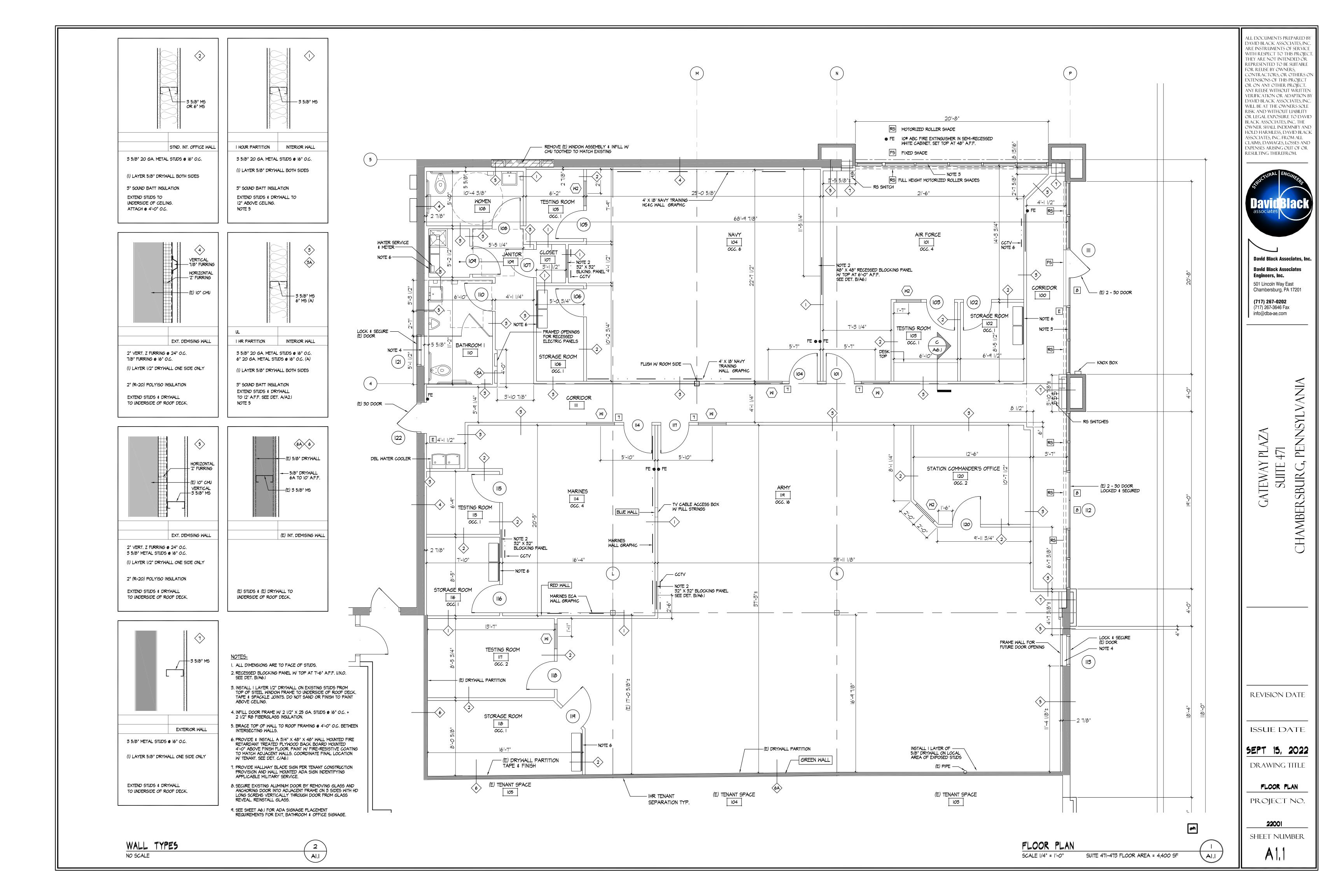
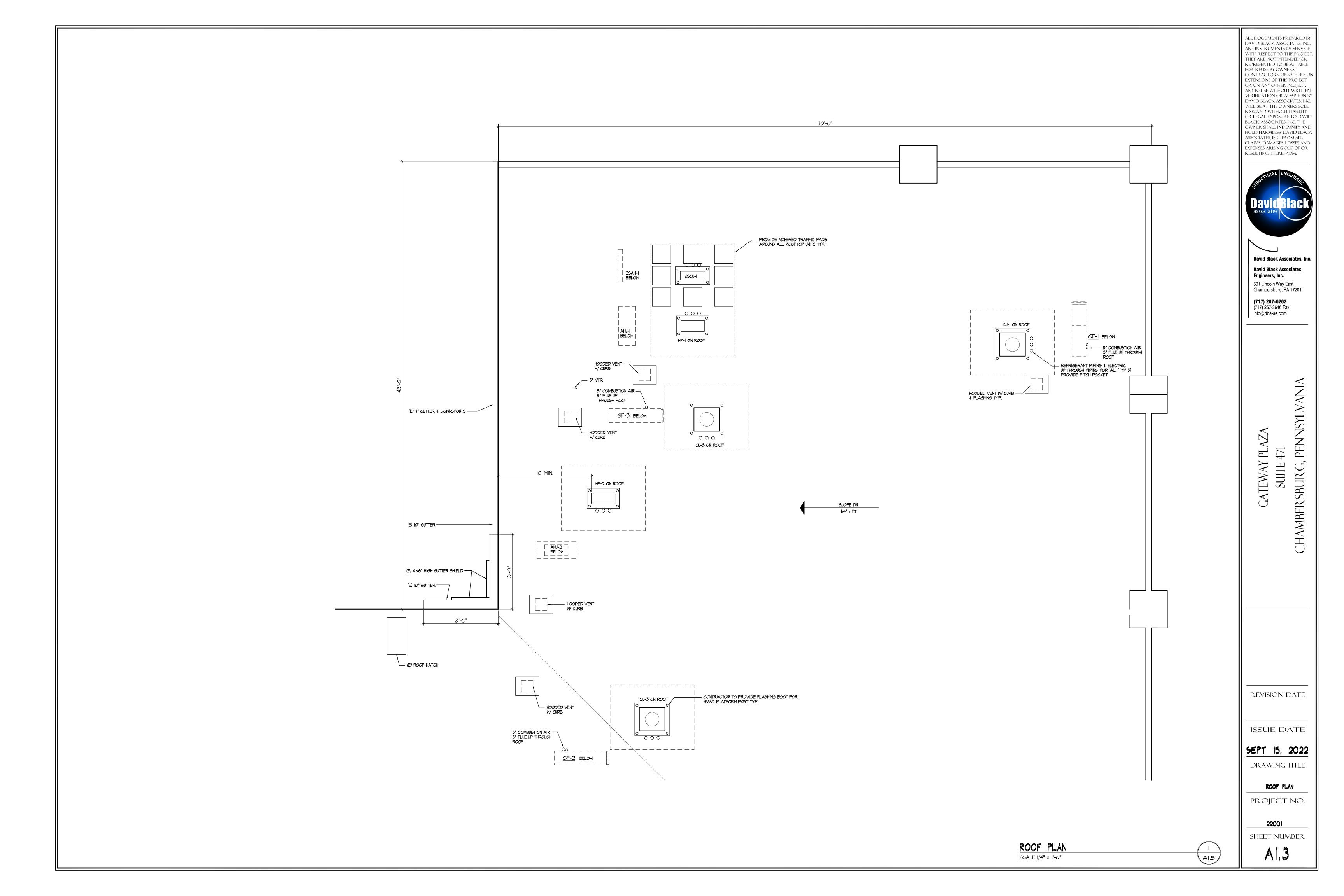


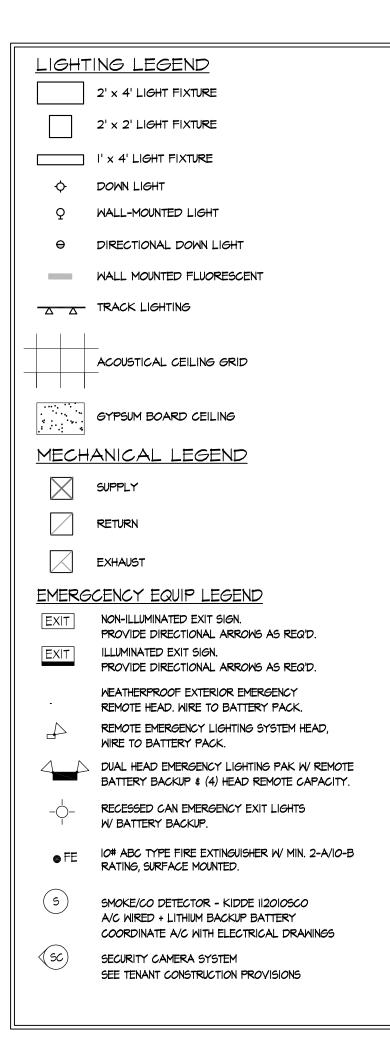


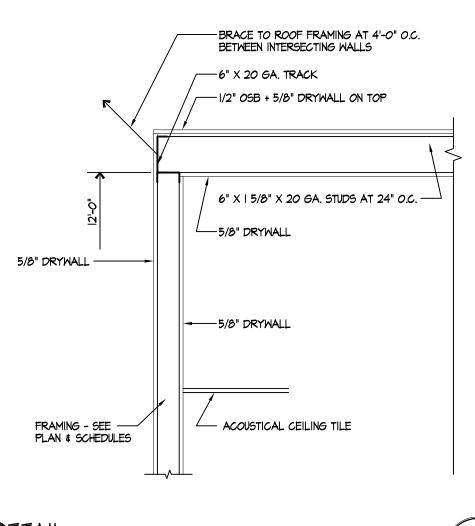
MIXED USES:	🛛 YES 🗆 NO
SEPARATED USES:	🗆 YES 🖾 NO







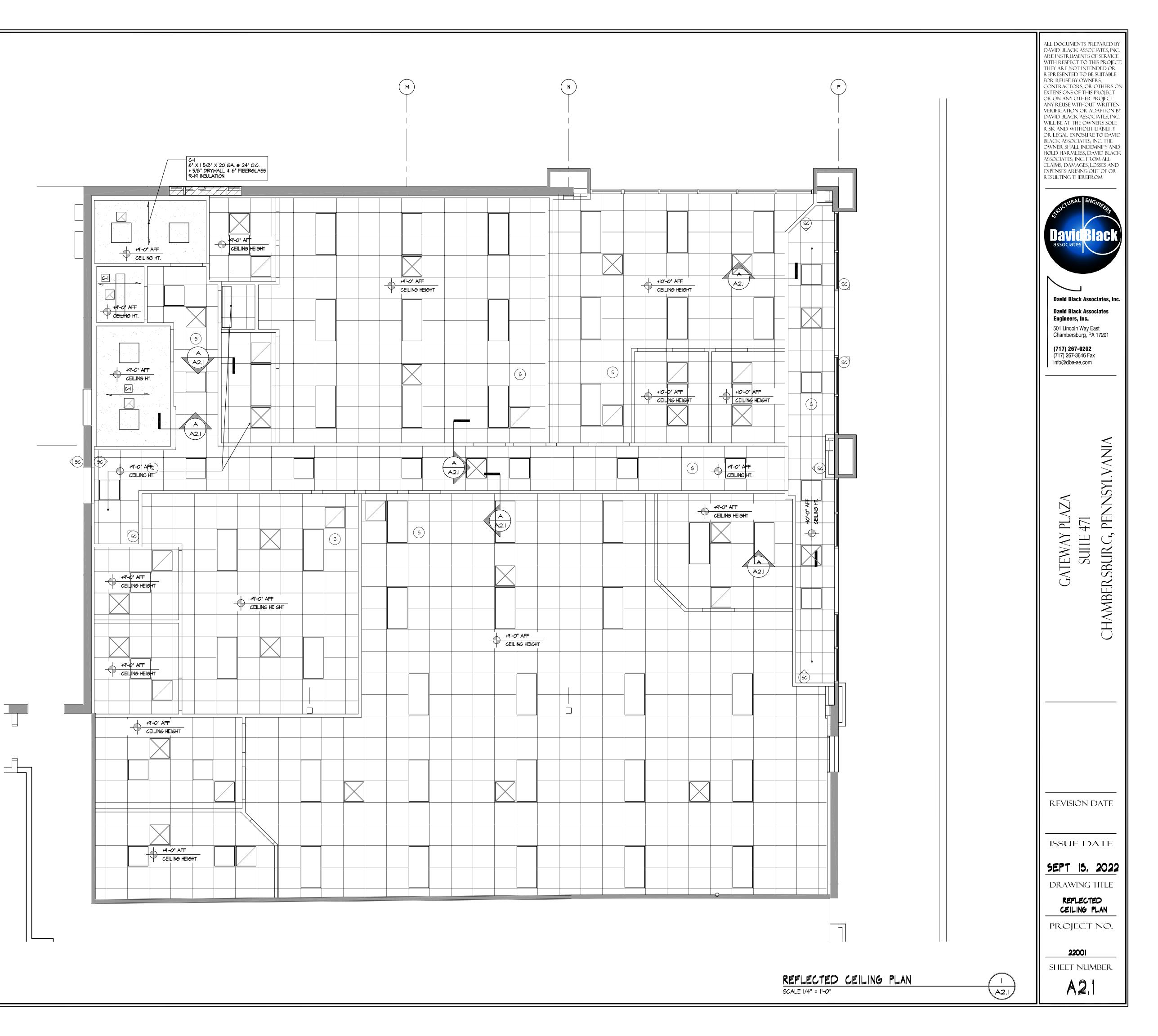


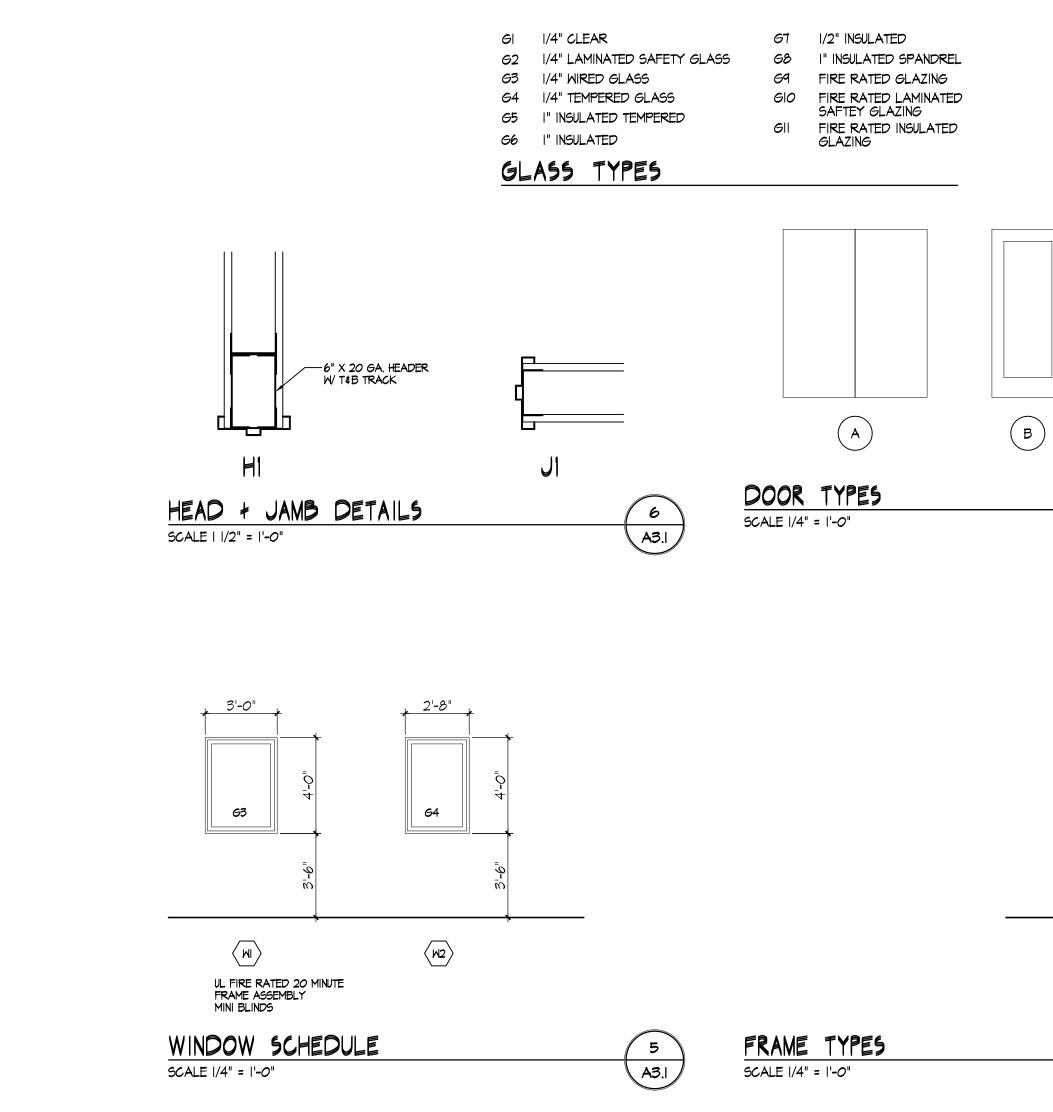


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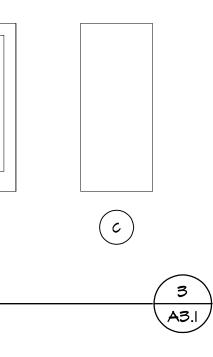
**DETAIL** SCALE 3/4" = 1'-0"

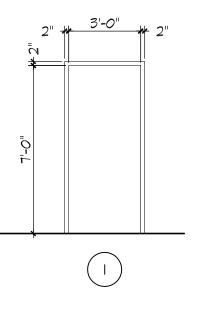




# NOTE: SEE SECTION OIGOO TENANT CNSTRUCTION PROVISION OF SPECIFICATIONS FOR SPECIFIC FINISH REQUIREMENTS ASSOCTIATED WITH EACH AREA.

	ABBREVIATIONS
AE	ACID ETCH
ATC	ACOUSTICAL TILE CEILING
AWT	ACOUSTICAL WALL TREATMENT
CMU	CONCRETE MASONRY UNIT
CONC	CONCRETE
CPT	CARPET TILE
СТ	CERAMIC TILE
(E)	EXISTING TO REMAIN
ES	EXPOSED STRUCTURE
EPOXY	EPOXY FLOORING SYSTEM. SEE SPECIFICATIONS
FRP	FIBERGLASS REINFORCED PANELS
GWB	GYPSUM WALL BOARD
HM	HOLLOW METAL
MBLP	METAL BUILDING LINER PANEL
p	PAINT
R	RUBBER
RAD	RADIAL RUBBER
SV	SHEET VINYL
VCT	VINYL COMPOSITION TILE
VEN	VENEER
WC	WALL COVERING
WOM	WALK OFF MAT
WD	WOOD
PT	PORCELAIN TILE
50	SEALED CONCRETE
SF	STAINED FACTORY FINISH
BR	BOTTOM OF CHAIR RAIL
TR	TOP OF CHAIR RAIL





´4` A3.1

MARK STYLE SIZE THICK. MAT'L FINISH GLAZE RATING HDWR. FRAME DATA SIGNAGE SIGNAGE REMARKS																		
SC P.			61 <b>7</b> 5			ENICI			HDWR. FRAME DATA									
Ľ	MARK	ARK STYLE	SIZE	THICK.	MAT'L	FINISH	GLAZE	RATING	SET I.D.	TYPE	MAT'L.	FINISH	HEAD	JAMB	SILL/THRS.	SIGNAGE	REMARKS	
	101	В	3'-0" X 7'-0"	3/4"	WOOD	SF	63	20 MIN.			HM	p	HI	L	ଚା	-	MINI BLINDS	
	102	C	3'-0" X 7'-0"	3/4"	WOOD	SF	-	-	2	I	HM	p	HI	L	52	-	-	
	103	В	3'-0" X 7'-0"	3/4"	WOOD	SF	64	-	3	I	HM	p	н	L	-	-	-	
	104	В	3'-0" X 7'-0"	3/4"	WOOD	SF	63	20 MIN.	I	Ι	HM	P	н	IL	SI	-	MINI BLINDS	
	105	В	3'-0" X 7'-0"	3/4"	WOOD	SF	64	-	3	Ι	HM	P	н	IL	-	-	-	
	106	C	3'-0" X 7'-0"	3/4"	WOOD	SF	-	-	2	I	HM	p	HI	L	52	-	-	
	101	c	3'-0" X 7'-0"	3/4"	WOOD	SF	-	20 MIN.	2	Ι	HM	P	н	٦L	53	-	-	
	108	C	3'-0" X 7'-0"	3/4"	WOOD	SF	-	20 MIN.	4	I	HM	p	HI	L	53	-	-	
	109	C	3'-0" X 7'-0"	3/4"	WOOD	SF	-	20 MIN.	2	I	HM	p	HI	L	53	-	-	
	110	C	3'-0" x 7'-0"	3/4"	WOOD	SF	-	20 MIN.	4	I	HM	p	н	L	53	-	-	
		B (E)	(E) 2 - 3'-0" X 7'-0"	3/4"	ALUM	-	(E) 65	-	٩	I	(E) AL	-	-	-	-	-	ENTRY ALERT DEVICE - SECURE I LEAF	
FLOOR	2	B (E)	(E) 2 - 3'-0" X 7'-0"	3/4"	ALUM	-	(E) 65	-	0	I	(E) AL	-	-	-	-	-	REMOVE PUSH/PULL & DEADBOLT - SECURE BOTH LEAFS	
	113	C (E)	(E) 3'-0" X 7'-0"	3/4"	HM	(E) P	-	-	8	I	(E) HM	(E) P	-	-	-	-	SECURE DOOR	
FIRGT	4	В	3'-0" X 7'-0"	3/4"	WOOD	SF	63	20 MIN.	I	I	HM	p	н	L	ଚା	-	MINI BLINDS	
"	5	В	3'-0" X 7'-0"	3/4"	WOOD	SF	64	-	3	I	HM	P	HI	L	-	-	-	
	116	C	3'-0" X 7'-0"	3/4"	WOOD	SF	-	-	2	I	HM	P	HI	L	52	-	-	
	117	В	3'-0" x 7'-0"	3/4"	WOOD	SF	63	20 MIN.	I	I	HM	P	HI	L	ଚା	-	MINI BLINDS	
	118	В	3'-0" X 7'-0"	3/4"	WOOD	SF	64	-	3	I	HM	P	HI	L	-	-	-	
	119	C	3'-0" X 7'-0"	3/4"	WOOD	SF	-	-	2	I	HM	P	HI	L	52	-	-	
	120	В	3'-0" X 7'-0"	3/4"	WOOD	SF	64	-	6	I	HM	p	-	-	-	-	MINI BLINDS	
	2	C (E)	(E) 3'-0" X 7'-0"	3/4"	HM	(E) P	-	-	8	I	(E) HM	(E) P	-	-	-	-	SECURE DOOR	
	122	C (E)	(E) 3'-0" X 7'-0"	3/4"	HM	(E) P	-	-	7	I	(E) HM	(E) P	-	-	-	-	ENTRY ALERT DEVICE	
															<u>D00</u>	r schedu	2 (A3.1)	

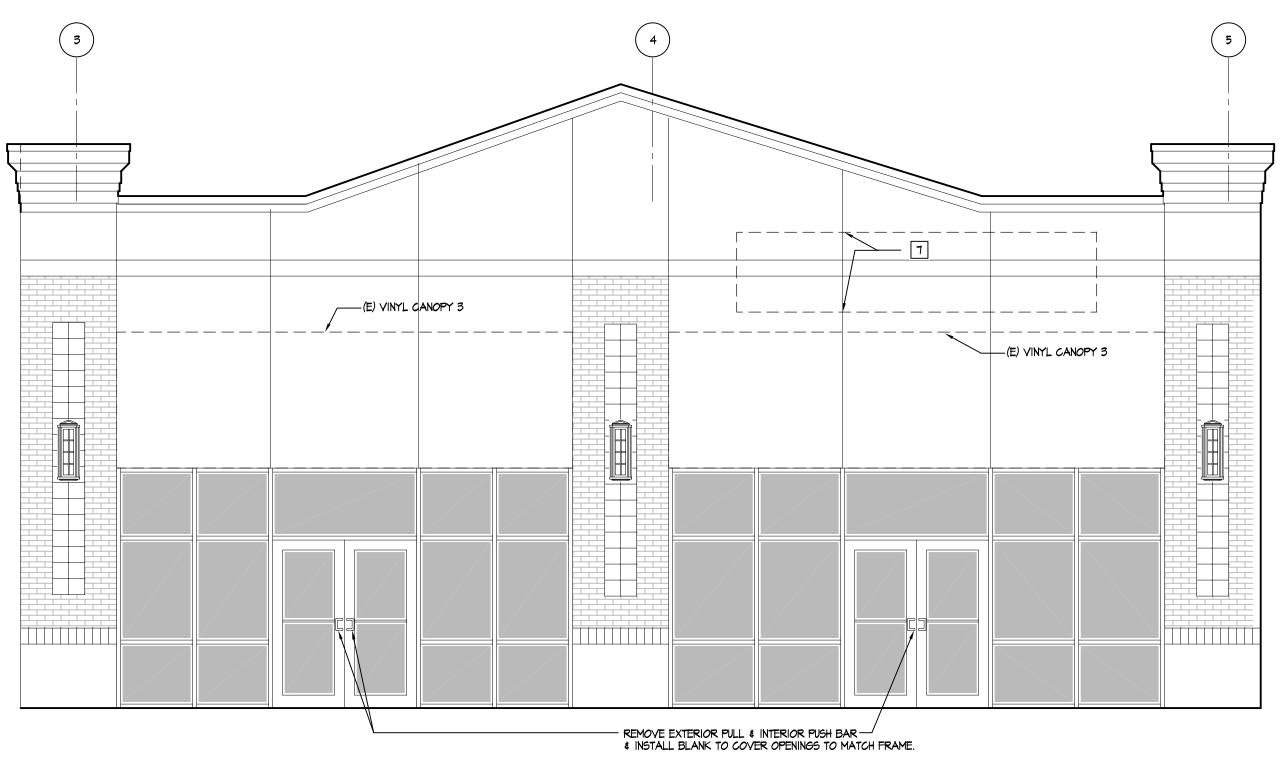
						FIN	ISH SCH	DULE								
		SPACE	FLOOR	BASE	NORTH WALL	-	EAST WALL		SOUTH WALL	-	WEST WALL		CEILING		REMARKS	
	NO.	NAME			MATERIAL	FINISH	MATERIAL	FINISH	MATERIAL	FINISH	MATERIAL	FINISH	MATERIAL	FINISH	HEIGHT	
S	100	CORRIDOR	PT	R	GWB	Ρ	GWB	P	GWB	P	(E)GLASS/GWB	P	ATC	-	10'-0"	CHAIR RAIL B.R. 30"
FORCE	101	AIR FORCE	CPT	R	GWB	Ρ	GWB	P	GWB	P	GWB	P	ATC	-	10'-0"	CHAIR RAIL B.R. 30"
Б Ю	102	STORAGE	VCT	R	GWB	Ρ	GWB	P	GWB	P	GWB	P	ATC	-	10'-0"	-
A R	103	TESTING	CPT	R	GWB	Ρ	GWB	P	GWB	P	GWB	P	ATC	-	10'-0"	CHAIR RAIL B.R. 30"
	104	NAVY	CPT	R	GWB	Ρ	GWB	p	GWB	Р	GWB	P	ATC	-	9'-0"	CHAIR RAIL T.R. 42"
NAVY	105	TESTING	CPT	R	GWB	p	GWB	р	GWB	p	GWB	p	ATC	-	9'-0"	-
~	106	STORAGE	VCT	R	GWB	Ρ	GWB	p	GWB	р	GWB	P	АТС	-	9'-0"	-
	107	CLOSET	VCT	R	GWB	Ρ	GWB	ρ	GWB	р	GWB	p	ATC	-	9'-0"	-
(62)	108	WOMEN	PT	R	GWB	PT/P	GWB	PT/P	GWB	PT/P	GWB	PT/P	GWB	P	9'-0"	-
	109	JANITOR	SC	R	GWB	FRP	GWB	FRP	GWB	FRP	GWB	FRP	GWB	P	9'-0"	-
FLOOR	110	MEN	PT	R	GWB	PT/P	GWB	PT/P	GWB	PT/P	GWB	PT/P	GWB	P	9'-0"	-
FIRST 1	Ш	CORRIDOR	PT	R	GWB	Ρ	GWB	p	GWB	P	GWB	P	АТС	-	9'-0"	CHAIR RAIL B.R. 30"
Ē																
ទា	4	MARINES	CPT	R	GWB	p_	GWB	p	GWB	P	GWB	P	ATC	-	9'-0"	-
MARINES	115	TESTING	CPT	R	GWB	<b>p_</b>	GWB	p	GWB	P	GWB	p	ATC	-	9'-0"	-
Σ́	116	STORAGE	VCT	R	GWB	ρ	GWB	p	GWB	P	GWB	P	ATC	-	9'-0"	-
	דוו	TESTING	CPT	R	GWB	p_	GWB	p	GWB	P	GWB	p	ATC	-	9'-0"	-
、	118	STORAGE	VCT	R	GWB	<b>p_</b>	GWB	P	GWB	P	GWB	p	ATC	-	9'-0"	-
ARMY	119	ARMY	CPT	R	GWB	<b>n_</b>	GWB	p	GWB	p	GWB	p	ATC	-	9'-0"	-
4	120	STATION COMMANDER'S OFFICE	CPT	R	GWB	P	GWB	p	GWB	P	GWB	P	ATC	-	9'-0"	-

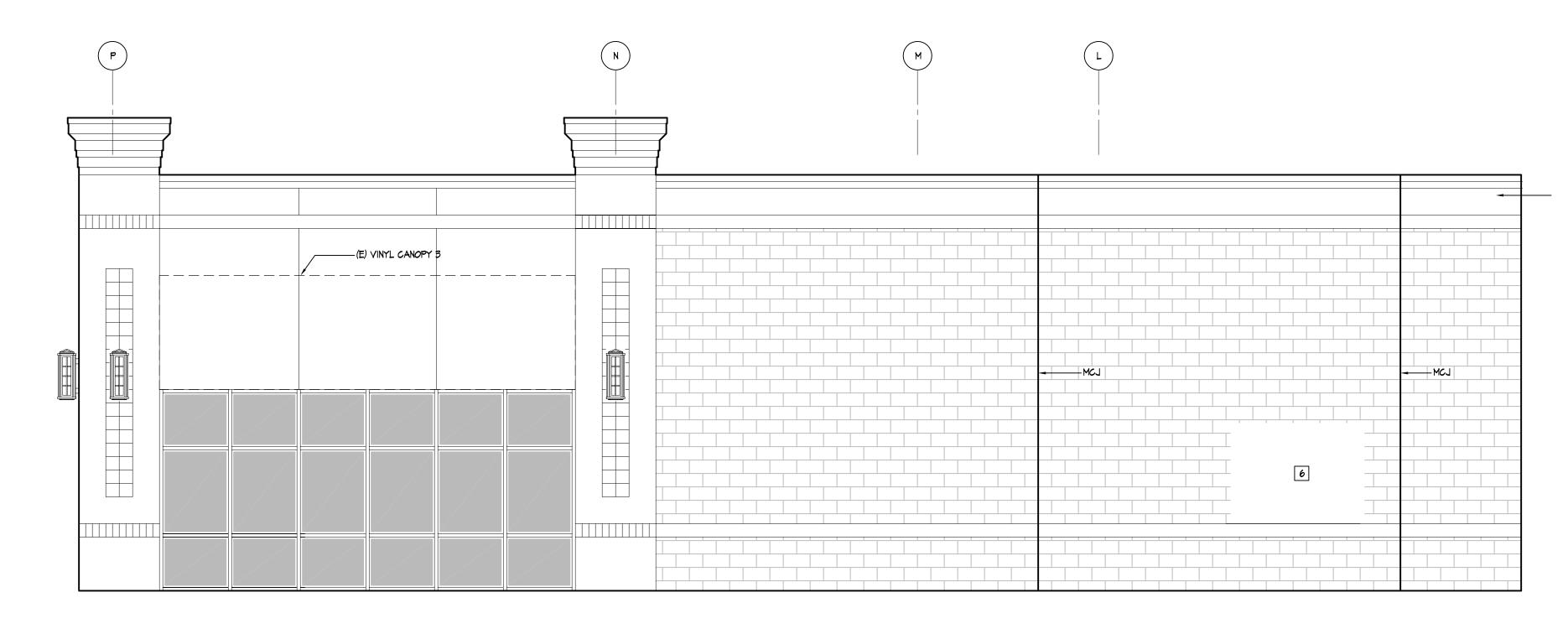
FINISH SCHEDULE



PROJECT NO. 22015 SHEET NUMBER

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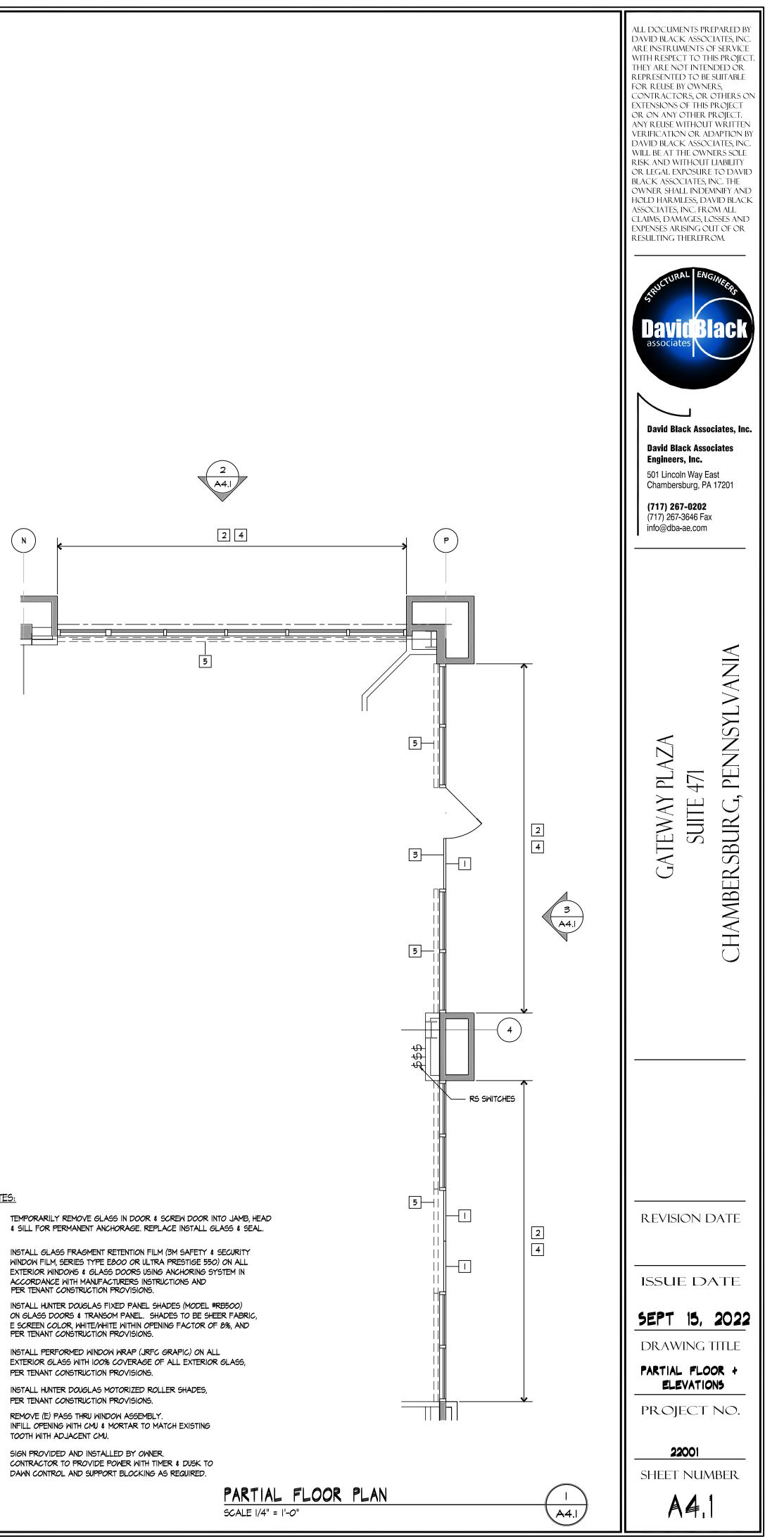
N	IOTE	<u>S:</u>
[		TEMPORARILY REN & SILL FOR PERMA
[	2	INSTALL GLASS FR MINDOW FILM, SERI EXTERIOR WINDOW ACCORDANCE WITT PER TENANT CONS
[	3	INSTALL HUNTER DO ON GLASS DOORS E SCREEN COLOR, PER TENANT CONS
[	4	INSTALL PERFORM EXTERIOR GLASS I PER TENANT CONS
[	5	INSTALL HUNTER DA
[	6	REMOVE (E) PASS INFILL OPENING WI TOOTH WITH ADJAC
	7	SIGN PROVIDED AN CONTRACTOR TO F

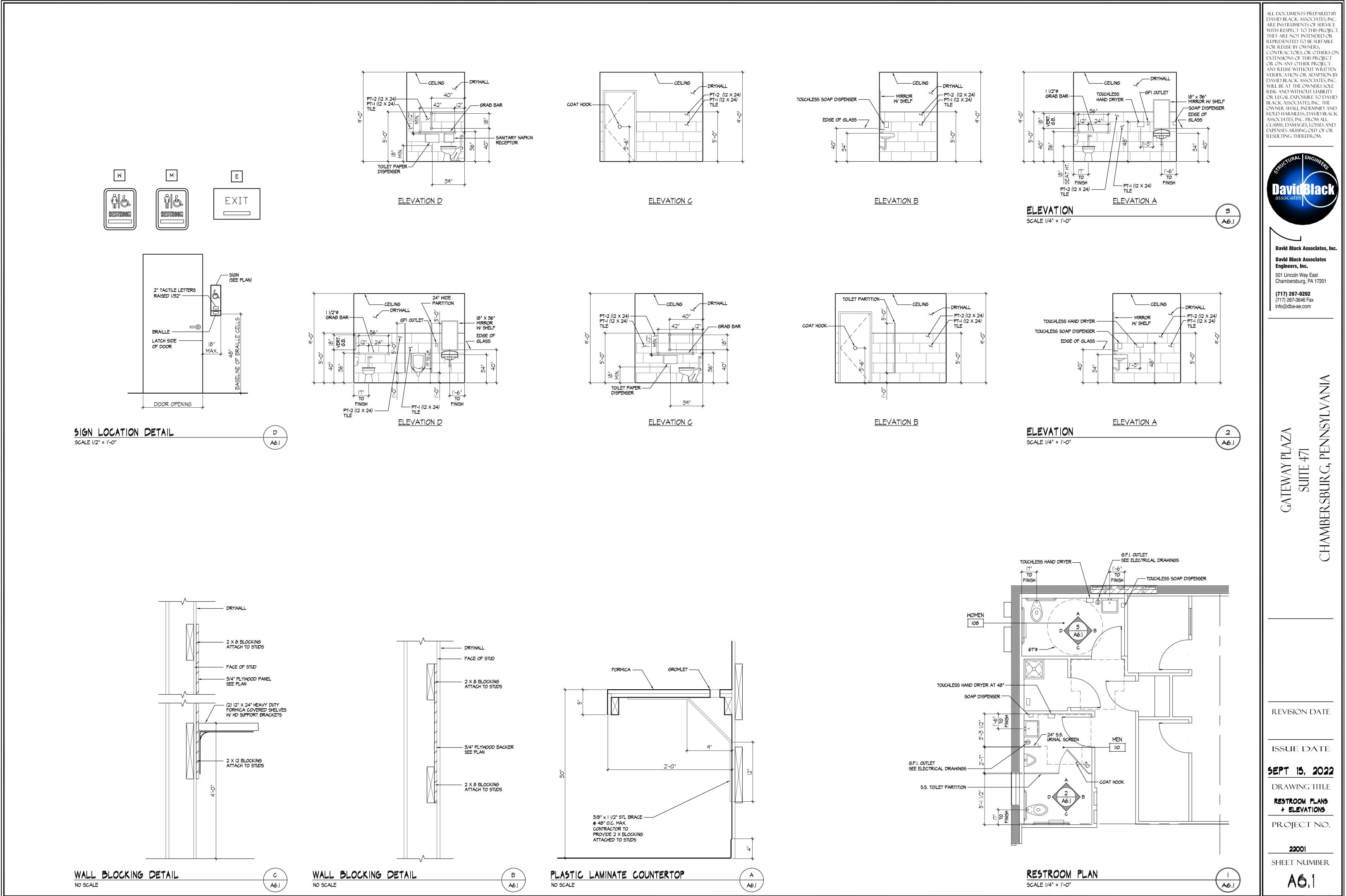
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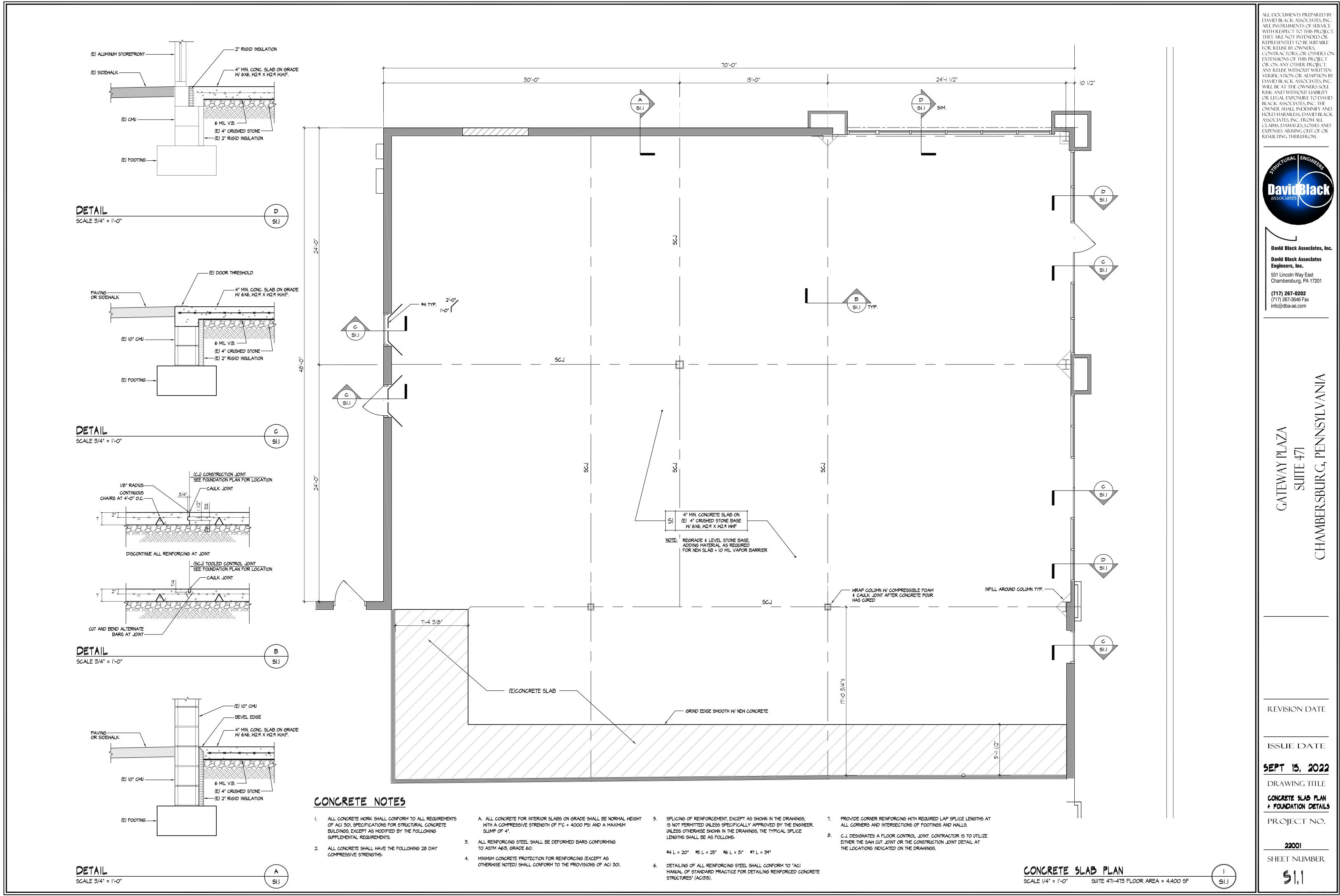
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## (E) BUILDING ELEVATION SCALE 1/4" = 1'-0"









# MECHANICAL ABBREVIATIONS

AB

AFF

AFG

AHJ

ARCH

BDD

BEL

BF

B.I

BOD

BTM

BTU

CD

CFM

CLG

CO

CONN

CONT COORD

CW

DB

DEG,

DIA,Ø

DISC

DN

EA

EAT

EC

EDB

EF ER

ESP

EWB

EWT

FD

FLA

FLEX

FPM

FT

GA

GAL

GC

GPH

GPM

HC

HD

HP

ID

IN.

INV

ISP IWG

LAT

INS

HORZ

HSTAT

FT HD

EX, (E)

DWG

ABOVE	LF	LINEAR FEET	$\square$
ABOVE FINISHED FLOOR	LB,#	POUNDS	$\bowtie$
ABOVE FINISHED GRADE	LDB	LEAVING DRY BULB TEMP.	
AUTHORITY HAVING JURISDICTION	LWB	LEAVING WET BULB TEMP.	
ARCHITECTURAL	LWT	LEAVING WATER TEMP.	
BACK DRAFT DAMPER	MAX	MAXIMUM	
BELOW	MBH	THOUSAND BTU PER HOUR	
BELOW FLOOR	MC	MECHANICAL CONTRACTOR	
BETWEEN JOISTS	MCA	MINIMUM CIRCUIT AMPACITY	
BOTTOM OF DUCT	MOD	MOTOR OPERATED DAMPER	
BOTTOM	MFR	MANUFACTURER	
BRITISH THERMAL UNIT	MIN	MINIMUM	
CEILING DIFFUSER		MOUNTED, MOUNTING	
CUBIC FEET PER MINUTE	NC	NOISE CRITERIA	$\boxtimes$
CEILING	NIC	NOT IN CONTRACT	
CLEANOUT	OA	OUTSIDE AIR	
CONNECT/CONNECTION	OAC	OPEN ABOVE CEILING	
CONTINUED/CONTINUATION	OAI	OUTSIDE AIR INTAKE	
COORDINATE	OC	ON CENTER	
DOMESTIC COLD WATER	ORD	OVERFLOW ROOF DRAIN	
DRY BULB	PC	PLUMBING CONTRACTOR	12x20
DEGREE	PH	PHASE	12,20
DIAMETER	PRV	PRESSURE REDUCING VALVE/	<u> </u>
DISCONNECT	DOL	PRESSURE RELIEF VENT	
DOWN	PSI	POUNDS PER SQUARE INCH	
	RA RD		
	RG	ROOF DRAIN RETURN GRILLE	┞╼═╦╤┱┩
ENTERING AIR TEMP. ELECTRICAL CONTRACTOR	RPM	REVOLUTIONS PER MINUTE	1 1
ENTERING DRY BULB TEMP.	RWC	RAINWATER CONDUCTOR	
EXHAUST FAN	S	STORMWATER	
EXHAUST REGISTER	S&C	STUB AND CAP	
EXTERNAL STATIC PRESSURE	SA	SUPPLY AIR	
ENTERING WET BULB TEMP.	SAN	SANITARY	٦
ENTERING WATER TEMP.	SF	SQUARE FEET	
EXISTING	SPEC	SPECIFICATIONS	민다
FIRE DAMPER/FLOOR DRAIN	SR	SUPPLY REGISTER	
FULL LOAD AMPERES	TD	TRANSFER DUCT	
FLEXIBLE	TEMP	TEMPERATURE	
FEET PER MINUTE	TG	TRANSFER GRILLE	
FOOT/FEET/FIN TUBE	THRU	THROUGH	T
FEET OF HEAD	TJ	THROUGH JOISTS	
GAUGE/GAGE	TSP	TOTAL STATIC PRESSURE	SB
GALLON	TSTAT	THERMOSTAT	H
GENERAL CONTRACTOR	TYP	TYPICAL	Μ
GALLONS PER HOUR	UNO	UNLESS NOTED OTHERWISE	S
GALLONS PER MINUTE	VAV	VARIABLE AIR VOLUME	
HVAC CONTRACTOR	VD	VOLUME DAMPER (MANUAL)	
HUB DRAIN	VFD	VARIABLE FREQUENCY DRIVE	DL
HORIZONTAL	VTR	VENT THROUGH ROOF	DU
HORSE POWER	W	WATTS/WASTE	
	W/	WITH	
	W/O		
	WB		$\bullet$
INSULATION INVERT	WL WPD	WEATHER LOUVER WATER PRESSURE DROP	-
INVERT	WPD	WATER PRESSURE DROP WATER TEMP. DROP	$\oplus$
INCHES WATER GAUGE	WTR	WATER TEMP. RISE	
LEAVING AIR TEMP.	XFMR	TRANSFORMER	
	2 VE 1811 V		

# CEILING DIFFUSER SCHEDULE

CFM	NECK	FLEX	MAX NC	THROW (FT) MAX. (50 FPM) - MIN. (100 FPM)					
CI-IVI	NLOK	SIZE		4-WAY	3-WAY	2-WAY	1-WAY		
0-100	6x6	6	30	6-3	6/7 - 3/4	9-4	12-6		
101-250	9x9	8	25	9-5	9/12 - 5/7	14-7	18-9		
251-400	12x12	10	25	12-6	12/15 - 6/7	15-8	18-9		
401-600	15x15	12	25	13-6	13/18 - 6/8	18-8	19-9		
601-900	18x18	14	25	13-6	13/18 - 6/8	18-8	19-9		

# GRILLE, REGISTER & DIFFUSER KEY

(1)	0x0 (2)	000 (3)
NOTES	_	
• •		N FOR GRILLE,
	REGISTER OR	
(2)	NECK SIZE, SE	EE GRILLE,
F	REGISTER. OF	R DIFFUSER

SCHEDULE WHERE OMITTED. (3) BALANCE AIRFLOW, SEE PLANS FOR AIRFLOW DIRECTION(S)

CFM	SIZE	APD	NC
0-100	8x6	0.10	30
101-150	8x8	0.10	30
151-250	10x10	0.08	30
251-400	12x12	0.08	25
401-600	18x12	0.08	25
601-900	18x18	0.08	25
901-2000	24x24	0.10	30

# HVAC SYMBOL LEGEND

# PIPING SYMBOL LEGEND

EXHAUST OR RELIEF AIR DUCT RISER		COLD WATER (CW)	o	PIPE RISE
		HOT WATER (HW)	<b>— Ə</b> —	BRANCH (BOTTOM CONNECTION)
		HOT WATER RECIRCULATION (HWR)	s	CONTINUATION
ROOFTOP EXHAUSTER		SOIL / WASTE (SAN)		STUB AND CAP
ROOFTOP INTAKE HOOD		STORM WATER (S) PUMPED SEWAGE		FLEXIBLE CONNECTOR
ROOFTOP RELIEF HOOD				EXPANSION LOOP
EXHAUST GRILLE OR REGISTER	-	NATURAL GAS (G)	k	2-WAY CONTROL VALVE
RETURN GRILLE OR REGISTER		LIQUID PROPANE (LP)	☆	3-WAY CONTROL VALVE
4-WAY CEILING DIFFUSER OR REGISTER				STEAM TRAP
2-WAY CEILING DIFFUSER		COIL CONDENSATE DRAIN (CD) 140°F HOT WATER (140)	<del>\$</del>	AUTOMATIC AIR VENT
2-WAY CORNER CEILING DIFFUSER	-	140°F HOT WATER RECIRCULATION (140R)		
3-WAY CEILING DIFFUSER	—-—F—-—		-	PUMP
DUCT (1ST FIGURE, SIDE SHOWN;		CHILLED WATER SUPPLY (CWS)	$-\bowtie$	SHUTOFF VALVE
2ND FIGURE, SIDE NOT SHOWN)	— — CWR— —	CHILLED WATER RETURN (CWR)	—及—	BALANCING VALVE
INCLINED RISE(R) OR DROP(D) ARROW IN DIRECTION OF AIR FLOW		HOT WATER SUPPLY (HWS)		BALL VALVE
		HOT WATER RETURN (HWR)	5	
STANDARD BRANCH FOR SUPPLY & RETURN (NO SPLITTER)		HOT WATER RECIRCULATION (HWR)		BUTTERFLY VALVE
		WATER SOURCE HEAT PUMP SUPPLY (HPS)		CHECK VALVE
MITERED ELBOW W/TURNING VANES		WATER SOURCE HEAT PUMP RETURN (HPR) STEAM SUPPLY (STM)	—k/—	GATE VALVE
MITERED ELBOW W/O TURNING VANES	—C	· · · ·	—×—	GLOBE VALVE
(USE ONLY WHERE SHOWN)	—_PC—	PUMPED CONDENSATE	— <del>K  </del>	STRAINER
FLEXIBLE CONNECTION	—FOG—	FUEL OIL GAGE (FOG)	7	
HORIZONTAL FIRE DAMPER	—FOS—	FUEL OIL SUPPLY (FOS)	—Ķ—	PRESSURE REDUCING VALVE
VERTICAL FIRE DAMPER	—FOR—	FUEL OIL RETURN (FOR)		SOLENOID VALVE
MANUAL VOLUME DAMPER		FUEL OIL VENT (FOV)	<b>A</b>	RELIEF VALVE
THERMOSTAT		REFRIGERANT SUCTION (RS)	ے ح	
EMERGENCY BURNER SHUT-OFF SWITCH HUMIDISTAT		REFRIGERANT LIQUID (RL) EXISTING WORK		PLUG COCK VALVE
MOTOR OPERATED DAMPER		DEMOLITION WORK	<del>  ¶  </del>	THERMOMETER
CONTROL SWITCH		FLOOR CLEANOUT (CO)		UNION
DUCT SMOKE DETECTOR	+o	WALL CLEANOUT (C0)	Ŷ	PRESSURE GAUGE
DOOR LOUVER, SEE ARCH. DWGS.	——С	OVERHEAD CLEANOUT (CO)	<b>X</b>	PIPE ANCHOR
DOOR UNDERCUT, SEE ARCH. DWGS. EXISTING WORK	+	HOSE BIBB (HB)	~	
DEMOLITION WORK	——————————————————————————————————————	WALL HYDRANT (WH)		PIPE GUIDE
CONNECT TO EXISTING		ROOF DRAIN (RD)	—_[A]	WATER HAMMER ARRESTER
DISCONNECT FROM EXISTING	•		لننا	(SIZE A-F, SEE SCHEDULE)
	——ф—	BRANCH (TOP CONNECTION)		

# **GRILLES & REGISTERS**

- AND EQUIPMENT.
- - ALL DUCT DIMENSIONS ARE INSIDE DIMENSIONS.
  - DUCT ACCESS PANELS FOR ALL FIRE DAMPERS.

  - SIDES.

  - CUTTING PIPING CONNECTIONS.

  - FINAL CONNECTION.

  - MANUFACTURER'S RECOMMENDATIONS.
- THAT DO NOT HAVE INTEGRAL AIR GAPS.
- ADJUSTMENT.
- THE CONTRACT.

- GRADE, OR INDIRECT WASTE.
- THE OWNER.

HEAT TRACE ALL DOMESTIC HOT WATER DISTRIBUTION PIPING, VALVES, AND FITTINGS WITH CHROMALOX HWM10-1CT SELF-REGULATING HEATING CABLE OR EQUAL TO MAINTAIN 110° F. MAXIMUM CABLE LENGTH PER CIRCUIT IS 155' FOR 20 AMP CIRCUIT. PROVIDE TIME CLOCK FOR OCCUPIED/UNOCCUPIED HEAT TRACE CONTROL.

CHROMOLOX MODEL	LOCATIC ASSOCIAT WATER S
HWM10-1CT	GROUND (SWF

# MECHANICAL GENERAL NOTES

 ALL WORK SHOWN IS TO BE CONSIDERED NEW AND PROVIDED UNDER THIS CONTRACT UNLESS SPECIFICALLY INDICATED AS EXISTING. CONNECT ALL DUCTS TO MECHANICAL EQUIPMENT BY FLEXIBLE DUCT CONNECTORS WITH NOT LESS THAN 3" SPACING BETWEEN DUCT

CONSTRUCT AND INSTALL ALL DUCTWORK IN ACCORDANCE WITH SMACNA.

PROVIDE FUSIBLE LINK FIRE DAMPERS AT ALL DUCT PENETRATIONS OR GRILLE OPENINGS IN FIRE RATED WALLS OR FLOORS. PROVIDE

 INSTALL DUCT MOUNTED SMOKE DETECTOR(S) IN THE RETURN AIR STREAM OF AIR SYSTEMS OVER 2000 CFM, PER MANUFACTURER'S RECOMMENDATIONS, DOWNSTREAM OF ALL BRANCH CONNECTIONS, UPSTREAM OF ANY OUTSIDE AIR CONNECTIONS OR FILTERS, AND PROVIDE WIRING FOR FAN SHUTDOWN. DETECTOR IS TO BE FURNISHED AND CONNECTED TO THE FIRE ALARM SYSTEM BY OTHERS. IN OCCUPANCIES WHERE A FIRE ALARM SYSTEM IS NOT PRESENT AND/OR REQUIRED, THE DUCT SMOKE DETECTOR SHALL BE FURNISHED & WIRED BY THE MECHANICAL CONTRACTOR TO A REMOTE TEST STATION MANUFACTURED BY SIMPLEX, MODEL 4098-9842.

 INSTALL DUCTWORK, EQUIPMENT, AND PIPING CONCEALED IN CHASES OR ABOVE CEILINGS WHERE CEILINGS ARE INDICATED, UNLESS NOTED OTHERWISE. WHERE DUCTWORK OR PIPING IS INDICATED TO BE EXPOSED, INSTALL AS HIGH AS POSSIBLE. ELEVATIONS SHOWN ARE TO THE LOWEST POINT, UNLESS NOTED OTHERWISE.

 ANY PIPING SHOWN TO BE INSTALLED WITHIN AN EXTERIOR WALL MUST BE INSTALLED ON THE INTERIOR SIDE OF THE WALL INSULATION. WALL MOUNTED THERMOSTATS SHALL BE INSTALLED 44" ABOVE THE FLOOR AND HANDICAPPED ACCESSIBLE.

INSTALL ROOFTOP EQUIPMENT NOT LESS THAN 10FT FROM THE ROOF EDGE OR ANY CHANGE IN ROOF HEIGHT GREATER THAN 2FT.

PROVIDE 4" THICK CONCRETE PADS FOR EQUIPMENT INSTALLED ON FLOORS OR ON GRADE, 6" LARGER THAN THE EQUIPMENT ON ALL

SEAL OR CAP OPENINGS IN PIPES OR DUCTS UNTIL FINAL CONNECTIONS ARE MADE

INSTALL SUFFICIENT UNIONS IN PIPING SYSTEMS TO ALLOW SERVICE OF ANY CONNECTED EQUIPMENT WITHOUT BREAKING FITTINGS OR

DIMENSIONS AND PIPE SIZES ARE IN INCHES UNLESS NOTED OTHERWISE.

RUNOUTS TO EQUIPMENT SHALL BE RUN IN SIZES INDICATED ON PLANS OR SCHEDULES AND INCREASED OR REDUCED AT POINT OF

DO NOT RUN PIPING OR DUCTWORK OVER ELECTRICAL EQUIPMENT.

PROVIDE SUFFICIENT CLEARANCE FOR OPERATION AND MAINTENANCE OF MECHANICAL EQUIPMENT ACCORDING TO THE

 PROVIDE SERVICE CLEARANCE FOR ELECTRICAL EQUIPMENT AS REQUIRED BY THE NATIONAL ELECTRICAL CODE (NEC). CONNECT HW, CW, VENT & SAN LINES TO FIXTURES IN ACCORDANCE WITH SIZES INDICATED ON THE PLUMBING FIXTURE SCHEDULE WITH A 2" MINIMUM SIZE FOR SANITARY PIPING BELOW FLOOR.

PIPING INSTALLED ABOVE CEILINGS SHALL BE BELOW THE ROOF INSULATION.

SLOPE SANITARY PIPING SIZES 3" AND LARGER 1/8" PER FOOT, AND SMALLER PIPES 1/4" PER FOOT, UNLESS NOTED OTHERWISE.

ALL EXPOSED PLUMBING PIPING AND ACCESSORIES (VALVES, TRAPS, STRAINERS, ETC) SHALL BE CHROME PLATED.

PROVIDE GAS SHUTOFF VALVE AND DIRT LEG AT ALL EQUIPMENT CONNECTIONS.

PROVIDE BACKFLOW PREVENTER OR AIR GAP FOR ALL DOMESTIC HOT AND COLD WATER CONNECTIONS TO FIXTURES AND EQUIPMENT

PROVIDE SHUTOFF VALVES FOR ALL DOMESTIC WATER CONNECTIONS TO FIXTURES AND EQUIPMENT.

PROVIDE ACCESS PANELS FOR ALL CONCEALED DAMPERS, VALVES, CONTROLS, AND EQUIPMENT OF SUFFICIENT SIZE FOR SERVICE AND

COORDINATE LOCATIONS OF ALL PIPING, DUCTWORK, EQUIPMENT AND DEVICES BEFORE INSTALLATION, WITH THE WORK OF OTHER TRADES. WHERE A CONFLICT IN CLEARANCES OCCURS, OBTAIN CLARIFICATION FROM THE ENGINEER, ARCHITECT, OR OWNER. INSTALL ALL NECESSARY PIPING, DUCTWORK AND FITTINGS, ETC. THAT ARE REQUIRED FOR A COMPLETE SYSTEM WITHOUT ADDITIONAL COST TO

 TEST INSTALLATIONS IN ACCORDANCE WITH THE APPROPRIATE CODE REQUIREMENTS AS EACH PORTION IS INSTALLED. FLUSH NEW DOMESTIC WATER PIPING UNTIL IT RUNS CLEAR. THEN FILL WITH 50PPM CHLORINE FOR 24 HOURS. THEN PURGE WITH FRESH WATER AND TEST FOR BACTERIAL CONTENT AND REPEAT IF NECESSARY.

PROVIDE P-TRAPS FOR ALL SANITARY FIXTURE CONNECTIONS TO FIXTURES WITHOUT INTEGRAL P-TRAPS.

PROVIDE CONDENSATE DRAINS WITH P-TRAPS FOR AIR HANDLING UNITS WITH COOLING COILS. DISCHARGE CONDENSATE TO ROOF,

 FOR ANY COOLING EQUIPMENT ABOVE CEILING, PROVIDE CONDENSATE OVERFLOW PROTECTION W/LIQUID DETECTOR AT TOP OF DRAIN PAN, WIRED TO SHUT DOWN THE SYSTEM.

• VERIFY MOUNTING HEIGHTS OF EQUIPMENT AND FIXTURES WITH ARCHITECTURAL DRAWINGS, AUTHORITY HAVING JURISDICTION, AND

# HEAT TRACE SCHEDULE

ION OR TED HOT SOURCE	TOTAL LENGTH OF PIPING (FT)	WATTS PER FOOT	VOLTAGE/ PHASE	MAX HEAT TRACE LENGTH FOR 20A CIRCUIT
) FLOOR H-1)	50	10	120/1	155



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PROJECT NO.

0423-22-001

SHEET NUMBER

MPC

											ST	AND	ARD	EFF	ICIEI	NCY S	SPLIT SY	STEM A	AIR H	ANDL	ER / I	HEAT	PUMF	PS					
			0.0	TOTAL		FAN					COOLI	NG (95°F		Г)			HEATING @ 4 (HEAT		HEA	TING 0°F A	AMBIENT (	ELECTRIC	HEAT)	SIZE	WEICHT	ELECTF	RICAL (SINGI WITH ELE	LE POINT POWER EC HEAT)	
TAG DESCRIPTION	TRANE MODEL	OA (CFM)	(CFM)	ESP IN WC	RPM	HP	NOM TONS	ТМВН	SMBH	EDB	EWB	LDB	LWB	ARI SEER	STAGES	СОМР МВН	COP	AUX ELEC KW	AUX ELEC MBH	EAT	LAT	STAGES	(LxWxH)	WEIGHT (LBS)	MCA	МОСР	VOLTS DISC. PHASE SWITCH	RI	
AHU-1 HP-1	AIR HANDLER HEAT PUMP	TPVA0A0121AA70A TRUZA012KA70NA	65	400	0.8	1050	1/3	1.0	12.0	9.6	79.0	67.2	59.0	57.8	21.4	1	19.0	3.82	3	10.2	58.3	94.0	1	22x18x50 31x14x24	113 141	16.5 11	20 30	208/1 EC	CASED COOLING
AHU-2 HP-2	AIR HANDLER HEAT PUMP	TPVA0A0121AA70A TRUZA012KA70NA	50	315	0.5	1050	1/3	1.0	12.0	9.6	79.0	67.2	59.0	57.8	21.4	1	19.0	3.82	3	10.2	58.9	94.0	1	22x18x50 31x14x24	113 141	16.5 11	20 30	208/1 EC	CASED COOLING
NOTES:		1	1	1	1	1	-1	1	1	1	1	1		1	1	1			1	1	1	1	1		1	1	L	1 I	

1. PROVIDE UNIT WITH FACTORY CONDENSATE PUMP. 2. INDOOR AND OUTDOOR UNIT HAVE SEPARATE POWER CONNECTIONS.

3. PROVIDE UNIT WITH FACTORY CONDENSATE PUMP.

											HIC	ih ei	FFIC	IENC	Y SF	PLIT S	YSIE	M FU	IRNA	CE (9	6% A	(FUE)							
		TRANE	OA	TOTAL		FAN					COOL	ING (95°F	AMBIEN	T)				I	HEATING (	0°F AMBIE	NT)		SIZE	WEIGHT		ELE	CTRICAL	-	
TAG	DESCRIPTION	MODEL	(CFM)			RPM	HP	NOM TONS	тмвн	SMBH	EDB	EWB	LDB	LWB	ARI SEER	STAGES	INPUT MBH	OUTPUT MBH	MIN AFUE	EAT	LAT	STAGES	(LxWxH)	(LBS)	MCA	MOCI	, VOLTS PHASI	S DISC. E SWITC	REMARKS / OPTIONS
GF-1 CU-1	GAS FURNACE CONDENSER	S9X1B040U3PSB 4TTR6018J1	120	600	0.5	1075	1/2	1.5	18.0	13.2	79.0	67.2	57.4	54.6	16.0	1	40.0	38.8	95.0	64.2	88.0	1	29x18x50 29x26x29	114 161	8.8 12.0	15.0 20.0		EC EC	CASED COOLING COIL, CONCENTRIC VENT TERMINATION KIT, ANTI-SHORT CYCLE TIMER
GF-2 CU-2	GAS FURNACE CONDENSER	S9X1B040U3PSB 4TTR6030J1	175	1000	0.5	1075	3/4	2.5	28.6	22.0	79.0	67.2	58.4	56.5	15.0	1	40.0	38.8	95.0	57.8	88.0	1	29x18x51 29x26x29	114 184	8.8 17.0	15.0 25.0			CASED COOLING COIL, CONCENTRIC VENT TERMINATION KIT, ANTI-SHORT CYCLE TIMER
GF-3 CU-3	GAS FURNACE CONDENSER	S9X1B040U3PSB 4TTR6030J1	200	1000	0.5	1075	3/4	2.5	28.6	22.0	79.0	67.2	58.4	56.5	15.0	1	40.0	38.8	95.0	56.0	88.0	1	29x18x51 29x26x29	114 184	8.8 17.0	15.0 25.0			CASED COOLING COIL, CONCENTRIC VENT TERMINATION KIT, ANTI-SHORT CYCLE TIMER

NOTES: 1. PROVIDE UNIT WITH FACTORY CONDENSATE PUMP.

	WALL HUNG DUCTLESS SPLIT SYSTEMS (COOLING ONLY)																						
							COOLIN	G (95°F A	MBIENT)						ELEC	TRICAL				PIPI	NG		
TAG	DESCRIPTION	DAIKIN MODEL	TOTAL (CFM)	SPEED	NOM TONS	ТМВН	SMBH	EDB	EWB	ARI SEER	EER	SIZE (HxWxD)	WEIGHT (LBS)	MCA	MFA	VOLTS/ PHASE	DISC. SWITCH	LIQUID	GAS	CD	MAX INTERUNIT LENGTH (FEET)	MAX INTERUNIT HEIGHT DIFFERENCE (FEET)	REMARKS / OPTIONS
SSAH-1 SSCU-1	AIR HANDLER CONDENSER	FTKB12AXVJU RKB12AXVJU	360	HIGH	1.0	11.0	8.2	80	67	17	8.5	11-11/16x35-1/16x8-1/4 21-5/8x25-15/16x10-3/4	20 57	7.7	15.0	208/1	EC EC	1/4	3/8	3/4	65.625	32.8	LOW AMBIENT KIT, WALL MOUNTED WITH THERMOSTAT, MINI-WHITE CONDENSATE PUMP

						FAN	I SCH	EDU	LE				
TAC	G TYPE	GREENHECK MODEL	CFM	SP (IN WC)	RPM	HP (WATTS)	VOLTS/ PHASE	DRIVE	DISC. SWITCH	ROOF OPENING	DAMPER SIZE	FAN SIZE LxWxH	ACCESSORIES
EF-	1 CEILING	SP-A125	50	0.25	1100	(53)	115/1	D	MFR	-	-	14x12x12	BDD, BRICK VENT BVE-157
EF-	2 CEILING	SP-A125	100	0.25	1100	(53)	115/1	D	MFR	-	-	14x12x12	BDD, BRICK VENT BVE-157
EF-	3 CEILING	SP-A125	50	0.25	1100	(53)	115/1	D	MFR	-	-	14x12x12	BDD, BRICK VENT BVE-157

TAG	TYPE	GREENHECK MODEL	CFM	SP (IN WC)	ROOF OPENING LxW	CURB CAP LxW	HOOD SIZE LxWxH	ACCESSORIES
RI-1	ROOF GRAVITY INTAKE	FABRAHOOD (FGI)	50	0.125	12x12	20x20	26x26x27	CURB, MOD
RI-2	ROOF GRAVITY INTAKE	FABRAHOOD (FGI)	65	0.125	12x12	20x20	26x26x27	CURB, MOD
RI-3	ROOF GRAVITY INTAKE	FABRAHOOD (FGI)	50	0.125	12x12	20x20	26x26x27	CURB, MOD
RI-4	ROOF GRAVITY INTAKE	FABRAHOOD (FGI)	175	0.125	12x12	20x20	26x26x27	CURB, MOD
RI-5	ROOF GRAVITY INTAKE	FABRAHOOD (FGI)	200	0.125	12x12	20x20	26x26x27	CURB, MOD

		ELECTR	IC UN	IT HEA	ATER	SCHE	DULE	
TAG	TYPE	BERKO MODEL	WATTS	VOLTS/ PHASE	AMPS	DISC. SWITCH	MOUNTING	ACCESSORIES / REMARKS
BB-1	BASEBOARD HEATER	2514W	1000	120/1	8.4	MFR	FLOOR	LENGTH: 48" REMOTE THERMOSTAT. DSW2W DOUBLE POLE DISCONNECT SWITCH ACCESSORY

# 

REMARKS / OPTIONS	

LING COIL, ANTI-SHORT CYCLE TIMER

LING COIL, ANTI-SHORT CYCLE TIMER



PARAGON ENGINEERING SERVICES INC. SHALL RETAIN ALL COMMON LAW,

STATUTORY AND OTHER

**David Black Associates** Engineers, Inc.

501 Lincoln Way East Chambersburg, PA 17201

(717) 267-0202 (717) 267-3646 FAX info@dba-ae.com

**REVISION DATE** 

ISSUE DATE

09/15/2022

DRAWING TITLE

SCHEDULES

PROJECT NO.

0423-22-001

SHEET NUMBER

M0.2



# SECTION 15500 - HVAC

### DESCRIPTION: THE WORK OF THIS SECTION INCLUDES, BUT IS NOT LIMITED TO, THE HVAC SYSTEM.

## QUALITY ASSURANCE: COMPLY WITH THE CURRENT:

• INTERNATIONAL MECHANICAL (IMC), BUILDING CODE (IBC), ENERGY CODE (IECC); LOCAL CODES AND AMMENDMENTS NFPA 70; UL LISTING; NFPA 90A & 90;

## SUBMITTALS:

- PRODUCT DATA FOR HEATING AND COOLING UNITS AND FANS ONLY. WARRANTIES AND GUARANTEES
- OWNERS OPERATIONAL AND MAINTENANCE MANUALS.
- BALANCING AND COMMISSIONING REPORTS: SUBMIT PRE-TEST VERIFICATION AND BALANCING DATA REPORTS.
- RECORD DRAWINGS: DELIVER TO OWNER AT THE COMPLETION OF THE PROJECT A SET OF PRINTS OF THE DRAWINGS MARKED IN RED SHOWING CHANGES IN LOCATIONS, MODELS, AND CAPACITIES OF THE SYSTEM.

### PIPING AND INSULATION:

- GENERAL: PROVIDE STEEL PIPE SLEEVES FOR MASONRY WALL PENETRATIONS, TIGHT FITTING SHEET METAL SLEEVES IN WOOD PENETRATIONS AND 3M FIRE STOPPING IN RATED WALL OR FLOOR PENETRATIONS. PROVIDE DIELECTRIC FITTINGS OR UNIONS IN ALL PIPE CONNECTIONS OF DISSIMILAR METALS.
- COOLING COIL CONDENSATE: RUN IN PVC PIPING AND SOLVENT WELDED JOINTS EXCEPT PLENUM AREAS RUN IN TYPE L RIGID COPPER TUBING WITH SOLDERED WROUGHT COPPER FITTINGS. INSULATE WITH 1/2" CLOSED CELL FOAM (ARMAFLEX). COMBUSTION AIR INTAKE AND VENT (FOR CONDENSING GAS APPLIANCES): SCHEDULE 40 PVC, COLORED PLASTIC OR PAINTED
- TO MATCH BUILDING. • REFRIGERANT PIPING SHALL BE DRAWN AND ANNEALED (MAX. O.D. 0.625") ACR COPPER TUBE WITH WROUGHT COPPER FITTINGS. INSULATE WITH CLOSED CELL FOAM (AP ARMAFLEX FS OR EQUAL), 1" THICK FOR 1.5" AND LARGER PIPES, 0.5" THICK FOR SMALLER PIPES. SEAL INSULATION JOINTS WITH MASTIC VAPOR TIGHT. BRAZE WITH INERT GAS PROTECTION, CHARGE WITH NITROGEN & EVACUATE TO 200 MICRONS OR LESS IN MULTIPLE CYCLES AS RECOMMENDED BY EQUIPMENT MANUFACTURER. ROOF PIPE PORTAL: PIPE CURB ASSEMBLY BY THE PATE COMPANY OR APPROVED EQUAL

### HANGERS AND SUPPORTS

- PROVIDE CLEVIS HANGERS SIZED TO INCLUDE INSULATION WITH INSULATION SHIELDS.
- PROVIDE JOIST HANGERS AND ALL-THREAD RODS. PROVIDE PIPE CLAMPS TO SUPPORT VERTICAL PIPING THROUGH FLOOR.
- INSTALL SUPPORTS FOR VERTICAL PVC & CPVC PIPING EVERY 48 INCHES AND INSTALL HANGERS FOR HORIZONTAL PIPING WITH THE FOLLOWING MAXIMUM SPACING AND MINIMUM ROD DIAMETERS: > NPS 1" AND SMALLER: 36" SPAN & 3/8" ROD, NPS 1-1/4" TO 2": 48" SPAN & 3/8" ROD, NPS 2-1/2" TO 3-1/2": 48" SPAN & 1/2" ROD, NPS
- 4" TO 5": 48" SPAN & 5/8" ROD, NPS 6" & 8": 48" SPAN & 3/4" ROD. INSTALL SUPPORTS FOR VERTICAL COPPER TUBING EVERY 10 FEET AND INSTALL HANGERS FOR HORIZONTAL TUBING WITH THE FOLLOWING MAXIMUM SPACING AND MINIMUM ROD DIAMETERS:
- > NPS 3/4" & SMALLER: 60" SPAN & 3/8" ROD, NPS 1" & 1.25": 72" SPAN & 3/4" ROD, NPS 1.5" & 2": 96" SPAN & 3/8" ROD, NPS 2-1/2": 108" SPAN & 1/2" ROD, NPS 3" TO 5": 120" SPAN 1/2" ROD.
- ROOFTOP EQUIPMENT SUPPORTS: ROOF CURB OR LD/HD MECHANICAL UNITS SUPPORTS BY MIRO OR APPROVED EQUAL.

### INSTALL **IDENTIFICATION:**

- GENERAL: PROVIDE PERMANENT LABELS ON ALL EQUIPMENT WITH DRAWING TAG, CAPACITY, AND ELECTRICAL
- CHARACTERISTICS. OUTDOOR EQUIPMENT: PROVIDE STAMPED METAL NAMEPLATES.
- PROVIDE PIPE LABELS SHOWING TYPE OF DUTY (I.E. "HOT WATER SUPPLY" AND DIRECTION OF FLOW) AT 15 FOOT INTERVALS.

## FURNACE

- PROVIDE CONDENSING DIRECT VENT, SEALED COMBUSTION RESIDENTIAL FURNACE MEETING AGA AND EFFICIENCY RATING CERTIFIED BY GAMA. MODEL AND CAPACITY AS SCHEDULED.
- PROVIDE UPFLOW/HORIZONTAL SPLIT SYSTEM COOLING COIL WITH BALANCED PORT HARD SHUTOFF THERMAL EXPANSION VALVE. MODEL AND CAPACITY AS SCHEDULED.

### HEAT PUMP AIR HANDLER:

 DESCRIPTION: HORIZONTAL OR VERTICAL WITH DOWNFLOW CONVERSION KIT WHERE REQUIRED, SPLIT SYSTEM HEATING AND COOLING DIRECT EXPANSION (DX) COIL (R410) WITH COPPER TUBES EXPANDED INTO ALUMINIUM FINS, DRAIN PAN, TXV VALVE, CENTRIFUGAL MULTI-SPEED DIRECT DRIVE FAN, TIME DELAY RELAY, FACTORY OR FIELD INSTALLED OPTIONAL ELECTRIC HEAT, INSULATED (R4.2) STEEL CABINET WITH ENAMEL FINISH AND 2% MAX LEAKAGE AT 1"WC PRESSURE.

### HEAT PUMP CONDENSING UNITS: PROVIDE HIGH EFFICIENCY R410 SPLIT SYSTEM CONDENSING UNIT WITH SCROLL COMPRESSOR(S) MODEL AND CAPACITY AS

SCHEDULED.

### FANS, VENTILATORS, AND LOUVERS CEILING OR INLINE CENTRIFUGAL CABINET FAN: EXHAUSTER WITH METAL GRILLE, FAN AND MOTOR, CORD DISCONNECT, AND

BACK DRAFT DAMPER. MODEL AND CAPACITY AS INDICATED ON DRAWING.

### ELECTRIC BASEBOARD HEATER:

• 16 GAUGE ROLLED STEEL ENCLOSURE, NICKEL CHROMIUM HEATING ELEMENT WIRE, EMBEDDED IN MAGNESIUM OXIDE ALUMINUM FINS. INCLUDE DISCONNECT, AND TRIM ACCESSORIES. MODEL AND CAPACITY AS INDICATED ON DRAWING.

### DUCTWORK, ACCESSORIES AND INSULATION:

- DUCTWORK: GALVANIZED G90 SHEET METAL FABRICATED AND SEALED WITH MASTIC IN ACCORDANCE WITH SMACNA STANDARDS AND FOR THE PRESSURE CLASS OF THE SYSTEM TO EXCEED THE SPECIFIED FAN PRESSURE. PROVIDE LEAKAGE TESTING FOR HIGH PRESSURE SYSTEMS 3"WC AND ABOVE ACCORDING TO ASHRAE AND THE IECC. RETURN AIR SYSTEMS SHALL BE CONSTRUCTED AND TESTED TO -2.0" WC PRESSURE CLASS UNLESS OTHERWISE NOTED. PROVIDE DOUBLE-WALL SPIRAL LOCKSEAM CONSTRUCTION FOR EXPOSED ROUND DUCTS. PROVIDE PVC COATED ROUND DUCTS BELOW GRADE.
- DUCT LINER: GLASS FIBER DUCT LINER (K=0.24, R=4.2 /IN) WITH EROSION AND MICROBIAL RESISTANT COATING. THOROUGHLY COAT ALL PENETRATIONS AND EXPOSED EDGES WITH MASTIC. SOUND ABSORPTION COEFFICIENTS (125 Hz) 0.08, (250 Hz) 0.31, (500 Hz) 0.64, (1000 Hz) 0.84, (2000 Hz) 0.97, (4000 Hz) 1.03, NRC=0.70.
- R=4.1 /IN), ASTM C 1290 TYPE III WITH ASTM C 1136 TYPE II FOIL REINFORCED KRAFT (FRK) LOW PERMEANCE VAPOR RETARDER FACING.
- BLANKET INSULATION (POLYETHYLENE BUBBLE): TWO LAYERS OF (94%) REFLECTIVE FILM BONDED TO POLYETHYLENE WITH INNER LAYER OF INSULATING BUBBLES SEPARATED BY A THIRD LAYER OF POLYETHYLENE IN THE CENTER. ASTM E84. CLASS A/CLASS 1 LESS THAN 25 FLAME SPREAD AND 50 SMOKE RATINGS. PROVIDE UL181 ACRYLIC ADHESIVE FOIL TAPE FOR ALL JOINTS AND ASTM E96 VAPOR PERMEANCE 0.02. ASTM C4111 RATED -60°F TO +180°F. INSULATION RATING R4.2 FOR 5/16" THICKNESS OR R8.0 FOR 1" THICKNESS WITH 3/4" AIR GAP.
- BOARD INSULATION: 3 LB/CF GLASS FIBERS BONDED WITH A THERMOSETTING RESIN (MIN R-4.1 /IN), ASTM C 612 WITH ASTM C 1136 TYPE II FOIL REINFORCED KRAFT (FRK) LOW PERMEANCE VAPOR RETARDER FACING.
- INSULATION APPLICATION: APPLY INSULATION AS FOLLOWS: > INDOOR CONCEALED SUPPLY: 1" THICK FIBERGLASS LINER OR 1-1/2" BLANKET WITH VAPOR BARRIER.
- > INDOOR RETURN AND TRANSFER: 1" THICK DUCT LINER.
- > INDOOR CONCEALED OUTSIDE AIR DUCTS: 2" THICK FIBERGLASS LINER OR 2" BLANKET WITH VAPOR BARRIER. > INDOOR CONCEALED SUPPLY & RETURN IN UNCONDITIONED SPACES: 2" THICK FIBERGLASS LINER OR 3" BLANKET WITH VAPOR BARRIFR
- > OUTDOOR SUPPLY AND RETURN DUCTWORK: 1" DUCT LINER PLUS 2" THICK CLOSED CELL FOAM EXTERNAL INSULATION WITH 60 MIL ADHERED RUBBER (EDPM) OR ALUMINUM FACED ADHESIVE VENTURECLAD WATERPROOF JACKET. BALANCING DAMPERS: PROVIDE GALVANIZED STEEL MANUAL BALANCING DAMPERS WITH GALVANIZED STEEL SHAFTS AND STEEL BEARINGS.
- TURNING VANES: PROVIDE GALVANIZED STEEL AIRFOIL TYPE TURNING VANES IN DUCT ELBOWS AS INDICATED. CONTROL DAMPERS: PROVIDE ULTRA-LOW LEAK GALVANIZED STEEL DAMPERS GALVANIZED STEEL SHAFTS AND STEEL BEARINGS, NEOPRENE BLADE AND EDGE SEALS.

- AIR DEVICES:

# CONTROLS:

# FURNACE

# TOILET EXHAUST FANS: EF-3

# CYCLE.

## BALANCING:

CONSTRUCTION: PROVIDE REGISTERS, GRILLES, AND DIFFUSERS WITH BAKED WHITE ENAMEL ALUMINUM OR STEEL CONSTRUCTION, SUITABLE FOR FIELD PAINTING. CEILING DIFFUSERS: ASPIRATING TYPE, SQUARE FACE, WITH ROUND NECK OR SQUARE TO ROUND TRANSITION AND OPPOSED BLADE DAMPER. PRICE MODEL SCD OR EQUAL. • GRILLES & REGISTERS: HORIZONTAL FACE BARS WITH 45° DEFLECTION ON 1/2" CENTERS, OPPOSED BLADE DAMPER FOR REGISTERS. PRICE MODEL 70D OR EQUAL.

PROGRAMMABLE THERMOSTATS: 7 DAY, 24 HOUR PROGRAM, AUTOMATIC HEATING/COOLING CHANGEOVER AND 5 DEGREE DEADBAND, WITH FAN OFF-AUTO-SUB-BASE, AUXILIARY CONTACTS, AND BATTERY BACKUP.

SEQUENCE OF OPERATION: (ALL SETPOINTS SHALL BE ADJUSTABLE)

 OCCUPIED CYCLE (BASED ON TSTAT PROGRAM): OPEN THE OUTSIDE AIR DAMPER FOR OCCUPIED MINIMUM AIRFLOW AND OPERATE THE SUPPLY FAN CONTINUOUSLY. ON A RISE IN SPACE TEMPERATURE ABOVE THE COOLING SET POINT (75°F), ENERGIZE THE COMPRESSOR(S) IN STAGES TO SATISFY THE THERMOSTAT. ON A FALL IN SPACE TEMPERATURE BELOW THE HEATING SET POINT (70°F), OPERATE THE GAS BURNER TO SATISFY THE THERMOSTAT. • UNOCCUPIED CYCLE (BASED ON TSTAT PROGRAM): CLOSE THE OUTSIDE AIR DAMPER. ON A RISE IN SPACE TEMPERATURE ABOVE COOLING SETBACK TEMPERATURE, START SUPPLY FAN AND ENERGIZE COMPRESSOR(S) IN STAGES TO SATISFY THE THERMOSTAT. ON A FALL IN SPACE TEMPERATURE BELOW THE HEATING SETBACK TEMPERATURE (65°F) START THE SUPPLY FAN AND OPERATE THE GAS BURNER TO SATISFY THE THERMOSTAT.

## DUCTLESS CASSETTE MINI-SPLIT SYSTEM HEAT PUMP/AIR HANDLER:

BASED ON STAND-ALONE REMOTE TEMPERATURE CONTROLLER: OPERATE THE SUPPLY FAN CONTINUOUSLY. ON A RISE IN SPACE TEMPERATURE ABOVE THE COOLING SET POINT, CYCLE THE COMPRESSOR IN COOLING MODE TO SATISFY THE TERMOSTAT. ON A FALL IN SPACE TEMPERATURE BELOW THE HEATING SET POINT, CYCLE THE COMPRESSOR IN HEATING MODE TO SATISFY THE THERMOSTAT.

TOILET EXHAUST FANS: EF-1, EF-2 INTERLOCK FAN WITH LIGHT SWITCH, WIRING BY EC.

INTERLOCK WITH PROGRAMMABLE THERMOSTAT AUXILIARY CONTACTS TO OPERATE CONTINUOUSLY DURING THE OCCUPIED

• VERIFY ALL NECESSARY BALANCING COMPONENTS ARE INSTALLED SUCH AS BALANCING VALVES AND DAMPERS. BALANCE AIR SYSTEMS TO WITHIN 0 TO + 10% OF INDICATED VALUES.

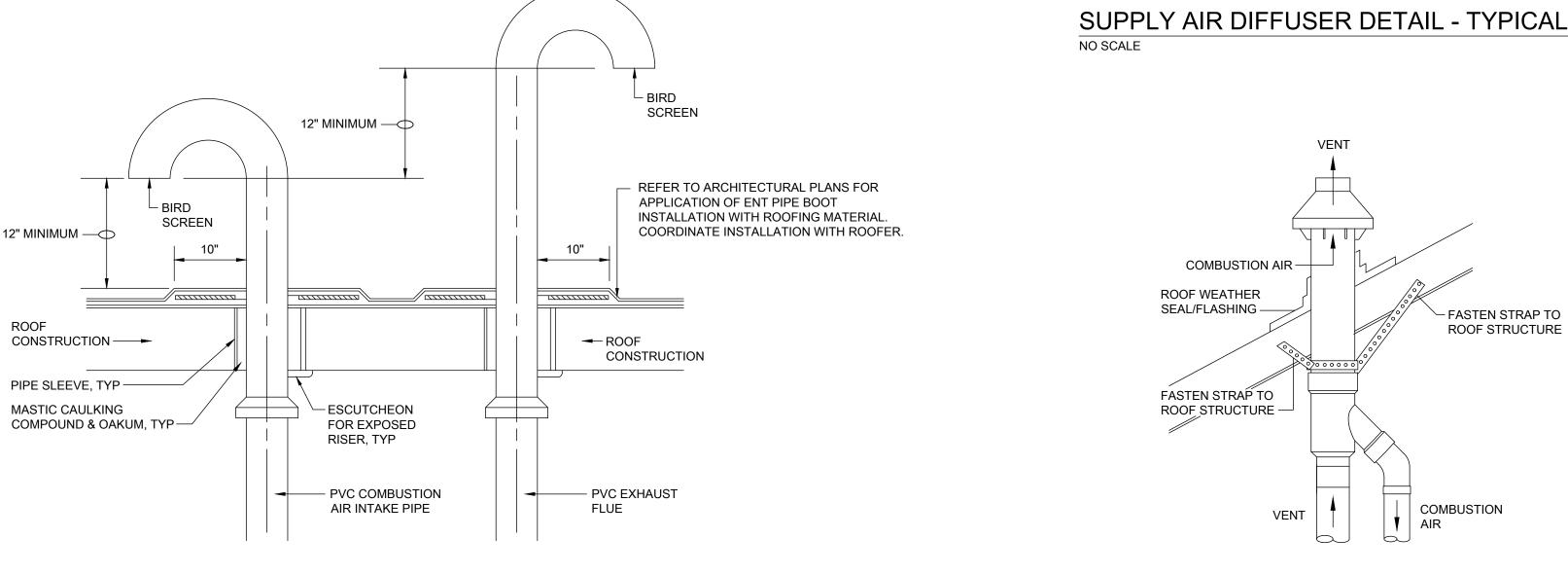
BALANCE HYDRONIC SYSTEMS TO WITHIN ± 5% OF INDICATED VALUES.

 SUBMIT REPORTS SPECIFIED UNDER SUBMITTALS ASSIST WITH FUNCTIONAL TESTING DURING COMMISSIONING AS REQUIRED.

NO SCALE

SUPPORT FROM STRUCTURE -----INSULATED FLEX DUCT MAX. LENGTH 8'-0" -



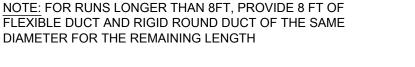


## **PVC COMBUSTION AIR INTAKE & PVC EXHAUST VENT** THRU ROOF DETAIL - TYPICAL NO SCALE



VERTICAL ROOF CONCENTRIC **VENT DETAIL - TYPICAL** NO SCALE

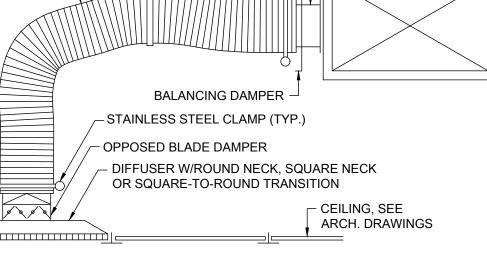
NOTE: FOR RUNS LONGER THAN 8FT, PROVIDE 8 FT OF DIAMETER FOR THE REMAINING LENGTH



- METAL BAND

SUPPORT





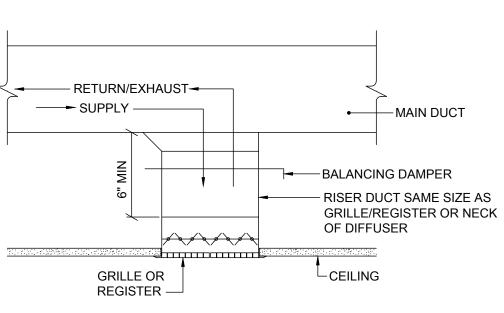
SPIN COLLAR. BELLMOUTH,

TO ROUND TRANSITION

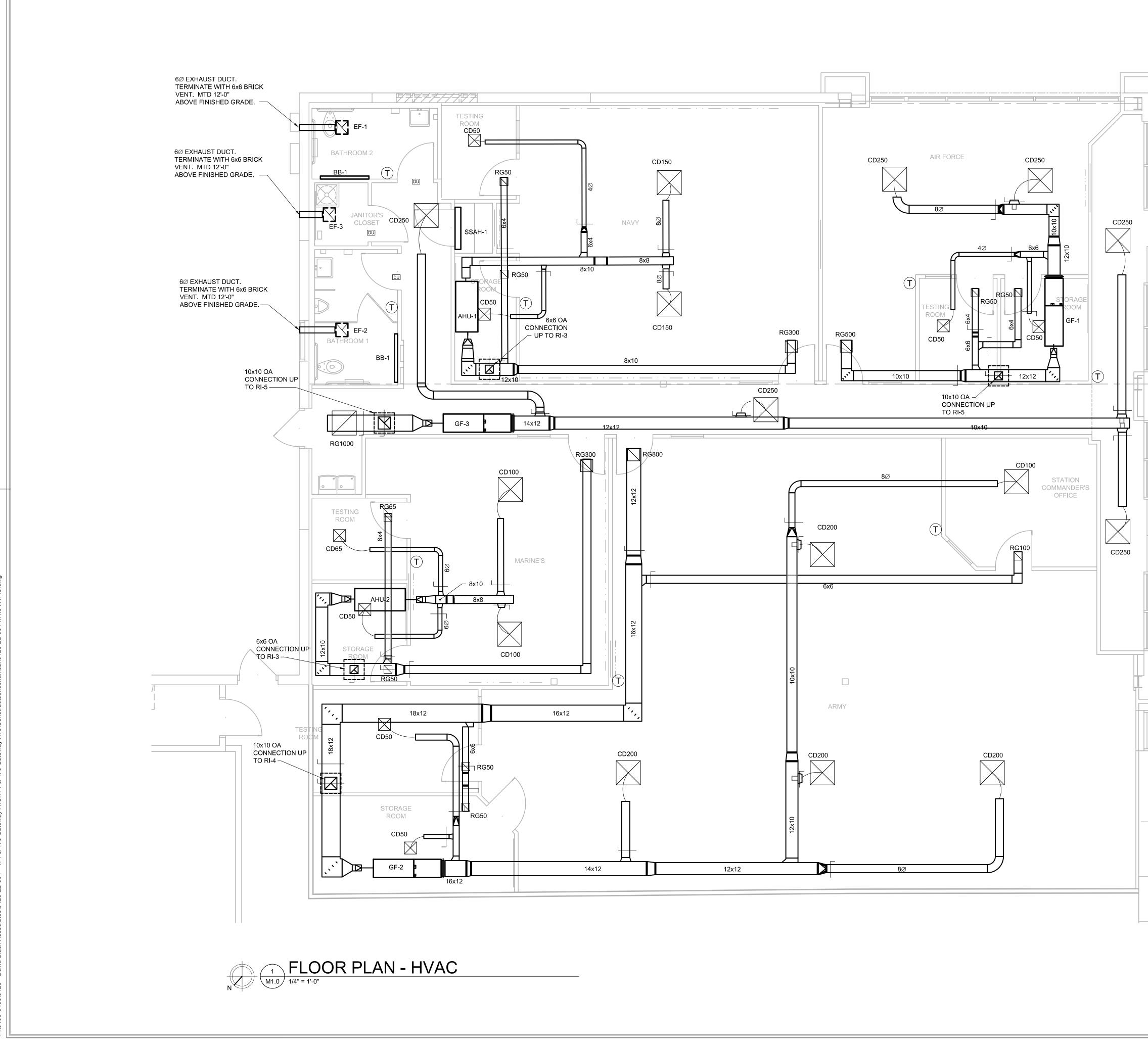
AS SHOWN

RECTANGULAR OR SQUARE









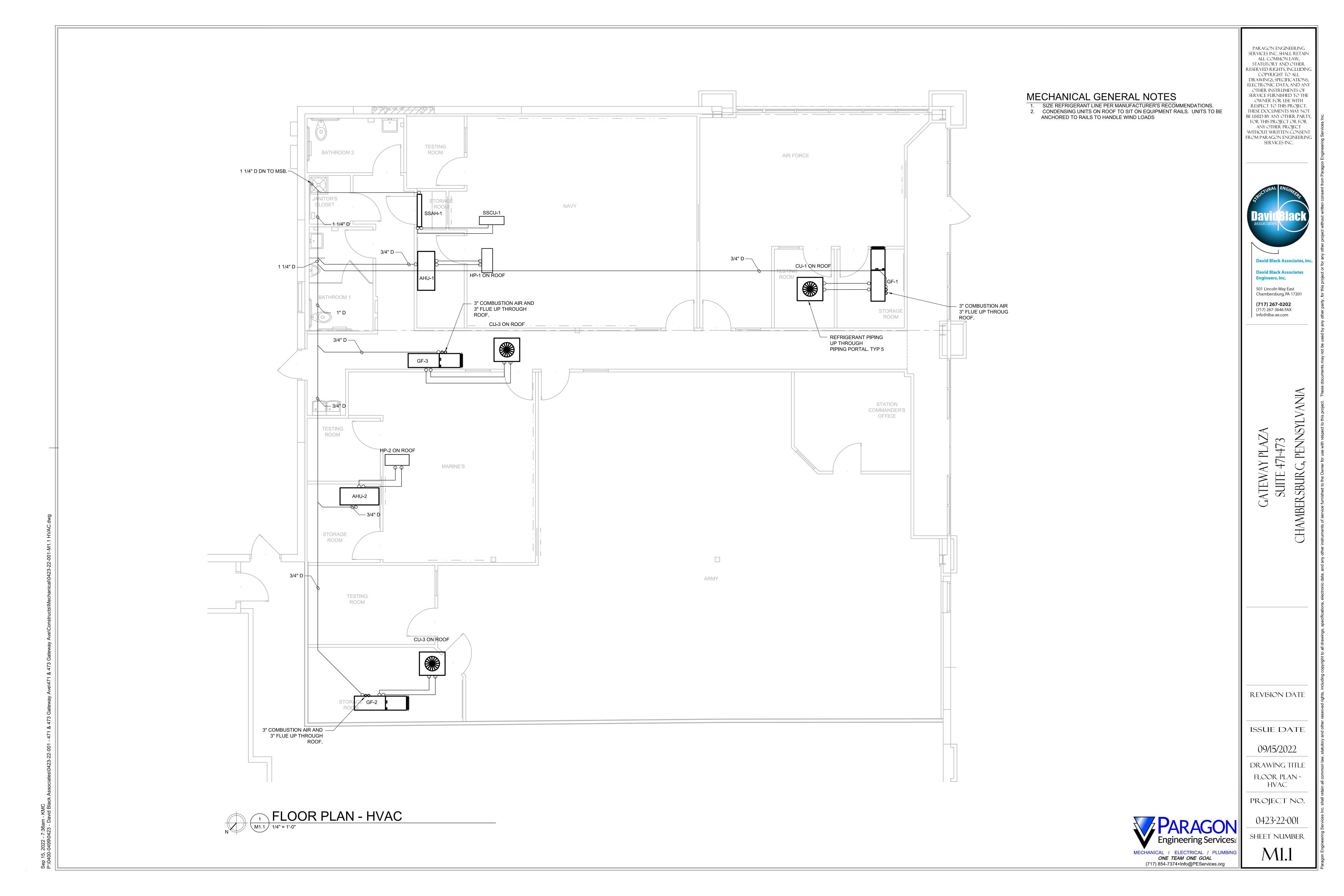
Sep 15, 2022 - 7:36am - KMC P:\0400-0499\0423 - David Black Associates\0423-22-001 - 471 & 473 Gateway Ave\471 & 473 Gateway Ave\Constructs\Mechanica\\0423-22-001-M1.0 HVAC

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MECHANICAL GENERAL NOTES

1. CONNECT ALL DUCTS TO MECHANICAL EQUIPMENT BY FLEXIBLE DUCT

CONNECTORS WITH NOT LESS THAN 3" SPACING BETWEEN DUCT AND EQUIPMENT.



# **SECTION 15000 - PLUMBING**

## **DESCRIPTION:**

THE WORK OF THIS SECTION INCLUDES, BUT IS NOT LIMITED TO THE PLUMBING SYSTEM.

- QUALITY ASSURANCE: COMPLY WITH THE CURRENT:
- INTERNATIONAL PLUMBING CODE (IPC) INTERNATIONAL ENERGY CONSERVATION CODE (IECC)
- CABO A117: ADA ANSI A117.1: NSF 61 FOR POTABLE WATER DEVICES; NFPA 70; UL LISTING.

SUBMITTALS:

- PRODUCT DATA FOR EQUIPMENT
- WARRANTIES AND GUARANTEES
- OWNERS OPERATIONAL AND MAINTENANCE MANUALS. RECORD DRAWINGS: DELIVER TO OWNER AT THE COMPLETION OF THE PROJECT A SET OF PRINTS OF THE DRAWINGS
- MARKED IN RED SHOWING CHANGES IN LOCATIONS, MODELS AND CAPACITIES OF THE SYSTEM. PIPING AND FITTINGS:
- GENERAL: PROVIDE DIELECTRIC FITTINGS AND UNIONS FOR ALL PIPE CONNECTIONS OF DISSIMILAR METALS. • EARTHWORK: PROVIDE TRENCHING (AND SHORING WHERE REQUIRED FOR DEPTH), #1 STONE BEDDING 6. BELOW AND 6 ABOVE PIPES, AND CLEAN BACKFILL COMPACTED IN 6 LAYERS FOR ALL BURIED PIPING UNDER BUILDING SLAB AND WHERE SHOWN, EXTENDED TO CONNECTION BY SITE CONTRACTOR, SEE GENERAL CONSTRUCTION SPECIFICATIONS FOR SPECIFIC REQUIREMENTS.
- HOT AND COLD WATER: ABOVE GRADE, RUN IN TYPE L RIGID COPPER TUBING WITH WROUGHT COPPER FITTINGS WITH SILVER (NO LEAD) SOLDER, CPVC SCHEDULE 40, ASTM D 2846, NSF, FLAME/SMOKE RATING OF LESS THAN 25/50, 100 PSI AT 180°F OR ASTM F876 PEX-A TUBING WITH ASTM F1960 COLD EXPANSION (NO CLAMP) FITTINGS, NSF, 160 PSI AT 73.4°F. BELOW GRADE, RUN IN TYPE K SOFT COPPER TUBING WITH WROUGHT COPPER FITTINGS WITH SILVER ( NO LEAD) SOLDER.
- SANITARY SEWER AND VENT BELOW GROUND: RUN IN PVC SCH 40 DWV PIPING AND SOLVENT WELDED JOINTS. FOR SANITARY USE WYE FITTINGS ONLY. FOR VENT USE SANITARY TEES OR WYE FITTINGS ONLY.
- SANITARY SEWER AND VENT ABOVE GROUND: RUN IN SERVICE WEIGHT CAST IRON PIPE AND FITTINGS WITH NO-HUB JOINTS IN AIR PLENUMS OR PVC SCH 40 DWV PIPING AND SOLVENT WELDED JOINTS ELSEWHERE. FOR SANITARY USE WYE FITTINGS ONLY. FOR VENT USE SANITARY TEES OR WYE FITTINGS ONLY.
- NATURAL GAS BELOW GRADE: RUN IN ONE PIECE PLASTIC POLYETHYLENE TUBING WITH NO JOINTS.
- NATURAL GAS ABOVE GRADE: RUN IN SCHEDULE 40 BLACK STEEL PIPE AND THREADED FITTINGS. USE WELDED FITTINGS ABOVE 5 PSIG, IN CONCEALED LOCATIONS, AND FOR PIPING ABOVE 2 ... THREADED JOINTS WITH MALLEABLE FITTINGS MAY BE MADE AT UNIT CONNECTIONS. PAINT EXTERIOR EXPOSED STEEL PIPING FOR CORROSION PROTECTION, COLOR SELECTED BY OWNER OR ARCHITECT.
- SELF-REGULATING PARALLEL RESISTANCE ELECTRIC HEATING CABLE: HEATING ELEMENT SHALL CONSIST OF A PAIR OF PARALLEL NO.16 TINNED OR NICKEL COATED STRANDED COPPER BUS WIRES EMBEDDED IN CROSS LINKED CONDUCTIVE POLYMER CORE WITH VARYING HEAT OUTPUT IN RESPONSE TO TEMPERATURE ALONG ITS LENGTH. TERMINATIONS SHALL BE WATERPROOF, FACTORY ASSEMBLED, NON-HEATING LEADS WITH CONNECTOR AT ONE END AND WATER-TIGHT SEAL AT OPPOSITE END. HEATING ELEMENT SHALL BE CAPABLE OF CROSSING OVER ITSELF WITHOUT OVERHEATING. CABLE SHALL HAVE FLAME RETARDANT POLYOLEFIN INSULATED JACKET AND TINNED COPPER AND POLYOLEFIN OUTER JACKET WITH UV INHIBITOR. 115 V, SINGLE PHASE, REFER TO HEAT TRACE SCHEDULES FOR WATTS PER FOOT.

## INSULATION:

• DOMESTIC HOT WATER (HW & HWR) AND COLD WATER (CW) : ASTM E84, UL181 PREFORMED ELASTOMERIC FOAM PLASTIC INSULATION (ARMAFLEX) (K=0.25 @ 75°F, R=4 /IN) . APPLY1.5" INS FOR 1.5" AND LARGER HW & HWR PIPES, 1" INS FOR SMALLER HW & HWR PIPES. APPLY 0.5" INS FOR ALL CW PIPE SIZES. SEAL JOINTS WITH MASTIC VAPOR TIGHT. PROVIDE PVC JACKET FOR EXPOSED PIPING.

### ESCUTCHEONS:

PROVIDE CLIP-ON CHROME-PLATED ESCUTCHEONS AT ALL EXPOSED WALL, FLOOR AND CEILING PENETRATIONS.

- SLEEVES: • PROVIDE STEEL PIPE SLEEVES IN MASONRY WALL PENETRATIONS AND SHEET METAL SLEEVES (TIGHTLY FITTED TO THE CUT OPENING) IN WOOD PENETRATIONS.
- PROVIDE 3M FIRE CAULKING IN ALL SLEEVES IN WALL AND FLOOR PENETRATIONS.

### CAULKING:

PROVIDE 100% SILICONE CAULKING FOR PLUMBING FIXTURES AT WALL, FLOOR AND COUNTER TOPS

- **IDENTIFICATION:** • PROVIDE PERMANENT LABELS ON ALL EQUIPMENT WITH DRAWING TAG AND NORMAL SETTINGS AS SPECIFIED.
- PROVIDE PIPE LABELS SHOWING TYPE OF DUTY (I.E., COLD WATER, AND DIRECTION OF FLOW) AT 15 FOOT
- INTERVALS. FOR GAS PIPING, PROVIDE A YELLOW PIPE LABEL MARKED GAS, IN BLACK LETTERS, AT INTERVALS NOT EXCEEDING 5 FEET.
- GAS PIPING INSTALLED ON ROOF SHALL BE PAINTED, SAFETY, YELLOW.

### VALVES:

- BALL VALVES: PROVIDE FOR SHUT-OFF OR THROTTLING APPLICATIONS, NIBCO MODEL S-S80 OR S-590-Y.
- CHECK VALVES: PROVIDE WHERE ONE WAY FLOW IS REQUIRED, NIBCO MODEL S-413. WATER SERVICE BACKFLOW PREVENTER: ASSE 1013 WATTS MODEL LF909 REDUCED PRESSURE PRINCIPAL TYPE WITH
- BALL VALVES, STRAINER, AND AIR GAP FITTING TO MEET THE REQUIREMENTS OF THE WATER COMPANY. PLUG VALVES: PROVIDE ON GAS PIPING, LUNKENHEIMER MODEL 454.

### ELECTRICAL REQUIREMENTS:

- GENERAL: PROVIDE WIRING, METAL CONDUIT, STARTERS, RELAYS, CONTROLS, SWITCHES, MEANS OF DISCONNECT, JUNCTION BOXES, CONTROLLERS, ET CETERA REQUIRED FOR A COMPLETE FUNCTIONING SYSTEM. FOLLOW THE REQUIREMENTS OF THE ELECTRICAL SECTION OF THE SPECIFICATION.

- MOTORS: PROVIDE MOTORS FOR MECHANICAL EQUIPMENT SUPPLIED BY THE EQUIPMENT MANUFACTURER WHEN POSSIBLE. PROVIDE MOTORS OF PHASE AND VOLTAGE INDICATED ON DRAWINGS AND SUITABLE FOR THE LOADING AND ENVIRONMENT. PROVIDE OPEN DRIP PROOF (ODP) MOTOR ENCLOSURES FOR NORMAL USE OR TOTALLY ENCLOSED FAN COOLED (TEFC) ENCLOSURES FOR OUTDOOR USE, HAZARDOUS OR DIRTY ENVIRONMENTS. PROVIDE MOTORS WITH 1.15 SERVICE FACTOR, INSULATION CLASS F, AND PRE-LUBRICATED BALL BEARINGS RATED FOR CONTINUOUS DUTY UP TO 105°F AMBIENT TEMPERATURE AND 3300 FT ALTITUDE. POLY-PHASE MOTORS SHALL BE PREMIUM EFFICIENCY AND WHEN USED WITH VARIABLE SPEED DRIVES, SHALL BE RATED FOR INVERTER DUTY. SINGLE PHASE MOTORS LARGER THAN 1/6HP SHALL BE OPEN-CAPACITOR START, CAPACITOR RUN TYPE UNLESS OTHERWISE INDICATED. SINGLE PHASE MOTORS 1/6HP AND SMALLER MAY BE SPLIT PHASE START, CAPACITOR RUN TYPE OR PERMANENT-SPLIT CAPACITOR TYPE.
- STARTERS: PROVIDE EACH MOTOR WITH A MOTOR STARTER OF PROPER DESIGN TO MEET THE REQUIREMENTS OF THE MOTOR AND DRIVE. STARTER TYPES SHALL INCLUDE MAGNETIC, MANUAL, SOLID-STATE REDUCED VOLTAGE, OR VARIABLE SPEED DRIVE. COORDINATE STARTER REQUIREMENTS WITH THE EQUIPMENT AND CONTROL SEQUENCE. PROVIDE ACCESSORIES SUCH AS CONTACTS, OVERLOADS, EXTERNAL RESETS, CONTROL CIRCUIT TRANSFORMERS, PILOT LIGHTS, PUSH BUTTONS, HOA AND OTHER SELECTOR SWITCHES AS NEEDED FOR THE SPECIFIED OPERATION.

## HANGERS AND SUPPORTS:

- PROVIDE CLEVIS HANGERS SIZED TO INCLUDE INSULATION WITH INSULATION SHIELDS.
- PROVIDE JOIST HANGERS AND ALL-THREAD RODS. PROVIDE PIPE CLAMPS TO SUPPORT VERTICAL PIPING THROUGH FLOOR.
- INSTALL SUPPORTS FOR VERTICAL PVC & CPVC PIPING EVERY 48 INCHES AND INSTALL HANGERS FOR HORIZONTAL PIPING WITH THE FOLLOWING MAXIMUM SPACING AND MINIMUM ROD DIAMETERS:
- > NPS 1 AND SMALLER: 36 SPAN & 3/8 ROD, NPS 1-1/4 TO 2 : 48 SPAN & 3/8 ROD, NPS 2-1/2 TO 3-1/2 : 48 SPAN & 1/2, ROD, NPS 4, TO 5, : 48, SPAN & 5/8, ROD, NPS 6, & 8, : 48, SPAN & 3/4" ROD. INSTALL SUPPORTS FOR VERTICAL COPPER TUBING EVERY 10 FEET AND INSTALL HANGERS FOR HORIZONTAL TUBING WITH THE FOLLOWING MAXIMUM SPACING AND MINIMUM ROD DIAMETERS:
- > NPS 3/4 & SMALLER: 60 SPAN & 3/8 ROD, NPS 1 & 1.25 : 72 SPAN & 3/8 ROD, NPS 1.5 & 2 : 96 SPAN & 3/8 ROD, NPS 2-1/2, : 108, SPAN & 1/2, ROD, NPS 3, TO 5, : 120, SPAN 1/2, ROD. INSTALL SUPPORTS FOR VERTICAL STEEL & CAST IRON PIPING EVERY 10 FEET AND INSTALL HANGERS FOR HORIZONTAL
- PIPING WITH THE FOLLOWING MAXIMUM SPACING AND MINIMUM ROD DIAMETERS: > NPS 1 & SMALLER: 96 SPAN & 3/8 ROD, NPS 1-1/4 TO 2 : 108 SPAN & 3/8 ROD, NPS 2-1/2 TO 3-1/2 : 120 SPAN & 1/2, ROD, NPS 4, & LARGER: 120, SPAN & 5/8, ROD.

- PLUMBING SPECIALTIES:

# PLUMBING FIXTURES

- DRAWING SCHEDULE.
- DRAWING SCHEDULE.

COMMERCIAL ELECTRIC WATER HEATER:

FD	
NOTE: COO FIBERGLAS	
TAG	
170	
SWH-1	5

TMV-1

TMV-2

TAG

WC-1A

UR-1A

L-1

EWC-1

MSB-1

• EXPANSION TANK: ASME DIAPHRAM TYPE, BELL & GOSSETT PTA-12 OR AMTROL ST-12. FLOOR DRAINS: CAST IRON, 9. DIA NICKEL BRONZE TOP, ZURN 4. MODEL: ZN415BZ.

 CLEANOUTS: ADJUSTABLE CAST IRON ZURN MODEL ZN1400 WITH BRONZE COVER. WATER METER FURNISHED BY THE WATER COMPANY. CONTRACTOR SHALL INSTALL METER ACCORDING TO THE REQUIREMENTS OF THE WATER COMPANY.

• WATER CLOSET (FLUSH VALVE FLOOR MTD) WC-1 (ADA): VITREOUS CHINA, ELONGATED BOWL, FULLY GLAZED BALLPASS TRAPWAY, SEAT OLSONITE #95 OPEN FRONT SEAT LESS COVER, 1-1/2" TOP SPUD, 2 BOLT CAPS, LOW CONSUMPTION 1.6 GPF, 16-1/2" HIGH BOWL, TOUCH LESS FLUSH VALVE PER DRAWING SCHEDULE, MODEL: PER DRAWING SCHEDULE. URINAL UR-1: VITREOUS CHINA, FLUSHING RIM, INTEGRAL STRAINER, 3/4, INLET SPUD, WALL HANGER, LOW CONSUMPTION 1.0 GPF, 17. MOUNTING HEIGHT, TOUCH LESS FLUSH VALVE PER DRAWING SCHEDULE, MODEL: PER

LAVATORY L-1(ADA): WALL HUNG, VITREOUS CHINA CONSTRUCTION, REAR OVERFLOW, FAUCET LEDGE, FAUCET HOLES ON 4" CENTERS, GRID STRAINER, MODEL: PER DRAWING SCHEDULE. FAUCET: PER DRAWING SCHEDULE. MODEL: PER

• WATER COOLER EWC-1 (ADA) : 8GPH CAPACITY, BUILT-IN 100 MICRON STRAINER, STAINLESS STEEL TOP, GALVANIZED STEEL FRAME, REFRIGERANT R-134A, THREE PUSH PAD ACTIVATION, SANDSTONE POWDER COATED PAINT ON GALVANIZED STEEL, 5 YEAR WARRANTY, MODEL: PER DRAWING SCHEDULE.

 MOP SERVICE BASIN MSB-1: 24x24x10, ONE PIECE BASIN, WALL MIN 1. WIDE, STAINLESS STEEL DRAIN BODY. COMBINATION DOME STRAINER AND LINT BASKET, MODEL: PER DRAWING SCHEDULE. FAUCET: CHROME PLATED WITH VACUUM BREAKER, INTEGRAL STOPS, ADJUSTABLE WALL BRACE, PAIL HOOK, 3/4, HOSE THREAD ON SPOUT, 8, CENTER TO CENTER FOUR ARM HANDLES, MODEL: PER DRAWING SCHEDULE. ACCESSORIES: HOSE AND HOSE BRACKET, MOP HANGER, STAINLESS STEEL WALL GUARD.

- ASME 150PSI WORKING PRESSURE, GLASS LINED TANK WITH BAKED ENAMEL FINISH, INCOLOY SHEATHED IMMERSION ELEMENT WITH PRE-WIRED TERMINAL LEADS, 120V CONTROL IMMERSION OPERATING AND HIGH LIMIT THERMOSTATS, POLYURETHANE FOAM INSULATION, SURFACE MOUNTED THERMOSTAT, HIGH LIMIT CONTROL, 3 YEAR LIMITED WARRANTY AGAINST LEAKS, MODEL: PER DRAWING SCHEDULE.

REFER TO ARCHITECTURAL PLANS FOR APPLICATION OF ENT PIPE BOOT INSTALLATION WITH ROOFING MATERIAL. COORDINATE INSTALLATION WITH ROOFER.



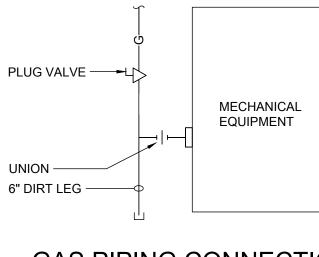
NO SCALE

HEAT TRAP-

A.S.M.E. RATED **TEMP/PRESSURE** RELIEF VALVE -

WALL-----

3/4" INDIRECT DRAIN TO FLOOR DRAIN, MOP BASIN, OR 12" ABOVE GRADE -



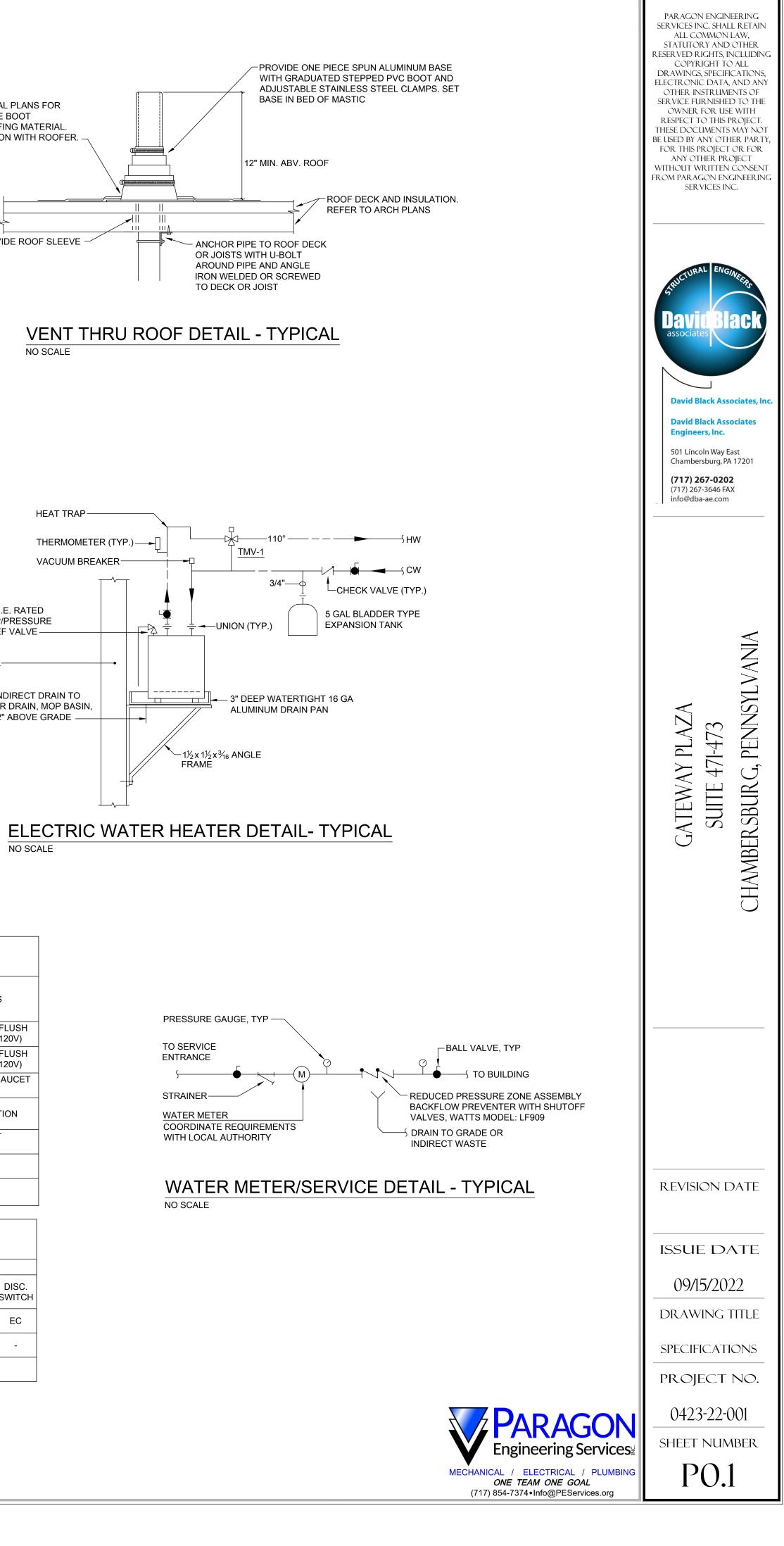
## GAS PIPING CONNECTION DETAIL - TYPICAL NO SCALE

NO SCALE

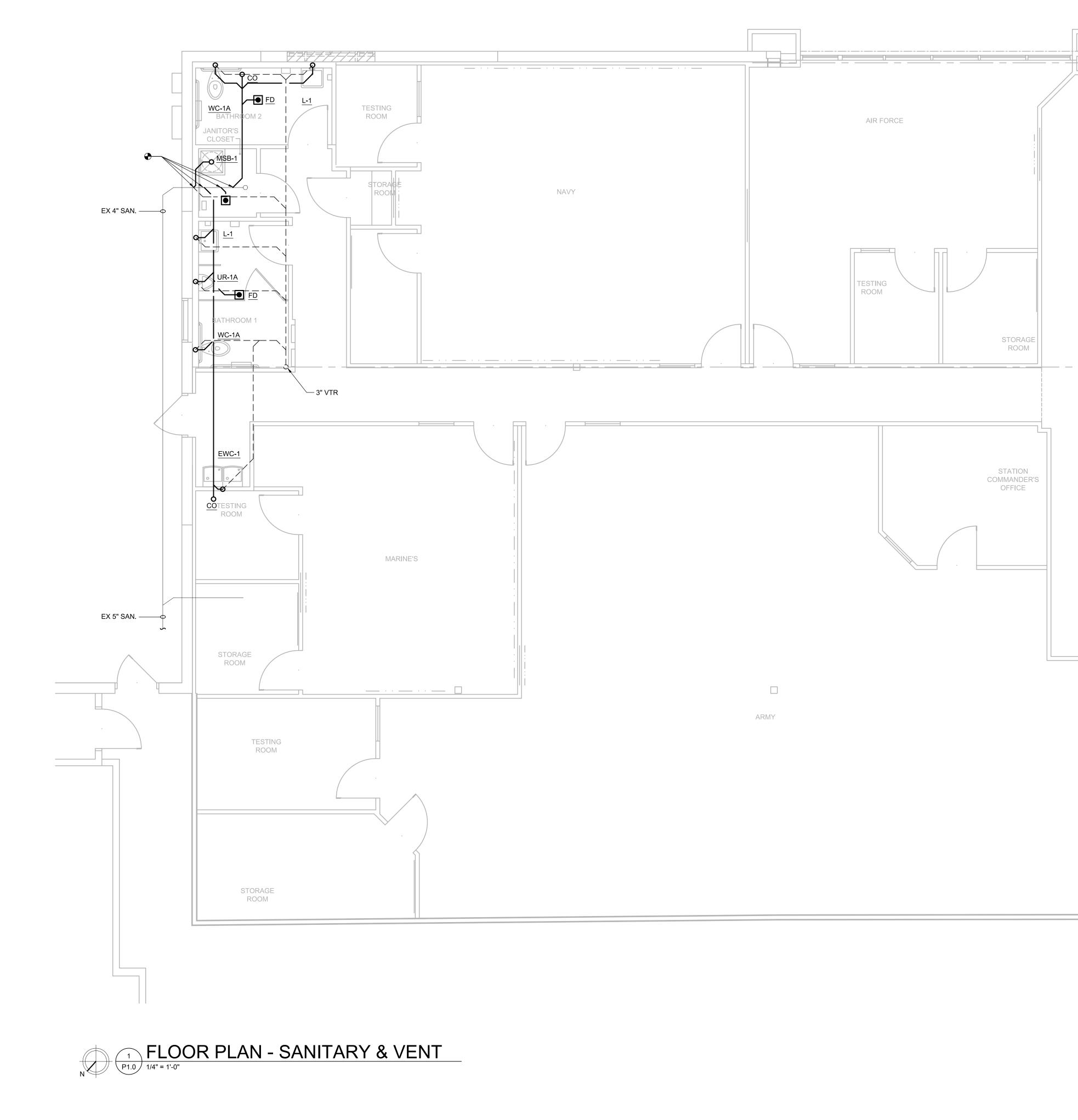
		PLUMBIN	IG FIXTURE S	SCHE	DULE			
DESCRIPTION	MANUFACTURER	MODEL	MOUNTING HEIGHT AFF (INCHED)		PIPE SIZE	S (INCHES)		REMARKS/ACCESSORIES
				CW	HW	VENT	WASTE	
WATER CLOSET (ADA) FLUSH VALVE TYPE		3461.001	FLOOR 17"-19" TO TOP OF SEAT	1	-	2	4	SLOAN ELECTRONIC SENSOR FLUSH VALVE MODEL: 111-1.6 ES-S (120V)
URINAL (ADA) FLUSH VALVE TYPE	AMERICAN STANDARD	6561.017	WALL MTD - 14"	3/4	-	1-1/2	1-1/2	SLOAN ELECTRONIC SENSOR FLUSH VALVE MODEL: 186-1.0 ES-S (120V)
LAVATORY (ADA)		0355.012	WALL MTD - 34"	1/2	1/2	1-1/4	1-1/4	SLOAN ELECTRONIC SENSOR FAUCET MODEL: ETF-80 (120V)
SPLIT LEVEL WATER COOLER (ADA)	ELKAY	EZS8WSSK	32"/36"	1/2	-	1-1/4	1-1/4	EZH20 BOTTLE FILLING STATION
MOP SERVICE BASIN	FIAT PRODUCTS	MSB 2424	FLOOR	3/4	3/4	2	3	FIAT PRODUCTS FAUCET MODEL: 830-AA
FLOOR DRAIN	ZURN	ZN415	9"Ø W/4" OUTLET			2"	4"	
RDINATE MOUNTING HEIGHT INSULATION AND PVC JACK				ROVIDE AD	A WRISTBLA	DE HANDLE	S FOR ADA F	AUCETS. PROVIDE PREFORMED

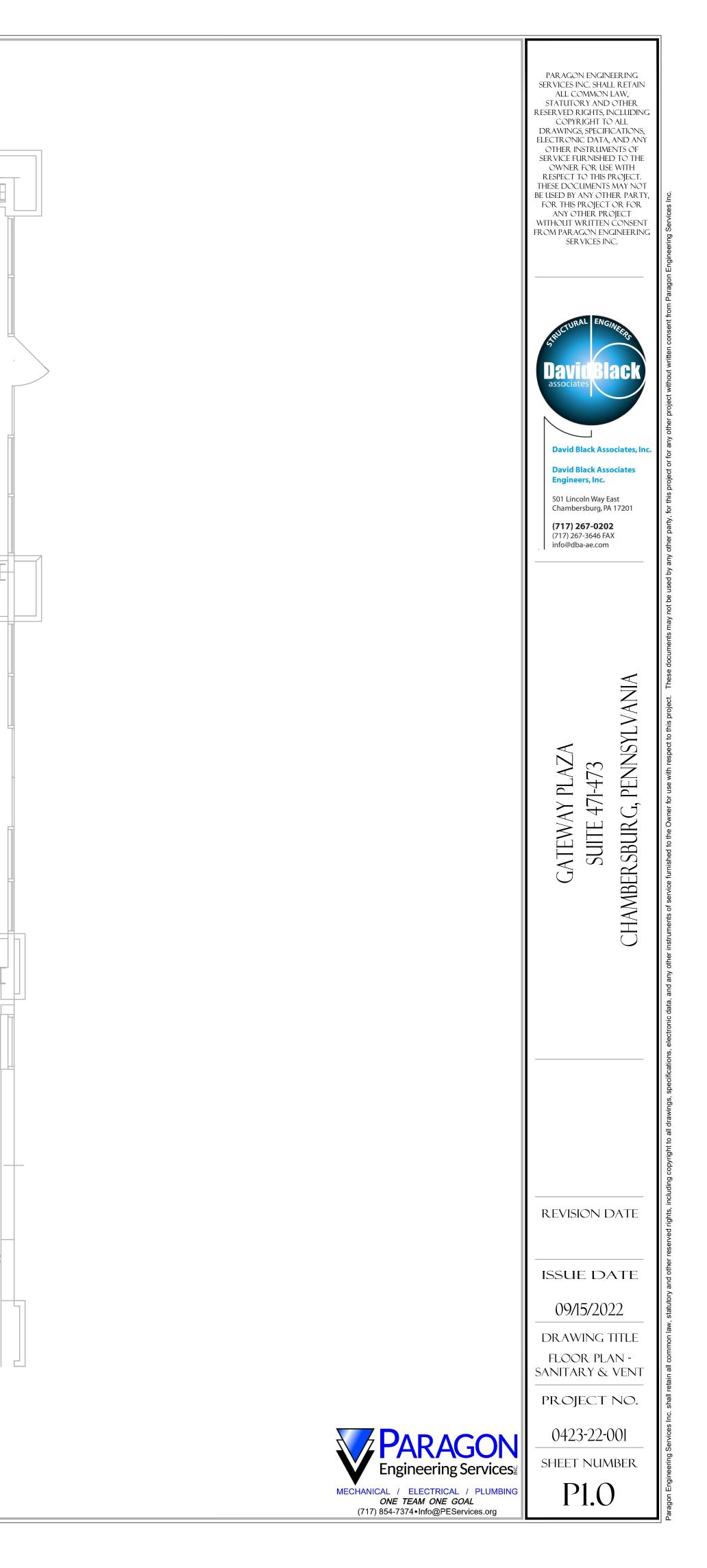
# PLUMBING EQUIPMENT SCHEDULE

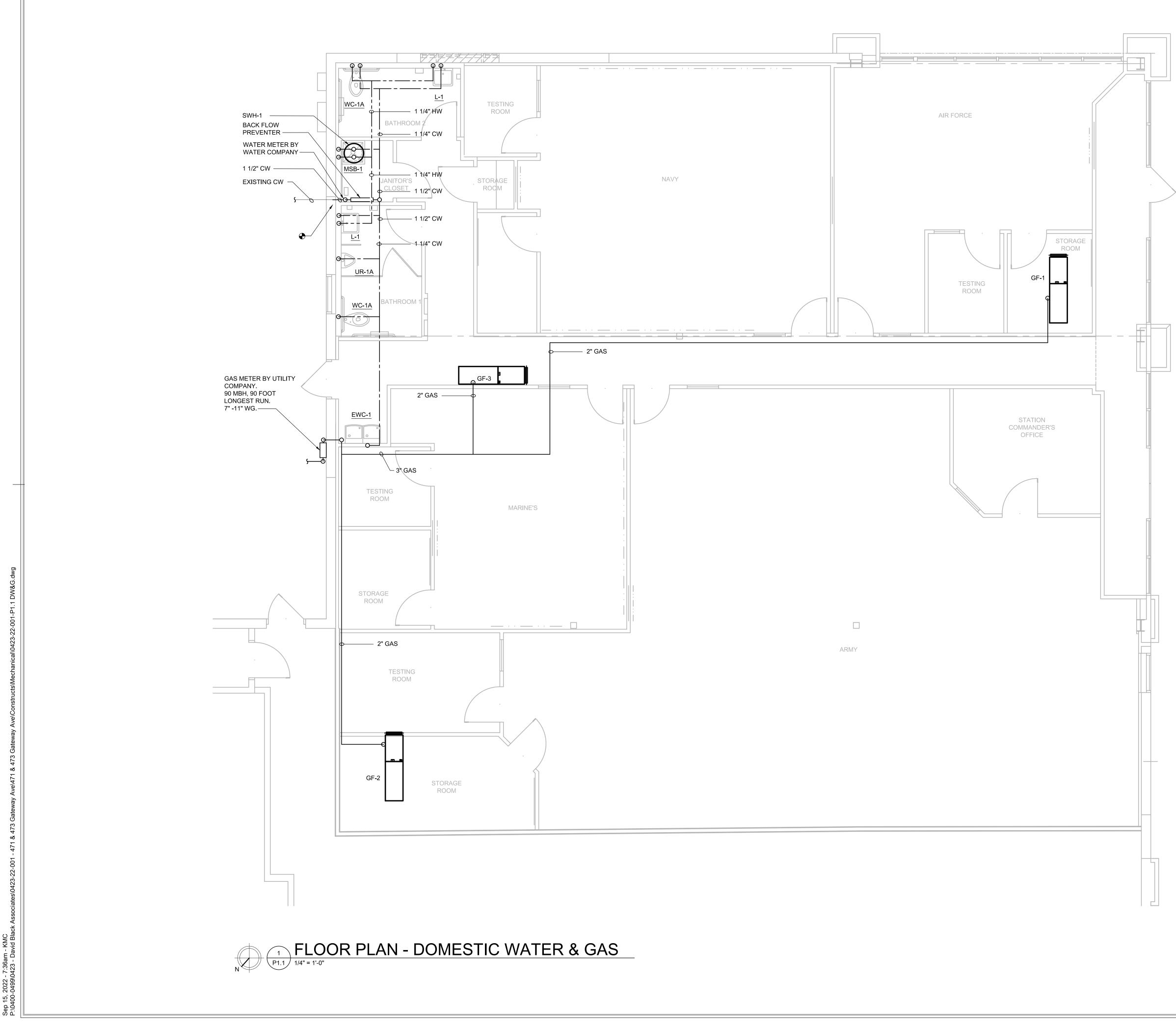
						ELECT	RICAL (60	) HZ)		
DESCRIPTION	MANUFACTURER	MODEL	CAPACITY	WATTS	HP	VOLTS/ PHASE	FLA	MCA	MOCP	DISC. SWITCH
STORAGE WATER HEATER	RHEEM	EGSP20	19.9 GAL, 18 GPH RECOVERY @ 100°F RISE 4.5 KW	4500	-	208/1	21.6	-	-	EC
DOMESTIC WATER THERMAL MIXING VALVE	WATTS	LFMMV	SHALL COMPLY WITH ASSE 1017 STANDARD	-	-	-	-	-	-	-
DOMESTIC WATER THERMAL MIXING VALVE	WATTS	LFUSG-B	SHALL COMPLY WITH ASSE 1070 STANDARD							



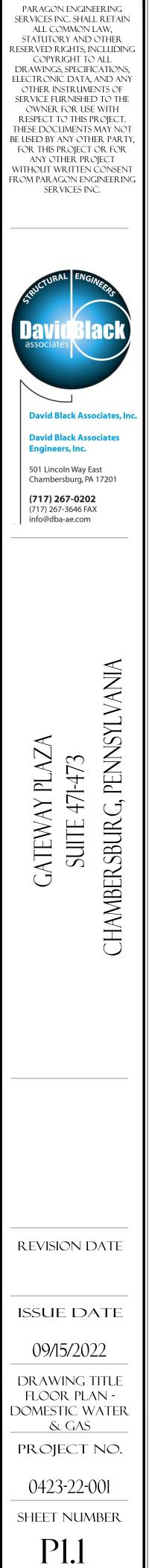








# PLUMBING GENERAL NOTES: 1. GAS PIPING TO RUN ABOVE CEILING.



PARAGON Engineering Services

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			ELECTRICA	AL SY	MBOL LEGEND (SYMBOLS ARE	STANDAR			
<u>*</u> * * * *	SINGLE FACE EXIT SIGN	<u> </u>	WALL MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR	0	LINE VOLTAGE THERMOSTAT	FAA	FIRE ALARM ANNUNCIATOR PANEL	<u>S</u>	WALL MOUNTED FIRE ALARM SPEAKER
	DOUBLE FACE EXIT SIGN	os	WALL SWITCH MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR	м	MOTOR OPERATED DAMPER	©_	DUCT SMOKE DETECTOR	Ø	WALL MOUNTED FIRE ALARM SPEAKER/STROBE
4_4	EMERGENCY BATTERY UNIT	©S	CEILING MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR	РВ	PUSH BUTTON	Ś	SMOKE DETECTOR	S	CEILING MOUNTED FIRE ALARM SPEAKER
9P 9	SINGLE / DUAL HEAD REMOTE LAMP	J <sub>P</sub>	JUNCTION BOX WITH LOW VOLTAGE POWER SUPPLY FOR OCCUPANCY SENSORS	s <sub>T</sub>	MANUAL MOTOR STARTER SWITCH	S	SMOKE DETECTOR WITH SOUNDER	Ì	CEILING MOUNTED FIRE ALARM SPEAKER/STROBE
	2'X4' RECESSED PRISMATIC LENS LIGHT FIXTURE / WITH EMERGENCY	PC	PHOTOCELL	S <sub>T30A</sub>	30A MANUAL MOTOR STARTER SWITCH	Ĥ	HEAT DETECTOR	K	KNOX BOX
	2'X2' RECESSED PRISMATIC LENS LIGHT FIXTURE / WITH EMERGENCY	LCP	LIGHTING CONTROL PANEL	φ	20A-120V DUPLEX RECEPTACLE	FS	CONNECTION TO WATER FLOW SWITCH		
	STRIP LIGHT FIXTURE / WITH EMERGENCY	тс	TIME CLOCK	•	20A-120V DOUBLE DUPLEX RECEPTACLE	13	CONNECTION TO TAMPER SWITCH		
0	ROUND RECESSED DOWNLIGHT / WITH EMERGENCY		CONTACTOR - SIZE & TYPE AS NOTED	FB	FLOOR BOX	F	MANUAL PULL STATION		
	WALL MOUNTED LIGHT FIXTURE		PANEL - 120/208V	ŧ	GROUND CONNECTION		WALL MOUNTED FIRE ALARM HORN/STROBE 15/30/75/115		
	EXTERIOR WALL PACK	Т	TRANSFORMER		VOICE OUTLET WITH 3/4" EMPTY CONDUIT TO ABOVE ACCESSIBLE CEILING	X	WALL MOUNTED STROBE 15/30/75/115		
S	SINGLE POLE SWITCH	J	JUNCTION BOX	•	DATA OUTLET WITH 3/4" EMPTY CONDUIT TO ABOVE ACCESSIBLE CEILING		WALL MOUNTED FIRE ALARM HORN		
S <sub>3</sub>	THREE WAY SWITCH	Ľ	NON-FUSED DISCONNECT SWITCH	V	VOICE/DATA OUTLET WITH 3/4" EMPTY CONDUIT TO ABOVE ACCESSIBLE CEILING	) E (	CEILING MOUNTED FIRE ALARM HORN/STROBE 15/30/75/115		
S <sub>4</sub>	FOUR WAY SWITCH	ď	FUSED DISCONNECT SWITCH	Τ <sub>V</sub>	CABLE TV OUTLET WITH 3/4" CONDUIT TO ACCESSIBLE OUT CEILING	E	CEILING MOUNTED STROBE 15/30/75/115		
S <sub>D</sub>	DIMMER SWITCH	Ø	MOTOR	FACP	FIRE ALARM CONTROL PANEL	Æ	CEILING MOUNTED FIRE ALARM HORN		

LIGHT FIXTURE SCHEDULE							MECHANICAL EQUIPMENT SCHEDULE									
AG M	MANUFACTURER	MODEL NUMBER	VOLTAGE		E DATA	DESCRIPTION	TAG	HP	WATTS	FLA	MCA	МОСР	VOLTAGE	PHASE	DISC SW	DESCRIPTION
A	LITHONIA	EPANL 2X4 4800LM 80CRI 40K MIN10 ZT 120	120	45	5,119	2' X 4' LED PANEL LIGHT FIXTURE	AHU-1	-	-	-	16.5	30	208	1	EC	AIR HANDLER
31	LITHONIA	EPANL 2X2 4000LM 80CRI 40K MIN10 ZT 120	120	37	4,121	2' X 2' LED PANEL LIGHT FIXTURE	AHU-2	-	-	-	16.5	30	208	1	EC	AIR HANDLER
32	LITHONIA	EPANL 2X2 4800LM 80CRI 40K MIN10 ZT 120	120	45	4,843	2' X 2' LED PANEL LIGHT FIXTURE	BB-1	-	1000	-	-	-	120	1	MFR	BASEBOARD HEATER
33	LITHONIA	EPANL 2X2 4000LM 80CRI 40K MIN10 ZT 120 DGA22	120	37	4,121	2' X 2' LED PANEL LIGHT FIXTURE WITH DRYWALL GRID ADAPTER	CU-1	-	-	-	12.0	20	208	1	EC	CONDENSING UNIT
c	LITHONIA	FML4W 48 5000LM 840 ZT MVOLT	120	53	5,000	1' X 4' LOW-PROFILE LED WRAPAROUND LIGHT FIXTURE	CU-2	-	-	-	17.0	25	208	1	EC	CONDENSING UNIT
D C	LITHONIA	WST LL LED 72K BN	120	11	-	LED EXTERIOR WALL MOUNTED FIXTURE	CU-3	-	-	-	17.0	25	208	1	EC	CONDENSING UNIT
E	GOTHAM	EVO6 30/05 AR MWD LSS	120	6	-	6" RECESSED DOWN LIGHT	EF-1	-	53	-	-	-	115	1	MFR	EXHAUST FAN
(1	LITHONIA	LHQM LED R HO	120	LED	2	THERMOPLASTIC BATTERY LED TYPE SINGLE FACED EXIT FIXTURE WITH 2 HEADS AND REMOTE CAPACITY	EF-2	-	53	-	-	-	115	1	MFR	EXHAUST FAN
(2	LITHONIA	LHQM LED R	120	LED	2	THERMOPLASTIC BATTERY LED TYPE SINGLE FACED EXIT FIXTURE WITH 2 HEADS	EWC-1	-	-	-	-	-	-	-	PLUG	ELECTRIC WATER COOLER
(3	LITHONIA	LHQM LED R HO RO	120	LED	-	THERMOPLASTIC BATTERY LED TYPE SINGLE FACED EXIT FIXTURE WITH NO HEADS	GF-1	-	-	-	8.8	15.0	115	1	EC	GAS FURNACE
(4	LITHONIA	ELM2L	120	LED	4	THERMOPLASTIC BATTERY LED TYPE LIGHTING UNIT WITH TWO(2) HEADS	GF-2	-	-	-	8.8	15.0	115	1	EC	GAS FURNACE
I			<u> </u>		I I		GF-3	-	-	-	8.8	15.0	115	1	EC	GAS FURNACE
NCLUDE ALL LIGHT FIXTURES WITH LAMPS. COORDINATE MOUNTING HEIGHTS WITH ARCHITECTURAL DRAWINGS PRIOR TO INSTALLATION. /ERIFY ALL CEILING TYPES SHOWN ON THE ARCHITECTURAL DRAWINGS AND PROVIDE ALL NECESSARY MOUNTING ACCESSORIES.							HP-1	-	-	-	11.0	20	208	1	EC	HEAT PUMP
EXIT SIGNS SHALL BE CEILING, WALL, OR END MOUNTED. FIELD COORDINATE FINAL MOUNTING REQUIREMENTS. EXIT SIGNS IN WAREHOUSE SHALL NOT EXCEED A MOUNTING HEIGHT OF 30'-0" TO TOP OF FIXTURE. SUSPENDED EXIT SIGNS SHALL BE MOUNTED TO A 4" SQUARE BOX SUSPENDED FROM A 1" RIGID CONDUIT. EXIT SIGNS SHALL HAVE DIRECTIONAL CHEVRONS AS SHOWN ON PLANS. PROVIDE APPROPRIATE CORD/CABLE LENGTH FOR ALL PENDANT MOUNTED FIXTURES. REFER TO ARCHITECTURAL FLOOR PLAN, SECTIONS, AND INTERIOR ELEVATIONS FOR ADDITIONAL INFORMATION WHEN MOUNTING							HP-2	-	-	-	11.0	20	208	1	EC	HEAT PUMP
							SWH-1	-	4500	21.6	-	30	208	1	EC	STORAGE WATER HEATER
IOR TO LIC	HT OF FIXTURES IS NOT CLEARLY STATED OR SHOWN ON DRAWINGS. R TO LIGHT FIXTURE SUBSTITUTIONS, CONTRACTOR SHALL PROVIDE POINT-BY-POINT CALCULATION FOR EACH INDIVIDUAL SPACE IN WHICH A SUBSTITUTION IS REQUESTED. NO SUBSTITUTIONS WILL BE ACCEPTED OUT PROFESSIONAL PREPARED CALCULATIONS.								-	-	7.7	15	208	1	EC	SPLIT SYSTEM

ELECTRICAL ABBREVIATIONS									
A	AMPERES	КW	KILOWATTS						
AFF	ABOVE FINISHED FLOOR	MOD	MOTOR OPERATED DAMPER						
ALUM	ALUMINUM	NL	NIGHT LIGHT						
ATS	AUTOMATIC TRANSFER SWITCH	NO	NUMBER						
BLDG	BUILDING	Р	POLE						
С	CONDUIT	PH	PHASE						
CTR	COUNTERTOP MOUNTED	SCH	SCHEDULE						
DISC	DISCONNECT	SN	SOLID NEUTRAL						
DWG	DRAWING	sw	SWITCH						
EXIST	EXISTING	TYP	TYPICAL						
F	FUSE	V	VOLTS						
FLA	FULL LOAD AMPS	VFD	VARIABLE FREQUENCY DRIVE						
GFI	GROUND FAULT INTERRUPTER	w	WATTS, WIDE						
GRD	GROUND	WP	WEATHERPROOF						
HP	HORSEPOWER	XFMR	TRANSFORMER						





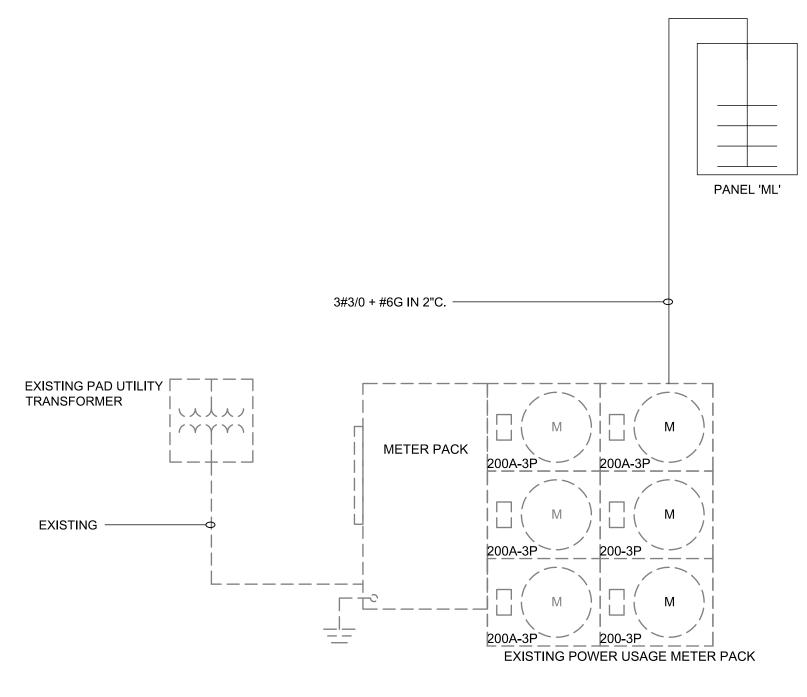
## SECTION 16000 - ELECTRICAL

- FURNISH ALL LABOR AND MATERIALS REQUIRED TO COMPLETE ALL WORK IN BUILDING INCLUDING LIGHTING, POWER, OUTLETS FOR SYSTEMS AND SERVICES.
- ELECTRICAL CONTRACTOR SHALL FAMILIARIZE THEMSELVES WITH THE SITE AND EXAMINE THE SAME TO BE SATISFIED AS TO THE EXTENT OF THE WORK AND CONDITIONS UNDER WHICH THEY ARE OBLIGATED TO PERFORM THE WORK. NO ADDITIONAL COMPENSATION WILL BE ALLOWED BY FAILURE TO DETERMINE ACTUAL CONDITIONS.
- EC SHALL FURNISH TOOLS, LABOR AND MATERIAL REQUIRED TO COMPLETE THE WORK DESCRIBED AND OUTLINED IN THE ELECTRICAL CONTRACT, INCLUDING BUT NOT LIMITED TO THE CONSTRUCTION AND INSTALLATION OF ELECTRICAL POWER AND LIGHTING SYSTEMS. BEFORE ORDERING ANY EQUIPMENT OR MATERIALS, VERIFY ALL CRITICAL DIMENSIONS, ELECTRICAL RATINGS, ENVIRONMENTAL CONSIDERATIONS AND LOCATION AS PERTAINING TO THE USE AND INSTALLATION OF EQUIPMENT OR CONSTRUCTION OF THE PROJECT.
- EQUIPMENT, FIXTURES, DEVICES, MATERIAL SHEETS, CATALOG OR MANUFACTURERS REFERENCE USED IN DESCRIBING AN ITEM IS MERELY DESCRIPTIVE AND NOT RESTRICTIVE UNLESS OTHERWISE NOTED. ELECTRICAL CONTRACTOR SHALL CLEARLY IDENTIFY THE PROPOSED PRODUCT, MODEL, TYPE AND DISCRETION AS TO THE ACCEPTANCE AND APPLICATION.
- EC SHALL SUBMIT TO OWNER FOR REVIEW SUBMITTALS ON LIGHT FIXTURES, LIGHTING CONTROLS, PANELBOARDS, AND DISCONNECT SWITCHES.
- EC SHALL TEST ALL ELECTRICAL CONDUCTORS TO INSURE PROPER INSTALLATION AND CONTINUITY. TESTING SHALL BE PERFORMED BY A QUALIFIED PROFESSIONAL WORKING WITHIN THE FIELD USING UP TO DATE TESTING EQUIPMENT. TESTING SHALL BE DONE AT NO ADDITIONAL COST TO THE OWNER.
- ALL SURFACE RACEWAY SHALL BE PRIME COATED READY FOR FIELD PAINTING UNDER GENERAL PORTION OF THE CONTRACT.
- ALL PULL BOXES, JUNCTION BOXES AND OUTLET BOXES SHALL BE PROVIDED WITH A COVER PLATE. ALL EMPTY CONDUITS SHALL HAVE PULL STRINGS. BOXES FOR CEILING FANS MUST BE "FAN RATED". BOXES MUST BE RATED FOR THE WEIGHT THEY ARE TO SUPPORT.
- NEW POWER SERVICE IS TO BE INSTALLED. COORDINATE NEW TELEPHONE/DATA AND CATV SERVICES AS REQUIRED. COORDINATE SERVICE REQUIREMENTS WITH UTILITIES. OWNER WILL PAY EACH UTILITY'S SERVICE COSTS DIRECTLY TO THE UTILITY. THIS CONTRACTOR IS RESPONSIBLE FOR ALL TRENCHING, BACKFILLING AND RESTORATION TO MATCH ADJACENT AREAS.
- ALL POWER WIRING FOR HVAC AND PLUMBING EQUIPMENT, INCLUDING POWER WIRING THROUGH CONTROL DEVICES SUCH AS MOTOR STARTERS, LINE VOLTAGE SWITCHES AND THERMOSTATS, DISCONNECT SWITCHES, ETC, SHALL BE FURNISHED AND INSTALLED UNDER ELECTRICAL PORTION OF CONTRACT UNLESS NOTED OTHERWISE. ALL CONTROL DEVICES AND CONTROL WIRING FOR HVAC AND PLUMBING EQUIPMENT WILL BE FURNISHED AND INSTALLED UNDER HVAC AND PLUMBING PORTION OF CONTRACT. FINAL CONNECTION OF ALL POWER WIRING SHALL BE PERFORMED UNDER PORTION OF CONTRACT FURNISHING EQUIPMENT. FINAL CONNECTION OF ALL CONTROL WIRING WILL BE PERFORMED UNDER PORTION OF CONTRACT FURNISHING EQUIPMENT. FINAL CONNECTIONS TO MECHANICAL EQUIPMENT SHALL BE MADE WITH FLEX CONNECTORS.
- ALL RECEPTACLES SHALL BE MOUNTED 20" AFF TO TOP OF BOX UNLESS OTHERWISE NOTED.
- COUNTER MOUNTED RECEPTACLES SHALL BE MOUNTED AT HEIGHT AS REQUIRED.
- LIGHTING CONTROL SWITCHES SHALL BE MOUNTED 44" AFF TO TOP OF BOX UNLESS OTHERWISE NOTED.
- LED DRIVERS SHALL BE RATED AT 120 VOLT. LIGHT FIXTURES SHALL COMPLY WITH NEC ARTICLE 410.130.
- ALL BRANCH WIRING SHALL BE TYPE "MC" WHERE ALLOWED BY CODE OR SHALL BE TYPE THHN/THWN IN E.M.T. UNLESS NOTED OTHERWISE. ALL PANEL
  FEEDERS SHALL BE IN EMT CONDUIT WITH COMPRESSIONS FITTINGS. WIRE SHALL NOT BE SMALLER THAN #12. ALL WIRING UNDERGROUND AND IN WET
  LOCATIONS SHALL BE XHHW. ALL CIRCUITS SHALL HAVE SEPARATE GROUND WIRE. ALL WIRING IN THIS CONTRACT SHALL BE IN CONDUIT IN PLENUMS UNLESS
  NOTED OTHERWISE. ANY CABLES INSTALLED IN PLENUMS BY OWNER SHALL BE PLENUM RATED.
- ALL WIRING SHALL BE COPPER, MINIMUM SIZE E.M.T. CONDUIT SHALL BE 1/2". POWER WIRING #12 THROUGH #1 SHALL BE RATED AT 60 DEGREES C. ALL OTHER WIRING SHALL BE RATED AT 75 DEGREES C.
- ANY CONDUIT SHOWN TO BE INSTALLED WITHIN AN EXTERIOR WALL MUST BE INSTALLED ON THE INTERIOR SIDE OF THE WALL INSULATION.
- ALL DISCONNECT SWITCHES SHALL BE SIZE AND NEMA ENCLOSURE AS STATED ON DRAWINGS. SWITCHES SHALL BE QUICK MAKE, QUICK BREAK, GENERAL DUTY. FUSES SHALL BE BUSSMAN TYPE RK-1 CURRENT LIMITING, TIME DELAY-DUAL ELEMENT. PROVIDE ONE COMPLETE SET OF SPARE FUSES FOR EACH SIZE USED. DISCONNECTS SHALL BE MANUFACTURED BY SQUARE D, CUTLER HAMMER OR SIEMENS.
- ALL PANELBOARDS SHALL BE THE PRODUCT OF A SINGLE MANUFACTURER. THE SYSTEM IS BASED ON SQUARE D; HOWEVER, COMPARABLE EQUIPMENT BY CUTLER HAMMER OR SIEMENS WILL BE ACCEPTABLE. PANELBOARDS OVER 42 CIRCUITS SHALL BE DOUBLE PANELS. TANDEM AND HALF SPACE CIRCUIT BREAKERS SHALL NOT BE USED. PANELBOARDS SHALL HAVE HINGED LOCKABLE COVER. PROVIDE TYPED PANELBOARD SCHEDULE INSIDE DOOR OF PANELBOARD WITH NUMBERS CORRESPONDING WITH BREAKER NUMBERS. PROVIDE TYPED SOURCE OF SUPPLY LABEL FOR EACH SWITCHBOARD, SWITCHGEAR AND PANELBOARD INDICATING EACH DEVICE OR EQUIPMENT WHERE THE POWER ORIGINATED. PANELBOARD SCHEDULES AND SOURCE SUPPLY LABELS, CIRCUIT DIRECTORY OR CIRCUIT IDENTIFICATION SHALL BE COMPLETED AS REQUIRED BY NEC ARTICLE 408.4. SERIES RATED PANELBOARD ASSEMBLIES WILL NOT BE APPROVED. MAIN PANEL TO BE MARKED WITH AIC RATING.
- DUPLEX INDOOR RECEPTACLES SHALL BE 20A-120V-UL LISTED, COMMERCIAL SPECIFICATION GRADE AS MANUFACTURED BY HUBBELL #CBRS20 OR SIMILAR BY LEVITON, A&H, P&S, BRYANT OR EAGLE. ACH RECEPTACLE SHALL BE EQUIPPED WITH A PLASTIC WALL PLATE. (COLOR TO BE SELECTED BY THE ARCHITECT AND TO MATCH DEVICE).
- DUPLEX INDOOR AND OUTDOOR G.F.I. RECEPTACLES SHALL BE 20A-120V-UL LISTED. RECEPTACLES SHALL BE USED AS END-OF-LINE TYPE. EACH OUTDOOR RECEPTACLE SHALL BE EQUIPPED WITH A WEATHER PROOF WHILE-IN-USE COVER. OUTLET BOX HOOD SHALL BE EXTRA DUTY. INTERIOR RECEPTACLES SHALL BE HUBBELL #GFTRST20 AND EXTERIOR RECEPTACLES SHALL BE HUBBELL #GFTWRST20 WEATHER RESISTANT OR SIMILAR BY LEVITON, A&H, P&S, BRYANT OR EAGLE. EXTERIOR RECEPTACLES SHALL BE WEATHER RESISTANT RATED, "WR". OUTLET BOX HOOD SHALL BE LISTED AS "EXTRA DUTY". GFCI PROTECTED RECEPTACLES SHALL BE READILY ACCESSIBLE TO COMPLY WITH NEC ARTICLE 210.8. IF NOT READILY ACCESSIBLE GFI BREAKERS SHALL BE USED.
- LIGHTING CONTROL SWITCHES SHALL BE 20A-120V-UL LISTED. COMMERCIAL SPECIFICATION GRADE AS MANUFACTURED BY HUBBELL #CSB120 SERIES OR SIMILAR BY LEVITON, A&H, P&S, BRYANT OR EAGLE. EACH SWITCH SHALL BE EQUIPPED WITH A PLASTIC WALL PLATE. (COLOR TO BE SELECTED BY THE ARCHITECT AND TO MATCH DEVICE).
- OCCUPANCY SENSORS SHALL BE AS REQUIRED FOR THE INTENDED AREAS SHOWN ON THE DRAWINGS BY WATT STOPPER COMPANY OR SIMILAR BY LEVITON OR SENSOR SWITCH.
- PROVIDE ALL ELECTRICAL SYSTEM AND EQUIPMENT GROUNDS AS REQUIRED BY THE CURRENT EDITION OF THE NATIONAL ELECTRICAL CODE AND THE CURRENT EDITION OF THE NATIONAL ELECTRICAL SAFETY CODE UNLESS NOTED OTHERWISE.
- BONDING JUMPERS, WITH APPROVED GROUND FITTINGS, SHALL BE INSTALLED AT ALL RACEWAYS. EQUIPMENT ENCLOSURES, PULL BOXES, ETC., TO MAINTAIN GROUND CONTINUITY, WHERE REQUIRED BY CODE. PROVIDE INTERSYSTEM BONDING PER NEC,
- COORDINATE WORK WITH OTHER TRADES AND CONDITIONS TO AVOID INTERFERENCE BETWEEN PIPING, DUCTS, AND EQUIPMENT, ARCHITECTURAL OR STRUCTURAL FEATURES. IN CASE OF INTERFERENCE, THE ARCHITECT DECIDES WHICH WORK IS TO BE RELOCATED, REGARDLESS OF WHICH IS FIRST INSTALLED.
- THE INSTALLATION MUST COMPLY WITH ALL FEDERAL, STATE, MUNICIPAL OR OTHER AUTHORITY'S LAWS, RULES, OR REGULATIONS.
- AN ELECTRICAL INSPECTION SHALL BE MADE BY THE LOCAL INSPECTION AGENCY. ALL EQUIPMENT AND ITS COMPONENTS SHALL BEAR THE UNDERWRITERS LABEL.
- ALL LIGHT FIXTURES SHOWN SHALL BE SUPPORTED WITH FORMED CHANNELS, ANGLES, RODS, CLAMPS, WASHERS, ETC., OF SUFFICIENT SIZE AND STRENGTH TO SUPPORT THE WEIGHT OF THE FIXTURE FROM THE BUILDING STRUCTURE. ALL ADDITIONAL MOUNTING HARDWARE REQUIRED FOR A COMPLETE INSTALLATION IS TO BE SUPPLIED UNDER THIS CONTRACT. ALL RECESSED TROFFER LIGHTS SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE VIA FOUR (4) INDEPENDENT FOURTEEN (14) GAUGE WIRES, ONE FROM EACH CORNER OF THE FIXTURE.
- LIGHT FIXTURE SCHEDULE IS AS INDICATED ON FLOOR PLANS.
- LIGHT FIXTURES SHALL BE FOR CEILING TYPE AS REQUIRED.
- ALL PENETRATIONS THROUGH FIRE RATED WALL AND FLOOR SHALL BE SEALED WITH A SEALANT RATED FOR ITS USE. ALL OUTLETS BOXES SHALL HAVE COVERS.
- ALL WIRING AND CONDUIT SHALL BE CONCEALED IN FINISHED AREAS OF THE BUILDING.
- ARCHITECT/OWNER RESERVES THE RIGHT TO MOVE ANY OUTLET A DISTANCE OF TEN FEET BEFORE ROUGHING IN, AT NO ADDITIONAL EXPENSE TO THE OWNER.
- ALL EMERGENCY LIGHTING UNITS AND EXIT FIXTURES SHALL BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS. CONNECT TO LOCAL LIGHTING CIRCUIT AHEAD OF ANY SWITCHES.
- CONTRACTOR SHALL COORDINATE SERVICES WITH (PPL, MET ED, BGE), VERIZON, AND CATV COMPANY.
- RELOCATE AND RECONNECT, AS REQUIRED BY CONSTRUCTION, OUTLETS, LIGHTS OR OTHER ELECTRICAL EQUIPMENT ENCOUNTERED DURING CONSTRUCTION. EXISTING ELECTRICALLY POWERED EQUIPMENT WHICH IS TO REMAIN BUT IS ON SAME CIRCUIT AS EQUIPMENT BEING REMOVED, SHALL BE RECONNECTED AND LEFT IN OPERATING CONDITION. ALL EXISTING EQUIPMENT THAT IS TO REMAIN SHALL BE LEFT IN OPERATING CONDITION.
- IN THE EXISTING BUILDING SECTIONS, ALL NEW CONDUITS SHALL BE RUN ABOVE LIFT-OUT CEILINGS. IF THIS IS IMPOSSIBLE, THE CONTRACTOR SHALL CHASE EXISTING BLOCK WALLS WITH FLEXIBLE STEEL CONDUIT, OR THE CONTRACTOR SHALL USE SURFACE METAL RACEWAY. WHERE HE CANNOT CHASE THE BUILDING SECTIONS, THE CONTRACTOR SHALL USE CONDUIT CONCEALED INSIDE THE STUD WALLS.
- OSHA RECOMMENDED 29 CODE OF FEDERAL REGULATIONS PART 1910, SUBPART S.
- ANSI/NFPA-NATIONAL ELECTRICAL CODE, LATEST LOCALLY ADOPTED VERSION. (NEC).
- NFPA 70E-LATEST ADOPTED ADDITION-STANDARD FOR ELECTRICAL SAFETY IN THE WORKPLACE.

Sep 15, 2022 - 7:42am - KMC P:\0400-0499\0423 - David Black Associates\0423-22-001 - 471 & 473 Gateway Ave\471 & 473 Gateway Ave\Constructs\Electri

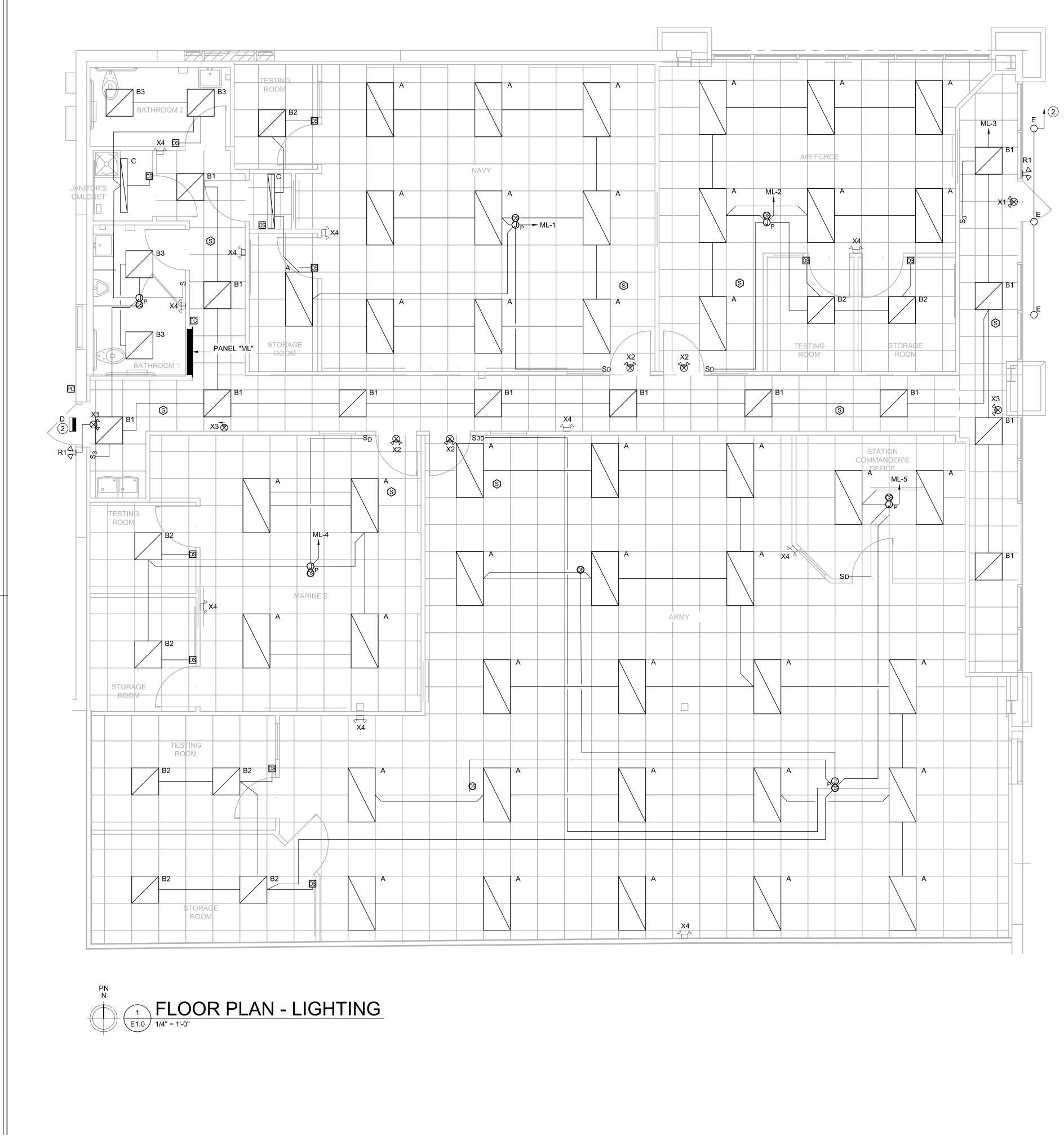
PANELBOARD ML									1					
			RATINGS: 120/208V, 3PH, 4W + G						BUS RATING: 200A					
			MOUNTING: SURFACE						MAIN RATING: 200A MAIN RATING: MCB 200A					
			MOONTING. SON AGE					MAIN RATING: MCB 200A MIN. SHORT CIRCUIT RATING: AMPS						
	LOAD (AMPS)			E	BKR	CKT		CKT	BK		AMPS	10	AD (AM	PS)
A	B	C C	LOAD DESCRIPTION	D	AMP	NO.		NO.	AMP	P	LOAD DESCRIPTION	A	B	
4	$\sim$		NAVY LIGHTING	1	20		A	2	20	1	AIR FORCE LIGHTING	3		$\overline{\mathbf{\nabla}}$
$\sim$	6	>	CORRIDOR / BATH. / JAN. LTG	1	20	3	В	4	20	1	MARINE'S LIGHTING	$\sim$	2	$\leq$
$\sim$	$\searrow$	9	ARMY LIGHTING	1	20	5	C		20	1	SMOKE DETECTORS	>	$\overline{}$	0
6	$\Leftrightarrow$	Š	REC. / EF-1/EF-2/EF-3	1	20	7	A	8	20	1	NAVY TEST RM. REC.	7	>	
$\langle \cdot \rangle$	0		EXTERIOR LIGHTING	1	20	9	В	10	20	1	NAVY TEST RM. REC.	$\overset{\cdot}{\searrow}$	7	$\leq$
	$\searrow$	15	NAVY STOR. REC.	1	20	11	C		20	1	NAVY RECEPTACLES	$\leq$	$\leq$	10
10		$\overset{!}{\sim}$	NAVY RECEPTACLES	1	20		A	14	20	1	NAVY RECEPTACLES	10	$\leq$	
$\sim$	12	>	NAVY RECEPTACLES	1	20	15	В	16	20	1	NAVY COMM. BOARD	$\sim$	7	
$\sim$	$\leq$	10	CORR. / BATH. / JAN. REC.	1	20	17	C		20	1	HALLWAY RECEPTACLES	>	$\leq$	10
10		$\geq$	AIR FORCE RECEPTACLES	1	20	_	A	20	20	1	AIR FORCE COMM. BOARD	7		
$\sim$	12	>	AIR FORCE RECEPTACLES	1	20	21	В	22	20	1	AIR FORCE RECEPTACLES	$\overset{\cdot}{\searrow}$	7	$\leq$
	$\sim$	12	AIR FORCE TEST RM. REC.	1	20	23	C		20	1	EXTIRIOR LIGHTS	$\leq$	$\leq$	8
15	$\langle \rangle$	$\leq$	AIR FORCE STOR. REC.	1	20	25	A	26	20	1	EWC-1 *	2	$\leq$	
$\sim$	12	>	MARINE'S RECEPTACLES	1	20	27	В	28	20	1	MARINE'S RECEPTACLES	$\sim$	10	$\leq$
	$\sim$	12	MARINE'S RECEPTACLES/TV	1	20	29	C		20	1	MARINE'S COMM. BOARD	>		7
12	$\langle \rangle$	$\leq$	MARINE'S TEST RM. REC.	1	20	31		32	20	1	DOOR BELL CHIME	$\overline{1}$	>	
	15	$\Leftrightarrow$	MARINE'S STOR. REC.	1	20	33	В	34	20	1	ARMY RECEPTACLES		10	$\leq$
	$\sqrt{1}$	7	ARMY RECEPTACLES	1	20	35	C		20	1	ARMY RECEPTACLES	$\leq$		10
10	$\sim$	<u> </u>	ARMY RECEPTACLES	1	20	37		38	20	1	ARMY RECEPTACLES	10	>	
$\sim$	10	$\Leftrightarrow$	ARMY RECEPTACLES	1	20	39	В	40	20	1	ARMY RECEPTACLES		10	
	$\sim$	6	ARMY COMM. BOARD	1	20	41	C		20	1	ARMY RECEPTACLES/TV	$\Leftrightarrow$		8
10	$\Leftrightarrow$	Š	COMMANDERS OFFICE REC.	1	20		A	44	20	1	COMMANDERS OFFICE REC.	10	>	
	10	$\Leftrightarrow$	ARMY TEST RM. REC.	1	20	45	В	46	20	1	ARMY TEST RM. REC.		10	
	$\sim$	15	ARMY STOR. REC.	1	20	47	C		20	1	ARMY STOR. REC.	$\Leftrightarrow$		10
2	$\bigcirc$	$\sim$	ARMY TV	1	20	49	A	50	20	1	ROOF MAINTENANCE REC.	2	>	
~	2	$\Leftrightarrow$	ARMY RECEPTACLES	1	20	51	В	52	20	1	RECEPTACLES		3	
	$\langle , $	13	HAND DRYER BATHRM. 1	1	20	53	C		20	1	RECEPTACLES	>	Ň	3
13	$\sim$	$\leq$	HAND DRYER BATHRM. 2	1	20		A	56	15	2	SSCU-1	8	>	
$\sim$	3	>	CORRIDOR CEILING RECEPT.	1	20	57		58	10	2		$\sim$	8	
	$\langle \langle \cdot \rangle$	3	CORRIDOR CEILING RECEPT.	1	20	59	C		20	1	BATHRM. 1 UTILITIES	>	Ň	1
0	$\bigcirc$	$\searrow$	DOOR CHIMES	1	20	61	1.1.1	62	20	1	BATHRM. 2 UTILITIES	1	>	
$\sim$	8	$\Leftrightarrow$	BB-1	1	20	63	В	64	20	1	BB-1	$\overline{}$	8	
	$\langle \cdot \rangle$	4	HEAT TRACE **	1	20	65	C		20	1	GF-1	$\Leftrightarrow$	Š	7
7	$\sim$	$\sim$	GF-2	1	20	67		68	20	1	GF-3	7	>	
-	13	$\Leftrightarrow$	AHU-1	2	30	69	В	70	30	2	AHU-2	$\leq$	13	
	2	13		2	50	71	C		00	2		$\Leftrightarrow$	2	13
10		$\sim$	CU-1	2	20	73		74	25	2	CU-2	14	$\Leftrightarrow$	
	10	$\Leftrightarrow$		2	20	75	В	76	25	2			14	
		14	CU-3	2	25	77	C		20	2	HP-1	$\Leftrightarrow$		9
14		$\overset{\cdot \cdot }{\searrow}$		~	20		A	80	20	~		9	$\Leftrightarrow$	Ň
	9	$\Leftrightarrow$	HP-2	2	20	81	В	82	30	2	SWH	Š	22	
	$\searrow$	9		2	20	83	C		00	2		$\Leftrightarrow$	<u> </u>	22
$\leq$	COMMENTS: * GFCI RATED BREAKER.							$\frown$	$\leq$					
	** 30MA GFCI TYPE CIRCUIT BREAKER.													
		*** MAIN BREAKER IS 100% RATED.								4				

			MAIN BREAKER IS 100% RATED.					
211.1	250.5	258.7	TOT	AL AMPS - PHASE A, B, C				
86	KVA	240	AMPS	TOTAL CONNECTED LOAD				
68	KVA	189	AMPS	TOTAL DEMAND LOAD - NO SPARE				

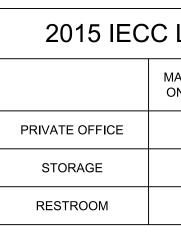


RISER DIAGRAM





15, 2022 -sers\KMC\a



- SMOKE DETECTORS TO BE HARDWIRED. POWER FROM CIRCUIT <u>ML-6</u>.
- 2. EXTERIOR LIGHTING TO BE CONTROLLED VIA PHOTOCELL AND TIME CLOCK WITH MANUAL OVERRIDE SWITCH. POWER FROM CIRCUIT <u>ML-24</u>.

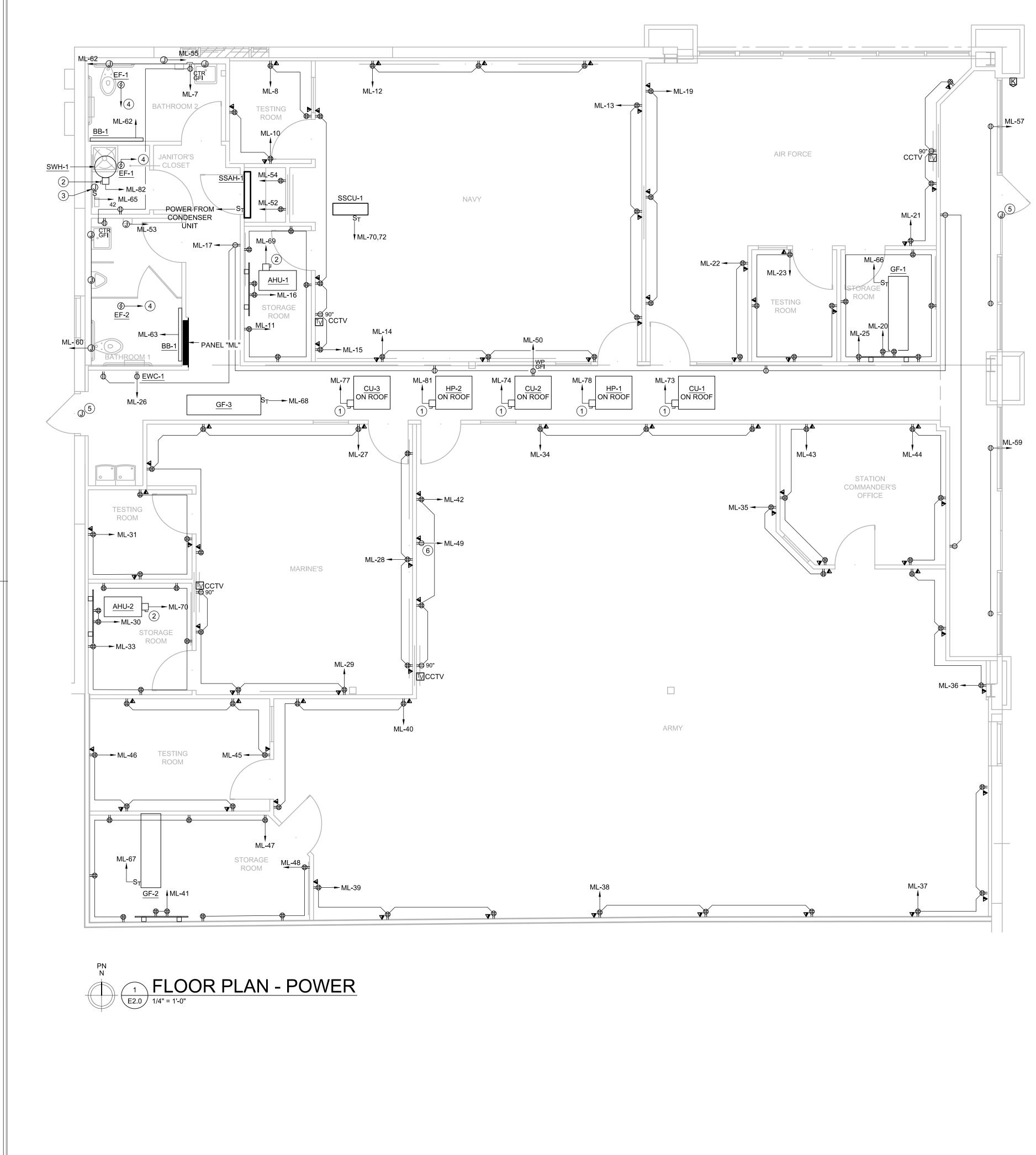
# 2015 IECC LIGHTING CONTROL REQUIREMENTS

/ANUAL ON/OFF	AUTO OFF - OCCUPANCY SENSOR	AUTO ON < 50% - OCCUPANCY SENSOR	FULL AUTO ON - OCCUPANCY SENSOR
х	×		
х	х		
х	х		х

NUMBERED NOTES: (THIS SHEET ONLY)









- 5. JUNCTION BOX FOR DOOR CHIME. WIRED TO CIRCUIT ML-32.

NUMBERED NOTES: (#) (THIS SHEET ONLY)

1. 30A-2P+SN-NF-240V-NEMA-3R DISCONNECT SWITCH.

2. 30A-2P+SN-NF-240V-NEMA-1 DISCONNECT SWITCH.

3. OUTLET FOR HEAT TRACE - 1.0KW-120V-1PHASE. PROVIDE DISCONNECT SWITCH WITH LOCKING COVER PLATE.

4. CONNECT TO RECEPTACLE CIRCUIT ML-7 THRU COMBINATION 2 POLE FAN / LIGHT CONTROL SWITCH FOR THIS ROOM.

6. MOUNTED 7'-6" AFF WITH CABLE BOX WITH TWO PULL STRINGS AND WOOD BLOCKING. TV AND MOUNT TO BE PROVIDED AND INSTALLED BY ARMY AT LATER DATE.



