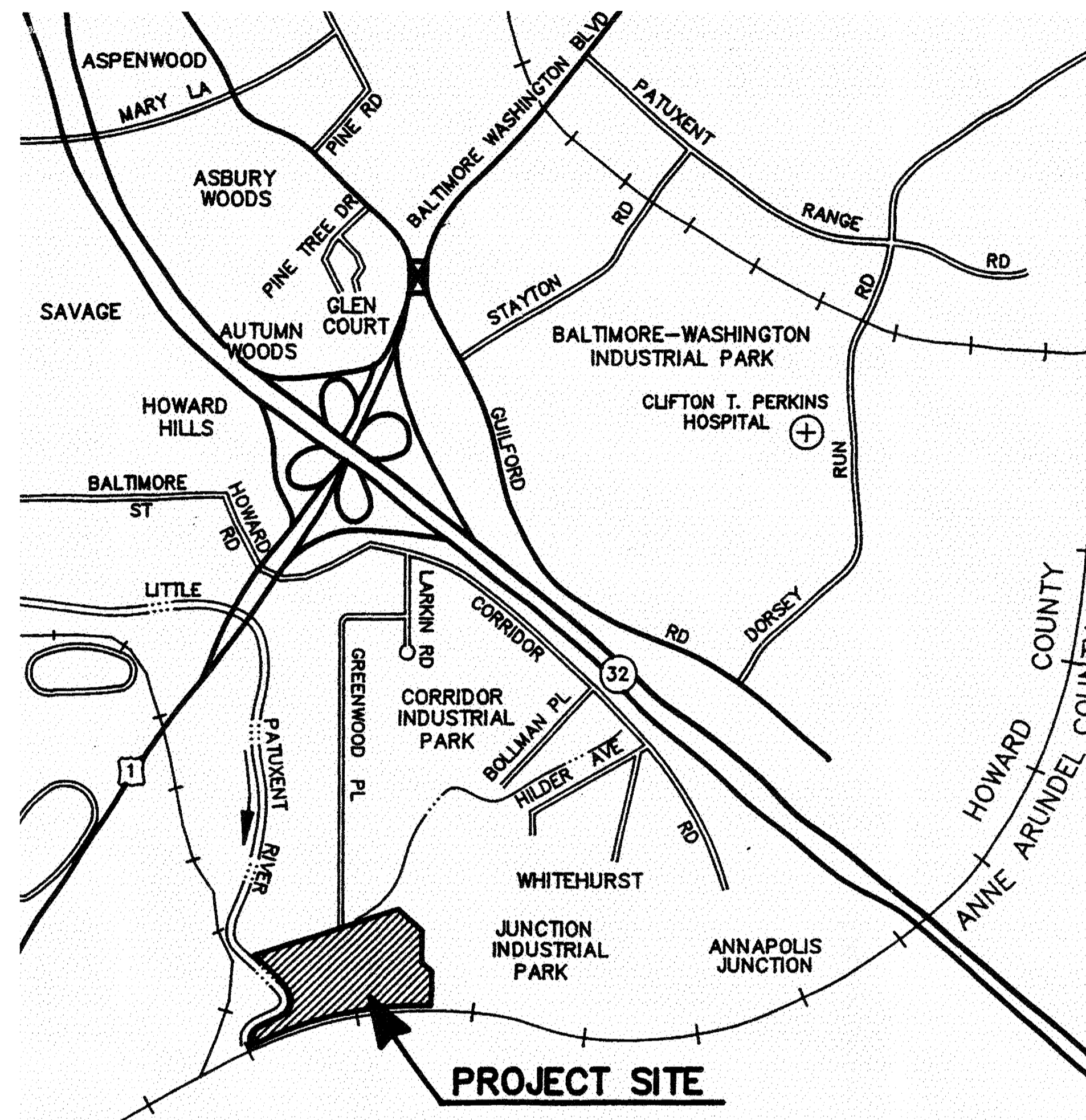


# HOWARD COUNTY, MARYLAND

## LITTLE PATUXENT WATER RECLAMATION PLANT



### ADDITION NO. 6 LABORATORY RENOVATION

CAPITAL PROJECT NO. S-6205  
CONTRACT NO. 20-3841

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

_____ DIRECTOR OF PUBLIC WORKS	_____ DATE	_____ CHIEF, BUREAU OF ENGINEERING	_____ DATE
_____ CHIEF, BUREAU OF UTILITIES	_____ DATE	_____ CHIEF, WATER & SEWER DIVISION	_____ DATE

THIS DRAWING WAS  
ORIGINALLY APPROVED  
FOR CONSTRUCTION  
AND SEALED BY  
ROBERT J. RECTANUS, JR.  
A REGISTERED  
PROFESSIONAL ENGINEER  
IN THE  
STATE OF MARYLAND,  
NO. 22927



**BLACK & VEATCH** LLP  
Gaithersburg, Maryland

#### ASSOCIATE DESIGN FIRMS

**STANTEC CONSULTING, LTD.**  
Surrey, British Columbia

**BRYANT, BRYANT, & WILLIAMS**  
Washington, D. C.

**A. MORTON THOMAS & ASSO., INC.**  
Rockville, Maryland

**LACH ELECTRIC CORPORATION**  
Baltimore, Maryland

CONFORMED TO CONSTRUCTION RECORDS 11/03/03

SHEET  
1 OF 28

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LIST OF DRAWINGS

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A  
B  
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D  
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A  
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DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND  
  
CHIEF, BUREAU OF UTILITIES DATE



**BLACK & VEATCH**  
Gaithersburg, Maryland  
  
REG. PROF. ENGR. \_\_\_\_\_ DATE \_\_\_\_\_

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DES: SLF							
DRN: SLF							
CHK:							
DATE:	11/03/03	CONFORMED TO CONSTRUCTION RECORDS		RHH	RJR	RJR	
	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP	

LAYOUT/OVERVIEW  
CIVIL  
  
LIST OF DRAWINGS

LITTLE PATUXENT WATER RECLAMATION PLANT  
ADDITION NO. 6  
LABORATORY RENOVATION  
  
CAPITAL PROJECT S-6205  
CONTRACT NO. 20-3841  
  
HOWARD COUNTY, MARYLAND

SCALE  
AS  
SHOWN  
  
SHEET  
2 OF 28  
  
L2

058472-5  
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**GENERAL LEGEND**

	SURFACED STREET, ROAD OR DRIVE		BUILDINGS, STRUCTURES
	SURFACED STREET, ROAD OR DRIVE WITH CURBS		STRUCTURES UNDERGROUND
	NON-SURFACED STREET, ROAD OR DRIVE		FUTURE BUILDINGS, STRUCTURES
	CONCRETE WALK		FENCE
	CATCH BASIN		FENCE, WOOD
	MANHOLE		RAILROAD, EACH TRACK
	DRAINAGE COURSE OR FLOW LINE		CENTERLINE
	EXISTING GROUND CONTOUR		HEDGE, BRUSH, SHRUBS, WOODS
	FINISH GRADE CONTOUR		SWAMP
	BANK OR SLOPE LINES		FIRE HYDRANT
	TEST HOLE AND NUMBER		YARD HYDRANT
	SURVEY LINE WITH PI, PT, OR POT		STREET LIGHT POLE
	CONCRETE ENCASEMENT-PLAN		TRAFFIC SIGN
	CONCRETE REACTION BLOCKING AT BEND, PLUG OR TEE		STOPSIGN
	DRAINS OR CULVERTS		WATER OR GAS VALVE
	TUNNEL CASING - PLAN		WATER OR GAS METER
	TUNNEL CASING - PLAN		TELEPHONE OR POWER POLE WITH GUY ANCHOR
	EXISTING		SECTION NUMBER OR DETAIL LETTER
	NEW		DRAWING NUMBER ON WHICH SECTION OR DETAIL APPEARS, OR WHERE SECTION IS CUT OR DETAIL IS NOTED
	NEW WATER LINE OR SEWER IN PROFILE		WALL ELEVATION
	NON-CONNECTING PIPING		AREA DESIGNATION
	CONSTRUCTION EASEMENT LINE		DOOR, WINDOW AND LOUVER SCHEDULE REFERENCE
	EASEMENT LINE		SCHEDULE NUMBER
	RIGHT-OF-WAY LINE		ROOM NUMBER
	PROPERTY LINE		AREA DESIGNATION
	PERMANENT EASEMENT LINE		EQUIPMENT REPRESENTATION WITH CALLOUT
	TEMPORARY EASEMENT LINE		EXISTING FACILITY TO BE DEMOLISHED OR REMOVED
	UTILITY EASEMENT LINE		
	SURVEY LINE SECTION LINE		
	WATER LINE		
	GAS LINE		
	TELEPHONE (UNDERGROUND)		
	ELECTRICAL (UNDERGROUND)		
	POWER OR TELEPHONE LINES (OVERHEAD)		

**MATERIALS LEGEND**

	EARTH OR GRADE		WOOD, SHEATHING, PANELING, DECKING, ETC.
	GRANULAR FILL (CRUSHED ROCK OR GRAVEL)		WOOD, STUDS, BEAMS, JOISTS, ETC.
	ROCK		RIPRAP
	NEW CONCRETE		CHECKERED PLATE
	EXISTING CONCRETE, PRECAST OR PRESTRESSED CONCRETE		STEEL (FOR 1" SCALE & LARGER)
	BRICK, FACE		STEEL OR ALUMINUM (FOR 3/4" SCALE & SMALLER)
	BRICK, COMMON		BAR GRATING (LINES IN DIRECTION OF SPAN)
	CONCRETE MASONRY UNITS (CMU)		ALUMINUM
	CUT STONE OR SAND FILL, GROUT, MORTAR, AND PLASTER		INSULATION (BATT)
	CAST STONE		INSULATION (RIGID)

**PIPING SYSTEMS**

	NEW PIPING		GAS, NATURAL
	UNDERGROUND PIPING		GRIT BASIN INFLUENT
	EXISTING PIPING		HEATING SYSTEM WATER RETURN
	FUTURE PIPING		HEATING SYSTEM WATER SUPPLY
	ALUMINUM SULFATE - (ALUM)		WATER, POTABLE HOT
	AUXILIARY PUMP STATION INFLUENT		HOT WATER CIRCULATING
	CHLORINE SOLUTION		INSTRUMENT AIR
	CONCENTRATED PRIMARY SCUM		INTERNAL RECYCLE
	DRAIN		LIME
	FIRE PROTECTION WATER SYSTEM		SODIUM HYDROXIDE
	FILTER BASIN INFLUENT		SODIUM HYPOCHLORITE
	FINAL CLARIFIER INFLUENT		PROCESS, NON-POTABLE
	FILTER EFFLUENT		WATER, NON-POTABLE HOT
	FLOW EQUALIZATION INFLUENT		
	FLOW EQUALIZATION EFFLUENT		
	FERMENTER SUPERNATANT		

**VALVE LEGEND**

	PINCH VALVE		BACKWATER VALVE
	PLUG VALVE, ECCENTRIC		INLINE PRESSURE RELIEF VALVE
	PLUG VALVE, NON-ECCENTRIC		PRESSURE REGULATING VALVE
	BUTTERFLY VALVE		PRESSURE SUSTAINING OR MAINTAINING VALVE
	GATE VALVE		VACUUM BREAKER
	BALL VALVE		THERMAL SHUTOFF VALVE
	GLOBE VALVE		EXPLOSION RELIEF VALVE
	CHECK VALVE		HOSE FAUCET
	3 WAY VALVE		HOSE FAUCET W/VACUUM BREAKER
	4 WAY VALVE		HOSE VALVE W/HOSE NIPPLE
	ANGLE VALVE		BACKFLOW PREVENTER
	CHLORINE INSTITUTE VALVE		SAFETY RELIEF VALVE
	DIAPHRAGM VALVE		VACUUM RELIEF CHECK VALVE
	THROTTLING VALVE		

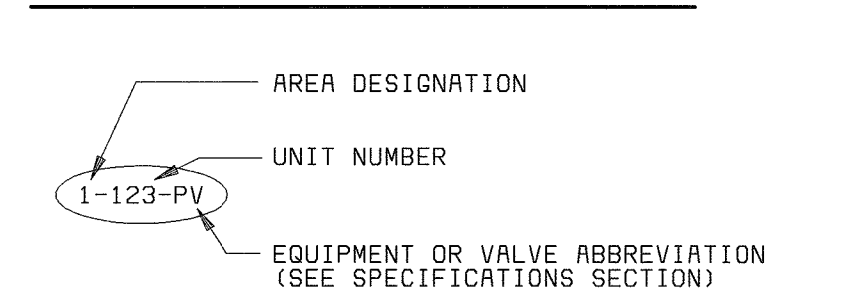
**PIPING ACCESSORIES LEGEND**

	AUTOMATIC DRAIN TRAP		FLUME
	BLIND FLANGE		GAGE GLASS
	CALIBRATING COLUMN		HOSE CONNECTION
	CAP OR PLUG		HOSE REEL
	CENTRIFUGE		INJECTOR, EDUCTOR, BLENDER
	CLEANOUT		INLINE FILTER
	COMPRESSOR OR BLOWER		INSULATING NIPPLE
	CROSS		LEVEL SWITCH
	DIAPHRAGM SEAL		MIXER
	DIFFERENTIAL PRESSURE INDICATOR		OIL SEPARATOR
	DIFFERENTIAL PRESSURE SWITCH		ORIFICE PLATE
	DIFFUSER, CHANNEL		PIPE ANCHOR
	DIFFUSER, PIPE		PIPE GUIDE
	DRAIN OR BELL-UP		PITOT TUBE
	DRIP TRAP		PRESSURE GAUGE WITH SNUBBER
	DUPLEX STRAINER		PRESSURE SWITCH
	ELBOW		PRESSURE TRANSMITTER
	ELBOW TURNING DOWN		PUMP
	ELBOW TURNING UP		QUICK COUPLING
	EXPANSION COMPENSATOR		REDUCER
	EXPANSION TANK		ROTAMETER
	FLAME ARRESTER OR CHECK		RUPTURE DISK
	FLEXIBLE CONNECTOR		SAMPLE TAP
	FLEXIBLE HOSE OR TUBING		SCREEN
	FLOWMETER ELECTROMAGNETIC/ULTRASONIC		SEDIMENT TRAP/CONDENSATE ACCUMULATOR
	FLOW SWITCH		SET STOP METER
	FLOW TUBE		SIGHT GLASS

**ACTUATOR LEGEND**

	AIR, PNEUMATIC		SIGHT FLOW INDICATOR
	AIR/OIL TANDEM		SILENCER
	DIAPHRAGM		SLIDE GATE
	ELECTRIC, MOTORIZED		SLUICE GATE
	FLOAT		STATIC MIXER
	HYDRAULIC		STOP PLATE
	SOLENOID		STRAINER/BASKET
			SUCTION DIFFUSER
			SURGE CHAMBER
			TEE
			TEE LINE DOWN
			TEE LINE UP
			TEMPERATURE INDICATOR
			TEMPERATURE SENSING ELEMENT
			TEMPERATURE SWITCH
			TEMPERATURE TRANSMITTER
			THERMOMETER
			TRAP
			UNION
			VENT
			VENT - SCREENED
			VERTICAL MIXER
			WALL SLEEVE
			WATER HAMMER ARRESTER
			WEIR
			WYE
			WYE STRAINER
			WYE STRAINER WITH BLOWOFF

**EQUIPMENT DESIGNATION**



**AREA DESIGNATION**

- # LOCATION
- 3 WEST GALLERY
- 5 NORTH BASIN COMPLEX
- 6 EAST GALLERY

NOTE: SYMBOLS ON THIS SHEET WHICH ARE TO BE SHOWN AS EXISTING SHALL BE DELINEATED AS SCREENED (THOSE SYMBOLS WHICH ARE TO BE SHOWN AS NEW SHALL BE DELINEATED AS SOLID (HEAVY)).

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  CHIEF, BUREAU OF UTILITIES DATE	 <b>BLACK &amp; VEATCH</b> Gaithersburg, Maryland  REG. PROF. ENGR. DATE	THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY ROBERT J. REICHTANUS, JR. A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 22927	DES: FKA DRN: RLC CHK: WLK DATE:	11/03/03 CONFORMED TO CONSTRUCTION RECORDS REVISIONS AND RECORD OF ISSUE	RHH RJR RJR NO. BY CK APP	LAYOUT/OVERVIEW CIVIL  LEGEND AND DESIGNATIONS	LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 LABORATORY RENOVATION  CAPITAL PROJECT S-6205 CONTRACT NO. 20-3841  HOWARD COUNTY, MARYLAND	SCALE AS SHOWN  SHEET 3 OF 28  L3
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ABBREVIATIONS

A	ACID, AMBER INDICATING LIGHT, AMPERE	CTR(S)	CENTER(S)	GM	GAS METER	SKL	SKYLIGHT
AB	ANCHOR BOLT	CU	CUBIC	GPM	GALLONS PER MINUTE	SLG	SLIDE GATE
ABS	ACID BATH SINK	CU YD	CUBIC YARD	GR	GRADE	SM	SHEET METAL
AC	ALTERNATING CURRENT	CV	CHECK VALVE	GV	GATE VALVE	SP	SUMP PUMP
A/C	AIR CONDITIONER, (ING)	CW	COLD WATER	GWB	GYPNUM WALLBOARD	SPA	SPACING, SPACES
ACP	ASBESTOS CEMENT PIPE	CWR	COLD WATER RETURN	GYP	GYPNUM	SPEC(S)	SPECIFICATION(S)
ACST	ACOUSTIC, (AL)	CWS	COLD WATER SUPPLY			SPLY	SUPPLY
AD	ACCESS DOOR, AREA DRAIN, AIR DAMPER, ANODE	D	DOOR	H	HIGH, HOUR, HYDROGEN	SQ	SQUARE
ADA	AMERICAN DISABILITY ACT	DBL	DOUBLE	HB	HOSE BIBB	SR	SUPPLY REGISTER
ADD	ADDITIONAL	DC	DIRECT CURRENT	HV	HOLLOW CORE	SS	STAINLESS STEEL
ADH	ADHESIVE	DEG	DEGREE	HDR	HEADER	SSK	SANITARY SEWER
ADJ	ADJUSTABLE, ADJACENT	DEPT	DEPARTMENT	HDWR	HARDWARE	SSS	SERVICE SINK
ADMIN	ADMINISTRATION	DET	DEPARTMENT	HE	HEAT EXCHANGER	ST	SELF TAPPING
AF	AIR FLOW	DET	DETAIL	HEX	HEXAGONAL	ST SWR	STORM SEWER
AFF	ABOVE FINISH FLOOR	DF	DRINKING FOUNTAIN	HF	HOSE FRUJET	STA	STATION
AH	AHEAD	DH	DOOR HEIGHT	HCT	HEIGHT	STD	STANDARD
AHU	AIR HANDLING UNIT	DI	DROP INLET, DUCTILE IRON	HH	HANDHOLE	STL	STEEL
AL	ACTIVE LEAF	DIA	DIAMETER	HLS	HIGH LEVEL SWITCH	STOR	STORAGE
ALT	ALTERNATE, (IVE)	DIFF	DIFFUSER	HMC	HARNESSED MECHANICAL COUPLING	STR	STRUCTURAL
ALUM	ALUMINUM	DIM	DIMENSION	HMD	HOLLOW METAL DOOR	SUP	SUPPLY
AM	AMMETER	DIP	DUCTILE IRON PIPE	HMJ	HARNESSED MECHANICAL JOINT	SUSP	SUSPENDED
AMP	AMPERE	DISCH	DISCHARGE	HORIZ	HORIZONTAL	SV	SHUTOFF VALVE
AN	ANAEROBIC	DISP	DISPENSER	HP	HIGH POINT, HORSEPOWER	SW	SWITCH
ANOD	ANODIZED	DIST	DISTRIBUTION	HR	HOUR, HANDRAIL	SWBD	SWITCHBOARD
AP	ACCESS PANEL	DIV	DIVISION	HS	HIGH STRENGTH	SWGR	SWITCHGEAR
APPR	APPROACH	DL	DEAD LOAD	HV	HOSE VALVE	SWL	SEAL WATER SOLENOID
APPROX	APPROXIMATE, (LY)	DM	DAMPER MOTOR	HVAC	HEATING, VENTILATING AND AIR CONDITIONING	SYM	SYMMETRICAL
AR	ALARM RELAY	DMJ	DOUBLE MECHANICAL JOINT	HW	HOT WATER	SYS	SYSTEM
ARCH	ARCHITECTURAL	DN	DOWN	HWY	HIGHWAY		
AS	AMMETER SWITCH	DO	DOOR OPENING, DISSOLVED OXYGEN	HYDRO	HYDROPNEUMATIC		
ASSY	ASSEMBLY	DPDT	DOUBLE POLE DOUBLE THROW			T	THERMOSTAT, TREAD, TOTALIZER
AUTO	AUTOMATIC	DR	DRAIN	I	INDICATOR	T	TRANSFORMER, TELEPHONE, TOP
AUX	AUXILIARY	DS	DOWNSPOUT	ID	INSIDE DIAMETER	TAN	TANGENT
AVS	AUTOMATIC VALVE STATION	DT	DISTRIBUTION TRANSFORMER	IF	INSIDE FACE	TB	TERMINAL BOX
AWG	AMERICAN WIRE GAGE	DV	DRAIN VALVE	I/I	CURRENT TO CURRENT BOOSTER	T&B	TOP AND BOTTOM
AX	ANOXIC	DWG(S)	DRAWING(S)	IN	INCHES	TBE	THREAD BOTH ENDS
		DWL(S)	DOWEL(S)	INC	INCORPORATED	TBM	TEMPORARY BENCHMARK
B	BEAM	E	EAST, ELECTRICAL	INCL	INCLUDING	TC	TOWEL CABINET, TOP OF CURB
B TO B	BACK TO BACK	EA	EACH	INCR	INCREASE	TEL	TELESCOPING
BA	BEARING AREA	EAT	ENTERING AIR TEMPERATURE	INST	INSTRUMENT, (ATION)	TEMP	TEMPERATURE, TEMPORARY
BAL	BALANCE	EC	END CURVE	INSUL	INSULATE, (ED), (ING)	TERM	TERMINAL
BAT	BATTERY	ECC	ECCENTRIC	INT	INTERIOR, INTERNAL	T&G	TONGUE & GROOVE
BC	BEGIN CURVE	ECC RED	ECCENTRIC REDUCER	INV	INVERT	TH	TEST HOLE
BD	BOARD	EEW	EMERGENCY EYEWASH	IPS	IRON PIPE SIZE	THK	THICK, THICKNESS
BEJ	BRICK EXPANSION JOINT	EF	EACH FACE	IR	INTERNAL RECYCLE	THR	THRESHOLD
BF	BLIND FLANGE	EFF	EFFLUENT	JAN	JANITOR	TI	TOTALIZING INDICATOR, TEMPERATURE INDICATOR
BFV	BUTTERFLY VALVE	EJ	EXPANSION JOINT	JB	JUNCTION BOX	TIR	TOTALIZING INDICATING RECORDER
BHP	BRAKE HORSEPOWER	EL	ELEVATION	JF	JOINT FILLER	TOF	TOP OF FOOTING
BITUM	BITUMINOUS	ELB	ELBOW	JT	JOINT	TOM	TOP OF MASONRY
BKR	BREAKER	ELEC	ELECTRIC, (AL)	K	KIPS	TOS	TOP OF STEEL
BLDG	BUILDING	ELEV	ELEVATOR	KIT	KITCHEN	TP	TWISTED PAIR COUPLE, TOWEL PIN
BLK	BLOCK	EMER	EMERGENCY	KO	KNOCK OUT	TPD	TONS PER DAY
BM	BENCHMARK	ENC	ENCASEMENT	KS	KITCHEN SINK	TRANS	TRANSFORMER, TRANSMITTER, TRANSFER
BOF	BOTTOM OF FOOTING	ENCL	ENCLOSURE	KV	KILOVOLT	TS	TEMPERATURE SWITCH
BOT	BOTTOM	ENT	ENTRANCE	KVA	KILOVOLT AMPERE	TV	TELEVISION
BP	BACK PRESSURE	EOL	END OF LINE	KW	KILOWATT	TYP	TYPICAL
BPMK NO	BASEPLATE MARK NUMBER	EPV	ECCENTRIC PLUG VALVE	KWH	KILOWATT HOUR	TW	TILTING WEIR
BRG	BEARING	EQ	EQUAL	L	LOUVER, ANGLE	UDM	ULTRASONIC DENSITY METER
BRK	BRICK	EQUIP	EQUIPMENT	LAB	LABORATORY	UGND	UNDERGROUND
BS	BOTH SIDES	EW	EACH WAY	LAM	LAMINATE(D)	UH	UNIT HEATER
B&S	BELL AND SPIGOT	EMEF	EMERGENCY EYEWASH	LAT	LEAVING AIR TEMPERATURE	UNIF	UNIFORM
BSMT	BASEMENT	EXCH	EXCHANGER	LAT	LATERAL	UNO	UNLESS NOTED OTHERWISE
BTU	BRITISH THERMAL UNIT	EXH	EXHAUST	LAV	LAVATORY	UR	URINAL
BTUH	BRITISH THERMAL UNIT-HOUR	EX, EXIST	EXISTING	LB(S)	POUNDS	USGS	UNITED STATES GEOLOGICAL SURVEY
BU	BELL-UP	EXP	EXPANSION, EXPOSED	LG	LENGTH, LONG	V	VALVE, VOLT, VENT
BUR	BUILT UP ROOFING	EXP JT	EXPANSION JOINT	LH	LEFT HAND	VAC	VACUUM
BV	BALL VALVE	EXT	EXTENSION, EXTERIOR, EXTERNAL	LIN	LINEAL, LINEAR	VAT	VINYL ASBESTOS TILE
BVC	BEGIN VERTICAL CURVE	F	FAN, FIBERGLASS	LL	LIVE LOAD	VB	VACUUM BREAKER
		F TO F	FACE TO FACE	LLH	LONG LEG HORIZONTAL	VC	VERTICAL CURVE, VICTAULIC COUPLING
C	COUNTER	FB	FACE BRICK, FILTER BASIN	LLV	LONG LEG VERTICAL	VCD	VERTICAL CONTROL DAMPER
C TO C	CENTER TO CENTER	FC	FLEXIBLE CONNECTION, FLOW CONTROL, FINAL CLARIFIER	LO	LOUVER OPENING	VCP	VITRIFIED CLAY PIPE
CB	CATCH BASIN	FCA	FLANGED COUPLING ADAPTER	LS	LABORATORY SINK, LEVEL SWITCH, LIMIT SWITCH	VCT	VINYL COMPOSITION TILE
CBU	CEMENTITIOUS BACKER UNIT	FDN	FOUNDATION	LT	LEFT, LAB TABLE	VERT	VERTICAL
CD	CEILING DIFFUSER	FDPR	FIRE DAMPER	MA	MILLIAMPERE	VF	VACUUM FILTER
C/EJ	CONTRACTION/EXPANSION JOINT	FE	FIRE EXTINGUISHER, FLOW ELEMENT	MACH	MACHINE	VIB	VIBRATION
CFM	CUBIC FEET PER MINUTE	FEC	FIRE EXTINGUISHER CABINET	MAINT	MAINTENANCE	VM	VOLT METER
CFS	CUBIC FEET PER SECOND	FF	FACTORY FINISH	MAN	MANUAL	VNR	VENEER
C&G	CURB AND GUTTER	FH	FLAT HEAD, FIRE HYDRANT	MAS	MASONRY	VV	VENT VALVE
CHKD	CHECKERED	FHMS	FLAT HEAD MACHINE SCREW	MATL	MATERIAL	W	WEST, WIDE, WIDTH, WINDOW, WATT, WATER
CI	CAST IRON	FIG	FIGURE	MAX	MAXIMUM	W/	WITH
CIMH	CAST IRON MANHOLE	FIN	FINISH	MB	MACHINE BOLT	WAS	WASTE ACTIVATED SLUDGE
CIMHS	CAST IRON MANHOLE STEPS	FIN GR	FINISH GRADE	MC	MECHANICAL COUPLING	WBB	WALLBOARD
CIP	CAST IRON PIPE	FL	FLOOR, FLOW LINE	MCC	MOTOR CONTROL CENTER	WC	WATER CLOSET
CISP	CAST IRON SOIL PIPE	FLX	FLEXIBLE	MECH	MECHANICAL	WD	WOOD, WIDTH
CJT	CONTROL JOINT	FLG	FLANGE, FLASHING	MED	MEDIUM	WF	WALL FITTING, WALL FABRIC
CKT	CIRCUIT	FM	FORCE MAIN	MEZ	MEZZANINE	WH	WALL HYDRANT
CL	CLASS, CENTERLINE	FO	FUEL OIL	MFM	MAGNETIC FLOWMETER	WL	WATER LEVEL
CLC	CEILING	FOB	FLAT ON BOTTOM	MFR(S)	MANUFACTURER(S)	WM	WATER METER, WATTMETER
CLO	CLOSET	FOM	FACE OF MASONRY	MG	MILLION GALLONS	WO	WINDOW OPENING
CLR	CLEAR, (ANCE)	FOS	FACE OF STUDS	MGD	MILLION GALLONS PER DAY	W/O	WITHOUT
CMP	CORRUGATED METAL PIPE	FOT	FLAT ON TOP	MG/L	MILLIGRAMS PER LITER	WOM	WOMEN
CMU	CONCRETE MASONRY UNIT	FPM	FEET PER MINUTE	MH	MANHOLE	WP	WATERPROOF, WORKING POINT
CO	CLEAN OUT, COMPANY	FRP	FIBERGLASS REINFORCED PLASTIC	MIN	MINIMUM, MINUTE	WR	WASTE RECEPTACLE
COD	CHEMICAL OXYGEN DEMAND	FS	FAR SIDE, FLOOR SLEEVE, FLOAT SWITCH, FLOOR SEALER	MISC	MISCELLANEOUS	WS	WATERSTOP
COL	COLUMN	FT	FOOT	MJ	MECHANICAL JOINT	WT	WEIGHT, CERAMIC WALL TILE
COMB	COMBINATION	FTG	FOOTING	MJR	MECHANICAL JOINT RETAINER GLAND	WW	WETWELL
COMB SWR	COMBINED SEWER	FURN	FURNISH, FURNISHED	MJTR	MECHANICAL JOINT WITH TIE ROD	WWF	WELDED WIRE FABRIC
COMP	COMPRESSOR, (ED)	FV	FLAP VALVE, FLOW CONTROL VALVE, PINCH VALVE	MO	MASONRY OPENING, MOTOR OPERATED		
COMP	CONCRETE	FWD	FORWARD	MOD	MODIFIED	X	BY, TIMES
CONN	CONNECTION	G	GAS	MP	METERING PUMP	YH	YARD HYDRANT
CONST	CONSTRUCTION	GA	GAUGE	MRO	METAL ROOF DECK	&	AND
CONT	CONTINUOUS, CONTINUATION, CONTROL	GAL	GALLON	MS	MACHINE SCREW	@	AT
CONTR	CONTRACTOR	GALV	GALVANIZED	MSL	MEAN SEA LEVEL	€	CENTERLINE
COR	CORNER	GB	GRID BASIN	MT	CERAMIC MOSAIC FLOOR TILE	<	DEFLECTION ANGLE
CORR	CORRIDOR, CORRUGATED	GC/MS	GAS CHROMATOGRAPH/MASS SPECTROMETER	MTR	MOTOR	#	NUMBER
CP	CONTROL PANEL, CARPET	GLV	GLOBE VALVE	MV	MUD VALVE	%	PERCENT
CPLG	COUPLING						
CPT	CONTROL POWER TRANSFORMER						
CRS	COURSES, (ING)						
CS	CONTROL SWITCH, CONTROL STATION, CUP SINK						
CSK	COUNTERSUNK, (INK)						
CT	CERAMIC TILE, CARPET TILE, CYCLE TIMER, CURRENT TRANSFORMER						

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF UTILITIES DATE



**BLACK & VEATCH**  
Gaithersburg, Maryland

REG. PROF. ENGR. DATE

THIS DRAWING WAS  
ORIGINALLY APPROVED  
FOR CONSTRUCTION  
AND SEALED BY  
ROBERT J. REICHAUS, JR.  
A REGISTERED  
PROFESSIONAL ENGINEER  
IN THE  
STATE OF MARYLAND,  
NO. 22927

DES: FKA					
DRN: RLC					
CHK: WLK					
DATE:	11/03/03	CONFORMED TO CONSTRUCTION RECORDS	RHH	RJR	RJR
DATE:	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK APP

LAYOUT/OVERVIEW  
CIVIL

ABBREVIATIONS

LITTLE PATUXENT WATER RECLAMATION PLANT  
ADDITION NO. 6  
LABORATORY RENOVATION

CAPITAL PROJECT S-6205  
CONTRACT NO. 20-3841

HOWARD COUNTY, MARYLAND

SCALE  
AS  
SHOWN

SHEET  
4 OF 28

L4

**EXISTING LEGEND**

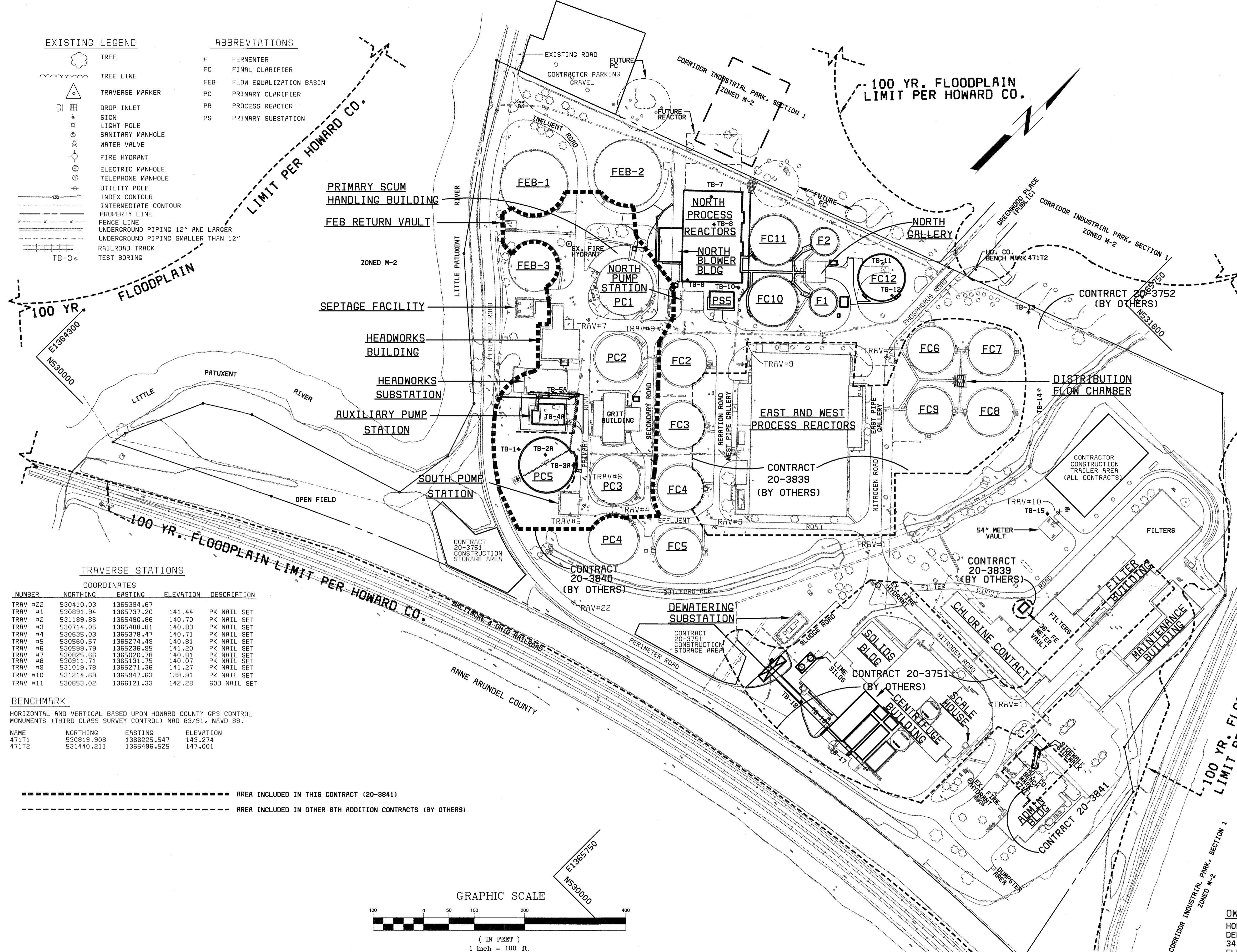
- TREE
- TREE LINE
- TRAVERSE MARKER
- DROP INLET
- SIGN
- LIGHT POLE
- SANITARY MANHOLE
- WATER VALVE
- FIRE HYDRANT
- ELECTRIC MANHOLE
- TELEPHONE MANHOLE
- UTILITY POLE
- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- PROPERTY LINE
- FENCE LINE
- UNDERGROUND PIPING 12" AND LARGER
- UNDERGROUND PIPING SMALLER THAN 12"
- RAILROAD TRACK
- TEST BORING

**ABBREVIATIONS**

- F FERMENTER
- FC FINAL CLARIFIER
- FEB FLOW EQUALIZATION BASIN
- PC PRIMARY CLARIFIER
- PR PROCESS REACTOR
- PS PRIMARY SUBSTATION

**GENERAL NOTES:**

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
2. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
3. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
4. ALL PLAN DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
5. THE EXISTING TOPOGRAPHY IS TAKEN FROM AERIAL SURVEY WITH MAXIMUM ONE FOOT CONTOUR INTERVALS PREPARED FOR AMT AND ASSOCIATES BY AIR SURVEY CORP., INC. DATED JUNE 1999.
6. THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NOS. 47111 AND 4712N WERE USED FOR THIS PROJECT.
7. WATER IS PUBLIC (HO. CO. LITTLE PATUXENT WATER RECLAMATION PLANT).
8. SEWER IS PUBLIC (HO. CO. LITTLE PATUXENT WATER RECLAMATION PLANT).
9. EXISTING UTILITIES ARE BASED ON LITTLE PATUXENT WATER RECLAMATION PLANT AND MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO START OF ANY DEMOLITION AND CONSTRUCTION.
10. FLOODPLAIN LIMITS FOR THIS PROJECT WERE TAKEN FROM HOWARD COUNTY STUDY DATED 1986.
11. THE ENTIRE LITTLE PATUXENT WASTEWATER TREATMENT PLANT SITE IS LOCATED IN THE 100 YEAR FLOODPLAIN, ELEV. 143.0.
12. OFFSITE DISPOSAL OF EXCESS MATERIAL WILL BE TO AN APPROVED SITE.
13. THE CONTRACTOR SHALL LOCATE AND PROTECT ALL EXISTING FACILITIES, STRUCTURES AND UTILITIES FROM DAMAGE UNLESS OTHERWISE SHOWN.
14. OMISSIONS/ADDITIONS OF UTILITIES FOUND DURING CONSTRUCTION ARE THE SOLE RESPONSIBILITY OF ANY CONTRACTOR ENGAGED IN CONSTRUCTION AT THIS SITE. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY AND ALL UTILITY OMISSIONS/ADDITIONS.
15. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REMOVE AND LEGALLY DISPOSE OF ANY AND ALL DEMOLISHED/DELETERIOUS MATERIALS.
16. EXISTING PAVEMENT SHALL BE SAWCUT PRIOR TO REMOVAL. ALL SAWCUT SHALL BE STRAIGHT, EVEN CUTS. JAGGED EDGES SHALL NOT BE PERMITTED. SAWCUT DEPTH SHALL EXTEND AT LEAST 2/3 TIMES THE THICKNESS OF THE EXISTING PAVEMENT THAT REMAINS IN PLACE.
17. POSITIVE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES. PONDING OF WATER SHALL NOT BE PERMITTED. ALL PONDING WATER SHALL BE FILTERED THROUGH A PORTABLE SEDIMENT TRAP PRIOR TO DISCHARGE INTO THE PUBLIC STORM/SEWER SYSTEM.
18. SURFACED STREET AND PARKING AREAS SHALL BE MAINTAINED IN A CLEAN CONDITION, MUD AND DUST FREE AT ALL TIMES. ADEQUATE MEANS SHALL BE PROVIDED TO CLEAN TRUCKS AND EQUIPMENT.
19. CONTRACTOR SHALL HAND DIG TEST PITS AT ALL UTILITY CROSSINGS TO DETERMINE THEIR EXACT LOCATION, WELL IN ADVANCE OF ANY DEMOLITION/CONSTRUCTION.
20. ALL TIES TO EXISTING PAVEMENT/STRUCTURES AND CURB SHALL BE SMOOTH TRANSITIONS WITH NO ABRUPT CHANGES.
21. CONTRACTOR SHALL ADJUST ALL UTILITY FRAME AND COVERS TO MATCH NEW FINISHED GRADE.
22. THE SITE PLAN AND EROSION CONTROL PLAN ARE BASED ON THE SITE DEVELOPMENT PLAN (SDP) AMENDMENT DATED APRIL 10, 2000 AND SUBMITTED TO HOWARD COUNTY. THE SDP AMENDMENT IS INCLUDED IN THE CONTRACT BY REFERENCE. THE CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS OF THE SDP AMENDMENT.



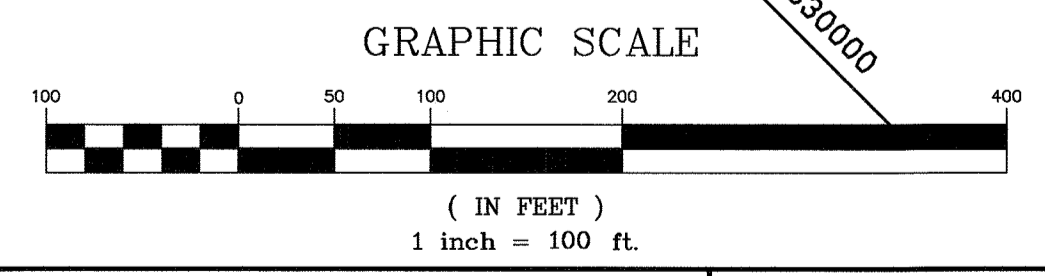
**TRAVERSE STATIONS**

NUMBER	NORTHING	EASTING	ELEVATION	DESCRIPTION
TRAV #22	530410.03	1365394.67		
TRAV #1	530891.94	1365737.20	141.44	PK NAIL SET
TRAV #2	531189.86	1365490.86	140.70	PK NAIL SET
TRAV #3	530714.05	1365488.81	140.83	PK NAIL SET
TRAV #4	530835.03	1365378.47	140.71	PK NAIL SET
TRAV #5	530560.57	1365274.49	140.81	PK NAIL SET
TRAV #6	530599.79	1365236.95	141.20	PK NAIL SET
TRAV #7	530825.66	1365020.78	140.81	PK NAIL SET
TRAV #8	530911.71	1365131.75	140.07	PK NAIL SET
TRAV #9	531019.78	1365271.36	141.27	PK NAIL SET
TRAV #10	531214.69	1365947.63	139.91	PK NAIL SET
TRAV #11	530853.02	1366121.33	142.28	60D NAIL SET

**BENCHMARK**

HORIZONTAL AND VERTICAL BASED UPON HOWARD COUNTY OPS CONTROL MONUMENTS (THIRD CLASS SURVEY CONTROL) NAD 83/91, NAVD 88.

NAME	NORTHING	EASTING	ELEVATION
47111	530819.908	1366225.547	143.274
47112	531440.211	1365496.525	147.001



DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF UTILITIES DATE

**AMT**  
A. MORTON THOMAS AND ASSOCIATES, INC.  
CONSULTING ENGINEERS  
12750 TWINBROOK PARKWAY, SUITE 200, ROCKVILLE MD 20852  
TEL (301) 881-2545 FAX (301) 881-8814  
E-MAIL JBYRNE@AMTENGINEERING.COM  
AMT FILE # 98-154

**BLACK & VEATCH** LLP  
Gaithersburg, Maryland

REG. PROF. ENGR. DATE

THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY MICHAEL JOSEPH WIERCINSKI A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 21816

DES: R ANCHORS					
DRN: R ANCHORS					
CHK: A REYES					
DATE: 10/01/01	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CHK APP

CIVIL

OVERALL SITE PLAN

OWNER/DEVELOPER  
HOWARD COUNTY GOVERNMENT  
DEPT. OF PUBLIC WORKS  
3430 COURTHOUSE DRIVE  
ELLCOTT CITY, MARYLAND 21043

LITTLE PATUXENT WATER RECLAMATION PLANT  
ADDITION NO. 6  
LABORATORY RENOVATION

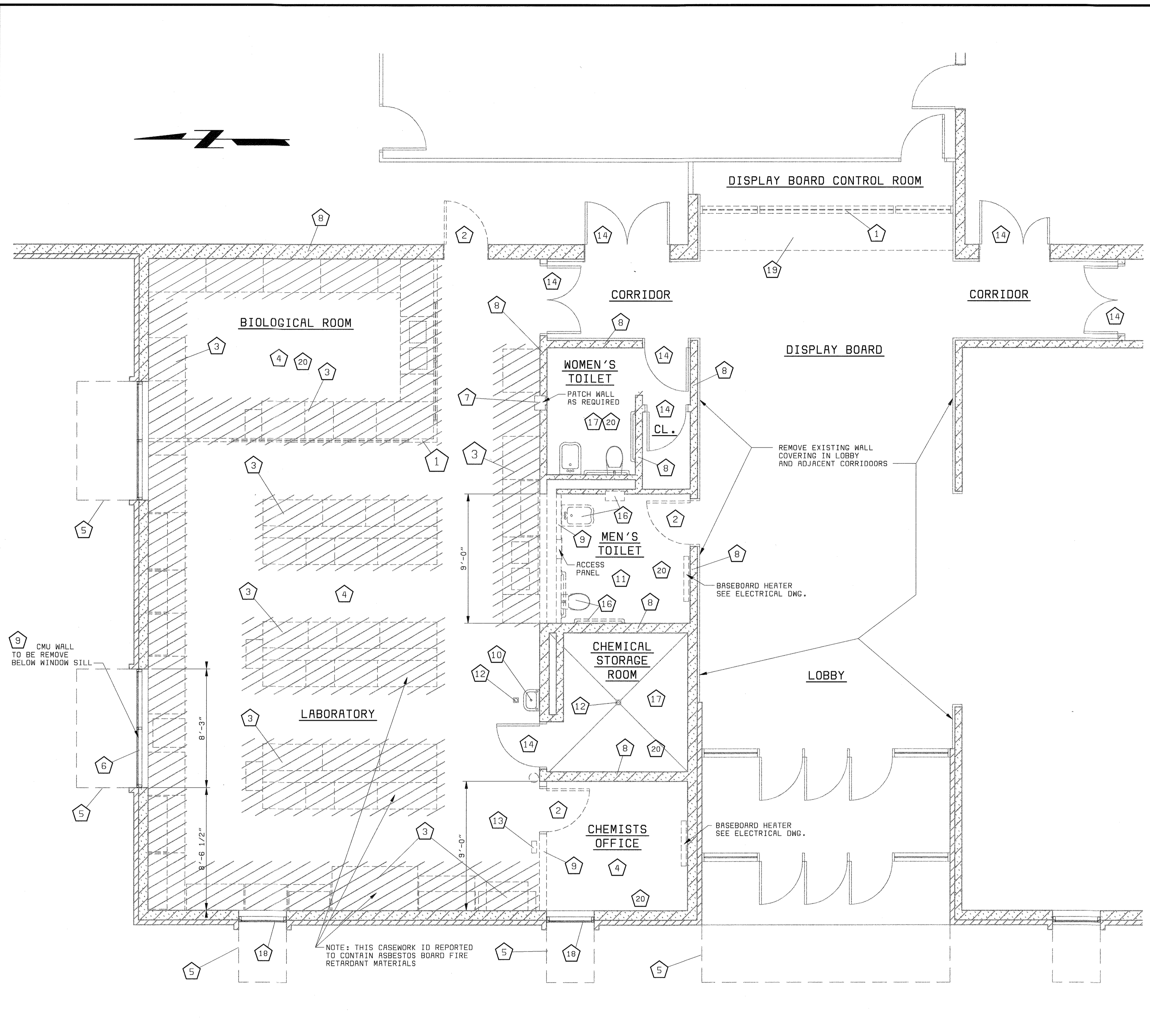
CAPITAL PROJECT S-6205  
CONTRACT NO. 20-3841

HOWARD COUNTY, MARYLAND

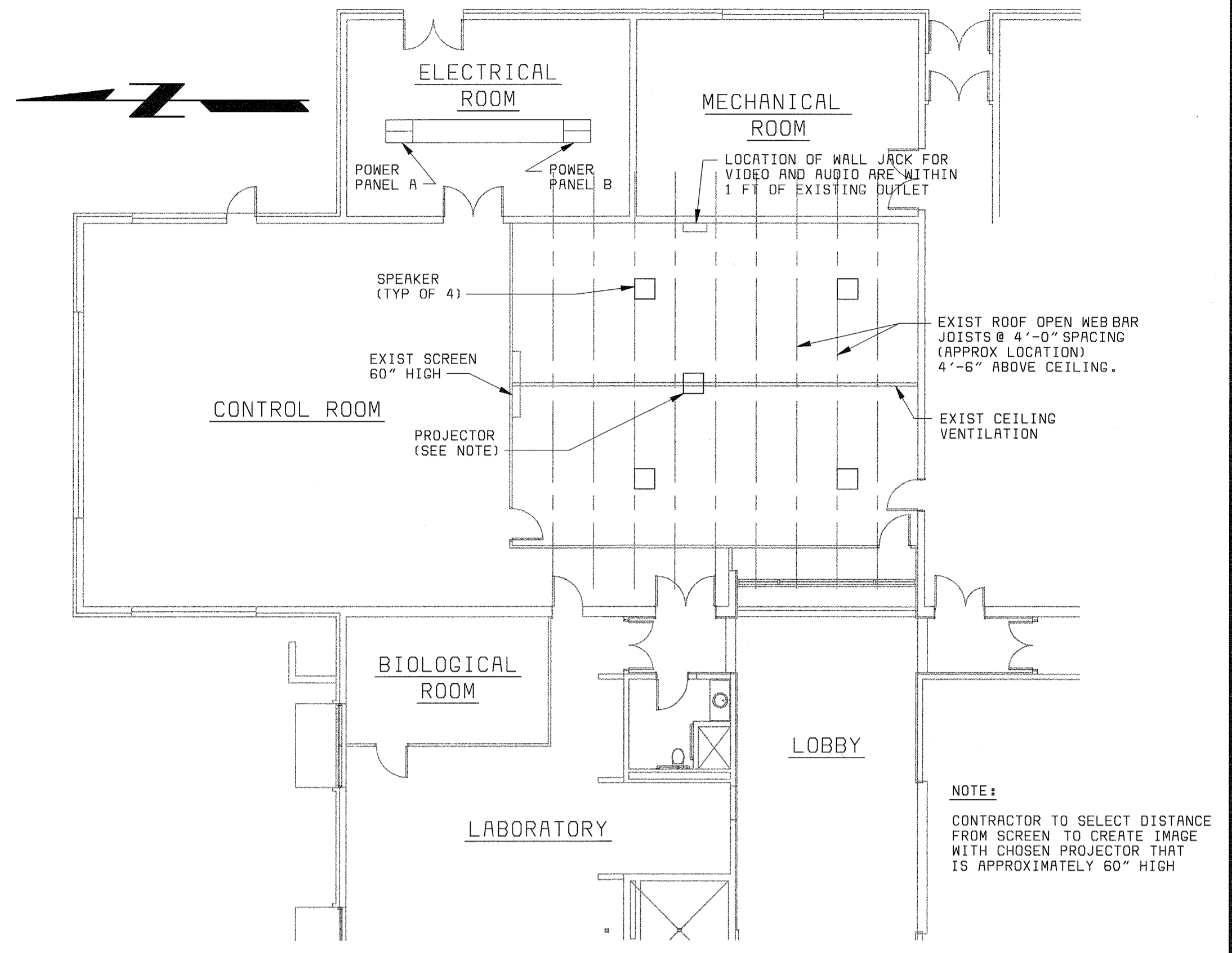
SCALE AS SHOWN

SHEET 5 OF 28

L5



DEMOLITION PLAN - ELEV 145.00' 1/A1  
1/4" = 1'-0"



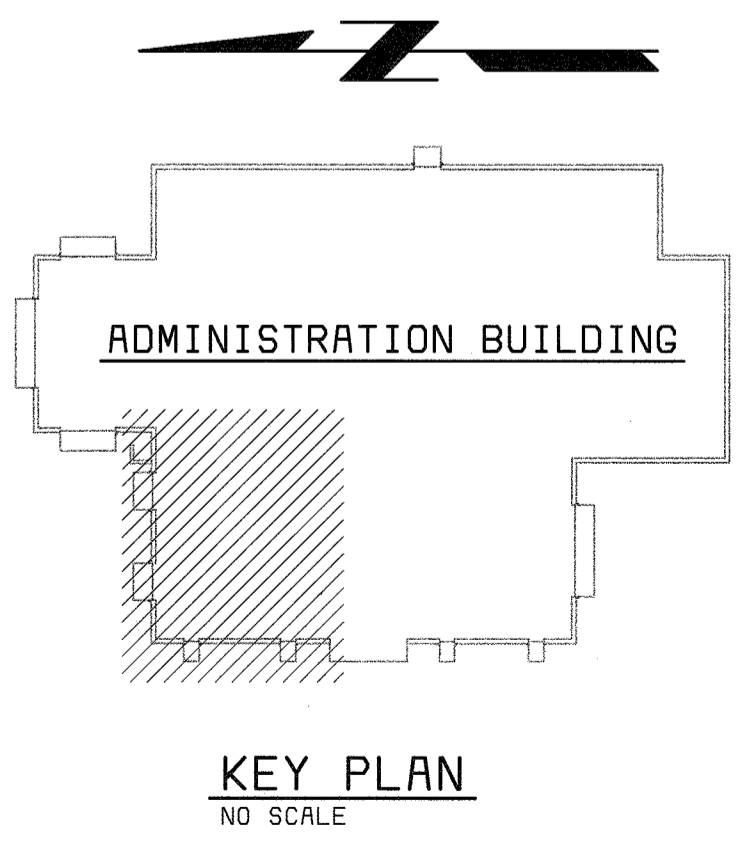
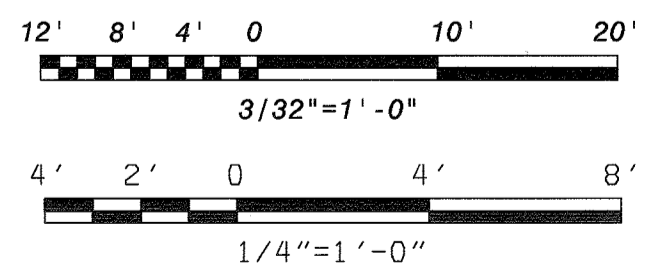
PLAN  
3/32" = 1'-0"

LEGEND:

- TO REMOVE.
- EXISTING TO REMAIN.
- 1 REMOVE ALL PARTITIONS FROM SLAB TO UNDERSIDE OF ROOF DECK, INCLUDING WIRING AND OTHER CONCEALED ITEMS.
- 2 EXISTING DOOR TO BE REMOVED.
- 3 EXISTING CASEWORK TO BE REMOVED.
- 4 CEILING AND GRID TO BE REMOVED.
- 5 EXISTING CANOPY TO REMAIN
- 6 EXISTING WINDOW TO BE REMOVED.
- 7 REMOVE ELECTRIC WATER COOLER
- 8 CMU PARTITION TO REMAIN.
- 9 CMU PARTITION TO BE REMOVED.
- 10 EYE WASH TO REMAIN.
- 11 PLASTER CEILING TO BE REMOVED.
- 12 FLOOR DRAIN TO REMAIN
- 13 FIRE BLANKET TO BE TEMPORARILY REMOVED AND REINSTALL IN SAME LOCATION AFTER INSTALLATION OF CERAMIC TILE.
- 14 DOOR TO REMAIN.
- 15 NOT USED.
- 16 TOILET ACCESSORIES AND FIXTURES TO BE REMOVED.
- 17 P.C. PLASTER CEILING TO REMAIN.
- 18 EXISTING WINDOW TO REMAIN.
- 19 EXISTING DISPLAY BOARD TO BE REMOVED.
- 20 REMOVE EXISTING SEAMLESS FLOOR COATING, IF REQUIRED.
- 21 NOTE: SALVAGE EXISTING GLAZED C.M.U. TO BE REMOVED AND RE-USE FOR INFILL ON EAST SIDE OF THE WALL IN-FILL.

DEMOLITION NOTES:

1. FOR PANEL TO BE REMOVED SEE ELECTRICAL DRAWINGS.
2. FOR DUCTS AND DIFFUSERS TO BE REMOVED SEE MECHANICAL DRAWINGS.
3. FOR FLOOR DRAIN TO BE REMOVED SEE PLUMBING DRAWINGS.
4. FOR EXISTING EMERGENCY LIGHT AND SIGNAL TO BE REMOVED OR REUSED SEE ELECTRICAL DRAWINGS.
5. FOR PROPANE GAS PIPE TO BE REMOVED SEE MECHANICAL OR PLUMBING DRAWINGS.
6. REMOVE EXISTING FLOOR COATING IN LABORATORY, MEN'S TOILET AND CHEMISTS OFFICE.



DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

**bbw** Architects • Designers • Planners  
Bryant Bryant Williams, P.C.  
4201 Connecticut Avenue N.W., Suite 500  
Washington, D.C. 20008 (202) 241-2108

**BLACK & VEATCH**  
Gaithersburg, Maryland  
REG. PROF. ENGR. DATE

THIS DRAWING WAS  
ORIGINALLY APPROVED  
FOR CONSTRUCTION  
AND SEALED BY  
CHARLES J. BRYANT  
A REGISTERED  
ARCHITECT  
IN THE  
STATE OF MARYLAND,  
NO. 1377-R

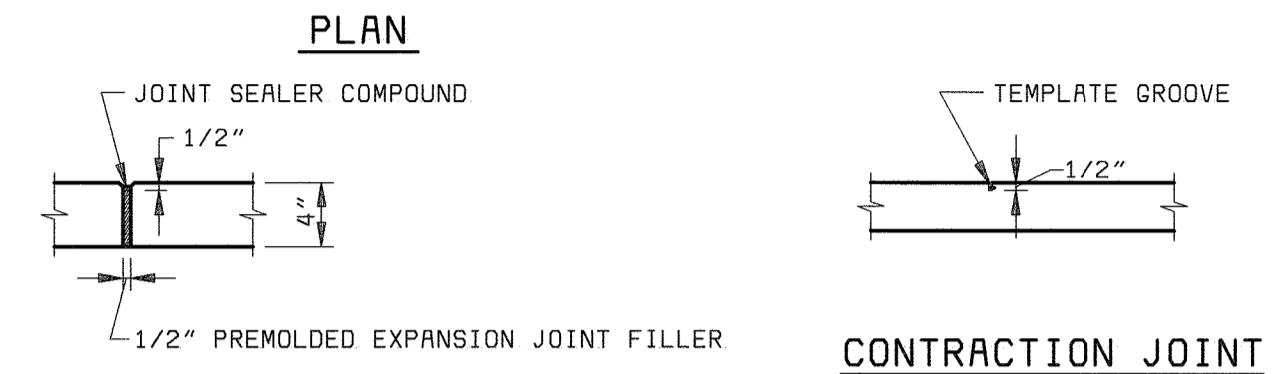
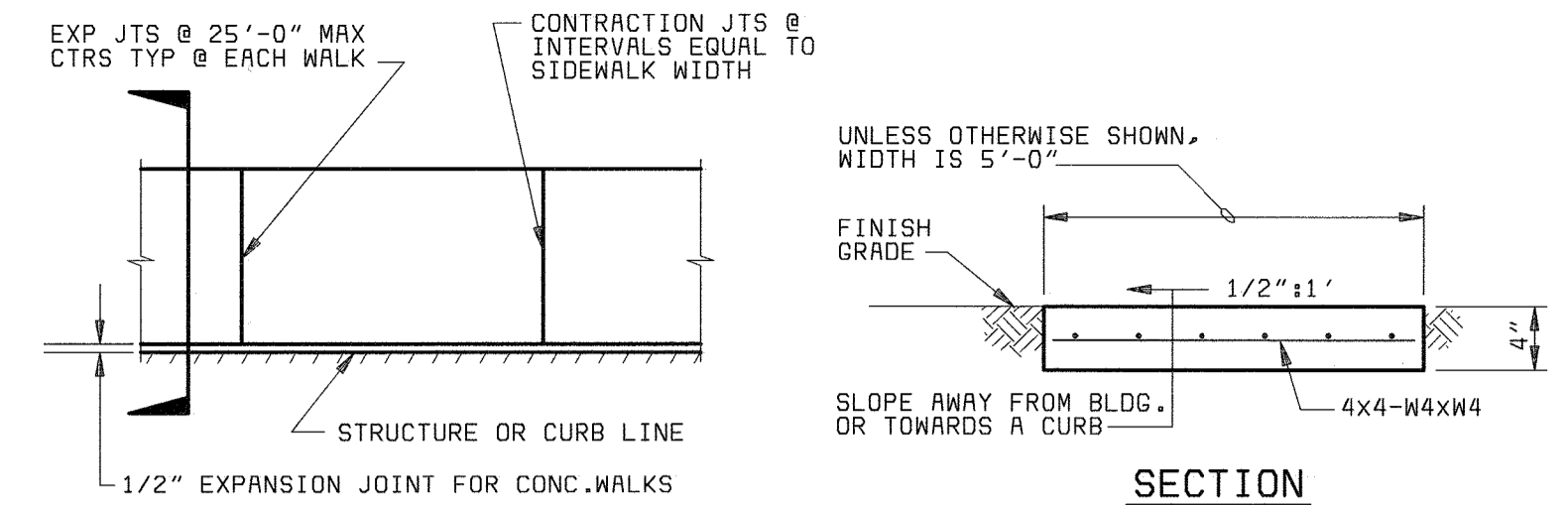
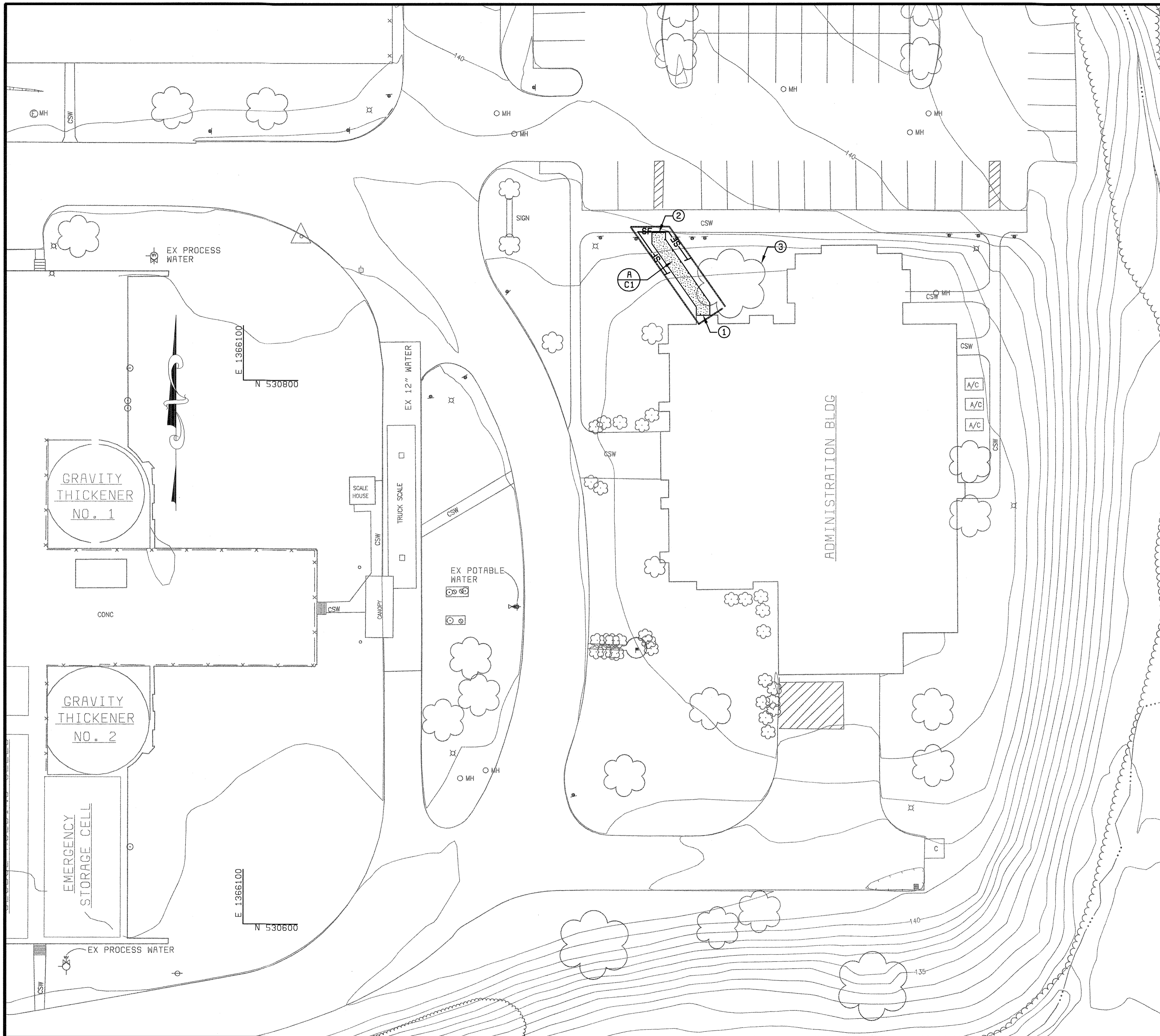
DES:	CH/JS				
DRN:	JS				
CHK:	CH	11/03/03	CONFORMED TO CONSTRUCTION RECORDS	RHH/RJR/RJR	
DATE:	08/00	11/26/02	ADDENDUM #2		
			REVISIONS AND RECORD OF ISSUE	NO. BY CK APP	

ARCHITECTURAL  
**ADMINISTRATION BUILDING  
LABORATORY  
DEMOLITION PLAN AND DETAILS**

LITTLE PATUXENT WATER DEMOLITION PLANT  
ADDITION NO. 6  
LABORATORY RENOVATION  
CAPITAL PROJECT S-6205  
CONTRACT NO. 20-3841  
HOWARD COUNTY, MARYLAND

SCALE  
AS  
SHOWN  
SHEET  
7 OF 28  
**A1**

058472-5  
FD58472R



**CONCRETE WALK DETAILS**  
 NO SCALE

**NOTES**

1. INSTALL CONCRETE WALK UNDERNEATH EXISTING CANOPY. PROVIDE GRADING AS NECESSARY TO MATCH CONCRETE WALK ELEVATION TO EXISTING FINISHED FLOOR AT DOOR THRESHOLD, AS INDICATED ON DRAWING A9.
2. MATCH EXISTING SIDEWALK IN GRADE.
3. PROTECT EXISTING TREE FROM DAMAGE.

**LEGEND**

- PROPOSED CONCRETE SIDEWALK
- SF SILT FENCE
- LIMIT OF DISTURBANCE

DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND  
 CHIEF, BUREAU OF UTILITIES DATE

**AMT**  
 A. MORTON THOMAS AND ASSOCIATES, INC.  
 CONSULTING ENGINEERS  
 12750 TWINBROOK PARKWAY, SUITE 200, ROCKVILLE MD 20852  
 TEL (301) 881-2566 FAX (301) 881-8814  
 E-MAIL JBYRNE@AMTENGINEERING.COM  
 AMT FILE # 98-154

**BLACK & VEATCH** LP  
 Gaithersburg, Maryland  
 REG. PROF. ENGR. DATE

THIS DRAWING WAS  
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 FOR CONSTRUCTION  
 AND SEALED BY  
 MICHAEL JOSEPH NIERCINSKI  
 A REGISTERED  
 PROFESSIONAL ENGINEER  
 IN THE  
 STATE OF MARYLAND,  
 NO. 21816

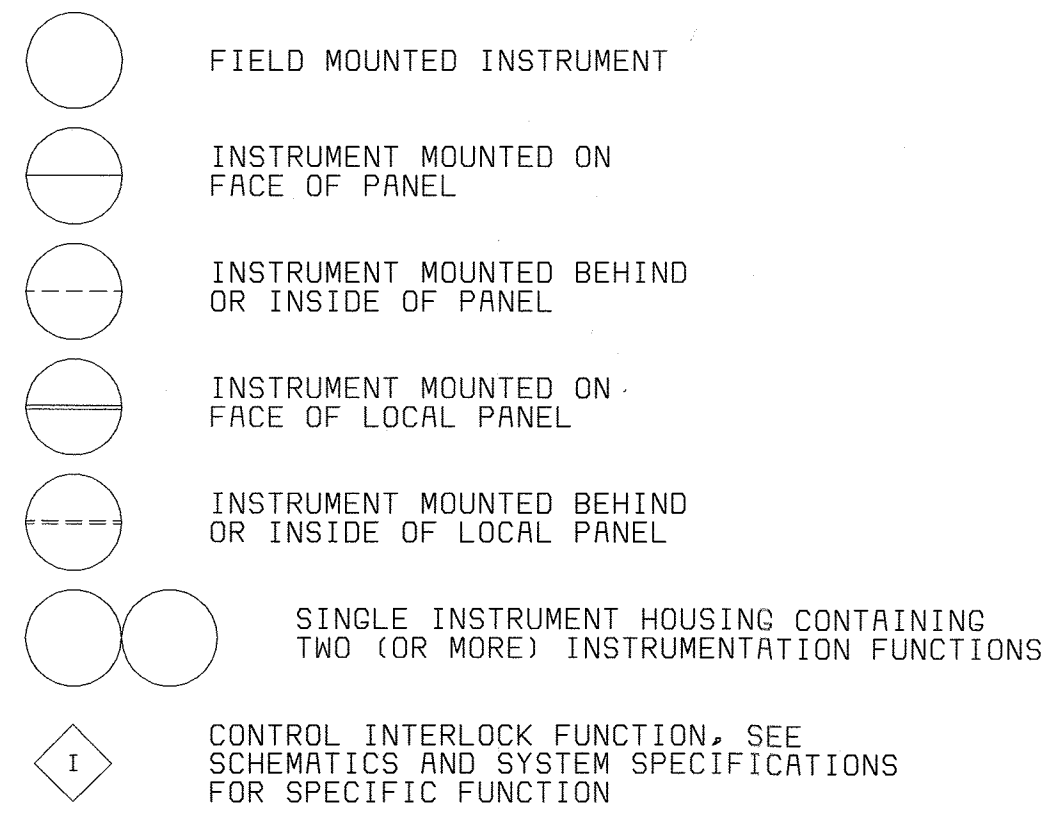
DES: R ANCHORS					
DRN: R ANCHORS					
CHK: A REYES					
DATE: 10/01/01	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK APP

CIVIL  
 SITE GRADING AND STAGING PLAN

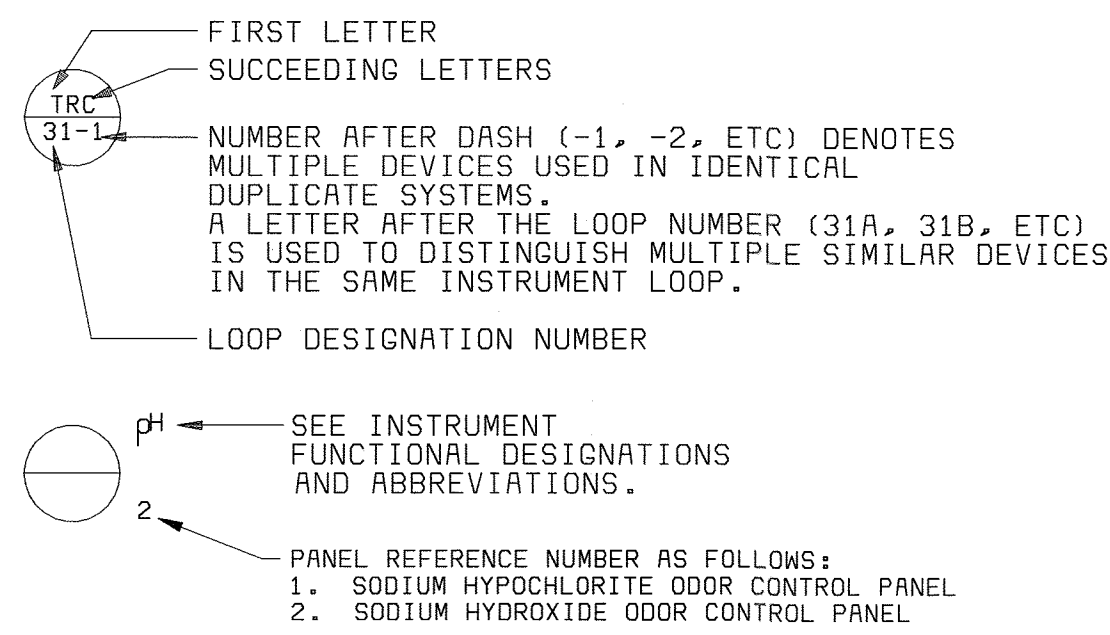
LITTLE PATUXENT WATER RECLAMATION PLANT  
 ADDITION NO. 6  
 LABORATORY RENOVATION  
 CAPITAL PROJECT S-6205  
 CONTRACT NO. 20-3841  
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
 SHEET 6 OF 28  
 C-1

**GENERAL INSTRUMENT SYMBOLS**



**TAG NUMBERS AND ADDITIONAL DESIGNATIONS**

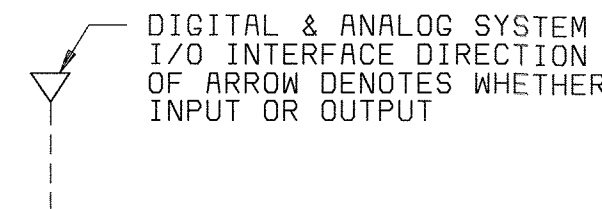


**TAG NUMBERS MEANINGS OF IDENTIFICATION LETTERS**

LETTER	FIRST LETTER		SUCCEEDING LETTERS		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, COMBUSTION		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C	CONDUCTIVITY (ELECTRICAL)			CONTROL	
D	DENSITY (MASS) OR SPECIFIC GRAVITY	DIFFERENTIAL			
E	VOLTAGE (EMF)		PRIMARY ELEMENT		
F	FLOW RATE	RATIO (FRACTION)			
G	USER'S CHOICE		GLASS		
H	HAND (MANUALLY INITIATED)				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME OR TIME-SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT (PILOT)		LOW
M	MOISTURE OR HUMIDITY	MOMENTARY			MIDDLE OR INTER-MEDIATE
N	USER'S CHOICE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O	USER'S CHOICE		ORIFICE (RESTRICTION)		
P	PRESSURE OR VACUUM		POINT (TEST CONNECTION)		
Q	QUANTITY	INTEGRATE OR TOTALIZE	INTEGRATE OR TOTALIZE		
R	RADIATION		RECORD OR PRINT		
S	SPEED OR FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION			VALVE, DAMPER, OR LOUVER	
W	WEIGHT OR FORCE		WELL		
X	UNCLASSIFIED		UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT, STATE, OR PRESENCE			RELAY OR COMPUTE	
Z	POSITION, DIMENSION			DRIVE, ACTUATOR OR UNCLASSIFIED FINAL CONTROL ELEMENT	

**DIGITAL SYSTEMS INTERFACE SYMBOLS**

NOTE: REFER TO DETAILED SYSTEM SPECIFICATIONS FOR FUNCTIONAL DESCRIPTION. ALSO SEE I/O SCHEDULES FOR COMPLETE INPUT AND OUTPUT LISTINGS.



**GENERAL NOTES**

- IN GENERAL, THE P & ID SYMBOLS AND DEVICE IDENTIFICATIONS ARE BASED ON INSTRUMENT SOCIETY OF AMERICA, STANDARD PRACTICE ISA-SS-1 (1988). SOME MODIFICATIONS, ADDITIONS, AND ALTERATIONS HAVE BEEN MADE AS NEEDED TO ACCOMMODATE THE PROJECT REQUIREMENTS.
- ADDITIONAL CONTROL AND INTERLOCK REQUIREMENTS WHICH CAN BE MORE CLEARLY ILLUSTRATED ON SCHEMATIC DRAWINGS HAVE BEEN OMITTED FROM THE P & ID DRAWINGS. SOME PROCESS ITEMS, SUCH AS EQUIPMENT ISOLATION VALVES, BYPASS LINES, ETC., WHICH ARE NOT CRITICAL FOR AN UNDERSTANDING OF THE INSTRUMENTATION FUNCTIONS HAVE ALSO BEEN OMITTED.
- THIS IS A GENERAL LEGEND SHEET. SOME SYMBOLS AND ABBREVIATIONS MAY NOT BE UTILIZED ON THIS SPECIFIC PROJECT.
- PIPING AND EQUIPMENT LEGEND APPLIES TO P & ID SHEETS ONLY AND MAY DIFFER FROM LEGENDS FOR OTHER SHEETS.

**GENERAL ABBREVIATIONS**

AFD	AJUSTABLE FREQUENCY DRIVE	PCE	PRIMARY CLARIFIER EFFLUENT
A	AIR	PCI	PRIMARY CLARIFIER INFLUENT
AN	ANEROBIC ZONE	PRI	PRIMARY REACTOR INFLUENT
AX	ANOXIC ZONE	PR	PROCESS REACTOR
DB	DISTRIBUTION BOX	PS	PRIMARY SLUDGE
FBI	FLOCCULATION BASIN INFLUENT	RAS	RETURN ACTIVATED SLUDGE
FCI	FINAL CLARIFIER INFLUENT	RFS	RECYCLED FERMENTED SLUDGE
FSU	FERMENTER SUPERNATANT	WAS	WASTE ACTIVATED SLUDGE
FTS	FLOTATION THICKENED SLUDGE	WFS	WASTE FERMENTED SLUDGE
M	MOTOR, MIXER		
OX	OXIC		

**FUNCTION DESIGNATIONS AND ABBREVIATIONS**

**INSTRUMENT DESIGNATIONS**

K	GAIN OR ATTENUATE (INPUT:OUTPUT)
-K	GAIN AND REVERSE
Σ	ADD OR SUM (ADD AND SUBTRACT)
Δ	SUBTRACT (DIFFERENCE)
√	EXTRACT SQUARE ROOT
÷	DIVIDE
F(X)	CHARACTERIZE SIGNAL
>	HIGH-SELECT
<	LOW-SELECT
X	MULTIPLY
/	INTEGRATE (TIME INTEGRAL)
CH <sub>4</sub>	METHANE
CL <sub>2</sub>	CHLORINE RESIDUAL
CO <sub>2</sub>	CARBON DIOXIDE
DO	DISSOLVED OXYGEN
LEL	LOWER EXPLOSIVE LIMIT
MCC	MOTOR CONTROL CENTER
MLSS	MIXED LIQUOR SUSPENDED SOLIDS
O <sub>2</sub>	OXYGEN (PURITY)
pH	pH CELL
TURB	TURBIDITY

**HAND SWITCH DESIGNATIONS**

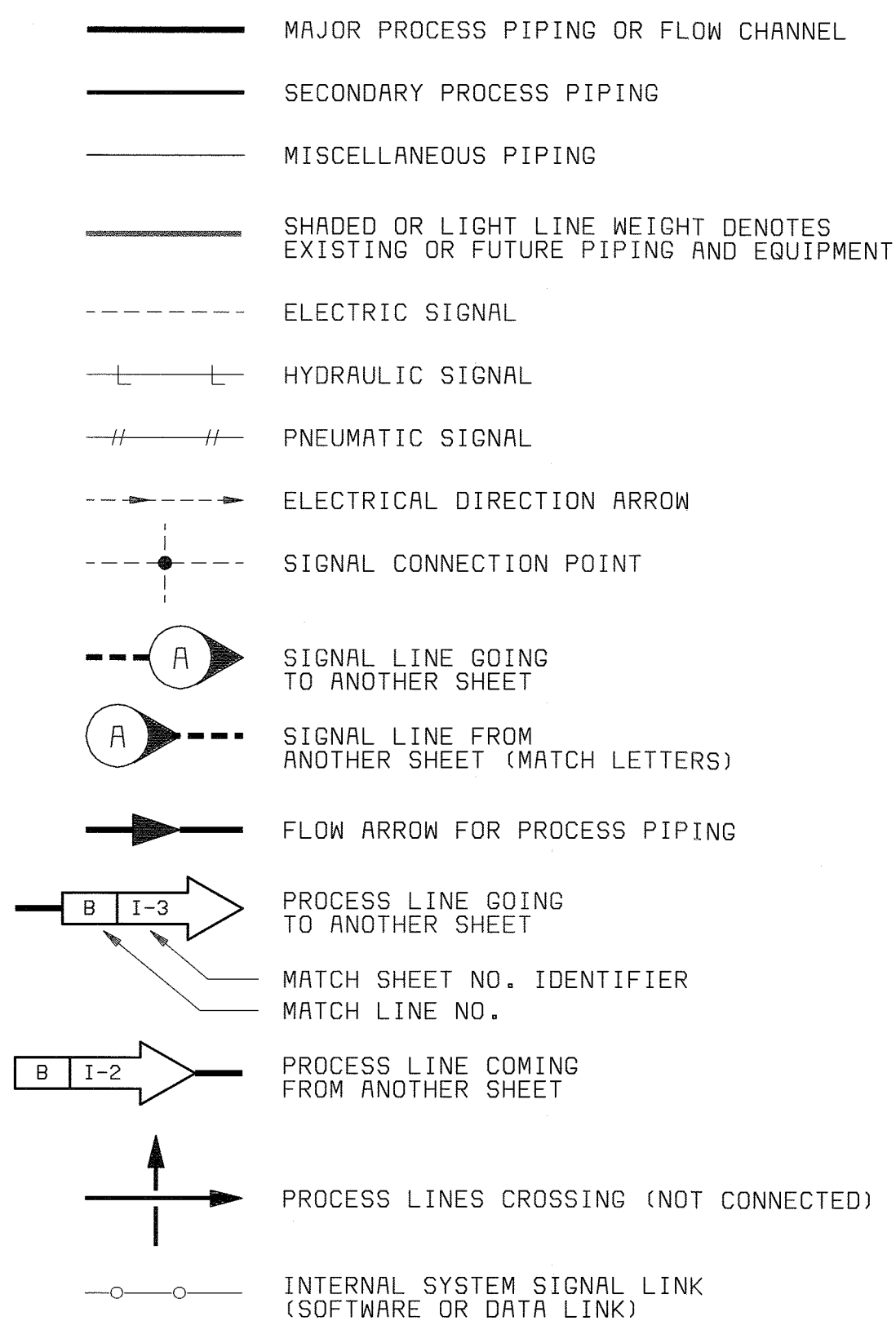
HOA	HAND-OFF-AUTO
LR	LOCAL REMOTE
OC	OPEN-CLOSE
OO	ON-OFF
LOR	LOCAL-OFF-REMOTE
OOA	ON-OFF-AUTO
OCR	OPEN-CLOSE-REMOTE
OOR	ON-OFF-REMOTE

**POWER SUPPLY ABBREVIATIONS**

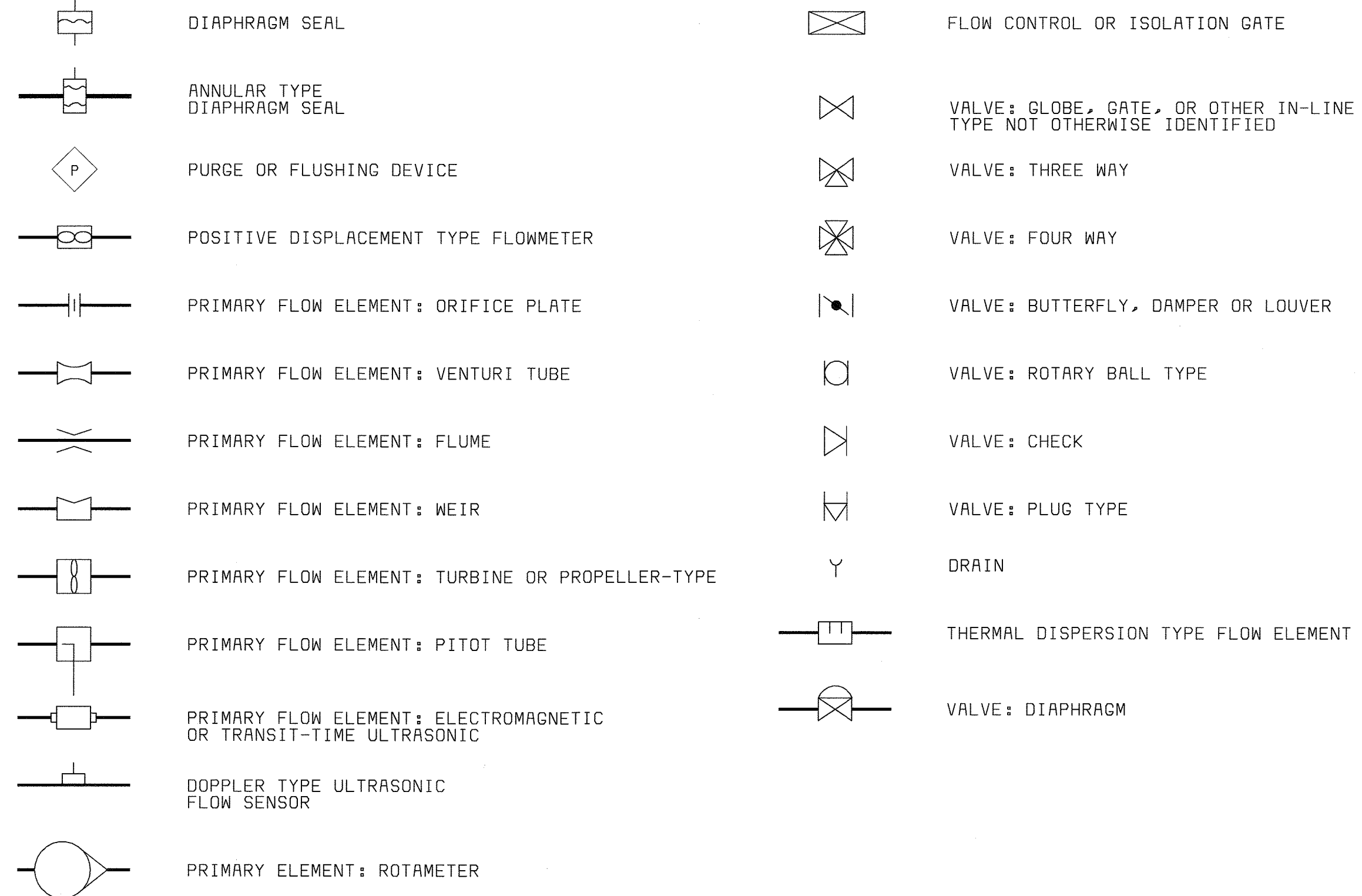
AS	AIR SUPPLY
ES	ELECTRIC SUPPLY
GS	GAS SUPPLY
HS	HYDRAULIC SUPPLY
NS	NITROGEN SUPPLY
SS	STEAM SUPPLY
WS	WATER SUPPLY

AS POWER SUPPLY SOURCE LABEL. USED ONLY WHERE NECESSARY TO HELP CLARIFY AN INSTRUMENT OR SYSTEM FUNCTION.

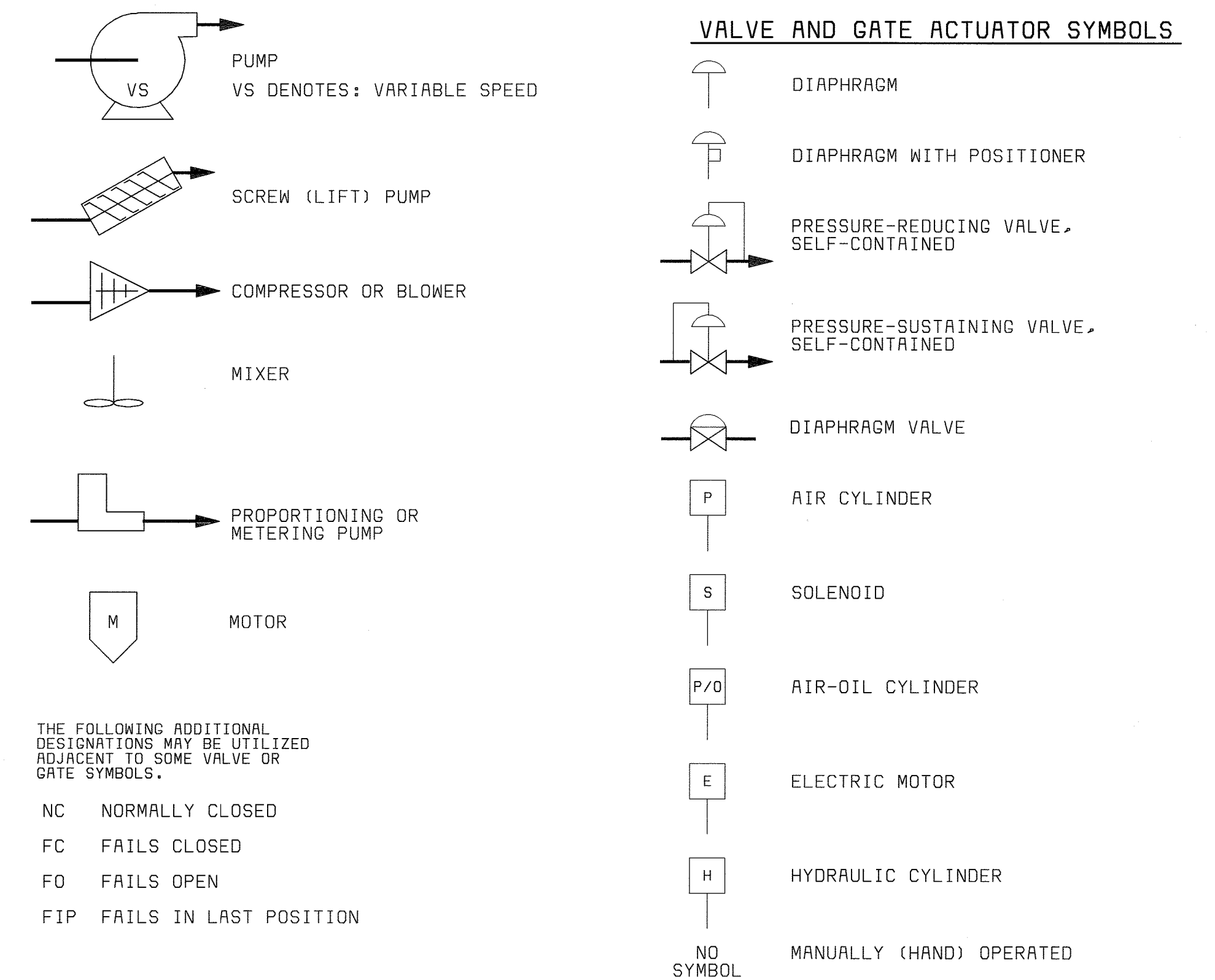
**LINE SYMBOLS**



**PROCESS DEVICE SYMBOLS**



**VALVE AND GATE ACTUATOR SYMBOLS**



THE FOLLOWING ADDITIONAL DESIGNATIONS MAY BE UTILIZED REFERENT TO SOME VALVE OR GATE SYMBOLS:

NC	NORMALLY CLOSED
FC	FAILS CLOSED
FO	FAILS OPEN
FIP	FAILS IN LAST POSITION

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND  
CHIEF, BUREAU OF UTILITIES DATE

**BLACK & VEATCH**  
Gaithersburg, Maryland  
REG. PROF. ENGR. DATE

THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY DONALD R. STEVENS A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 21876

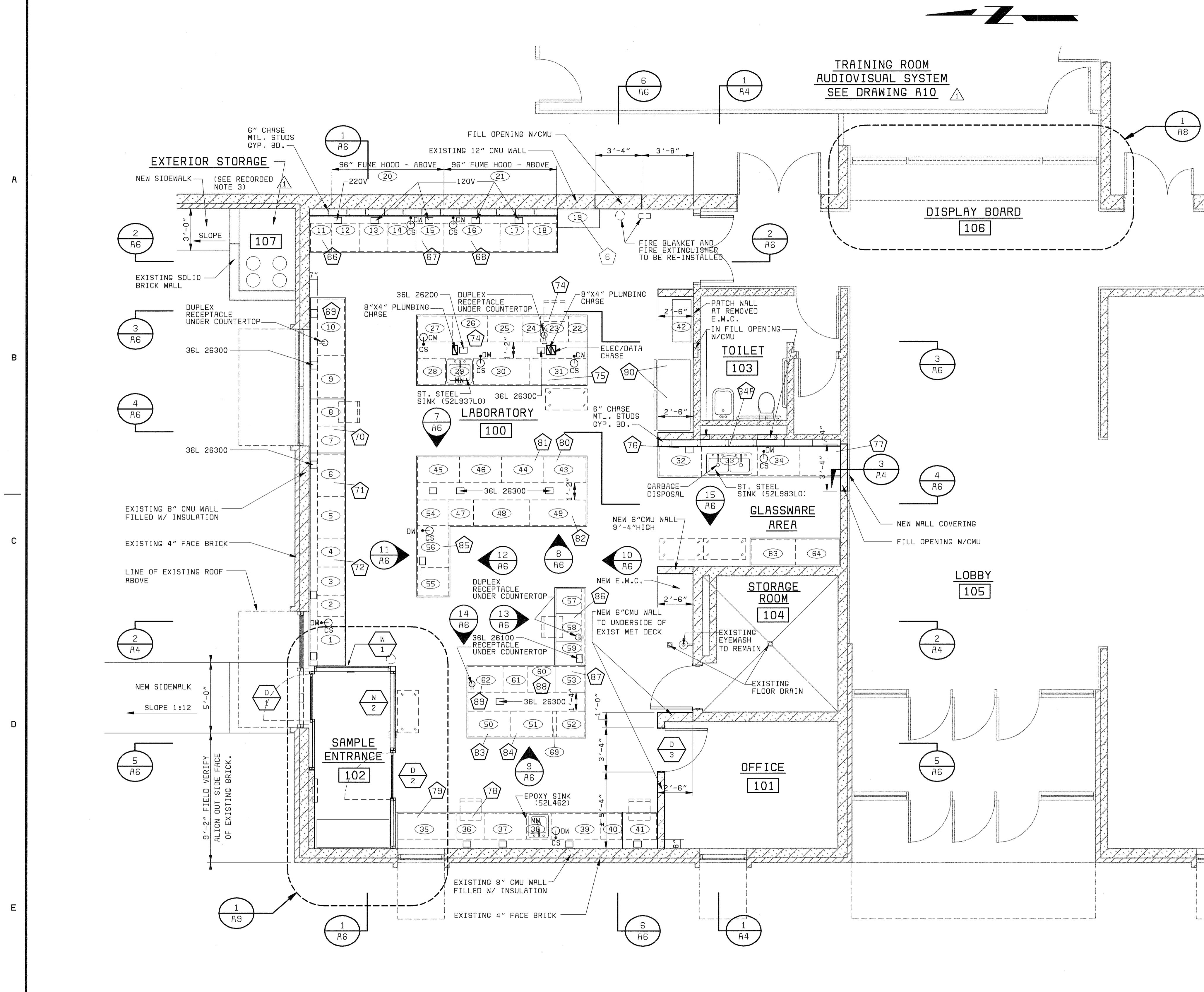
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DRN: TDR					
CHK: PWM					
DATE: 04/22/02	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK APP
	7/22/05	CONFORMED TO CONSTRUCTION RECORDS		RHH	RJR

**INSTRUMENTATION**  
**P & ID**  
**LEGEND & ABBREVIATIONS**

LITTLE PATUXENT WATER RECLAMATION PLANT  
ADDITION NO. 6  
CONTROL SYSTEM EXPANSION  
CAPITAL PROJECT S-6205  
CONTRACT NO. 20-3842  
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
SHEET 6 OF 39  
I 1





LABORATORY - FLOOR PLAN - EL. 145.00'  
1/4" = 1'-0"

**PLAN NOTES:**

- FOR LABORATORY FURNITURE AND EQUIPMENT SCHEDULE SEE A-5.
- FOR NEW FLOOR DRAIN LOCATIONS SEE PLUMBING DRAWINGS.
- FOR WINDOW AND DOOR DETAILS SEE A-9.
- FOR REFLECTED CEILING PLAN SEE A-3.
- ALL INTERIOR PARTITION WALLS SHALL BE CONSTRUCTED FROM FINISH FLOOR TO UNDERSIDE OF CEILING UNLESS OTHERWISE NOTED.
- DIMENSIONS AT EXTERIOR WALL REFER TO INSIDE FACE OF GYPSUM BOARD OR CMU FINISH.
- + DIMENSIONS WHICH MAY BE ADJUSTED IF REQUIRED HOLD OTHER DIMENSIONS AS INDICATED.
- MAINTAIN EXISTING FIRE RATING AND ANY PENETRATION SHOULD BE SEALED AGAINST GAS MIGRATION.
- CHAIR SHOW ON PLANS ARE NOT IN CONTRACT.
- REMOVE AND REPLACE EXISTING VINYL WALL COVERING IN LOBBY AND ADJACENT CORRIDORS TO LIMIT OF DOORS WHICH ENCLOSE THE LOBBY/CORRIDOR AREAS.
- FOR WALL FINISHES REFERENCE TO BUILDING SECTIONS ON A4 (TYPICAL).
- PATCH OR REPLACE EXISTING GLAZED CMU BEHIND REMOVED HEATING UNIT TO MATCH SURROUNDING AREA.

**LEGEND:**

- NEW WALL
- EXISTING WALL
- CS= CUP SINK (FISHER 34L 132) 4" X 7" X 8" D.
- CW= COLD WATER (FISHER 32L 386)
- DW= DE-IONIZED WATER (FISHER 32L 513)
- MW= MIXED WATER (FISHER 32L 408)
- CUP SINK (CW OR DW)
- FUNCTIONAL DESCRIPTION
- EQUIPMENT / FURNITURE

**ELECTRICAL LEGEND:**

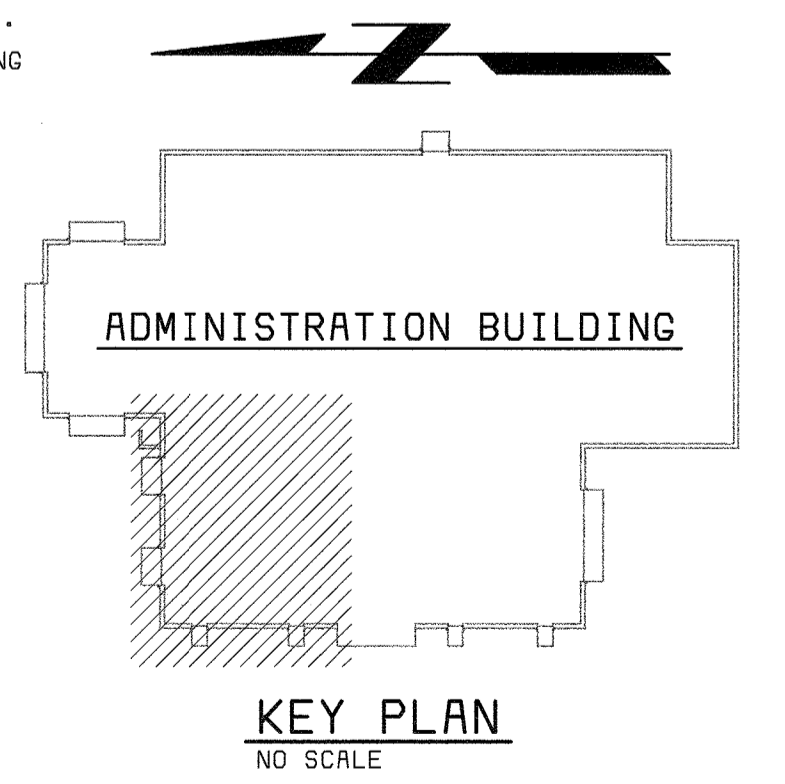
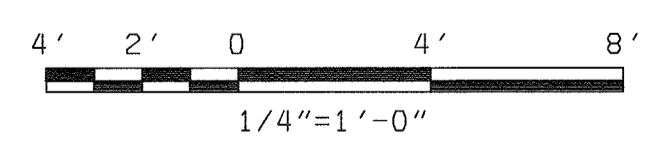
- RECEPTACLES: UNLESS OTHERWISE NOTED, ON COUNTERTOP, ARE FISHER 36L 26200, PEDESTAL OUTLETS (4 RECEPTACLES FACING ONE WAY)
- WHEN NOTED, 36L 26300 (4 RECEPTACLES ON EACH SIDE) OR 36L 26100 (2 RECEPTACLES ON EACH SIDE)

**FUNCTIONAL DESCRIPTION LEGEND: ALSO REF. TO A5**

- |   |                                    |                      |
|---|------------------------------------|----------------------|
| 66 MUFFLE FURNACE.                      | 76 WATER SYSTEM.                   | 86 PC. FOR TSS.      |
| 67 CN DESTILLATION.                     | 77 DISHWASHER.                     | 87 METTLER BALANCE.  |
| 68 TKN DIGESTION.                       | 78 BALANCE.                        | 88 CI. COLOR ANAL.   |
| 69 CENTRIFUGE.                          | 79 DESSICATOR.                     | 89 B.O.D. INCUBATOR. |
| 70 PC.                                  | 80 DESSICATOR FOR TSS              | 90 REFRIGERATOR      |
| 71 ATOMIC ABSORPTION.                   | 81 DESSICATOR FOR TS.              |                      |
| 72 AUTOCLAVE.                           | 82 TS/TSS DRYING OVEN.             |                      |
| 73 PC.                                  | 83 WATER BATH FOR FECAL COLIFORMS. |                      |
| 74 NUTRIENT ANALYZER I W/ AUTOSAMPLER.  | 84 INCUBATOR.                      |                      |
| 75 NUTRIENT ANALYZER II W/ AUTOSAMPLER. | 85 B.O.D. ANALYSIS                 |                      |

**CONSTRUCTION RECORD NOTES**

- ALL WALLS IN ROOMS 100, 101, 102, AND 103 ARE TO HAVE CERAMIC TILE. REGULAR BLOCK UNDER THE TILE IS ACCEPTABLE.
- CONTRACTOR DOES NOT NEED TO PROVIDE TWO HOUR FIRESTOPPING FOR PENETRATIONS FOR STORAGE ROOM 104.
- SIDEWALK DOES NOT NEED TO BE CONSTRUCTED.
- CHASE FOR LAB TABLE OUTSIDE STORAGE ROOM 102.
- THE ELECTRICAL SWITCHES LOCATED INSIDE AND OUTSIDE OF ROOM 102 SHOULD BE LOWERED TO THE NEXT COURSE DOWN. ALSO, THE LOCATION SHOULD BE COORDINATED WITH CABINETS AND COUNTERTOPS.
- REMOVE HEATING RADIATOR FROM TOILET, ROOM 107 WILL NOT BE RETILED.



DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF UTILITIES DATE

**bbw** Architects • Designers • Planners  
Bryant Bryant Williams, P.C.  
4201 Connecticut Avenue N.W., Suite 500  
Washington, D.C. 20008 (202) 244-2108

**BLACK & VEATCH** LLP  
Gaithersburg, Maryland

REG. PROF. ENGR. DATE

THIS DRAWING WAS  
ORIGINALLY APPROVED  
FOR CONSTRUCTION  
AND SEALED BY  
CHARLES I. BRYANT  
A REGISTERED  
ARCHITECT  
IN THE  
STATE OF MARYLAND,  
NO. 1377-R

DES:	CH				
DRN:	JS				
CHK:	CH/JS				
DATE:	08/00				
DATE:	11/03/03	CONFORMED TO CONSTRUCTION RECORDS			
DATE:		REVISIONS AND RECORD OF ISSUE			

ARCHITECTURAL

ADMINISTRATION BUILDING  
LABORATORY FLOOR PLAN

LITTLE PATUXENT WATER RECLAMATION PLANT  
ADDITION NO. 6  
LABORATORY RENOVATION

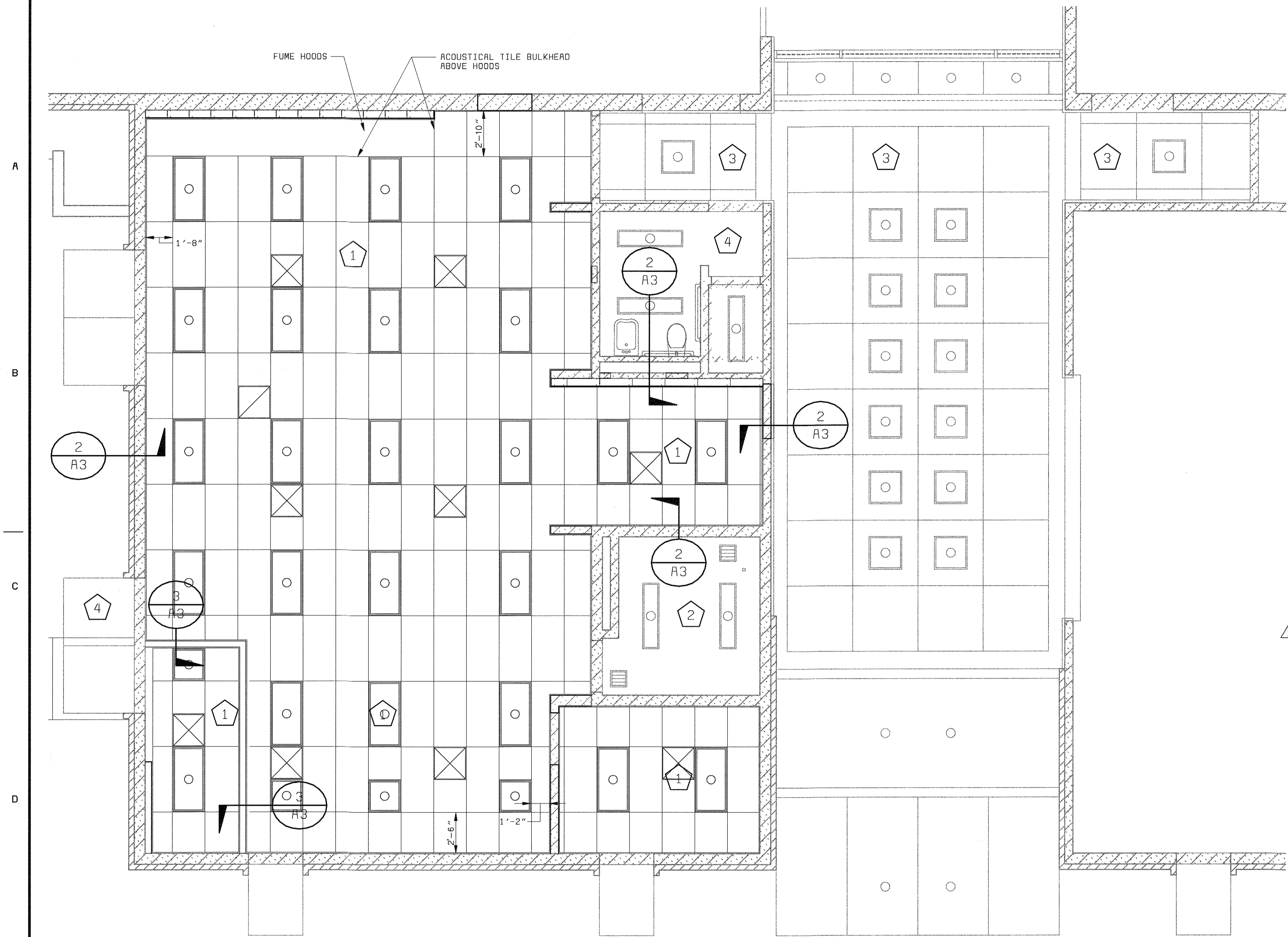
CAPITAL PROJECT S-6205  
CONTRACT NO. 20-3841

HOWARD COUNTY, MARYLAND

SCALE  
AS  
SHOWN

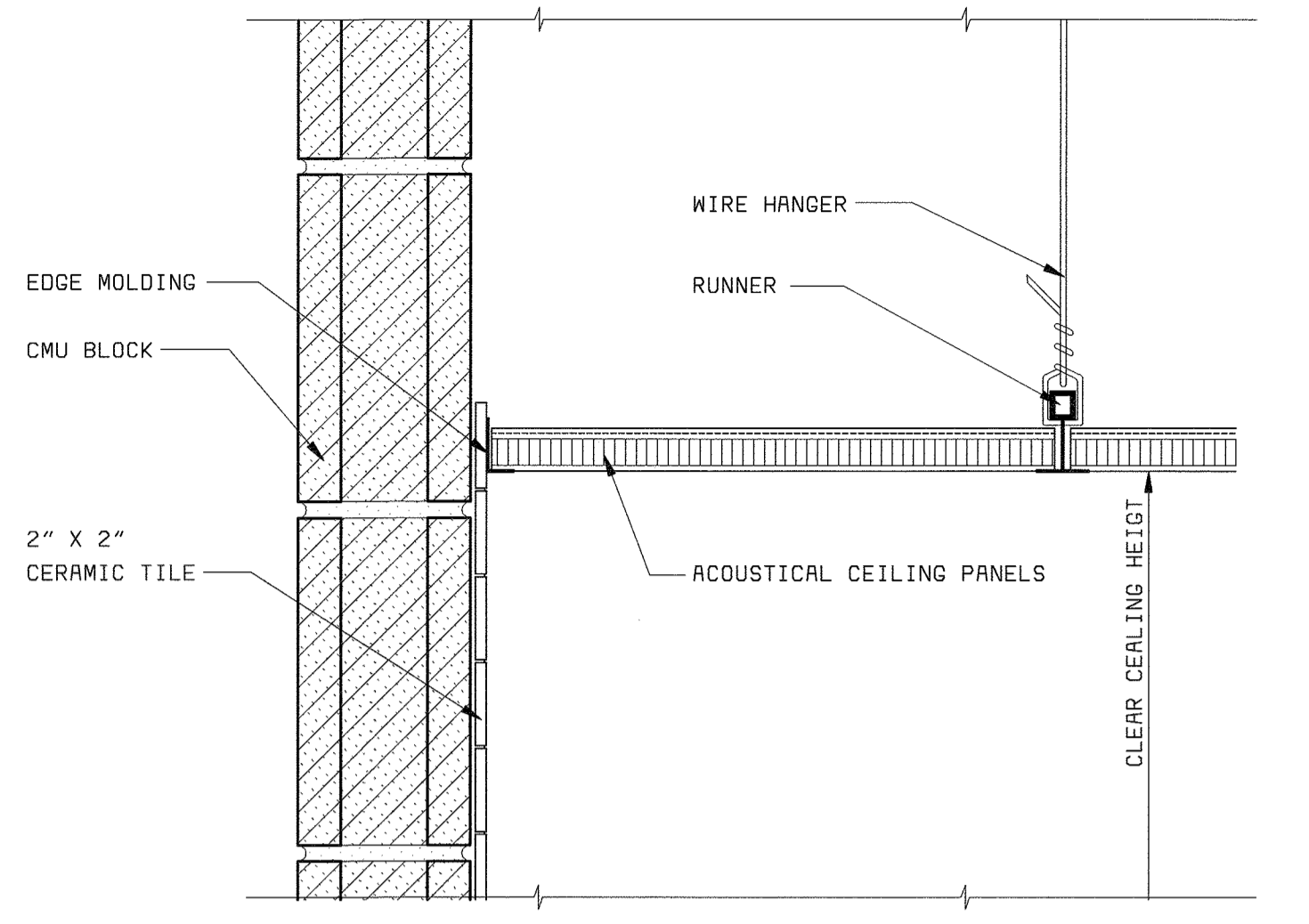
SHEET  
8 OF 28

A2

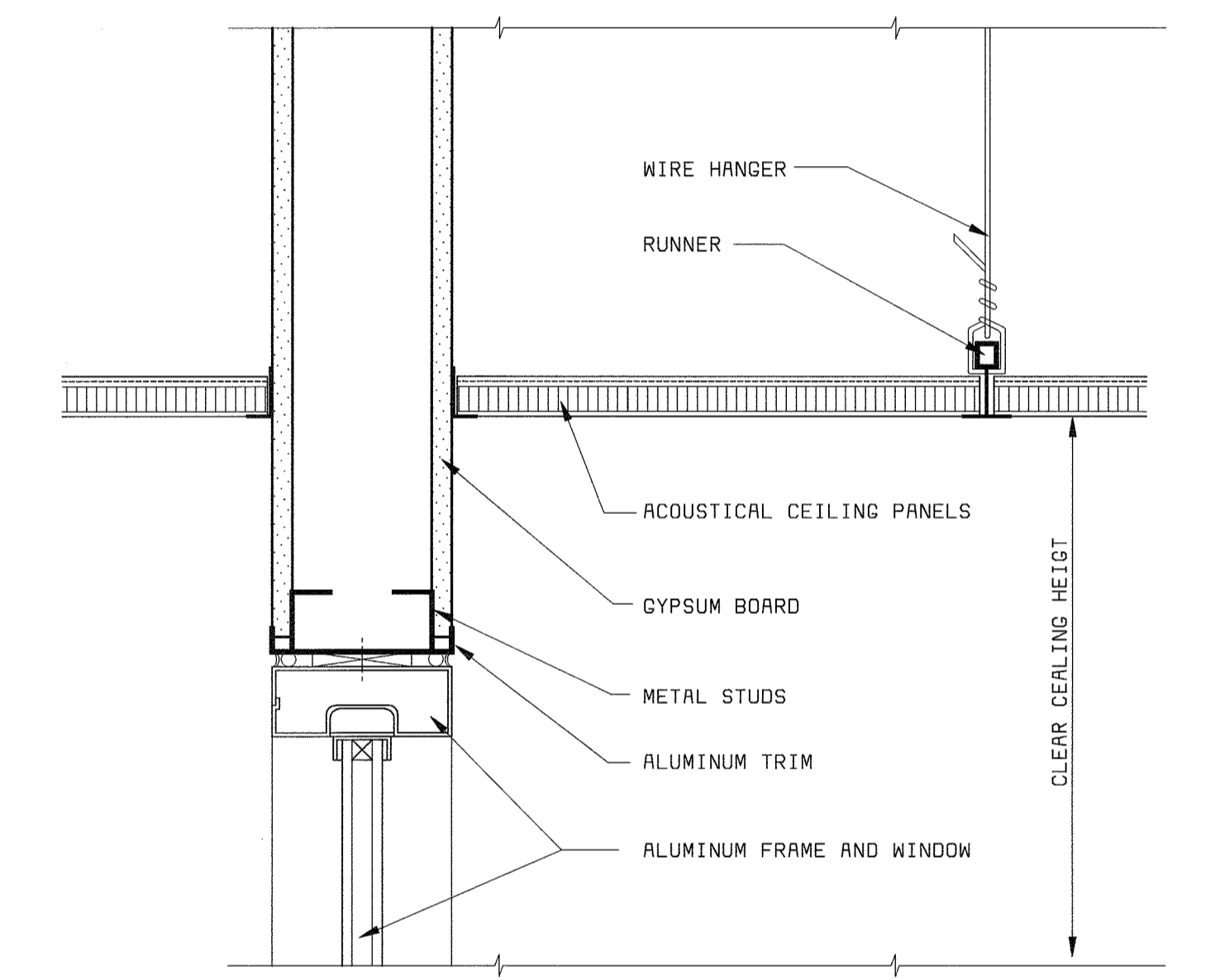


- LEGEND:**
- 1 2' X 4' NEW ACOUSTICAL CEILING PANELS.
  - 2 NOT USED.
  - 3 EXISTING ACOUSTICAL CEILING PANELS.
  - 4 EXISTING P.C. PLASTER CEILING TO REMAIN.
  - NEW 2' X 4' LIGHT FIXTURE
  - NEW 1' X 4' LIGHT FIXTURE
  - NEW 2' X 2' LIGHT FIXTURE
  - EXISTING 2' X 4' LIGHT FIXTURE
  - EXISTING 1' X 4' LIGHT FIXTURE
  - EXISTING 2' X 2' LIGHT FIXTURE
  - SPRINKLER
  - RETURN SLOT DIFFUSER W/DESIGNATION
  - SUPPLY SLOT DIFFUSER W/DESIGNATION
  - ⊗ EXISTING AIR SUPPLY REGISTER
  - ⊘ EXISTING AIR RETURN REGISTER
  - EXISTING SPOT LIGHT FIXTURE

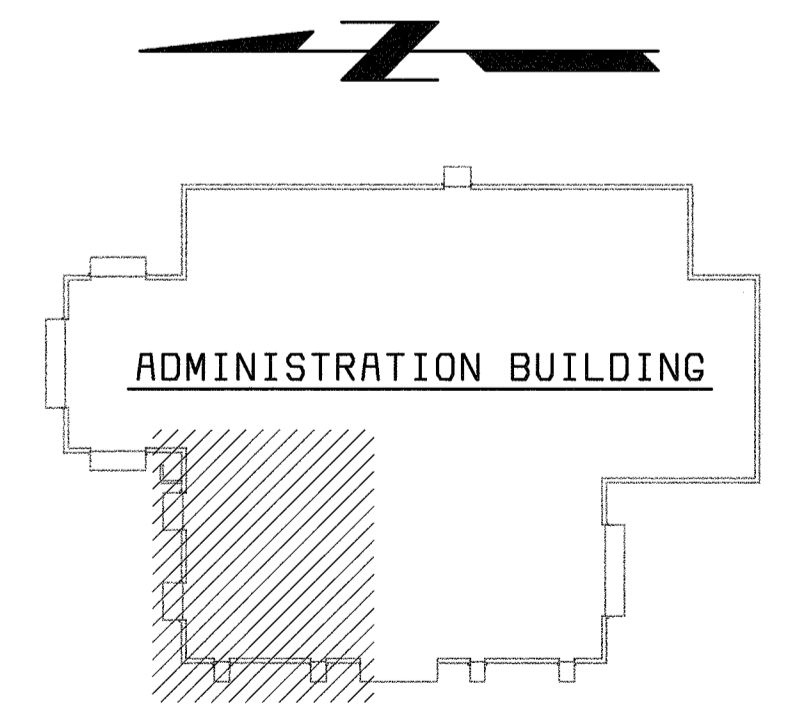
- PLAN NOTES:**
1. ACOUSTICAL CEILING 8'-0" ABOVE FIN. FLOOR - TO MATCH EXISTING.
  2. FOR RETURN AND SUPPLY SLOT DIFFUSER LOCATIONS AND DIMENSION SEE H DRAWINGS.
  3. FOR SPRINKLER SYSTEM - SEE FIRE PROTECTION DRAWINGS.
  4. ON THE EXISTING CONSTRUCTION TO REMAIN, REUSE THE LIGHT FIXTURES AND REPLACE IN ORIGINAL LOCATIONS.



**CEILING DETAIL 2**  
3" = 1'-0" A3

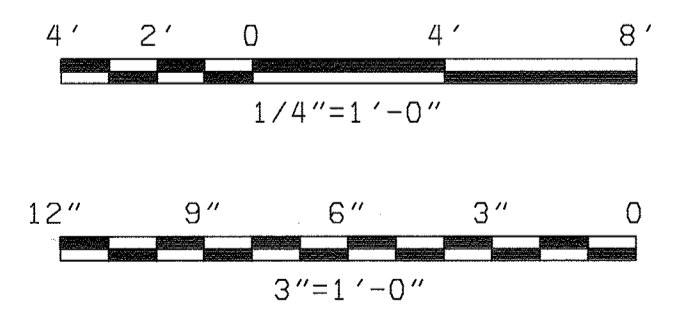


**CEILING DETAIL 3**  
3" = 1'-0" A3

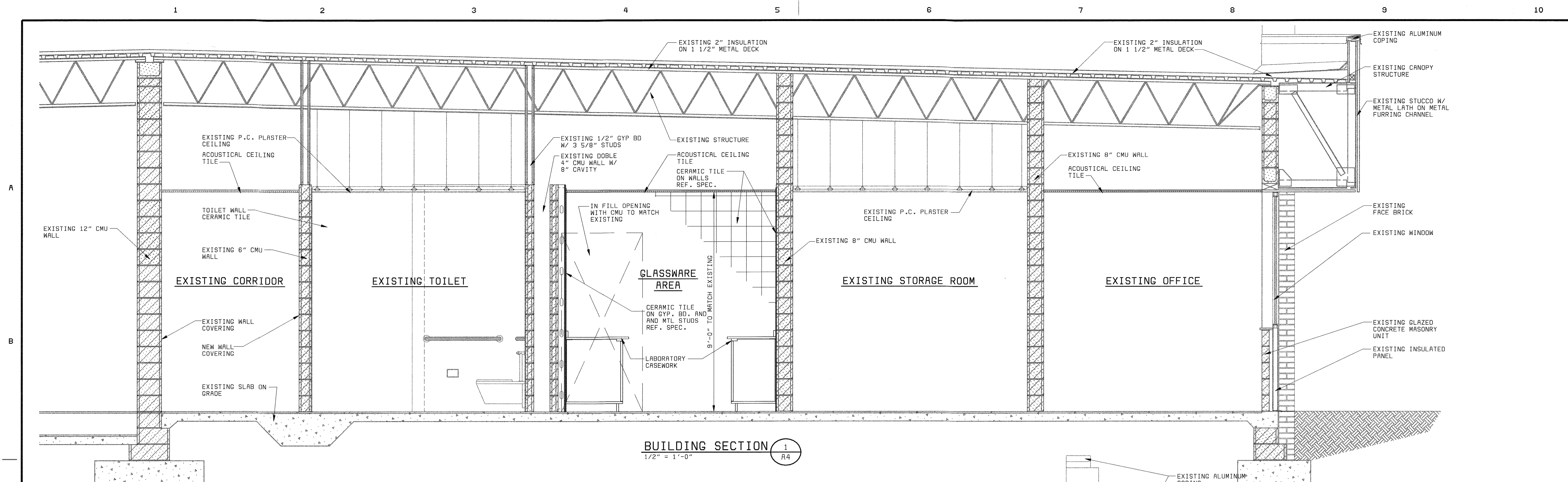


**KEY PLAN**  
NO SCALE

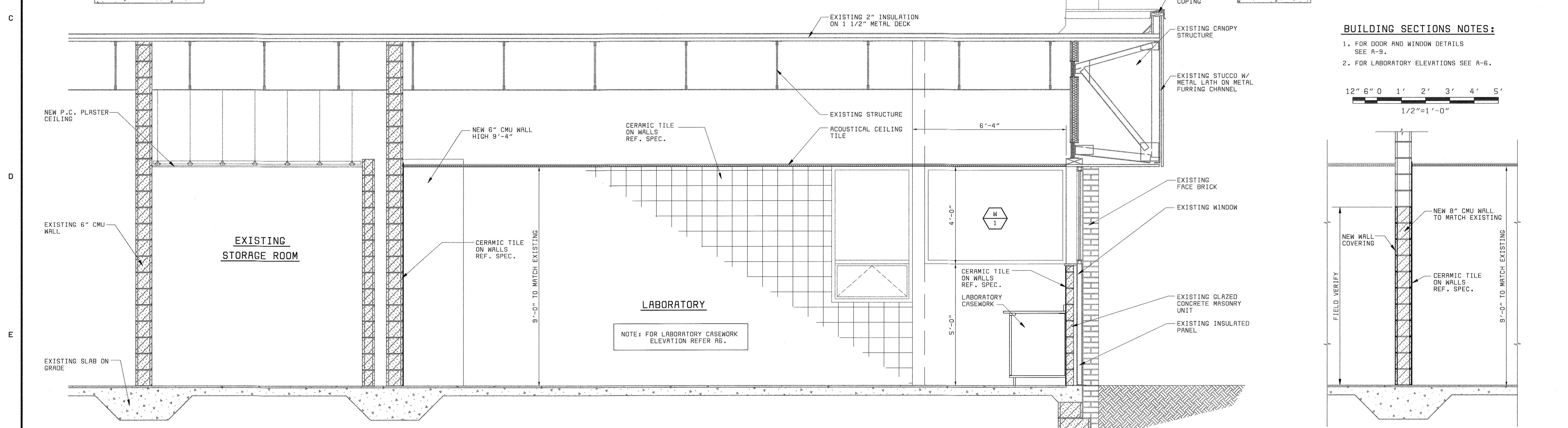
**REFLECTED CEILING PLAN 1**  
1/4" = 1'-0" A3



DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  <b>bbw</b> Architects • Designers • Planners Bryant Bryant Williams, P.C. 4201 Connecticut Avenue N.W., Suite 500 Washington, D.C. 20009 (202) 244-2100	<b>BLACK &amp; VEATCH</b> Gaithersburg, Maryland  REG. PROF. ENGR. _____ DATE _____	THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY CHARLES I. BRYANT A REGISTERED ARCHITECT IN THE STATE OF MARYLAND, NO. 1377-R	DES: CH						ARCHITECTURAL  ADMINISTRATION BUILDING LAB - REFLECTED CEILING PLAN AND DETAILS	LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 LABORATORY RENOVATION  CAPITAL PROJECT S-6205 CONTRACT NO. 20-3841  HOWARD COUNTY, MARYLAND	SCALE AS SHOWN
			DRN: JS	CHK: CH/JS	DATE: 08/00	11/03/03	CONFORMED TO CONSTRUCTION RECORDS	RHH			RJR
			DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP			A3

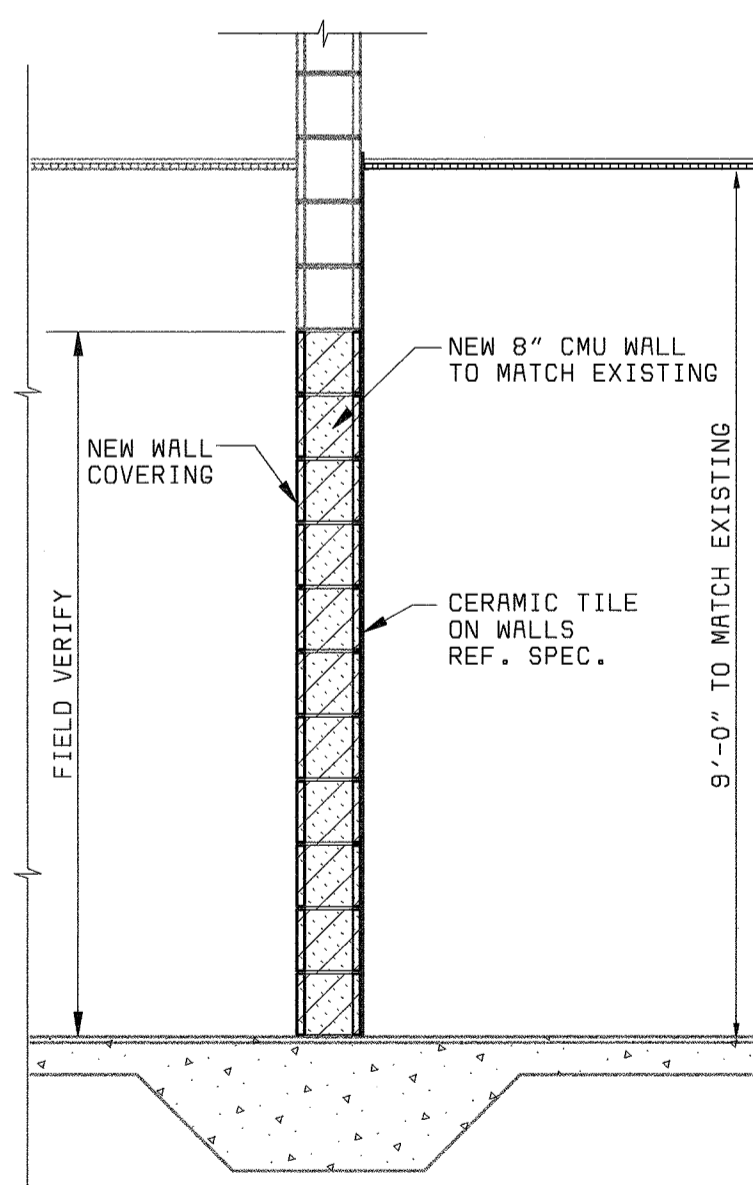


**BUILDING SECTION 1**  
1/2" = 1'-0"



**BUILDING SECTION 2**  
1/2" = 1'-0"

**BUILDING SECTIONS NOTES:**  
 1. FOR DOOR AND WINDOW DETAILS SEE A-9.  
 2. FOR LABORATORY ELEVATIONS SEE A-6.



**BUILDING SECTION 3**  
1/2" = 1'-0"

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  <b>bbw</b> Architects • Designers • Planners Bryant Bryant Williams, P.C. 4201 Connecticut Avenue N.W., Suite 550 Washington, D.C., 20008 (202) 244-2108  CHIEF, BUREAU OF UTILITIES DATE	<b>BLACK &amp; VEATCH</b> Gaithersburg, Maryland  REG. PROF. ENGR. DATE	THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY CHARLES I. BRYANT A REGISTERED ARCHITECT IN THE STATE OF MARYLAND, NO. 1377-R	DES: CH/JS	ARCHITECTURAL	LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 LABORATORY RENOVATION  CAPITAL PROJECT S-6205 CONTRACT NO. 20-3841  HOWARD COUNTY, MARYLAND	SCALE AS SHOWN
			DRN: JS	ADMINISTRATION BUILDING LABORATORY		SHEET 10 OF 28
			CHK: CW	ARCHITECTURAL BUILDING SECTIONS		A4
			DATE: 08/00			
			11/03/03	CONFORMED TO CONSTRUCTION RECORDS	RHH/RJR/RJR	
			DATE	REVISIONS AND RECORD OF ISSUE	NO. BY CK APP	

LABORATORY FURNITURE AND EQUIPMENT SCHEDULE

LABORATORY FURNITURE AND EQUIPMENT SCHEDULE

NOTES:

EQUIP. No.	REFERENCE	MANUFACTURE AND MODEL No.	DESCRIPTION	DIMENSIONS	REMARKS
1	1/A-6 1	106S7320	DOOR CABINET - PULL OUT SHELVES	42" X 21-5/8" X 35-1/4"	WITH PULL-OUT SHELVES (2)
2	1/A-6 3	173S2320	DRAWER CABINET	18" X 21-5/8" X 35-1/4"	-
3	1/A-6 4	214S4320	CARBOY HOLDER	24" X 21-5/8" X 35-1/4"	-
4	1/A-6 5	501S2210	DRAWER FRAME	24" X 21-1/2"	SITTING TABLE
5	1/A-6 6	206S6320	DRAWER CABINET	36" X 21-5/8" X 35-1/4"	-
6	1/A-6 7	148S6320	COMBINATION CABINET	36" X 21-5/8" X 35-1/4"	WITH PULL-OUT SHELVES (2)
7	1/A-6 8	127S4220	COMBINATION CABINET W/PULL-BOARD	24" X 21-5/8" X 29-3/8"	WITH PULL-OUT SHELVES (2)
8	1/A-6 9	501S2210	DRAWER FRAME	24" X 21-1/2"	SITTING SPACE
9	1/A-6 10	180S6320	COMBINATION CABINET	36" X 21-5/8" X 35-1/4"	WITH PULL-OUT SHELVES (2)
10	1/A-6 11	181S8320	COMBINATION CABINET	48" X 21-5/8" X 35-1/4"	WITH PULL-OUT SHELVES (2)
11	2/A-6 1	137S2320	COMBINATION CABINET	18" X 21-5/8" X 35-1/4"	WITH PULL-OUT SHELVES (2)
12	2/A-6 2	950S8210	ACID STORAGE CABINET	24" X 21-5/8" X 35-1/4"	-
13	2/A-6 3	131S4320	COMBINATION CABINET	24" X 21-5/8" X 35-1/4"	WITH PULL-OUT SHELVES (2)
14	2/A-6 4	950S7410	FLAMMABLE LIQUID STORAGE CABINET	24" X 22" X 35-1/4"	-
15	2/A-6 5	131S4320	COMBINATION CABINET	24" X 21-5/8" X 35-1/4"	WITH PULL-OUT SHELVES (2)
16	2/A-6 6	121S8320	FUME HOOD CABINET	48" X 21-5/8" X 35-1/4"	WITH PULL-OUT SHELF (1)
17	2/A-6 7	950S8210	ACID STORAGE CABINET	24" X 21-5/8" X 35-1/4"	-
18	2/A-6 8	136S4320	COMBINATION CABINET	24" X 21-5/8" X 35-1/4"	WITH PULL-OUT SHELVES (2)
19	2/A-6 9	818S696M	TALL CASE	36" X 16" X 84"	-
20	2/A-6 10	54L600	FUME HOOD	96" X 31-1/4" X 54-1/4"	-
21	2/A-6 11	54L600	FUME HOOD	96" X 31-1/4" X 54-1/4"	-
22	3/A-6 1	131S1320	COMBINATION CABINET	15" X 21-5/8" X 35-1/4"	-
23	3/A-6 2	501S2210	DRAWER FRAME	24" X 21-1/2"	SITTING SPACE
24	3/A-6 3	164S1320	DRAWER CABINET	15" X 21-5/8" X 35-1/4"	-
25	3/A-6 4	100S5320	OPEN CABINET	30" X 21-5/8" X 35-1/4"	WITH 531S8250 EXTRA SHELF
26	3/A-6 5	203S5320	DRAWER CABINET	30" X 21-5/8" X 35-1/4"	-
27	3/A-6 6	206S5320	DRAWER CABINET	30" X 21-5/8" X 35-1/4"	-
28	4/A-6 1	164S4320	DRAWER CABINET	24" X 21-5/8" X 35-1/4"	-
29	4/A-6 2	112S4320	SINK CABINET	24" X 21-5/8" X 35-1/4"	-
30	4/A-6 3	182S8320	COMBINATION CABINET	48" X 21-5/8" X 35-1/4"	WITH PULL-OUT SHELVES (2)
31	4/A-6 4	182S8320	COMBINATION CABINET	48" X 21-5/8" X 35-1/4"	WITH PULL-OUT SHELVES (2)
32	4/A-6 5	115S6320	SINK CABINET	36" X 21-5/8" X 35-1/4"	-
33	4/A-6 6	115S3620	SINK CABINET	48" X 21-5/8" X 35-1/4"	-
34	4/A-6 7	115S6320	SINK CABINET	36" X 21-5/8" X 35-1/4"	-
34A	4/A-6	52L780	PEGBOARD	-	CONTRACTOR PURCHASE/CONTRACTOR INSTALL
34B	4/A-6	52L546	DRIP TROUGH FOR PEGBOARD	-	CONTRACTOR PURCHASE/CONTRACTOR INSTALL
35	5/A-6 1	148S8320	COMBINATION CABINET	48" X 21-5/8" X 35-1/4"	WITH PULL-OUT SHELVES (2)
36	5/A-6 2	501S2210	DRAWER FRAME	24" X 21-1/2"	SITTING SPACE
37	5/A-6 3	148S6320	COMBINATION CABINET	36" X 21-5/8" X 35-1/4"	WITH PULL-OUT SHELVES (2)
38	5/A-6 4	113S3320	SINK CABINET	21" X 21-5/8" X 35-1/4"	-
39	5/A-6 5	148S7320	COMBINATION CABINET	42" X 21-5/8" X 35-1/4"	WITH PULL-OUT SHELVES (2)
40	5/A-6 6	164S2320	DRAWER CABINET	18" X 21-5/8" X 35-1/4"	-
41	5/A-6 7	502S2200	DRAWER FRAME	30" X 21-1/2"	SITTING SPACE
42	6/A-6 1	818S696M	TALL CASE	36" X 16" X 84"	-
43	7/A-6 1	148S6320	COMBINATION CABINET	36" X 21-5/8" X 35-1/4"	WITH PULL-OUT SHELVES (2)
44	7/A-6 2	148S6320	COMBINATION CABINET	36" X 21-5/8" X 35-1/4"	WITH PULL-OUT SHELVES (2)
45	7/A-6 3	179S6320	COMBINATION CABINET	36" X 21-5/8" X 35-1/4"	WITH PULL-OUT SHELVES (2)

EQUIP. No.	REFERENCE	MANUFACTURE AND MODEL No.	DESCRIPTION	DIMENSIONS	REMARKS
46	7/A-6 4	501S2210	DRAWER FRAME	30" X 21-5/8" X 35-1/4"	SITTING SPACE
47	8/A-6 1	176S3320	DRAWER CABINET	21" X 21-5/8" X 35-1/4"	-
48	8/A-6 2	148S8320	COMBINATION CABINET	48" X 21-5/8" X 35-1/4"	WITH PULL-OUT SHELVES (2)
49	8/A-6 3	148S8320	COMBINATION CABINET	48" X 21-5/8" X 35-1/4"	WITH PULL-OUT SHELVES (2)
50	9/A-6 1	200S6320	DRAWER CABINET	36" X 21-5/8" X 35-1/4"	-
51	9/A-6 2	100S6320	BOOKSHELF CABINET	36" X 21-5/8" X 35-1/4"	-
52	9/A-6 3	136S4320	COMBINATION CABINET	24" X 21-5/8" X 35-1/4"	WITH PULL-OUT SHELVES (2)
53	10/A-6 1	303S3320	DOOR CABINET	21" X 21-5/8" X 35-1/4"	WITH PULL-OUT SHELVES (2)
54	11/A-6 1	303S3320	DOOR CABINET	21" X 21-5/8" X 35-1/4"	WITH PULL-OUT SHELVES (2)
55	12/A-6 1	127S4220	COMBINATION CABINET W/PULL-BOARD	24" X 21-5/8" X 29-3/8"	-
56	12/A-6 2	502S2210	DRAWER FRAME	42" X 21-1/2"	SITTING SPACE
57	13/A-6 1	130S3220	DRAWER CABINET	21" X 21-5/8" X 29-3/8"	-
58	13/A-6 2	501S2210	DRAWER FRAME	24" X 21-1/2"	SITTING SPACE
59	13/A-6 3	139S3220	DRAWER CABINET	21" X 21-5/8" X 29-3/8"	-
60	14/A-6 1	100S5320	OPEN CABINET	30" X 21-5/8" X 35-1/4"	-
61	14/A-6 2	136S3320	COMBINATION CABINET	21" X 21-5/8" X 35-1/4"	WITH PULL-OUT SHELVES (2)
62	14/A-6 3	-	OPEN SPACE	24"	FOR B.O.D. INCUBATOR
63	15/A-6 1	148S6320	COMBINATION CABINET	36" X 21-5/8" X 35-1/4"	WITH PULL-OUT SHELVES (2)
64	15/A-6 2	148S6320	COMBINATION CABINET	36" X 21-5/8" X 35-1/4"	WITH PULL-OUT SHELVES (2)
65	NOT USED				
66	1/A-2	NEY 525	EXISTING MUFFLE FURNACE.		OWNER WILL MOVE. CONTRACTOR TO RE-INSTALL (INCL. ATTACHMENT TO HOOD SYSTEM)
67	1/A-2	EXISTING	CN DISTILLATION.		OWNER REMOVE; OWNER RE-INSTALL
68	1/A-2	EXISTING	TKN DIGESTION.		OWNER REMOVE; OWNER RE-INSTALL
69	1/A-2	EXISTING	CENTRIFUGE.		OWNER REMOVE; OWNER RE-INSTALL
70	1/A-2	EXISTING	EXISTING PC.		OWNER REMOVE; OWNER RE-INSTALL
71	1/A-2	PERKIN/ELMER 3030	EXISTING ATOMIC ABSORPTION SPECTROPHOTOMETER		OWNER WILL MOVE OUT. CONTRACTOR TO RE-INSTALL WITH ALL CONNECTIONS (NEW)
72	1/A-2	MARKET FORGE	EXISTING AUTOCLAVE STERILMATIC STM-E		OWNER WILL MOVE OUT. CONTRACTOR TO RE-INSTALL WITH ALL EXHAUST PIPING AND OTHER CONNECTIONS (NEW)
73	1/A-2		EXISTING PC.		OWNER REMOVE; OWNER RE-INSTALL
74	1/A-2	NEW	NUTRIENT ANALYZER I W/ AUTOSAMPLER - OWNER PURCHASE		OWNER REMOVE; OWNER RE-INSTALL
75	1/A-2	NEW	NUTRIENT ANALYZER II W/ AUTOSAMPLER - OWNER PURCHASE		OWNER REMOVE; OWNER RE-INSTALL
76	1/A-2		WATER SYSTEM.		CONTRACTOR PURCHASE; CONTRACTOR INSTALL
77	1/A-2	MIELE G7783	GLASSWARE CLEANING APPARATUS (DISHWASHER)		CONTRACTOR PURCHASE; CONTRACTOR INSTALL
78	1/A-2	EXISTING	BALANCE.		OWNER REMOVE; OWNER RE-INSTALL
79	1/A-2	EXISTING	DESSICATOR.		OWNER REMOVE; OWNER RE-INSTALL
80	1/A-2	EXISTING	DESSICATOR FOR TSS		OWNER REMOVE; OWNER RE-INSTALL
81	1/A-2	EXISTING	DESSICATOR FOR TS.		OWNER REMOVE; OWNER RE-INSTALL
82	1/A-2	NEW	TS/TSS DRYING OVEN - OWNER PURCHASE		OWNER REMOVE; OWNER RE-INSTALL
83	1/A-2	NEW	WATER BATH FOR FECAL COLIFORMS - OWNER PURCHASE		OWNER REMOVE; OWNER RE-INSTALL
84	1/A-2	NEW	INCUBATOR - OWNER PURCHASE		OWNER REMOVE; OWNER RE-INSTALL
85	NOT USED				
86	1/A-2	EXISTING	PC. FOR TSS.		OWNER REMOVE; OWNER RE-INSTALL
87	1/A-2	EXISTING	METTLER BALANCE.		OWNER REMOVE; OWNER RE-INSTALL
88	1/A-2	EXISTING	CI. COLOR ANAL.		OWNER REMOVE; OWNER RE-INSTALL
89	1/A-2	97-990E	B.O.D. INCUBATOR (NEW)		CONTRACTOR PURCHASE; CONTRACTOR INSTALL
90	1/A-2	I4505SCA	REFRIGERATORS (NEW)		CONTRACTOR PURCHASE; CONTRACTOR INSTALL
91					
92					

1. UNLESS OTHERWISE NOTED, ALL ITEMS ARE PURCHASED NEW AND INSTALLED BY CONTRACTOR.  
2. ALL ITEMS ARE FISHER HAMILTON REFERENCES UNLESS OTHERWISE NOTED.

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND



**BLACK & VEATCH**  
Gathersburg, Maryland

THIS DRAWING WAS  
ORIGINALLY APPROVED  
FOR CONSTRUCTION  
AND SEALED BY  
CHARLES I. BRYANT  
A REGISTERED  
ARCHITECT  
IN THE  
STATE OF MARYLAND,  
NO. 1377-R

DES: CH  
DRN: JS  
CHK: CH/JS  
DATE: 08/00

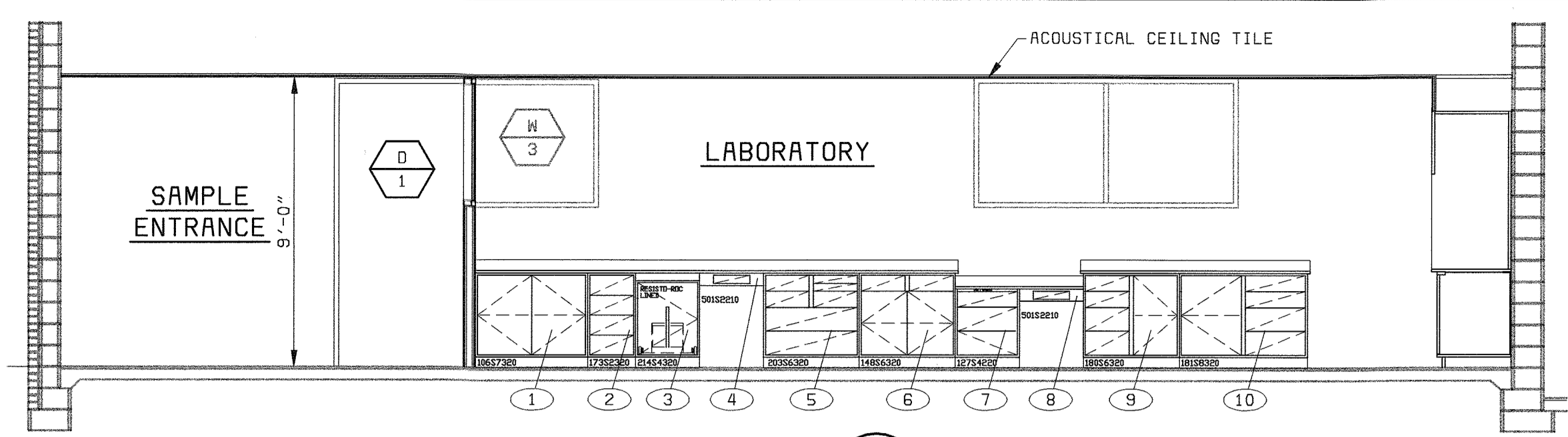
11/03/03	CONFORMED TO CONSTRUCTION RECORDS	RHH	RJR	RJR
DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK APP

ARCHITECTURAL  
ADMINISTRATION BUILDING  
LABORATORY  
FURNITURE - EQUIPMENT SCHEDULE

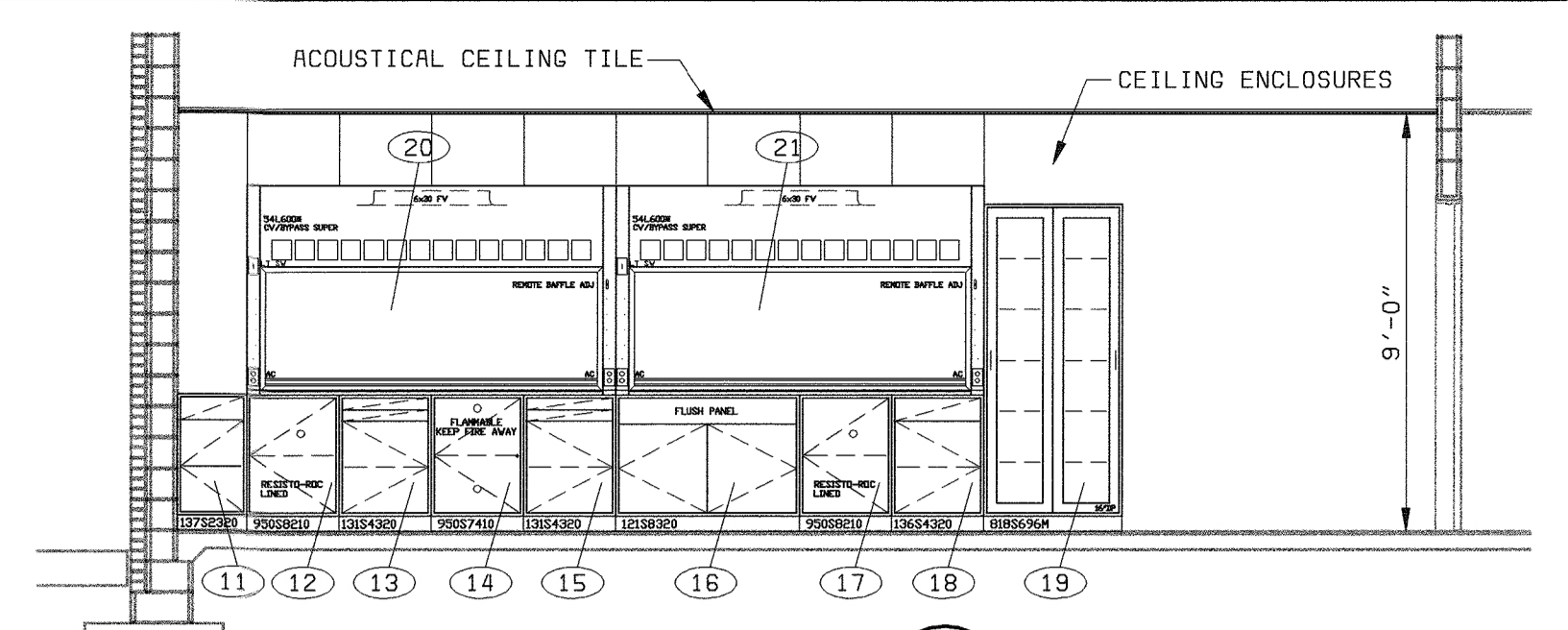
LITTLE PATUXENT WATER RECLAMATION PLANT  
ADDITION NO. 6  
LABORATORY RENOVATION  
CAPITAL PROJECT S-6205  
CONTRACT NO. 20-3841  
HOWARD COUNTY, MARYLAND

SCALE  
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058472-5  
F058472A

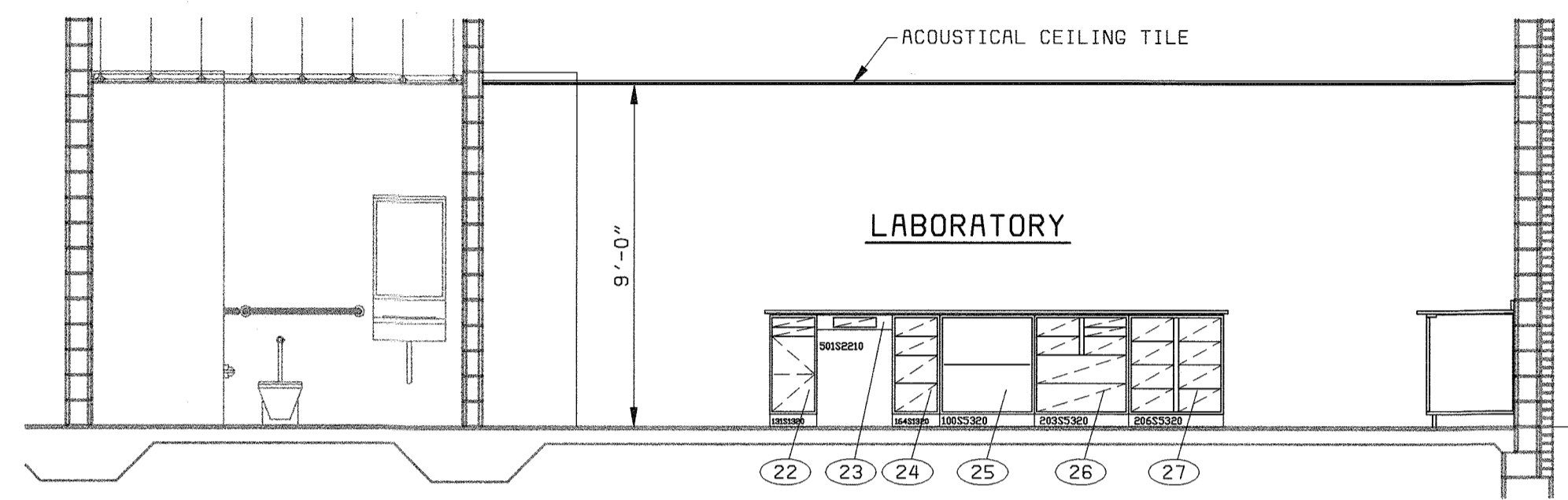


ELEVATION 1  
1/4" = 1'-0" A-6

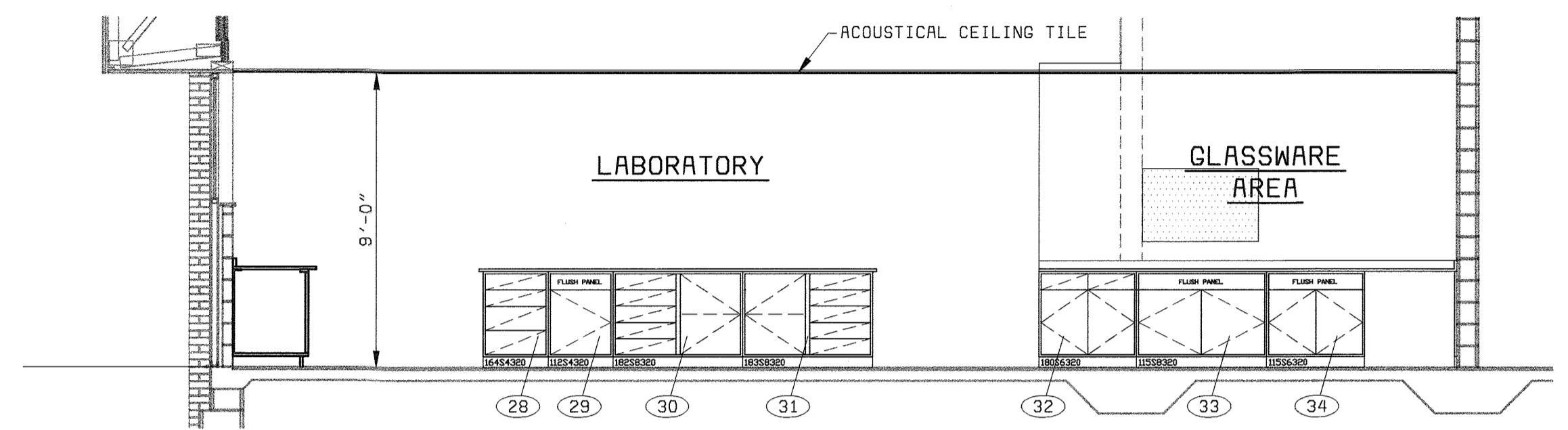


ELEVATION 2  
1/4" = 1'-0" A-6

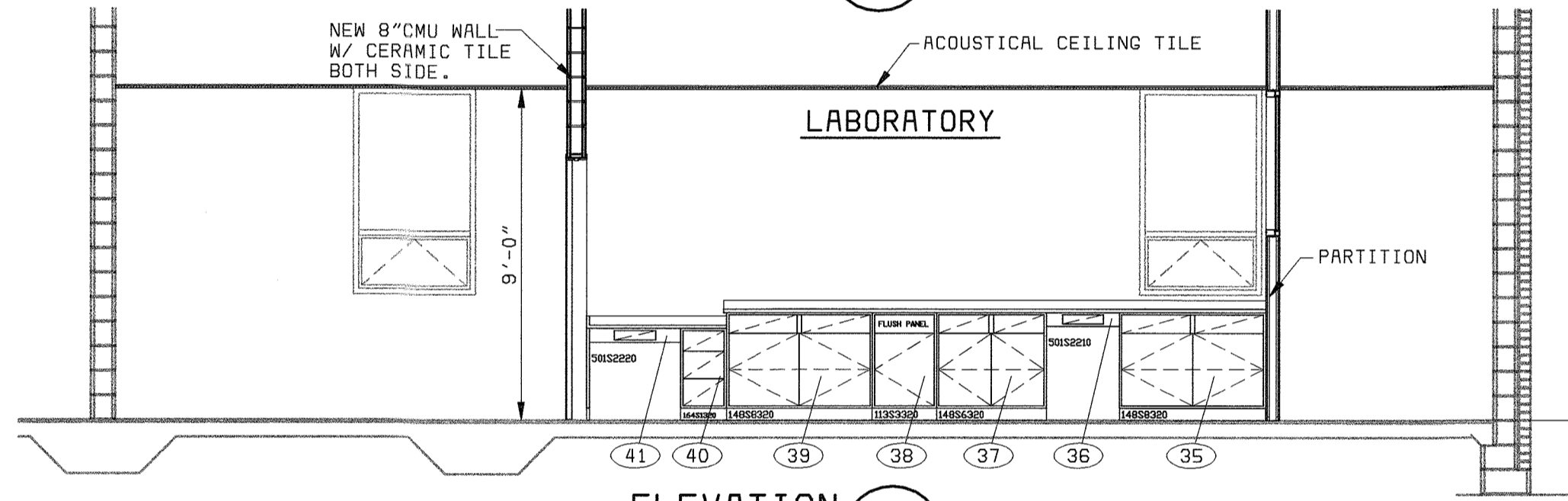
- ELEVATION NOTES:**
1. FOR FINISH, WINDOW AND DOOR SCHEDULE SEE A-7.
  2. FOR DOOR AND WINDOW DETAILS SEE A-7.
  3. FOR PARTITIONS TYPE SEE A-7.
  4. FOR LABORATORY CASEWORK SEE A-2
  5. FOR FURNITURE AND EQUIPMENT SCHEDULE SEE A-5.



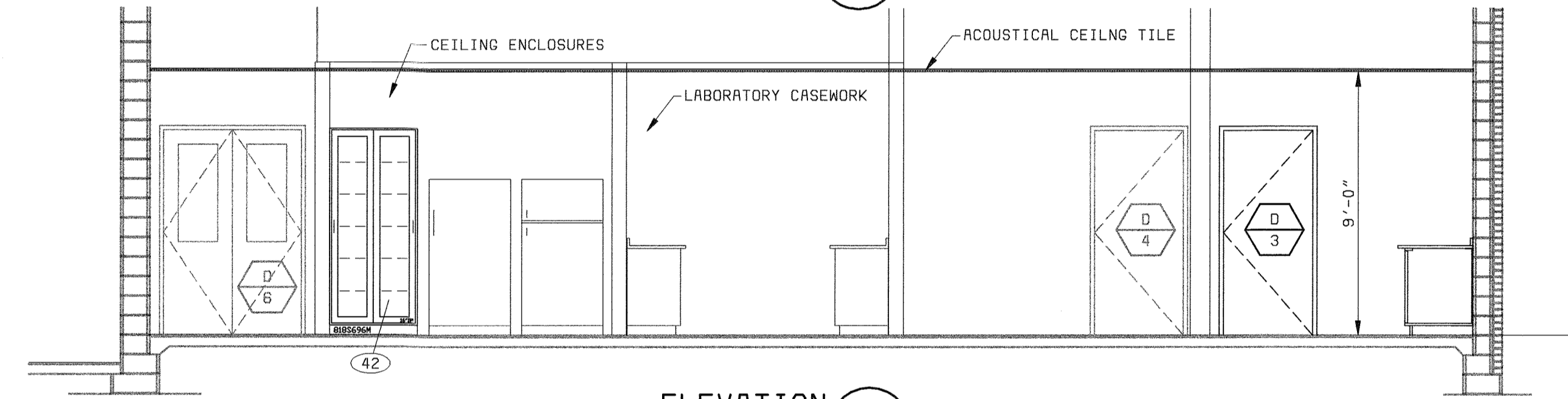
ELEVATION 3  
1/4" = 1'-0" A-6



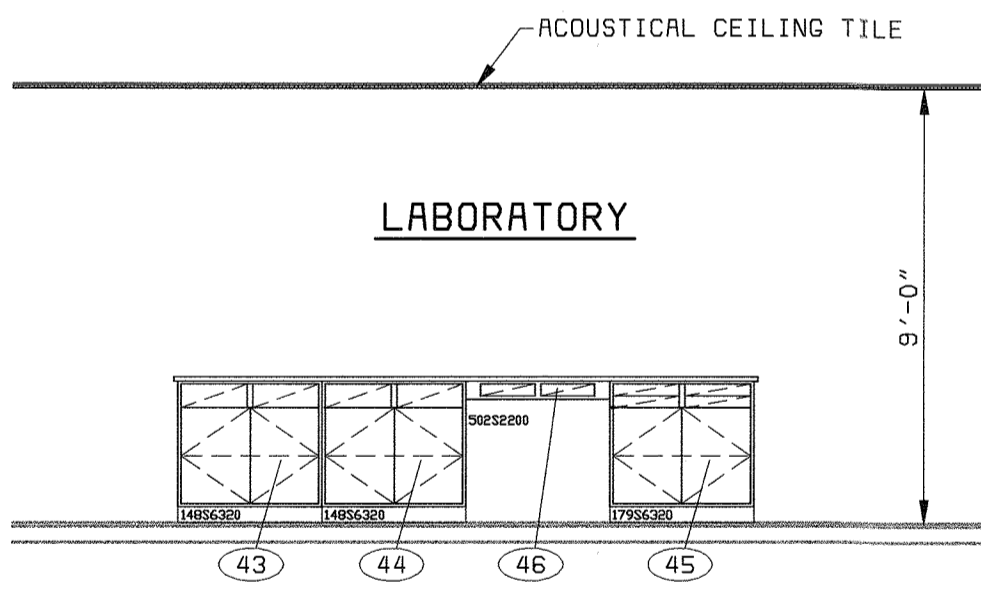
ELEVATION 4  
1/4" = 1'-0" A-6



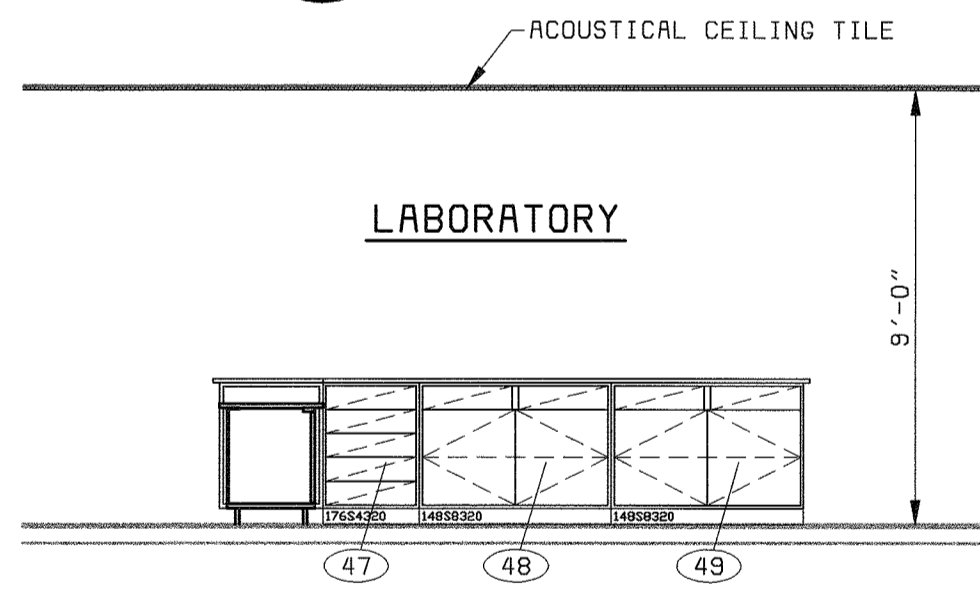
ELEVATION 5  
1/4" = 1'-0" A-6



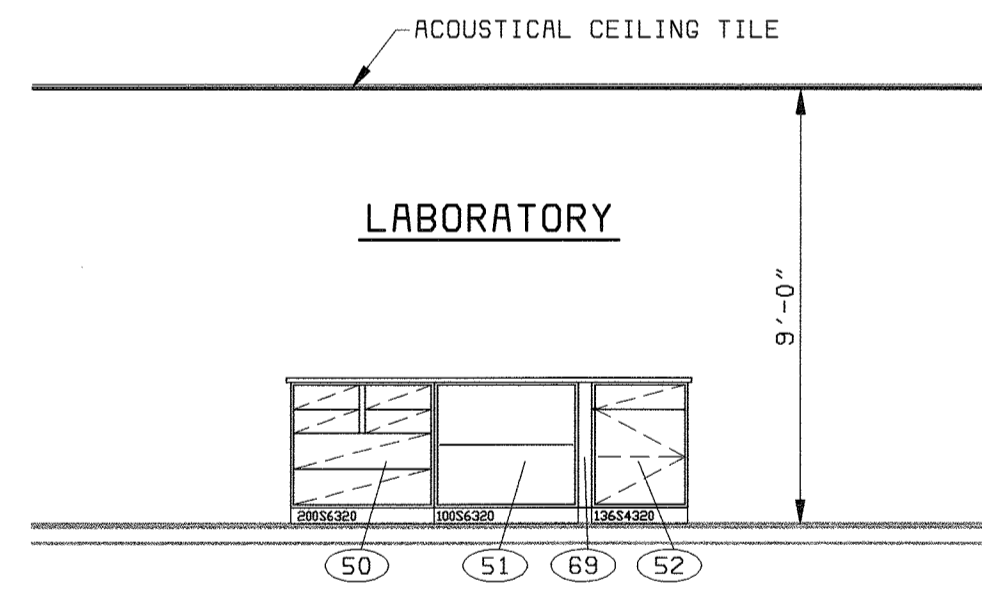
ELEVATION 6  
1/4" = 1'-0" A-6



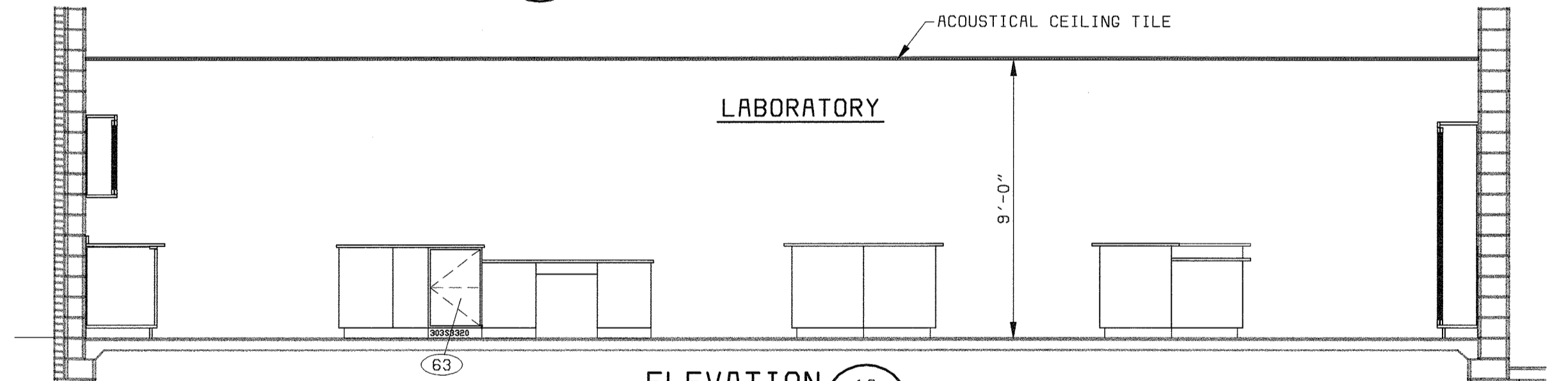
ELEVATION 7  
1/4" = 1'-0" A-6



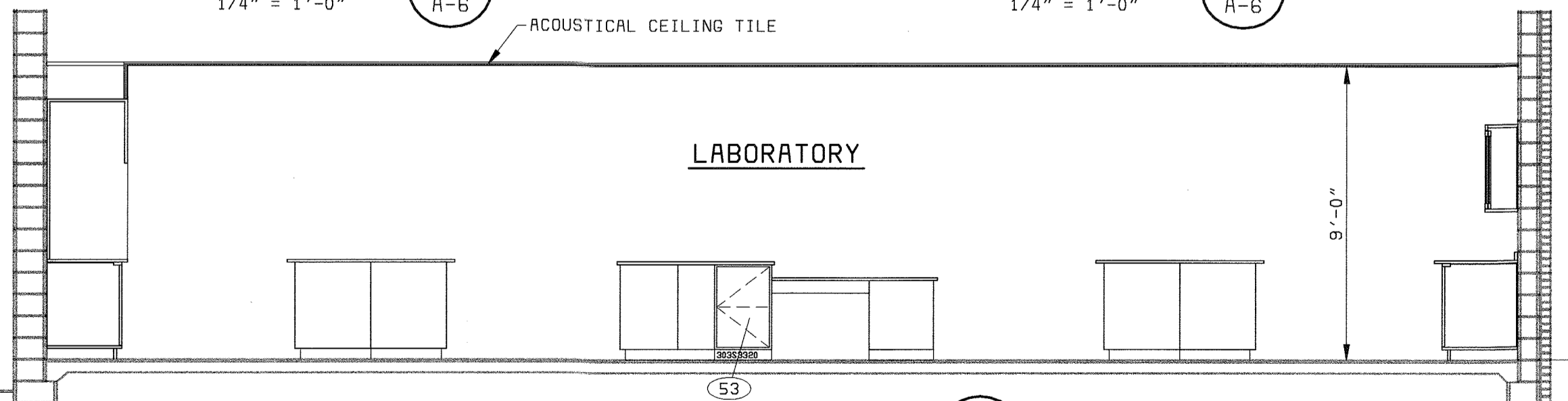
ELEVATION 8  
1/4" = 1'-0" A-6



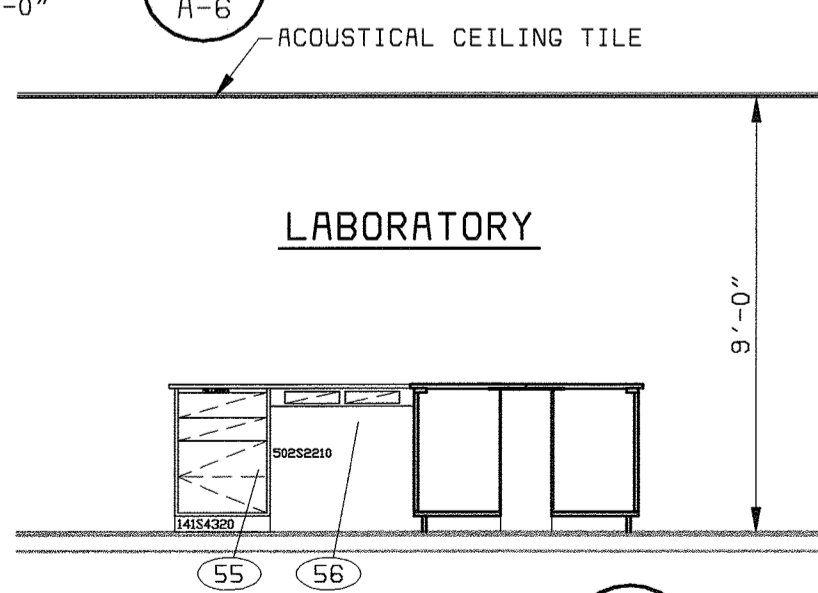
ELEVATION 9  
1/4" = 1'-0" A-6



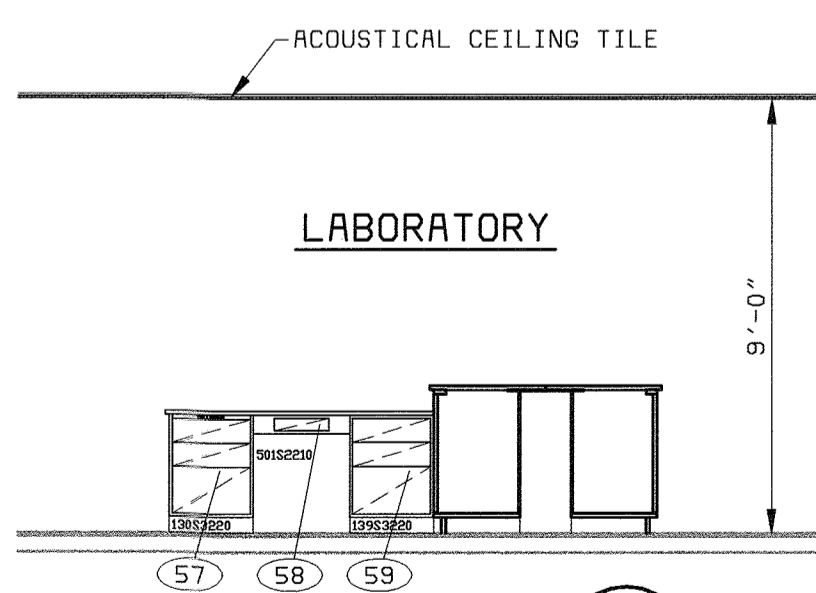
ELEVATION 10  
1/4" = 1'-0" A-6



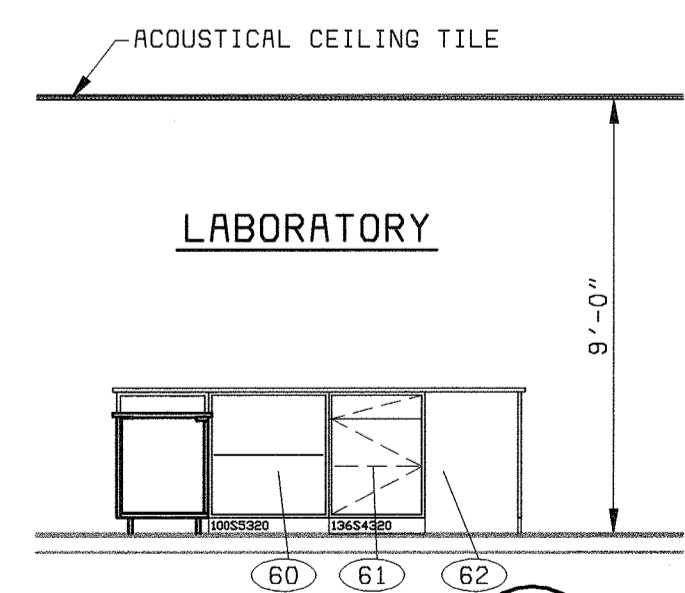
ELEVATION 11  
1/4" = 1'-0" A-6



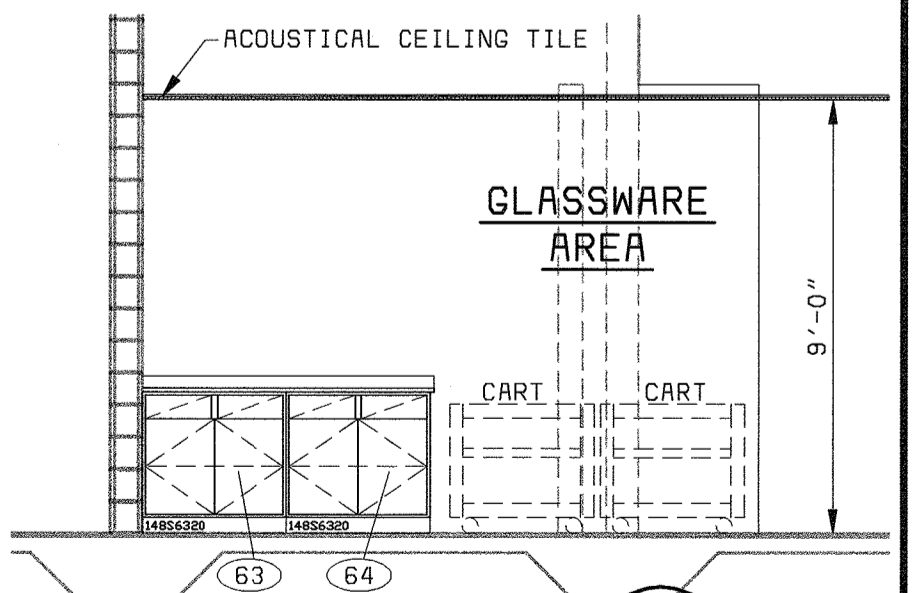
ELEVATION 12  
1/4" = 1'-0" A-6



ELEVATION 13  
1/4" = 1'-0" A-6

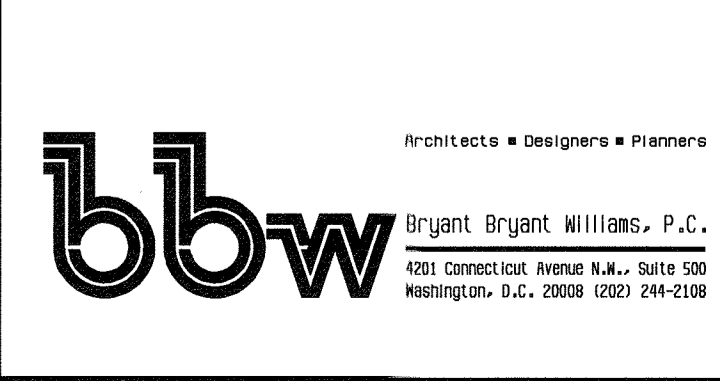


ELEVATION 14  
1/4" = 1'-0" A-6



ELEVATION 15  
1/4" = 1'-0" A-6

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND  
CHIEF, BUREAU OF UTILITIES DATE



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DES:	CH/JS				
DRN:	JS				
CHK:	CH				
DATE:	08/08	11/03/03	CONFORMED TO CONSTRUCTION RECORDS	RHH/RJR/RJR	
		DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY

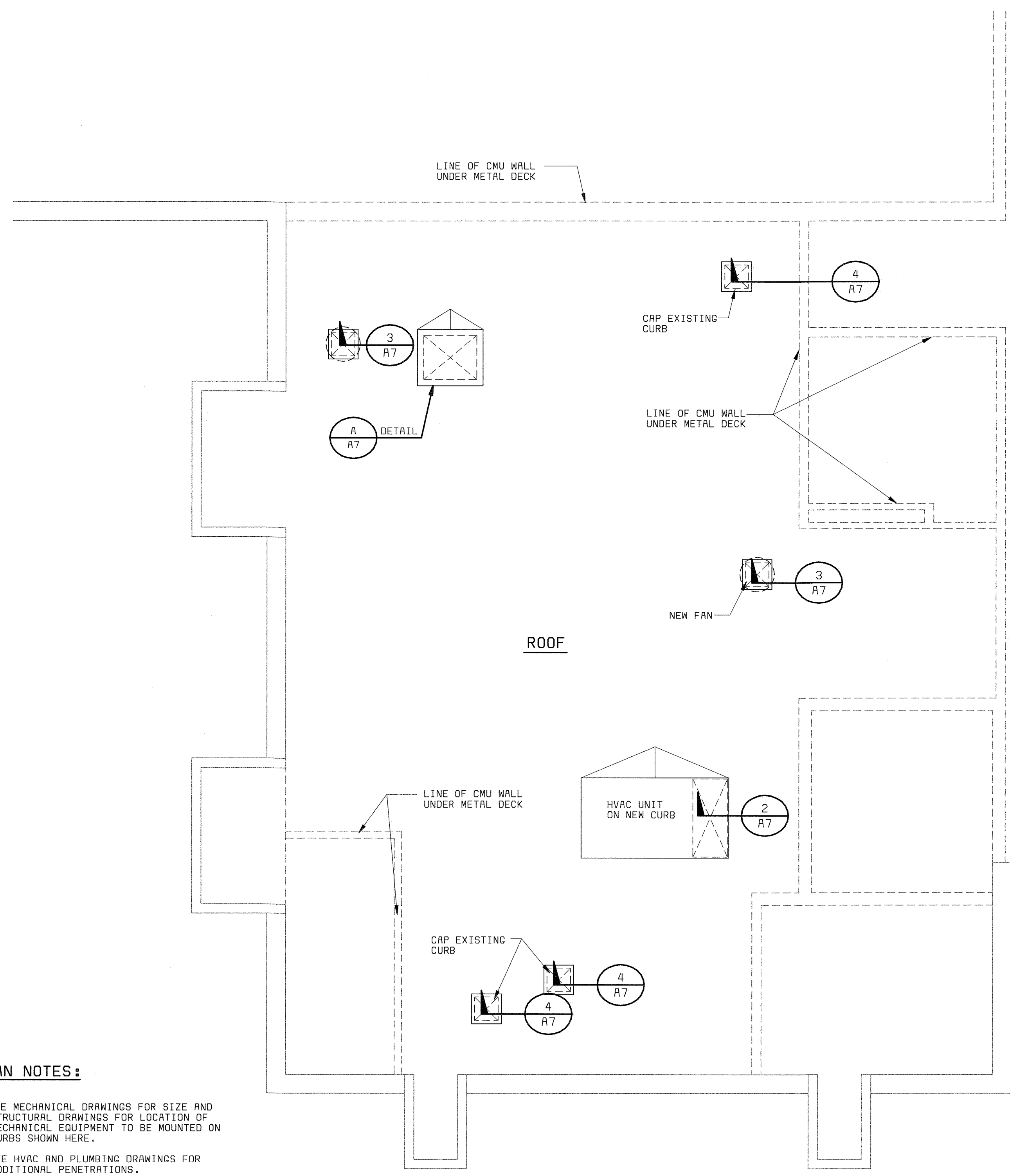
ARCHITECTURAL  
ADMINISTRATION BUILDING  
LABORATORY  
WORK AREA ELEVATIONS

LITTLE PATUXENT WATER RECLAMATION PLANT  
ADDITION NO. 6  
LABORATORY RENOVATION  
CAPITAL PROJECT S-6205  
CONTRACT NO. 20-3841  
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
SHEET 12 OF 28  
A6

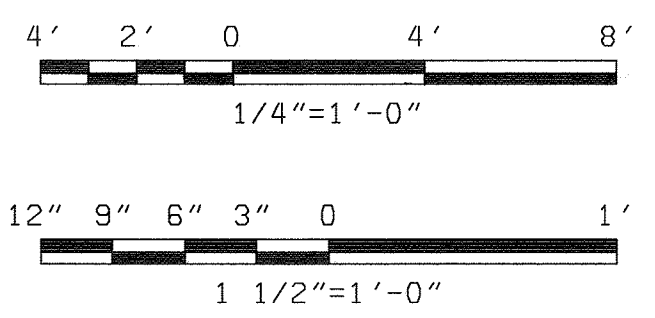
058472LS  
F058472N

A  
B  
C  
D  
E  
F

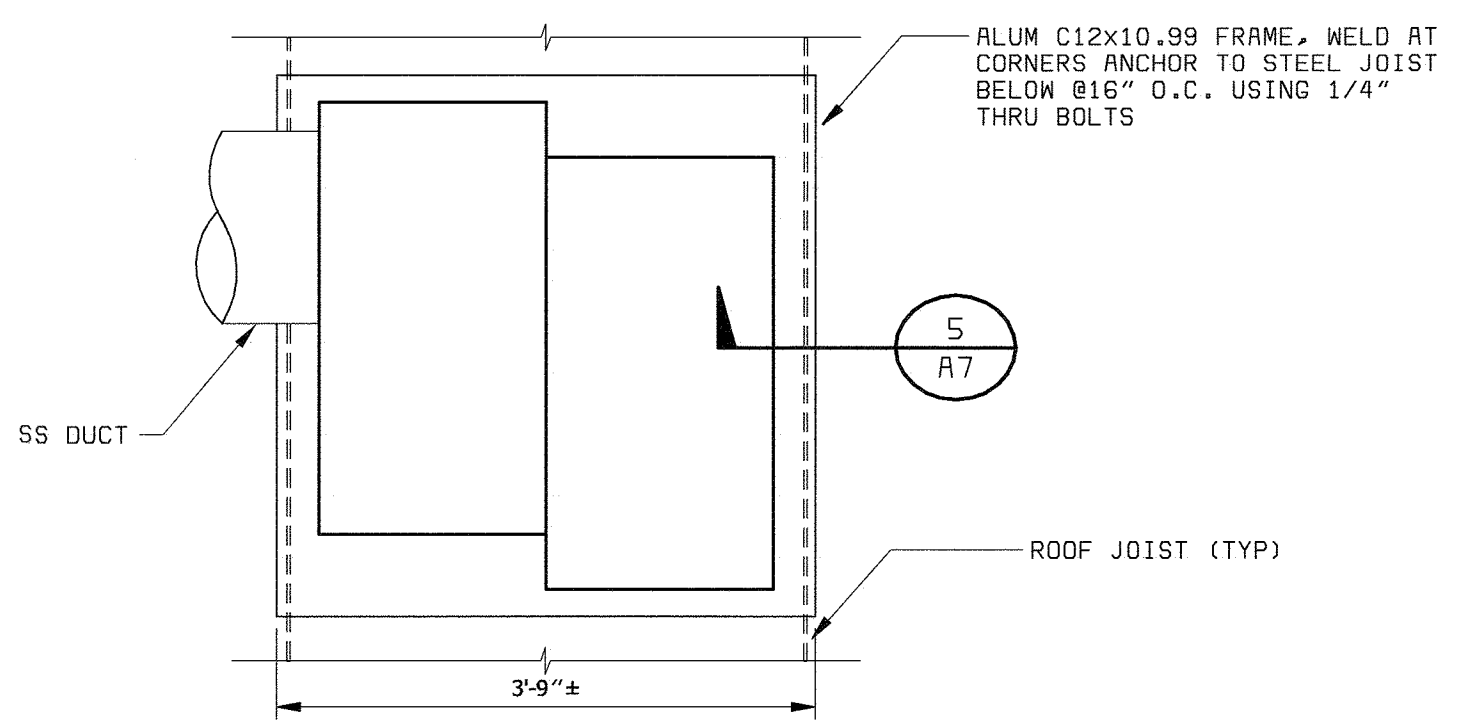


**PLAN NOTES:**

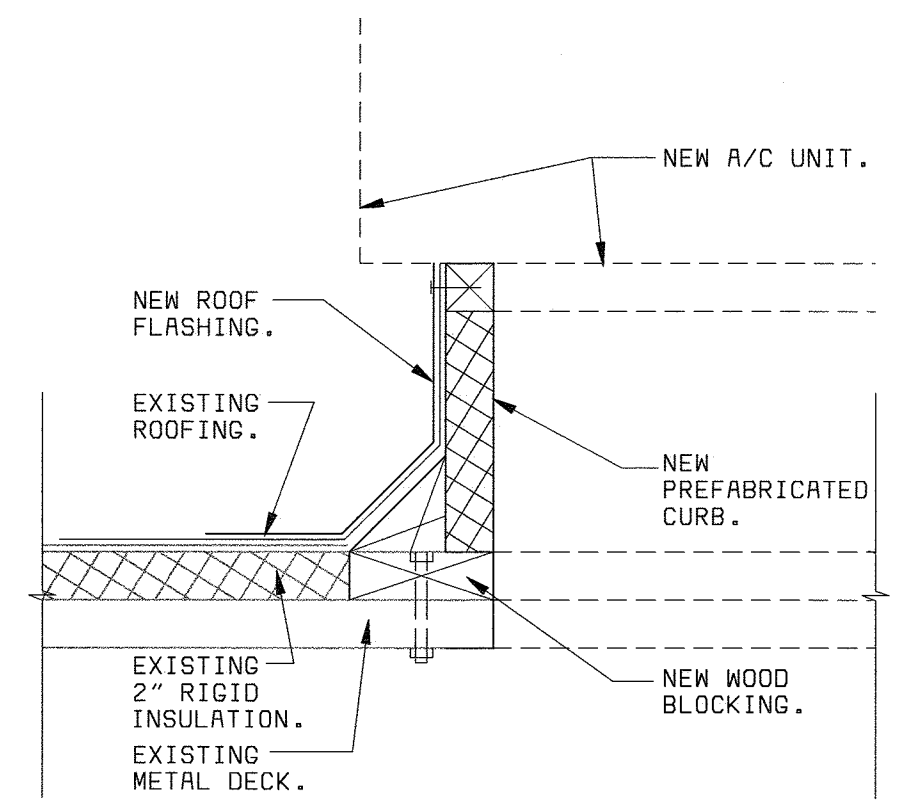
1. SEE MECHANICAL DRAWINGS FOR SIZE AND STRUCTURAL DRAWINGS FOR LOCATION OF MECHANICAL EQUIPMENT TO BE MOUNTED ON CURBS SHOWN HERE.
2. SEE HVAC AND PLUMBING DRAWINGS FOR ADDITIONAL PENETRATIONS.



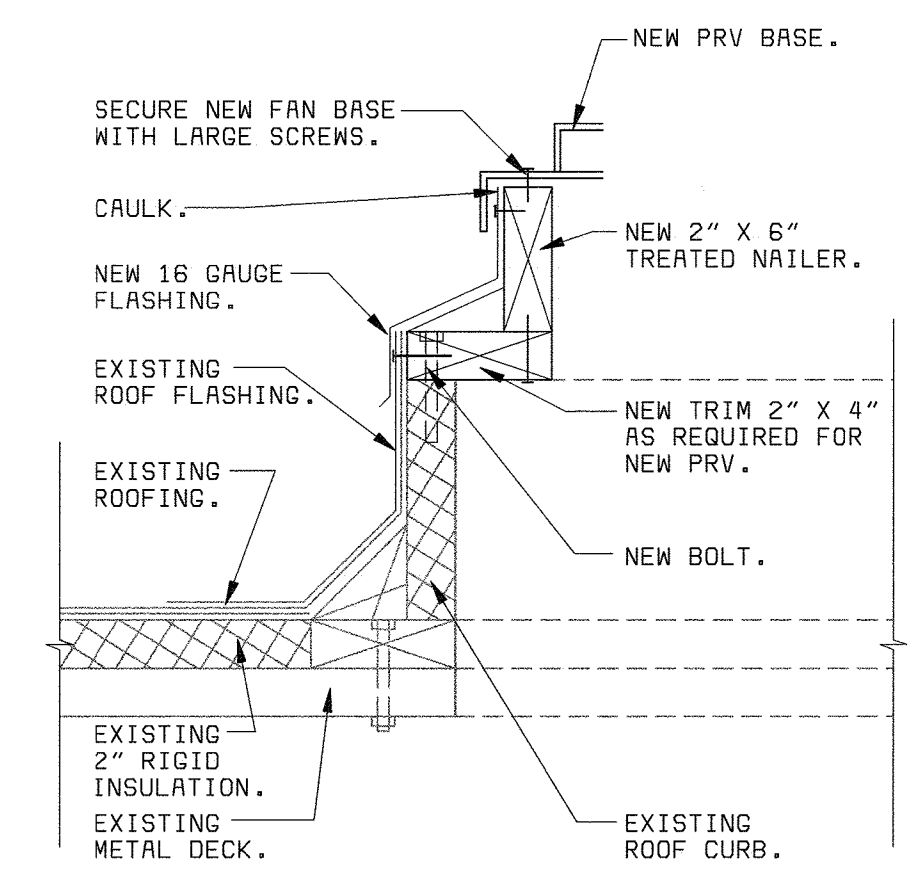
**LABORATORY - ROOF PLAN**  
1/4" = 1'-0" (1 A7)



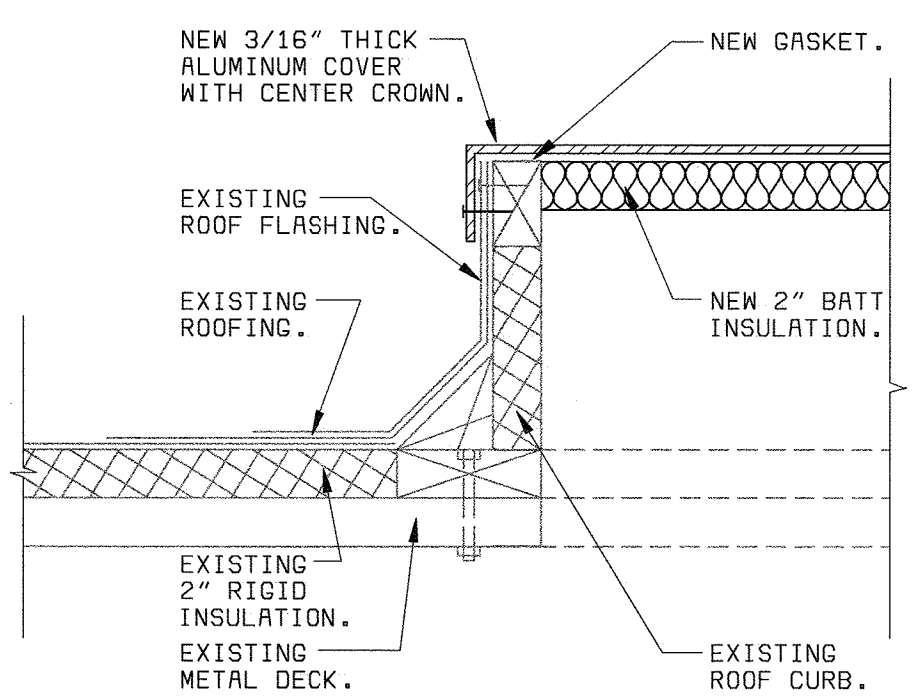
**ROOF FAN PAD AND MOUNTING DETAIL**  
3/4" = 1'-0" (A7)



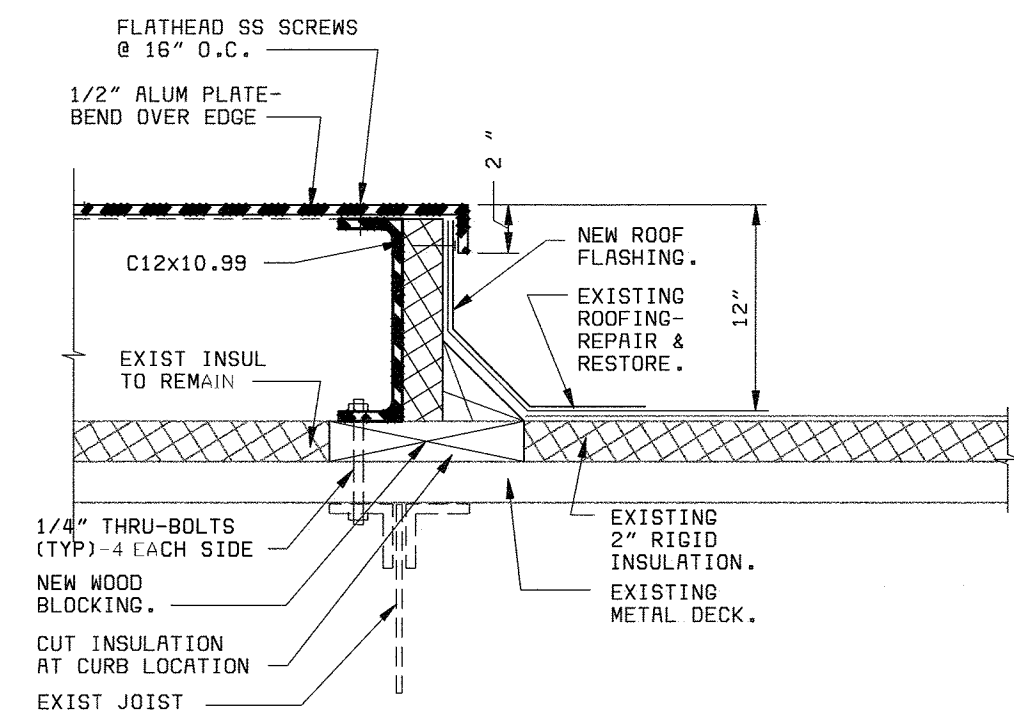
**DETAIL**  
1 1/2" = 1'-0" (A7)



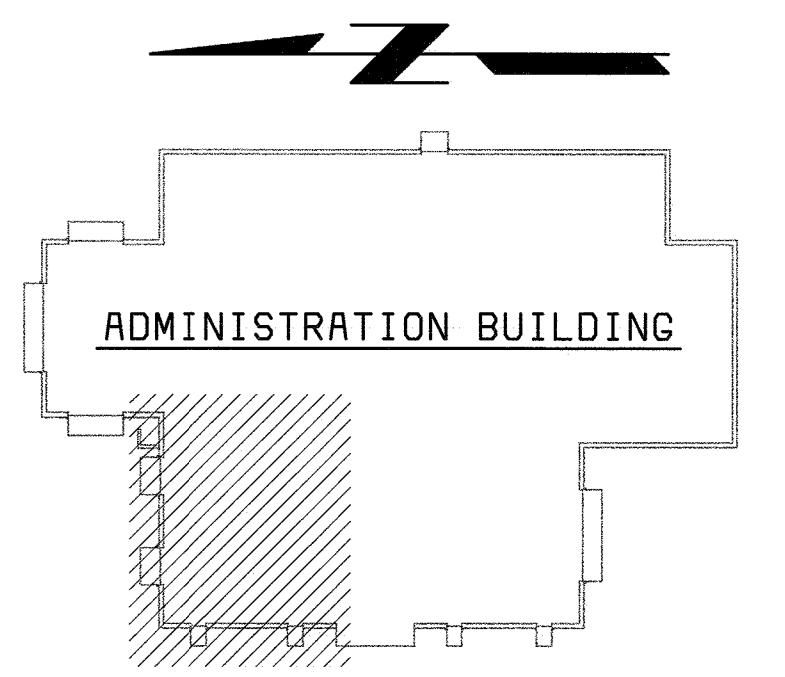
**DETAIL**  
1 1/2" = 1'-0" (A7)



**DETAIL**  
1 1/2" = 1'-0" (A7)



**SECTION**  
1 1/2" = 1'-0" (A7)



**KEY PLAN**  
NO SCALE

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND  
CHIEF, BUREAU OF UTILITIES DATE



**BLACK & VEATCH**  
Gaithersburg, Maryland  
REG. PROF. ENGR. DATE

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A REGISTERED  
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IN THE  
STATE OF MARYLAND,  
NO. 1377-R

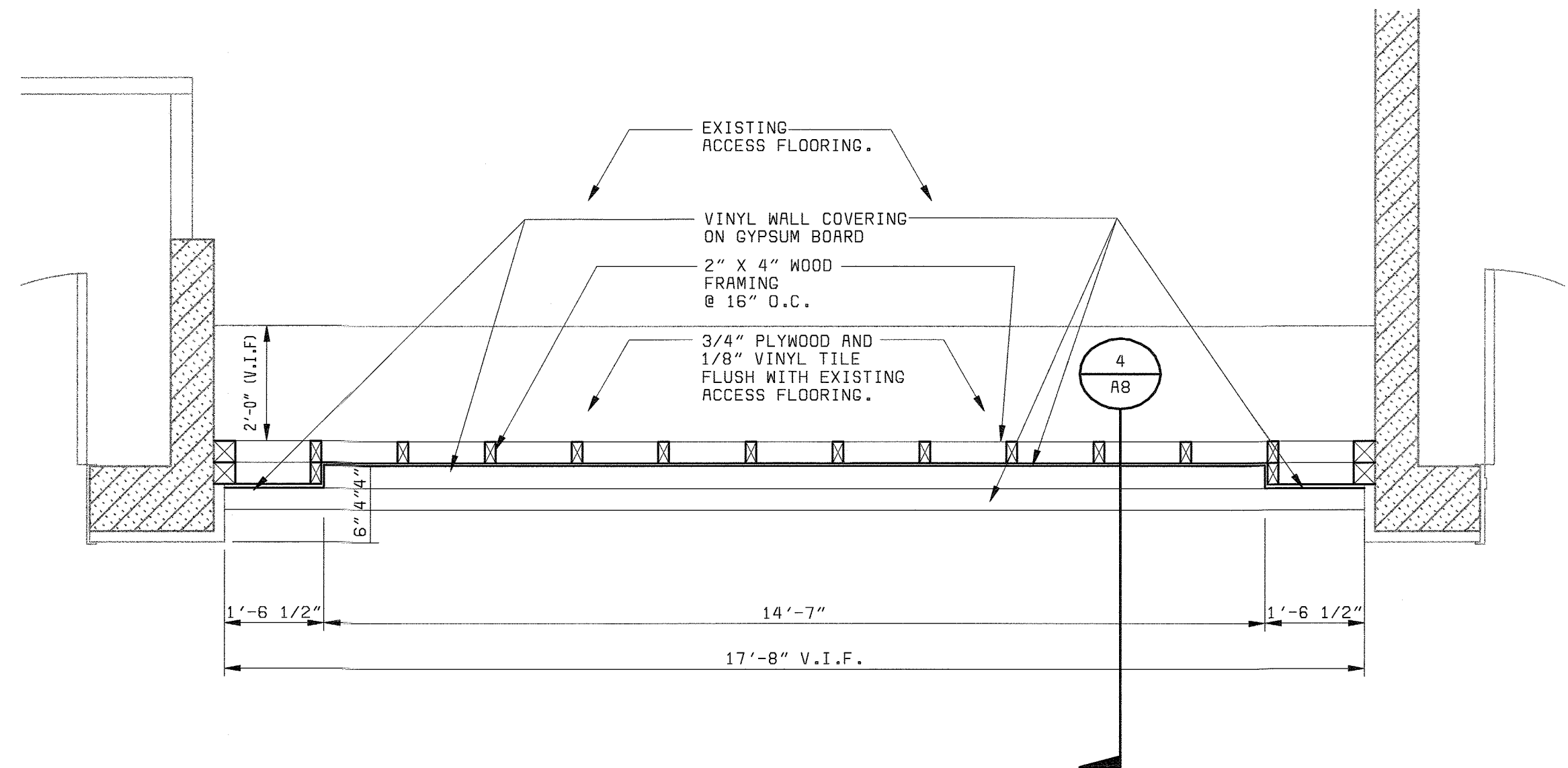
DES:	CH						
DRN:	JS						
CHK:	CH/JS						
DATE:	08/00	11/03/03	CONFORMED TO CONSTRUCTION RECORDS				
		DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP

ARCHITECTURAL  
**ADMINISTRATION BUILDING  
LABORATORY ROOF PLAN  
AND DETAILS**

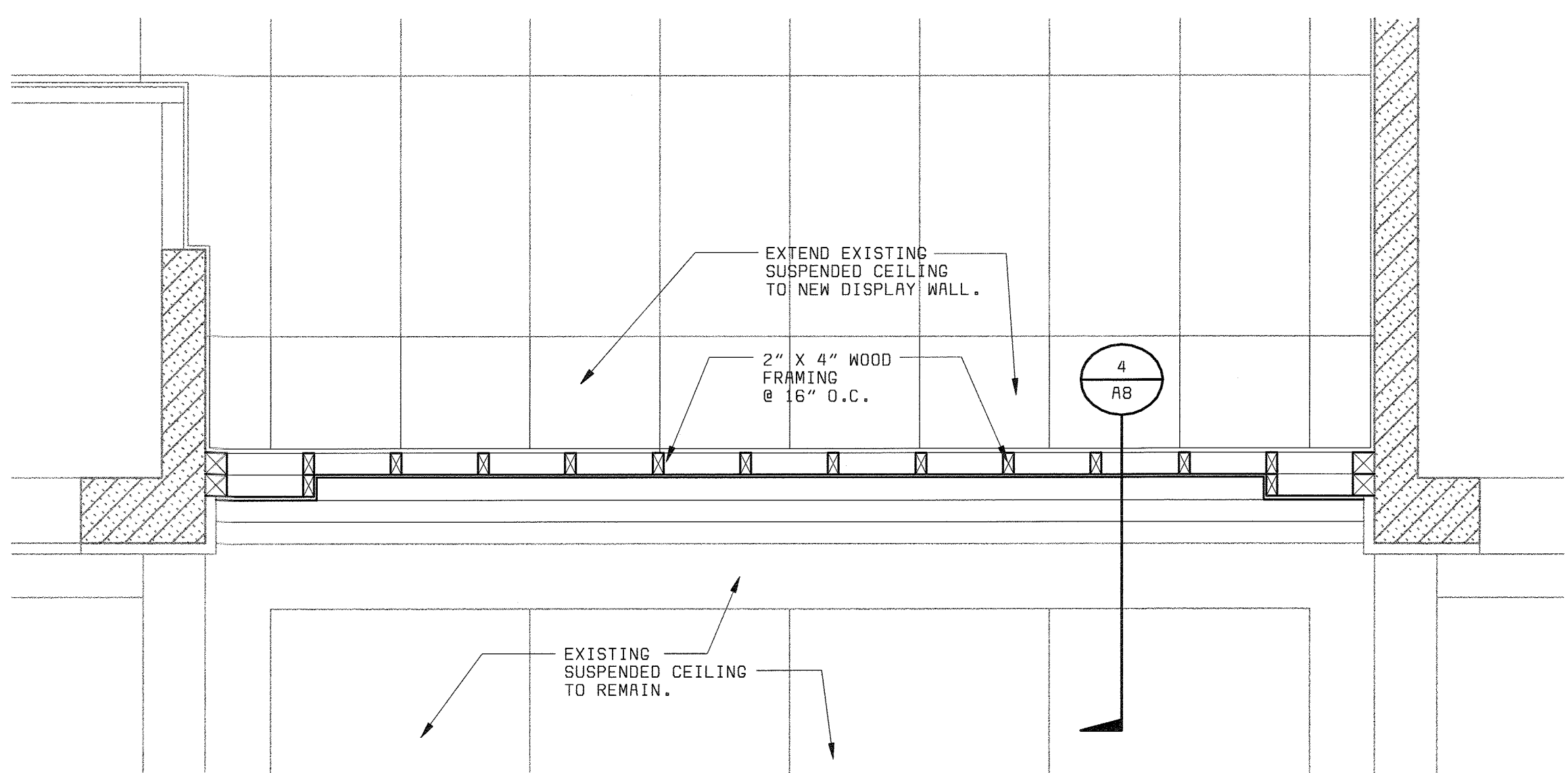
LITTLE PATUXENT WATER RECLAMATION PLANT  
ADDITION NO. 6  
LABORATORY RENOVATION  
CAPITAL PROJECT S-6205  
CONTRACT NO. 20-3841  
HOWARD COUNTY, MARYLAND

SCALE  
AS  
SHOWN  
SHEET  
**13 OF 28**  
A7

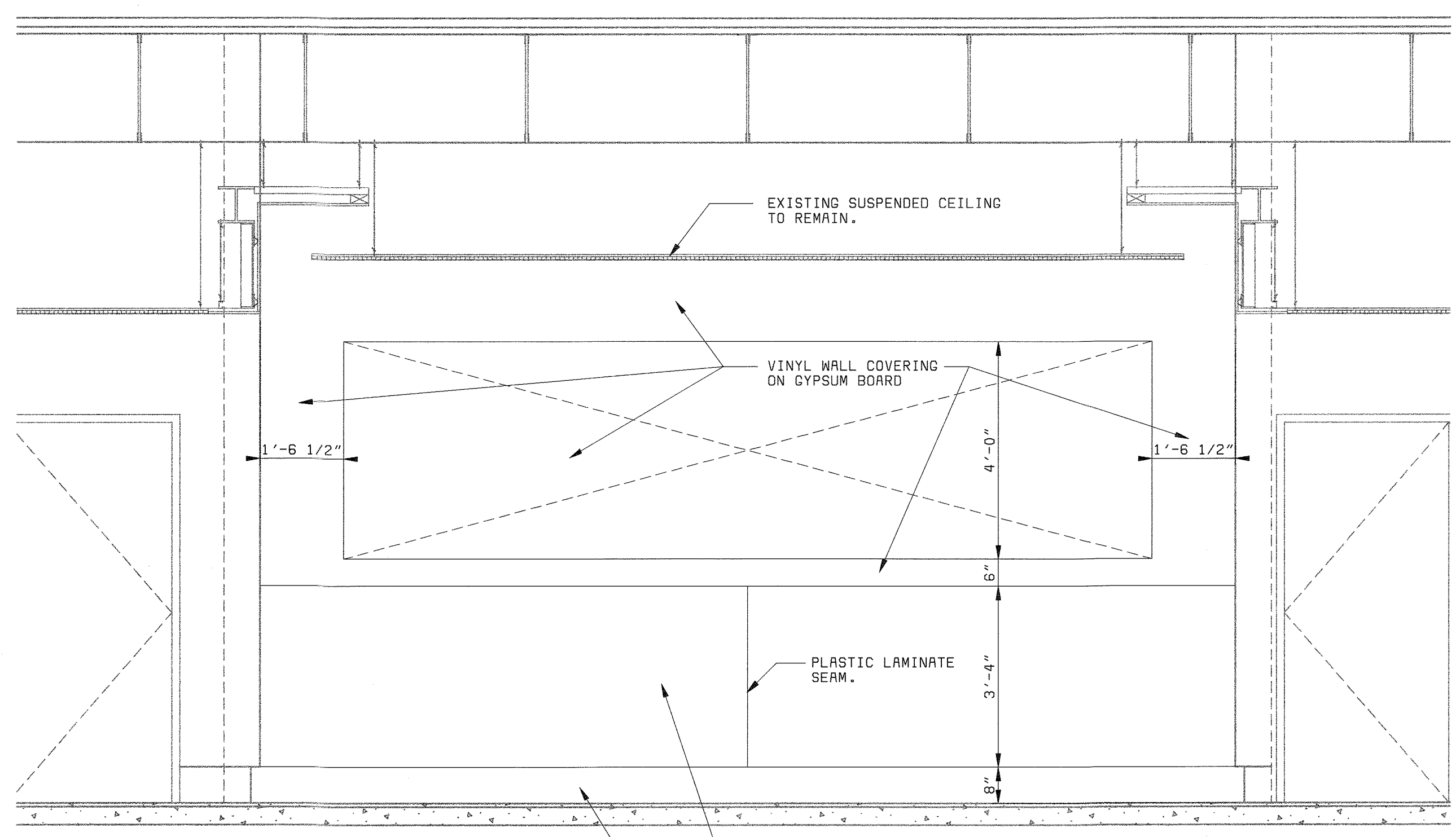
D58472-5  
FD58472R



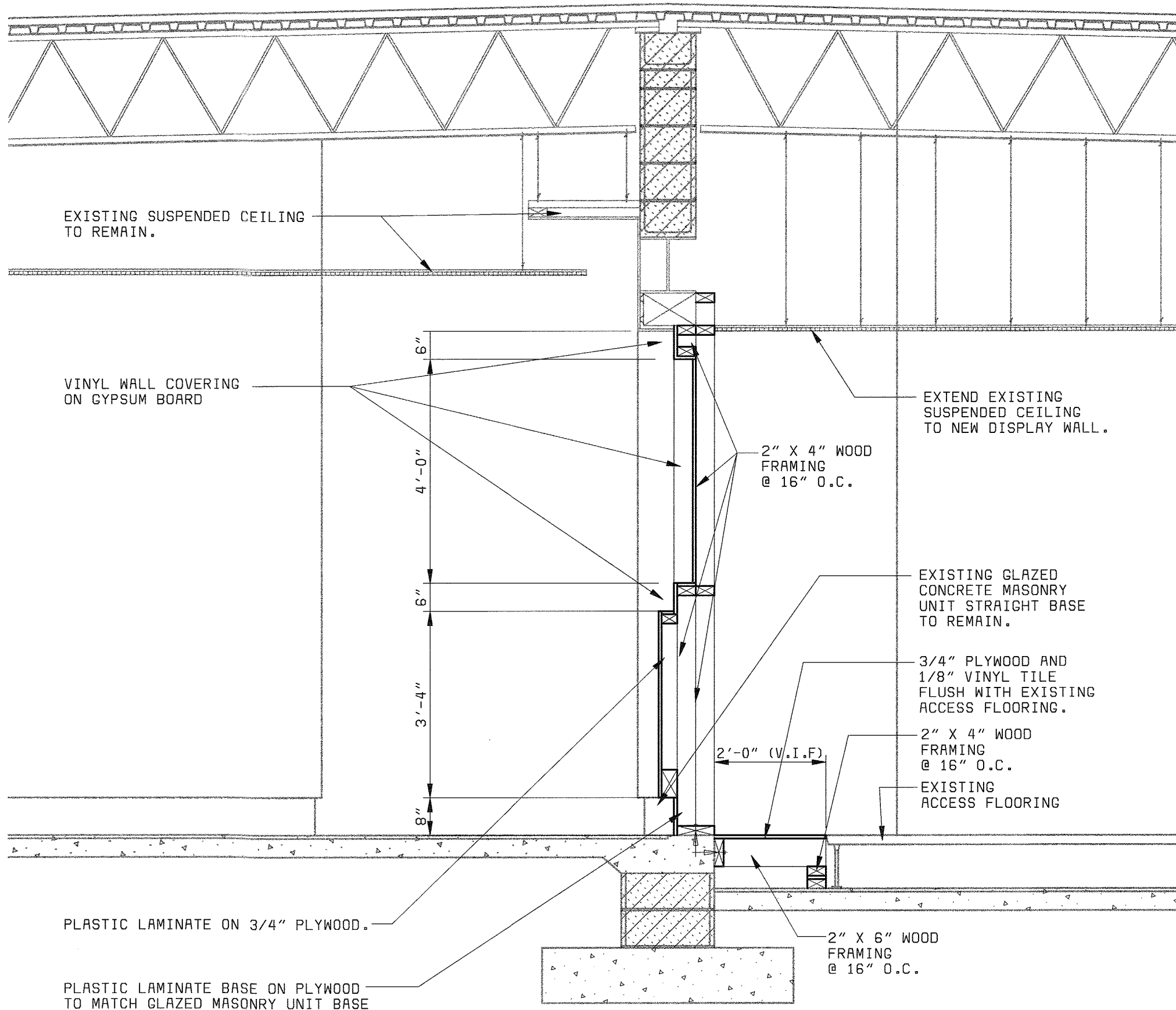
**FLOOR PLAN 1**  
1/2" = 1'-0"



**REFLECTED CEILING PLAN 2**  
1/2" = 1'-0"



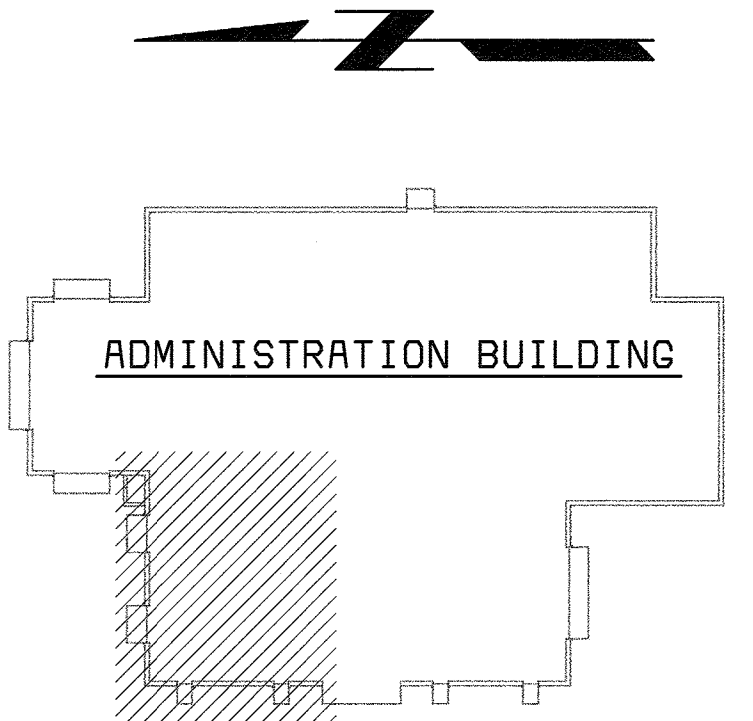
**SECTION ELEVATION 3**  
1/2" = 1'-0"



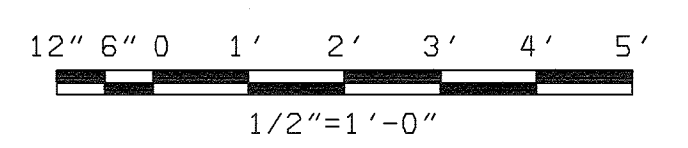
**SECTION ELEVATION 4**  
1/2" = 1'-0"

**DRAWING NOTES:**

1. REMOVE AND SAVAGE EXISTING ALUMINUM LETTERS BELOW EXISTING DISPLAY BOARD.
2. THE QUALITY STANDARDS FOR THIS FINISH QUALITY WOODWORK WILL BE THE CONSTRUCTION BEING REMOVED (NOT INCLUDING THE WEAR AND TEAR), AND THE ARCHITECTURAL WOODWORK QUALITY STANDARDS OF THE AMERICAN WOODWORK INSTITUTE.



**KEY PLAN**  
NO SCALE



DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND



DES:	CH/JS				
DRN:	JS				
CHK:	CH				
DATE:	10/01	11/03/03	CONFORMED TO CONSTRUCTION RECORDS	RHH/RJR/RJR	
		DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY

**ARCHITECTURAL**

**ADMINISTRATION BUILDING  
LOBBY DISPLAY  
PLAN, ELEVATION AND DETAILS**

**LITTLE PATUXENT WATER RECLAMATION PLANT  
ADDITION NO. 6  
LABORATORY RENOVATION**

CAPITAL PROJECT S-6205  
CONTRACT NO. 20-3841

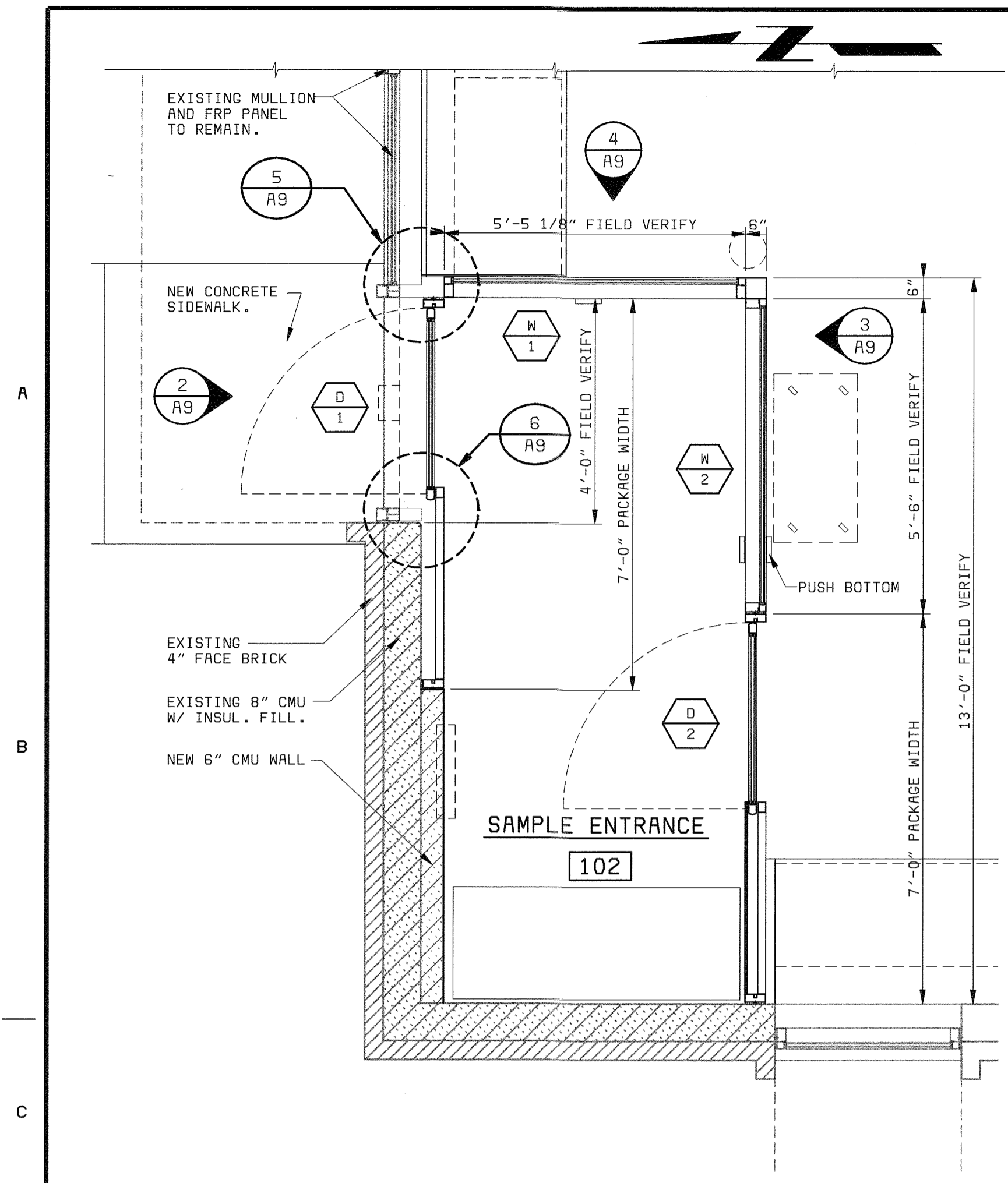
HOWARD COUNTY, MARYLAND

SCALE  
AS  
SHOWN

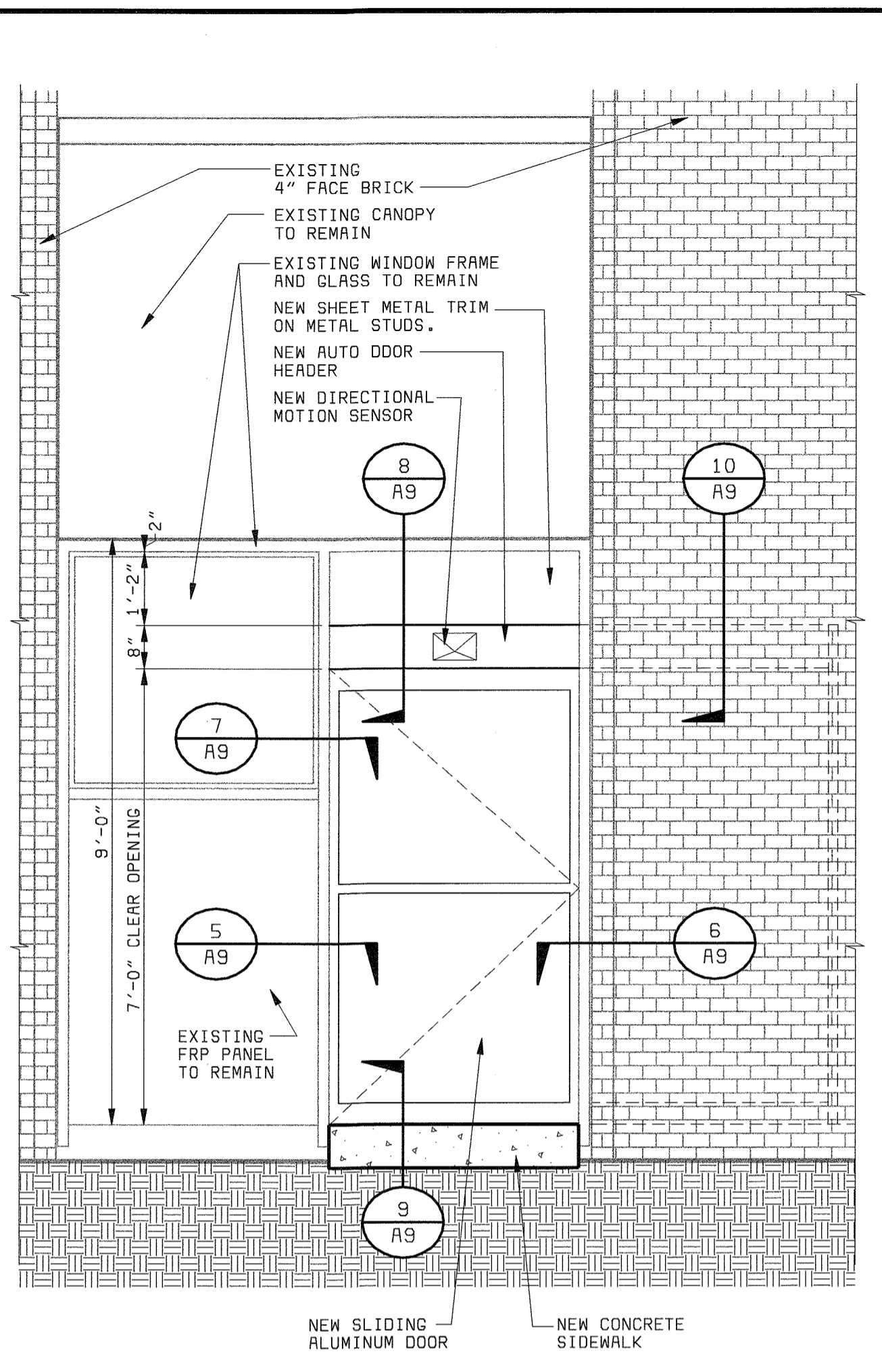
SHEET  
14 OF 28

**A8**

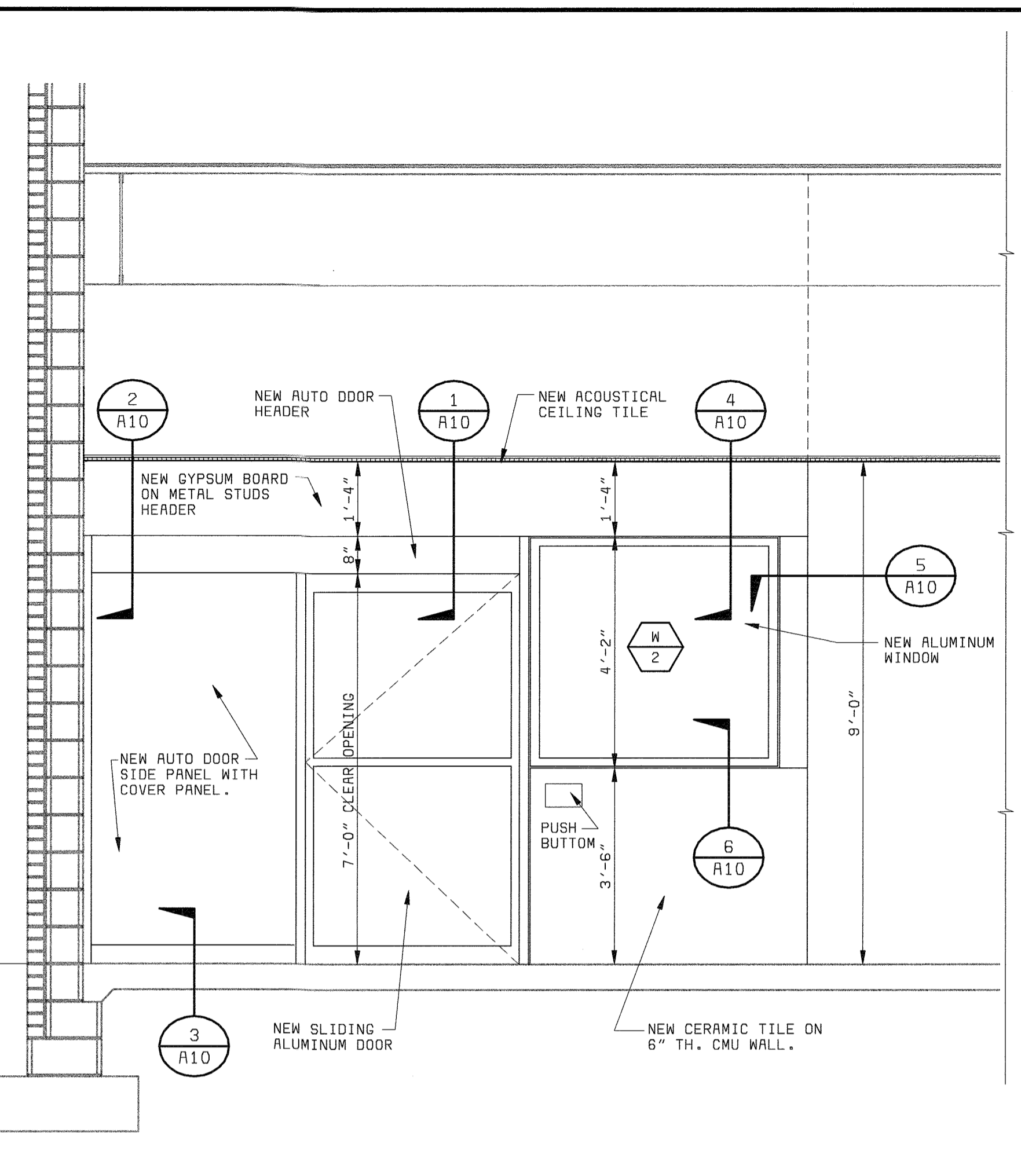
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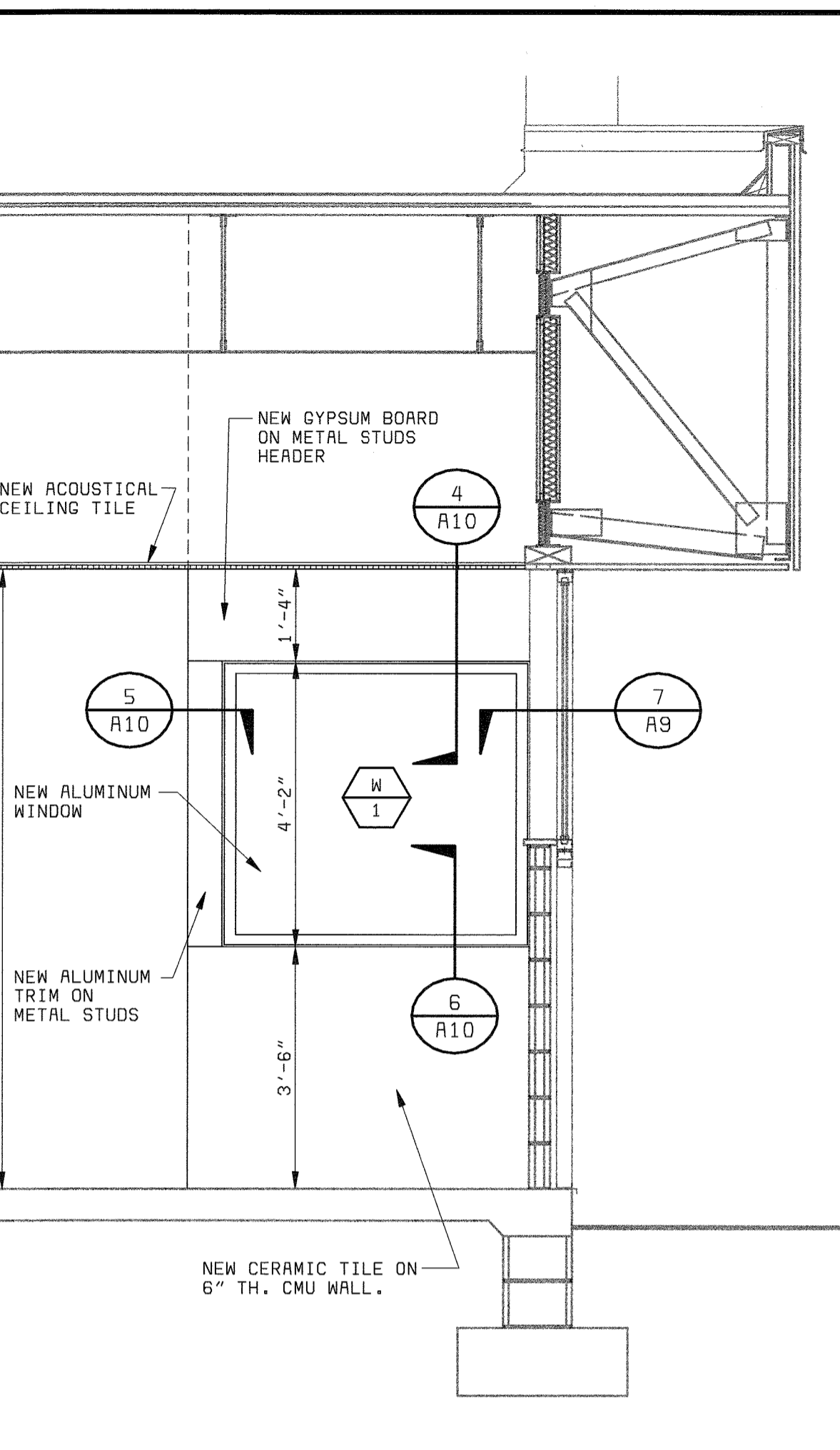
**SAMPLE ENTRANCE DETAIL PLAN** (1)  
1/2" = 1'-0"



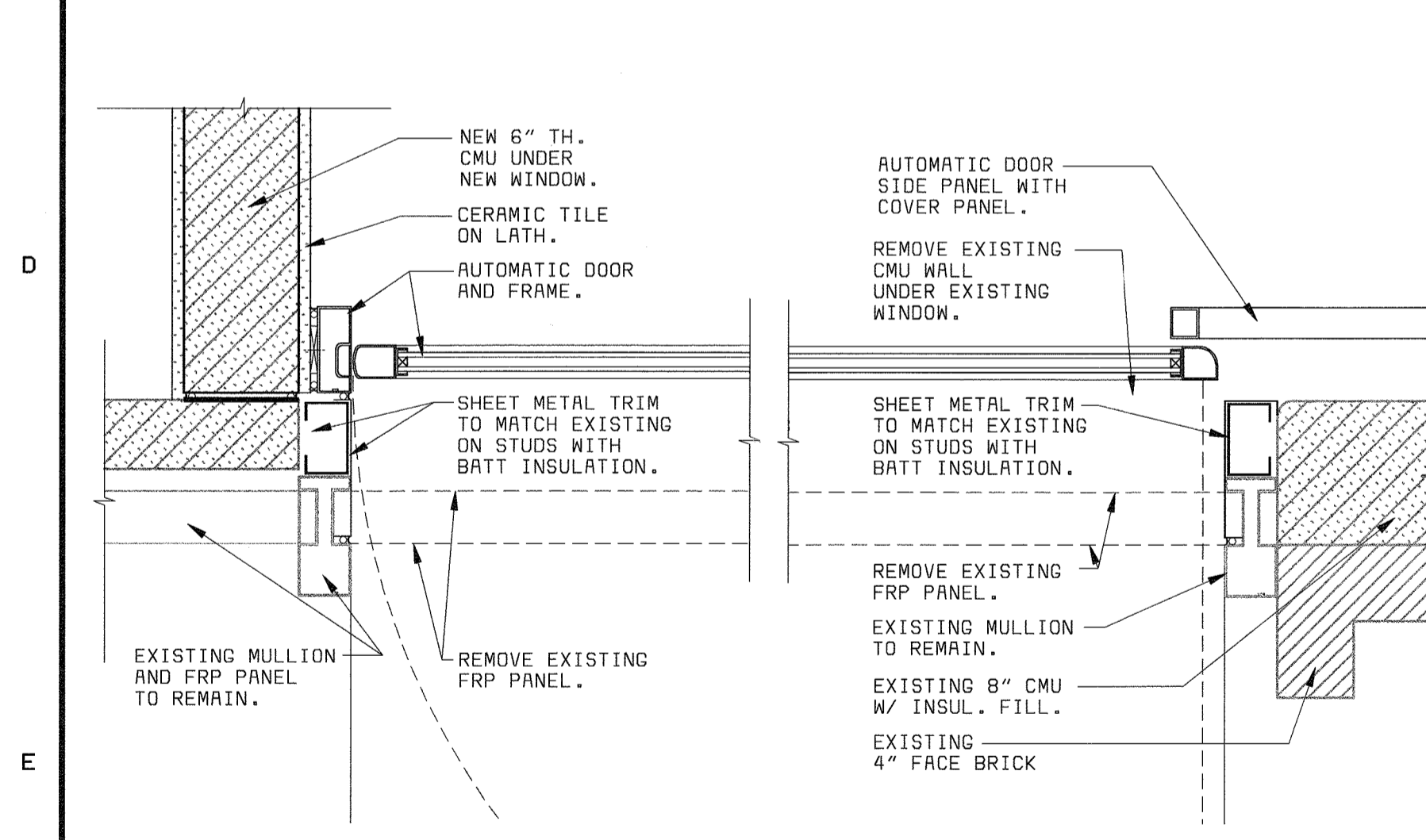
**ELEVATION DETAIL** (2)  
1/2" = 1'-0"



**ELEVATION DETAIL** (3)  
1/2" = 1'-0"

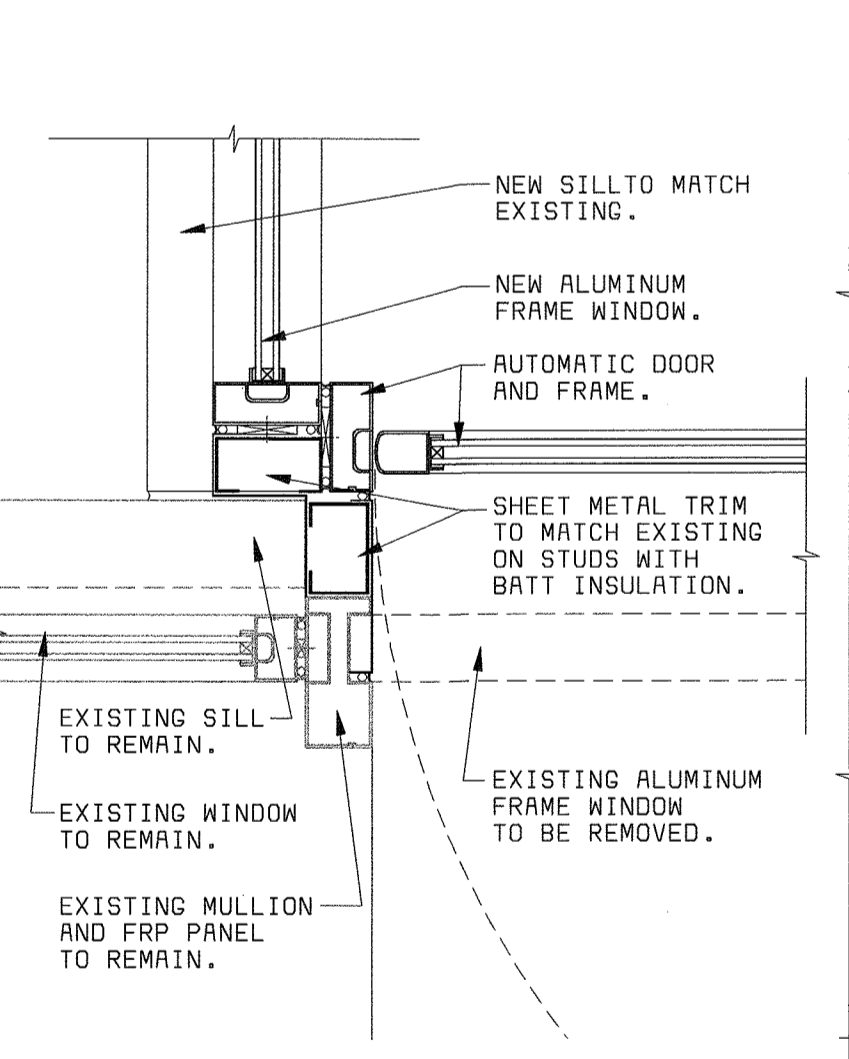


**ELEVATION DETAIL** (4)  
1/2" = 1'-0"

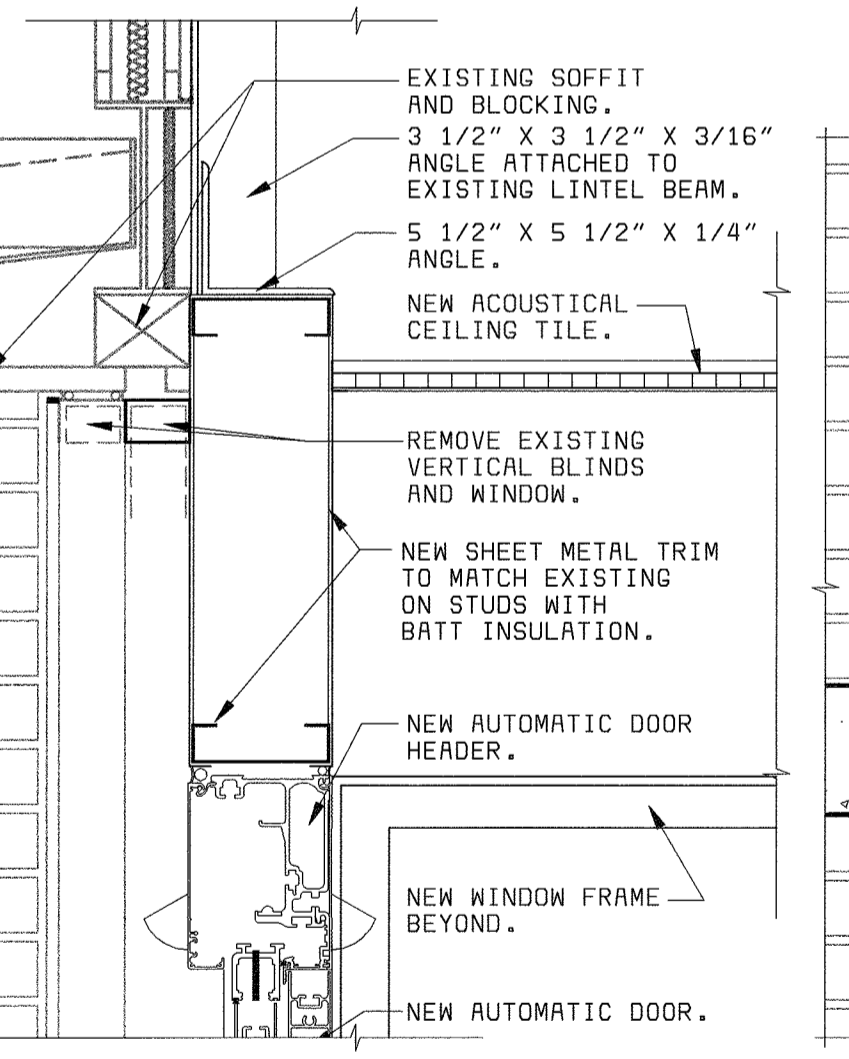


**DETAIL** (5)  
1 1/2" = 1'-0"

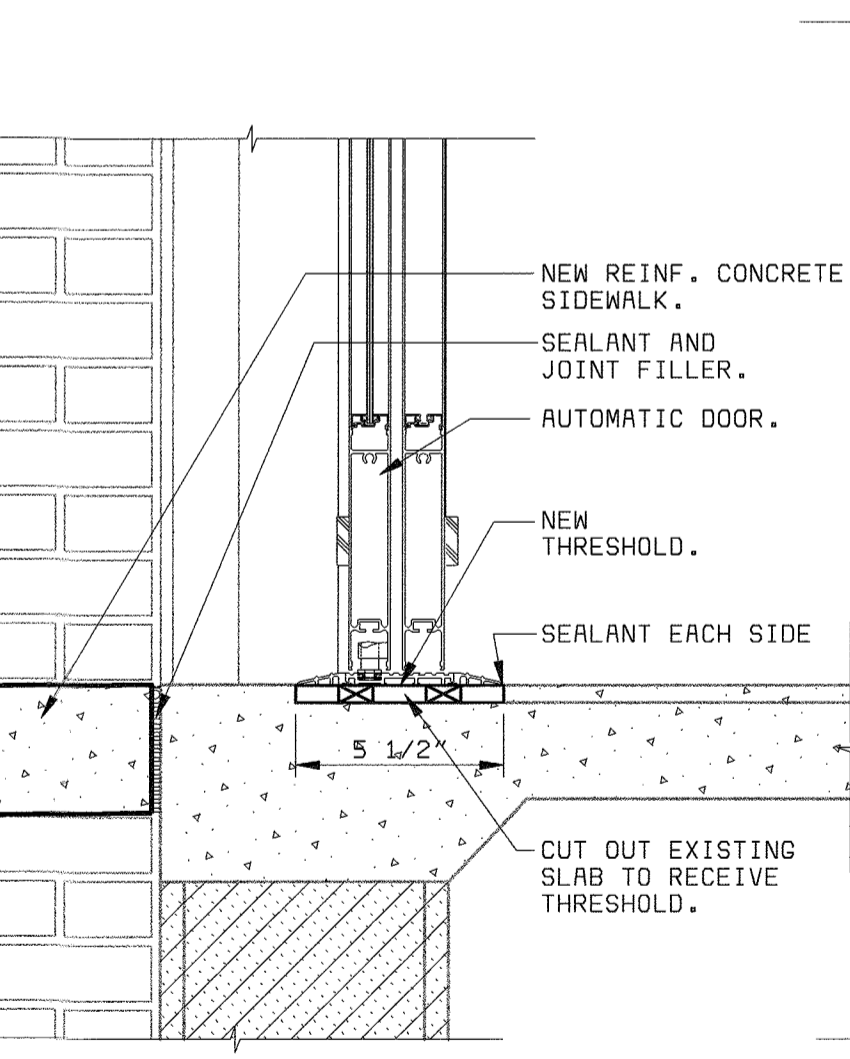
**DETAIL** (6)  
1 1/2" = 1'-0"



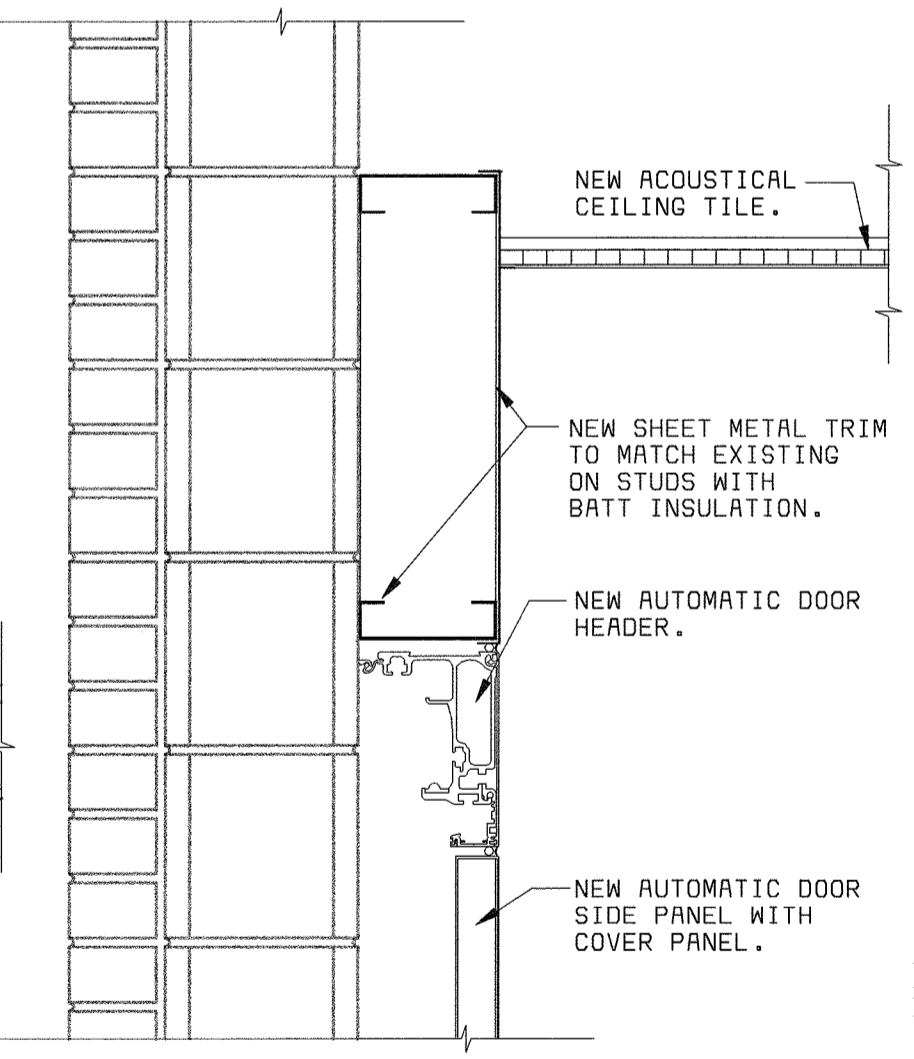
**DETAIL** (7)  
1 1/2" = 1'-0"



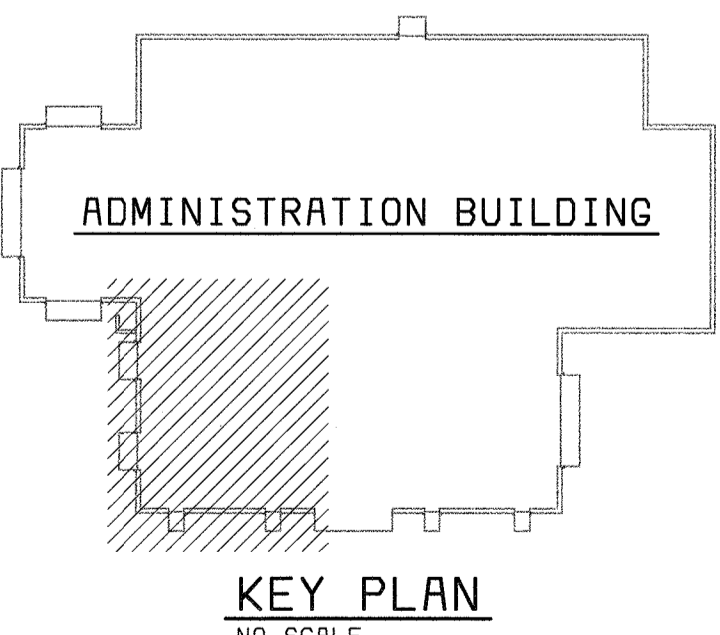
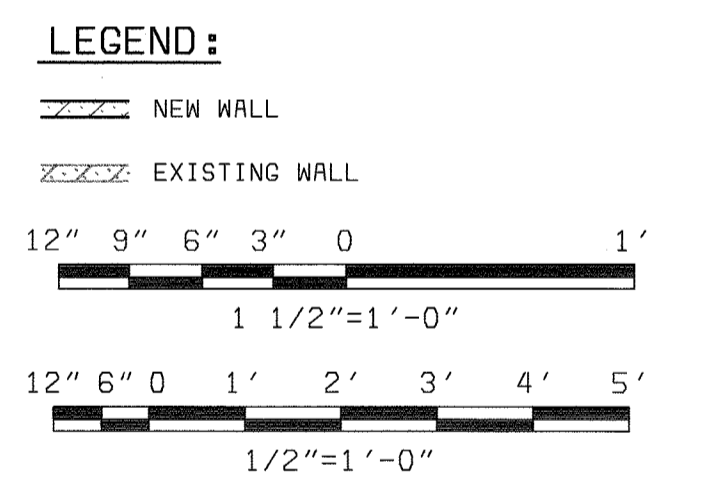
**DETAIL** (8)  
1 1/2" = 1'-0"



**DETAIL** (9)  
1 1/2" = 1'-0"



**DETAIL** (10)  
1 1/2" = 1'-0"



**PLAN NOTES:**  
1. FOR FINISH, DOOR AND WINDOW SCHEDULES SEE A-7.  
2. FOR REFLECTED CEILING PLAN SEE A-3.  
3. MAINTAIN EXISTING FIRE RATING AND ANY PENETRATION SHOULD BE SEALED AGAINST GAS MIGRATION.

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND  
CHIEF, BUREAU OF UTILITIES DATE

**bbw** Architects • Designers • Planners  
Bryant Bryant Williams, P.C.  
4201 Connecticut Avenue N.W., Suite 500  
Washington, D.C. 20008 (202) 246-2108

**BLACK & VEATCH** LLP  
Gaithersburg, Maryland  
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A REGISTERED  
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IN THE  
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NO. 1377-R

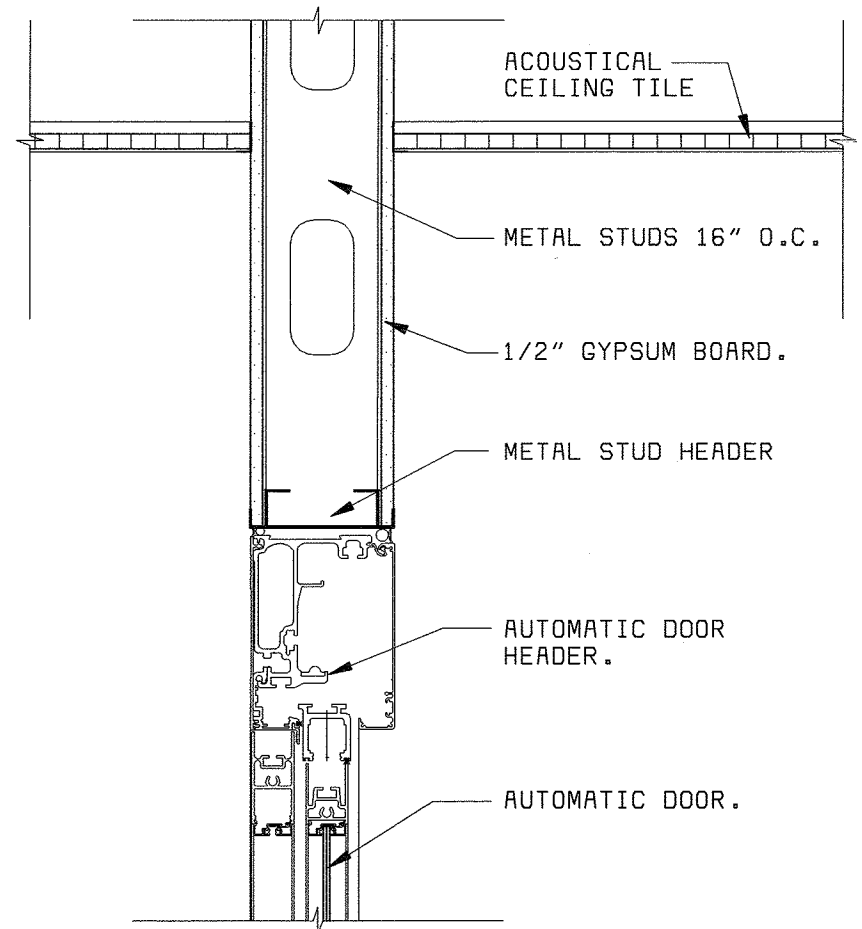
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DRN:	JS				
CHK:	CH				
DATE:	08/00	11/03/03	CONFORMED TO CONSTRUCTION RECORDS	RHH/RJR/RJR	
		DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY CK APP

ARCHITECTURAL  
**ADMINISTRATION BUILDING  
LABORATORY SAMPLE ENTRANCE  
ENLARGED PLAN AND DETAILS**

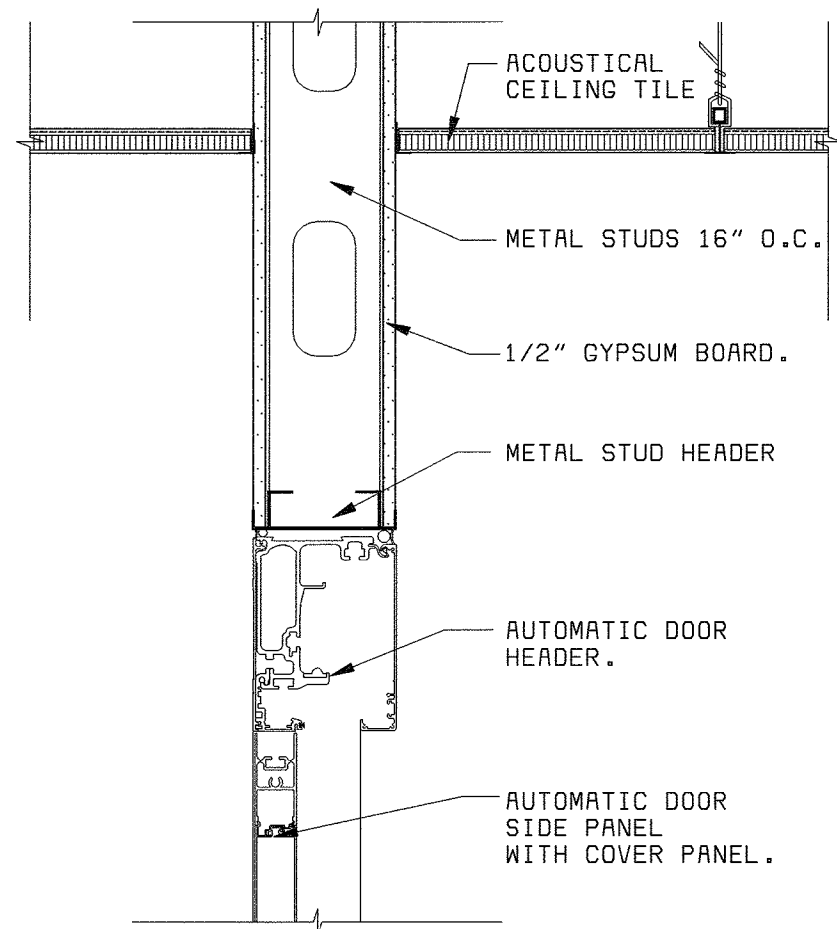
LITTLE PATUXENT WATER RECLAMATION PLANT  
ADDITION NO. 6  
LABORATORY RENOVATION  
CAPITAL PROJECT S-6205  
CONTRACT NO. 20-3841  
HOWARD COUNTY, MARYLAND

SCALE  
AS  
SHOWN  
SHEET  
15 OF 28  
A9

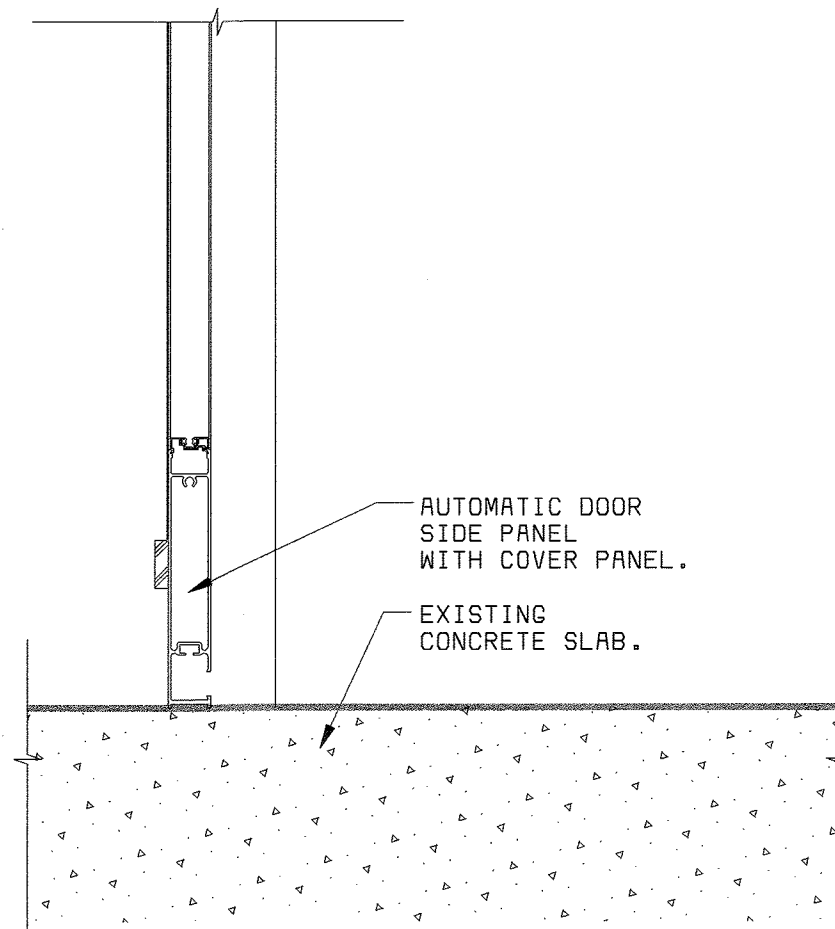




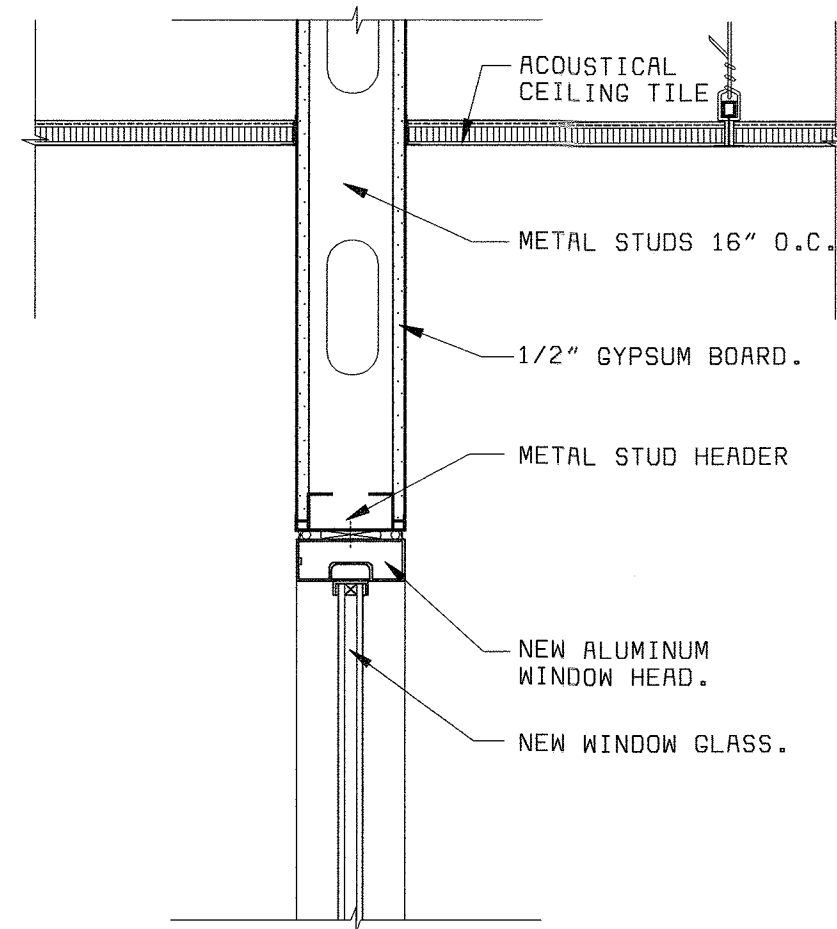
**DETAIL 1**  
1 1/2" = 1'-0" A10



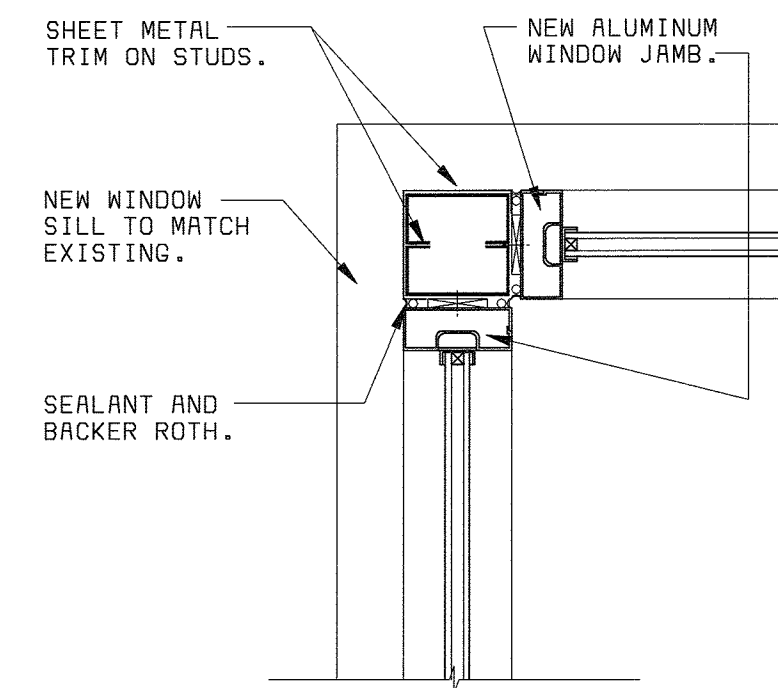
**DETAIL 2**  
1 1/2" = 1'-0" A10



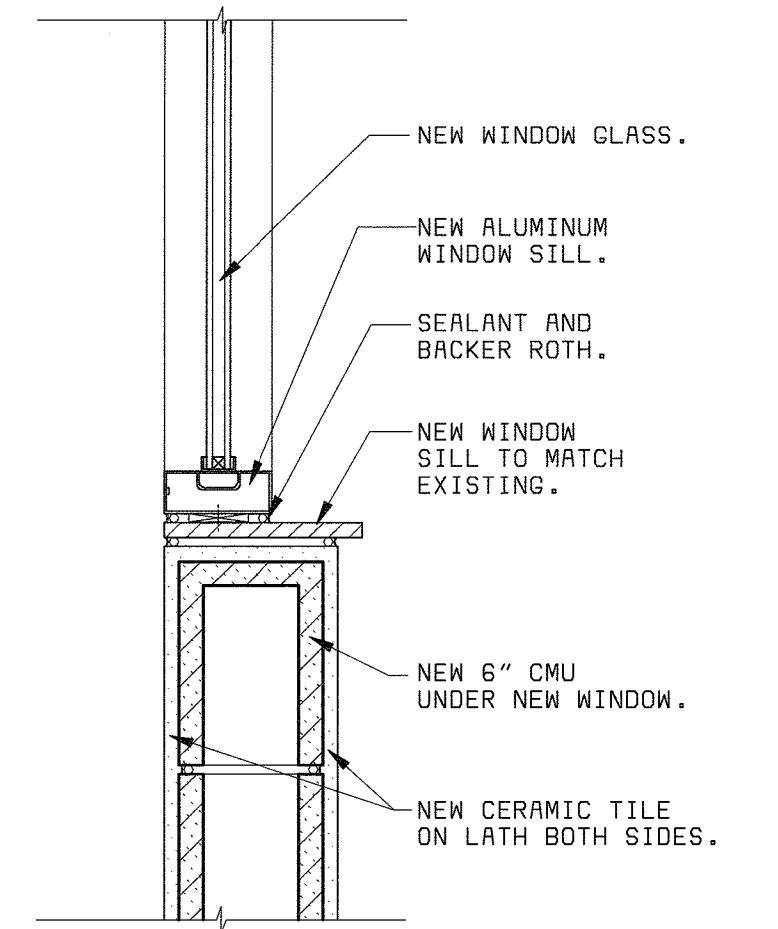
**DETAIL 3**  
1 1/2" = 1'-0" A10



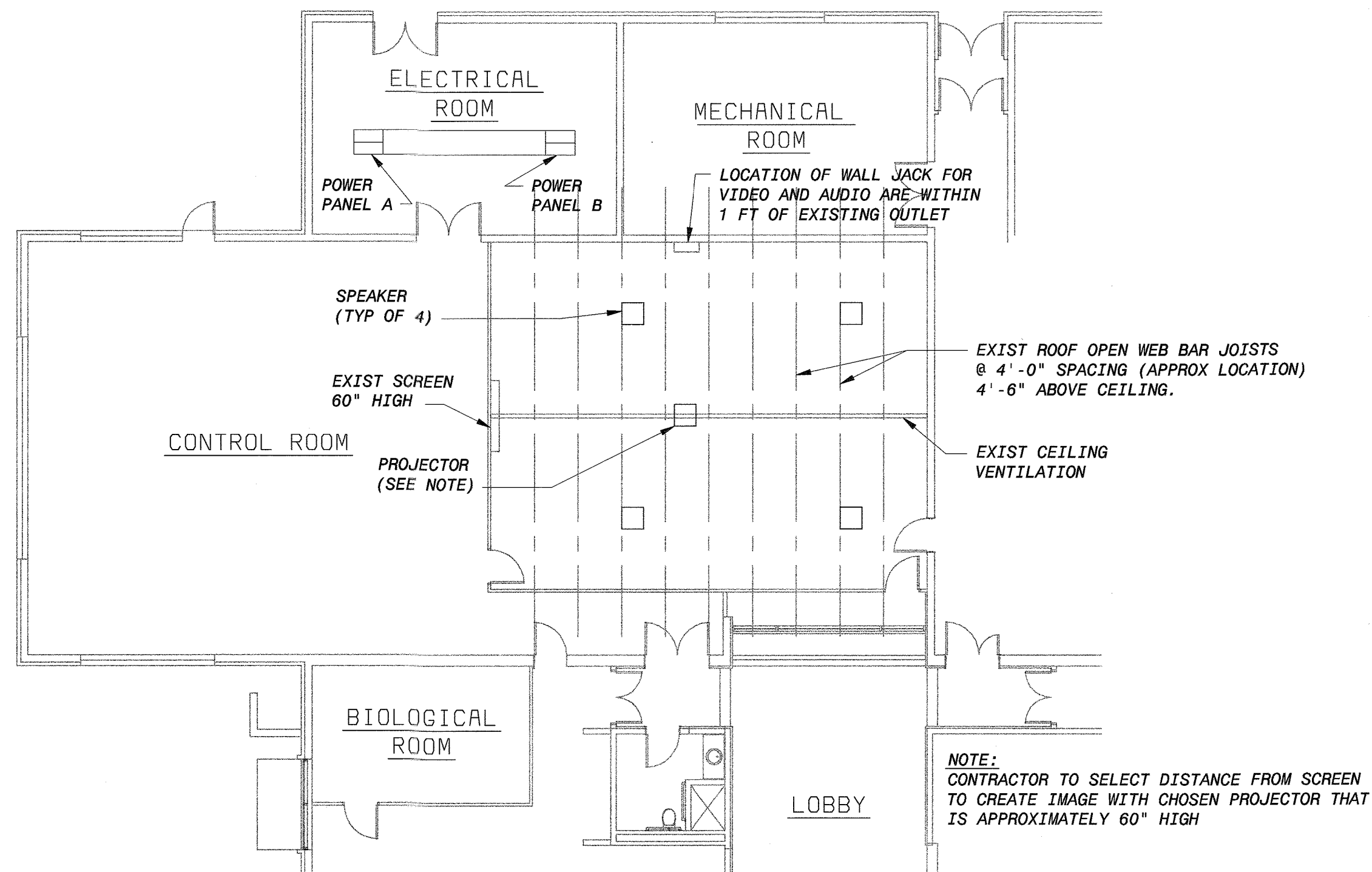
**DETAIL 4**  
1 1/2" = 1'-0" A10



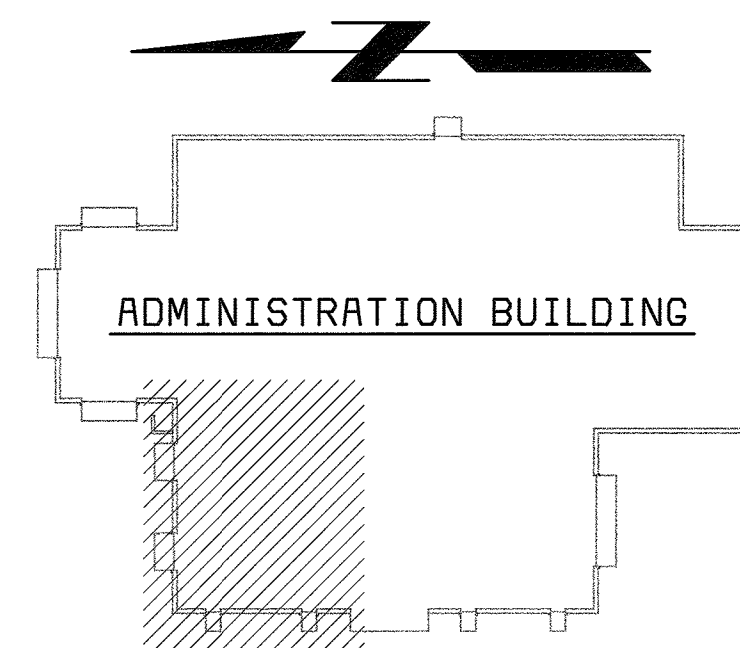
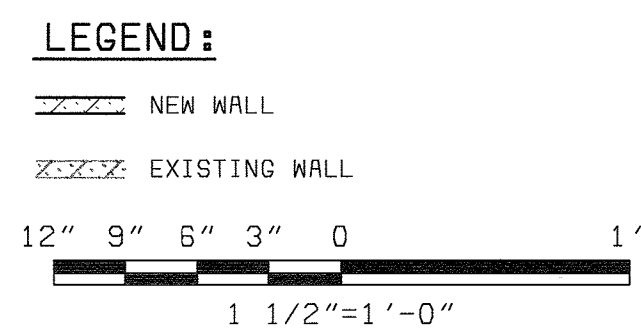
**DETAIL 5**  
1 1/2" = 1'-0" A10



**DETAIL 6**  
1 1/2" = 1'-0" A10



**TRAINING ROOM AUDIOVISUAL SYSTEM**  
3/32" = 1'-0"



**KEY PLAN**  
NO SCALE

- PLAN NOTES:**
- FOR FINISH, DOOR AND WINDOW SCHEDULES SEE A-7.
  - FOR REFLECTED CEILING PLAN SEE A-3.
  - MAINTAIN EXISTING FIRE RATING AND ANY PENETRATION SHOULD BE SEALED AGAINST GAS MIGRATION.

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND



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DRN:	JS						
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DATE:	01/01	11/03/03	CONFORMED TO CONSTRUCTION RECORDS				
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ARCHITECTURAL

ADMINISTRATION BUILDING  
LABORATORY  
MISCELLANEOUS DETAILS

LITTLE PATUXENT WATER RECLAMATION PLANT  
ADDITION NO. 6  
LABORATORY RENOVATION

CAPITAL PROJECT S-6205  
CONTRACT NO. 20-3841

HOWARD COUNTY, MARYLAND

SCALE  
AS  
SHOWN

SHEET  
16 OF 28

A10

058472-5  
P058472A

ABBREVIATIONS

GENERAL MECHANICAL NOTES

Table of abbreviations for mechanical systems including AC, AF, AHU, ALUM, AP, APPROX, AS, ASTM, ATU, AUTO, AVS, B, BDD, BFD, BFF, BFM, BH, BI, BL, BLD, BLR, BOD, BOT, BTUH, BU, C, CAB, CB, CD, CC, CCO, CDM, CEN, CF, CFC, CFW, CO, CONC, CONN, CONT, CP, CUP, CT, CU, CV, D, DB, DDC, DEH, DF, DIR, DN, DOW, DSN, DX, EA, EAT, EC, ECH, EDH, EEW, EFX, EGH, EGS, EIH, EP, EQ, ES, ES/EW, ESP, ET, EWH, EWT, EXIST, F, FA, FBD, FC, FCO, FCU, FD, FDB, FEF, FLEX, FM, FPM, FRP, FS, FSW, FT, G, GA, GALV, GCO, GD, GHI, GPM, GUH, GV, GW, GWH, H, HC, HCH, HE, HF, HO, HOP, HR, HU, HUM, HVM, HWB, HWP, HZ, I, IBR, ID, IN, JS, KS, KW, L, LAT, LBS, LI, LS, LMT, MAU, MAX, MCA, ME, MOC, MOP, MPR, MIN, MOD, NC, NPSHR, NT, OA, OC, OCF, OCF/S, OCL, OCP, OPCS, OD, ORD, ORP, P, PD, PAC, POI, PDS, PH, PL, POS, PPM, PROP, PRS, PRV, PS, PPS, PSI, PSIA, PSIG, PTAC, RA, RAC, RCS, RD, REQD, RH, SA, SCFM, SCFM, SF, SH, SIM, SMD, SP, SPS, SRP, SS, STD, SV, T, TCP, TD, TE, TEMP, TI, TL, TS, TYP, UR, V, VAC, VAN, VAV, VB, VCD, VCF, VCP, VSP, VTR, W, WB, WBP, WC, WCL, WCO, WH, WHT, WIA, WSI, WM, WMT, WT, WP, ZD

- 1. THIS IS A GENERAL LEGEND AND ABBREVIATION SHEET FOR PLUMBING AND HVAC DRAWINGS. SOME ITEMS CONTAINED ON THIS SHEET MAY NOT BE USED ON THIS SPECIFIC PROJECT.
2. FOR ROOFTOP EQUIPMENT CURB, FLUES, AND FLASHING DETAILS. SEE ARCHITECTURAL DRAWINGS.
3. SEE ARCHITECTURAL DRAWINGS FOR ALL EQUIPMENT BASE DETAILS.
4. "SCREENED" DELINEATION DENOTES EXISTING AND NEW FACILITIES AND IS FOR REFERENCE ONLY. "LIGHT" LINE DELINEATION DENOTES EXISTING MECHANICAL EQUIPMENT AND SYSTEMS. EXISTING FACILITY AND MECHANICAL SYSTEMS INFORMATION WAS TAKEN FROM PREVIOUS DRAWINGS, CONSTRUCTION RECORDS, DATA, AND FIELD SURVEY INFORMATION. ACTUAL LOCATION, ARRANGEMENT, AND DIMENSIONS SHALL BE FIELD VERIFIED AND WORK INSTALLED TO MEET ACTUAL CONDITIONS AND LOCATIONS ENCOUNTERED. "BOLD" (DARK) DELINEATION IS NEW WORK TO BE CONSTRUCTED UNDER THIS CONTRACT.
5. ALL MATERIALS, FITTINGS, COVERS, AND EQUIPMENT INSTALLED IN RETURN AIR PLENUMS SHALL BE NONCOMBUSTIBLE AND UL LISTED FOR USE IN RETURN AIR PLENUMS.
6. METAL ROOF DECKING SHALL NOT BE USED FOR THE SUPPORT OF EQUIPMENT, PIPING, OR DUCTWORK.
7. ALL HANGERS, BRACKETS, OR BRACES FOR DUCTWORK, EQUIPMENT, AND PIPING ARE NOT INDICATED ON THE DRAWINGS. REFER TO THE SPECIFICATIONS FOR SUPPORT REQUIREMENTS NOT SHOWN ON THE PLANS.
8. OUTSIDE AIR INLETS SHALL BE LOCATED A MINIMUM OF 10' AWAY FROM ANY EXHAUST AIR OR PLUMBING VENT OUTLET.
9. ALL EQUIPMENT, PIPING, AND DUCTWORK SHALL BE ROUTED TO AVOID INTERFERENCES WITH STRUCTURE, OTHER PIPING, EQUIPMENT, DUCTWORK, AND CONDUIT. UNLESS SPECIFICALLY DIMENSIONED, THE PIPE AND DUCTWORK ROUTING SHOWN IS INTENDED TO INDICATE GENERAL LOCATION ONLY.
10. ALL PIPING AND DUCTWORK SHALL BE ROUTED AS HIGH AS POSSIBLE WITH A MINIMUM HEIGHT OF 8'-0" ABOVE FINISHED FLOOR UNLESS OTHERWISE INDICATED BY A CENTERLINE, INVERT, OR BOTTOM OF DUCT ELEVATION.
11. PIPING AND DUCTWORK INSTALLED ABOVE SUSPENDED CEILING SHALL BE INSTALLED TO ALLOW A MINIMUM 6 INCH CLEARANCE BETWEEN THE CEILING AND PIPING OR BOTTOM OF THE DUCT.
12. DUCTWORK SHALL BE FABRICATED, REINFORCED, SUPPORTED AND SEALED FOR OPERATING PRESSURES INDICATED IN THE SCHEDULES FOR THE EQUIPMENT IT SERVES. ALL DUCTWORK SHALL HAVE A MINIMUM SMACNA PRESSURE CLASSIFICATION OF ONE INCH.
13. DUCT SIZES INDICATED ARE CLEAR DIMENSIONS INSIDE THE DUCT OR DUCT LINING. SHEET METAL SIZES ARE LARGER FOR INTERNALLY LINED DUCTWORK.
14. DUCT CONNECTIONS TO EQUIPMENT, PIPING SIZES TO EQUIPMENT, AND EQUIPMENT SUPPORTS SHALL BE VERIFIED AND ADJUSTED TO MATCH ACTUAL EQUIPMENT FURNISHED.
15. THE LOCATION OF PIPING AND VALVES TO THE AIR HANDLING EQUIPMENT SHALL NOT INTERFERE WITH FILTER REMOVAL OR AIR HANDLING EQUIPMENT SERVICING.
16. ROOFTOP EQUIPMENT SHALL NOT BE LOCATED SUCH THAT ACCESS TO CONTROLS AND TO PERFORM SERVICE FOR EQUIPMENT IS LOCATED WITHIN 6 FEET OF THE BUILDING EDGE.
17. SEE ARCHITECTURAL DRAWING FOR FLOOR AND WALL PATCHING REQUIREMENTS WHEN EXISTING DUCT WORK AND PIPING IS REMOVED.
18. FOR ABANDONED PLUMBING VENT THRU ROOF PIPING, CUT PIPE BELOW DECK AND PROVIDE WEATHERPROOF CAP ON TOP OF VENT.
19. FOR LOCATION OF CEILING DIFFUSERS, SEE ARCHITECTURAL REFLECTED CEILING PLAN.

LEGEND

GENERAL

PIPE FITTINGS

VALVES

HVAC

PLUMBING

Legend table showing symbols for various mechanical components: GENERAL (PIPE ABOVE FLOOR OR GRADE, PIPE TURNING UP, PIPE TURNING DOWN), FUEL GAS (NATURAL GAS, PROPANE GAS), HVAC (CHILLED WATER RETURN, CONDENSATE DRAIN, CONDENSER WATER RETURN, HEATING WATER RETURN, LOW PRESSURE CONDENSATE, LOW PRESSURE STEAM), SPECIAL (ACETYLENE, ARGON, COMPRESSED AIR, HELIUM, HYDROGEN, HIGH PURITY AIR, METHANE, NITROGEN, NITROUS OXIDE, OXYGEN, VACUUM), WASTE (CHEMICAL RESISTANT WASTE, INDIRECT DRAIN, SANITARY DRAIN, STORM DRAIN, SUMP PUMP DISCHARGE, VENT), WATER (COLD WATER - NONPOTABLE, COLD WATER - POTABLE, DEIONIZED WATER, FIRE PROTECTION WATER, HOT WATER CIRCULATING - POTABLE, HOT WATER - NONPOTABLE, HOT WATER - POTABLE, PLANT EFFLUENT WATER, SERVICE WATER, SOFTENED WATER, TEMPERED OR BLENDED WATER, TEMPERED NONPOTABLE WATER), FIRE PROTECTION (ALARM CHECK VALVE - MET SYSTEM, DRY PIPE VALVE, FIRE DEPARTMENT CONNECTION, FLOW SWITCH, SUPERVISORY (TAMPER) SWITCH), VALVES (ANGLE VALVE, BACKFLOW PREVENTER, BACKWATER VALVE, BALL VALVE, BUTTERFLY VALVE, CHECK VALVE, GATE VALVE, GLOBE VALVE, PLUG VALVE, PRESSURE REDUCING VALVE, THREE WAY VALVE), HVAC (CONTROL DAMPER, DIFFUSER FOR FLEXIBLE DUCT, DIRECTION OF AIR FLOW, DUCTWORK DIMENSIONS, FIRE DAMPER, FLEXIBLE CONNECTION, FLEXIBLE DUCTWORK, INCLINED DROP IN RESPECT TO DIRECTION OF AIRFLOW, INCLINED RISE IN RESPECT TO DIRECTION OF AIRFLOW, NEGATIVE PRESSURE DUCT, POSITIVE PRESSURE DUCT, REGISTER, GRILLE OR DIFFUSER, ROUND OR FLEXIBLE DUCT TAKEOFF, ROUND TO SQUARE TRANSITION, TURNING VANES, VOLUME CONTROL DAMPER), PLUMBING (FUNNEL RECEPTOR W/TRAP, CLEANOUT (FLOOR), CLEANOUT (PIPE), BLENDING VALVE, DOWNSPOUT NOZZLE, EMERGENCY SHOWER/EYEWASH, FLOOR DRAIN, HOSE RACK, HOSE REEL, P-TRAP, ROOF DRAIN, SHOWER, SPLASHBLOCK, WATER HAMMER ARRESTOR W/ PDI SIZE DESIGNATION), PLUMBING (SCHEMATIC) (AIR-GAP FITTING, BELL-UP DRAIN, FLOOR CLEANOUT, FLOOR DRAIN, FLOOR DRAIN W/FUNNEL, P-TRAP, VENT THROUGH ROOF (VTR)), AIR INLET AND OUTLET IDENTIFICATION (SIZE-WIDTH BY HEIGHT, FLEXIBLE DUCT DIAMETER, CFM THRU DEVICE, DEVICE DESIGNATION, DEVICE GROUP, DEVICE TYPE).

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND CHIEF, BUREAU OF UTILITIES DATE

BLACK & VEATCH logo and registration information: REG. PROF. ENGR. DATE

THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY MARTIN L. PAPE A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 21992

Revision table with columns: DES, DRN, CHK, DATE, NO., BY, CK, APP. Includes dates 11/03/03 and 10/03/01.

HVAC/PLUMBING ADMINISTRATION BUILDING LEGEND AND ABBREVIATIONS

LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 LABORATORY RENOVATION CAPITAL PROJECT S-6205 CONTRACT NO. 20-3841 HOWARD COUNTY, MARYLAND

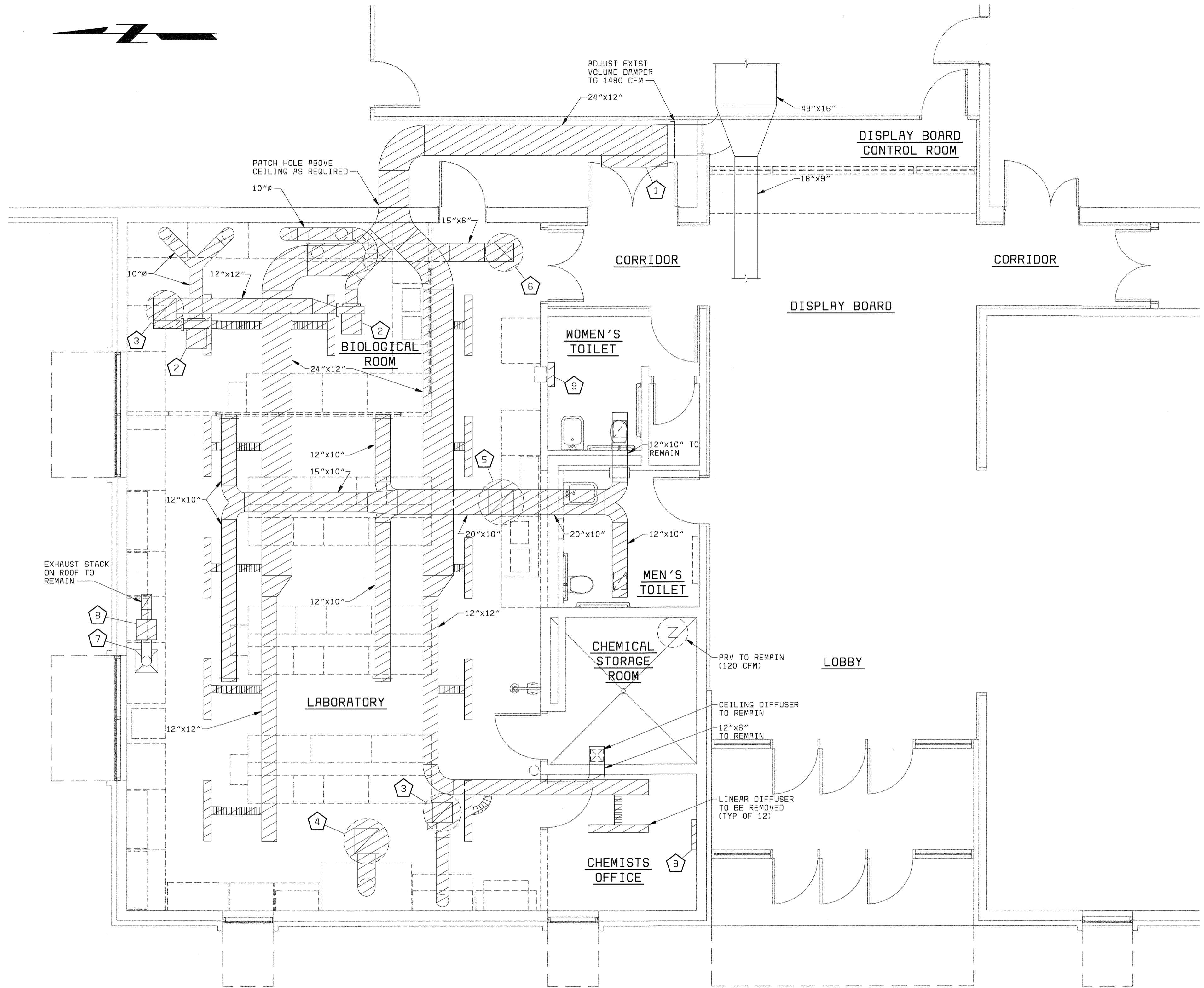
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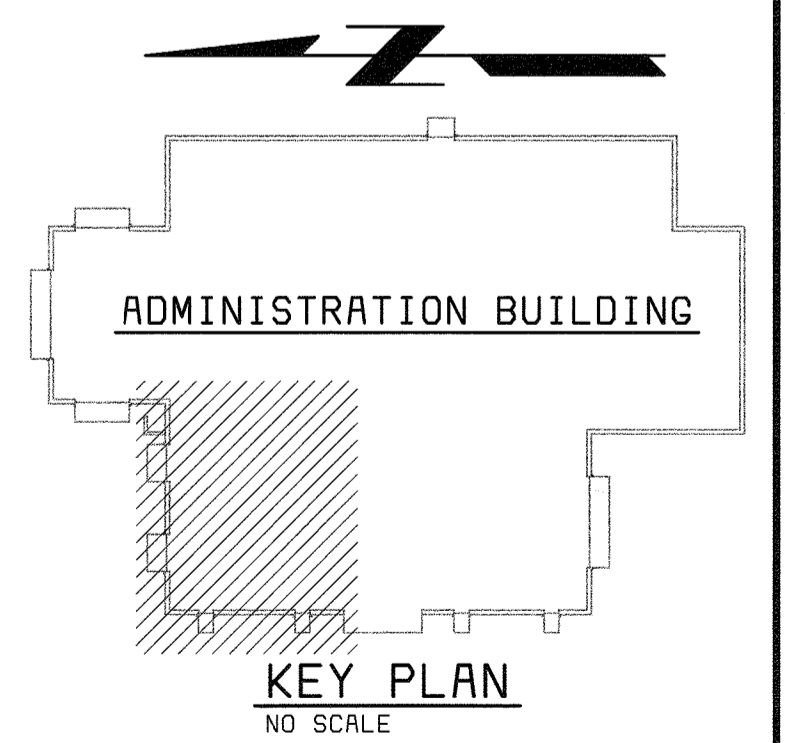


**PLAN NOTES:**

- 1 REMOVE EXISTING 10 KW DUCT HEATER.
- 2 REMOVE EXISTING FUME HOOD EXHAUST FAN AND ALL ASSOCIATED DUCTS AND SUPPORTS LOCATED ABOVE CEILING.
- 3 REMOVE EXISTING RELIEF HOOD LOCATED ON ROOF. EXISTING ROOF CURB SHALL REMAIN.
- 4 REMOVE EXISTING FUME HOOD PRV LOCATED ON ROOF. EXISTING ROOF CURB SHALL REMAIN. REMOVE ASSOCIATED DUCTS.
- 5 REMOVE EXISTING EXHAUST PRV LOCATED ON ROOF. EXISTING ROOF CURB SHALL REMAIN. REMOVE ASSOCIATED DUCTWORK.
- 6 REMOVE EXISTING SUPPLY PRV LOCATED ON ROOF. REMOVE EXISTING ASSOCIATED DUCTWORK. EXISTING CURB SHALL REMAIN.
- 7 REMOVE AND RELOCATE EXISTING ATOMIC ABSORPTION EXHAUST HOOD AND FLEXIBLE DUCT.
- 8 REMOVE EXISTING ATOMIC ABSORPTION EXHAUST FAN LOCATED ABOVE CEILING. REMOVE ASSOCIATED DISCHARGE DUCT UP TO ROOF EXHAUST STACK. ROOF EXHAUST STACK SHALL REMAIN.
- 9 REMOVE EXISTING BASEBOARD ELECTRIC HEATER.



**DEMOLITION PLAN - EL 145.00**  
1/4" = 1'-0"



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58472-112-ADM-H-T000003XF

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF UTILITIES DATE

**BLACK & VEATCH**  
Gaithersburg, Maryland

REG. PROF. ENGR. \_\_\_\_\_ DATE \_\_\_\_\_

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IN THE  
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NO. 21992

DES: GWP,RWC					
DRN: BDL,LDW					
CHK: JEP					
DATE: 10/03/01	11/03/03	CONFORMED TO CONSTRUCTION RECORDS		RHH	RJR
	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK APP

HVAC

**ADMINISTRATION BUILDING  
LABORATORY  
DEMOLITION PLAN**

LITTLE PATUXENT WATER RECLAMATION PLANT  
ADDITION NO. 6  
LABORATORY RENOVATION

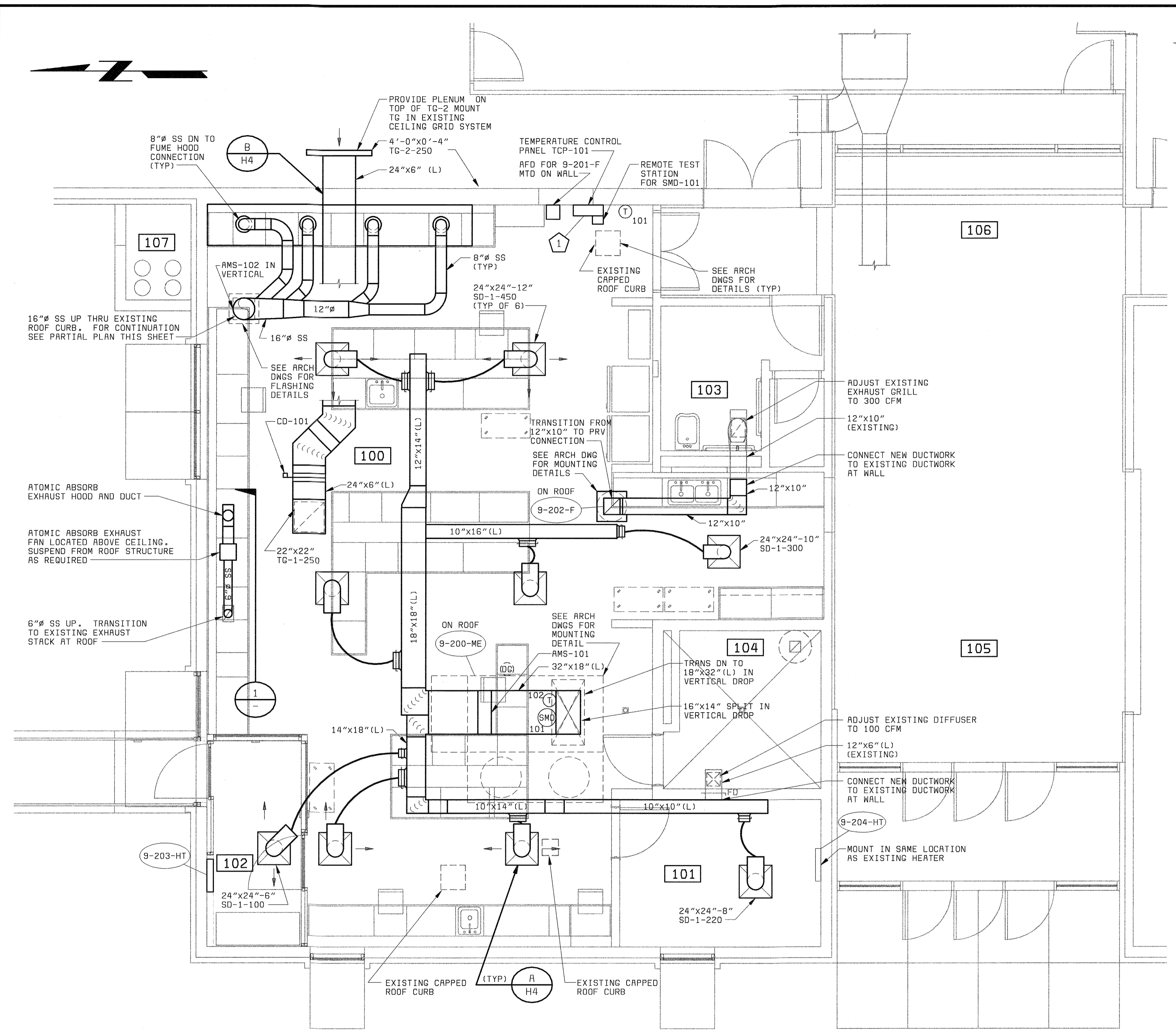
CAPITAL PROJECT S-6205  
CONTRACT NO. 20-3841

HOWARD COUNTY, MARYLAND

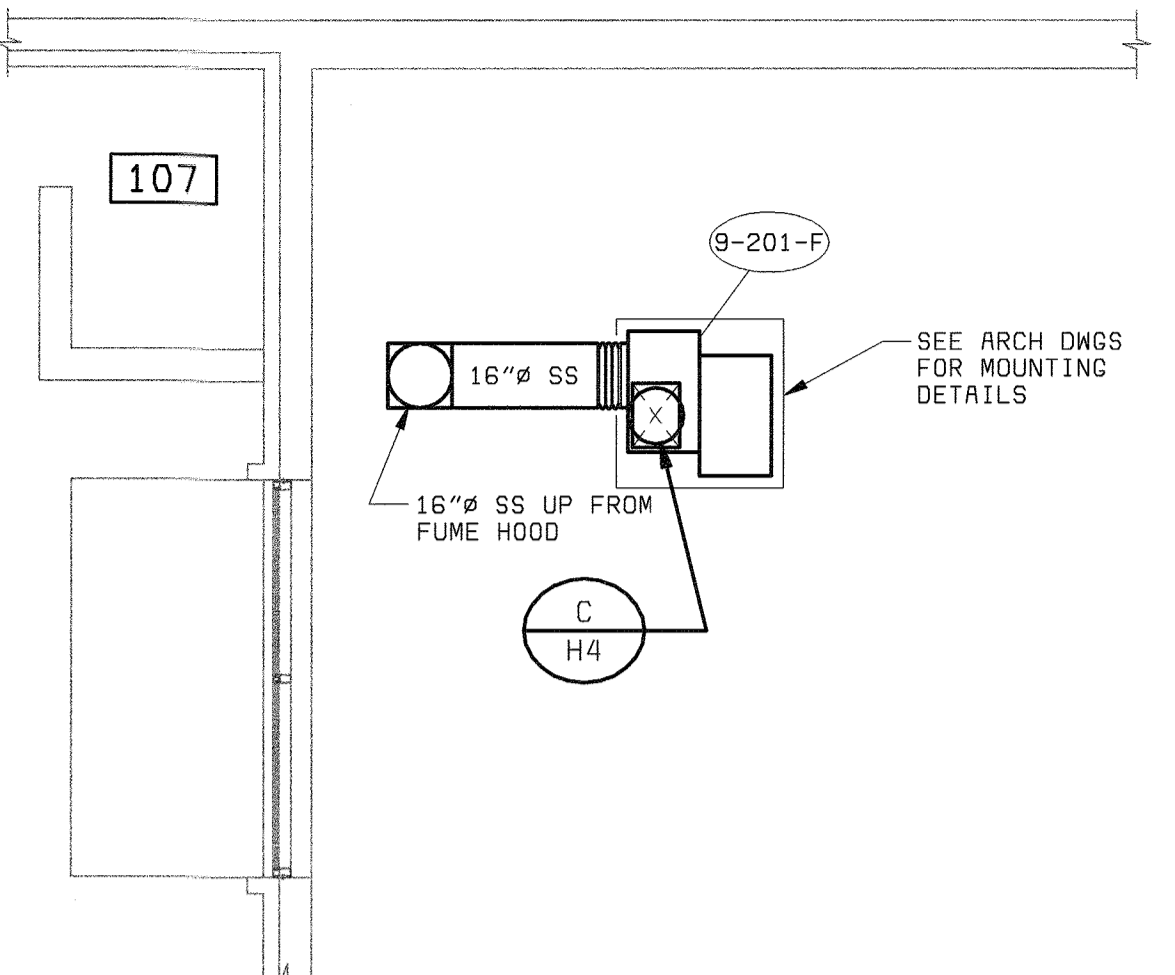
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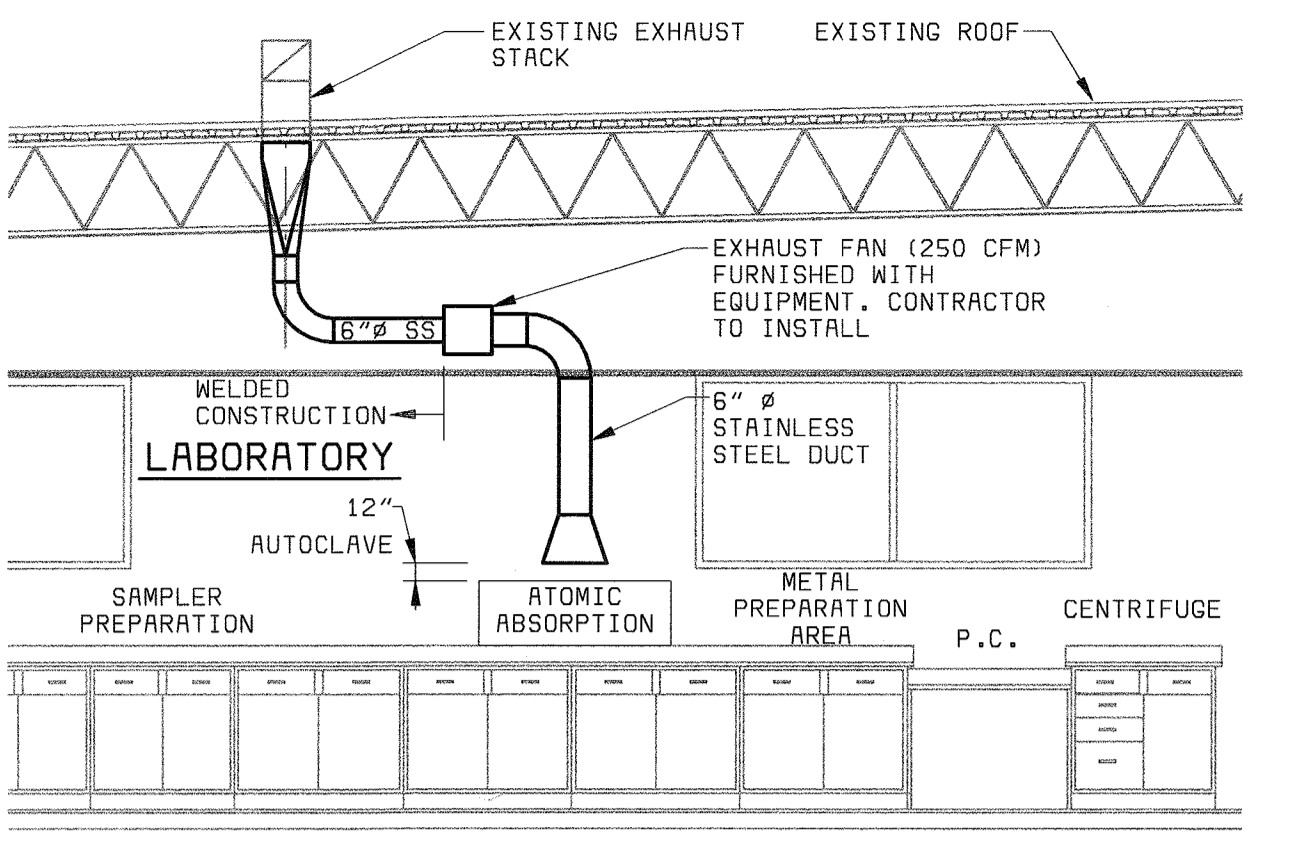
**H2**



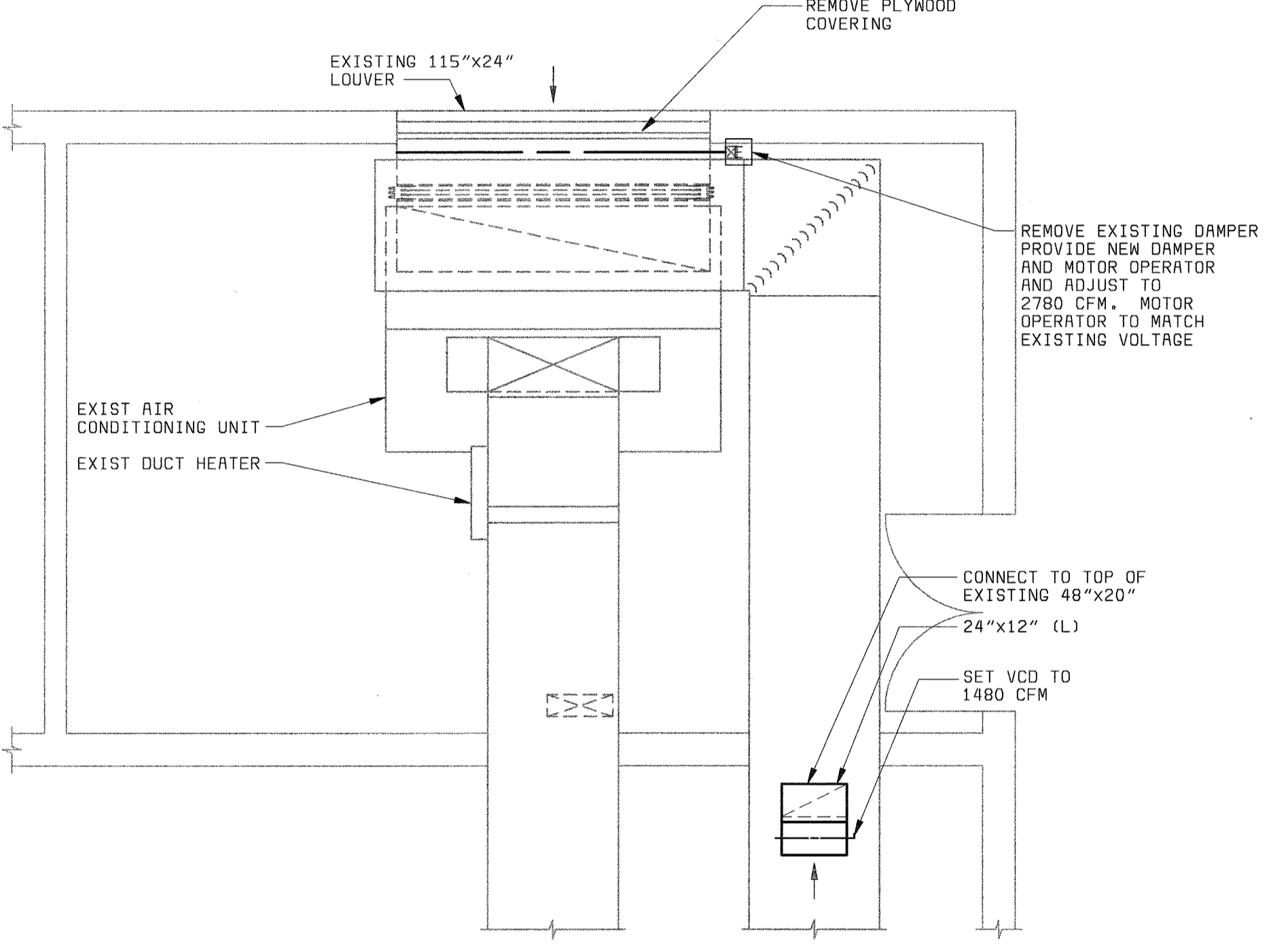
**FLOOR PLAN - EL 145.00**  
1/4" = 1'-0"



**PARTIAL ROOF PLAN**  
1/4" = 1'-0"



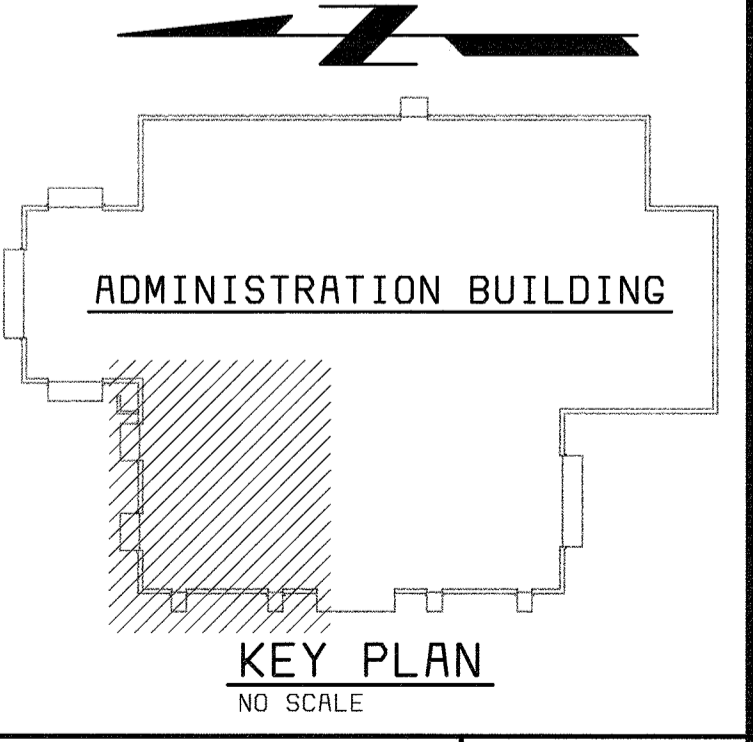
**SECTION 1**  
1/4" = 1'-0"



**MECHANICAL ROOM PARTIAL PLAN**  
1/4" = 1'-0"

**PLAN NOTES**

- 1 FLOW INDICATOR FOR AMS-101 AND AMS-102 SHALL BE MOUNTED INSIDE OF TCP-101. TIME CLOCK SHALL BE MOUNTED INSIDE OF TCP-101 WITH OVERRIDE SWITCH MOUNTED ON FACE OF PANEL. REMOTE TEST STATION FOR SMD-101 SHALL BE MOUNTED ON FACE OF PANEL.



**KEY PLAN**  
NO SCALE

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DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND  
CHIEF, BUREAU OF UTILITIES DATE

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Gathersburg, Maryland  
REG. PROF. ENGR. DATE

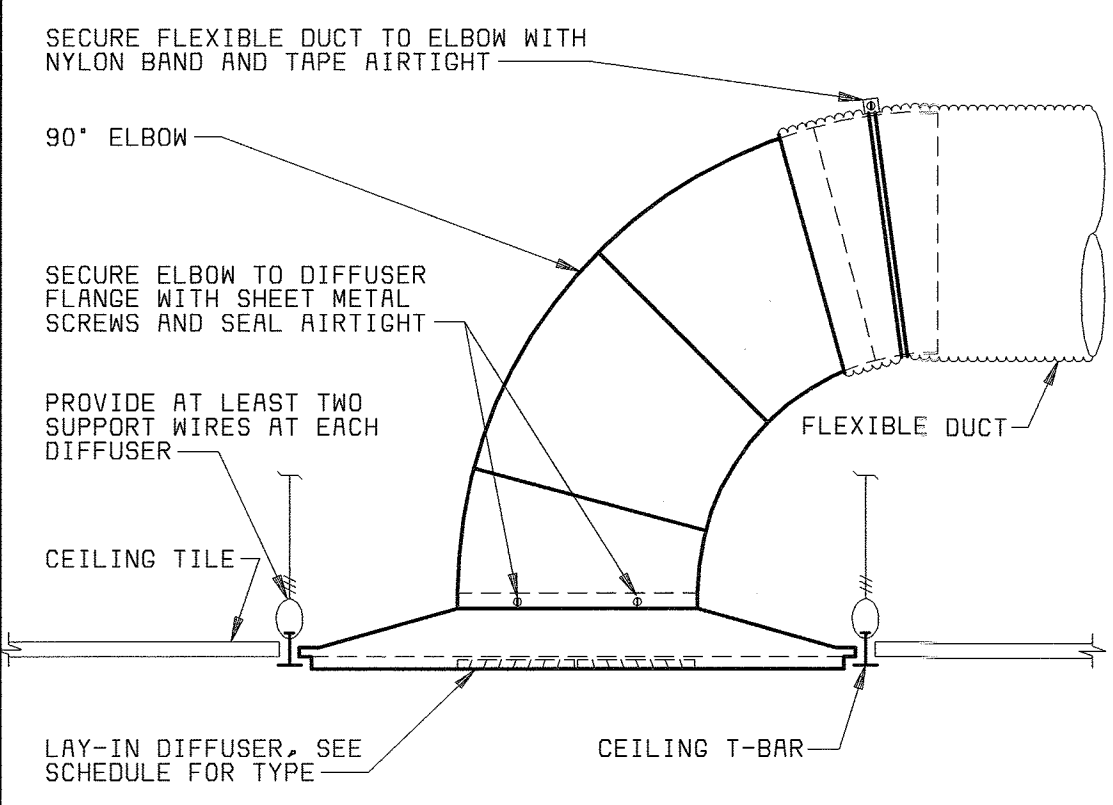
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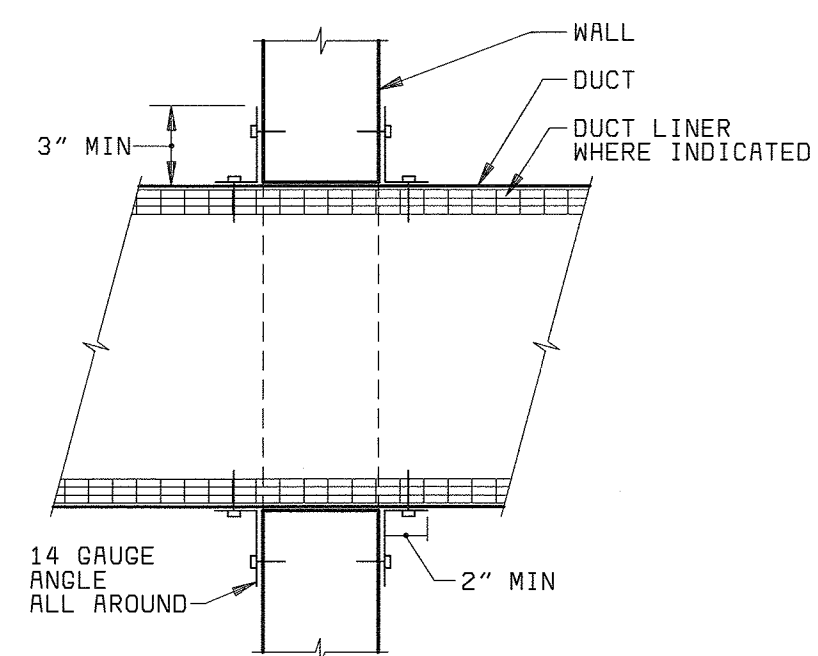
**HVAC**  
**ADMINISTRATION BUILDING  
LABORATORY FLOOR PLAN,  
PARTIAL PLANS AND SECTION**

**LITTLE PATUXENT WATER RECLAMATION PLANT  
ADDITION NO. 6  
LABORATORY RENOVATION**  
CAPITAL PROJECT S-6205  
CONTRACT NO. 20-3841  
HOWARD COUNTY, MARYLAND

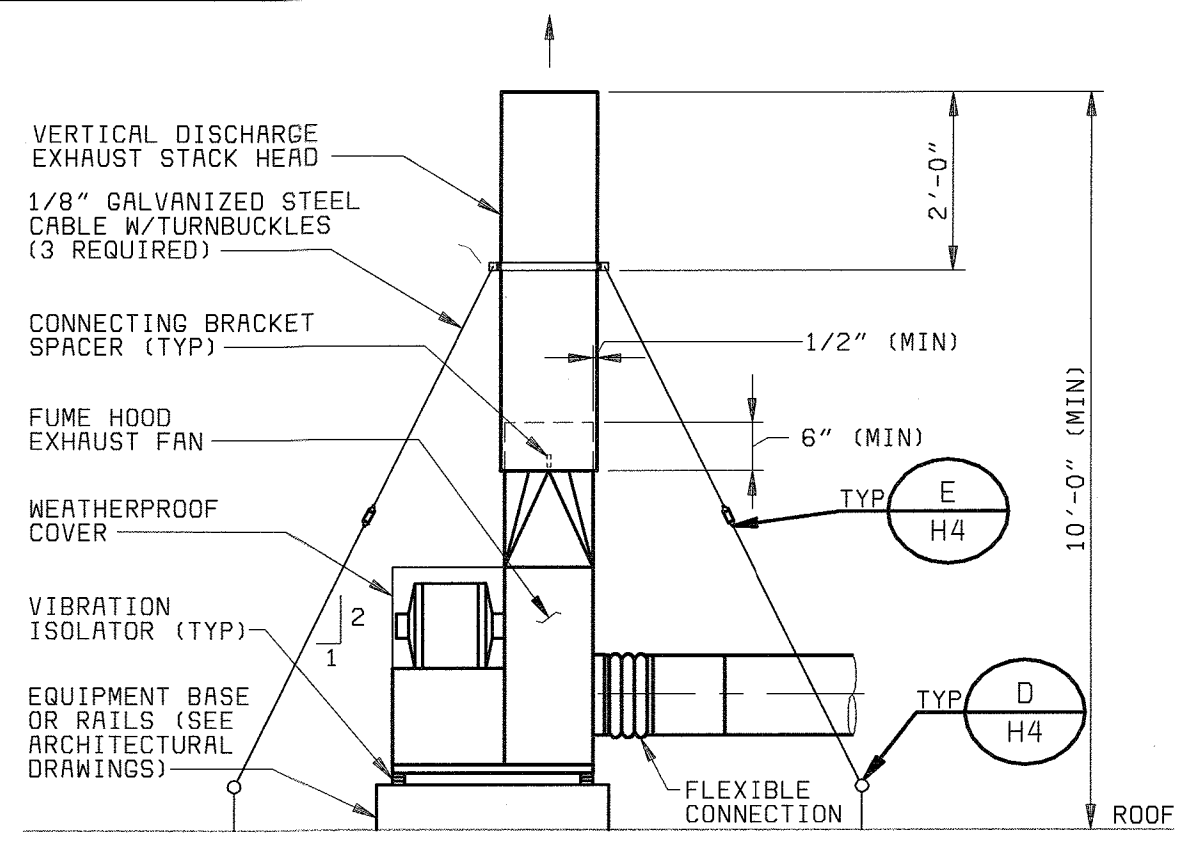
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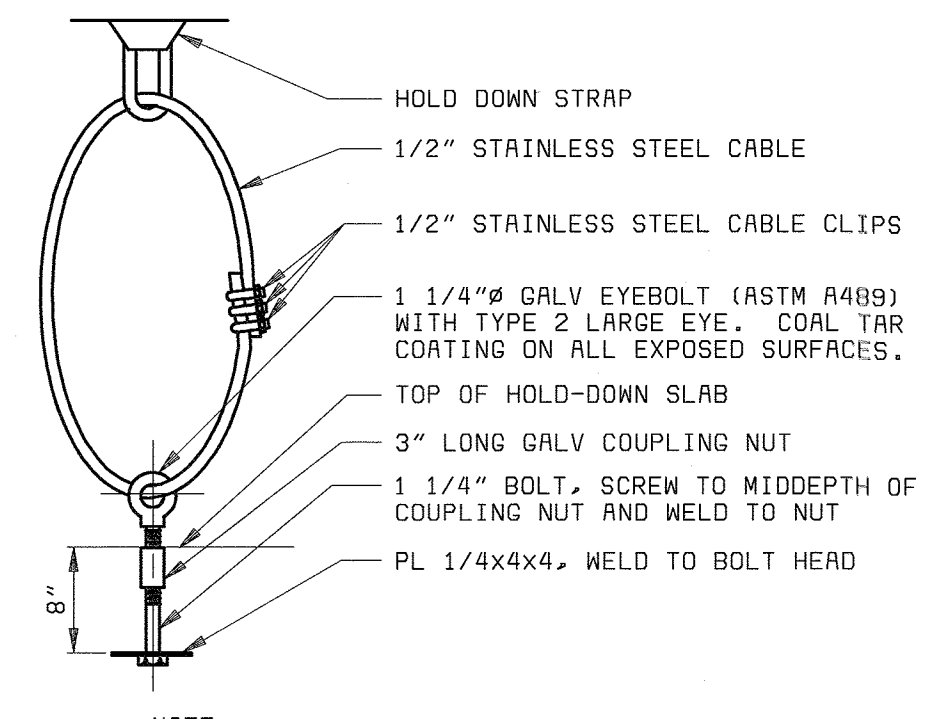
**CEILING DIFFUSER** (A) (H2)  
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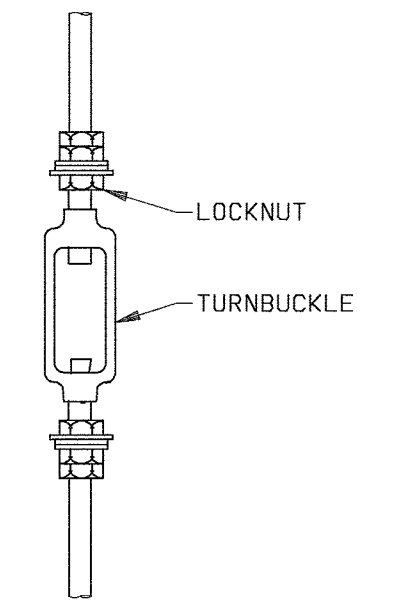
**WALL PENETRATION** (B) (H2)  
NO SCALE



**ROOF EXHAUST FAN** (C) (H2)  
NO SCALE



**HOLD-DOWN DETAIL** (D) (H4)  
NO SCALE



**EQUIPMENT TURNBUCKLE** (E) (H4)  
NO SCALE

**AIR DEVICE SCHEDULE**

SYMBOL	MODEL	FRAME/BORDER	MATERIAL	FINISH	DAMPER TYPE	ACCESSORIES	REMARKS
SD-1	PAS-AA	LAY-IN	ALUMINUM	WHITE	OPPOSED		FLUSH FACE
TC-1	PAR-AA	LAY-IN	ALUMINUM	WHITE			FLUSH FACE
TG-2	CT-480	LAY-IN	ALUMINUM	WHITE			4'-0" LINEAR GRILLE

NOTES:  
1. EQUIPMENT SCHEDULE MODEL NUMBERS BASED ON TITUS COMPANY  
2. ALL DIFFUSER CORE STYLES ARE 4-WAY UNLESS OTHERWISE INDICATED ON THE PLANS

**FAN SCHEDULE**

UNIT NO	LOCATION	AIRFLOW (CFM)	ESP (IN WG)	MOTOR HP	POWER SUPPLY VOLTS/PHASE	MIN WHEEL DIA (IN)	WHEEL TYPE	DRIVE	APPROX WT (LBS)	REMARKS
9-201-F	LAB ROOF	3420	1.125	2	460/3	15	C	B	200	FUME HOOD EXHAUST FAN, 2D, 4, 5
9-202-F	LAB ROOF	300	0.375	1/6	115/1	8	C	D	40	REST ROOM EXHAUST FAN (PRV), 3

WHEEL TYPE NOTES: C - CENTRIFUGAL  
P - PROPELLER

DRIVE NOTES: D - DIRECT  
B - BELT

REMARKS:  
1 - EXPLOSION-PROOF  
2 - VIBRATION ISOLATOR A) RUBBER PAD B) RUBBER MOUNT C) RUBBER HANGER D) SPRING MOUNT E) SPRING HANGER F) RESTRAINED SPRING MOUNT  
3 - BACKDRAFT DAMPER  
4 - ARRANGEMENT 9, UPBLAST, CW  
5 - ADJUSTABLE FREQUENCY DRIVE

**HEATER SCHEDULE**

UNIT NO	LOCATION	UNIT ORIENTATION	AIRFLOW (CFM)	AIR PD (IN WG)	OUTPUT CAPACITY		WATER FLOW (GPM)	WATER PD (FT)	MOTOR HP	POWER SUPPLY VOLTS/PHASE	APPROX WT (LBS)	REMARKS
					(BTUH)	(KW)						
9-203-HT	SAMPLE ENTRANCE	-	-	-	-	4.0	-	-	1/50	240/1	50	RECESSED WALL HTR
9-204-HT	OFFICE 101	-	-	-	-	0.5	-	-	-	120/1	-	BASE BOARD HEATER ELECTROMODE 8800 SERIES 27 INCHES LONG, BUILT IN T-STAT

UNIT ORIENTATION NOTES: H - HORIZONTAL DISCHARGE  
V - VERTICAL DISCHARGE

NOTES:  
ENTERING AIR TEMPERATURE - 72°F

**PACKAGED AIR CONDITIONING UNIT SCHEDULE**

UNIT NO	LOCATION	AIRFLOW (CFM)	ESP (IN WG)	INDOOR FAN MOTOR HP	POWER SUPPLY VOLTS/PHASE	MINIMUM CIRCUIT AMPACITY	COOLING				HEATING			OA (CFM)	APPROX WEIGHT (LBS)	REMARKS
							EAT (FDB)	CAPACITY (FWB)	SENSEIBLE	TOTAL	EAT (FDB)	CAPACITY (BTUH)	AUX CAPACITY (KW)			
9-200-ME	LAB ROOF	3420	0.375	3	460/3	106	91	75	126,100	220,100	13	273,200	-	3420	2000	

NOTES:  
1. OUTDOOR COIL ENTERING AIR TEMPERATURE:  
COOLING - 96°F  
2. THE EQUIPMENT SHALL HAVE A MINIMUM EFFICIENCY AT THE ARI STANDARD RATING CONDITIONS OF NOT LESS THAN THE FOLLOWING:  
>135,000 BTUH - 11.0 EER  
3. THE FOLLOWING EQUIPMENT SHALL HAVE THE MINIMUM NUMBER OF CAPACITY STEP REDUCTIONS OR STAGES:  
9-200-ME - 2 COOLING STEPS SCR CONTROL HEATING  
4. UNIT SHALL HAVE BELT DRIVEN INDOOR FAN  
5. UNIT SHALL BE PROVIDED WITH HOT GAS BYPASS AND LOW AMBIENT (0 F) CONTROLS.  
6. UNIT SHALL BE PROVIDED WITH AN ADJUSTABLE FREQUENCY DRIVE

**SEQUENCE OF OPERATIONS**

THE PACKAGED AIR CONDITIONING UNIT (9-200-ME) SHALL HAVE TWO MODES OF OPERATION, OCCUPIED AND UNOCCUPIED. UNDER THE OCCUPIED MODE OF OPERATION, 9-200-ME SHALL OPERATE CONTINUOUSLY IN THE NORMAL COOLING OR HEATING MODE AND SHALL BE AT THE MAXIMUM AIRFLOW OF 3420 CFM. NORMAL COOLING AND HEATING SETPOINTS ARE 78 F AND 72 F RESPECTIVELY. THE LABORATORY FUME HOOD EXHAUST FAN (9-201-F) SHALL OPERATE CONTINUOUSLY AT THE NORMAL AIRFLOW RATE OF 3420 CFM. UNDER THE UNOCCUPIED MODE OF OPERATION, 9-200-ME SHALL OPERATE CONTINUOUSLY IN THE SETBACK COOLING OR HEATING MODE AND SHALL BE AT THE REDUCED AIRFLOW OF 1710 CFM (FIELD ADJUSTABLE). SETBACK COOLING AND HEATING SETPOINTS ARE 90 F AND 60 F RESPECTIVELY (FIELD ADJUSTABLE). THE LABORATORY FUME HOOD EXHAUST FAN (9-201-F) SHALL OPERATE CONTINUOUSLY AT THE REDUCED AIRFLOW RATE OF 1710 CFM (FIELD ADJUSTABLE).

THE ADJUSTABLE FREQUENCY DRIVES FOR 9-200-ME AND 9-201-F SHALL BE ADJUSTED TO THE INDICATED AIRFLOW RATES AND SHALL OPERATE AS INDICATED ABOVE. AIR FLOW MONITORING STATIONS AMS-101 AND AMS-102 SHALL BE USED TO ADJUST THE DRIVES TO THE PROPER AIRFLOW SETTINGS. AIRFLOW RATES SHALL BE INDICATED AT TCP-101.

A PROGRAM 7-DAY TIME CLOCK, WITH A MANUAL 2 HOUR OVERRIDE TIMER, SHALL BE PROVIDED IN THE TEMPERATURE CONTROL PANEL, TCP-101, TO SWITCH THE SYSTEM FROM OCCUPIED MODE TO UNOCCUPIED MODE OF OPERATION. A SPACE THERMOSTAT (T-101) SHALL BE PROVIDED WITH ADJUSTABLE SET POINTS AND BE ABLE TO HAVE SETBACK TEMPERATURE SETPOINTS. THE SYSTEM PROGRAM TIME CLOCK SHALL CONTROL THE SETTINGS OF THE SPACE THERMOSTAT (OCCUPIED AND UNOCCUPIED MODES OF OPERATION). WHEN THE UNOCCUPIED MODE IS OVERRIDDEN, THE SYSTEM SHALL RETURN TO THE OCCUPIED MODE OF OPERATION UNTILL THE PRESELECTED TIME PERIOD ELAPSES.

WHEN LOW LIMIT THERMOSTAT T-102 SENSES A TEMPERATURE BELOW ITS SET POINT OF 40 F, 9-200-ME SHALL BE DE-ENERGIZED AND FUME HOOD EXHAUST FAN (9-201-F) SHALL BE DE-ENERGIZED. WHEN SMOKE DETECTOR SMD-101 DETECTS SMOKE, 9-200-ME AND FUME HOOD EXHAUST FAN (9-201-F) SHALL DE-ENERGIZE AND AN INDICATING LIGHT ON THE SMOKE DETECTOR'S REMOTE TEST STATION SHALL ILLUMINATE.

THE REST ROOM EXHAUST FAN (9-202-F) SHALL BE INTERLOCKED WITH THE LIGHT SWITCH WHEN THE LIGHT SWITCH IS ON, THE FAN SHALL BE ENERGIZED.

THE WALL HEATER (9-203-HT) SHALL BE CONTROLLED BY A UNIT MOUNTED THERMOSTAT. WHEN THE THERMOSTAT SENSES A TEMPERATURE BELOW ITS SETTING OF 65 F, THE HEATER SHALL BE ENERGIZED.

THE BASE BOARD HEATER (9-204-HT) SHALL BE CONTROLLED BY A UNIT MOUNTED THERMOSTAT. WHEN THE THERMOSTAT SENSES A TEMPERATURE BELOW ITS SETTING OF 72 F, THE HEATER SHALL BE ENERGIZED.

THE ATOMIC ABSORPTION EXHAUST FAN AND TRANSFER CONTROL DAMPER (CD-101) SHALL BE INTERLOCKED WITH THE ATOMIC ABSORPTION UNIT. WHEN THE ATOMIC ABSORPTION UNIT IS IN OPERATION, THE EXHAUST FAN SHALL BE ENERGIZED AND THE CONTROL DAMPER (CD-101) SHALL BE ENERGIZED TO THE OPEN POSITION.

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF UTILITIES DATE

**BLACK & VEATCH** L.P.  
Gaithersburg, Maryland

REG. PROF. ENGR. DATE

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**HVAC**

**ADMINISTRATION BUILDING  
LABORATORY  
DETAILS AND SCHEDULES**

**LITTLE PATUXENT WATER RECLAMATION PLANT  
ADDITION NO. 6  
LABORATORY RENOVATION**

CAPITAL PROJECT S-6205  
CONTRACT NO. 20-3841

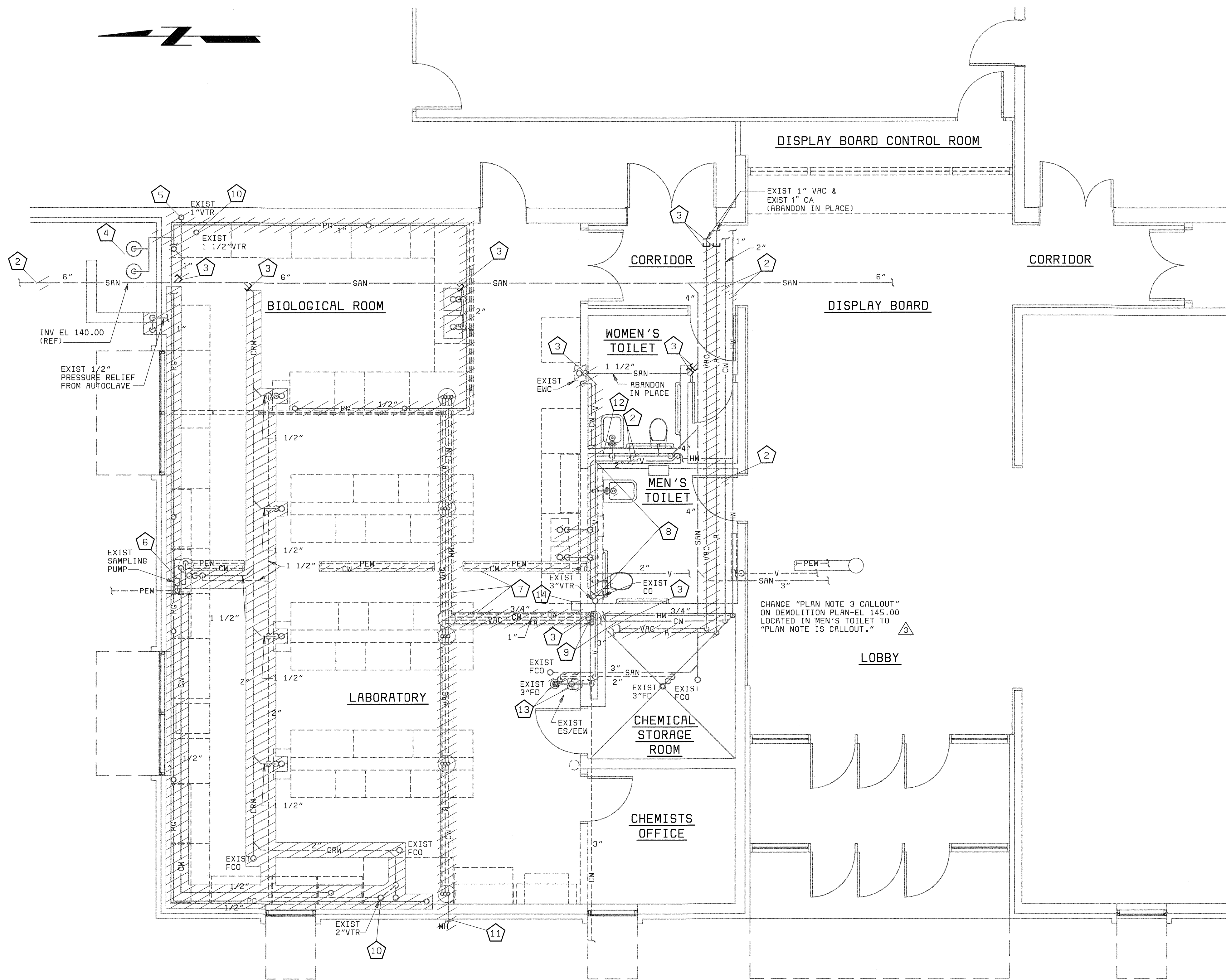
**HOWARD COUNTY, MARYLAND**

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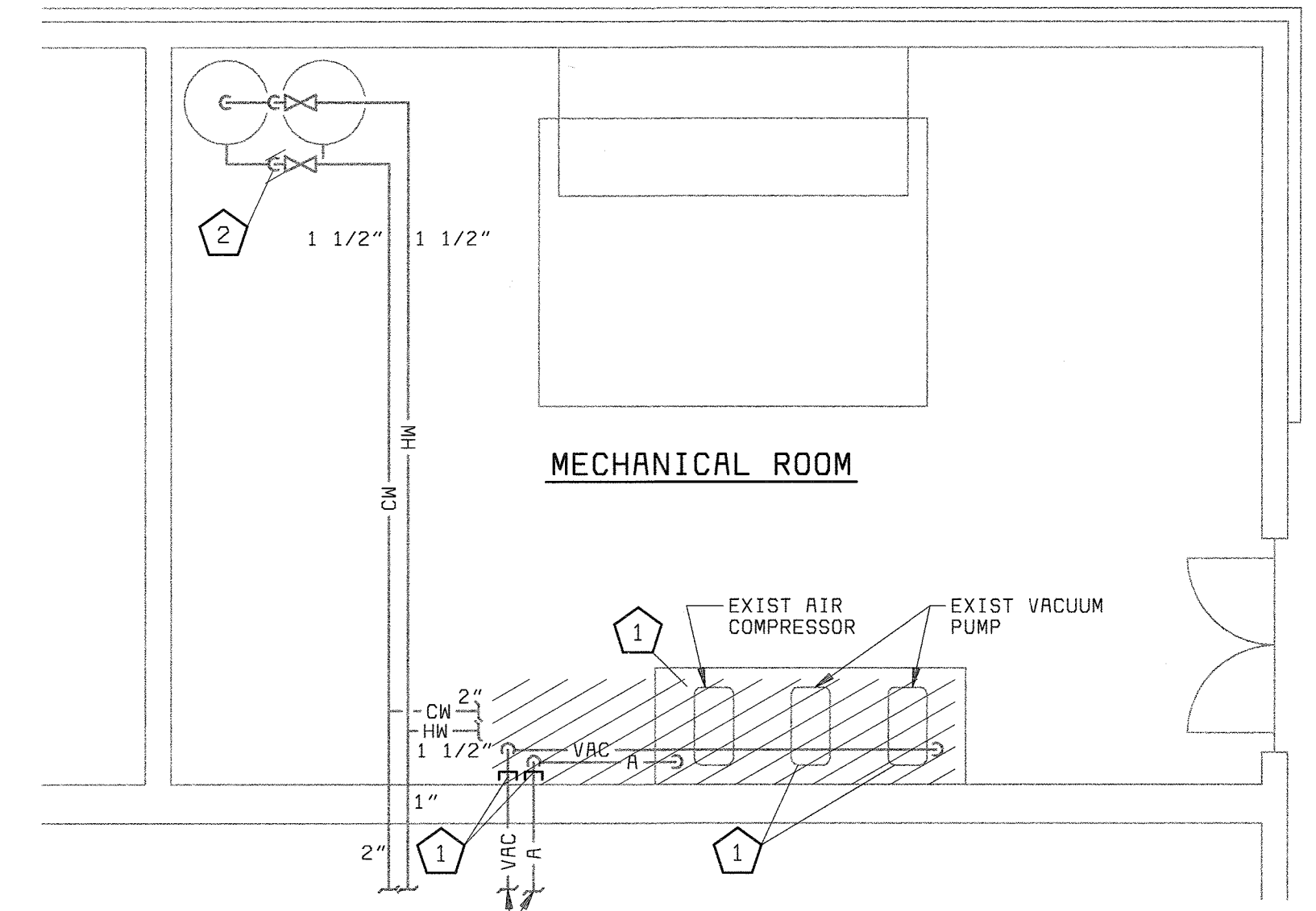
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**DEMOLITION PLAN - EL 145.00**  
1/4" = 1'-0"



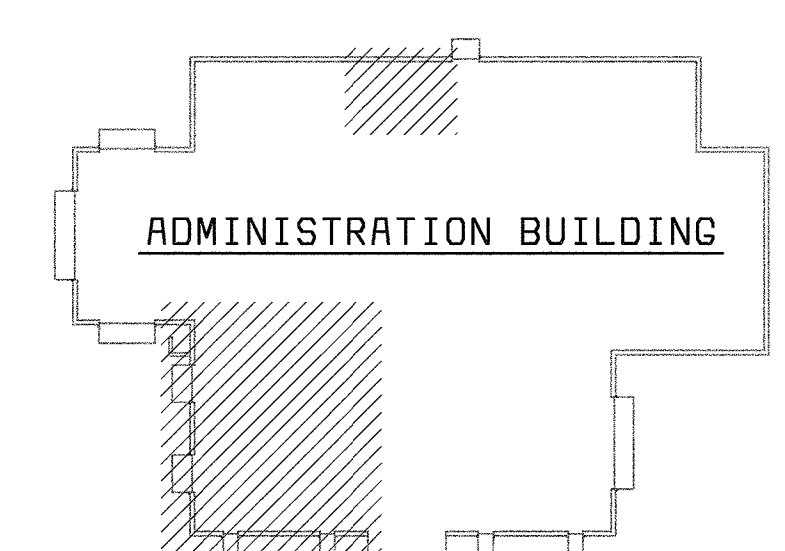
**DEMOLITION PLAN - EL 145.00**  
1/4" = 1'-0"

**PLAN NOTES:**

- 1 CONTRACTOR SHALL REMOVE EXIST COMPRESSED AIR AND VACUUM PIPING FROM PUMPS AND COMPRESSOR TO WALL PENETRATIONS AND CAP. CONTRACTOR SHALL REMOVE EXISTING AIR COMPRESSOR AND VACUUM PUMPS.
- 2 CONTRACTOR SHALL MODIFY EXIST PIPING AS NECESSARY TO INSTALL NEW BRANCH PIPING.
- 3 CONTRACTOR SHALL REMOVE EXIST PIPING AND INSTALL CAP OR PLUG.
- 4 OWNER WILL REMOVE PROPANE TANKS AND ACCESSORIES.
- 5 CONTRACTOR SHALL REMOVE EXISTING VENT PIPING UP TO BOTTOM OF ROOF SLAB. CAP AND SEAL VENT PIPE ABOVE ROOF.
- 6 CONTRACTOR SHALL REMOVE EXISTING SAMPLING PUMP AS SHOWN IN DETAIL B, DRAWING P3.
- 7 CONTRACTOR SHALL CAP OR PLUG ALL EXISTING PIPING AT FLOOR LEVEL IN FLOOR CONDUIT EXCEPT FOR PEW PIPING. CONTRACTOR SHALL BLOWOUT ALL LINES TO ENSURE THAT NO WATER REMAINS IN PIPING BEFORE CAP OR PLUG IS INSTALLED.
- 8 CONTRACTOR SHALL MODIFY EXISTING VENT PIPING TO REMOVE UNUSED BRANCHES AND TO ROUTE ABOVE NEW CEILING.
- 9 CONTRACTOR SHALL REMOVE EXIST CW PIPING TO UNDERGROUND CONDUIT AND CAP OR PLUG AT BRANCH. CONTRACTOR SHALL MODIFY HEADER FOR NEW BRANCH CONNECTION TO NEW DEIONIZED WATER SYSTEM.
- 10 CONTRACTOR SHALL REMOVE EXISTING VENT PIPING UP THRU ROOF. NEW CRV PIPING THRU ROOF SHALL REUSE EXISTING ROOF PENETRATION. CONTRACTOR SHALL MODIFY AS NECESSARY.
- 11 CONTRACTOR SHALL REMOVE EXISTING WALL HYDRANT. EXISTING WALL PENETRATION SHALL BE MODIFIED AS NECESSARY TO ACCOMMODATE NEW WALL HYDRANT.
- 12 CONTRACTOR SHALL MODIFY EXISTING SANITARY DRAIN PIPING TO INSTALL NEW WALL CLEANOUT.
- 13 CONTRACTOR SHALL REMOVE EXISTING EMERGENCY SHOWER AND EMERGENCY EYEWASH.
- 14 CONTRACTOR SHALL REMOVE EXISTING DEIONIZED WATER E-PURE UNIT FOR RELOCATION TO GLASSWARE AREA.
- 15 CONTRACTOR SHALL REMOVE EXISTING HW PIPING TO UNDERGROUND CONDUIT AND MODIFY FOR CONNECTION TO NEW DEIONIZED WATER SYSTEM.

**GENERAL NOTES:**

- 1. CONTRACTOR SHALL FIELD VERIFY LOCATION OF ALL EXISTING PIPING AND EQUIPMENT SHOWN ON THIS DRAWING.
- 2. CONTRACTOR SHALL REMOVE ALL EXISTING LABORATORY PIPING NOT BEING REUSED SUBJECT TO OWNERS APPROVAL.



**KEY PLAN**  
NO SCALE

58472-112-ADM-A-T000003XF

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FD58472R

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HOWARD COUNTY, MARYLAND  
  
CHIEF, BUREAU OF UTILITIES DATE



**BLACK & VEATCH, L.P.**  
Gaithersburg, Maryland

REG. PROF. ENGR. DATE

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MARTIN L. PAPE  
A REGISTERED  
PROFESSIONAL ENGINEER  
IN THE  
STATE OF MARYLAND,  
NO. 21992

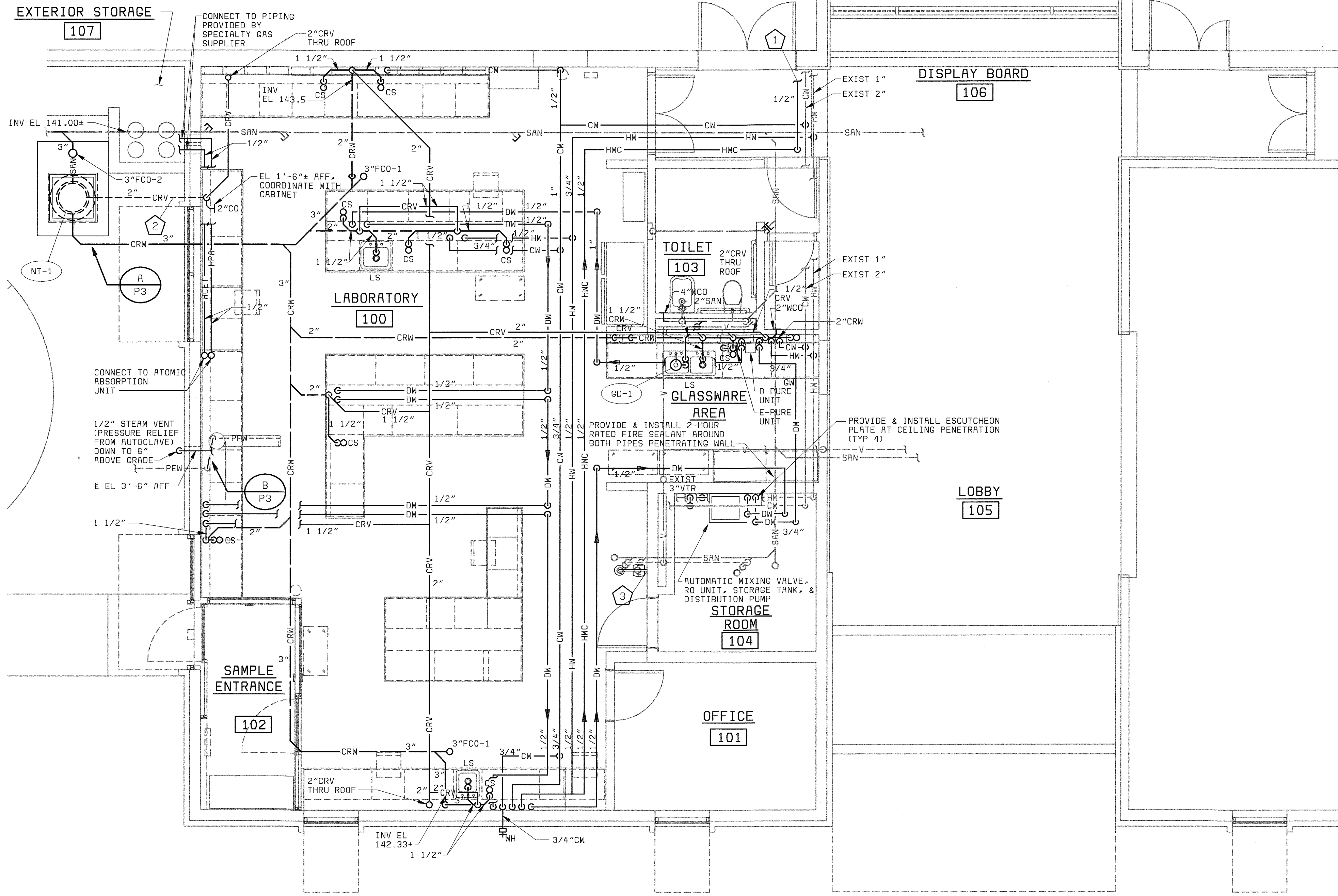
DES: JPC  
DRN: JPC  
CHK: MLP  
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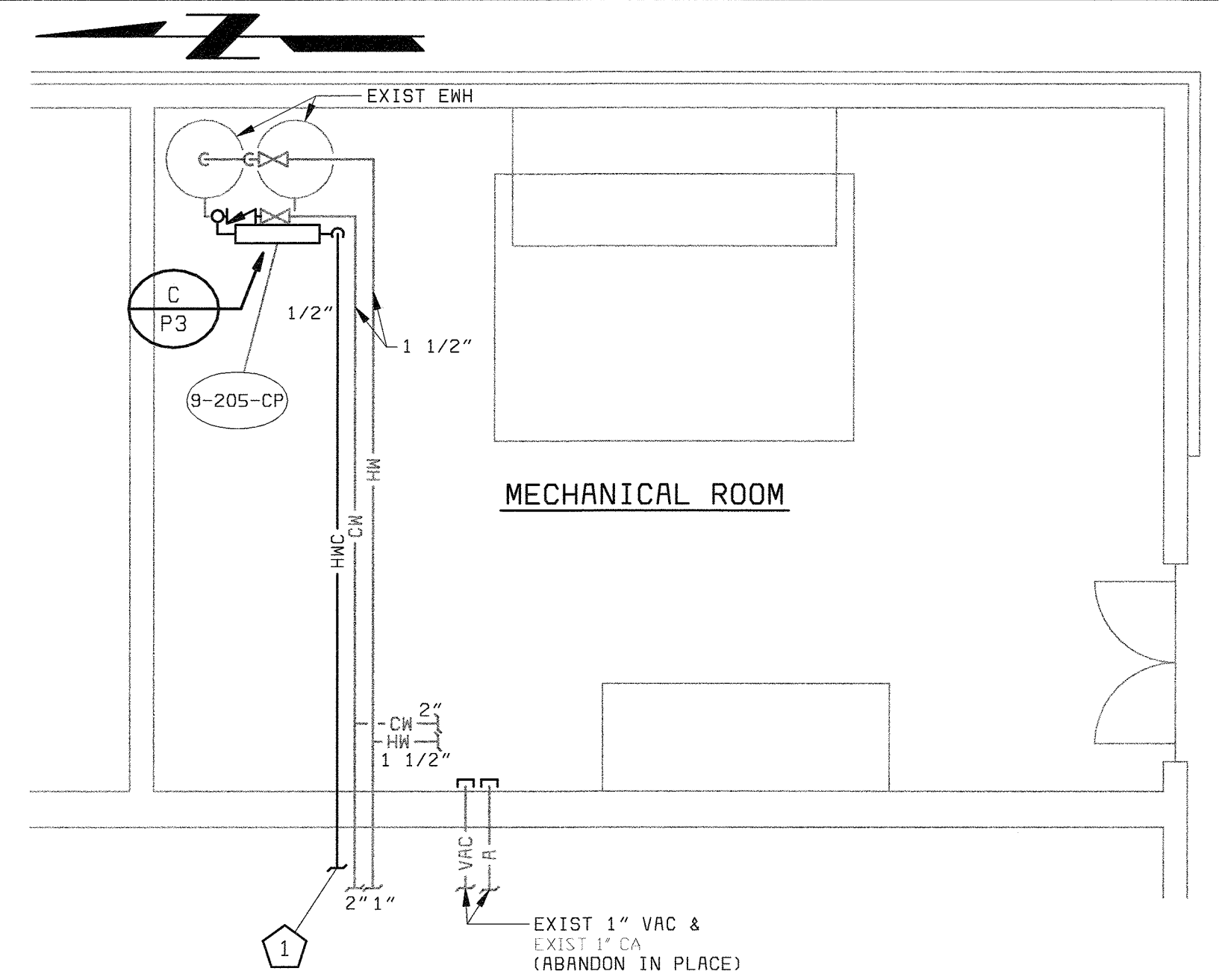
**PLUMBING**  
  
**ADMINISTRATION BUILDING  
LABORATORY  
DEMOLITION PLAN**

**LITTLE PATUXENT WATER RECLAMATION PLANT  
ADDITION NO. 6  
LABORATORY RENOVATION**  
  
CAPITAL PROJECT S-6205  
CONTRACT NO. 20-3841  
  
HOWARD COUNTY, MARYLAND

SCALE  
AS  
SHOWN  
  
SHEET  
21 OF 28  
  
**P1**



FLOOR PLAN - EL 145.00  
1/4" = 1'-0"



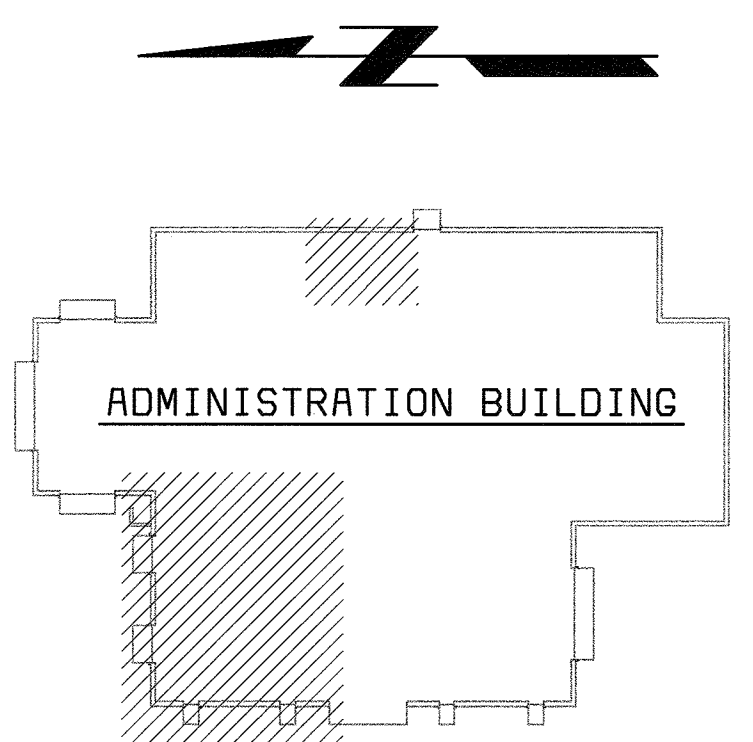
FLOOR PLAN - EL 145.00  
1/4" = 1'-0"

**PLAN NOTES:**

- 1 CONTRACTOR SHALL FIELD ROUTE HOT WATER CIRCULATING PIPING FROM MECHANICAL ROOM TO LABORATORY. CONTRACTOR SHALL SUBMIT PIPE ROUTING PLAN TO ENGINEER FOR APPROVAL.
- 2 BELOW GRADE VENT PIPING SHALL BE SLOPED UPWARD AS MUCH AS POSSIBLE TOWARD THE BUILDING.
- 3 INSTALL NEW LAB EMERGENCY SHOWER AND NEW EMERGENCY EYEWASH. RECONNECT TO EXISTING WATER AND DRAIN CONNECTIONS.

**GENERAL NOTES:**

- 1. CONTRACTOR SHALL COORDINATE VENT AND WATER RISERS BELOW THE CEILING WITH PLUMBING CHASES SHOWN ON ARCHITECTURAL DRAWING A2.
- 2. SEE ARCHITECTURAL DRAWING A2 FOR TYPE OF WATER REQUIRED AT EACH SINK.



KEY PLAN  
NO SCALE

58472-112-ADM-A-T000003X

58472-5  
FD58472A

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND  
  
CHIEF, BUREAU OF UTILITIES DATE

**BLACK & VEATCH**  
Gaithersburg, Maryland  
  
REG. PROF. ENGR. \_\_\_\_\_ DATE \_\_\_\_\_

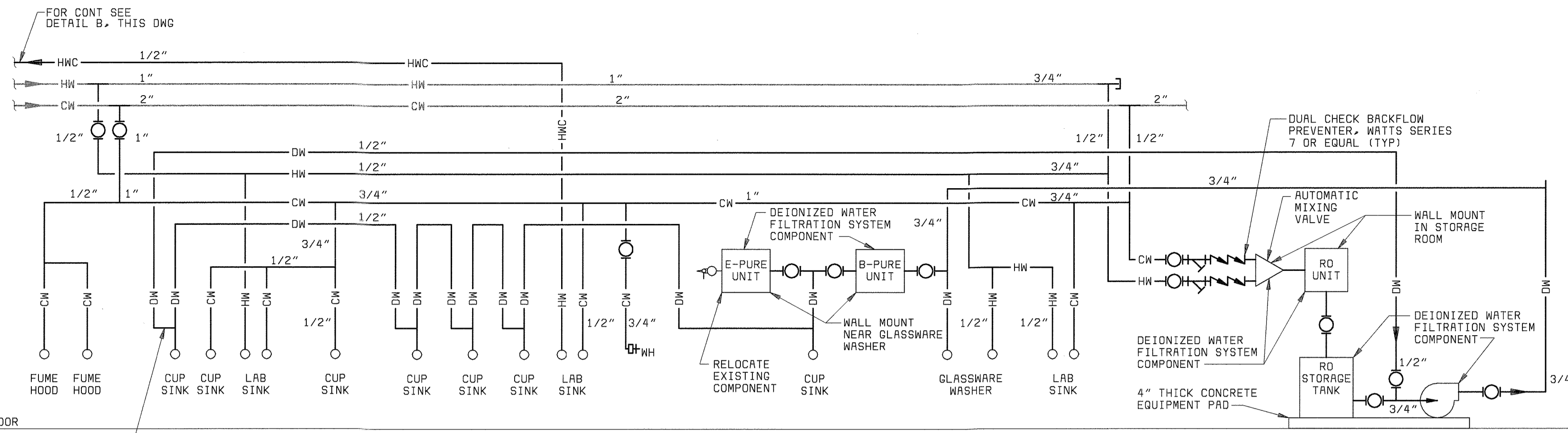
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**PLUMBING**  
  
**ADMINISTRATION BUILDING  
LABORATORY  
FLOOR PLAN**

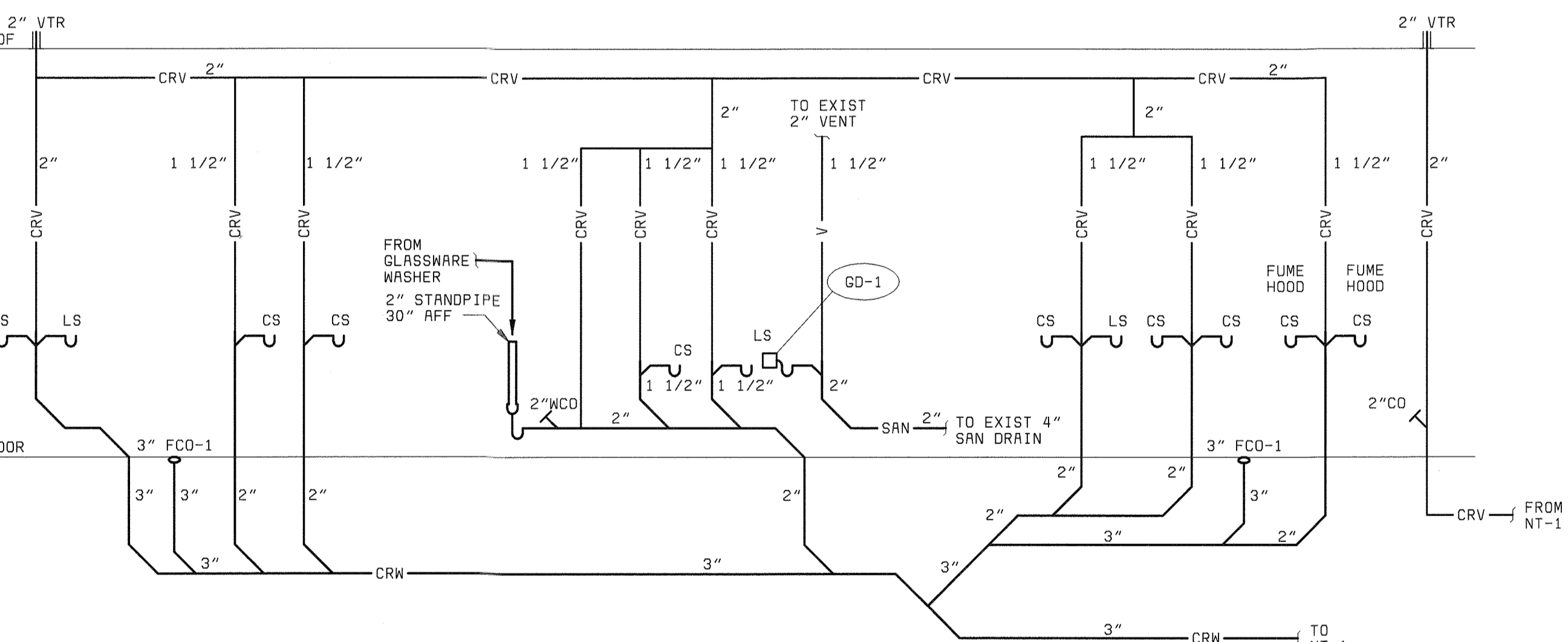
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SCALE  
AS  
SHOWN  
  
SHEET  
22 OF 28  
  
**P2**

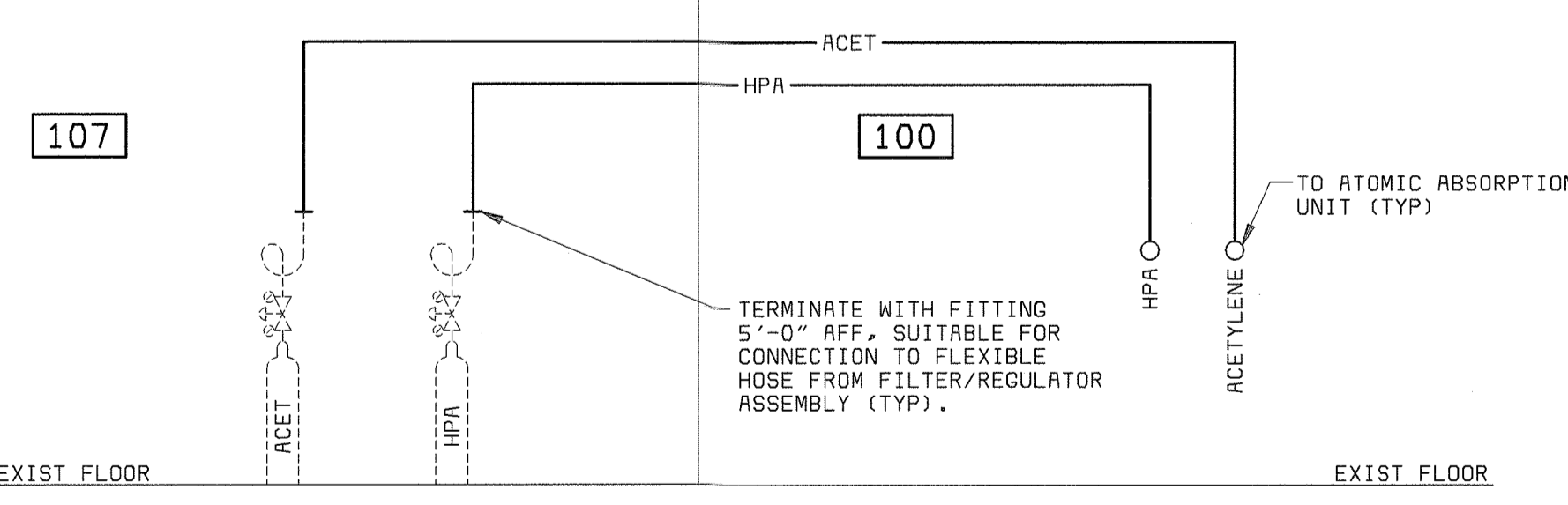


NOTE:  
ALL PIPING SHALL BE 1/2" ID UNLESS OTHERWISE INDICATED.

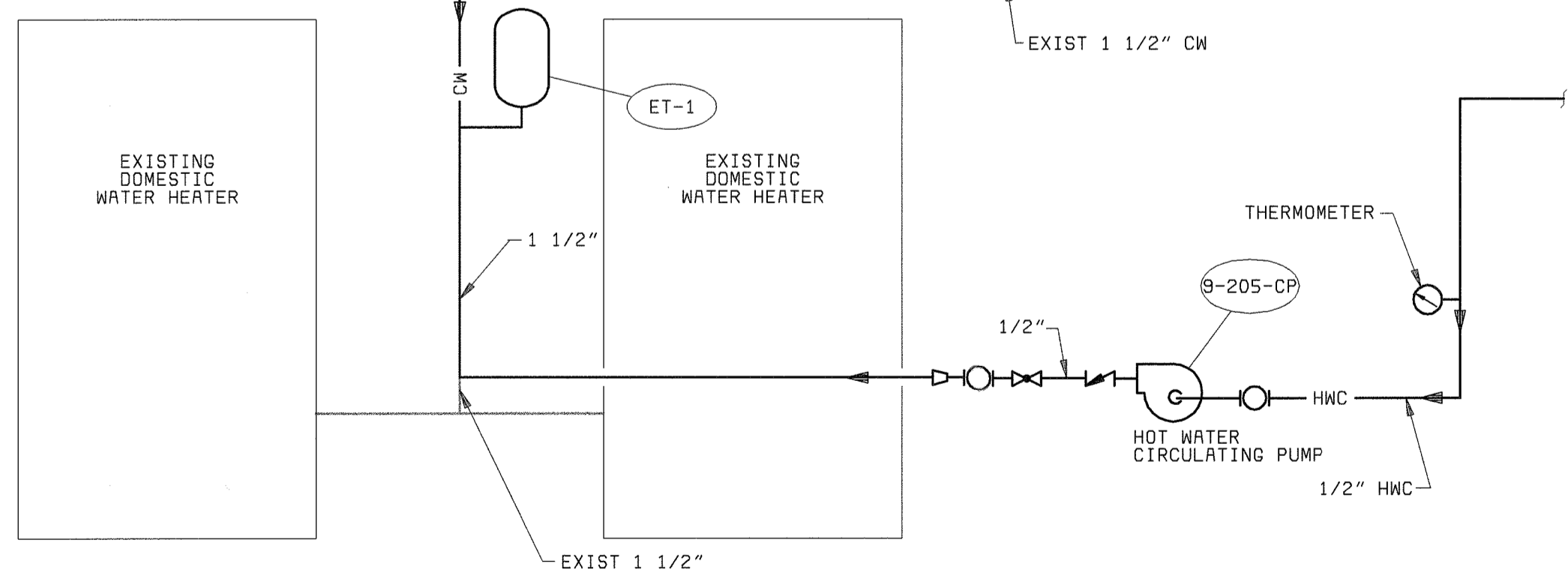
**LABORATORY WATER PIPING RISER DIAGRAM**  
NO SCALE



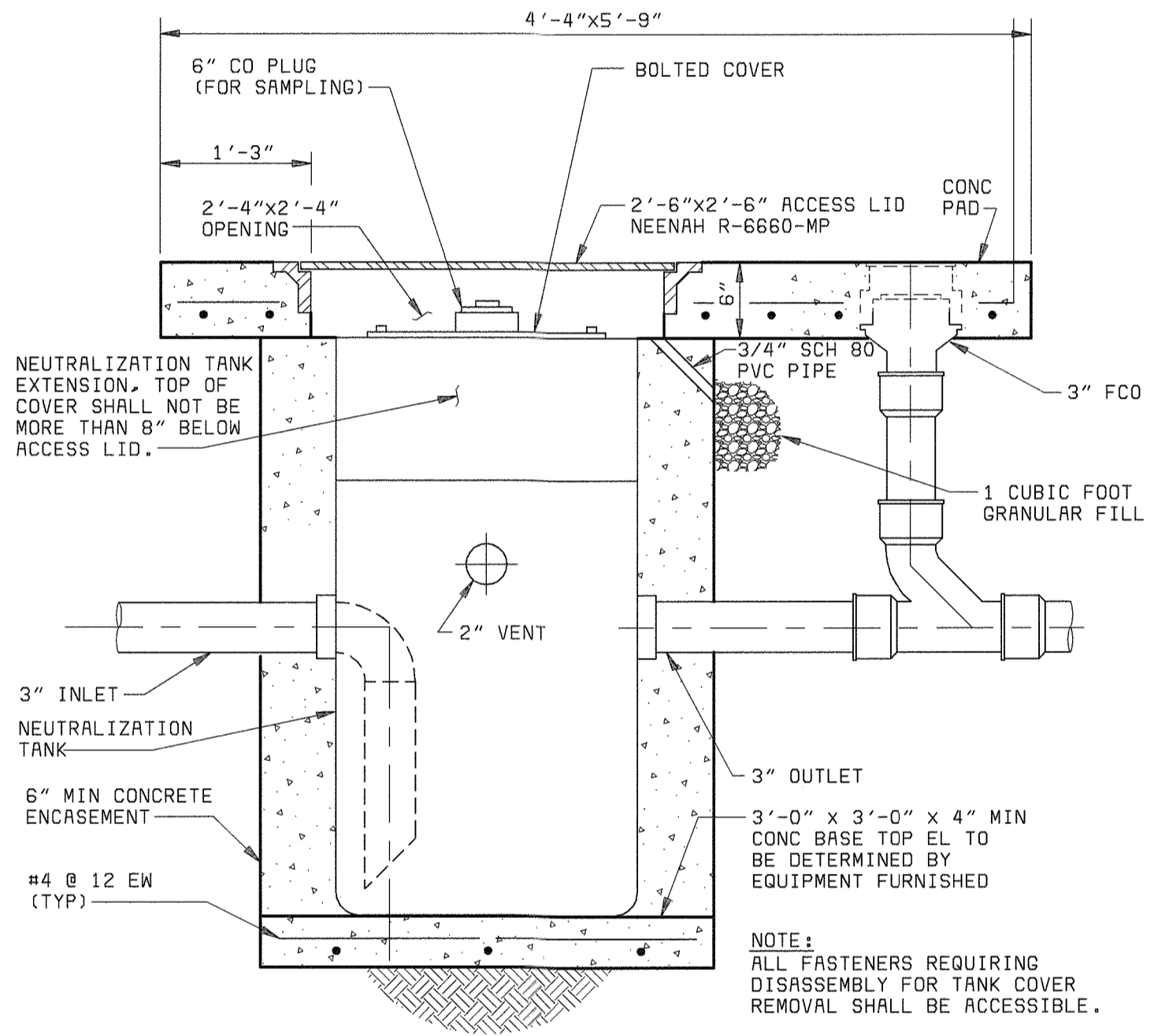
**LABORATORY WASTE AND VENT RISER DIAGRAM**  
NO SCALE



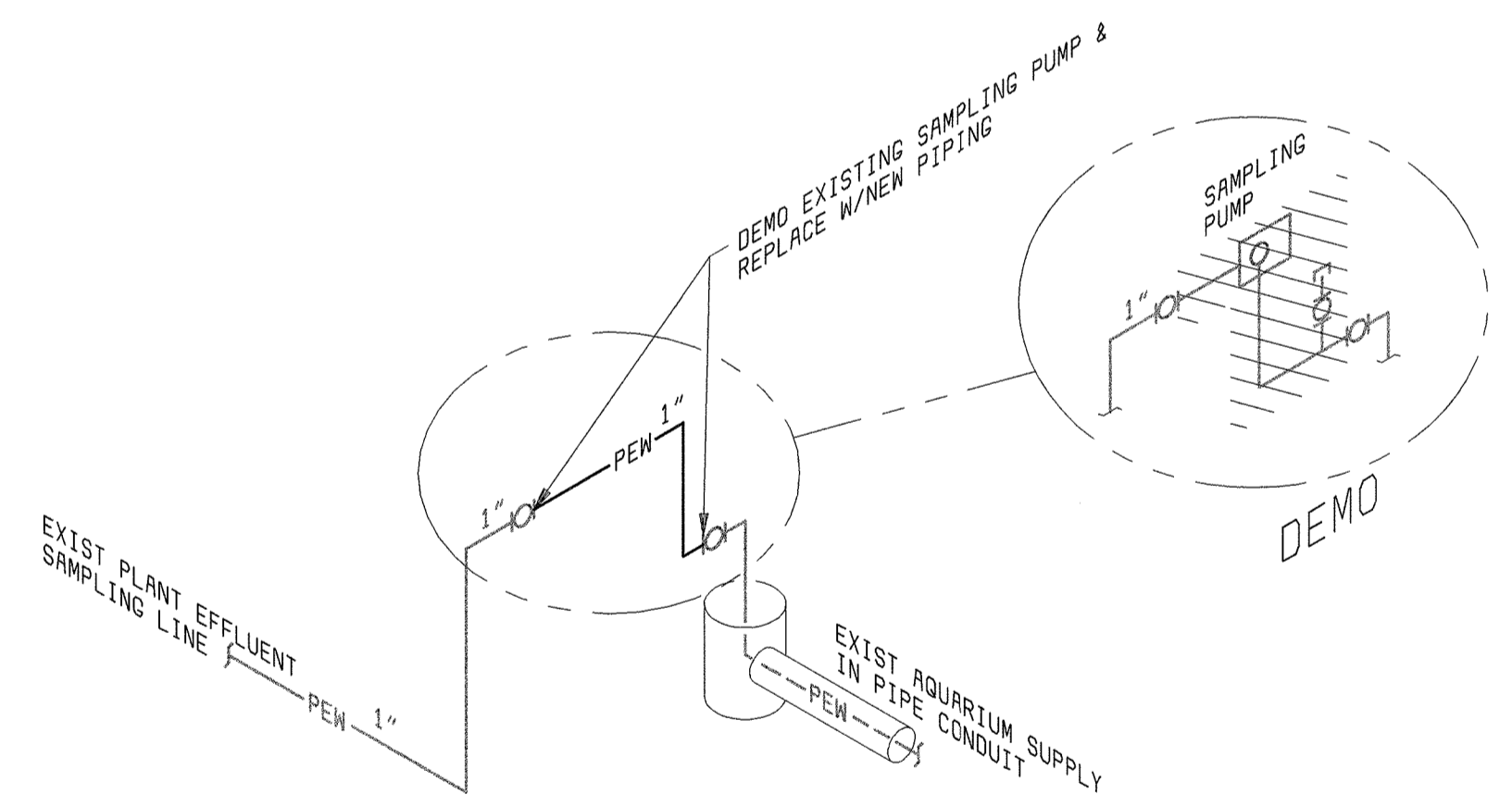
**LABORATORY SPECIALTY GASES PIPING RISER DIAGRAM**  
NO SCALE



**CIRCULATING HOT WATER PIPING SCHEMATIC**  
NO SCALE



**NEUTRALIZATION TANK DETAIL**  
NO SCALE



**PLANT EFFLUENT PIPING DETAIL**  
NO SCALE

PLUMBING FIXTURE AND EQUIPMENT SCHEDULE

LABEL	DESCRIPTION	MANUFACTURER MODEL	REMARKS
NT-1	NEUTRALIZATION TANK, 55 GALLON, 3 INCH INLET AND OUTLET, 2 INCH VENT CONNECTION.	ORION STYLE 4	
FCO-1	CORROSION RESISTANT FLOOR CLEANOUT, POLYPROPYLENE BODY, NICKEL BRONZE COVER.	ORION FFCO-RD-NB SERIES	
FCO-2	HEAVY DUTY FLOOR CLEANOUT, SECURED ROUND ADJUSTABLE NICKEL BRONZE TOP.	SMITH 4100 SERIES	
ET-1	EXPANSION TANK, PIPELINE MOUNTED, 4.7 GALLON, PRECHARGE TO 80 PSIG.	AMTROL ST-12	
GD-1	FOOD WASTE DISPOSER, 1/2 HP, 120 VOLT, 1 PHASE.	IN-SINK-ERATOR 333/SS	
REMARKS: 1. FIXTURE AND INSTALLATION SHALL BE ADA COMPLIANT.			

PLUMBING PUMP SCHEDULE

UNIT NO	DESCRIPTION	MANUFACTURER MODEL	REMARKS
9-205-CP	IN-LINE HOT WATER CIRCULATING PUMP, 1 GPM, 5 FT HEAD, 120 VOLT, 1 PHASE, 60 HZ.	BELL & GOSSETT NBF-12	
REMARKS:			

PLUMBING FIXTURE CONNECTION SCHEDULE

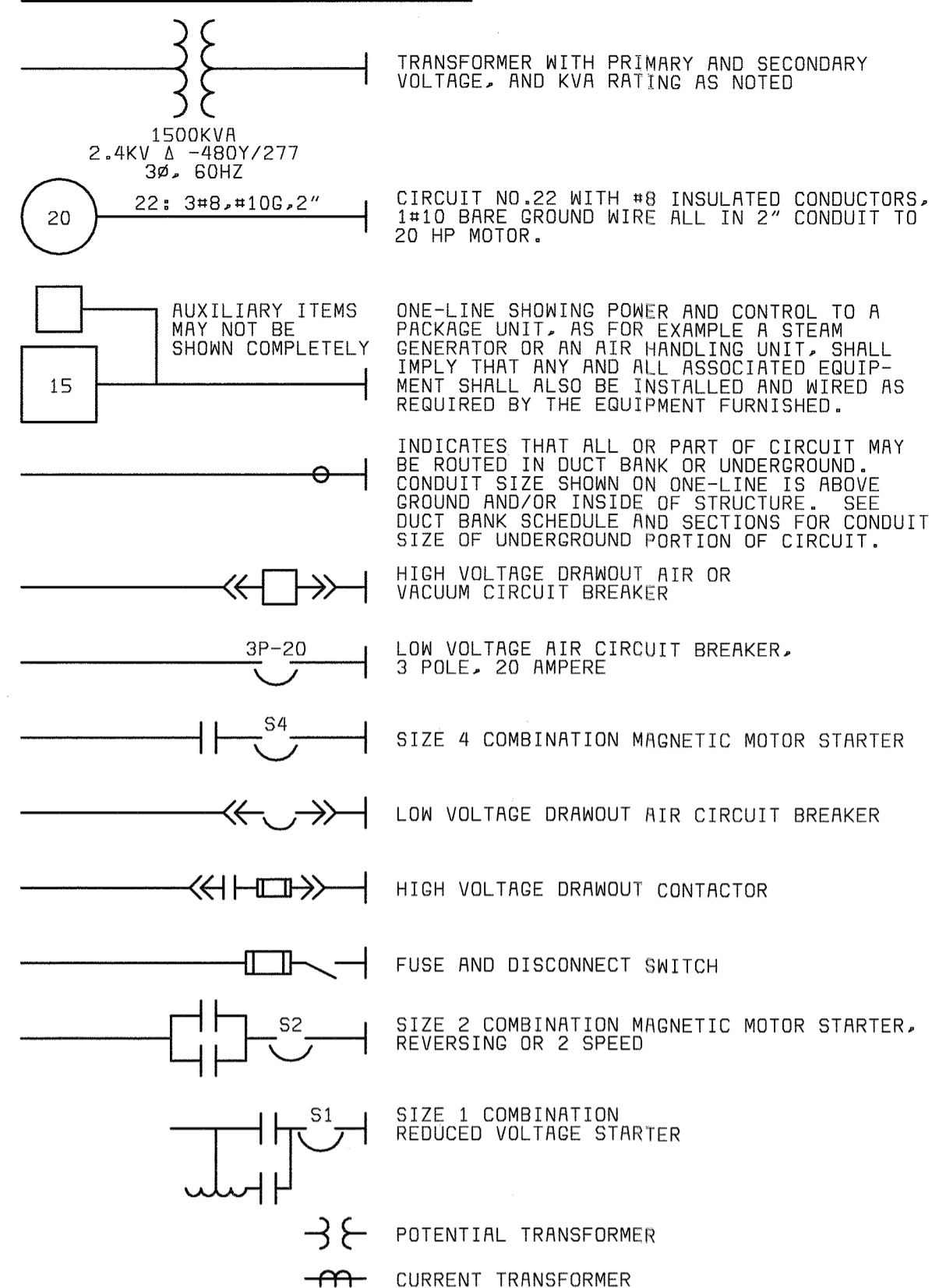
SYMBOL	FIXTURE	WATER		SANITARY	
		HOT	COLD	WASTE	VENT
CS	CUP SINK	-	1/2"*	1 1/2"	1 1/2"
GW	GLASSWARE WASHER	1/2"	1/2"	1 1/2"	1 1/2"
LS	LAB SINK	1/2"	1/2"	1 1/2"	1 1/2"
REMARKS: 1. * - PROVIDE DW WATER WHERE INDICATED ON DRAWINGS.					

- GENERAL NOTES:**
- CONTRACTOR SHALL FIELD VERIFY ALL EXISTING PIPING AND EQUIPMENT SHOWN ON THIS DRAWING.
  - CONTRACTOR SHALL FIELD VERIFY ROUTING AND PLACEMENT OF PIPING AND EQUIPMENT. FIELD ROUTE PIPING TO AVOID INTERFERENCES WITH OTHER PIPING, DUCTWORK, STRUCTURAL, ARCHITECTURAL AND ELECTRICAL ITEMS.

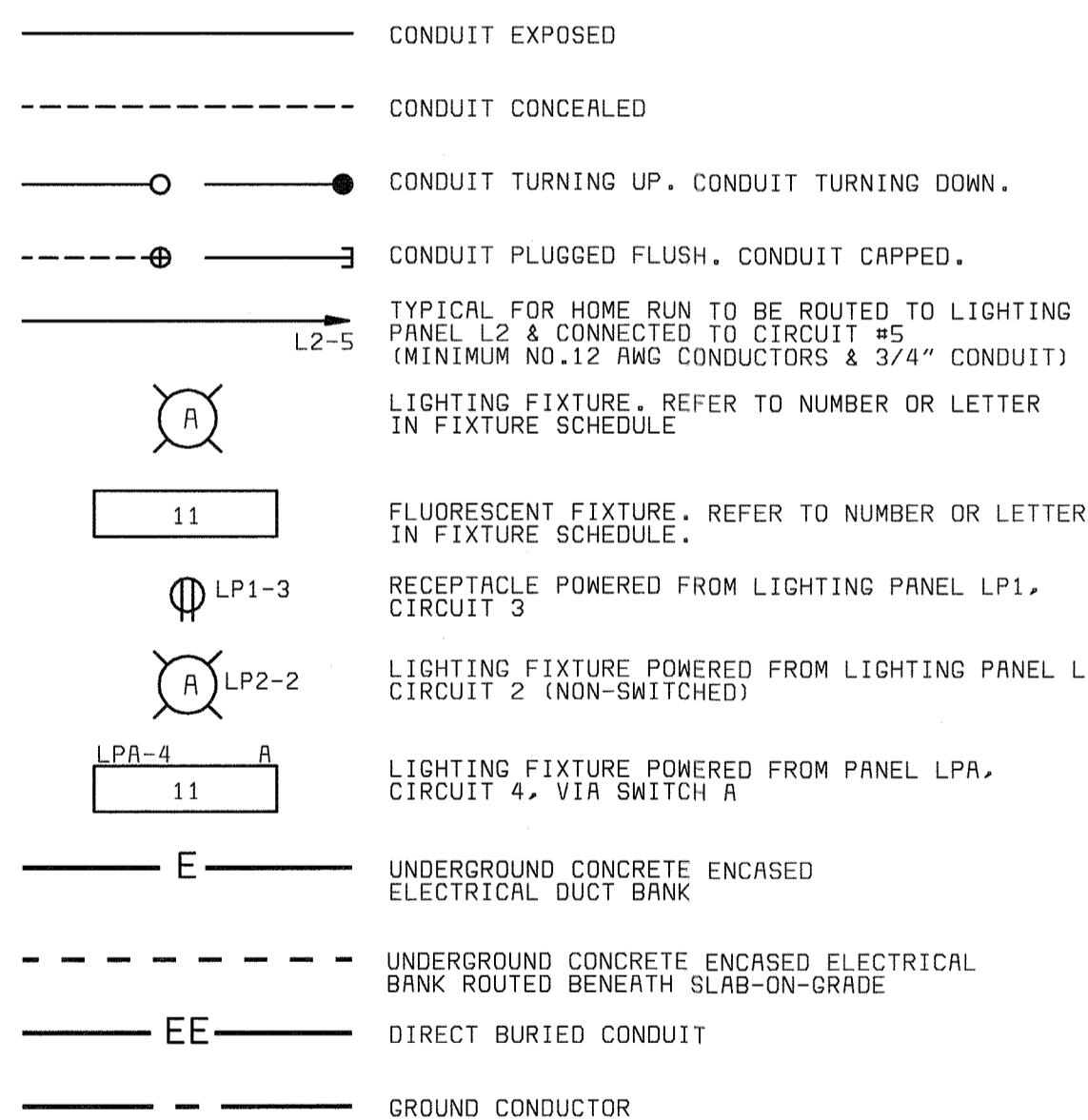
DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  CHIEF, BUREAU OF UTILITIES DATE	 <b>BLACK &amp; VEATCH</b> Gaithersburg, Maryland  REG. PROF. ENGR. DATE	THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY MARTIN L. PAPE A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 21992	DES: JPC					<b>PLUMBING</b>  <b>ADMINISTRATION BUILDING          LABORATORY</b> <b>RISER DIAGRAMS, SCHEDULES &amp; DETAILS</b>	<b>LITTLE PATUXENT WATER RECLAMATION PLANT          ADDITION NO. 6          LABORATORY RENOVATION</b>  CAPITAL PROJECT S-6205 CONTRACT NO. 20-3841  HOWARD COUNTY, MARYLAND	SCALE AS SHOWN
			DRN: JPC	CHK: MLP	DATE: 10/03/01	11/03/03	CONFORMED TO CONSTRUCTION RECORDS			RHH/RJR/RJR



**ONE-LINE DIAGRAM LEGEND**



**CONDUIT & WIRING INSTALLATION LEGEND**



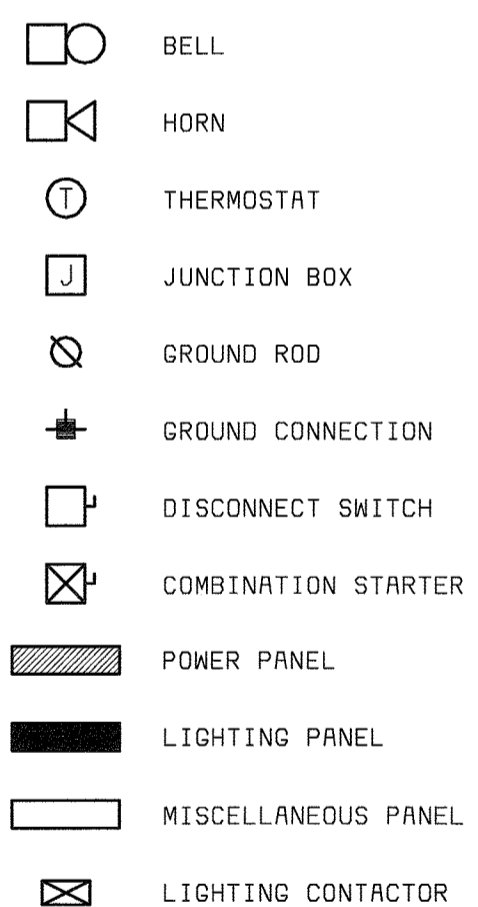
**SWITCH & OUTLET SYMBOLS**

S	SINGLE POLE SWITCH	SPL	SWITCH WITH PILOT LIGHT	⊕	DUPLX RECEPTACLE 120 VOLT	⊕	120 VOLT DUPLX RECEPTACLE (UPS)
S2	TWO POLE SWITCH	SX0	KEY OPERATED SWITCH	⊕	SIMPLEX RECEPTACLE	⊕	DUPLX FLOOR OUTLET
S3	THREE-WAY SWITCH	SXP	EXPLOSION PROOF SWITCH	⊕	RANGE RECEPTACLE	⊕	TELEPHONE OUTLET
S4	FOUR-WAY SWITCH	SDM	DIMMER SWITCH	⊕	TWISTLOCK RECEPTACLE	⊕	TELEPHONE FLOOR OUTLET
SC1M	MOMENTARY SWITCH CONTROLLING CONTACTOR CI	S3A	THREE-WAY SWITCH CONTROLLING LIGHTS WITH "A" DESIGNATION	⊕	240V, 1Ø RECEPTACLE, TYPICAL AMPERE RATING NOTED	⊕	COAXIAL CABLE OUTLET
SWP	WEATHERPROOF SWITCH	⊕60	480V, 3Ø WELDING RECEPTACLE, TYPICAL AMPERE RATING NOTED				

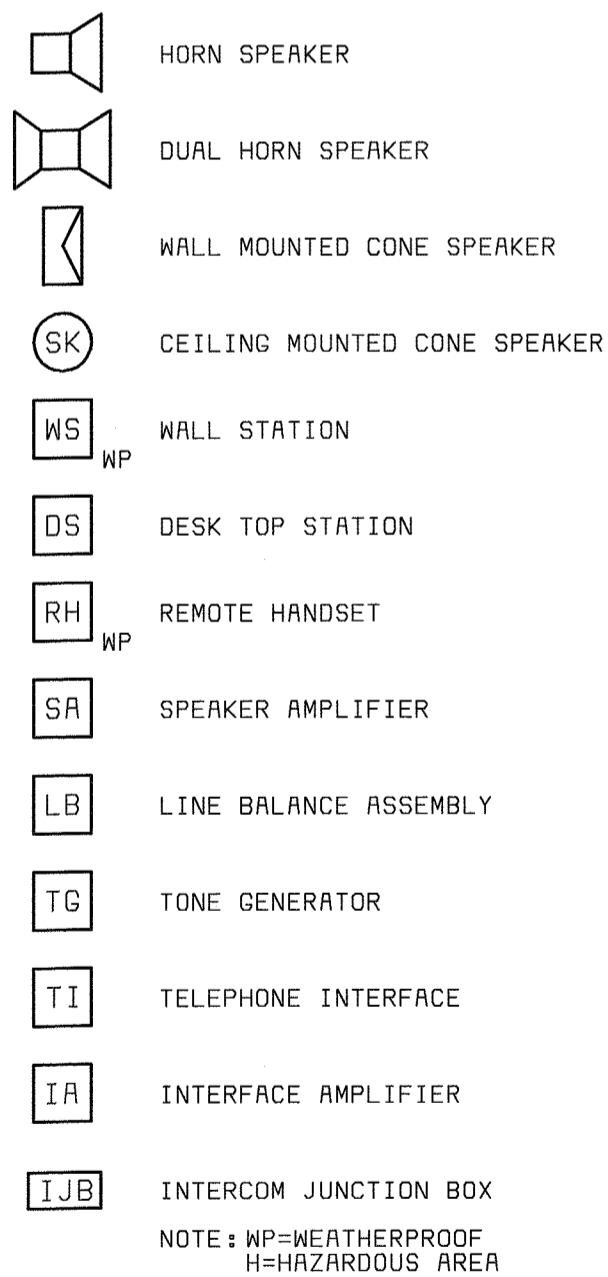
**SCHEMATIC SYMBOLS**



**MISCELLANEOUS SYMBOLS**



**COMMUNICATION SYMBOLS**



**ABBREVIATIONS**

A	AMBER, AMPERE, ALARM	M	MAGNETIC MOTOR STARTER
AC	ALTERNATING CURRENT	MA	MILLIAMPERE
ACB	AIR CIRCUIT BREAKER	MCB	MAIN CIRCUIT BREAKER
AF	AMPERE FRAME	MCC	MOTOR CONTROL CENTER
AFD	ADJUSTABLE FREQUENCY DRIVE	MCLU	MOTOR CONTROL LINEUP
AM	AMMETER	MCM	THOUSAND CIRCULAR MIL
ANN	ANNUNCIATOR	MD	MOISTURE DETECTOR
AR	ALARM RELAY	MFM	MAGNETIC FLOW METER
AS	AMMETER SWITCH	MFR	MANUFACTURER
AT	AMPERE TRIP	MH	MANHOLE OR MOUNTING HEIGHT
AWG	AMERICAN WIRE GAGE	MOV	MOTOR OPERATED VALVE
		MPR	MOTOR PROTECTION RELAY
BC	BATTERY CHARGER	MS	MANUAL MOTOR STARTER
BR	BRAKE	MSH	MOTOR SPACE HEATER
BT	BEARING TEMPERATURE	MV	MILLIVOLT
		MVA	MEGA VOLT AMPERE
C	CLOSE, COUNTER OR CONTACTOR	N	NEUTRAL
CAP	CAPACITOR	NC	NORMALLY CLOSED
CB	CIRCUIT BREAKER	NO	NORMALLY OPEN, NUMBER
CB"R"	CIRCUIT BREAKER AUXILIARY CONTACT (OPEN WHEN BREAKER IS OPEN OR TRIPPED)	O	OPEN
CB"Y"	CIRCUIT BREAKER AUXILIARY CONTACT (CLOSED WHEN BREAKER IS CLOSED)	OCB	OIL CIRCUIT BREAKER
		OL	OVERLOAD
CD	CONTROL DAMPER	OOA	ON-OFF-AUTO
CI	CELL INTERLOCK	OOR	ON-OFF-REMOTE
CKT	CIRCUIT	P	PRIMARY
CL2	CHLORINE	PCS	PLANT CONTROL SYSTEM
COS	CABLE OPERATED SWITCH	PB	PUSH BUTTON OR PULL BOX
CP	CONTROL PANEL	PF	POWER FACTOR METER
CPT	CONTROL POWER TRANSFORMER	PH	PHASE, CHEMICAL TERM
CR	CURRENT OR CONTROL RELAY	PLC	PROGRAMMABLE LOGIC CONTROLLER
CS	CONTROL STATION	PP	POWER PANEL
CT	CYCLE TIMER OR CURRENT TRANSFORMER	PRS	PROXIMITY SWITCH
CTC	CYCLE TIMER CLUTCH	PS	PRESSURE SWITCH
CTM	CYCLE TIMER MOTOR	PT	POTENTIAL TRANSFORMER, PROGRAM TIMER
2/C	2 CONDUCTOR	2P	2 POLE
4/C	4" CONDUIT	R	RED, RAISE, RELAY OR REVERSE
DC	DIRECT CURRENT	RECP	RECEPTACLE
DI	DOOR INTERLOCK	RES	RESISTOR
DM	DAMPER MOTOR OR DEMAND METER	RT	REPEATING TIMER
DPDT	DOUBLE POLE DOUBLE THROW	RTD	RESISTANCE TYPE TEMP DETECTOR
DPST	DOUBLE POLE SINGLE THROW	RTU	REMOTE TERMINAL UNIT
DPR	DIFFERENTIAL PRESSURE REGULATOR	RVSS	REDUSED VOLTAGE SOLID STATE STARTER
DPS	DIFFERENTIAL PRESSURE SWITCH	S2	SIZE 2 STARTER
DS	DISCONNECT SWITCH	S2	SUPERVISORY CONTROL AND DATA ACQUISITION
DVLS	DISCHARGE VALVE LIMIT SWITCH	SH	SPACE HEATER
E	ELECTRIC OPERATOR FOR CONTROL	SN	SOLID NEUTRAL
	DAMPER OR VALVE	SO	SOLENOID OILER
EC	EMPTY CONDUIT	SP	SINGLE POLE
EL	ELEVATION OR EMERGENCY LIGHT	SPDT	SINGLE POLE DOUBLE THROW
EMH	ELECTRICAL MANHOLE	SPST	SINGLE POLE SINGLE THROW
ER	ELECTRODE RELAY	SS	SELECTOR SWITCH
ES	END SWITCH	SSS	SOLID STATE STARTER
ETM	ELAPSED TIME METER	SUPV	SUPERVISORY CONTROL
EX	EXISTING	SV	SOLENOID VALVE
F	FORWARD	SWB	SWITCHBOARD
FD	FIRE DETECTOR	SWGR	SWITCHGEAR
FS	FLOW SWITCH	T	THERMOSTAT, TIMER, OR TOTALIZER
G	GREEN OR GROUND	TACH	TACHOMETER
GD	GROUND DETECTOR	TB	TERMINAL BLOCK
GEN	GENERATOR	TC	TIMER CLUTCH
GFI	GROUND FAULT INTERRUPTER	TD	TIME DELAY RELAY
GLS	GEARED LIMIT SWITCH	TEMP	TEMPERATURE
#GB	#8 GROUND WIRE	TM	TIMER MOTOR
H	HIGH OR HUMIDISTAT	TQ	TORQUE
HC	HOT CIRCUIT	TS	TEMPERATURE SWITCH
HH	HANDHOLE	TTB	TELEPHONE TERMINAL BOX
HMT	HIGH MOTOR TEMPERATURE	UG	UNDERGROUND
HOR	HAND-OFF-AUTO	UV	UNDER VOLTAGE
HOR	HAND-OFF-REMOTE	UPS	UNINTERRUPTIBLE POWER SUPPLY
HP	HORSEPOWER	V	VOLTS
HWCO	HIGH WATER CUTOFF	VA	VOLT AMPERE
HZ	HERTZ (CYCLE)	VAR	VARMETER
I/O	INPUT/OUTPUT	VLS	VALVE LIMIT SWITCH
INST	INSTANTANEOUS	VM	VOLTMETER
J	JUNCTION BOX	VPI	VALVE POSITION INDICATOR
JB	JUNCTION BOX	VS	VOLTMETER SWITCH
K	KEY INTERLOCK	W	WHITE OR WATTS
KV	KILOVOLT	WH	WATTHOUR METER
KVA	KILOVOLT AMPERE	WM	WATT METER
KVAR	KILOVAR	WP	WEATHERPROOF
KW	KILOWATT	X	AUXILIARY RELAY
KWH	KILOWATT HOUR	XFMR	TRANSFORMER
L	LOW, LEVEL	XP	EXPLOSION PROOF
LA	LIGHTNING ARRESTER	Y	YELLOW
LAN	LOCAL AREA NETWORK	Z	AUXILIARY RELAY
LC	LIGHTING CONTACTOR	ZS	POSITION SWITCH
LOR	LOCAL-ON-OFF	ZSS	ZERO SPEED SWITCH
LP	LIGHTING PANEL		
LS	LIMIT OR LEVEL SWITCH		
LWCO	LOW WATER CUTOFF		
1-1PR#16S	ONE, SINGLE PAIR, TWISTED, SHIELDED #16 CABLE		
3-7/C#14	THREE, SINGLE, SEVEN CONDUCTOR #14 MULTICONDUCTOR CONTROL CABLES		

**AREA DESIGNATIONS**

THE SPECIAL AREA DESIGNATION BOXES, AS DEFINED BELOW, ARE LOCATED ON THE PLAN DRAWINGS TO DEFINE ELECTRICAL INSTALLATION REQUIREMENTS. DESIGNATION BOXES ARE LOCATED WITHIN ROOM OR BELOW ROOM NUMBER. ALL INDOOR AREAS NOT INDICATED OTHERWISE ARE AREA TYPE I AND MINIMUM NEMA TYPE I ENCLOSURES.

AREA TYPE 1A	CORROSIVE CHEMICAL FEED AND STORAGE ROOMS. CONDUIT SYSTEM SHALL BE EXPOSED PVC RIGID NON-METALLIC CONDUIT WITH PVC FITTINGS, BOXES, AND ACCESSORIES.
AREA TYPE 4	INDOOR WET LOCATIONS SUCH AS VAULTS, HOUSEDOWN AREAS, BASEMENTS, ETC. MINIMUM NEMA TYPE 4 ENCLOSURE FOR EQUIPMENT AND GASKETED FITTINGS IN A CONDUIT SYSTEM.
AREA TYPE 7A	CLASS I, DIVISION 1 AREA AS DEFINED BY NEC. ALL EQUIPMENT AND CONDUIT SYSTEMS SHALL BE RATED FOR USE IN THIS AREA.
AREA TYPE 7B	CLASS I, DIVISION 2, GROUP C AND D (METHANE, GASOLINE) AS DEFINED BY NEC. EQUIPMENT AND CONDUITS SYSTEMS SHALL BE RATED FOR USE IN THIS AREA.
AREA TYPE 12	INDOOR, DRY, DIRT AREA. REQUIRES MINIMUM NEMA TYPE 12 GASKETED ENCLOSURES FOR ALL EQUIPMENT AND GASKETED FITTINGS IN CONDUIT SYSTEMS.

**GENERAL REQUIREMENTS**

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ROUTING ALL CONDUITS NOT SHOWN ON THE PLANS. THIS SHALL INCLUDE ALL CONDUITS SHOWN ON THE ONE-LINES AND HOME-RUNS SHOWN ON THE PLAN DRAWINGS. CONDUITS SHALL BE ROUTED AS DEFINED IN THE SPECIFICATIONS.
- SPARE WIRES SHALL BE TAPED AND COILED.
- IF EQUIPMENT SUPPLIED BY MANUFACTURER HAS A LARGER LOAD THAN VALUE SHOWN, THE CABLE CONDUIT AND ELECTRICAL EQUIPMENT SHALL BE ENLARGED, AS REQUIRED, TO ACCOMMODATE THE HIGHER VALUE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING PROPERLY SIZED STARTER OVERLOADS FOR EQUIPMENT FURNISHED.
- LIGHTING AND RECEPTACLE CIRCUITS DESIGNATED ON THE FLOOR PLANS ARE NOT SHOWN ON THE ONE-LINES. CONDUCTORS FOR LIGHTING, RECEPTACLES, AND MISCELLANEOUS 120VAC CIRCUITS SHALL BE MINIMUM NO. 12AWG. CONDUIT FOR LIGHTING, RECEPTACLES, AND MISCELLANEOUS 120VAC CIRCUITS SHALL BE MINIMUM 3/4".
- IN AREAS WHERE THERE ARE OVERHEAD BRIDGE CRANES, HOISTS, ETC., NO CONDUITS SHALL BE RUN OVERHEAD THAT WILL INTERFERE WITH THE OPERATION OF THE EQUIPMENT.

**GENERAL NOTES**

- SOLID LINES (————) INDICATE NEW WORK OR EQUIPMENT.
- SCREENED LINES (————) INDICATE EXISTING WORK OR EQUIPMENT.
- DASHED LINES (---) INDICATE FUTURE WORK OR EQUIPMENT.
- THIS IS A GENERAL LEGEND SHEET. SOME SYMBOLS AND ABBREVIATIONS MAY NOT BE UTILIZED ON THIS SPECIFIC PROJECT.
- INFORMATION RELATED TO CIRCUIT IDENTIFICATION, WIRE & CONDUIT SIZES, AND ROUTING, IS ON THE FOLLOWING DRAWING TYPES.
  - ONE-LINE DIAGRAMS SHOW CIRCUIT IDENTIFICATION, WIRE QUANTITY AND SIZES, AND CONDUIT SIZE WITHIN STRUCTURES. ONE-LINE DIAGRAMS ALSO INDICATE ORIGIN AND DESTINATION OF CIRCUITS, AND IDENTIFY CIRCUITS ROUTED UNDERGROUND.
  - FOR CIRCUITS WITHOUT UNDERGROUND PORTIONS, BUILDING FLOOR PLANS SHOW LOCATION OF EQUIPMENT FOR DETERMINING CIRCUIT LENGTH WITHIN THE STRUCTURE. FOR CIRCUITS WITH UNDERGROUND PORTIONS, ANTICIPATED PENETRATION OF UNDERGROUND CONDUITS ARE SHOWN ON STRUCTURE PLANS FOR DETERMINING THE LENGTH OF THE IN-STRUCTURE PORTIONS OF CIRCUITS. BUILDING FLOOR PLANS MAY ALSO SHOW HOME RUNS FOR LIGHTING, RECEPTACLE, AND OTHER MISCELLANEOUS EQUIPMENT CIRCUITS.
  - SITE PLANS INDICATE THE GENERAL ROUTING OF UNDERGROUND CONDUITS AND DUCT BANKS. CIRCUITS ROUTED IN UNDERGROUND CONDUITS OR DUCT BANKS ARE INDICATED IN DUCT BANK SECTIONS REFERENCED ON THE SITE PLAN.
  - DUCT BANK SECTIONS AND SCHEDULES IDENTIFY CONDUIT SIZE, CONDUIT MATERIAL, ARRANGEMENT OF THE UNDERGROUND CONDUITS, AND CIRCUITS ROUTED IN EACH UNDERGROUND CONDUIT.

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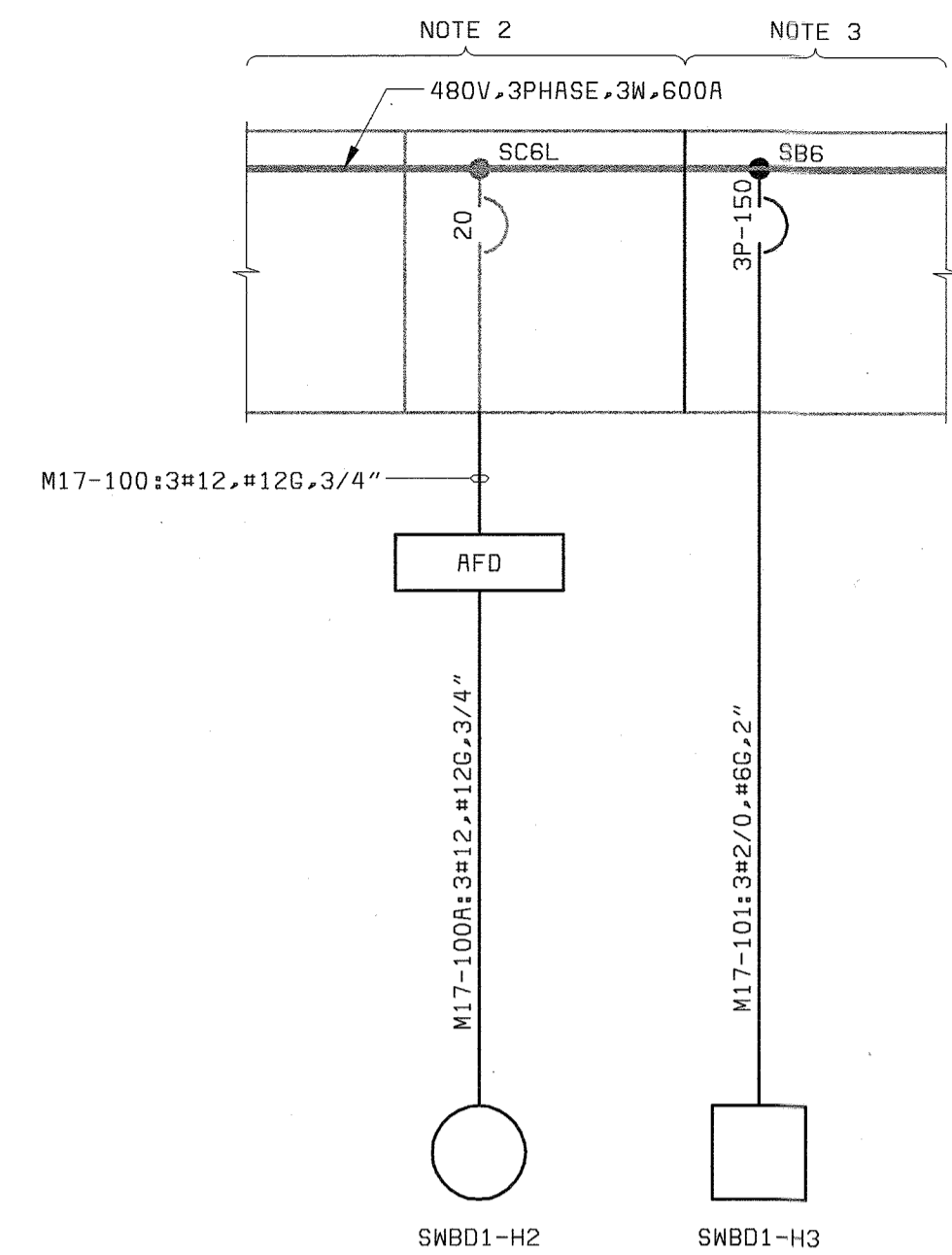
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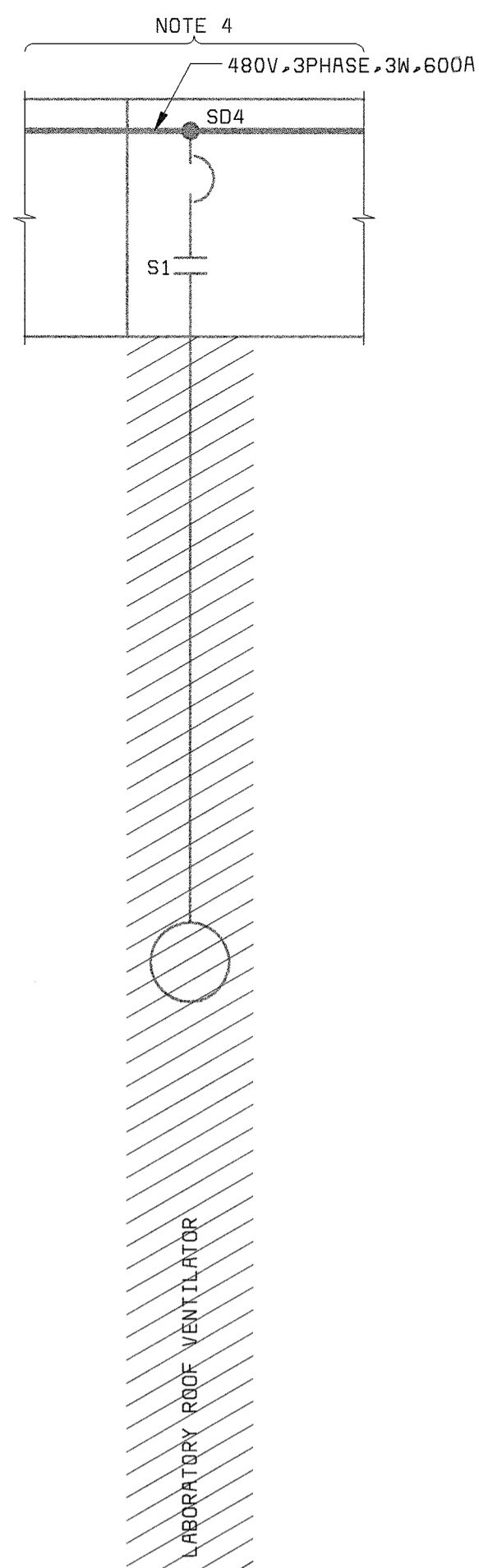
ADMINISTRATION BUILDING  
ELECTRICAL  
LEGEND AND ABBREVIATIONS

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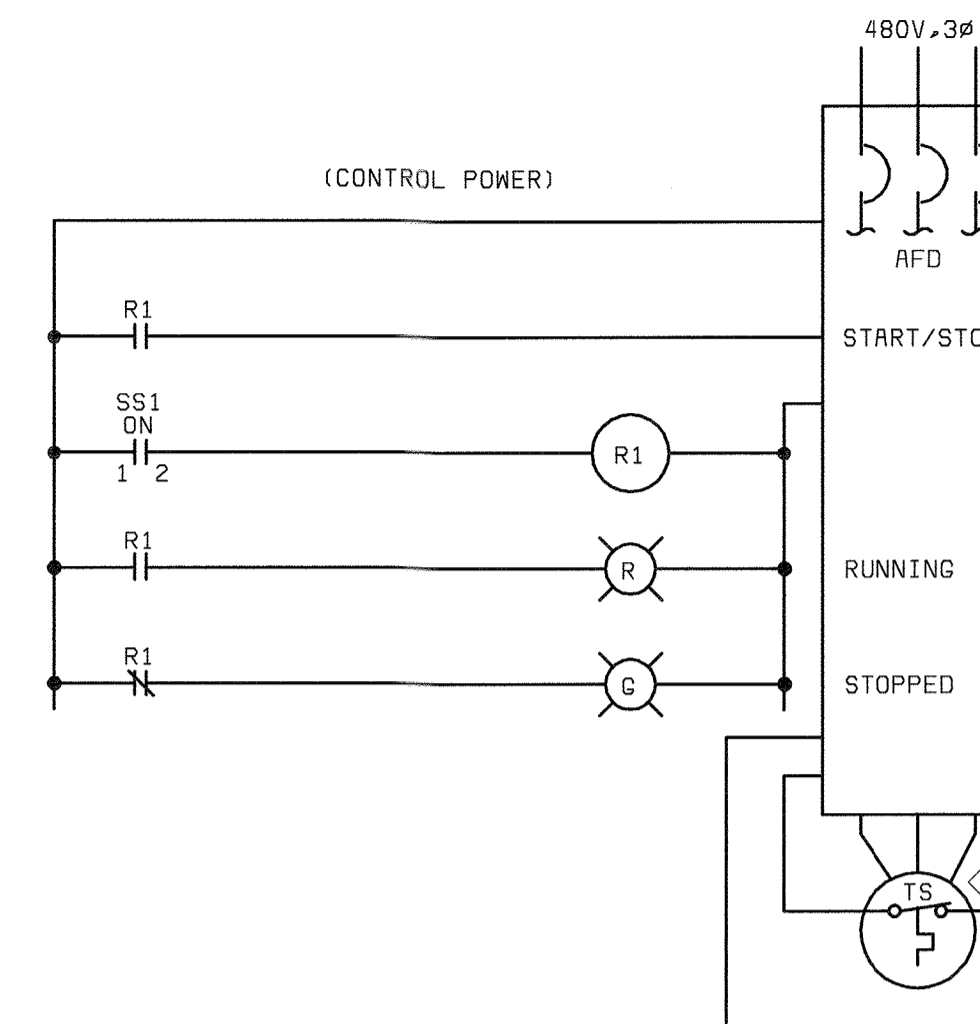
SCALE AS SHOWN  
SHEET 24 OF 28  
E1



**EXISTING SWBD1**  
PARTIAL ONE-LINE DIAGRAM  
(ADMINISTRATION BUILDING ELECTRICAL ROOM)



**EXISTING MCC17**  
PARTIAL ONE-LINE DEMOLITION  
(ADMINISTRATION BUILDING ELECTRICAL ROOM)



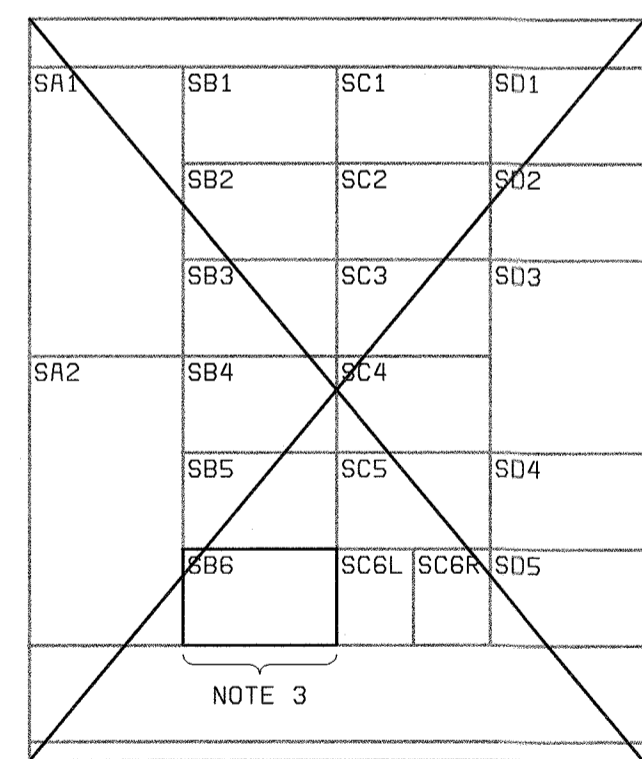
**FUME HOOD EXHAUST FAN, 9-201-F**  
SCHEMATIC DIAGRAM

SWITCH DEVELOPMENT:

CONTACTS	POSITION	
	ON	OFF
1-2	X	

DEVICE LEGEND:

◇ AT DRIVEN EQUIPMENT



**EXISTING MCC17 FRONT ELEVATION**  
NO SCALE

**SWBD1**

Item	Description	Item	Description
H1	SPARE	J1	SPARE
H2	FUME HOOD 20 AMP	J1	WATER HEATER 2 ADMIN. BLDG.
H3	ROOF TOP UNIT LAB 150 AMP	J3	AIR COND. UNIT ADMIN. BLDG.
H4	SPARE	J4	SPARE
H5	POWER TO MCC17 MAIN BREAKER 1	J5	POWER TO 167 KVA TRANS B
FILLER PLATE		J6	SPARE

**NOTES:**

- SEE DRAWING E1 FOR ELECTRICAL LEGEND & ABBREVIATIONS AND GENERAL REQUIREMENTS.
- CONTRACTOR TO UTILIZE EXISTING BREAKERS AS INDICATED. EXISTING LINE-UP IS GE 7700 LINE CONTROL CENTER.
- CONTRACTOR SHALL REMOVE THE TWO 1/2-SPACE BREAKERS AND REPLACE WITH NEW BREAKER AS SHOWN.
- CONTRACTOR TO REMOVE EXISTING LOAD FEEDER AS SHOWN AND MAKE STARTER A SPARE.
- ALL NAMEPLATES SHALL BE CHANGED TO REPRESENT NEW/MODIFIED LOADS FOR THE WORK SHOWN HERE.

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND



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ADMINISTRATION BUILDING  
ELECTRICAL

LABORATORY EQUIPMENT  
ONE-LINE & SCHEMATIC DIAGRAMS

LITTLE PATUXENT WATER RECLAMATION PLANT  
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CAPITAL PROJECT S-6205  
CONTRACT NO. 20-3841

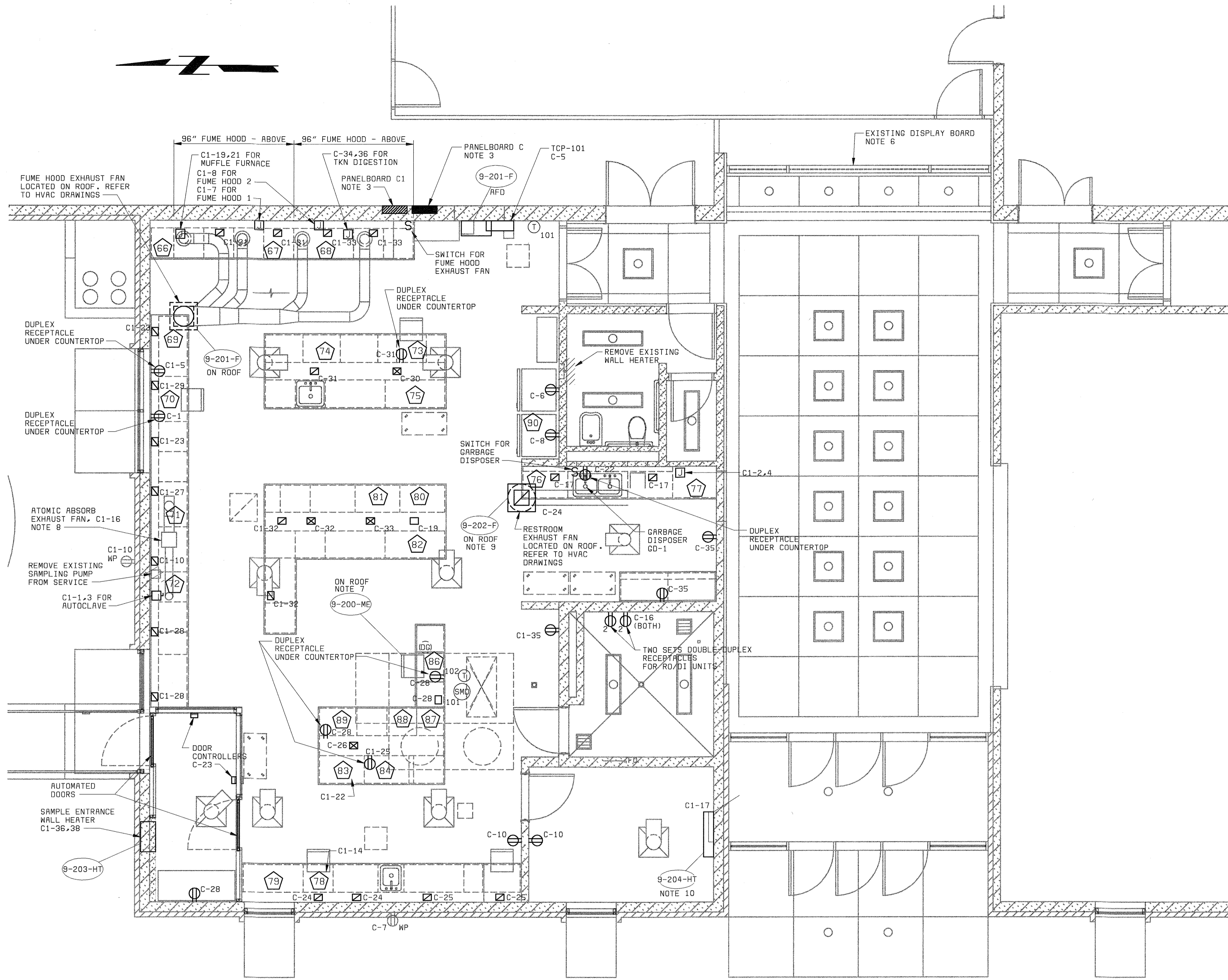
HOWARD COUNTY, MARYLAND

SCALE  
AS  
SHOWN

SHEET  
25 OF 28

E2

58472-5  
FD58472A

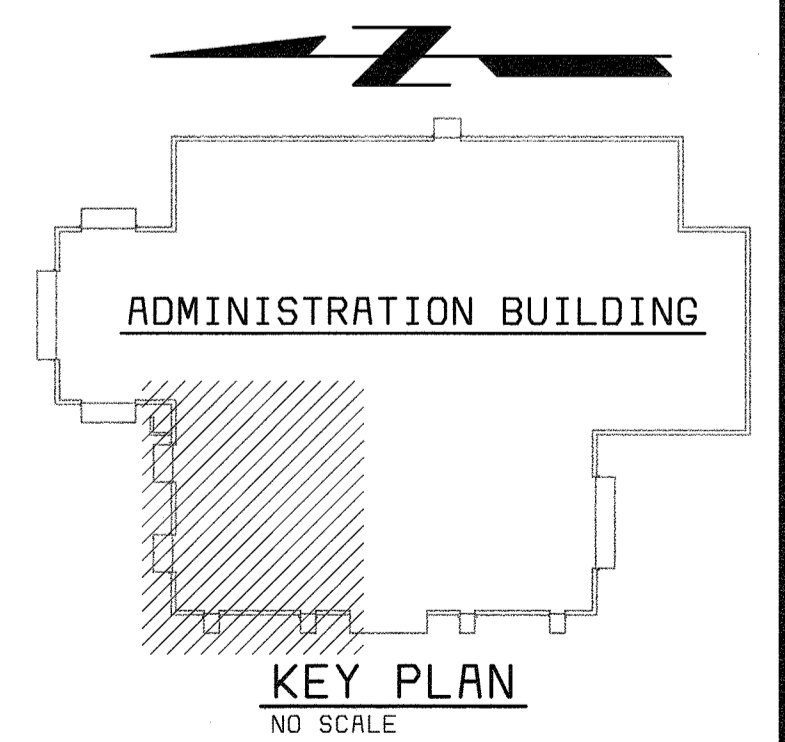


- ELECTRICAL LEGEND:**
- ☒ - RECEPTACLES: ON COUNTERTOP, FISHER HAMILTON MODEL 36L26300. PEDESTAL OUTLETS (4 RECEPTACLES ON EACH SIDE)
  - ☑ - RECEPTACLES: ON COUNTERTOP, FISHER HAMILTON MODEL 36L26200. PEDESTAL OUTLETS (4 RECEPTACLES ON ONE SIDE)
  - ☐ - RECEPTACLES: ON COUNTERTOP, FISHER HAMILTON MODEL 36L26100. PEDESTAL OUTLETS (2 RECEPTACLES ON EACH SIDE)
- NOTE: RECEPTACLES INDICATED ABOVE AND ON PLANS ARE PROVIDED WITH FURNITURE. ELECTRICAL CONTRACTOR TO PROVIDE POWER.

- EQUIPMENT LEGEND:**
- 66 RELOCATED MUFFLE FURNACE.
  - 67 CN DISTILLATION
  - 68 RELOCATED TKN DIGESTION.
  - 69 CENTRIFUGE.
  - 70 PC (COMPUTER 1)
  - 71 RELOCATED ATOMIC ABSORPTION.
  - 72 RELOCATED AUTOCLAVE.
  - 73 PC (COMPUTER 2)
  - 74 NUTRIENT ANALYZER I W/ AUTOSAMPLER.
  - 75 NUTRIENT ANALYZER II W/ AUTOSAMPLER.
  - 76 WATER SYSTEM.
  - 77 GLASSWASHER.
  - 78 BALANCE.
  - 79 DESSICATOR.
  - 80 DESSICATOR FOR TSS
  - 81 DESSICATOR FOR TS.
  - 82 TS/TSS DRYING OVEN.
  - 83 WATER BATH FOR FECAL COLIFORMS.
  - 84 INCUBATOR.
  - 85 NOT USED
  - 86 PC. FOR TSS.
  - 87 METTLER BALANCE.
  - 88 CI. COLOR ANAL.
  - 89 B.O.D INCUBATOR.
  - 90 REFRIGERATOR

- NOTES:**
1. SEE DRAWING E1 FOR ELECTRICAL LEGEND & ABBREVIATIONS AND GENERAL REQUIREMENTS.
  2. SEE PANELBOARD SCHEDULES ON DRAWING E5.
  3. EXISTING SUB-PANEL ASSEMBLIES FOR PANELS C AND C1 TO BE REPLACED WITH NEW SUB-PANELS.
  4. HOT WATER CIRCULATION PUMP 9-205-CP IS LOCATED IN EXISTING MECHANICAL ROOM. REFER TO DRAWING E5.
  5. EXISTING HEATERS AND OTHER EQUIPMENT ARE TO BE REMOVED FROM SERVICE. REFER TO ARCHITECTURAL, HVAC AND PLUMBING DEMOLITION DRAWINGS.
  6. EXISTING GRAPHIC DISPLAY BOARD SHALL BE REMOVED FROM SERVICE.
  7. A WEATHERPROOF (WP) CONVENIENCE RECEPTACLE SHALL BE INSTALLED ON THE ROOF IN THE VICINITY OF 9-200-ME (CIRCUIT C-27).
  8. NEW POWER CONDUCTORS SHALL BE INSTALLED FOR RELOCATED ATOMIC ABSORPTION FAN.
  9. CONTRACTOR SHALL PROVIDE SWITCH OR STARTER AS REQUIRED FOR THE LOADS, SUCH THAT EXHAUST FAN 9-202-F ON THE ROOF IS SWITCHED ON WHEN LIGHTS ARE TURNED ON IN THE RESTROOM.
  10. EXISTING WALL HEATER TO BE REMOVED AND REPLACED WITH NEW WALL HEATER 9-204-HT.
  11. ALL 120V & 240V POWER SUPPLY CIRCUITS SHALL BE 2#12, #12G IN 3/4" CONDUIT, EXCEPT THE GLASSWASHER, WHICH SHALL BE 2#8, #10G IN 3/4" CONDUIT.

- CONSTRUCTION RECORD NOTE:**
1. FOR LAB TABLE OUTSIDE STORAGE ROOM 102, A CHASE FOR ELECTRICAL CABLE AND POWER CONNECTION IS TO BE PROVIDED.

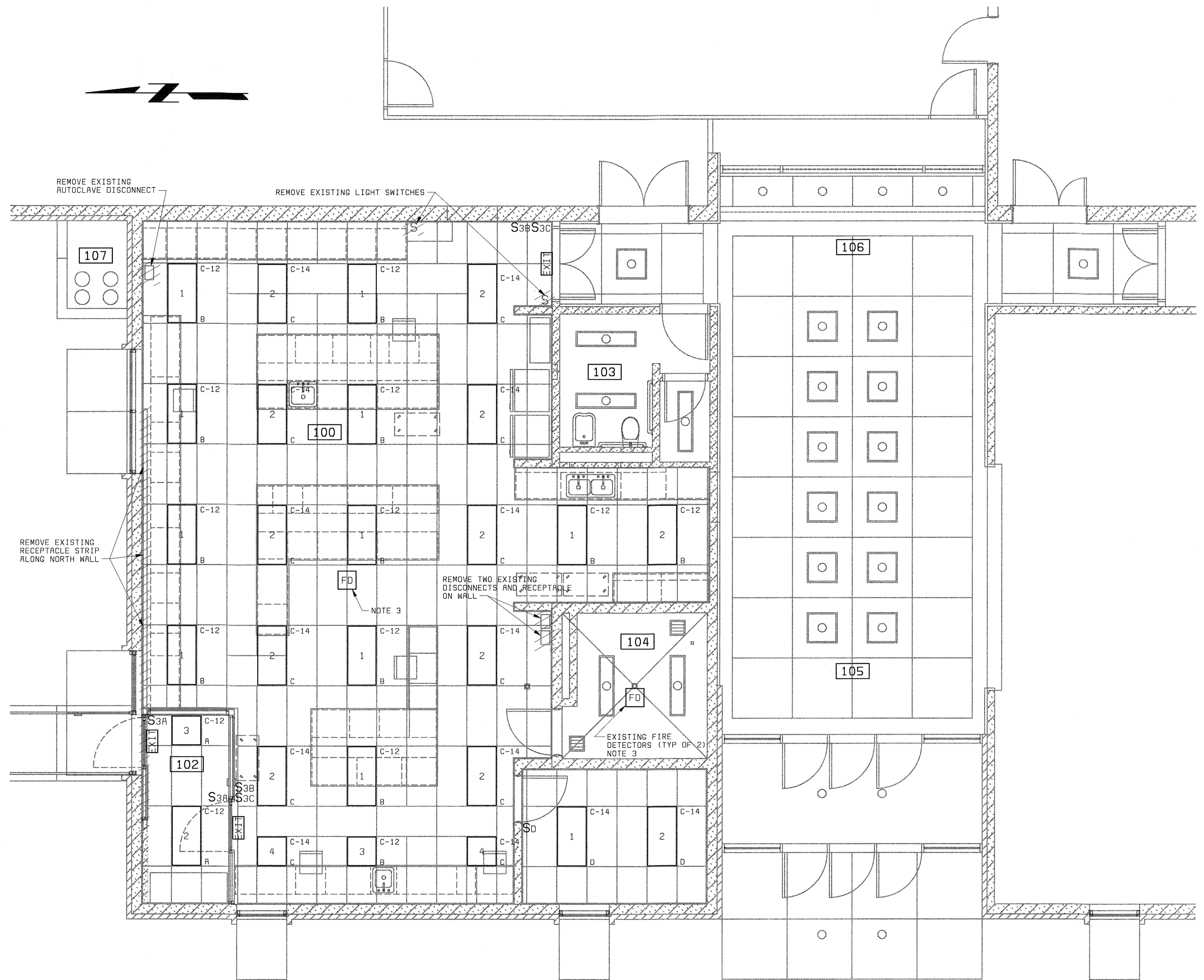


**FLOOR PLAN - EL 145.00**  
1/4" = 1'-0"

58472-104-ADM-H-1000003X3  
58472-112-ADM-A-1000003X1  
58472-112-ADM-A-10000050P

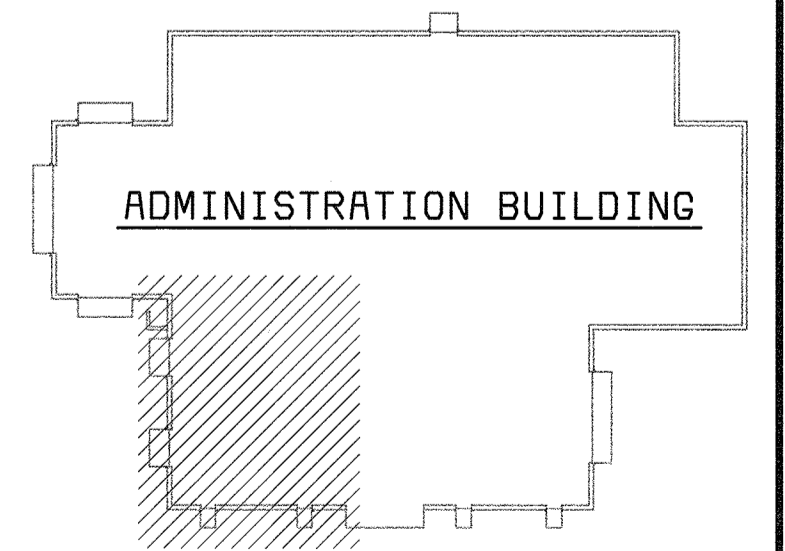
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FD58472A

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  CHIEF, BUREAU OF UTILITIES DATE	 <b>BLACK &amp; VEATCH</b> Gaithersburg, Maryland  REG. PROF. ENGR. _____ DATE _____	THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY DONALD R. STEVENS A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 21976	DES: MEP DRN: MEP CHK: CEC DATE: 10/03/01	11/03/03 CONFORMED TO CONSTRUCTION RECORDS REVISIONS AND RECORD OF ISSUE	ADMINISTRATION BUILDING ELECTRICAL  LABORATORY FLOOR PLAN POWER PLAN	LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 LABORATORY RENOVATION  CAPITAL PROJECT S-6205 CONTRACT NO. 20-3841  HOWARD COUNTY, MARYLAND	SCALE AS SHOWN  SHEET 26 OF 28  <b>E3</b>
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**NOTES:**

1. SEE DRAWING E1 FOR ELECTRICAL LEGEND & ABBREVIATIONS AND GENERAL REQUIREMENTS.
2. SEE LIGHTING FIXTURE AND PANELBOARD SCHEDULES ON DRAWING E5.
3. EXISTING LABORATORY FIRE DETECTION SYSTEM SHALL REMAIN IN PLACE. CONTRACTOR TO RE-INSTALL EXISTING FIRE DETECTORS.
4. EXISTING LIGHTING AND NUMEROUS RECEPTACLES IN FURNITURE SHALL BE REMOVED FROM SERVICE. REFER TO ARCHITECTURAL, HVAC AND PLUMBING DEMOLITION DRAWINGS.



**KEY PLAN**  
NO SCALE

**FLOOR PLAN - EL 145.00**  
1/4" = 1'-0"

58472-104-ADM-H-1000003XJ  
58472-112-ADM-A-1000003XL  
58472-112-ADM-W-1000005OP

058472-S  
FD58472R

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF UTILITIES DATE

**BLACK & VEATCH**  
Gaithersburg, Maryland

REG. PROF. ENGR. \_\_\_\_\_ DATE \_\_\_\_\_

THIS DRAWING WAS  
ORIGINALLY APPROVED  
FOR CONSTRUCTION  
AND SEALED BY  
DONALD R. STEVENS  
A REGISTERED  
PROFESSIONAL ENGINEER  
IN THE  
STATE OF MARYLAND,  
NO. 21876

DES: MEP					
DRN: MEP					
CHK: CEC					
DATE: 10/03/01	11/03/03	CONFORMED TO CONSTRUCTION RECORDS		RHH/RJR/RJR	
	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK APP

ADMINISTRATION BUILDING  
ELECTRICAL

LABORATORY FLOOR PLAN  
LIGHTING PLAN

LITTLE PATUXENT WATER RECLAMATION PLANT  
ADDITION NO. 6  
LABORATORY RENOVATION

CAPITAL PROJECT S-6205  
CONTRACT NO. 20-3841

HOWARD COUNTY, MARYLAND

SCALE  
AS  
SHOWN

SHEET  
27 OF 28

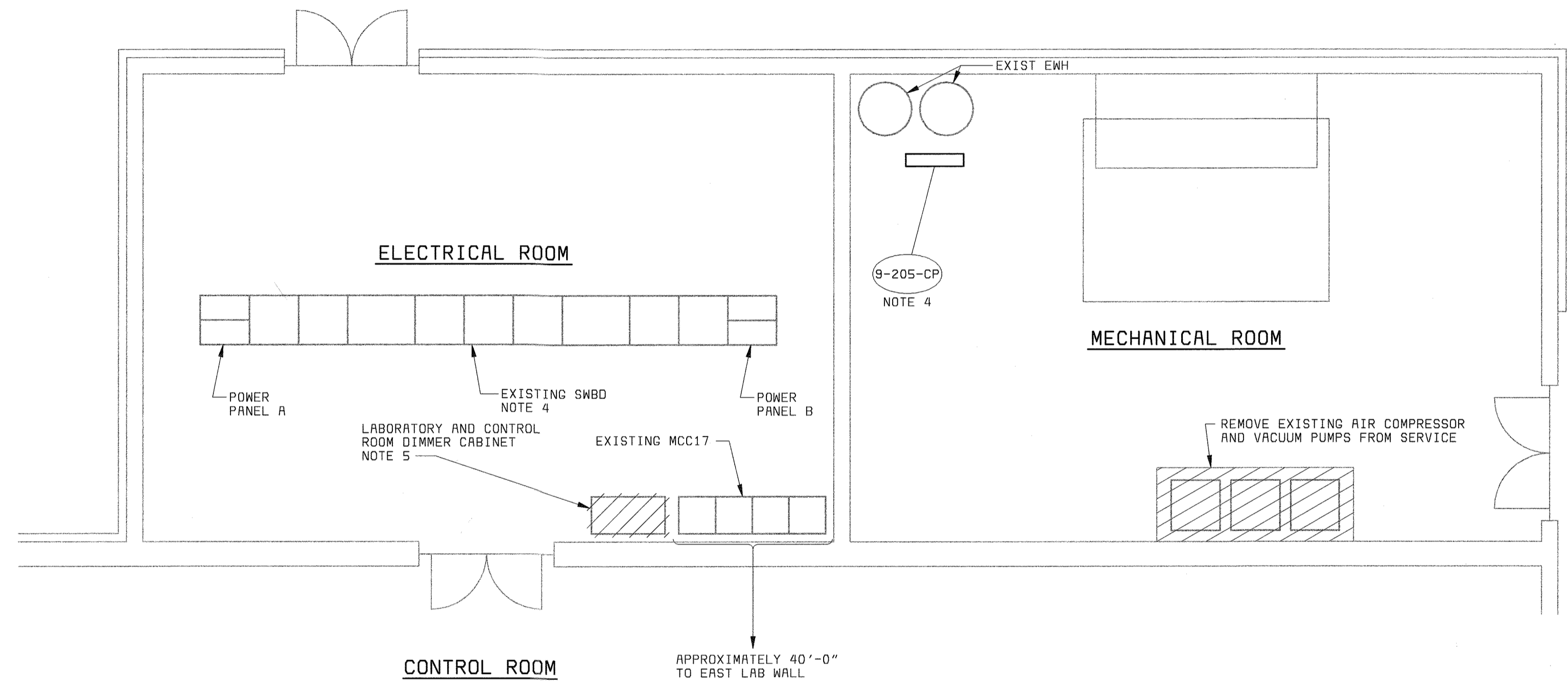
**E4**

PANELBOARD: C1 (NOTE 2)		BUS: COPPER		MAINS: 3P-300A MAIN BREAKER	
SERVICE: 120/240V, 1Ø, 3W		RATING: 400A		LOCATION: CONTROL ROOM	
MOUNTING: SURFACE					
LOAD	P	BKR	CKT#	BKR	LOAD
AUTOCLAVE	2	20	1 2	30 2	GLASS WASHER
-	-	-	3 4	-	-
CENTRIFUGE	1	20	5 6	20 1	SPARE
FUME HOOD 1	1	20	7 8	20 1	FUME HOOD 2
RECEP - TRAINING ROOM FLOOR	1	20	9 10	20 1	RECEP - NORTH WALL INTERIOR/EXTERIOR
RECEP - TRAINING ROOM FLOOR	1	20	11 12	20 1	SPARE
SPARE	1	20	13 14	20 1	RECEP - BALANCE
SPARE	1	20	15 16	20 1	RECEP - A.A. FURNACE
CHEMIST OFFICE HEATER	1	20	17 18	20 1	SPARE
MUFFLE FURNACE	2	20	19 20	20 1	SPARE
-	-	-	21 22	20 1	WATER BATH
RECEP - NORTH LAB BENCH	1	20	23 24	20 1	RESTROOM EXHAUST FAN 9-202-F
* INCUBATOR	1	20	25 26	20 1	SPARE
RECEP - NORTH LAB BENCH	1	20	27 28	20 1	RECEP - NORTH LAB BENCH
RECEP - NORTH LAB BENCH	1	20	29 30	20 1	SPARE
RECEP - EAST LAB BENCH	1	20	31 32	20 1	RECEP - MIDDLE LAB TABLE
RECEP - EAST LAB BENCH	1	20	33 34	20 1	SPARE
RECEP - SOUTH LAB WALL NEAR STORAGE RM	1	20	35 36	20 2	SAMPLE ENTRANCE HEATER 9-203-HT
SPARE	1	20	37 38	-	-
SPARE	1	20	39 40	20 1	SPARE
SPARE	1	20	41 42	20 1	SPARE

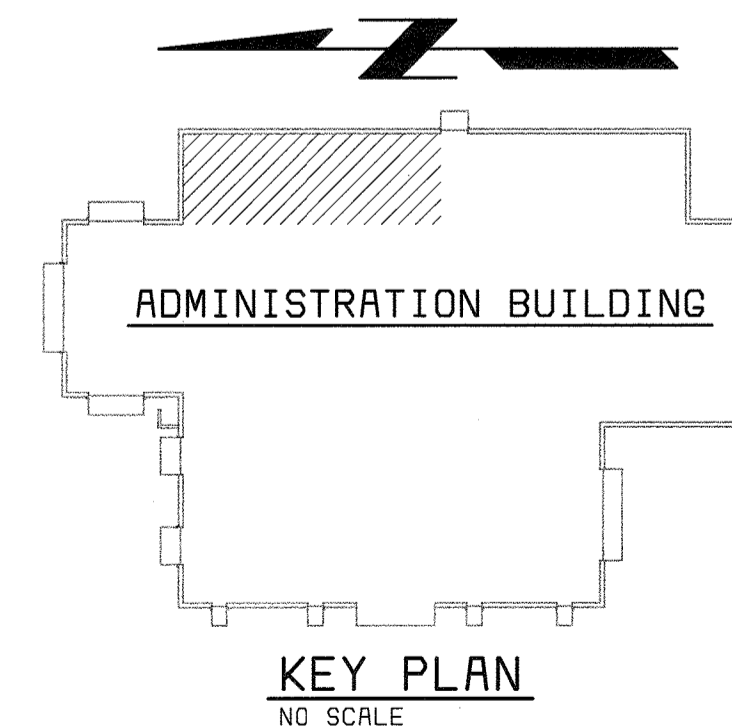
PANELBOARD: C (NOTE 2)		BUS: COPPER		MAINS: 3P-175A MAIN BREAKER	
SERVICE: 120/240V, 1Ø, 3W		RATING: 400A		LOCATION: CONTROL ROOM	
MOUNTING: SURFACE					
LOAD	P	BKR	CKT#	BKR	LOAD
RECEP - NORTH WALL UNDER COUNTERTOP	1	20	1 2	20 1	EBH-10 LOBBY
EBH-8 LOBBY	1	20	3 4	20 1	SPARE
* TEMP. CONTROL PANEL TCP-101	1	20	5 6	20 1	RECEP - REFRIGERATOR & TOILET AREAS
RECEP - EXTERIOR WEST WALL	1	20	7 8	20 1	RECEP - REFRIGERATOR & LOBBY
SPARE	1	20	9 10	20 1	RECEP - CHEMIST OFFICE AREA
SPARE	1	20	11 12	20 1	LIGHTS - (ROWS 1,3,5,6) & ENTRANCE
SPARE	1	20	13 14	20 1	LIGHTS - LAB (ROWS 2,4) & OFFICE
SPARE	1	20	15 16	20 1	RECEP - STORAGE ROOM (RO/DI UNITS)
RECEP - GLASSWARE AREA	1	20	17 18	20 1	RECEP - COMPUTER
* RECEP - OVEN	1	20	19 20	20 1	RADIO CONTROL CONSOLE BATTERY CHARGER
SPARE	1	20	21 22	20 1	RECEP - GARBAGE DISPOSER GD-1
SAMPLE ENTRANCE AUTOMATED DOORS	1	20	23 24	20 1	RECEP - WEST WALL LAB
RECEP - WEST WALL LAB	1	20	25 26	20 1	RECEP - WEST LAB TABLE
RECEP - LAB ROOF (9-200-ME)	1	20	27 28	20 1	RECEP - WEST LAB AREA
FIRE ALARM RECEIVER PANEL	1	20	29 30	20 1	RECEP - EAST LAB TABLE
RECEP - EAST LAB TABLE	1	20	31 32	20 1	RECEP - MIDDLE LAB TABLE
RECEP - MIDDLE LAB TABLE	1	20	33 34	20 2	TKN DIGESTION
RECEP - GLASSWARE AREA	1	20	35 36	-	-
SPARE	1	20	37 38	20 1	SPARE
SPARE	1	20	39 40	20 1	SPARE
SPARE	1	20	41 42	20 1	SPARE

\* DENOTES SERVICES THAT SHALL NOT BE GFCI PROTECTED (TYP OF 6). ALL OTHER CIRCUIT BREAKERS SHALL PROVIDE GFCI PROTECTION. ALL GFCI PROTECTED RECEPTACLES SHALL BE CLEARLY LABELED AS SUCH.

LIGHTING FIXTURE SCHEDULE				
SYMBOL	LAMP	MTG HGT	DESCRIPTION	MANUFACTURER
1	F32T8/SP35/RS 2850 LUMENS	RECESSED IN CEILING	2'x4' 4-LAMP FLUORESCENT TROFFER, FLUSH WHITE ALUMINUM FRAME DOOR, ELECTRONIC BALLAST, 120V	LITHONIA #2SP8G432FWA12125- 120GEB-1/4
2	F32T8/SP35/RS 2850 LUMENS	RECESSED IN CEILING	SAME AS FIXTURE NO. 2, EXCEPT WITH LITHONIA EMERGENCY BATTERY PACK PS1400-120V 60HZ, 120V	LITHONIA #2SP8G432FWA12125- 120GEB-1/4-EL14
3	F17T8/SP35/RS 1350 LUMENS	RECESSED IN CEILING	2'x2' 4-LAMP FLUORESCENT TROFFER, FLUSH WHITE ALUMINUM FRAME DOOR, ELECTRONIC BALLAST, 120V	LITHONIA #2SP8G417FWA12125- 120GEB-1/4
4	F17T8/SP35/RS 1350 LUMENS	RECESSED IN CEILING	SAME AS FIXTURE NO. 3, EXCEPT WITH LITHONIA EMERGENCY BATTERY PACK PS1400-120V 60HZ, 120V	LITHONIA #2SP8G417FWA12125- 120GEB-1/4-EL14
EXIT	SELF- LUMINOUS	UNIVERSAL MOUNT	SELF-LUMINOUS UNIVERSAL MOUNTED EXIT SIGN, WHITE HOUSING, SINGLE FACE, RED ACEPLATE, ALUMINUM ANODIZED FRAME, 20 YEAR LUMINOUS LIFE	LITHONIA #0SW1R20AA



**ELECTRICAL/MECHANICAL ROOM PLAN**  
1/4" = 1'-0"



**NOTES:**

- SEE DRAWING E1 FOR ELECTRICAL LEGEND & ABBREVIATIONS AND GENERAL REQUIREMENTS.
- CONTRACTOR SHALL REMOVE AND REPLACE EXISTING PANELBOARD C & C1 SUB-PANEL ASSEMBLIES WITH NEW SUB-PANELS. CONTRACTOR SHALL RE-TERMINATE EXISTING MAIN FEEDER CABLES TO NEW PANEL ASSEMBLIES. ALL CIRCUIT BREAKERS SHALL BE NEW. EXISTING FLUSH MOUNTED PANELS ARE G.E. NAB TYPE AND ARE CURRENTLY USING G.E. TYPE TED CIRCUIT BREAKERS. CONTRACTOR SHALL CONFIRM.
- CONTRACTOR SHALL INCLUDE IN BID TIME FOR THE VERIFICATION AND RE-CONNECTION OF EXISTING CIRCUITS THAT ARE NOT BEING REMOVED (SHOWN WITH SCREENED TEXT ON PANELBOARD SCHEDULE). ALL NEW AND RECONNECTED CIRCUITS SHALL BE PROPERLY LABELED.
- CONTRACTOR SHALL POWER CIRCULATION PUMP FROM SPARE 120 VOLT CIRCUIT BREAKER IN ONE OF THE TWO EXISTING POWER PANELS (A OR B) LOCATED WITHIN EXISTING SWBD. CONTRACTOR SHALL FIELD DETERMINE/VERIFY.
- EXISTING LIGHT DIMMING BALLASTS AND PANEL ARE NO LONGER USED. CONTRACTOR SHALL REMOVE.

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND



REG. PROF. ENGR. DATE

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ADMINISTRATION BUILDING  
ELECTRICAL

LIGHTING FIXTURE AND  
PANELBOARD SCHEDULES

LITTLE PATUXENT WATER RECLAMATION PLANT  
ADDITION NO. 6  
LABORATORY RENOVATION

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