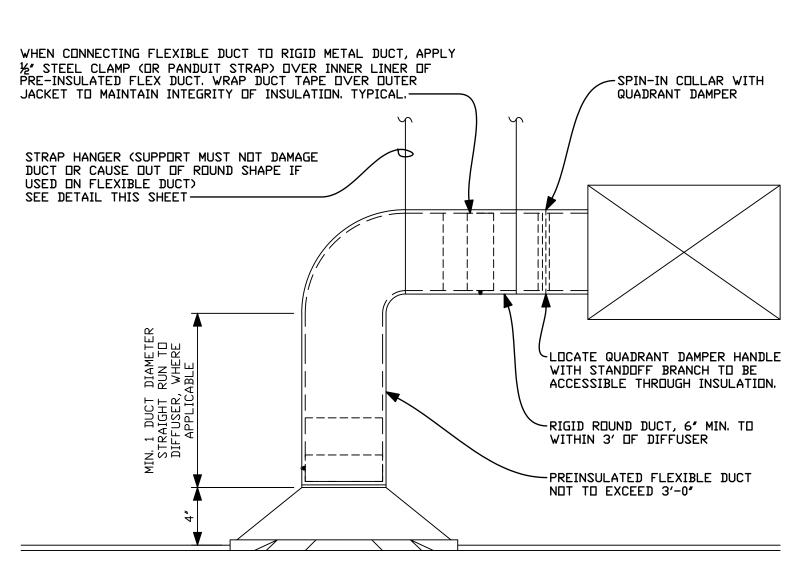
EXPOSED DUCTWORK
WEATHER PROOFING DETAIL
NOT TO SCALE



FLEXIBLE DUCT SUPPORTS
NOT TO SCALE



FLEXIBLE DUCT SUPPORTS
NOT TO SCALE



CEILING DIFFUSER CONNECTION DETAIL
NOT TO SCALE

BEV. DATE COMMENT

8-31-22 BID SET

DATE

COMMENT

21-105

CLUBHOUSE

ROCK

回

20025

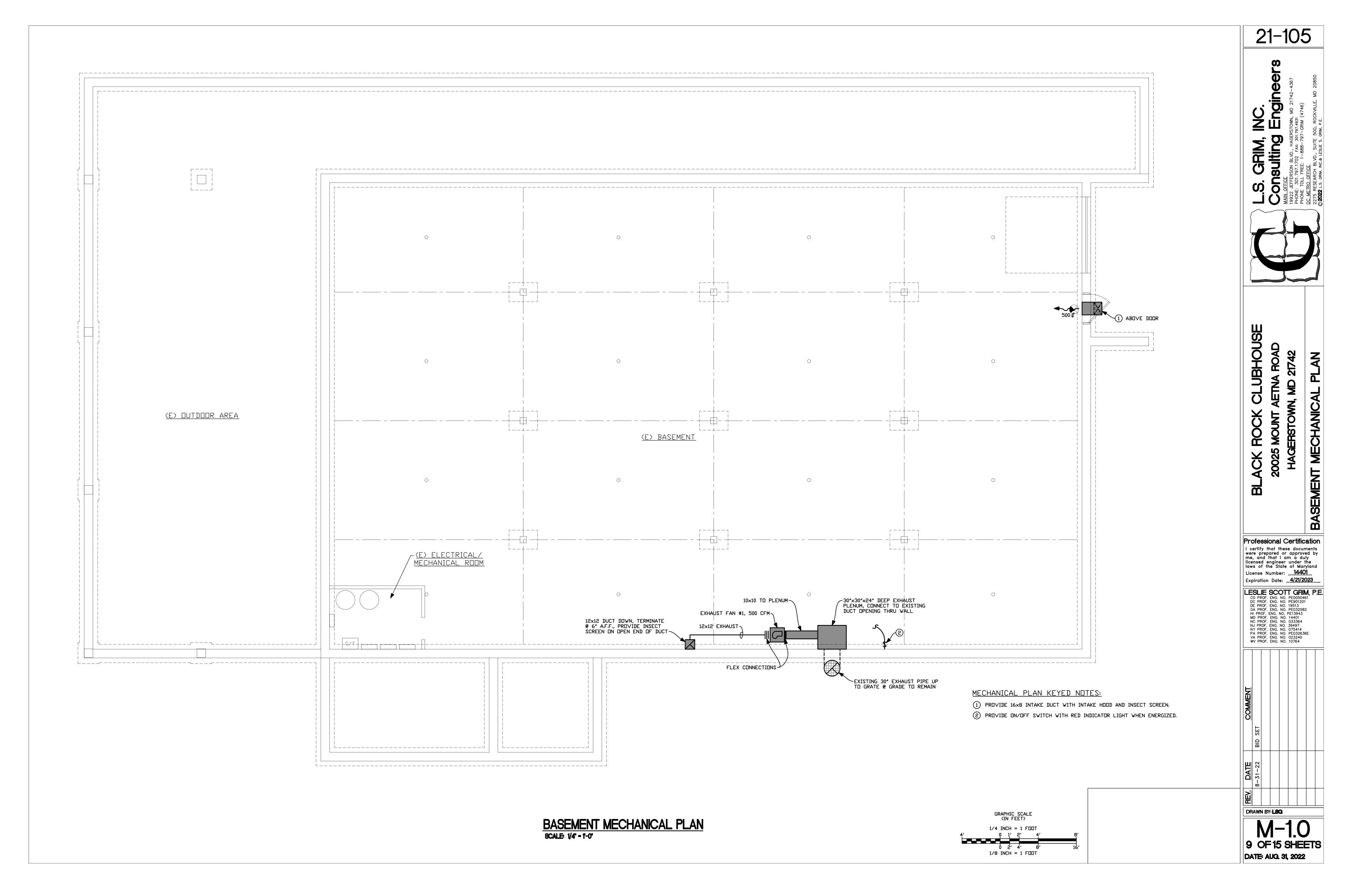
Professional Certification

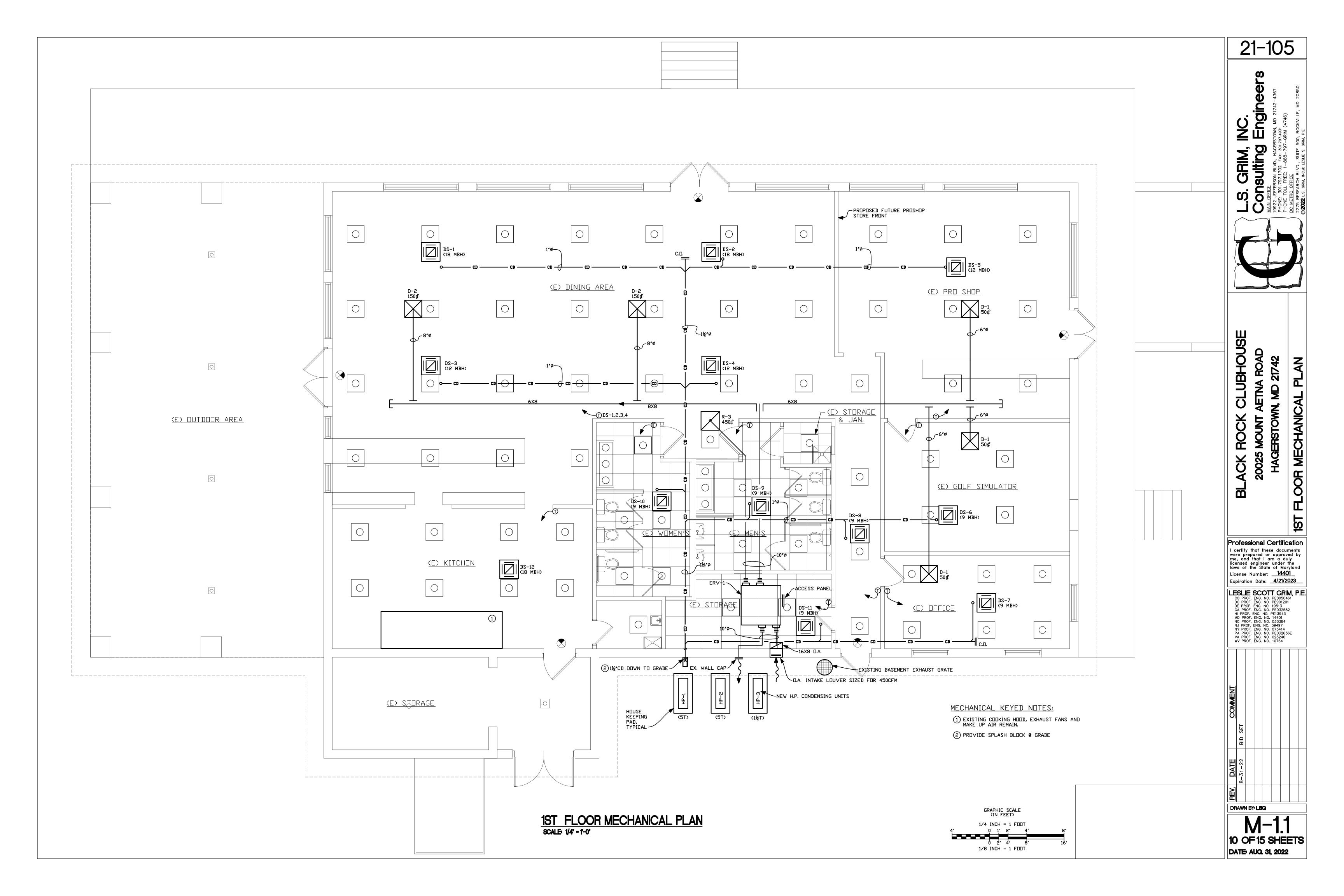
I certify that these documents were prepared or approved by me, and that I am a duly licensed engineer under the laws of the State of Maryland

CO PROF. ENG. NO. PE0050461
DC PROF. ENG. NO. PE901201
DE PROF. ENG. NO. 19513
GA PROF. ENG. NO. PE332582
HI PROF. ENG. NO. PE13943
MD PROF. ENG. NO. PE13943
MD PROF. ENG. NO. 033364
NJ PROF. ENG. NO. 033364
NJ PROF. ENG. NO. 39497
NY PROF. ENG. NO. 075414
PA PROF. ENG. NO. 075414
PA PROF. ENG. NO. 0232636E
VA PROF. ENG. NO. 023240
WV PROF. ENG. NO. 10764

21742

MODI 8 OF 15 SHEETS DATE: AUG. 31, 2022





Locati				WBT RH(%			RA Temperature(°F) RH(%) Cooling DBT Cooling WBT RH(%) Heating DBT Heating WBT RH			Cooling W		DBT Heating WBT RH		,
ERV	1	95.0	76.	0 42.6	5 15.0	14.1	86.0 72.0 60.1 50.4 71.0 58.3 47	7.0 80.7 71.2 63.3 49.3 41.4	50.0 86.3	67.3	37.1 36.7	39.2 12	3.2 ARVU053ZEA2	2 1
	COMMERCI	:AL R	EGIS	STER	S, GF	RILLES	, & DIFFUSERS		System	Tag	Model Name	Туре		CapacityBTU/
MARK SEE NOTE#2	DESCRIPTION	CFM SEE NOTE#1	NECK	BLOW	COLOR	MATERIAL	MANUFACTURER & MODEL NO.		7232	DS-01	ARNU183TQD4	CASSETTE 4WAY	Total Cooling 15,290	Sensible Cooli
D-1	24"x24" LAY-IN SUPPLY DIFFUSER	75 TD 125	6 " ø	4-W	WHITE	STEEL	KRUEGER MDDEL #1400F23 W/ INTERGRAL RDUND NECK COLLAR AND PRN100 DAMPER		HP-01	DS-02 DS-03	ARNU183TQD4 ARNU123TRD4	CASSETTE 4WAY CASSETTE 4WAY	15,290 9,847	11,815 7,591
D-5	24"x24" LAY-IN SUPPLY DIFFUSER	130 TD	8 ″ ø	4-W	WHITE	STEEL	KRUEGER MODEL #1400F23 W/ INTERGRAL ROUND NECK COLLAR AND PRN100 DAMPER			DS-04 DS-05	ARNU123TRD4 ARNU123TRD4	CASSETTE 4WAY CASSETTE 4WAY	9,847 9,844	7,591 7,589
D-3	24"x24" LAY-IN SUPPLY DIFFUSER		10 " ø	4-W	WHITE	STEEL	KRUEGER MODEL #1400F23 W/ INTERGRAL ROUND NECK COLLAR AND PRN100 DAMPER			DS-06 DS-07	ARNU093TRD4 ARNU093TRD4	CASSETTE 4WAY CASSETTE 4WAY	7,683 7,683	5,942 5,942
D-4	24"x24" LAY-IN	300 305 TD	12 " ø	4-W	WHITE	STEEL	KRUEGER MODEL #1400F23 W/ INTERGRAL		HP-02	DS-08 DS-09	ARNU093TRD4 ARNU093TRD4	CASSETTE 4WAY CASSETTE 4WAY	7,683 7,683	5,942 5,942
D-5	SUPPLY DIFFUSER 24"x24" LAY-IN	425 500	14 " Ø	4-W	WHITE	STEEL	ROUND NECK COLLAR AND PRN100 DAMPER KRUEGER MODEL #1400F23 W/ INTERGRAL			DS-10 DS-11	ARNU093TRD4 ARNU093TRD4	CASSETTE 4WAY	7,683 7,683	5,942 5,942
	SUPPLY DIFFUSER CEILING	1000 50					ROUND NECK COLLAR AND PRN100 DAMPER KRUEGER MODEL#SH4 F22 OBD		HP-03	DS-12	LCN188HV4	CASSETTE 4WAY	18,000	3,3 12
D-6	SURFACE MOUNTED SUPPLY DIFFUSER CEILING	100 110	6 * ×6*	4-W	WHITE	STEEL	(ROUND TO SQUARE ADAPTER MAY BE REQUIRED SEE PLAN) KRUEGER MODEL#SH4 F22 OBD							
D-7	SURFACE MOUNTED SUPPLY DIFFUSER	TD 9	9″×9″	4-W	WHITE	STEEL	(RDUND TO SQUARE ADAPTER MAY BE REQUIRED SEE PLAN) KRUEGER MODEL#SH4 F22 OBD	HP-01 ARUN060GS	SS4			HP-02	000004	
D-8	CEILING SURFACE MOUNTED SUPPLY DIFFUSER	400	12 " ×12 "	4-W	WHITE	STEEL	(ROUND TO SQUARE ADAPTER MAY BE REQUIRED SEE PLAN)					ARUN0	60GSS4	
D-9	CEILING SURFACE MOUNTED SUPPLY DIFFUSER	310 TD :	15 ″ ×15 ″	4-W	WHITE	STEEL	KRUEGER MODEL#SH4 F22 OBD (ROUND TO SQUARE ADAPTER MAY BE REQUIRED SEE PLAN)	3/8:3/4	ARBL054 1/4:1/2		ARNU123TRD4 #DS-0	<u>3/8:3/4</u>	ARBL057	7 A
D-10	CEILING SURFACE MOUNTED SUPPLY DIFFUSER	450 TD :	18 " ×18"	4-W	WHITE	STEEL	KRUEGER MODEL#SH4 F22 OBD (ROUND TO SQUARE ADAPTER MAY BE REQUIRED SEE PLAN)		1/4:1/2		ARNU123TRD4 #DS-0	3	1/4:1/2	A
D-11	24"x24" LAY-IN PERFORATED SUPPLY DIFFUSER	UP TO 125	6 ″ ø	4-W	WHITE	STEEL	KRUEGER MODEL#6604 (ROUND TO SQUARE ADAPTER MAY BE REQUIRED SEE PLAN)		1/4:1/2		ARNU183TQD4 #DS-0 ARNU183TQD4 #DS-0		1/4:1/2	A
D-12	24"x24" LAY-IN PERFORATED SUPPLY DIFFUSER	125 TD 230	8 ″ ø	4-W	WHITE	STEEL	KRUEGER MODEL#6604 (ROUND TO SQUARE ADAPTER MAY BE REQUIRED SEE PLAN)		77.72				1/4:1/2	^ ^ ^
D-13	24"x24" LAY-IN PERFORATED	230 TD	10 ″ ø	4-W	WHITE	STEEL	KRUEGER MODEL#6604 (ROUND TO SQUARE ADAPTER	VDE DEI		NIT D			1/4:1/2	A
D-14	SUPPLY DIFFUSER 4'-0' LINEAR	350 300 TD 12	2″ DVAL	2-W	WHITE	_	MAY BE REQUIRED SEE PLAN) KRUEGER MODEL#PTBS-Y-48-3	<u>VIII IIII</u> 8CALE: 1/4' =			<u>IPING DIA</u>	<u>GRAM</u>	1/4:1/2	A
R-1	SLOT DIFFUSER 24"x24" LAY-IN	400 100 TD	8 ″ ø	N/A	WHITE	ALUM	-12-100-50-QD KRUEGER MDDEL #S80H5FFF23 #3							
	RETURN GRILLE 24"x24" LAY-IN	200								F				
R-2	RETURN GRILLE 24"x24" LAY-IN	400	10 " Ø	N/A	WHITE	ALUM	KRUEGER MDDEL #S80H5FFF23 #3							
R-3	RETURN GRILLE	800 800	12 * ø	N/A	WHITE	ALUM	KRUEGER MDDEL #S80H5FFF23 #3	HP-01	ΔCS	mart5				
R-4	24"x24" LAY-IN RETURN GRILLE	TD 1200	16 " ø	N/A	WHITE	ALUM	KRUEGER MODEL #S80H5FFF23 #3	ARUN060GSS		ral				
R-5	24"x24" LAY-IN RETURN GRILLE	1500	20 " ×20"	N/A	WHITE	ALUM	KRUEGER MODEL #S80H5FFF23 #3	ODU IDU C L N B A B A B OO OOOO	ВА			ARNU123TRD4 L N		RLA: 0.20
R-6	24"×48" LAY-IN RETURN GRILLE	2000 TD 2 3000	22"x22"	N/A	WHITE	ALUM	KRUEGER MODEL #S80H5FFF23 #3	<u> </u>		// //		(#DS-04)(-)		R.C : PREMTE
R-7	24"×48" LAY-IN RETURN GRILLE	3000 TD 2 5000	22"x32"	N/A	WHITE	ALUM	KRUEGER MODEL #S80H5FFF23 #3	MCA: 25.4 MOP: 40 V,Hz: 1Phase/208~	.220///60H-		*	ARNU123TRD4 L N		RLA: 0.20 R.C: PREMTE
R-8	COMMERCIAL SURFACE MOUNTED RETURN GRILLE	200 TD 1 300	.2 " ×6 "	N/A	WHITE	STEEL	KRUEGER MDDEL #S80H #3	V,112 . 1F1IdSe/200~	2300/00/12		A B	(#DS-03)(-)		
R-9	COMMERCIAL SURFACE MOUNTED RETURN GRILLE	300 TD 1 600	.2 " ×12 "	N/A	WHITE	STEEL	KRUEGER MODEL #S80H #3					ARNU183TQD4 L N		RLA: 0.20 R.C: PREMTE
R-10	COMMERCIAL SURFACE MOUNTED	600	.8 * ×12 *	N/A	WHITE	STEEL	KRUEGER MODEL #S80H #3				A B	(#DS-02)(-)		
R-11	RETURN GRILLE COMMERCIAL SURFACE MOUNTED	900 TD 1	18"×18"	N/A	WHITE	STEEL	KRUEGER MODEL #S80H #3					OO ARNU183TQD4		RLA : 0.20 R.C : PREMTE
R-12	RETURN GRILLE COMMERCIAL SURFACE MOUNTED		24"×20"	N/A	WHITE	STEEL	KRUEGER MODEL #S80H #3				00	<u> </u>		
R-13	RETURN GRILLE COMMERCIAL SURFACE MOUNTED		24 " ×24 "	N/A	WHITE	STEEL	KRUEGER MODEL #S80H #3			//	•	Total RLA: 0.80		J
R-14	RETURN GRILLE COMMERCIAL SURFACE MOUNTED	2400 2500	30"×48"	N/A	_	ALUM	KRUEGER MODEL #S580-H-30-40-F22							
	RETURN GRILLE 24"x24" LAY-IN	3200					-01-15	HP-03						
R-15	PERFORATED RETURN GRILLE	1600	24"x24"	N/A	WHITE	STEEL	KRUEGER M□DEL #6790 F-3 #3	LUU180HHV						
2. REGIS	CFMS DESIGNATED TERS, GRILLES, AND	DIFFUSERS	DESIGNA	AM ZNOITA	Y APPEAR	ON SCHEDULE	BUT MAY NOT BE UTILIZED	L N	20100					

	Extract Critic BECIGNITIES	DIV I DIVIN TILL DIVI CODIN DI	2011120111	
2.	REGISTERS, GRILLES, AND	DIFFUSERS DESIGNATION:	S MAY APPEAR ON SCHEDULE	BUT MAY NOT BE UTILIZED
	TN THE PLAN. REFER TO	I PLAN FOR QUANTITY AND	DESIGNATION.	

UN THE PLAN. REFER TO PLAN FOR QUANTITY AND DESIGNATION.

3. REFER TO PLAN TO DETERMINE IF FILTERS ARE REQUIRED IN RETURN GRILLES, PROVIDE APPROPRIATE STYLE /MODEL TO ACCOMMODATE FILTERS.

		EXHA	UST	FAN	SCHEI)ULE
MARK	CONTROL	CFM	SP	HP	VOLTS	MANUFACTURER & MODEL #
EF-1	LOCAL SWITCH	500	0.375	FRAC.	120	GREENHECK #SQ-90, 1/6 HP

FAN NOTES:
#1 ROOF CURB
#2 LOW LEAK BACK DRAFT DAMPER
#3 LOW LEAK MOTOR OPERATED DAMPER

#4 PROTECTIVE GUARD/CAGE

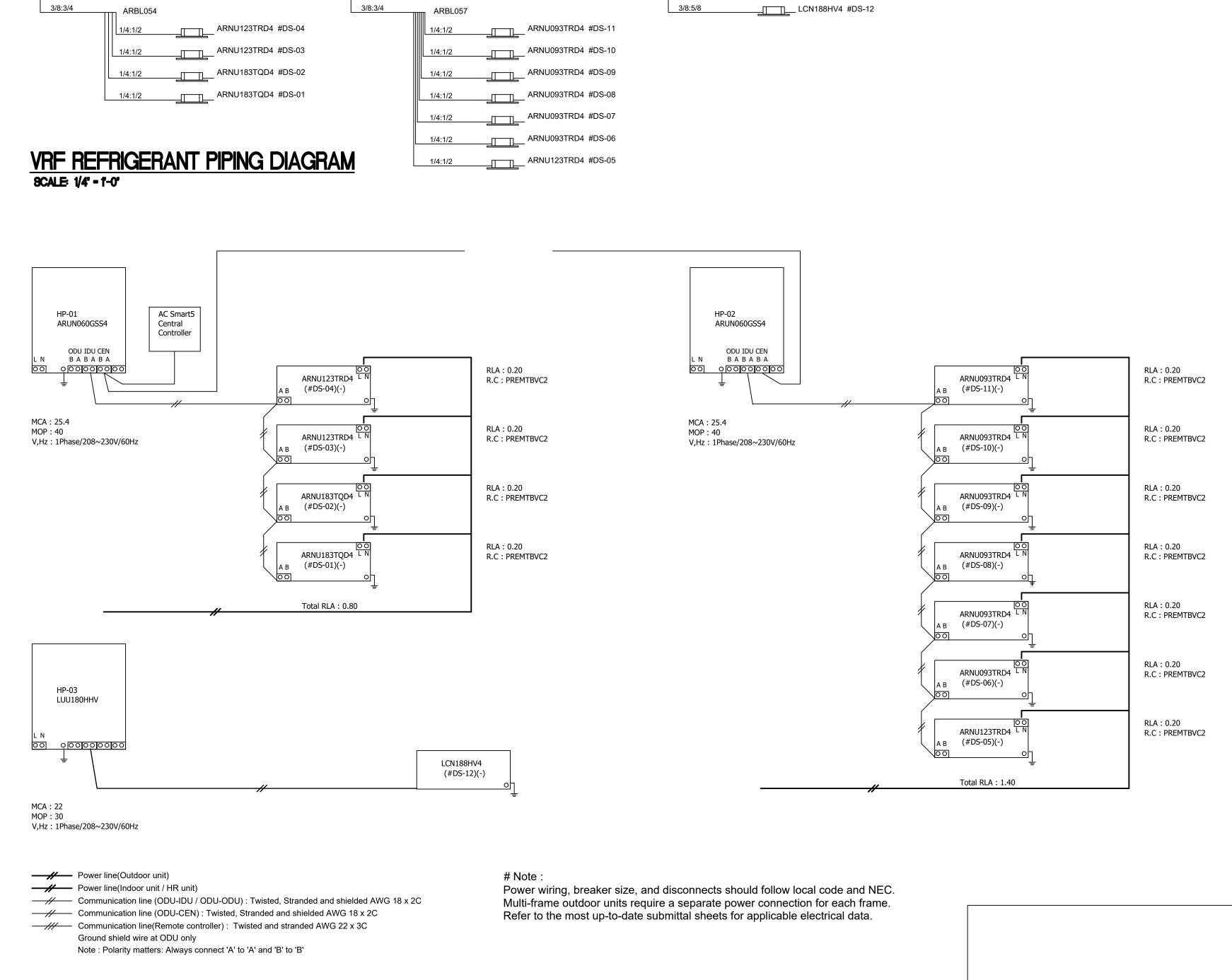
#5 SPEED SWITCH #6 HUMIDISTAT TO CYCLE FAN

						Multi	/ Indoor Unit Ea	uinmant Schad	ulo							
	_		-	Multi V Indoor Unit Equipment Schedule CapacityBTU/h) Return Air Temp (°F)				A: () (GEAA)	Piping Conn	ections(inch)		Power Supply				
System	Tag	Model Name	Type	Total Cooling	Sensible Cooling	Heating	Cooling DBT	Cooling WBT	Heating DBT	Air flow rate(CFM)	Liquid	Gas	Volts	Phase	Hz	RLA (A)
	DS-01	ARNU183TQD4	CASSETTE 4WAY	15,290	11,815	17,619	75.0	62.6	71.0	396/388/353	1/4	1/2	208~230V	1Ph	60Hz	0.2
UD 04	DS-02	ARNU183TQD4	CASSETTE 4WAY	15,290	11,815	17,619	75.0	62.6	71.0	396/388/353	1/4	1/2	208~230V	1Ph	60Hz	0.2
HP-01	DS-03	ARNU123TRD4	CASSETTE 4WAY	9,847	7,591	11,346	75.0	62.6	71.0	307/283/247	1/4	1/2	208~230V	1Ph	60Hz	0.2
	DS-04	ARNU123TRD4	CASSETTE 4WAY	9,847	7,591	11,346	75.0	62.6	71.0	307/283/247	1/4	1/2	208~230V	1Ph	60Hz	0.2
	DS-05	ARNU123TRD4	CASSETTE 4WAY	9,844	7,589	10,268	75.0	62.6	71.0	307/283/247	1/4	1/2	208~230V	1Ph	60Hz	0.2
	DS-06	ARNU093TRD4	CASSETTE 4WAY	7,683	5,942	8,014	75.0	62.6	71.0	283/265/251	1/4	1/2	208~230V	1Ph	60Hz	0.2
	DS-07	ARNU093TRD4	CASSETTE 4WAY	7,683	5,942	8,014	75.0	62.6	71.0	283/265/251	1/4	1/2	208~230V	1Ph	60Hz	0.2
HP-02	DS-08	ARNU093TRD4	CASSETTE 4WAY	7,683	5,942	8,014	75.0	62.6	71.0	283/265/251	1/4	1/2	208~230V	1Ph	60Hz	0.2
	DS-09	ARNU093TRD4	CASSETTE 4WAY	7,683	5,942	8,014	75.0	62.6	71.0	283/265/251	1/4	1/2	208~230V	1Ph	60Hz	0.2
	DS-10	ARNU093TRD4	CASSETTE 4WAY	7,683	5,942	8,014	75.0	62.6	71.0	283/265/251	1/4	1/2	208~230V	1Ph	60Hz	0.2
	DS-11	ARNU093TRD4	CASSETTE 4WAY	7,683	5,942	8,014	75.0	62.6	71.0	283/265/251	1/4	1/2	208~230V	1Ph	60Hz	0.2
HP-03	DS-12	LCN188HV4	CASSETTE 4WAY	18,000		20,000	80.0	67.0	70.0	460/424/388	3/8	5/8	208~230V	1Ph	60Hz	NA

HP-03 LUU180HHV

SA EA 0.5

Exchange Efficiency(%)



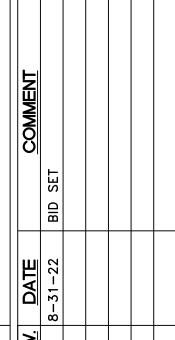
21-105

41.8 x 14.4 x 44.9

CLUBHOUSE 2002

Professional Certification I certify that these documents were prepared or approved by me, and that I am a duly licensed engineer under the laws of the State of Maryland Expiration Date: <u>4/21/2023</u>

LESLIE SCOTT GRIM, P.E. CO PROF. ENG. NO. PE0050461
DC PROF. ENG. NO. PE001201
DE PROF. ENG. NO. 19513
GA PROF. ENG. NO. PE032582
HI PROF. ENG. NO. PE13943
MD PROF. ENG. NO. 033364
NJ PROF. ENG. NO. 033364
NJ PROF. ENG. NO. 03497
NY PROF. ENG. NO. 075414
PA PROF. ENG. NO. PE032636E
VA PROF. ENG. NO. 023240
WV PROF. ENG. NO. 10764



DRAWN BY: **LSG**

11 OF 15 SHEETS DATE: AUG. 31, 2022

VRF WIRING DIAGRAM SCALE: 1/4" = 1'-0"

GENERAL ELECTRICAL NOTES

- 1. MATERIALS, EQUIPMENT, AND SYSTEMS SHALL MEET ALL PERTINENT REQUIREMENTS OF THE AMERICAN SOCIETY FOR TESTING MATERIALS (ASTM), 2017-NATIONAL-ELECTRIC-CODE (N.E.C.). THE UNDERWRITERS LABORATORY (UL), THE NATIONAL ELECTRIC MANUFACTURER'S ASSOCIATION (NEMA), NATIONAL FIRE PROTECTION ASSOCIATION (NFPA), AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI), AND OTHER NATIONALLY RECOGNIZED AGENCIES AS WELL AS APPLICABLE LOCAL CODES.
- 2. ANYTHING DRAWN OR SPECIFIED SHALL NOT BE CONSTRUED TO CONFLICT WITH ANY LOCAL, MUNICIPAL OR STATE LAW, REGULATION OR ORDINANCE WHICH GOVERNS THE INSTALLATION OF ANY ELECTRICAL OR RELATED WORK, ITEMS SHALL NOT BE INSTALLED IN CONFLICT WITH THE N.E.C. RESOLVE ANY AND ALL CONFLICTS BEFORE INSTALLATION AT NO ADDITIONAL EXPENSE TO THE OWNER.
- 3. ALL ELECTRICAL EQUIPMENT SHALL BE LISTED AND LABELED FOR THE QUALIFIED USE. VERIFY CIRCUIT BREAKER INTERRUPT CAPACITY NEEDED FOR EACH PANEL WITH LOCAL UTILITY. FOR BID PURPOSES, ASSUME **65,000** AIC FOR SERVICE ENTRANCE EQUIPMENT, AND **25,000** AIC ELSEWHERE. BALANCE THE POWER EQUALLY (± 10%) ON ALL PHASES.
- THE SYSTEMS SHOWN ON DRAWINGS SHALL BE PROVIDED TO SERVE ALL FIXTURES, EQUIPMENT, AND AREAS WITHIN THE CONTRACT LIMIT LINES AS SET FORTH BY THE ARCHITECTURAL SOLUTION FOR THE PROJECT. THE BIDDING AND CONTRACT REQUIREMENTS, GENERAL REQUIREMENTS, AND GENERAL PROVISIONS SHALL APPLY TO THIS SECTION. SYSTEMS SHALL INCLUDE ALL EQUIPMENT, APPURTENANCES, SAFETY DEVICES, AND CONTROLS NECESSARY FOR THE INTENDED SERVICE.
- 5. ALL PERMITS AND FEES REQUIRED FOR THE WORK SHALL BE SECURED AND PAID FOR BY THE ELECTRICAL CONTRACTOR AND INCLUDED IN BID PRICE.
- 6. WHERE JOB CONDITIONS REQUIRE CHANGES FROM THE CONTRACT DOCUMENTS THAT DO NOT CHANGE THE SCOPE OF INSTALLATION OR NATURE OF WORK REQUIRED, THE CONTRACTOR SHALL MAKE SUCH CHANGES WITHOUT ADDITIONAL COST TO THE OWNER. NO OTHER CHANGES MAY BE MADE WITHOUT WRITTEN PERMISSION OF THE OWNER.
- 7. BIDDERS SHALL BE LICENSED CONTRACTORS IN ACCORDANCE WITH LOCAL AND STATE LAWS.
- 8. ALL EQUIPMENT SHALL BE NEW AND UNUSED. ALL EQUIPMENT SHALL BE INSTALLED IN STRICT CONFORMANCE TO MANUFACTURER'S RECOMMENDATIONS, EXCEPT WHERE THESE SPECIFICATIONS REQUIRE A HIGHER QUALITY INSTALLATION THAN RECOMMENDED BY THE MANUFACTURER.
- 9. ALL INSTALLED SYSTEMS, DEVICES AND RELATED ITEMS SHALL BE TESTED IN PLACE ON SITE. REPLACE ANY AND ALL CONTRACTOR-SUPPLIED DEFECTIVE DEVICES, ITEMS OR SYSTEMS AT CONTRACTOR'S OWN EXPENSE BEFORE COMPLETION OF THE PROJECT.
- CONTRACTOR SHALL GUARANTEE ALL WORK FOR WHICH MATERIALS ARE FURNISHED, FABRICATED OR FIELD ERECTED, ALL FACTORY ASSEMBLED EQUIPMENT FOR WHICH NO SPECIFIC MANUFACTURER'S GUARANTEE IS FURNISHED, AND ALL WORK IN CONNECTION WITH INSTALLING MANUFACTURER'S GUARANTEED EQUIPMENT. THIS CONTRACTOR'S GUARANTEE SHALL EXIST FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF FINAL OWNER ACCEPTANCE OF THE WORK AND SHALL APPLY TO DEFECTS IN MATERIAL AND TO DEFECTIVE WORKMANSHIP OF ANY KIND.
- 11. VERIFY FINAL LOCATIONS FOR ROUGH-INS WITH FIELD MEASUREMENTS AND WITH THE REQUIREMENTS OF THE ACTUAL EQUIPMENT TO BE CONNECTED. VERIFY ALL DIMENSIONS BY FIELD MEASUREMENTS.
- 12. SEQUENCE, COORDINATE, AND INTEGRATE INSTALLATIONS OF ELECTRICAL MATERIALS AND EQUIPMENT FOR EFFICIENT FLOW OF THE WORK. GIVE PARTICULAR ATTENTION TO LARGE EQUIPMENT REQUIRING POSITIONING PRIOR TO CLOSING-IN THE BUILDING. COORDINATE THE CUTTING AND PATCHING OF BUILDING COMPONENTS TO ACCOMMODATE INSTALLATION OF ELECTRICAL EQUIPMENT AND MATERIALS.
- 13. COORDINATE THE INSTALLATION OF ELECTRICAL MATERIALS AND EQUIPMENT ABOVE CEILINGS WITH SUSPENSION SYSTEM, MECHANICAL EQUIPMENT AND SYSTEMS, AND STRUCTURAL COMPONENTS, COORDINATE ELECTRICAL EQUIPMENT AND MATERIALS INSTALLATION WITH OTHER BUILDING COMPONENTS
- 14. WHERE MOUNTING HEIGHTS ARE NOT DETAILED OR DIMENSIONED, INSTALL ELECTRICAL SERVICES AND OVERHEAD EQUIPMENT TO PROVIDE THE MAXIMUM HEADROOM POSSIBLE. INSTALL ELECTRICAL EQUIPMENT TO FACILITATE MAINTENANCE AND REPAIR OR REPLACEMENT OF EQUIPMENT COMPONENTS. AS MUCH AS PRACTICAL, CONNECT EQUIPMENT FOR EASE OF DISCONNECTING, WITH MINIMUM OF INTERFERENCE WITH OTHER INSTALLATIONS.
- 15. COORDINATE CONNECTION OF ELECTRICAL SYSTEMS WITH EXTERIOR UNDERGROUND AND OVERHEAD UTILITIES AND SERVICES. COMPLY WITH REQUIREMENTS OF GOVERNING REGULATIONS, FRANCHISED SERVICE COMPANIES, AND CONTROLLING AGENCIES. PROVIDE REQUIRED CONNECTION FOR EACH
- 16. DO NOT ENDANGER OR DAMAGE INSTALLED WORK THROUGH PROCEDURES AND PROCESSES OF CUTTING AND PATCHING. ARRANGE FOR REPAIRS REQUIRED TO RESTORE OTHER WORK, BECAUSE OF DAMAGE CAUSED AS A RESULT OF ELECTRICAL INSTALLATIONS.
- 17. BIDDERS SHALL THOROUGHLY ACQUAINT THEMSELVES WITH THE CONDITIONS UNDER WHICH THE WORK IS WORK IS IN ANY WAY DEPENDENT UPON, AND BRING ANY DISCREPANCIES DETERMINED OR OMISSIONS FOUND IN THE DRAWINGS TO THE OWNER'S ATTENTION BEFORE SUBMITTING BID.
- 18. VERIFY MECHANICAL EQUIPMENT SWITCH AND CONNECTION REQUIREMENTS, ITEM BY ITEM, WITH THE MECHANICAL CONTRACTOR, BEFORE WIRING EQUIPMENT. RESOLVE ALL DISCREPANCIES WITHOUT
- 19. ALL WIRING SHALL BE IN MC CABLE OR CONDUIT, 1/2" EMT MINIMUM WITH SET SCREW FITTINGS

SUPPORTED AT 10'-0" INTERVALS.

PROTECTION SYSTEM OR OTHER PIPES.

- 20. ALL WIRING SHALL BE THHN/THWN COPPER (NO. 12 AWG MINIMUM) UNLESS OTHERWISE NOTED. WIRE AND CONDUIT SIZES ARE SHOWN ON THE PANEL SCHEDULE.
- 21. ALL LIGHTS SHALL BE SUPPORTED AND SECURED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. THE SUPPORT SHALL BE FROM A BUILDING SUPPORT MEMBER AND NOT THE FIRE
- 22. ALL PANELS, CONTROL DEVICES AND MISCELLANEOUS ELECTRICAL APPARATUS SHALL BE CLEARLY MARKED FOR EASY IDENTIFICATION AND SAFETY. USE BLACK PLASTIC OR BAKELITE NAME PLATE ENGRAVED WITH WHITE LETTERS 1/2" HIGH. PUNCHED TAPE IS NOT ACCEPTABLE.
- 23. PANELS SHALL BE PROVIDED WITH A TYPEWRITTEN DIRECTORY AFFIXED TO INSIDE OF PANEL DOOR WITH A CLEAR PLASTIC SLEEVE.
- 24. THE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC AND ARE FOR CIRCUIT ALLOCATION ONLY. DO NOT SCALE DRAWINGS.
- 25. ELECTRICAL CONTRACTOR SHALL FURNISH RECORD SET OF DRAWINGS WITH ANY DEVIATIONS MARKED IN

ELECTRICAL NOTES:

1. SCOPE OF WORK:

- A. CONTRACTOR SHALL VISIT SITE PRIOR TO BIDDING. BIDS SHALL SERVE AS EVIDENCE OF KNOWLEDGE OF EXISTING CONDITIONS TO THE EXTENT POSSIBLE CONCEALED CONDITIONS EXCLUDED. FIELD VERIFY ALL ELECTRICAL EQUIPMENT.
- B. FURNISH ALL LABOR, MATERIALS, EQUIPMENT AND TOOLS TO PERFORM ELECTRICAL WORK SHOWN, NOTED OR SCHEDULED FOR A COMPLETE AND FINISHED INSTALLATION.
- * MATERIALS, PRODUCTS AND EQUIPMENT, INCLUDING ALL COMPONENTS THEREOF, SHALL BE NEW AND SUCH AS APPEAR ON THE UNDERWRITERS LABORATORIES LIST OF APPROVED ITEMS AND SHALL BE SIZED IN CONFORMITY WITH REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE AND OTHER APPLICABLE CODES, WHICHEVER ARE MORE STRINGENT.
- C. ALL WORK TO BE IN ACCORDANCE WITH NATIONAL ELECTRIC CODE (2015) AND THE UNIFORM CONSTRUCTION CODE (LATEST EDITION).
- D. ALL ELECTRICAL EQUIPMENT SHALL BE INSTALLED IN STRICT COMPLIANCE WITH THE MANUFACTURER'S INSTALLATION PROCEDURES.
- E. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL LABOR AND MATERIALS NECESSARY FOR A COMPLETE ELECTRICAL SYSTEM, WHETHER SPECIFIED OR

2. PERMITS:

A. SECURE AND PAY FOR ALL REQUIRED PERMITS AND INSPECTION CERTIFICATES.

3. SHOP DRAWINGS:

- A. SUBMIT MATERIAL LIST AND SHOP DRAWINGS FOR MAJOR EQUIPMENT TO THE ARCHITECT FOR APPROVAL. SUBMITTALS SHALL BE IN ACCORDANCE WITH GENERAL CONDITIONS AND SHALL BEAR STAMP OF THE GENERAL CONTRACTOR SHOWING THAT HE HAS REVIEWED AND APPROVED THEM. LACK OF SUCH CONTRACTOR'S APPROVAL WILL BE CAUSE FOR REJECTION WITHOUT REVIEW BY THE ARCHITECT OR ENGINEER.
- B. SUBMIT SHOP DRAWING IN PDF FORMAT

4. CONDUITS:

A. THE TYPE OF CONDUIT SHALL BE AS FOLLOWS FOR ALL FEEDERS AND DISTRIBUTION CIRCUITS, UNLESS OTHERWISE SPECIFIED:

<u>APPLICATION</u>	TYPE OF CONDUIT
BURIED IN CONCRETE	PVC - SCHEDULE 4
IN MASONRY	EMT OR IMC
EXPOSED ABOVE GRADE	ARC
UNDERGROUND	PVC - SCHEDULE 4
SUPPLY TO DISTRIBUTION PANELS	EMT
INTERIOR BRANCH CIRCUITS (CONCEALED)	MC
INTERIOR BRANCH CIRCUITS (EXPOSED)	EMT

5. <u>WIRE:</u>

- A. WIRE SHALL BE SINGLE CONDUCTOR COPPER WITH 600 VOLT INSULATION. #10 AND SMALLER SHALL BE SOLID. #8 AND LARGER SHALL BE STRANDED. MINIMUM WIRE SIZE SHALL BE #12 EXCEPT #14 MAY BE USED FOR CONTROL. ALL WIRE AND CABLE SHALL BE NEW AND SHALL BE BROUGHT TO THE SITE IN UNBROKEN PACKAGES. ALL WIRING OF ANY TYPE SHALL BE IN CONDUIT.
- * GENERAL WIRING SHALL BE THW OR THHN (ALUMINUM CONDUCTORS ARE
- B. WIRE CONNECTORS SHALL BE EQUAL BY SCOTCHLOCK FOR #6 AND SMALLER AND T & B "LOCK-LITE" FOR #8 AND LARGER.

6. <u>LIGHTING</u>:

A. LIGHTING FIXTURES AND LAMPS (UNLESS NOTED OTHERWISE) SHALL BE FURNISHED BY THE ELECTRICAL CONTRACTOR. ELECTRICAL CONTRACTOR SHALL INSTALL ALL FIXTURES AND LAMPS.

7. WIRE DEVICES:

- A. RECEPTACLES SHALL BE 20 AMP, 3-WIRE GROUNDING TYPE EQUAL TO HUBBELL 5362 (MOUNTING @ 18"A.F.F.).
- B. SWITCHES SHALL BE STANDARD GRADE RATED 20 AMP AT 120 VOLT (MOUNTING
- C. SPECIAL DEVICES SHALL BE A SPECIFICATION GRADE.

8. SAFETY SWITCHES:

- A PROVIDE SAFETY AND DISCONNECT SWITCHES, FUSED OR NONFUSED, AS CALLED FOR ON DRAWINGS AND AS REQUIRED BY CODE. SWITCHES SHALL BE HEAVY DUTY, LOAD AND HORSEPOWER RATED AS MANUFACTURED BY SQUARE D, GOULD, ITE OR EQUAL.
- B. MANUAL MOTOR STARTERS WITH OVERLOAD PROTECTION MAY BE USED FOR FRACTIONAL HORSEPOWER MOTORS, SINGLE PHASE STARTERS SHALL BE SQUARE D OR EQUAL. THREE PHASE STARTERS SHALL BE PROVIDED WITH OVERLOAD DEVICES IN EACH PHASE. MAGNETIC MOTOR STARTERS SHALL BE USED FOR INTEGRAL HORSEPOWER MOTORS, COMBINATION STARTERS, WHEN USED, SHALL CONTAIN FUSIBLE SWITCHES.

BOXES:

- A. DUTLET BOXES AND COVERS SHALL BE GALVANIZED, DNE-PIECE PRESSED STEEL KNOCKOUT.
- B. JUNCTION, PULL BOXES AND COVERS SHALL BE GALVANIZED STEEL, CODE GAUGE SIZE.

10. SERVICES:

A. PROVIDE ELECTRICAL SERVICE AS SHOWN ON THE DRAWINGS. ALL WORK NOT SPECIFICALLY NOTED AS BEING BY THE OWNER OR POWER COMPANY SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR. CLOSELY CO-ORDINATE ENTIRE INSTALLATION WITH OWNER AND POWER COMPANY AS REQUIRED.

11. INSTALLATION:

- A. ALL ELECTRICAL WORK SHALL BE INSTALLED SO AS TO BE READILY ACCESSIBLE FOR OPERATING, SERVICING, MAINTAINING AND REPAIRING. HANGERS SHALL INCLUDE ALL MISCELLANEOUS STEEL SUCH AS CHANNELS, RODS, ETC., NECESSARY FOR THE INSTALLATION OF WORK AND SHALL BE FASTENED TO STEEL, CONCRETE OR WOOD, BUT NOT TO PIPING. ALL CONDUIT SHALL BE CONCEALED WHEREVER POSSIBLE. EXPOSED CONDUIT SHALL BE IN STRAIGHT LINES PARALLEL WITH DR AT RIGHT ANGLES TO COLUMN LINES DR BEAMS AND SEPARATED AT LEAST 3 INCHES FROM WATER LINES WHEREVER THEY RUN ALONG SIDE OR ACROSS SUCH LINES. CONDUCTORS SHALL BE IN CONDUIT, DUCTS OR APPROVED RACEWAYS.
- B. THE CONTRACTOR SHALL DO ALL CUTTING, CHASING OR CHANNELING AND PATCHING REQUIRED FOR ANY WORK UNDER THIS DIVISION. ANY CUTTING SHALL HAVE PRIOR APPROVAL OF OWNER, SLEEVES SHALL EXTEND AT LEAST TWO (2") INCHES ABOVE FINISHED FLOOR AND ALL SLEEVES, OPENINGS, ETC., THROUGH FIRE RATED WALLS AND FLOORS SHALL BE SEALED AFTER CONDUIT INSTALLATION TO REMAIN THEIR FIRE RATING.
- C. THE FOLLOWING EQUIPMENT SHALL BE IDENTIFIED WITH ENGRAVED BAKELITE NAMEPLATES AS TO NAME AND/OR FUNCTION; DISTRIBUTION PANEL, LIGHTING PANELS, MOTOR STARTERS, TIME CLOCKS, AND DISCONNECT SWITCHES.
- D. THE LOCATION OF OUTLETS AND EQUIPMENT SHOWN ON THE DRAWINGS ARE APPROXIMATE AND THE ARCHITECT SHALL HAVE THE RIGHT TO RELOCATE ANY DUTLETS OR FIXTURES BEFORE THEY ARE INSTALLED WITHOUT ADDITIONAL
- E. ELECTRICAL CONTRACTOR SHALL RECORD ALL FIELD CHANGES IN HIS WORK AS THE JOB PROGRESSES.

12. GUARANTEE:

- A. MATERIALS, EQUIPMENT AND INSTALLATION SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR FROM DATE OF ACCEPTANCE. DEFECTS WHICH APPEAR DURING THAT PERIOD SHALL BE CORRECTED AT THIS CONTRACTOR'S EXPENSE.
- B. FOR THE SAME PERIOD, THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO PREMISES CAUSED BY DEFECTS IN WORKMANSHIP OR IN THE WORK OR EQUIPMENT FURNISHED AND/OR INSTALLED BY HIM.

13. FINALLY:

A. IT IS THE INTENT THAT THE FOREGOING WORK SHALL BE COMPLETE IN EVERY RESPECT AND THAT ANY MATERIAL OR WORK NOT SPECIFICALLY MENTIONED OR SHOWN ON THE DRAWINGS, BUT NECESSARY TO FULLY COMPLETE THE WORK SHALL BE FURNISHED.

PANEL/GEAR NOTES

- MAIN PANEL/GEAR SHALL BE FACTORY ASSEMBLED, METAL ENCLOSED BRACED FOR THE REQUIRED AVAILABLE FAULT CURRENT, AND WITH ALL EQUIPMENT, BUSSING CONNECTIONS, CURRENT LIMITING FUSES, CIRCUIT BREAKERS, AND ALL SIMILAR COMPONENTS REQUIRED FOR PROPER OPERATION. THE SWITCHBOARD SHALL BE SUITABLE FOR USE AS SERVICE ENTRANCE EQUIPMENT AND SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST NEMA PB-2 AND UL-891 STANDARDS.
- MAIN PROTECTIVE DEVICE SHALL BE EITHER A BOLTED PRESSURE SWITCH WITH CURRENT LIMITING CLASS L FUSES OR AN INSULATED CASE POWER CIRCUIT BREAKER. THE MAIN PROTETIVE DEVICE SHALL INCLUDE INTEGRAL GROUND FAULT PROTECTION IN ACCORDANCE WITH NEC 230-95.
- 3. BRANCH CIRCUIT PROTECTIVE DEVICE SHALL BE MOLDED CASE CIRCUIT BREAKERS (WITH CURRENT LIMITING FUSES, IF REQUIRED).
- 4. FUSES, AS REQUIRED, SHALL BE CURRENT LIMITING AND SHALL BE MANUFACTURED BY BUSSMAN, GOULD-SHAWMUT, OR LITTELFUSE.
- 5. NAMEPLATES: ALL BRANCH CIRCUIT AND MAIN PROTECTIVE DEVICES SHALL HAVE AN ENGRAVED LAMACIDD (BLACK LETTERING ON WHITE BACKGROUND).
- 6. FOR DIMENSIONAL AND WIRING DETAILS OF C.T. COMPARTMENT AND METERING EQUIPMENT AND CONNECTION OF SYSTEM GROUNDING CONDUCTOR SEE POWER COMPANY HAVING JURISDICTION STANDARD DRAWINGS AND SPECIFICATIONS. GROUNDING ELECTRODE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRIC CODE, GROUND ROD ELECTRODES SHALL BE 34", 10' LONG COPPER WITH STEEL CORE.

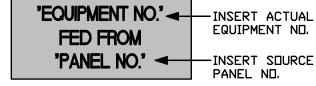
ELECTRICAL SYSTEM GROUNDING NOTES

ONE OF THE MOST IMPORTANT PARTS IN THE INSTALLATION OF ELECTRICAL SYSTEMS IS GROUNDING, PROPER GROUNDING WILL PROVIDE PROTECTION OF PERSONNEL, EQUIPMENT, AND CIRCUITS BY ELIMINATING THE POSSIBILITY OF DANGEROUS OR EXCESSIVE VOLTAGES.

- * GROUNDING SYSTEM MUST BE IN ACCORDANCE WITH APPLICABLE NATIONAL, STATE OR LOCAL ELECTRICAL CODES.
- * THE GROUND PATH MUST BE PERMANENT AND CONTINUOUS, AND THE RESISTANCE OF THE GROUND PATHS MUST NOT EXCEED TWO (25) OHMS.
- * ALL GROUNDING ELECTRODES OF DIFFERENT SYSTEMS MUST BE BONDED TOGETHER.
- * METALLIC CONDUIT USED TO ENCLOSE A GROUNDING CONDUCTOR MUST BE BONDED TO THE GROUNDING CONDUCTOR AT BOTH ENDS TO REDUCE IMPEDANCE.
- * ALL ISOLATED GROUNDING TYPE RECEPTACLES MUST BE INDIVIDUALLY CONNECTED TO GROUND (NOT SERIALLY) TO ASSURE THE CONTINUITY OF THE GROUND PATH.
- * RECEPTACLE BOXES MUST BE GROUNDED BY RACEWAY BACK TO THE GROUNDED PANEL.
- * IF FLEXIBLE OR PVC CONDUIT IS USED, OR WHERE REQUIRED BY LOCAL CODE, THEN A SEPARATE MECHANICAL GROUND WIRE MUST CONNECT THE DUTLET BOX TO THE PANEL MECHANICAL GROUND BUS.
- * ISOLATED GROUNDING SYSTEM FOR THE ISO GRD PANEL MUST BE BONDED TO THE MAIN DISTRIBUTION PANELBOARD GROUNDING SYSTEM AND IN TURN BONDED TO THE SYSTEM'S NEUTRAL.

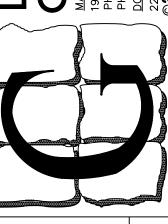


NAME PLATES



EQUIPMENT NO. PANEL NO.

INC. Engine sulting



217 N

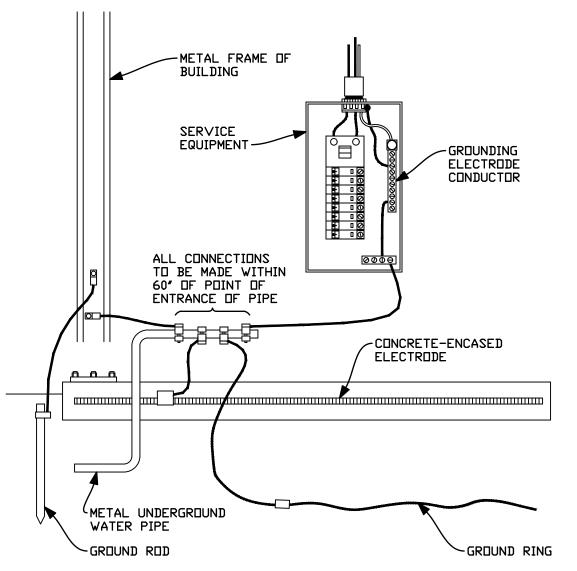
Professional Certification I certify that these documents were prepared or approved by me, and that I am a duly licensed engineer under the laws of the State of Maryland License Number: <u>14401</u> Expiration Date: <u>4/21/2023</u>

LESLIE SCOTT GRIM, P.E DE PROF. ENG. NO. 19513 GA PROF. ENG. NO. PE032582 HI PROF. ENG. NO. PE13943 MD PROF. ENG. NO. 14401 NC PROF. ENG. NO. 033364 NJ PROF. ENG. NO. 39497 NY PROF. ENG. NO. 075414 PA PROF. ENG. NO. PE032636E VA PROF. ENG. NO. 023240 WV PROF. ENG. NO. 10764

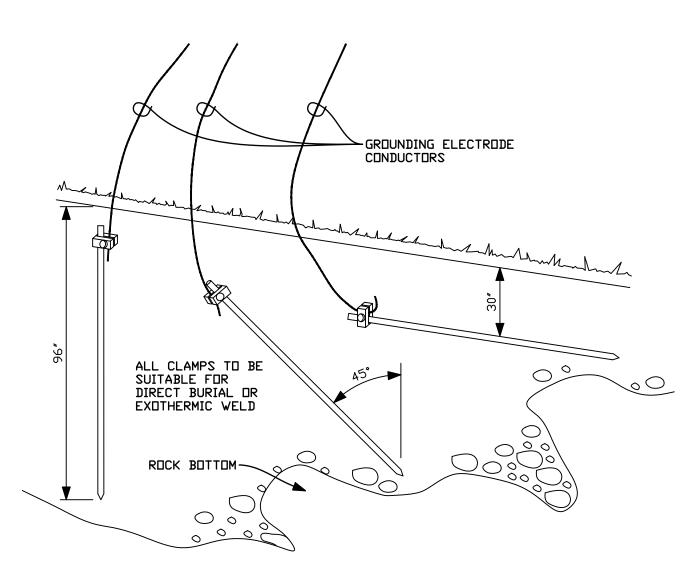
COMMENT	BID SET				
DATE	8-31-22				
REV.					

DRAWN BY: TMH 12 OF 15 SHEET

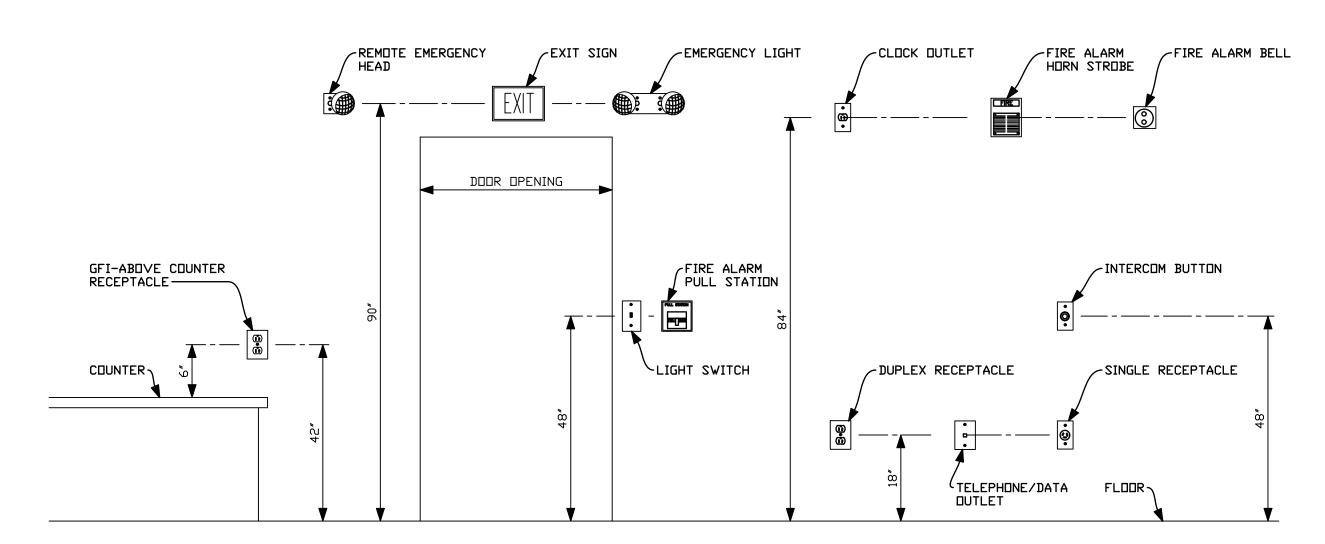
DATE: AUG. 31, 2022



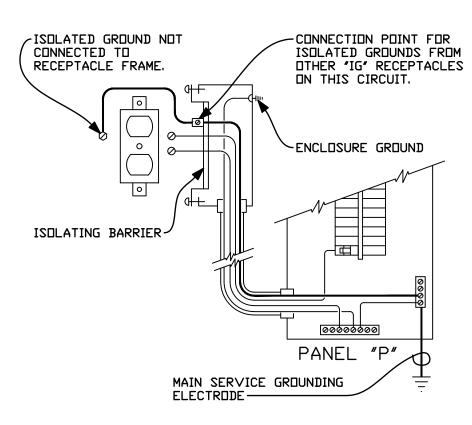




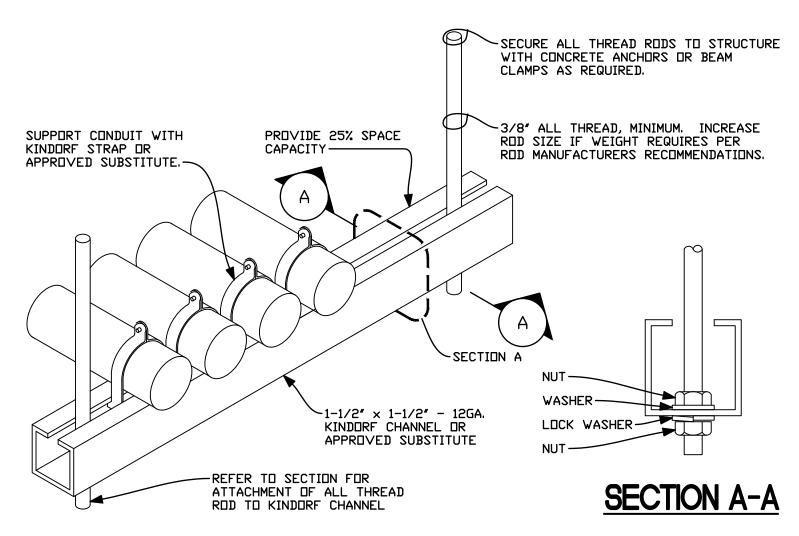
INSTALLATION DETAIL FOR ROD + PIPE ELECTRODES
NOT TO SCALE



MOUNTING HEIGHT DETAIL
NOT TO SCALE



ISOLATED GROUND RECEPTACLE PANEL NOT TO SCALE



TRAPEZE SUPPORT DETAIL NOT TO SCALE

MAGNETIC OVER-LOADS

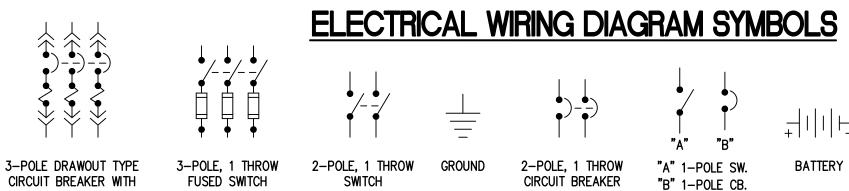
ELECTRICAL ABBREVIATIONS

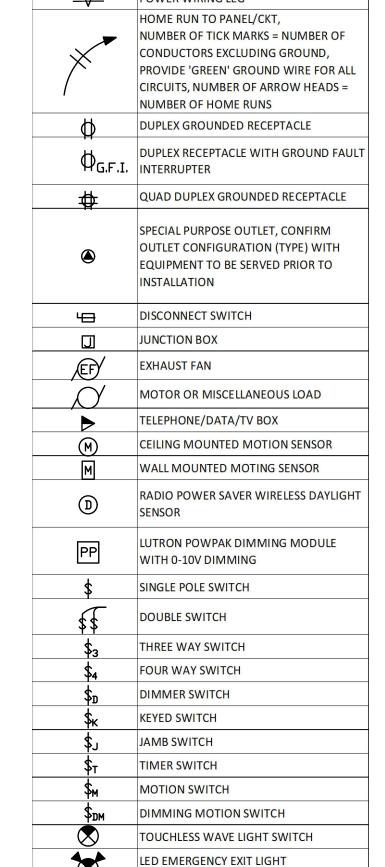
			ELECTRICAL F		<u>IEVIATIONS</u>		
Α	AMPERES	ESB	ENERGY SAVING BALLAST	MCA	MINIMUM CIRCUIT AMPACITY	SWBD	SWITCHBOARD
AC	ABOVE COUNTER OR ALTERNATING CURRENT	EF	EXHAUST FAN	MCC	MOTOR CONTROL CENTER	SWGR	SWITCHGEAR
AFF	ABOVE FINISHED FLOOR	EX	EXISTING	MH	METAL HALIDE	2S2W	TWO SPEED, TWO WINDINGS
AFG	ABOVE FINISHED GRADE	FAAR	FIRE ALARM ANNUNCIATOR PANEL	MIN	MINIMUM	TC	TIME CLOCK
AHU	AIR HANDLING UNIT	FACP	FIRE ALARM CONTROL PANEL	MLO	MAIN LUGS ONLY	TBD	TO BE DETERMINED
AL	ALUMINUM	FP	FIRE PUMP	MOV	MOTORIZED VALVE	TBI	TO BE INSTALLED
AIC	AMPERES INTERRUPTING CAPACITY	FL	FLOOR	MTD	MOUNTED	TBR	TO BE REMOVED
ATS	AUTOMATIC TRANSFER SWITCH	FLUOR	FLUORESCENT	NEC	NATIONAL ELECTRICAL CODE	TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
BKR	BREAKER	FVNR	FULL VOLTAGE NON-REVERSING	NIC	NOT IN CONTRACT	TYP	TYPICAL
BLDG	BUILDING	FVR	FULL VOLTAGE REVERSING	NL	NIGHT LIGHT	UNO	UNLESS NOTED OTHERWISE
BAS	BUILDING AUTOMATION SYSTEM	FEW	FURNISHED WITH EQUIPMENT	NEUT	NEUTRAL	UPS	UNINTERRUPTABLE POWER SUPPLY
BMS	BUILDING MANAGEMENT SYSTEM	GFI	GROUND FAULT CIRCUIT INTERRUPTER	NTS	NOT TO SCALE	UH	UTILITY HEATER
CLG	CEILING	GRND	GROUND	PVC	POLYVINYL CHLORIDE CONDUIT	VAV	VARIABLE AIR VOLUME
CK	CIRCUIT	HOA	HAND-OFF-AUOTMATIC	PB	PULL BOX	V	VOLTS
CB	CIRCUIT BREAKER	HOR	HAND-OFF-REMOTE	PC	PHOTOELECTRICAL CONTROL	VFD	VARIABLE FREQUENCY DRIVE
CP	CIRCULATOR PUMP	HP	HORSEPOWER	Р	POLE	VF	VENTILATION FAN
CCTV	CLOSED CIRCUIT TELEVISION	HPF	HIGH POWER FACTOR	PLC	PROGRAMMABLE LOGIC CONTROLLER	WH	WATER HEATER
С	CONDUIT	HPS	HIGH PRESSURE SODIUM	PNL	PANEL	W	WIRE OR WATTS
CU	COPPER OR CONDENSING UNIT	IG	ISOLATED GROUND	PH	PHASE	WP	WEATHERPROOF
DIA	DIAMETER	INST	INSTRUMENTATION	QTY	QUANTITY		
DS	DISCONNECT SWITCH OR DUCTLESS SPLIT UNIT	KVA	KILO VOLT-AMPERES	REC	RECEPTACLES		
DPDT	DOUBLE POLE DOUBLE THROW	KW	KILOWATT	RGS	RIGID GALVANIZED CONDUIT		
ELEC	ELECTRICAL	LAN	LOCAL AREA NETOWRK	RTU	ROOF TOP UNIT		
EC	ELECTRICAL CONTRACTOR	LTG	LIGHTING	SH	SHIELDED		
EH	ELECTRIC HEATER	LTS	LIGHTS	ST	SHUNT TRIP		
EMT	ELECTRICAL METALLIC TUBING	MAX	MAXIMUM	SF	SQUARE FEET		
EP	EXPLOSION PROOF	MOP	MAXIMUM OVERCURRENT PROTECTION	SS	STAINLESS STEEL		
ES	EMERGENCY STOP	MCB	MAIN CIRCUIT BREAKER	SW	SWITCH		

THERMAL CONTACT (N.C.) SOLENOID

OVERLOAD

HEATERS





LED COMBINATION

EXIT/EMERGENCY LIGHT

LED EMERGENCY LIGHT

ELECTRICAL POWER SYMBOLS

S = NUMBER OF
IG GROUND,
ND WIRE FOR ALL
IRROW HEADS =
S
SEPTACLE
S
THE GROUND FAULT

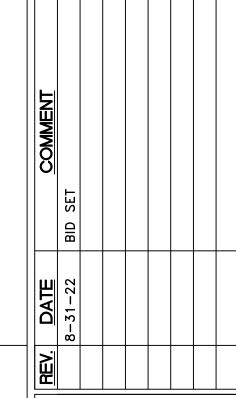
WAIN OFFICE
MAIN OFFICE
TO SERVING TO STA72-4363

HONE TOLL FREE: 1-888-797-GRIM (4746)

BLACK ROCK CLUBHOUSE 20025 MOUNT AETNA ROAD HAGERSTOWN, MD 21742

21-105

CO PROF. ENG. NO. PE0050461
DC PROF. ENG. NO. PE0050461
DC PROF. ENG. NO. PE001201
DE PROF. ENG. NO. 19513
GA PROF. ENG. NO. PE032582
HI PROF. ENG. NO. PE13943
MD PROF. ENG. NO. 14401
NC PROF. ENG. NO. 13364
NJ PROF. ENG. NO. 39497
NY PROF. ENG. NO. 075414
PA PROF. ENG. NO. 075414
PA PROF. ENG. NO. PE032636E
VA PROF. ENG. NO. 023240
WV PROF. ENG. NO. 10764



DRAWN BY: TMH

E-O.1

13 OF 15 SHEETS
DATE: AUG. 31, 2022

