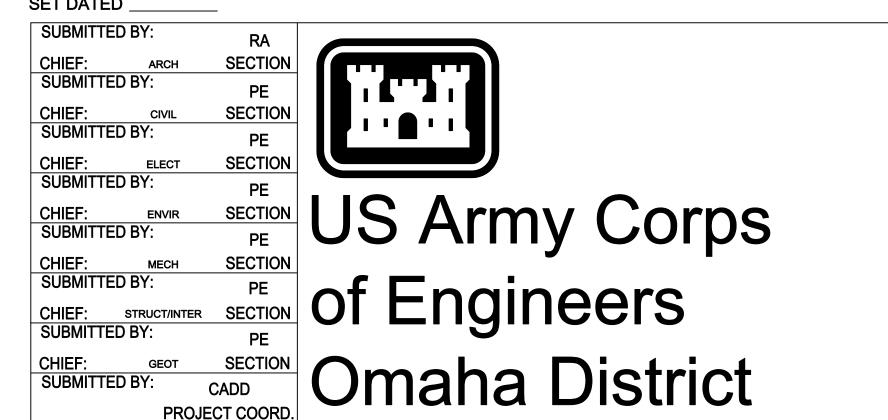


DEPARTMENT OF DEFENSE STANDARD PRESSURIZED HYDRANT DIRECT FUELING SYSTEM

THIS PROJECT WAS DESIGNED BY THE OMAHA DISTRICT OF THE US ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY ER 1110-1-8152.

THE FOLLOWING SIGNATURES BELOW INDICATE OFFICIAL APPROVAL OF ALL DRAWINGS IN THIS SET DATED _____



	1		2
	GENE	RAL	
DESIGN FILE	DRAWING CODE	SHEET NO.	DESCRIPTION
OD38G-001.dwg OD38G-002.dwg OD38G-003.dwg OD38G-004.dwg OD38G-005.dwg OD38G-006.dwg		G-001 G-002 G-003 G-004 G-005 G-006	COVER INDEX ABBREVIATIONS LEGEND ELECTRICAL LEGEND SUPPLEMENTAL ELECTRICAL LEGEND
	CIVI	L	
DESIGN FILE	DRAWING CODE	SHEET NO.	DESCRIPTION
OD38CS101.dwg		CS101	TYPICAL TYPE IV SYSTEM SITE PLAN
OD38MS101.dwg OD38MS102.dwg OD38MS501.dwg OD38MS502.dwg OD38MS503.dwg OD38MS504.dwg OD38MS505.dwg		MS101 MS102 MS501 MS502 MS503 MS504 MS505	TYPICAL APRON / TAXI LANE ARRANGEMENT - SHEET 1 OF 2 TYPICAL ARRANGEMENTS - SHEET 2 OF 2 FLUSHING VALVE PIT PLAN AND SECTION PANTOGRAPH - HOSE END TYPE - SHEET 1 OF 2 PANTOGRAPH - HOSE END TYPE - SHEET 2 OF 2 PANTOGRAPH - HOSELESS TYPE - SHEET 1 OF 2 PANTOGRAPH - HOSELESS TYPE - SHEET 2 OF 2
OD38ES501.dwg OD38ES502.dwg OD38ES503.dwg		ES501 ES502 ES503	MISC. DETAILS TANK DETAILS GROUNDING DETAILS
	STRUCT	URAL	
DESIGN FILE	DRAWING CODE	SHEET NO.	DESCRIPTION
OD38S-101.dwg OD38S-201.dwg OD38S-202.dwg OD38S-203.dwg OD38S-204.dwg OD38S-301.dwg OD38S-302.dwg OD38S-501.dwg OD38S-502.dwg OD38S-503.dwg OD38S-505.dwg OD38S-506.dwg OD38S-801.dwg OD38S-801.dwg OD38S-801.dwg OD38S-801.dwg OD38S-801.dwg OD38S-802.dwg OD38S-803.dwg OD38S-803.dwg OD38S-803.dwg OD38S-803.dwg OD38S-805.dwg		S-101 S-201 S-202 S-203 S-204 S-301 S-302 S-501 S-502 S-503 S-504 S-505 S-506 S-801 S-802 S-803 S-804 S-805	STRUCTURAL NOTES & MISCELLANEOUS DETAILS PUMPHOUSE FOUNDATION AND SLAB PLAN PUMP SHELTER FOUNDATION AND SLAB PLAN PIPE SUPPORT PLAN PIPE SUPPORT SCHEDULE CONTROL ROOM ROOF PLANS, SECTIONS, AND DETAILS BRIDGE CRANE PLAN AND DETAILS FOUNDATION AND SLAB SECTIONS & DETAILS; SHEET 1 OF 2 FOUNDATION AND SLAB SECTIONS & DETAILS; SHEET 2 OF 2 PIPE SUPPORT SECTIONS AND DETAILS; SHEET 1 OF 4 PIPE SUPPORT SECTIONS AND DETAILS; SHEET 2 OF 4 PIPE SUPPORT SECTIONS AND DETAILS; SHEET 3 OF 4 PIPE SUPPORT SECTIONS AND DETAILS; SHEET 4 OF 4 PUMPHOUSE CONTROL ROOM MASONRY ELEVATIONS; SHEET 1 OF 2 PUMPHOUSE CONTROL ROOM MASONRY ELEVATIONS; SHEET 2 OF 2 CONTROL ROOM MASONRY DETAILS PUMP SHELTER CONTROL ROOM MASONRY ELEVATIONS; SHEET 1 OF 2 PUMP SHELTER CONTROL ROOM MASONRY ELEVATIONS; SHEET 1 OF 2
	ARCHITEC	TURAL	
DESIGN FILE OD38A-101.dwg OD38A-102.dwg OD38A-201.dwg OD38A-202.dwg OD38A-301.dwg OD38A-301.dwg OD38A-501.dwg	DRAWING CODE	SHEET NO. A-101 A-102 A-201 A-202 A-301 A-302 A-501	DESCRIPTION FLOOR PLAN REFLECTED CEILING PLAN FLOOR PLAN REFLECTED CEILING PLAN BUILDING ELEVATIONS AND BUILDING SECTION BUILDING ELEVATIONS AND BUILDING SECTION WALL SECTIONS WALL SECTIONS DOOR SCHEDULE, DOOR & WINDOW DETAILS
	MECHAN	NICAL	
DESIGN FILE	DRAWING CODE	SHEET NO.	DESCRIPTION
OD38M-001.dwg OD38M-101.dwg OD38M-201a.dwg OD38M-201b.dwg OD38M-202.dwg OD38M-203a.dwg OD38M-203b.dwg OD38M-204b.dwg OD38M-301.dwg		M-001 M-101 M-201a M-201b M-202 M-203a M-203b M-204b M-301	FUEL SYSTEM LEGEND AND NOTES PLAN - PUMPHOUSE PIPING FLOW DIAGRAM - SCHEME A - SHEET 1 OF 2 FLOW DIAGRAM - SCHEME B - SHEET 2 OF 2 ISOMETRIC PIPING DIAGRAM SEQUENCE OF OPERATION - SCHEME A SEQUENCE OF OPERATION - SCHEME B - SHEET 1 OF 2 SEQUENCE OF OPERATION - SCHEME B - SHEET 2 OF 2 PUMPHOUSE PIPING SECTIONS

PUMPHOUSE PIPING SECTIONS

PUMPHOUSE MECHANICAL DETAILS

PUMPHOUSE MECHANICAL DETAILS

BUILDING VENTILATION

FILTER SEPARATOR AND PIPING SECTION

M-302

M-303

MH101

MH501

MH502

OD38M-302.dwg

OD38M-303.dwg

OD38MH101.dwg

OD38MH501.dwg

OD38MH502.dwg

INDEX

ELECTRICAL

DESIGN FILE	DRAWING CODE	SHEET NO.	DESCRIPTION
OD38EL101.dwg		EL101	LIGHTING PLAN
OD38EL501.dwg		EL501	LIGHTING FIXTURE DETAILS
OD38EP101.dwg		EP101	POWER PLAN
OD38EP501.dwg		EP501	ELECTRICAL DETAILS
OD38EP502.dwg		EP502	ELECTRICAL DETAILS
OD38EP601.dwg		EP601	ONE LINE DIAGRAM
OD38EP602.dwg		EP602	WIRING DIAGRAMS
OD38EP603.dwg		EP603	SCHEDULE SHEET
OD38EP604.dwg		EP604	EPDS WIRING DIAGRAM
OD38EG101.dwg		EG101	GROUNDING PLAN
OD38EI501.dwg		El501	PUMP CONTROL PANEL ELEVATION
OD38EI502.dwg		El502	GRAPHIC DISPLAY
OD38EI503.dwg		EI503	TERMINAL BLOCK CONNECTIONS (FOR FIELD DEVICES) SHEET 1
OD38EI504.dwg		EI504	TERMINAL BLOCK CONNECTIONS (FOR FIELD DEVICES) SHEET 2
OD38EI505.dwg		EI505	EPDS CONTROL AT FCC
OD38El601.dwg		El601	CONTROL SYSTEM DIAGRAMS
OD38El602.dwg		El602	CONTROL SYSTEM I/O SHEET 1
OD38El603.dwg		EI603	CONTROL SYSTEM I/O SHEET 2
OD38El604.dwg		El604	CONTROL SYSTEM I/O SHEET 3
OD38FA101.dwg		FA101	FIRE DETECTION SYSTEM

TYPE V

GENERAL

SPECIFICATIONS TO BE USED

AS PART OF THIS STANDARD:

01 42 00 SOURCES FOR REFERENCE PUBLICATIONS

33 52 43.11 AVIATION FUEL MECHANICAL EQUIPMENT

33 01 50.01 CLEANING FUEL STORAGE TANKS

33 52 43.12 AVIATION FUEL PANTOGRAPHS

33 52 43.14 AVIATION FUEL CONTROL VALVES

33 52 43.13 AVIATION FUEL PIPING

33 52 43.23 AVIATION FUEL PUMPS

05 59 10 ROLLING COVER FOR AVIATION REFUELING VAULTS

33 08 53 AVIATION FUEL DISTRIBUTION SYSTEM START-UP

33 52 43.28 FILTER SEPARATOR, AVIATION FUELING SYSTEM

01 33 23.33 AVIATION FUEL SYSTEM SPECIFIC SUBMITTAL REQUIREMENTS

33 09 53 AVIATION FUEL PUMP CONTROL AND ANNUNCIATION SYSTEM

01 78 23.33 OPERATION AND MAINTENANCE MANUALS FOR AVIATION FUEL SYSTEMS

33 09 54 AVIATION FUEL PUMP CONTROL AND ANNUNCIATION SYSTEM (TYPE [IV][V])

33 09 55 AVIATION FUEL PUMP CONTROL AND ANNUNCIATION SYSTEM (CUT-N-COVER TANKS)

01 33 00 SUBMITTAL PROCEDURES

DESIGN FILE	DRAWING CODE	SHEET NO.	DESCRIPTION
OD38MV101.dw	g	MV101	TYPICAL TYPE V LAYOUT PLAN

INDEX LEGEND:

1. SHEET NUMBERS:
DISCIPLINE CODE (ARCH., STRUC., MECH., ETC
— SUBJECT CODE BY DISCIPLINE; FOR
ARCHITECTURAL EXAMPLE 1 WOULD BE
FLOOR PLANS, 2 REFLECTED CEILING
PLANS, ETC.
↓ ↓
' '
A -1 0 1
A
SHEET REFERENCE NUMBER

2. DISCIPLINE CODES:								
G	GENERAL							
В	GEOTECH							
С	CIVIL ENGINEERING							
Q	AIRFIELD PAVEMENT							
U	ENVIRONMENTAL ENGINEERING							
MS	FUEL DISTRIBUTION PLAN							
ES	ELECTRICAL SITE UTILITIES							
L	LANDSCAPE							
S	STRUCTURAL ENGINEERING							
Α	ARCHITECT							
I	INTERIORS							
F	FIRE PROTECTION							
Р	PLUMBING ENGINEERING							
M	MECHANICAL ENGINEERING							

ELECTRICAL ENGINEERING

TELECOMMUNICATIONS

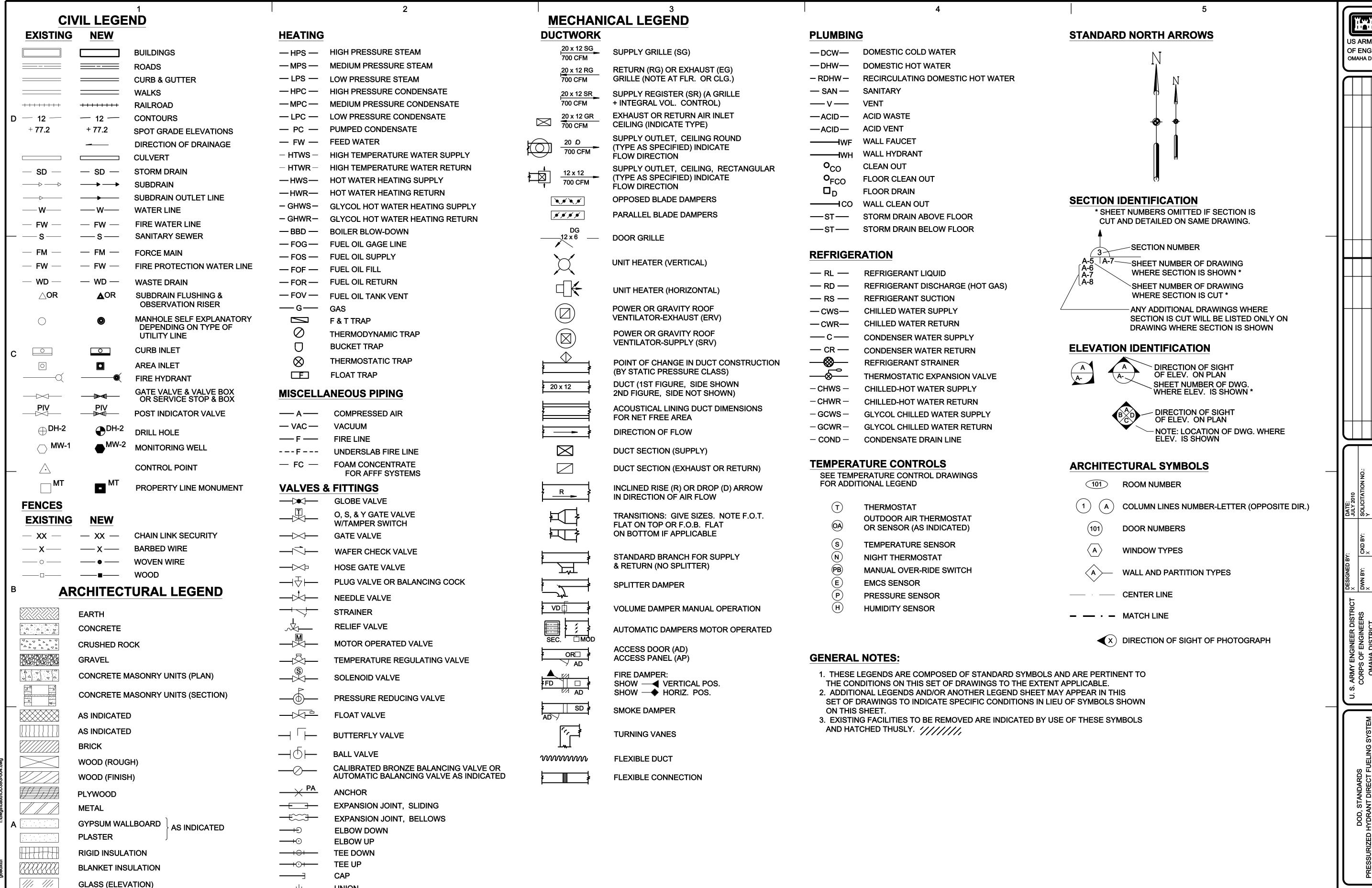
US ARMY CORPS
OF ENGINEERS
OMAHA DISTRICT

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U. S. ARMY ENGINEER DISTRICT	CORPS OF ENGINEERS OMAHA DISTRICT			

DOD, STANDARDS
PRESSURIZED HYDRANT DIRECT FUELING S
INDEX

			1			2		AE	BREVIATIONS		4				5		
			Δ		C (cont.)				I (cont.)		0		R (cont.)		V	US AR	RMY CORPS
		AB	ANCHOR BOLT	СОМ	COMMON	F	FAHRENHEIT	IESNA	ILLUMINATION ENGINEERING	OA	OUTSIDE AIR	RH	RELATIVE HUMIDITY	V	VOLT		A DISTRICT
	,	AC A/C	ALTERNATING CURRENT AIR CONDITIONING	COMB COMB	COMBINATION COMBUSTION	FA FC	FRESH AIR FOOTCANDLE	IN	SOCIETY of NORTH AMERICA INCHES	OBSC OWGL	OBSURE OBSCURE WIRE GLASS	RM RND	ROOM RND	VCP VCT	VITRIFIED CLAY PIPE VINYL COMPOSTION TILE		
		ACI ACSR	AMERICAN CONCRETE INSTITUTE ALUMINUM CABLE - STEEL	COMM CONC	COMMUNICATION CONCRETE	FCG FCJ	FACING FLOOR CONSTRUCTION JOINT	INSUL INT	INSULATION INTERIOR	O.C. OCEW	ON CENTER ON CENTER EACH WAY	RPM RPRT	REVOLUTIONS PER MINUTE RAISED PATTERN RUBBER TILE	VD VD	VAULT DOOR VOLUME DAMPER		APPI
			REINFORCED ACOUSTIC	CONF CONN	CONFERENCE CONNECTION	FD FD	FLOOR DRAIN FIRE DAMPER	INV IP	INVERT or INVERTER IRON PIPE	OD OD	OUTSIDE DIAMETER OVERFLOW DRAIN			VENT VENT	VENTILATION VENTILATOR		
	ָט	ACST AD	ACCESS DOOR	CONSTR	CONSTRUCTION	FDN	FOUNDATION	"	_	OFF	OFFICE		S	VERT	VERTICAL		
	,	AD ADMIN	ADMINISTRATION/ADMINISTRATIVE	CONSTR J	CONTINUOUS	FE FEB	FIRE EXTINGUISHER FIRE EXTINGUISHER BRACKET	JC	JANITOR CLOSET	OGL OH	OBSCURE GLASS OVERHEAD	S	SOUTH	VEST VFD	VESTIBULE VARIABLE FREQUENCY DRIVE		
	•	AFCI AFF	ARC FAULT CIRCUIT INTERRUPTOR ABOVE FINISH FLOOR	COR CORR	CORNER CORRIDOR	FEC F.E.S	FIRE EXTINGUISHER CABINET FLARED END SECTION	J-BOX JCT	JUNCTION BOX JUNCTION	OPNG OPP	OPENING OPPOSITE	SA SB	SUPPLY AIR SPLASH BLOCK	VOL V.P.C.	VOLUME VERTICAL POINT OF CURVATURE		
		AFFF AGGR	AQUEOUS FILM FORMING FOAM AGGREGATE	COV CPL	COVERED CEMENT PLASTER	FH FHC	FIRE HYDRANT FIRE HOSE CABINET	JST	JOIST JOINT	OPS O.R.	OPERATIONS OBSERVATION RISER	S.B. SCHED	SECURITY BARS SCHEDULE	V.P.I. V.P.T.	VERTICAL POINT OF INTERSECTION VERTICAL POINT OF TANGENCY		
	•	AHU	AIR HANDLING UNIT	CPRS C.P.S. ~	COMPRESSIBLE CYCLES PER SECOND (HERTZ)	FIG FIN	FIGURE FINISH	JI	JOINT	OS & Y	OUTSIDE SCREW & YOKE	SCIF	SENSITIVE COMPARTMENTED	VR VR	VAPOR RETARDER VOLTAGE REGULATOR		RIPTIC
	,	A.I. AIC	AMPS INTERRUPTING CAPACITY	CPT	CARPET	FIXT	FIXTURE	K	THOUSAND		Р	SCR	INFORMATION FACILITY SCREW	VS	VENT STACK		
		AISC	AMERICAN INSTITUTE of STEEL	CRES CRG	CORROSIVE RESISTANT STEEL CARRIAGE	FLR FLASH	FLOOR FLASHING	K	KEY	P	POLE	SCT SCUT	STRUCTURAL CLAY TILE SCUTTLE	VT	VINYL-TILE VOLTAGE TRANSFORMER		
		ALUM	CONSTRUCTION ALUMINUM	CRSE CSK	COURSE COUNTER SUNK	FLEX FLG	FLEXIBLE FLOORING	Kcmil or KCN KIP	M KILO CIRCULAR MIL KILOPOUND (1000 LBS)	PA PART	PUBLIC ADDRESS PARTICLE	SD	SMOKE DAMPER SUBDRAIN	VTR VWC	VENT THRU ROOF VINYL-WALL COVERING		
	-	A.L. ALT	ACTIVE LEAF ALTERNATE	CST CSMT	CAST STONE TILE CASEMENT	FLUOR FP	FLUORESCENT FIRE PROTECTION	KIT KL	KITCHEN KEY LOCK	PB PBS	PULL BOX PUSH BUTTON STATION	SDI	STEEL DECK INSTITUTE				+ + + + + + + + + + + + + + + + + + + +
		AMP	AMPERE	CT	CERAMIC TILE	FP FPM	FIREPROOF	KPL kV	KICK PLATE KILOVOLT	P.C.C.	PORTLAND CEMENT CONCRETE POINT OF CURVE	SECT SEQ	SECTION SEQUENCE		W		MAS
	•	ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	CTL	CURRENT TRANSFORMER CARPET TILE	FR	FEET PER MINUTE FRAME	kVA	KILOVOLT AMPERE	P.C.	PIECE	S.F. SFU	SQUARE FOOT (FEET) STRUCTURAL FACING UNIT	w	WEST		APPE
	•	AP APPD	ACCESS PANEL APPROVED	CTR CU	CENTER CONDENSING UNIT	FS FT	FULL SIZE FEET	kVAR kW	KILOVOLT AMPERE REACTIVE KILOWATT	PERF P.E.	PERFORATED POLYETHYLENE	SHLDR SHT	SHOULDER SHEET	W W/	WIRE WITH		
		APPROX ARCH	APPROXIMATE	CUH CU YD	CABINET UNIT HEATER CUBIC YARDS	FTG FUR	FOOTING FURRING	kWh	KILOWATT HOUR	PH PI	PHASE POINT OF INTERSECTION	SHTHG	SHEATHING SIMILAR	W/O WB	WITHOUT WET BULB		
		A.R.I.	AMERICAN REFRIGERATION INSTITUTE	CV	CEILING VENT	FW FWC	FIRE WATER FABRIC WALLCOVERING		L	PIV PL or P	POST INDICATOR VALVE PLATE	SJI	STEEL JOIST INSTITUTE	WC WD	WATER CLOSET WOOD		
		ASB	ASBESTOS	CWT	COLD WATER CERAMIC WALL TILE			LAB LAT	LABORATORY LEAVING AIR TEMPERATURE	PLAM L PLAS	PLASTIC LAMINATE PLASTER	SOV SPCL	SHUT OFF VALVE SPECIAL	W.D.	WASTE DRAIN WOOD BLOCKING		
		ASPH ASSIST.	ASPHALT ASSISTANT	CYL	CYLINDER		G	LAU	LAUNDRY LAVATORY	PLAT	PLATFORM	SPEC SPF	SPECIFICATION SOUNDPROOF	WD. BLK. WD. DR.	WOOD DOOR		
'		ATC AUTO	ACOUSTICAL TILE CEILING AUTOMATIC			G GA	NATURAL GAS GAGE or GAUGE	LBR	LUMBER	PLBG PLC	PLUMBING PROGRAMMABLE LOGICAL	SPH SPKR	SPACE HEATER SPEAKER	WDW WF	WINDOW WIDE FLANGE		RIPTIC
		AVG AWG	AVERAGE	d DA	PENNY (as in nail - 10d) DOUBLE ACTING	GAL GALV	GALLON GALVANIZED	LBS	POUNDS LOAD	PLG	CONTROLLER PILING	SQ or □ SSMR	SQUARE STANDING SEAM METAL ROOFING	WGL WH	WIRED GLASS WALL HYDRANT		DESC
		AWT	ACOUSTICAL WALL TREATMENT	DAT DB	DATUM DRY BULB	GCO GEN	GRADE CLEANOUT GENERAL	LDG LG	LOADING LENGTH	PLYWD PNL	PLYWOOD PANEL	SST	STAINLESS STEEL	WHM	WATTHOUR METER WHITE		
	•	_	ANGLE	DBL DC	DOUBLE DIRECT CURRENT	GFCI	GROUND FAULT CIRCUIT	LIN	LINEAR LAWN IRRIGATION SYSTEM	POL	POLISHED	STA STC	STATION SOUND TRANSMISSION CLASS	WI	WROUGHT IRON		
	1	RATT INICI II	BATT INSULATION	DCJ	DOWELED CONTROL JOINT	GFE/CI	INTERRUPTOR GOVERNMENT FURNISHED	LM LNTL	LUMEN LINTEL	POL PORC	PETROLEUM, OIL, LUBRICANT PORCELAIN	STD STL	STANDARD STEEL	WKSH WP	WORK SHOP WEATHER PROOF		<u> </u>
		BB	BULLETIN BOARD	DCJT DCL	DUMMY CONTOL JOINT DOOR CLOSER		EQUIPMENT CONTRACTOR INSTALLED	LONG	LONGITUDINAL	PPM PR	PARTS PER MILLION PAIR	STN STOR	STONE STORAGE	WP WRB	WATER PROOFING WARDROBE		MAF
		BD BD	BOOKCASE BOARD	DCW DEG	DOMESTIC COLD WATER DEGREE	GFE/GI	GOVERNMENT FURNISHED EQUIPMENT GOVERNMENT	LPS LPT	LIGHT PROOF SHADE LOW POINT	PREFAB PREFIN	PREFABRICATE PREFINISH	ST PR	STATIC PRESSURE	WS WSCT	WASTE STACK WAINSCOT		
	I	BDRY BEJ	BOUNDARY BRICK EXPANSION JOINT	DEPR DEPT	DEPRESSION DEPARTMENT	GFE	INSTALLED GOVERNMENT FURNISHED	LR L.R.	LIVING ROOM LONG RADIUS	PROC PROJ	PROCESSING PROJECT	STR STRUCT	STRINGER STRUCTURAL	WT WWF	WEIGHT WELDED WIRE FABRIC		
	1	BITUM BL	BITUMINOUS BUILDING LINE	DET DE	DETAIL DRINKING FOUNTAIN		EQUIPMENT	LT LTG	LIGHT LIGHTING	PRV PRV	PRESSURE REGULATING VALVE	STWY SUB FL	STAIRWAY SUBFLOOR	WWM	WOVEN WIRE MESH	NO NO	NO.: ER: DATE:
	ĺ	BLDG BLK	BUILDING BLOCK	DH DH	DOUBLE HUNG DUCT HEATER	G.F.I. or GI	FI GROUND FAULT INTERRUPTOR GALVANIZED IRON	LT WT	LIGHT WEIGHT LOW VOLTAGE POWER	P.S.	PRESSURE REDUCING VALVE PRESSED STEEL	SUSP SVF	SUSPEND SHEET VINYL FLOORING		Y	:: 2010 CITATI	RACT
		BLKG	BLOCKING	DHW	DOMESTIC HOT WATER	GL GL	GLASS GUTTER LINE	LWT	LEAVING WATER TEMPERATURE	PSF PSI	POUNDS per SQUARE FOOT POUNDS per SQUARE INCH	SW SWBD	SWITCH SWITCHBOARD	XFMR	TRANSFORMER	DATE: JULY 20 SOLICIT	CON.
		BM -	BENCH MARK	DIA or Ø DIAG	DIAMETER DIAGONAL	GOVT GND or GF	GOVERNMENT RND GROUND		M	P.T. PT	POINT OF TANGENCY POINT	SYMM	SYMMETRICAL		V		iii
		B.O. BOT	BOTTOM OF BOTTOM	DIM DIR	DIMENSION DIRECTOR	GPM GR	GALLONS PER MINUTE GRADE	M	THOUSAND MIXED AIR	PT	POTENTIAL (VOLTAGE) TRANSFORMER			YD	■ YARD	M	scal
		BPRF BRCG	BULLETPROOF (BULLET-RESISTANT) BRACING	DISSEM DISC	DISSEMANATION DISCONNECT	GRS GRTG	GALVANIZED RIGID STEEL CONDUIT	MACH	MACHINE	PTD PTN	PAINTED		Т	YD	YARD DRAIN) BY:	ED BY:
	1	BRDG BRG	BRIDGING	DISTR D & M	DISTRIBUTION DRESSED & MATCHED	GSU	GRATING GRAZED STRUCTURAL UNIT	MAINT MAS	MAINTENANCE MASONRY	PVC	PARTITION POLYVINYL CHLORIDE (PLASTIC)	T	TREAD			DESIGNE	SUBMITTE FILE NAMI AD38G-003 SIZE: 33.1X22
	В	BRK BRKT	BRICK	DN	DOWN	GUT GYP	GUTTER GYPSUM	MAT MAX	MATERIAL MAXIMUM	PVMT PW	PAVEMENT PASS WINDOW	TAN TCA	TANGENT TILE COUNCIL of AMERICA			DES	SUE SIZE 33.17
		BT	BENT	DMPF DR	DAMPPROOFING DOOR	GWB GWT	GYPSUM WALL BOARD GLAZED WALL TILE	M & B MC	MATCHED & BEADED MEDICINE CABINET		Q	TE TECH	TOP ELEVATION TECHNICAL			SICT	
		BTUH	BRITISH THERMAL UNIT BTU PER HOUR	DR DS	DRAIN DOWNSPOUT		11	MC MCC	MOLDED CASE MOTOR CONTROL CENTER	QT	QUART	TEL TEMP	TELEPHONE TEMPERATURE			OISTF ERS	5 II
		BUR	BUILT-UP ROOFING	DWG DWLS	DRAWING DOWELS		П	MCJ	MASONRY CONTROL JOINT	QT QTR	QUARRY TILE QUARTER	TER TERM	TERRAZZO TERMINAL			EER I	TRIC
			C	DX	DIRECT EXPANSION	HB HC	HOSE BIBB HANDICAP	MECH MER	MECHANICAL MECHANICAL EQUIPMENT ROOM	1/4 RD	QUARTER ROUND	TGL	TOGGLE			GINI F EN	A DIS
		CAP C TO C	CAPACITY CENTER TO CENTER		E	HCD HD	HALON CONTAINMENT DAMPER HEAD	MFG MFR	MANUFACTURING MANUFACTURER		R	THK THRES	THICKNESS THRESHOLD			AY EP	MAH
	(CB CB	CATCH BASIN CIRCUIT BREAKER	E EA	EAST EACH	HDBD HDPE	HARDBOARD HIGH DENSITY POLYETHYLENE	MG MGT	MOTOR GENERATOR MATTE - GLAZED TILE	R R	RISER RADIUS	TK BD TO	TACK BOARD TOP OF			. ARI	
	(CE CEM	COVER ELEVATION	EA	EXHAUST AIR	HDR	HEADER	MGT MH	MANAGEMENT MANHOLE	R R	RANGE RELIEF AIR	T.C. TOIL	TOP OF CURB TOILET				
 	_ (CFM	CUBIC FEET PER MINUTE	EAT EES	ENTERING AIR TEMPERATURE EMERGENCY EYEWASH & SHOWER	HNDRL HDW	HANDRAIL HARDWARE	MIN	MINIMUM	RA RA	RETURN AIR	TOPO TRANS	TOPOGRAPHY TRANSVERSE				
	(CFS CFT	CUBIC FEET PER SECOND CERAMIC FLOOR TILE	EIFS	EXTERIOR INSULATION & FINISH SYSTEM	HH HM	HAND HOLE HOLLOW METAL	ML	METAL LATH MONOLITHIC	RAG RAR	RETURN AIR GRILLE RETURN AIR REGISTER	TSTAT	THERMOSTAT				STEN
	(CHIM CI	CHIMNEY CURB INLET	EJ EL	EXPANSION JOINT ELEVATION - GRADE OR BUILDING	HP HP	HORSEPOWER HIGH PRESSURE	MLDG MO	MOLDING (MOULDING) MASONRY OPENING	RB RBR	RESILIENT BASE RUBBER	TYP	TELEVISION TYPICAL) S S S S S S S S S S S S S S S S S S S
β	(CI CIRC	CAST IRON CIRCULAR	ELEC ELEV	ELECTRIC or ELECTRICAL ELEVATOR	H.PT. HR	HIGH POINT HOUR	MOT MSB	MOTOR MAIN SWITCH BOARD	RC RCP	REMOTE CONTROL REINFORCED CONCRETE PIPE		U				
-003.d	(CJ	CONTROL JOINT	EMD	ESTIMATED MAXIMUM DEMAND	HS	HIGH STRENGTH	MSL MSTC	MEAN SEA LEVEL MASTIC	RCVR RD	RECEIVER	UC	UNIT COOLER			SQ	NS II
D38G		CKD	CHECKED	ENCL ENTR	ENCLOSURE ENTRANCE	HSGYP HT	HIGH - STRENGTH GYPSUM PLASTERHEIGHT	MT	METAL THRESHOLD	RDGE	ROOF DRAIN RIDGE	UG	UNDERGROUND UNIT HEATER			DAR.	IREC ATIO
\cadd\(CKT CKT BRKR	CIRCUIT BREAKER	EPDS EQ	EMERGENCY POWER DOWN SWITCHEQUAL	HTG HTR	HEATING HEATER	MTD MTL	MOUNTED METAL	RECPT RECR	RECEPTACLE RECREATION	UL	UNDERWRITERS LABORATORIES			STAN	D FIN
I:\dwgs		CL CLG	CEILING	EQUIP ES	EQUIPMENT EACH SIDE	HDWL HW	HEADWALL HOT WATER		N	RECT REF	RECTIFIER REFERENCE	UNEX	UNEXCAVATED UNFINISH) (aoc,	YDR4
1	^	CLKG CLO	CAULKING	EST EWC	ESTIMATE ELECTRIC WATER COOLER	HWH HYDR	HOT WATER HEATER HYDRAULIC	N	NORTH	REFR REG	REFRIGERATOR REGISTER	UPS UR	UNINTERRUPTIBLE POWER SYSTEM URINAL				Ή Q:
	(CLOS CLWG	CLOSED	EWT	ENTERING WATER TEMPERATURE	Hz	HERTZ	NC NCO	NORMALLY CLOSED NON COMMISSIONED OFFICER	REINF REM	REINFORCE	UTIL UV	UTILITY UNIT VENTILATOR				URIZI
dxtdf	(CMP	CORRUGATED METAL PIPE	EXC EXD	EXCAVATE EXIT DEVICE		1	NEC NEMA	NATIONAL ELECTRICAL CODE NATIONAL ELECTRICAL	REPRO	REMOVABLE REPRODUCE						ESS
gge		CMU CND	CONDUIT (FOR RACEWAY-ELEC.	EXH EXIST	EXHAUST EXISTING	l or EF	I IRON	NFPA	MANUFACTURERS ASSOCIATION NATIONAL FIRE PROTECTION	REQD RESIL	REQUIRED RESILIENT						ų.
		CNTR	SHTS) COUNTER	EXP EXP	EXPOSED EXPANSION	IC	INTERCOM INSULATED CASE	NIC	ASSOCIATION NOT IN CONTRACT	REV RFG	REVISION ROOFING						SHEET
		CO CO	CLEANOUT	EXPL EXT	EXPLOSION PROOF EXTERIOR	ID IE	INSIDE DIAMETER	NO.	NUMBER	RFS RGH	RAISED FLOOR SYSTEM ROUGH						NTIFICATION NUMBER
	(CO ₂	CARBON DIOXIDE COLUMN			I.E.	INVERT ELEVATION	NO N.R.	NORMALLY OPEN NOT REQUIRED		ı						G-003
. 1	·	-															



GLASS (LARGE SCALE SECTION)

WOOD STUD PARTITION

METAL STUD PARTITION

PIPE INCREASER OR DECREASER

FLANGE

BLIND FLANGE

11011 **US ARMY CORPS OF ENGINEERS OMAHA DISTRICT**

IDENTIFICATION NUMBER G-004



(1000)

BUS NUMBER FOR ANALYSIS AND REFERENCE ONLY

APPLICATIONS) UNLESS NOTED OTHERWISE

ELECTRIC WATER COOLER (DRINKING WATER DISPENSER) SIZE AS FCP INDIVIDUAL FLOOR OUTLET ASSEMBLY.'SM' DENOTES SURFACE MOUNTED TYPE (ABOVE FLOOR SERVICE FITTING), 'R' DENOTES RECESSED (FLUSH MOUNTED) TYPE, SEE SPECS OH FST OH FST RELOCATIBLE SERVICE POST ASSEMBLY - LENGTH AS REQUIRED TO EXTEND ABOVE SUSPENDED CEILING. SEE NOTE 8. TELEPHONE OUTLET, SINGLE AND DUPLEX JACK CONFIGURATIONS (8 PIN JACKS). SEE SPECS. SYMBOL SYMBOL WITHOUT LEG(S) REQUIRES DUPLEX JACKS. A SQUARE AROUND 2 - 9THE DEVICE INDICATE IT IS FLOOR MOUNTED. HL=HOTLINE TELEPHONE, P= PUBLIC TELEPHONE, SEE NOTE 8. FOFOF HORN AND MINIHORN, 6'-8" A.F.F. CABLE TRAY FOR COMMUNICATIONS AND DATA PROCESSING, DIMENSIONS AS INDICATED (W X D) TELEPHONE TERMINAL BOARD (PLYWOOD BACKBOARD); TELEPHONE TERMINAL CABINET, SIZE AS INDICATED MULTIOUTLET CONFIGURATION IN UNDERFLOOR DUCT SYSTEM P-O-13" (SEE SPECS.). OPEN CIRCLE DENOTES BLANK INSERT LOCATION. FOFO AND VISIBLE - FLASHING LIGHT WITH A MINIHORN, HORN, BELL, OR CHIME - 6'-8" UFOCO-17" SOLID DENOTES A DEVICE INSTALLATION; 'P' INDICATES A POWER DUCT WITH DUPLEX RECEPTACLES (NEMA 5-15), 'C' DENOTES COMMUNICATIONS DUCT W/BUSHED FITTING; FIGURES IDENTIFY NOMINAL WIDTH; UFD IDENTIFIES A SECTION OF FEEDER DUCT (NO INSERTS). MOTOR - USE AND SIZE AS INDICATED MOTOR CONTROLLER - MAGNETIC OR AS INDICATED, UPPER NUMERAL DESIGNATES NEMA SIZE; LOWER LETTER, IF USED, INDICATES: 'R' - REVERSING TYPE, '2S' - TWO SPEED TYPE, 'FV'-FULL VOLTAGE TYPE (DEFAULT IF NOT INDICATED), 'RV' -REDUCED VOLTAGE TYPE, 'AT' - AUTO TRANSFORMER TYPE, 'PW" - PART WINDING TYPE. COMBINATION STARTER W/EXTERNALLY OPERATED DISCONNECT DISCONNECT SWITCH, SIZE AND TYPE AS INDICATED (OR 3P, 240V, 30A MIN) PUSHBUTTON CONTROL STATION - 1, 2, OR 3 BUTTONS "EPO" = EMERGENCY POWER OFF. SELECTOR SWITCH (SEPARATE FROM STARTER)- 2 POSITION OR | OSY || SV || TS | | WFI | 3 POSITION AS INDICATED. IF NOT SPECIFIED ELSEWHERE, LEGEND PLATE DESIGNATIONS WILL BE 'ON-OFF' AND 'MAN-OFF-AUTO' (OR 'H.O.A.) THERMOSTAT - SEE MECH. SPECS, 5'-0" UP MOTOR CONTROL CENTER, FREE STANDING W/NO. OF 20" WIDE (MIN) VERTICAL SECTIONS INDICATED. SEE DIAGRAM AND/OR SCHEDULE FOR SIZES, RATINGS, AND LOADS LIGHTING AND APPLIANCE TYPE PANELBOARD - FLUSH MOUNTED NOTES: AND SURFACE MOUNTED TYPES, SEE CORRESPONDING PANEL SCHEDULE. OPEN SYMBOL INDICATES EXISTING 1. WHERE MORE THAN ONE SYMBOL FORMAT IS SHOWN, THE DISTRIBUTION TYPE PANEL PREFERRED FORM IS SHOWN FIRST. MAIN SWITCH BOARD OR MAIN SWITCH GEAR (ABBREVIATED OR 2. SUPPLEMENTAL ELECTRICAL LEGENDS MAY APPEAR IN SPELLED OUT), SEE FLOOR PLANS AND DIAGRAMS FOR THIS SET OF DRAWINGS TO ESTABLISH SYMBOLS FOR ITEMS DIMENSIONS, CLEARANCES, AND ELECTRICAL RATINGS NOT COVERED BY THIS SHEET OR TO INDICATE SPECIFIC BUS DUCT ASSEMBLY WITH PLUG-IN POWER BOX CAPABILITY AT 2' CONDITIONS IN LIEU OF SYMBOLS SHOWN ON THIS SHEET. INTERVALS, CURRENT RATING AS INDICATED. OPEN CIRCLE REPRESENTS A POSITION WITH BLANK COVER ONLY, SOLID 3. NOT USED. CIRCLE A PLUG IN BOX WITH BREAKER OR SWITCH (SEE SPECS), RECEPT. SYMBOL IDENTIFIES A BOX WITH RECEPTACLE ATTACHED 4. EXISTING ITEMS ARE DESIGNATED BY A THIN LINE OR AN (FIGURES INDICATE RATING OF RECEPT AND OVERCURRENT OPEN SYMBOL: NEW ITEMS WITH A THICK LINE OR CLOSED DEVICE. (FILLED-IN) SYMBOL. BRANCH CIRCUIT AND FEEDER WIRING. LONG, SHORT, SINGLE 5. ELECTRIC LIGHT FIXTURES ARE IDENTIFIED BY EITHER OR DOT AND DOUBLE DOT HASH MARKS REPRESENT PHASE **BOTH OF THE FOLLOWING METHODS:** CONDUCTOR, NEUTRAL, EQUIPMENT GROUND, AND ISOLATED EQUIPMENT GROUND RESPECTIVELY (AS APPLICABLE). (A) INDICATES FIXTURE TYPE, PER FIXTURE SCHEDULE, ARROWS AND LETTER/NUMERALS IDENTIFY HOME-RUN CIRCUITS. FOR ENTIRE ROOM OR AREA WHEN ADJACENT TO THE ROOM IF HASH MARKS ARE OMITTED BETWEEN HOME-RUNS, TRANSITION NAME OR NUMBER DESIGNATION OR FOR SINGLE FIXTURE SEGMENTS. AND END-OF-LINE DEVICES. REQUIRED QUANITY IS WHEN ADJACENT TO THE FIXTURE SYMBOL. UNDERSTOOD TO APPLY TO ALL UNMARKED INTERVENING SEGMENTS. A CIRCUIT WITHOUT ANY DESIGNATION INDICATES (B) CAPITAL LETTER OR FIXTURE DESIGNATION INSIDE OR THE CIRCUIT IS TWO-WIRE (MIN #12 IN 1/2"C). ADJACENT TO SYMBOL INDICATES FIXTURE TYPE FOR EACH CONDUIT ONLY - NO CONDUCTORS, PULL WIRE IF OVER 50' FIXTURE PER FIXTURE SCHEDULE. 6. SIZES OF WIRE AND CABLE ARE BASED ON COPPER COMM OR POWER FEEDER INSTALLED UNDER FLOOR SLAB IN CONDUCTORS UNLESS INDICATED OTHERWISE. COATED R.S. CONDUIT UNLESS INDICATED OTHERWISE 7. LETTERS SUCH AS "WP", "EP" ADJACENT TO ANY SYMBOL LIGHT LINE - EXISTING, OR BY OTHER TRADES INDICATE SPECIAL CONSTRUCTION IS REQUIRED. SEE HEAVY LINE - NEW ELECTRICAL WORK ABBREVIATIONS SHEET FOR DEFINITIONS. FUTURE WORK OR ELECTRICAL ITEM REPEATED FOR CLARITY 8. ALL RECEPTACLE AND COMMUNICATION OUTLETS SHALL (TO LIGHTING SHEET FROM POWER OR COMM DWG., ACROSS BE MOUNTED 15 - INCHES A.F.F. AS MEASURED TO THE MATCH LINES, ETC.) BOTTOM OF THE OUTLET BOX, UNLESS INDICATED **EXISTING EQUIPMENT; EXISTING EQUIPMENT AS RELOCATED** OTHERWISE. (NEW LOCATION) GENERATOR OR GENERATOR CONNECTION. STATIC GROUND ROD

FCP

"CO"=CARBON DIOXIDE

SWITCH, SEE MECH. SPECS

24-INCH LIGHTNING AIR TERMINAL.

60-INCH LIGHTNING AIR TERMINAL.

FIRE ALARM CONTROL PANEL, (SEE SPECS) **US ARMY CORPS** FIRE ALARM ANNUNCIATION PROVISIONS, **OF ENGINEERS** W/OR W/O GRAPHIC REPRESENTATION, SEE OMAHA DISTRICT FIRE ALARM SIGNAL TRANSMITTING (WITH ANTENNA FOR FM RADIO TYPE), SEE SPECS MANUAL FIRE ALARM STATION - 4'-0" A.F.F. ABORT STATION. "F"= FIRE; "H"=HALON; FIRE ALARM WARNING DEVICE - BELL, CHIME, FIRE ALARM WARNING DEVICE, VISIBLE ONLY - FLASHING LIGHT, CEILING MOUNTED AND WALL MOUNTED (6'-8" A.F.F.) RESPECTIVELY F.A. WARNING DEVICE, COMBINED AUDIBLE MINIHORN, HORN, BELL, OR CHIME - 6'-8" HEAT DETECTOR - UNDIFFERENTIATED SYMBOL INDICATES FIXED TEMPERATURE OR COMBINATION F.T. AND RATE OF RISE TYPE SEE SPECS; 'CR' INDICATES COMPENSATED RATE ("RATE ANTICIPATION") TYPE WITH TUBULAR SENSING ELEMENT REQUIRED SMOKE DETECTOR. THE LETTER 'I' OR 'P', IF PRESENT, STIPULATES IONIZATION OR PHOTOELECTRIC TYPE. 'D' STIPULATES A DUCT TYPE SMOKE DETECTOR. WHERE DUCT DETECTORS ARE SHOWN IN PAIRS, LOCATIONS ARE IN SUPPLY AND RETURN **DUCTS, A SINGLE DETECTOR WOULD BE** INSTALLED IN THE SUPPLY DUCT IF THE LOCATION IS NOT OTHERWISE INDICATED. FIRE ALARM CONTACTS AT SOLENOID (OS & Y) VALVE, TAMPER SWITCH, ALARM CHECK VALVES, WATER FLOW INDICATOR AND FLOW LIGHTNING PROTECTION MAIN CONDUCTOR

IDENTIFICATION NUMBER G-005

INSTRUMENTATION

2

LETTER

FIRST LETTER(S)

MODIFIER

DIFFERENTIAL

RATIO

SCAN

INTEGRATE

SAFETY

PROCESS OR

INITIATING VARIABLE

ANALYSIS(t)

BURNER FLAME

CONDUCTIVITY

VOLTAGE (EMF)

HAND (MANUAL)

(ALSO, MOTOR)

USERS CHOICE(t)

USERS CHOICE(t)

RADIOACTIVITY

TEMPERATURE

VISCOSITY

MULTIVARIABLE(t)

WEIGHT OR FORCE

FLOW RATE

GAUGE

POWER

LEVEL

OR SPACIFIC GRAVITY

CURRENT (ELECTRICAL)

MOISTURE OR HUMIDITY

PRESSURE (OR VACUUM)

QUANTITY OR EVEN(t)

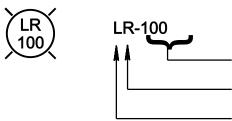
SPEED OR FREQUENCY

TIME OR SCHEDULE

DENSITY

INSTRUMENT BALLOONS

IDENTIFIER ABBREVIATION HS 100 HOA LOOP OR TAG NUMBER FUNCTION OF THE INDIVIDUAL INSTRUMENT FIRST LETTER INDICATES MEASURED OR INITIATING VARIABLE



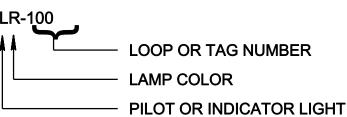
100

SS

0/0

HA

HOA



INSTRUMENT BALLOON							
HS 100	FIELD MOUNTED INSTRUMENT						
HS 100	PANEL MOUNTED INSTRUMENT						
HS 100	MCC MOUNTED INSTRUMENT						
LR 100	FIELD MOUNTED INDICATOR LIGHT						
LR 100	PANEL MOUNTED INDICATOR LIGHT						
LR 100	MCC MOUNTED INDICATOR LIGHT						
	COMPUTER SOFTWARE FUNCTION						
(I-1)	INTERLOCK						

DIGITAL/ANALOG INPUT/OUTPUT

INSTRUMENT BALLOONS

ON/OFF

TOGGLE

PUSH BUTTON

SELECTOR SWITCH

HAND/AUTOMATIC

HAND/OFF/AUTOMATIC

M=MOTOR, MC=MOTOR CONTROLLER

X	UNCLASSIFIED(t)		UNCLASSIFIED(t)	UNCLASSIFIED(t)	UNC
Y	USERS CHOICE(t)			RELAY OR COMPUTE(t)	
Z	POSITION			DRIVE ACTUATE OR UNCLASSIFIED FINAL CONTROL ELEMENT	
(t) WHEN U	SED EXPLANATION IS SHOWN AI	DJACENT TO INS	TRUMENT SYMBOL. SEE	ABBREVIATIONS AND LETTER SYMB	OLS.

INDICATE VARIOUS TYPES OF COMPONENTS IN THE

MISC ELECTRICAL SYSTEMS

SYSTEM.

INSTRUMENTATION LINES	P	BUILDING BLOCK FOR MISC DIFFERENT SYSTEMS. THESE
PROCESS CONNECTION	2	WOULD REQUIRE A SUPPLEMENTAL LEGEND; I=INTERCOM SYSTEM,
ELECTRICAL SIGNALS		N=NURSE CALL SYSTEM, P=PAGING SYSTEM,
COMMUNICATION LINK		SR=STAFF REGISTER, S=SOUND SYSTEM,
IDENTIFIER ABBREVIATION FOR		TV=CABLE TV SYSTEM. THE SUBSCRIPT BY THE SQUARE WOULD BE USED TO

RECEPTACLE BUILDING BLOCK

INSTRUMENT SOCIETY OF AMERICA TABLE

READOUT OR

PASSIVE FUNCTION

ALARM

GLASS

INDICATE

LIGHT(S) (PILOT)

USERS CHOICE(t)

RECORD OR PRINT

MULTIFUNCTION(t)

 $-\! \bigcirc$

WELL

POINT (TEST CONNECTION)

INTEGRATE (TOTALIZER)

USERS CHOICE(t)

PRIMARY ELEMENT

SUCCEEDING LETTERS

USERS CHOICE(t)

CONTROL STATION

USERS CHOICE(t)

SWITCH

TRANSMIT(TER)

MULTIFUNCTION(t)

VALVE, DAMPER, LOUVER

CONTROL(LER)

OUTPUT FUCTION

MODIFIER

USERS CHOICE(t)

AMBER

MIDDLE OR

INTERMEDIATE

USERS CHOICE(t)

MULTIFUNCTION(t)

UNCLASSIFIED(t)

WHITE

© 60A	A. NUMBER OF LEGS INDICATES NUMBER OF DEVICES, (ONE LEG-ONE DEVICE, TWO LEGS-TWO DEVICES ETC.)
GFI	B. INDICATES POLE/FREQUENCY/VOLT CHARACTRISTICS.
A B D	C. INDICATES AMPS. DEFAULT IS 15A.
€ GFI	D. INDICATES OTHER SPECIAL CHARACTERISTICS WP = WEATHERPROOF
	GFI = GROUND FAULT INTERRUPTER NG = UNGROUNDED

L = LOCKING TYPE BLADES: NEMA THROUGH 30A, LOCKING RING: MIL STD MS90555 40A-200A
2P, 3W GROUNDING TYPE RECEPTACLE - 250V, NEMA 6-XX

- ↔	4P, 5W GROUNDING TYPE RECEPTACLE - 208Y/120V, NEMA L21-XX; 480Y/277V, NEMA L22-XX

3P, 4W GROUNDING TYPE RECEPTACLE - 250V, NEMA 15-XX; 250V, NEMA L15-XX; 480V, NEMA L16-XX

DC RECEPTACLE, 2P. SEE PLANS FOR VOLTAGE AND \ominus **GROUNDING REQUIREMENTS**

HOHO400 HZ RECEPTACLE, 1Ø AND 3Ø, SEE PLANS

> SPECIAL RECEPTACLE, SEE SUPPLEMENTAL LEGEND OR RECEPTACLE SCHEDULE ON PLANS FOR BLADE/PIN CONFIGURATION AND APPLICATION

3P, 4W GROUNDING TYPE RECEPTACLE - 125/250V, NEMA 14-XX

RANGE RECEPTACLE

DRYER RECEPTACLE

ELECTRICAL CONTROL DIAGRAM

 $\overline{0}$

-oto-

-010-

-010-

ELECTRICAL DIAGRAM RELAY. LETTER OR NUMBER IN THE CIRCLE INDICATES THE RELAY DESIGNATION.

NORMALLY OPEN CONTACTS

NORMALLY CLOSED CONTACTS

PUSH BUTTON OPEN

PUSH BUTTON CLOSED

THREE POSITION SWITCH

TWO POSITION SWITCH

LIMIT SWITCH, NORMALLY OPEN

LIMIT SWITCH, NORMALLY OPEN, HELD CLOSED

LIMIT SWITCH, NORMALLY CLOSED

LIMIT SWITCH, NORMALLY CLOSED, HELD OPEN

TIME DELAY SWITCH, NORMALLY OPEN, TIMED DELAY CLOSED.

TIME DELAY SWITCH, NORMALLY CLOSED, TIME DELAY OPEN.

TIME DELAY SWITCH, NORMALLY CLOSED, TIME DELAY CLOSED.

TIME DELAY SWITCH, NORMALLY OPEN, TIME DELAY OPEN.

FLOW SWITCH, NORMALLY OPEN, CLOSE ON INCREASE.

FLOW SWITCH, NORMALLY CLOSED, OPEN ON INCREASE.

LIQUID LEVEL SWITCH, NORMALLY OPEN, CLOSE ON INCREASE.

LIQUID LEVEL SWITCH, NORMALLY CLOSED, OPEN ON INCREASE.

PRESSURE AND VACUUM SWITCH, NORMALLY OPEN, CLOSE ON RISE.

PRESSURE AND VACUUM SWITCH, NORMALLY CLOSED, OPEN ON RISE.

TEMPERATURE SWITCH, NORMALLY OPEN, CLOSE ON RISING TEMPERATURE.

TEMPERATURE SWITCH, NORMALLY CLOSED, OPEN ON RISING TEMPERATURE.

FOOT SWITCH, NORMALLY OPEN.

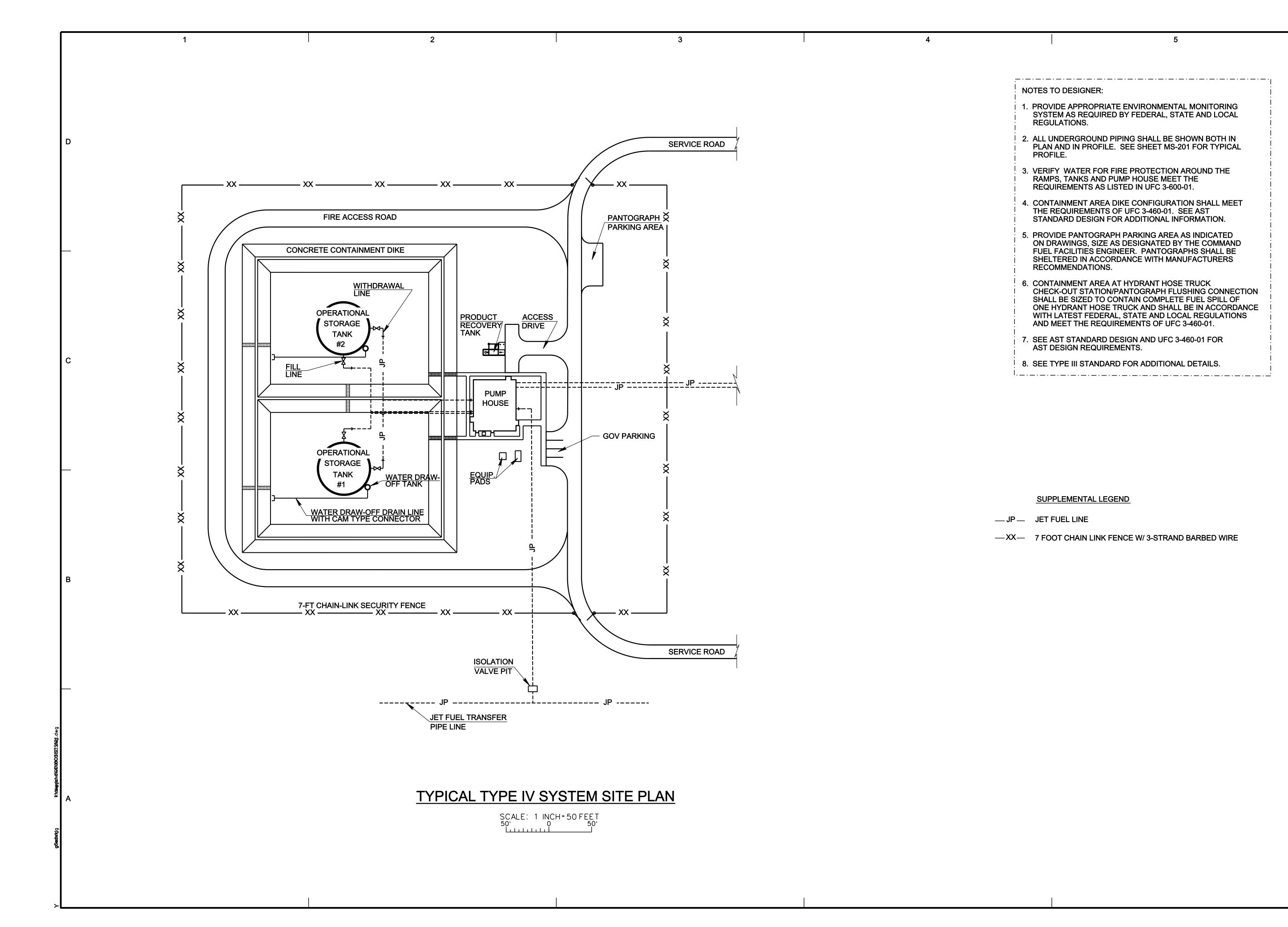
FOOT SWITCH, NORMALLY CLOSED.

IF ANY OF THESE SYMBOLS ARE NEEDED THEN A SUPPLEMENTAL LEGEND IS REQUIRED. THIS SHEET DOES NOT GO IN WITH CONTRACT DRAWINGS.



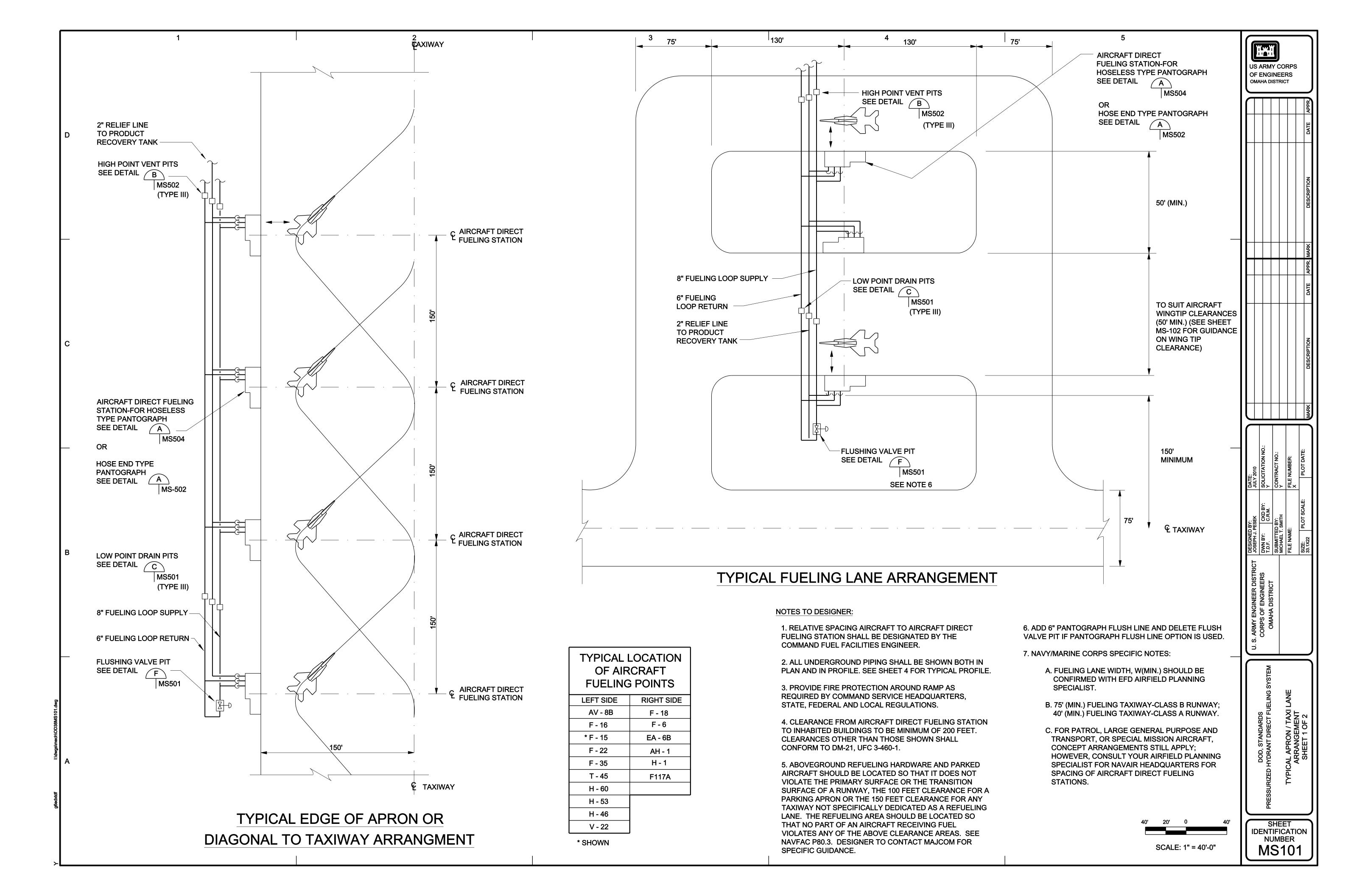
	DESIGNED BY:		N DV.	× × × × × × × × × × × × × × × × × × ×	SUBMITTED BY:	×	FILE NAME:	6	SIZE PLOT SCALE	33.1X22 0'-1" ':" / in.	
	DATE	JULT 2010	SOLICITATION NO	SOLICITATION NO.:	CONTRACT NO.:	Y	FILE NUMBER:	<u>~</u>		7/8/2010	
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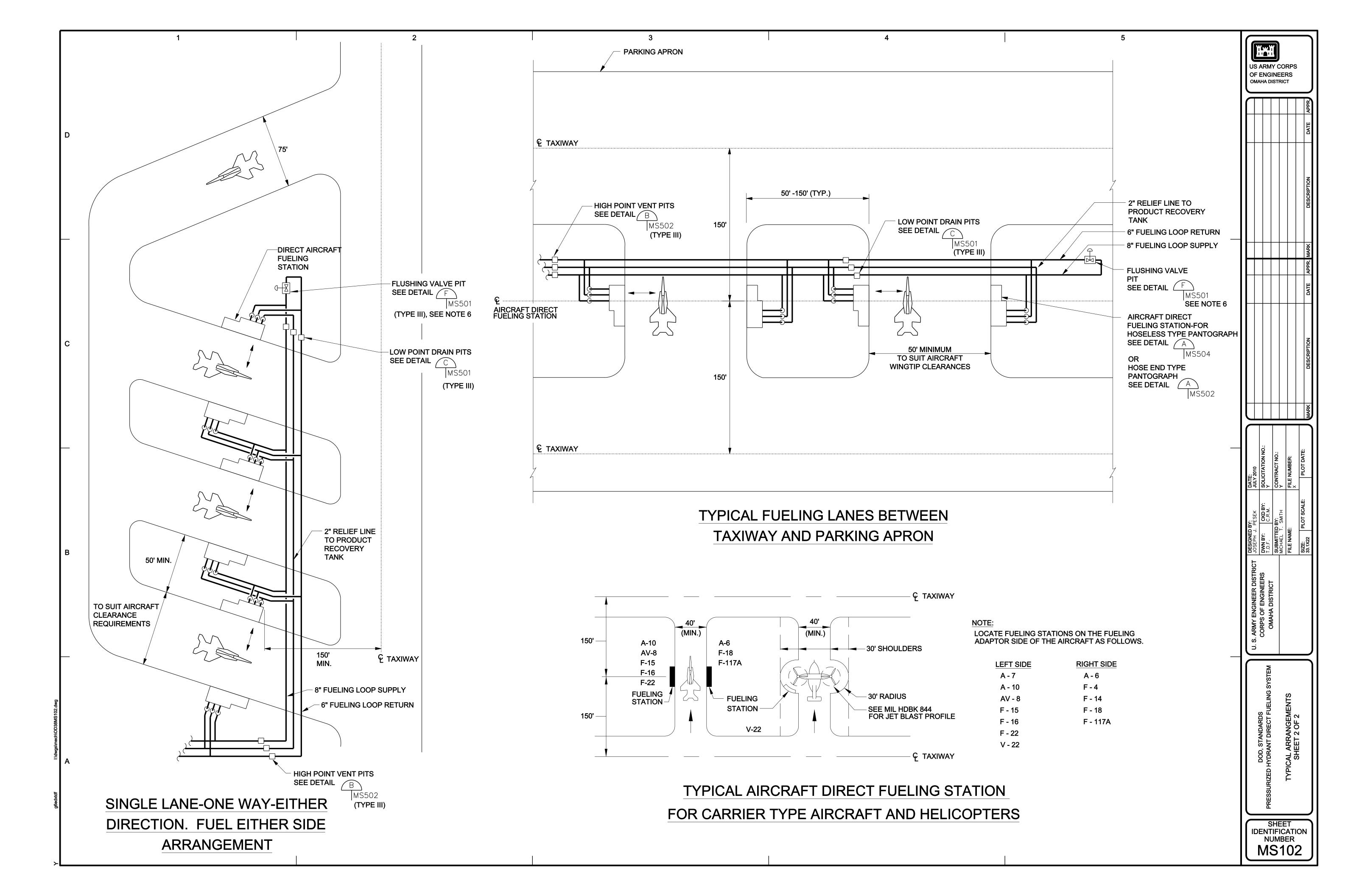
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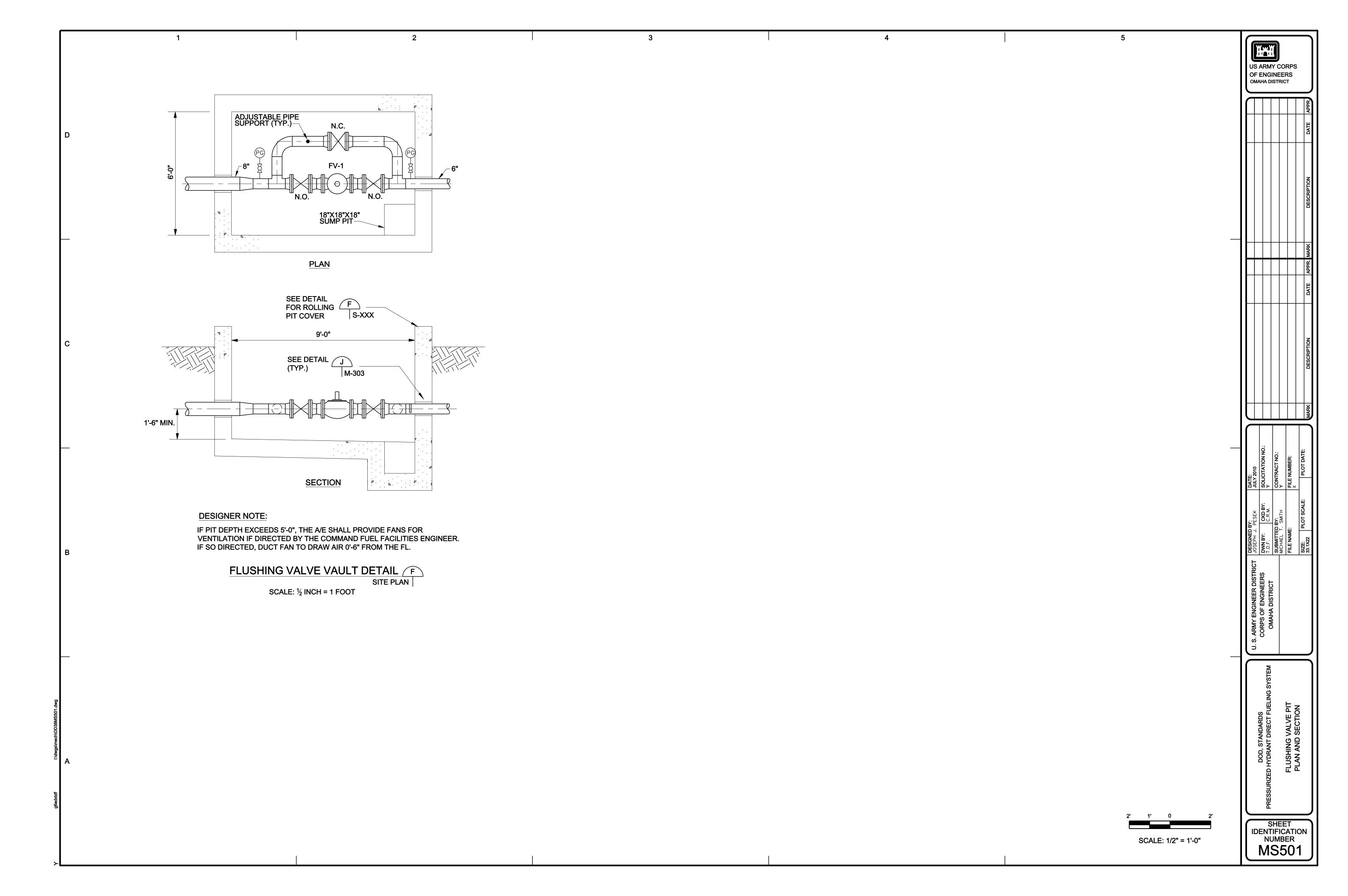


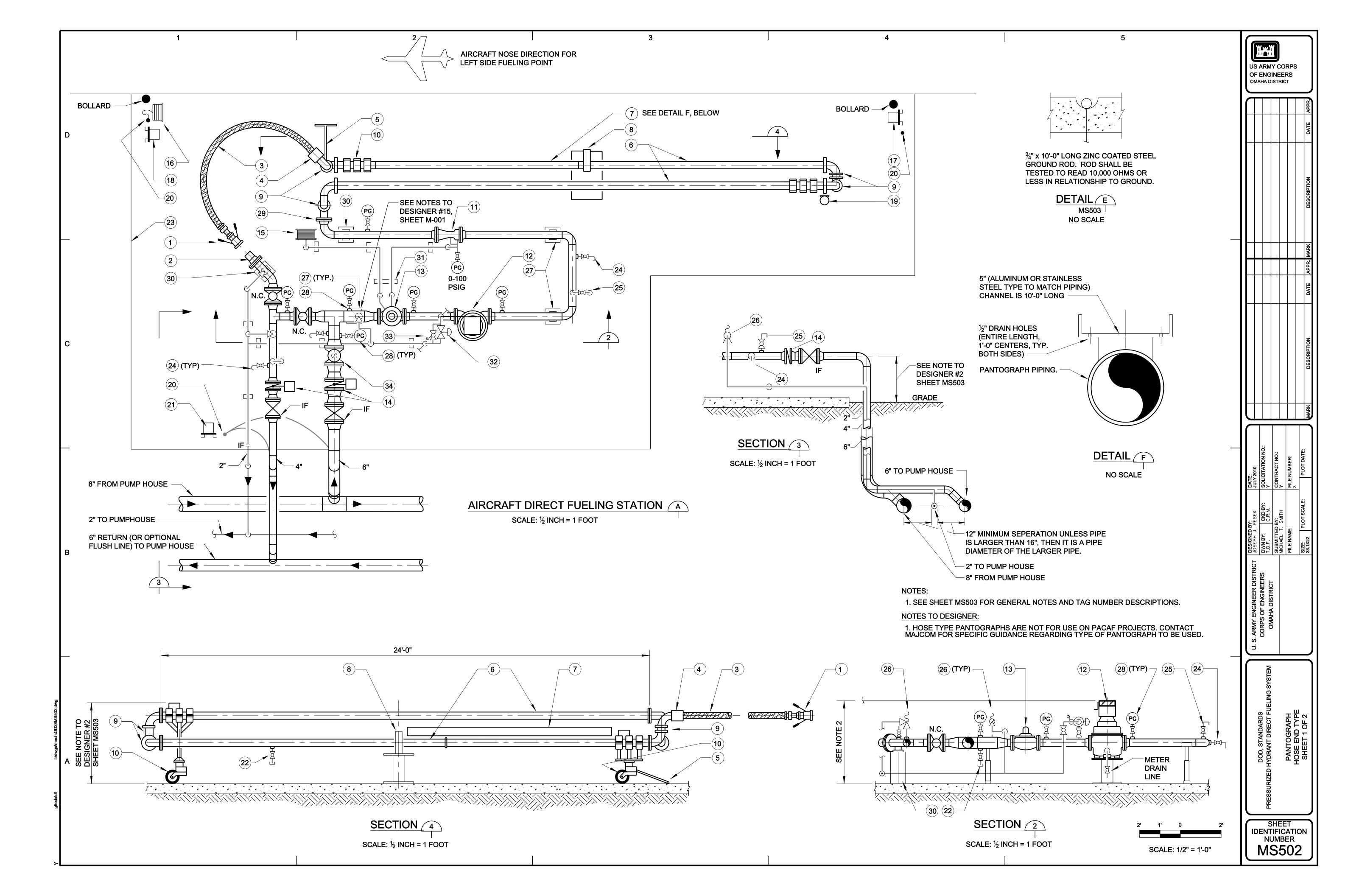
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			DESCRIPTION
			MARK
			APPR. MARK
			DATE
			DESCRIPTION
			MARK

DOD, STANDARDS
PRESSURIZED HYDRANT DIRECT FUELING SYSTE
TYPICAL TYPE IV SYSTEM SITE PLAN







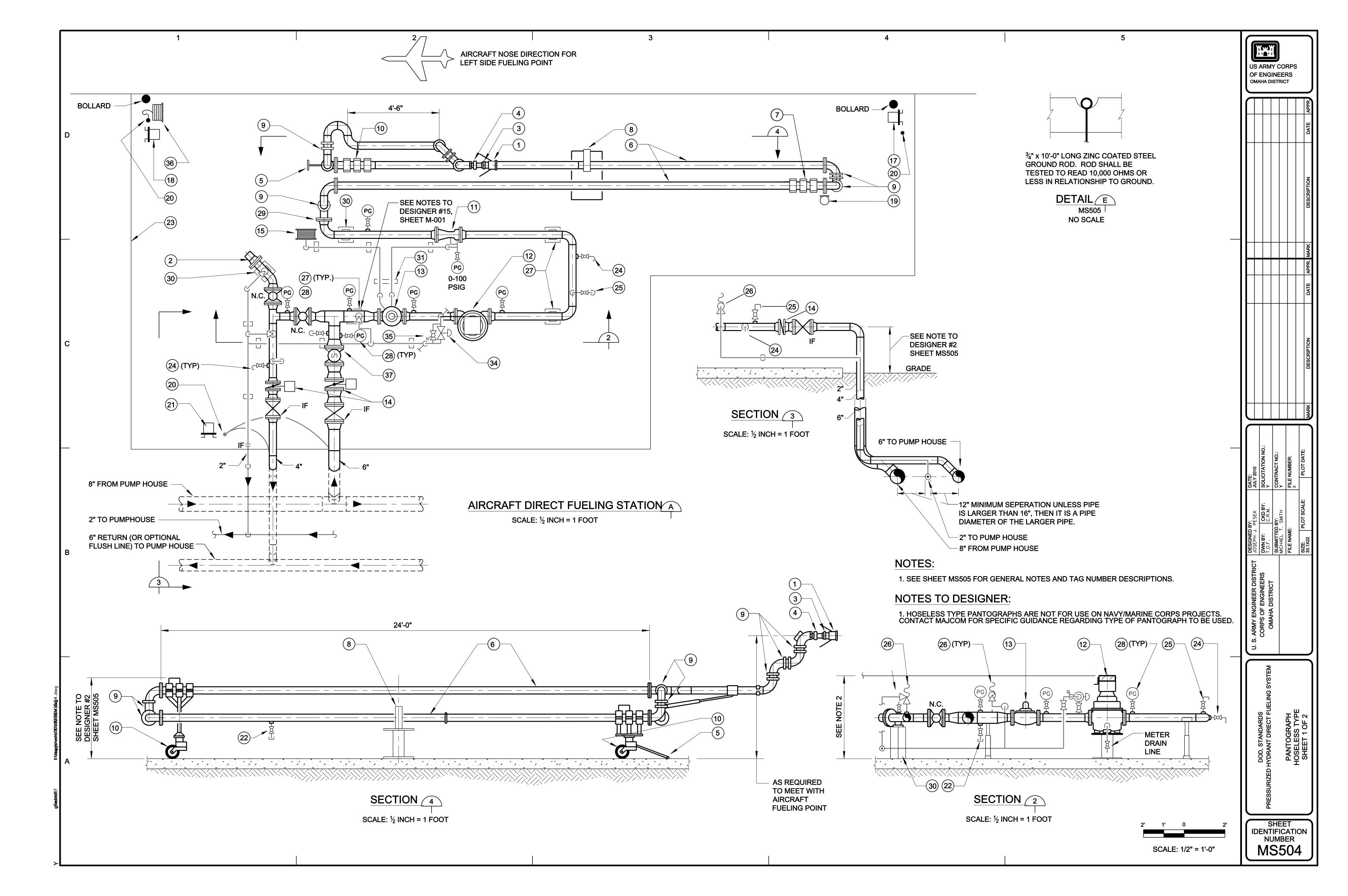


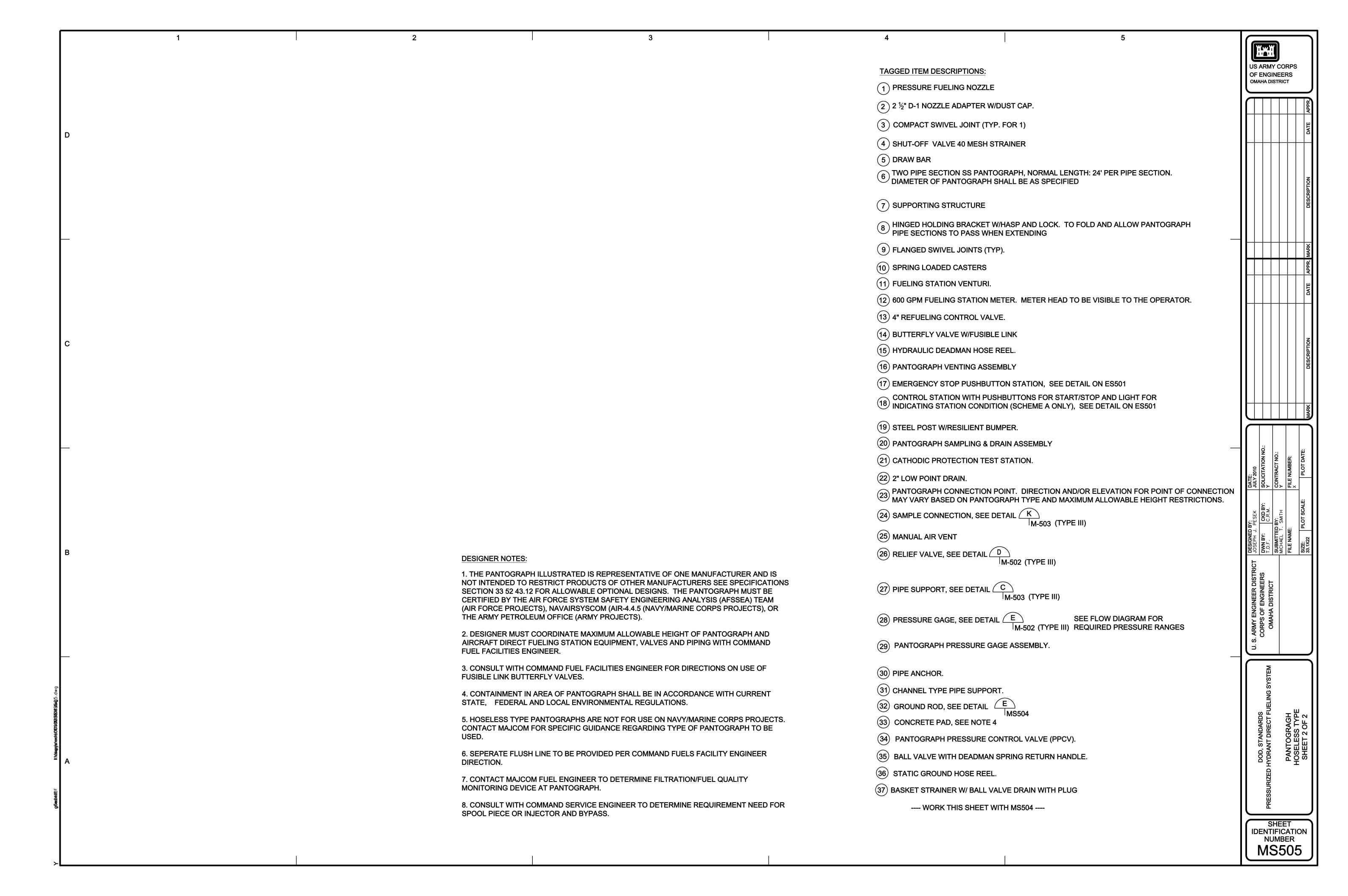
	TAGGED ITEM DESCRIPTIONS: (1) PRESSURE FUELING NOZZLE W/ 40 STRAINER AND DRY BREAK COUPLING (2) 2 ½" D-1 NOZZLE ADAPTER W/DUST CAP. (3) 3" DIAMETER API 1529 AIRCRAFT FUELING HOSE. NOMINAL 10' LENGTH. (4) SHUT-EMERGENCY BREAKAWAY COUPLING. (5) PULL HANDLE. (6) TWO PIPE SECTION, SS OR ALUMINUM PANTOGRAPH. NOMINAL LENGTH: 24' PER PIPE SECTION. DIAMETER OF PANTOGRAPH PIPING SHALL BE AS SPECIFIED. (7) HOSE TRAY, SEE DETAIL F IMS502 (8) HINGED HOLDING BRACKET W/HASP AND LOCK. TO FOLD AND ALLOW PANTOGRAPH PIPE SECTIONS TO PASS WHEN EXTENDING (9) SWIVEL JOINTS (TYP). (10) ALL TERRAIN WHEELS (TYP FOR 4). (11) FUELING STATION VENTURI.
	1 PRESSURE FUELING NOZZLE W/ 40 STRAINER AND DRY BREAK COUPLING 2 2 ½" D-1 NOZZLE ADAPTER W/DUST CAP. 3 3" DIAMETER API 1529 AIRCRAFT FUELING HOSE. NOMINAL 10' LENGTH. 4 SHUT-EMERGENCY BREAKAWAY COUPLING. 5 PULL HANDLE. 6 TWO PIPE SECTION, SS OR ALUMINUM PANTOGRAPH. NOMINAL LENGTH: 24' PER PIPE SECTION. DIAMETER OF PANTOGRAPH PIPING SHALL BE AS SPECIFIED. 7 HOSE TRAY, SEE DETAIL F MS502 8 HINGED HOLDING BRACKET W/HASP AND LOCK. TO FOLD AND ALLOW PANTOGRAPH PIPE SECTIONS TO PASS WHEN EXTENDING 9 SWIVEL JOINTS (TYP). 10 ALL TERRAIN WHEELS (TYP FOR 4).
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	10 ALL TERRAIN WHEELS (TYP FOR 4).
	(11) FLIELING STATION VENTURI
	TI I DELING CIATION VENTON.
	(12) 600 GPM FUELING STATION METER. METER HEAD TO BE VISIBLE TO THE OPERATOR.
	13) 4" REFUELING CONTROL VALVE. (PFV)
	14) BUTTERFLY VALVE W/FUSIBLE LINK. SEE NOTE 3
	(15) HYDRAULIC DEADMAN HOSE REEL.
	(16) STATIC GROUND HOSE REEL.
	EMERGENCY STOP PUSHBUTTON STATION, SEE DETAIL ON ES501 CONTROL STATION WITH PUSHBUTTONS FOR START/STOP AND LIGHT FOR INDICATING STATION CONDITION (SCHEME A ONLY), SEE DETAIL ON ES501
	(19) STEEL POST W/RESILIENT BUMPER. (20) GROUNDING ROD, SEE DETAIL. E MS502
	1MS502 (21) CATHODIC PROTECTION TEST STATION.
	(22) LOW POINT DRAIN.
	23) CONCRETE PAD, SEE NOTE 4
	24) SAMPLE CONNECTION, SEE DETAIL K M-503 (TYPE III)
	(25) MANUAL AIR VENT
	26) RELIEF VALVE, SEE DETAIL D
DESIGNER NOTES:	M-502 (TYPE III)
1. THE PANTOGRAPH ILLUSTRATED IS REPRESENTATIVE OF ONE MANUFACTURER AND IS NOT INTENDED TO RESTRICT PRODUCTS OF OTHER MANUFACTURERS SEE SPECIFICATIONS SECTION 33 52 43.12 FOR ALLOWABLE OPTIONAL DESIGNS. THE PANTOGRAPH MUST BE CERTIFIED BY THE AIR FORCE SYSTEM SAFETY ENGINEERING ANALYSIS (AFSSEA) TEAM	27) PIPE SUPPORT, SEE DETAIL C MS505 (TYPE III)
(AIR FORCE PROJECTS), NAVAIRSYSCOM (AIR-4.4.5 (NAVY/MARINE CORPS PROJECTS), OR THE ARMY PETROLEUM OFFICE (ARMY PROJECTS).	28) PRESSURE GAGE, SEE DETAIL E SEE FLOW DIAGRAM FOR REQUIRED PRESSURE RANGES
2. DESIGNER MUST COORDINATE MAXIMUM ALLOWABLE HEIGHT OF PANTOGRAPH AND AIRCRAFT DIRECT FUELING STATION EQUIPMENT, VALVES AND PIPING WITH COMMAND FUEL FACILITIES ENGINEER.	29 PANTOGRAPH CONNECTION POINT. DIRECTION AND/OR ELEVATION FOR POINT OF CONNECTION MAY VARY BASED ON PANTOGRAPH TYPE, AND MAXIMUM ALLOWABLE HIEGHT RESTRICTIONS.
3. CONSULT WITH COMMAND FUEL FACILITIES ENGINEER FOR DIRECTIONS ON USE OF FUSIBLE LINK BUTTERFLY VALVES.	30 PIPE ANCHOR.
4. CONTAINMENT IN AREA OF PANTOGRAPH SHALL BE IN ACCORDANCE WITH CURRENT STATE, FEDERAL AND LOCAL ENVIRONMENTAL REGULATIONS.	(31) CHANNEL TYPE PIPE SUPPORT.
5. HOSE TYPE PANTOGRAPHS ARE NOT FOR USE ON PACAF PROJECTS. CONTACT MAJCOM	(32) PANTOGRAPH PRESSURE CONTROL VALVE (PPCV).
FOR SPECIFIC GUIDANCE REGARDING TYPE OF PANTOGRAPH TO BE USED.	(33) BALL VALVE WITH DEADMAN SPRING RETURN HANDLE.
6. SEPERATE FLUSH LINE TO BE PROVIDED PER COMMAND FUELS FACILITY ENGINEER DIRECTION.	(34) BASKET STRAINER W/ BALL VALVE DRAIN WITH PLUG
7. CONTACT MAJCOM FUEL ENGINEER TO DETERMINE FILTRATION/FUEL QUALITY MONITORING DEVICE AT PANTOGRAPH.	WORK THIS SHEET WITH MS502
8. CONSULT WITH COMMAND SERVICE ENGINEER TO DETERMINE REQUIREMENT NEED FOR SPOOL PIECE OR INJECTOR AND BYPASS.	

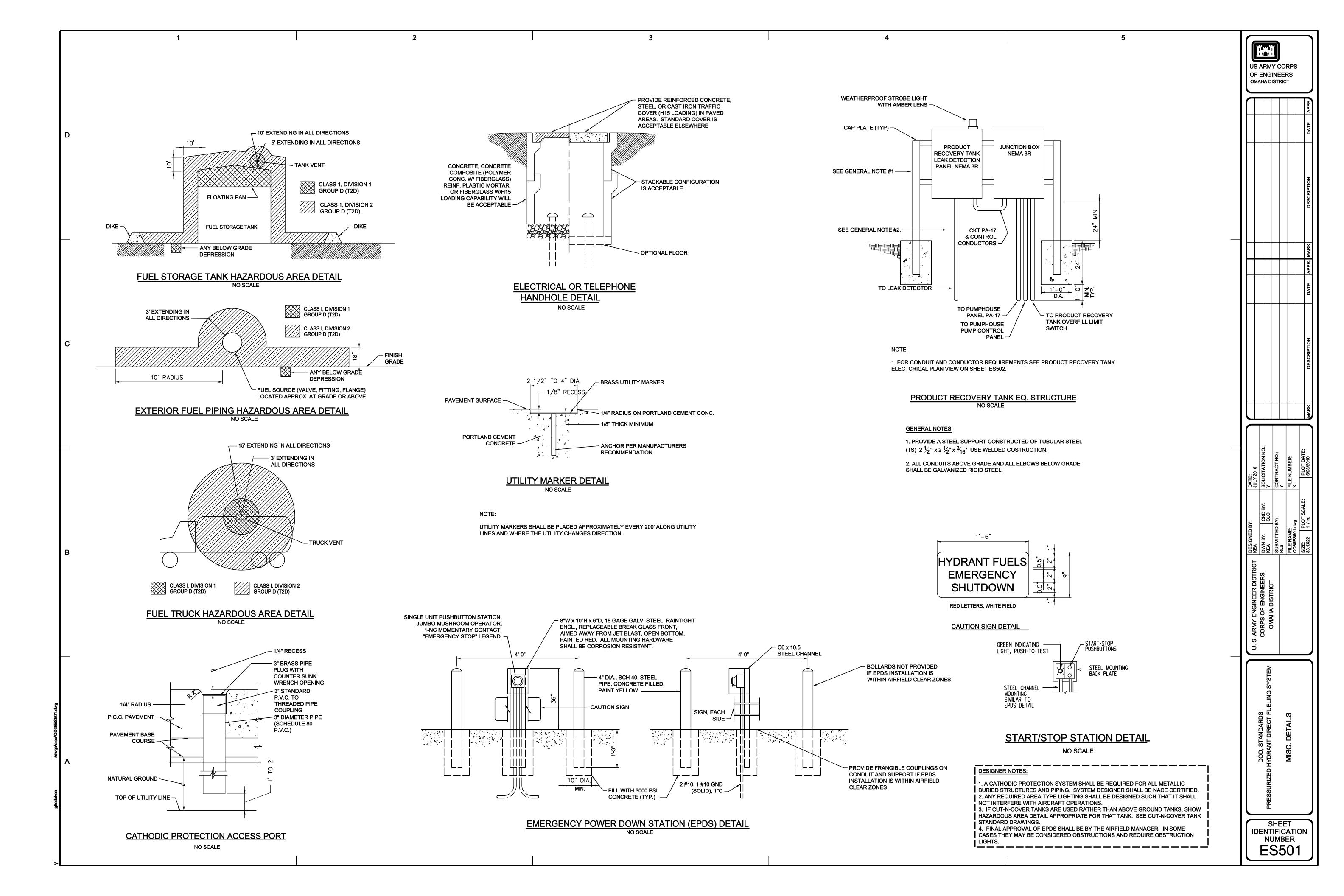
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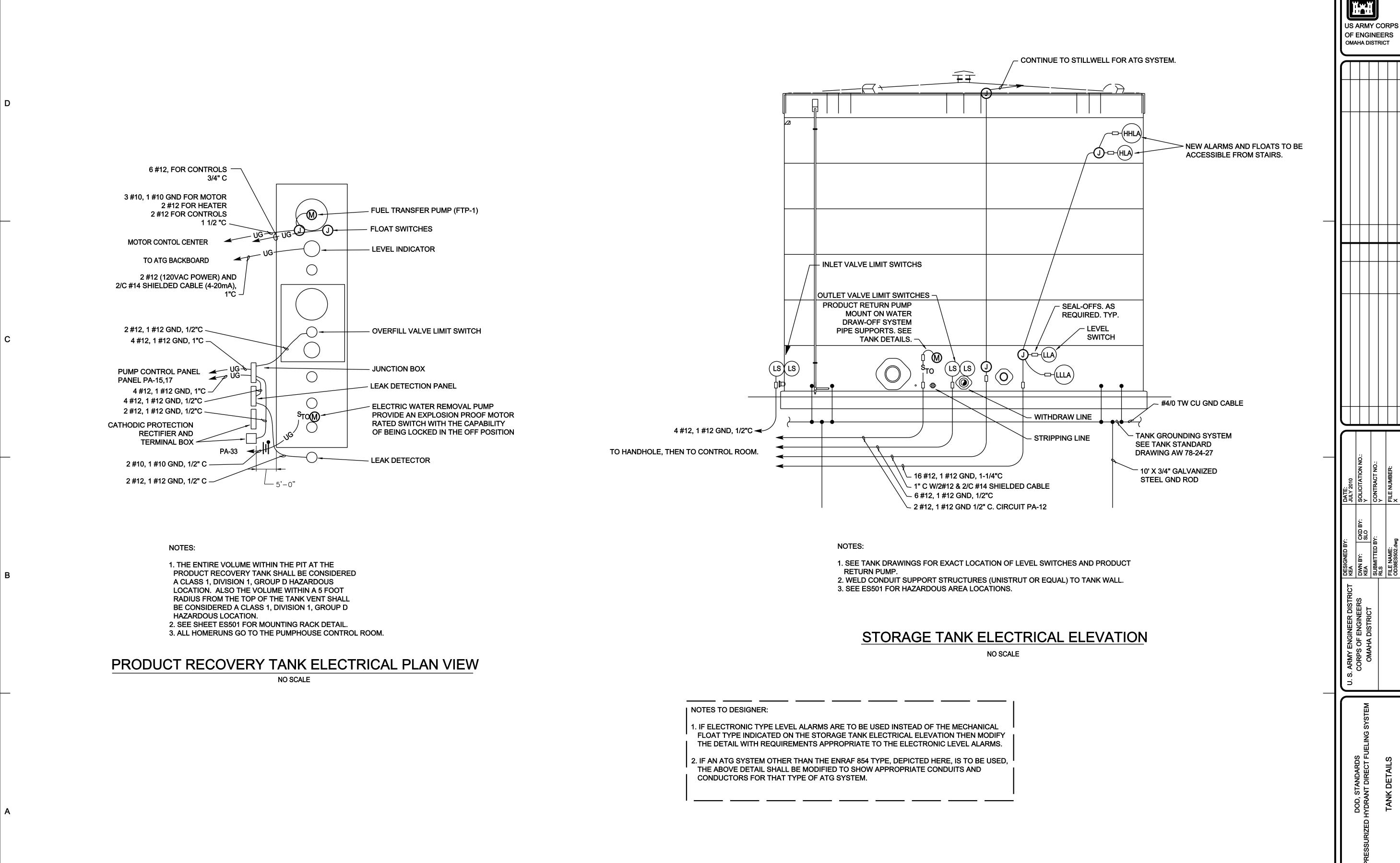
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DESIGNED BY: JOSEPH J. PESEK	DWN BY: CKD BY: T.D.F. C.R.M.	SUBMITTED BY:	FILE NAME:	SIZE: PLOT SCALE:
3. ARMY ENGINEER DISTRICT	CORPS OF ENGINEERS OMAHA DISTRICT			

BOD, STANDARDS
SSURIZED HYDRANT DIRECT FUELING SY:
PANTOGRAPH
HOSE END TYPE

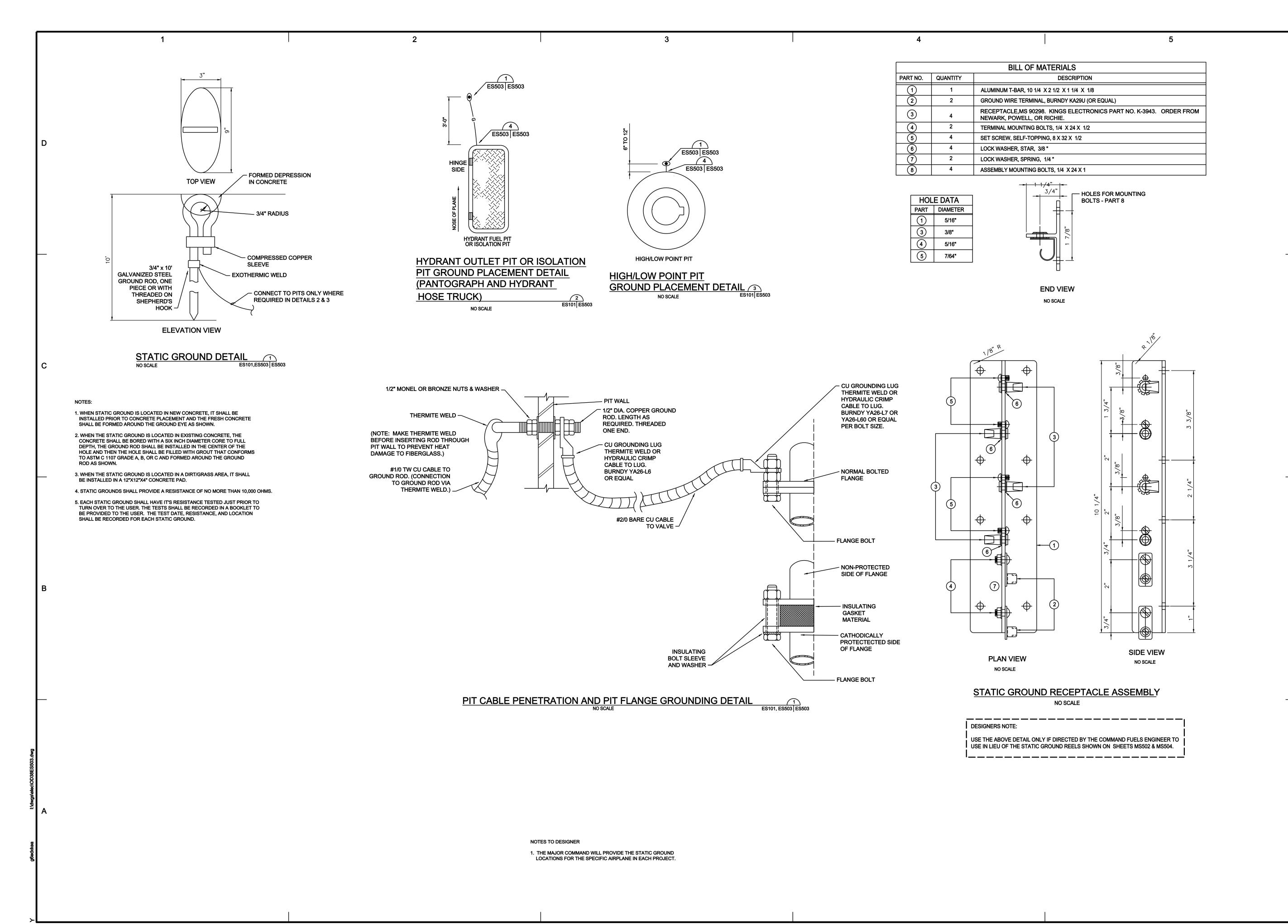








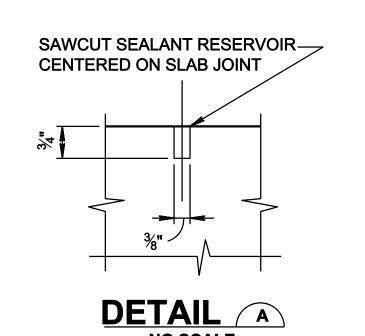
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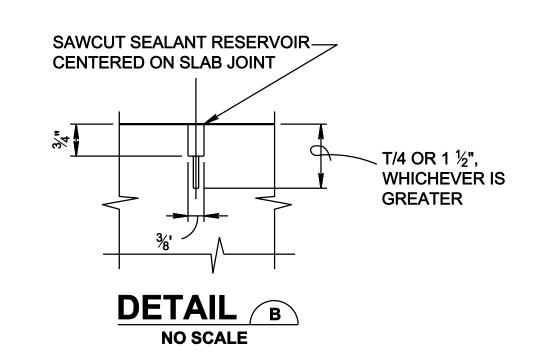


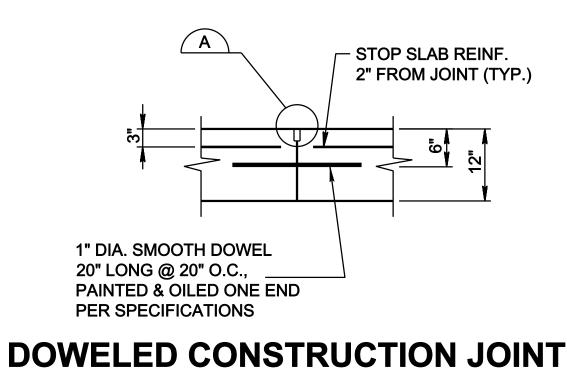
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| Contract No.: | Contract No.

DOD, STANDARDS
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GROUNDING DETAILS

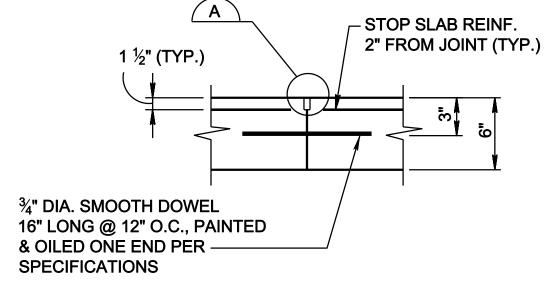






12" SLAB

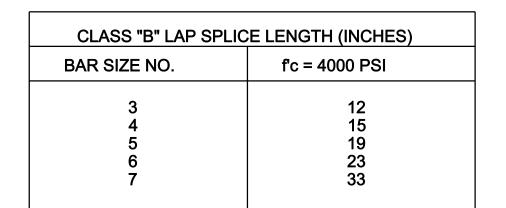
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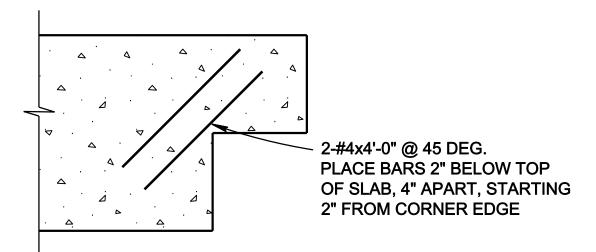
DOWELED CONSTRUCTION JOINT

6" SLAB

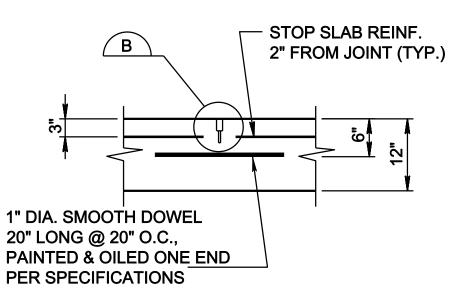
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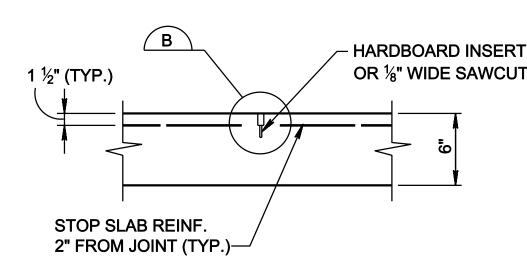
LAP SPLICE LENGTH FOR REINFORCED CONCRETE NOT ALL BAR SIZES LISTED MAY BE REQUIRED



TYPICAL SLAB REINFORCING AT RE-ENTRANT CORNER **NO SCALE**



CONTRACTION JOINT 12" SLAB NO SCALE



CONTRACTION JOINT 6" SLAB **NO SCALE**

GENERAL NOTES:

- 1. REFERENCE ELEVATION 100'-0" EQUALS ##.#' MEAN SEA LEVEL ELEVATION.
- 2. SLAB-ON-GRADE CONTRACTION JOINTS ARE DENOTED "CJ" IN PLAN. AT CONTRACTOR'S OPTION, CONSTRUCTION JOINTS MAY BE SUBSTITUTED FOR CONTRACTION JOINTS. SEE THIS SHEET FOR SLAB-ON-GRADE AND JOINT DETAILS.
- 3. ALL FLOOR SLABS SHALL BE TREATED WITH A SEALER/HARDENER. **SEE SPECIFICATION 03 31 00.00 10.**
- 4. SUBGRADE PREPARATION FOR SLABS SHALL BE PER THE FOUNDATION REPORT.
- 5. EXPANSION JOINTS ARE DENOTED "EJ" ON THE PLAN.
- 6. ALL FLOOR JOINTS IN THE PUMP ROOM AREA SHALL BE SEALED WITH JET FUEL RESISTANT SEALANT.
- 7. SLAB-ON-GRADE THICKNESS SHALL BE 12" UNLESS OTHERWISE NOTED. REINFORCE WITH #4 BARS @ 12" ON CENTER EACH WAY. SEE PIPE SUPPORT
- SCHEDULE FOR ADDITIONAL REINFORCEMENT BENEATH PIPE SUPPORTS. 8. SLAB-ON-GRADE THICKNESS IN THE CONTROL ROOM SHALL BE 6".
- REINFORCE WITH #3 BARS AT 18" ON CENTER EACH WAY. 9. MOTOR CONTROL CENTER TRENCH, APPROXIMATELY 12'-0" LONG. MAIN DISTRIBUTION SWITCHGEARA ND POWER CONTROL PANEL TRENCH APPROXIMATELY 5'-6" LONG. COORDINATE WITH EQUIPMENT MANUFACTURER FOR EXACT LENGTH OF TRENCH.
- 10. PUMP ROOM FLOOR SLAB SHALL BE SLOPED TO DRAINS AT $\frac{1}{8}$ " / FT. SEE PLAN.

MATERIAL NOTES:

- 1. REINFORCED CONCRETE:
- A. CONCRETE: SPECIFIED COMPRESSIVE STRENGTH fc =4000 PSI
- B. REINFORCING BARS: SPECIFIED YIELD STRENGTH Fy = 60 KSI (GRADE 60) 2. STRUCTURAL STEEL
- A. ROLLED SHAPES AND PLATES: SPECIFIED YIELD STRENGTH Fy = 36 KSI (ASTM A36)
- B. STRUCTURAL TUBING: SHALL CONFORM TO ASTM A500, GRADE B.
- 3. WELDING ELECTRODES: ALL WELDING SHALL BE PERFORMED WITH E70 ELECTRODES.
- 4. ANCHOR BOLTS: SHALL CONFORM TO ASTM A307.
- 5. BOLTED CONNECTIONS: SHALL CONFORM TO ASTM A307 UNLESS NOTED OTHERWISE.
- 6. HEADED ANCHOR STUDS: SHALL CONFORM TO ASTM A108.
- 7. SEE MASONRY NOTES ON S-802.

PRE-ENGINEERED METAL BUILDING NOTES:

- 1. PRE-ENGINEERED METAL BUILDING SHALL BE DESIGNED ACCORDING TO THE METAL BUILDING MANUFACTURERS' ASSOCIATION (MBMA), METAL BUILDING SYSTEMS MANUAL, 2006 EDITION STANDARDS USING THE FOLLOWING **CRITERIA:**
- A. BUILDING USE CATEGORY IV.
- B. MINIMUM DESIGN ROOF LIVE LOAD: (CONSTRUCTION AND MAINTENANCE) =
- 20 PSF (AREA REDUCTION ALLOWED).
- C. SNOW LOADS (UFC 3-310-01 AND ASCE 7-05) 1. GROUND SNOW LOAD Pf= ## psf
- 2. EXPOSURE FACTOR Ce= 1.0
- 3. THERMAL FACTOR Ct= 1.1
- 4. IMPORTANCE FACTOR l= 1.2
- D. WIND LOADS:
- (1) BASIC WIND SPEED: V = ## MPH (3-SECOND GUST).
- E. SEISMIC LOADS: (1) SEISMIC USE GROUP III
- (2) Ss = #.##
- (3) S1 = #.##
- (4) IMPORTANCE FACTOR: 1 = 1.50.
- (5) SITE CLASSIFICATION "#"
- (6) SEISMIC DESIGN CATEGORY "#"
- F. COLLATERAL ROOF DEAD LOADS FOR MISCELLANEOUS SUSPENDED MECHANICAL AND ELECTRICAL EQUIPMENT = 4 PSF UNIFORM LOAD.
- G. CRANE LOADS: THE RIGID FRAMES SHALL BE DESIGNED FOR A 1 TON
- CAPACITY BRIDGE CRANE. SEE SHEET S-302 FOR LOCATION AND

SHALL SUBMIT FOUNDATION LOADS FOR REVIEW AND APPROVAL.

- DETAILS. OBTAIN FINAL CRANE LOADS FROM CRANE MFR.
- 2. MINOR VARIATIONS IN THE BUILDING'S DIMENSIONS (DENOTED BY AN ASTERISK, *) MAY BE SUBMITTED FOR REVIEW AND POSSIBLE APPROVAL
- IF REQUIRED TO CONFORM TO AN INDIVIDUAL BUILDING SUPPLIER'S STANDARDS.
- 3. FOR ALLOWABLE FOUNDATION LOADS AT COLUMN LOCATIONS, REFER TO FRAME REACTION TABLE ON SHEET S-502. IF ACTUAL BUILDING LOADS EXCEED THOSE LISTED, PRE-ENGINEERED BUILDING SUPPLIER SHALL BE RESPONSIBLE FOR REQUIRED FOUNDATION RE-DESIGN AND MODIFICATION. BUILDING SUPPLIER
- 4. ANCHOR BOLT DESIGN AND REQUIREMENTS SHALL BE COORDINATED BETWEEN THE PRE-ENGINEERED METAL BUILDING SUPPLIER AND THE PRIMARY CONTRACTOR. CONTRACTOR SHALL SUBMIT DESIGNS FOR REVIEW AND APPROVAL.

- 5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SIZING AND PLACING BUILDING X-BRACING AND OTHER STRUCTURAL MEMBERS SUCH THAT THEY DO NOT INTERFERE WITH DOORS, LOUVERS, FANS, HOODS, AND OTHER MECHANICAL AND ELECTRICAL ITEMS LOCATED ALONG THE BUILDING'S WALLS AND ROOF.
- 6. BUILDING OVERVIEW: THE BUILDING FOUNDATION WAS DESIGNED BASED UPON THE FOLLOWING CRITERIA CONCERNING THE PRE-ENGINEERED METAL **BUILDING SUPERSTRUCTURE:**
- A. FUTURE EXPANSIONS OR ADDITIONS TO THIS BUILDING ARE NOT CONSIDERATIONS.
- B. FRAMING AT LINES 1 THRU 4 CONSIST OF CLEAR-SPAN RIGID FRAMES.
- C. CROSS BRACING SHALL BE PROVIDED IN COLUMN LINES A & D.
- D. DOWNWARD AND UPLIFT REACTIONS, AS WELL AS LATERAL LOADS PER-PENDICULAR TO THE FOUNDATION WALLS ARE CARRIED BY SPREAD FOOTINGS.
- E. LATERAL LOADS PARALLEL TO THE FOUNDATION WALLS ARE CARRIED BY THE FOUNDATION SYSTEM.
- F. ROOF WILL BE X-BRACED AS REQUIRED FOR LATERAL STABILITY.

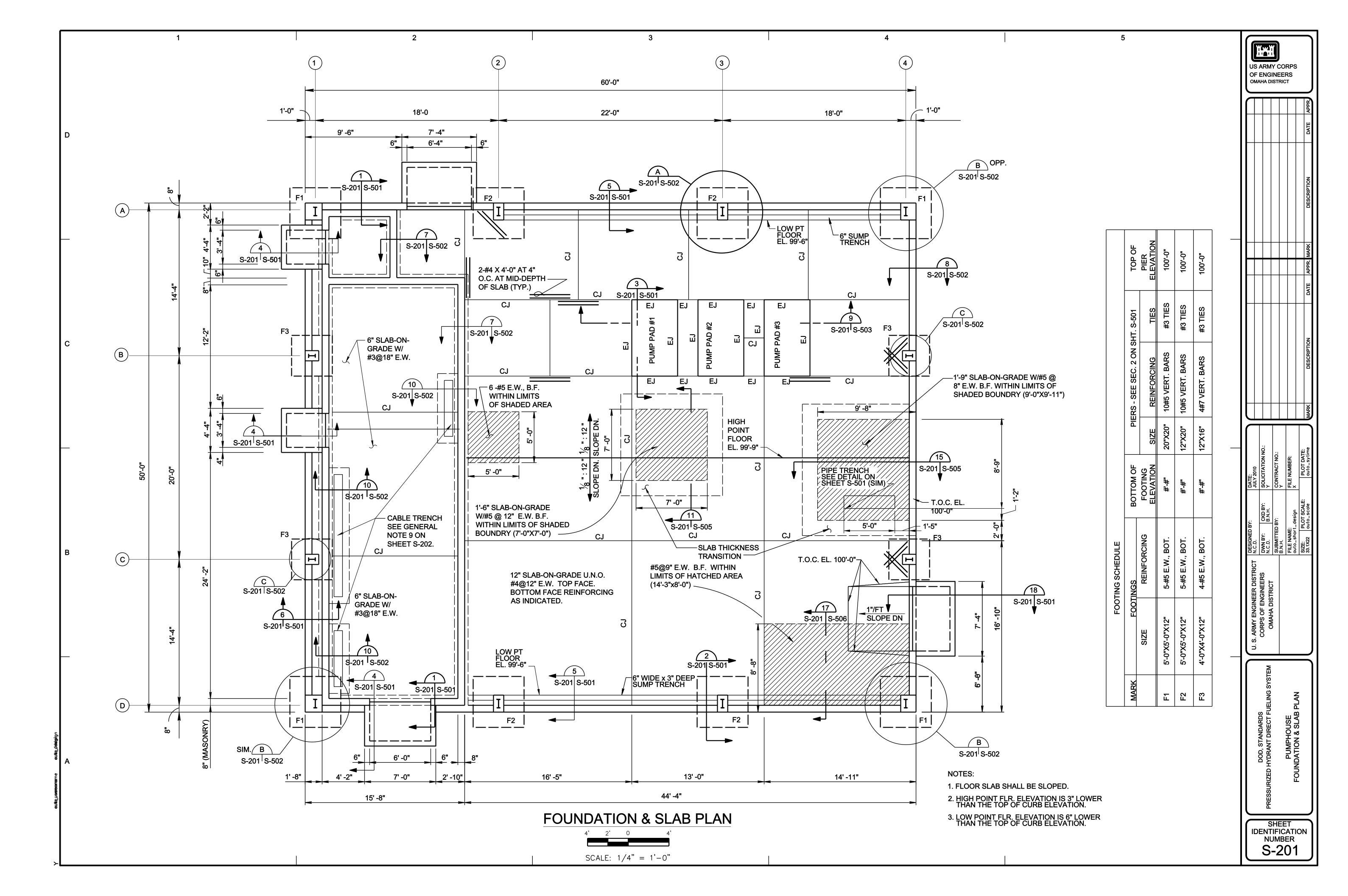
NOTES TO THE DESIGNER:

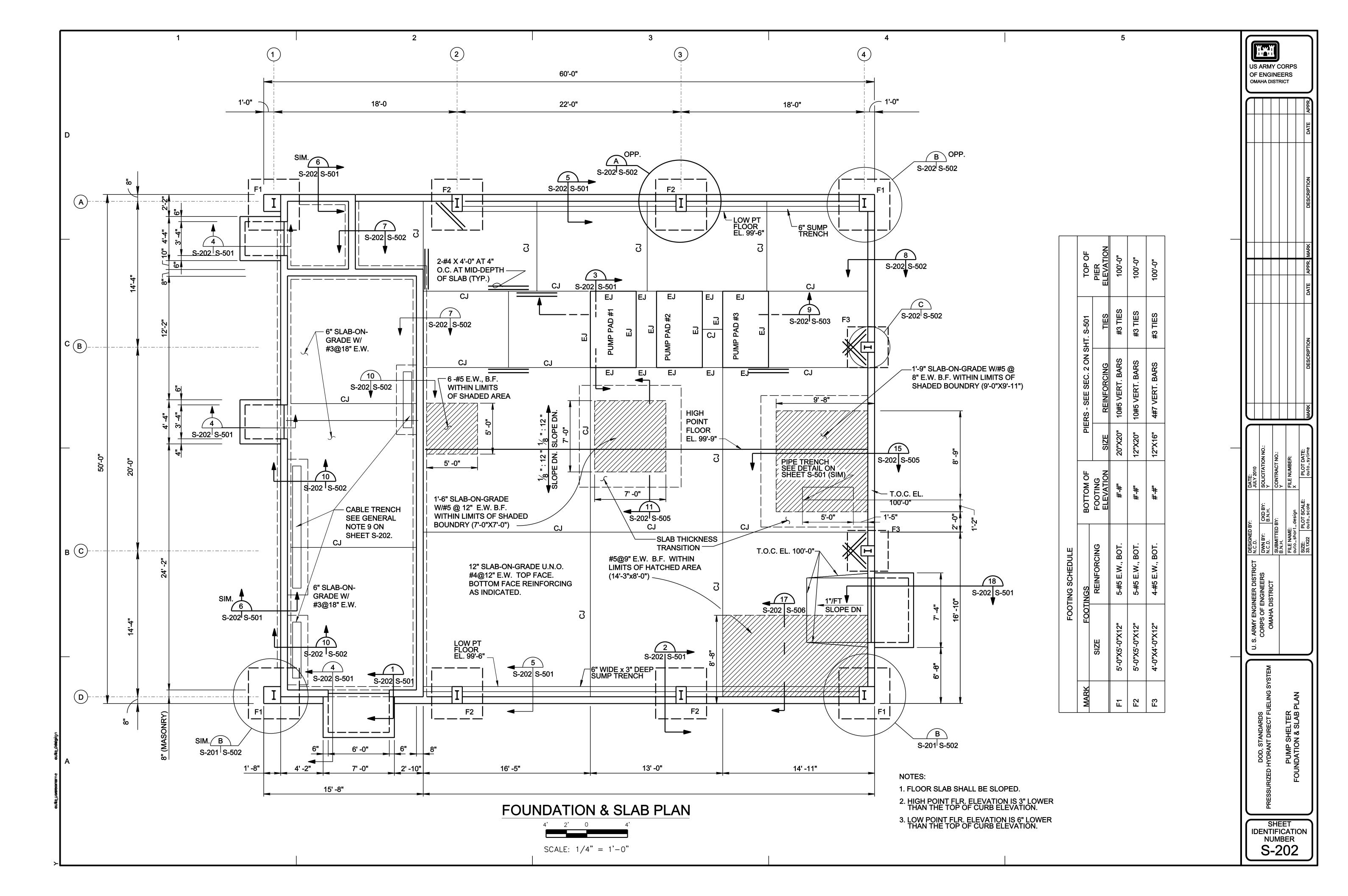
- 1. FOUNDATION DETAILS SHOWN ARE TYPICAL FOR AN ENCLOSED PUMP HOUSE WHERE DESIGN FOR FROST IS A CONSIDERATION. ALTERNATE FOIUNDATION DETAILS MAY BE PREFERRED FOR OPEN PUMP SHELTERS OR IN LOCATIONS WHERE A SLAB WITH A THICKENED EDGE MAY BE SUITABLE.
- 2. A SUBSURFACE INVESTIGATION WILL BE PERFORMED AND A FOUNDATION ANALYSIS WILL BE PREPARED. FOUNDATION DESIGN AND SUBGRADE PREPARATION WILL BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE FOUNDATION ANALYSIS.
- 3. THE FOUNDATION MUST BE DESIGNED FOR THE LOADS IMPOSED BY THE METAL BUILDING. FOUNDATION DESIGN LOADS MUST BE SHOWN ON THE DRAWINGS FOR VERIFICATION AND COORDINATION.
- 4. SITE SPECIFIC DESIGN CRITERIA INCLUDING DESIGN LOADS (DEAD, LIVE, COLLATERAL, WIND, SNOW, CRANE AND SEISMIC) AND THE RECOMMENDATIONS OF THE FOUNDATION REPORT (ALLOWABLE BEARING PRESSURES, TYPE OF FOUNDATION, SOIL DENSITY, AND LATERAL EARTH PRESSURE COEFFICIENTS). SHALL BE SHOWN ON THE CONTRACT DRAWINGS.
- 5. THE STRUCTURE IS CLASSIFIED AS ESSENTIAL PER AFM 88-3, CHAPTER 1.
- 6. SEE TYPE III STANDARD FOR DETAILS.
- 7. ITEMS INDICATED BY A "#" ARE TO BE DETERMINED BY THE DESIGNER.

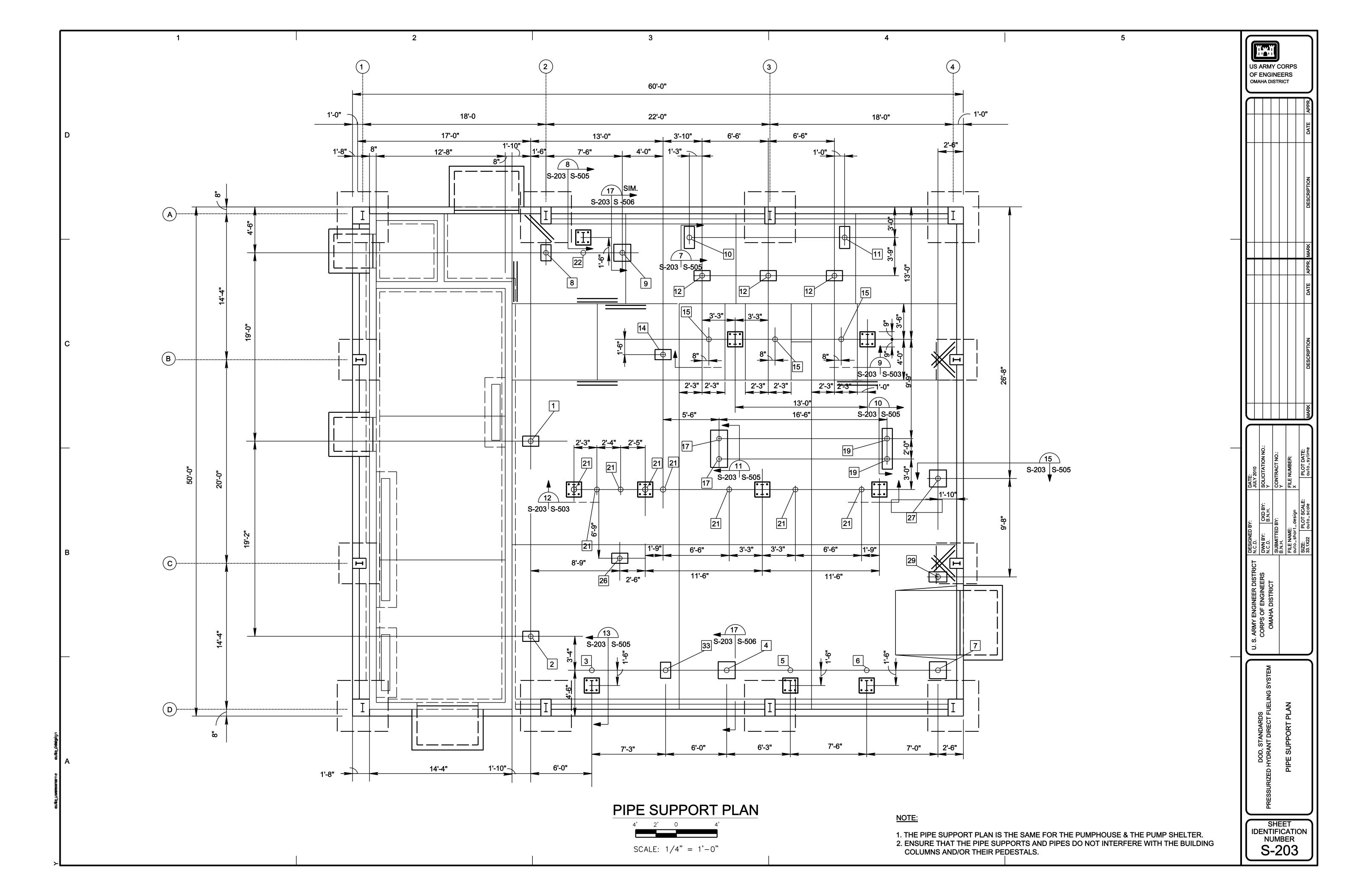
US ARMY CORPS

OF ENGINEERS

OMAHA DISTRICT







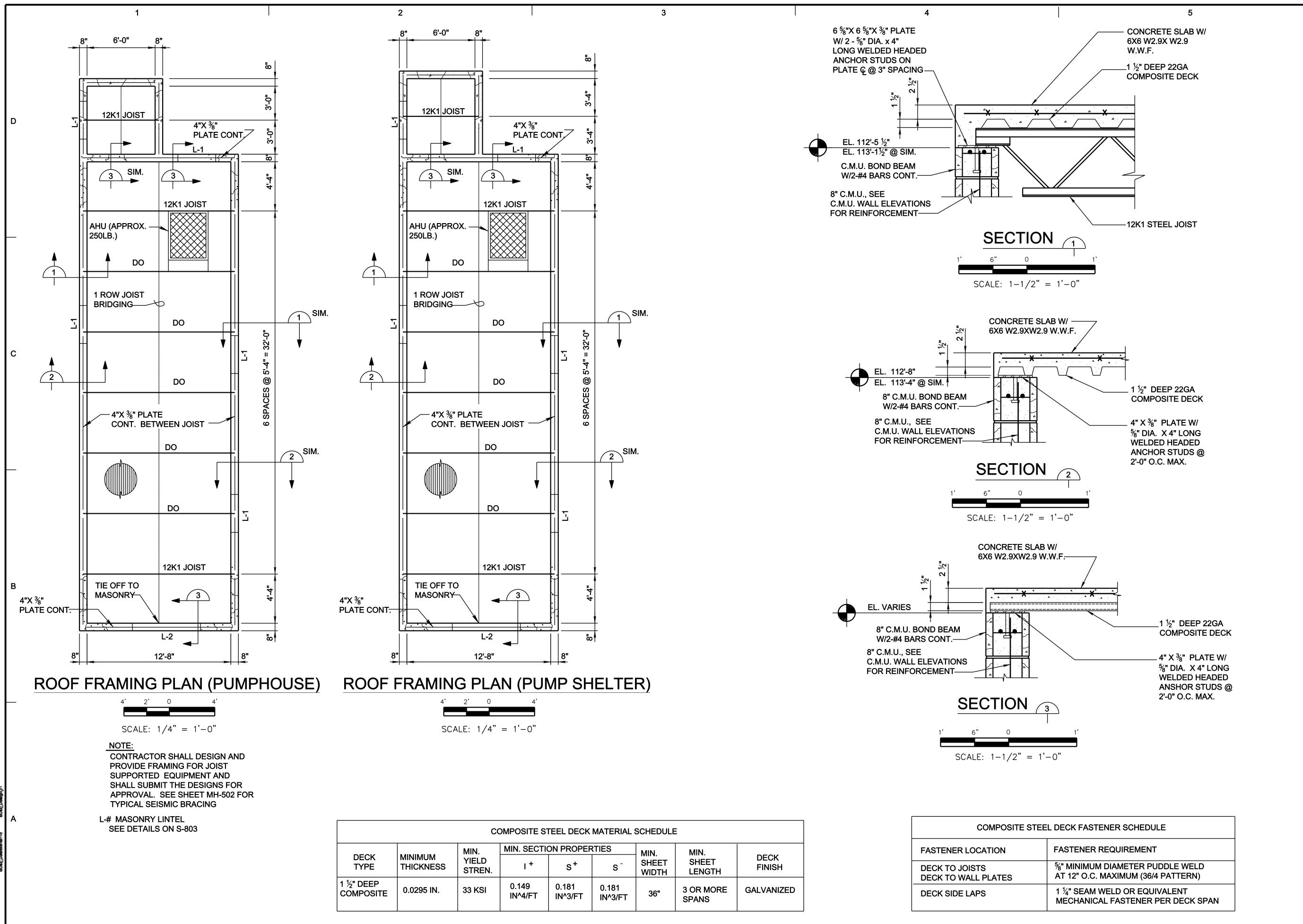
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PIPE	PIPE	ှင့် PIPE		PIERS	SUPPORTS	BOTTTOM FAI BENEATH PIE	CE REINFORCING R @ 12" O.C. (U.N.O)	PIPE SUPPORT TYPE	
SUPPORT *	DIAMETER	ELEVATION	SIZE	VERTICAL REINF.	TIES	LENGTH	REINFORCING	(SEE DETAILS ON SHT S-506)	REMARKS
1	8"	110'-0"	19"x12"	6-#7	#3 @ 12"	5'-0" E.W. SEE PLAN	6-#5 E.W.	Α	SEE SECTION 7 ON SHT. S-505
2	8"	110'-0"	19"x12"	6-#7	#3 @ 12"	5'-0" E.W. SEE PLAN	6-#5 E.W.	A	SEE SECTION 7 ON SHT. S-505
3	8"	110'-0" 102'-6"	18"x18"		1-#3	4'-0" E.W.	4-#5 E.W.	В	SEE SECTION 8 ON SHT. S-505
4	8"	102'-6"	20"x20"	12-#7	#3 @ 12"	4'-0" E.W.	4-#5 E.W.	С	SEE SECTION 17 ON SHT. S-506
5	4"	102'-6"	18"x18"		1-#3	SEE PLAN	#5 @ 9"E.W.	В	SEE SECTION 13 ON SHT. S-505
	2"	104'-0"							
6	6" 2"	102'-6" 104'-0"	18"x18"		1-#3	4'-0" E.W.	4-#5 E.W.	В	SEE SECTION 13 ON SHT. S-505
7	8"	102'-6"	20"x20"	12-#7	#3 @ 12"	SEE PLAN	#5 @ 9" E.W.	С	SEE SECTION 17 ON SHT. S-506
8	8"	101'-6"	19"x12"	6-#7	#3 @ 12"	4'-0" E.W.	4-#5 E.W.	Α	SEE SECTION 7 ON SHT. S-505
9	8"	101'-6"	20"x20"	12-#7	#3 @ 12"	4'-0" E.W.	4-#5 E.W.	С	SEE SECTION 17 ON SHT. S-506 (SIM.)
10	12"	SEE NOTE 1	26"x12"	6-#7	#3 @ 12"	4'-0" E.W.	4-#5 E.W.	Α	SEE SECTION 7 ON SHT. S-505
11	12"	SEE NOTE 1	26"x12"	6-#7	#3 @ 12"	4'-0" E.W.	4-#5 E.W.	Α	SEE SECTION 7 ON SHT. S-505
12	8"	SEE NOTE 1	19"x12"	6-#7	#3 @ 12"	4'-0" E.W.	4-#5 E.W.	Α	SEE SECTION 7 ON SHT. S-505
14	8"	108'-0"	19"x12"	6-#7	#3 @ 12"	4'-0" E.W.	4-#5 E.W.	Α	SEE SECTION 7 ON SHT. S-505
15	6"	108'-0"	18"x18"		1-#3		#5 @ 8" O.C.	A (SIM.)	SEE SECTION 9 ON SHT. S-503
17	8"	108'-0"	44"x20"	24-#7	#3@14"	7'-0" E.W. SEE PLAN	8-#5 E.W.	С	SEE SECTION 11 ON SHT. S-505
19	8"	108'-0"	48"x12"	12-#7	#3 @ 12"	5'-0"X4'0" SEE PLAN	#5 @ 12" O.C.	Α	SEE SECTION 10 ON SHT. S-505
04	6" & 8"	108'-0"						D	CEE CECTION 42 ON CUT. C 502
21	6"	SEE NOTE 2	18"x18"		1-#3	4'-0" E.W.	4-#5 E.W.	В	SEE SECTION 12 ON SHT. S-503
22	8"	101'-6"	- 18"x18"		1-#3	4'-0" E.W.	4-#5 E.W.	В	SEE SECTION 8 ON SHT S-505
22	8"	103'-6"			""	1 0 2.77.		J	OLE GEOTION G ON ON GETT G-300
26	8"	108'-0"	19"x12"	6-#7	#3 @ 12"	4'-0" E.W.	4-#5 E.W.	Α	SEE SECTION 7 ON SHT. S-505
27	6"	108'-1"	20"x20"	12-#7	#3 @ 14"	SEE PLAN	15-#5 E.W.	С	SEE SECTION 15 ON SHT. S-505
29	6"	108'-1"	19"x12"	6-#7	#3 @ 12"	4'-0" E.W.	4-#5 E.W.	Α	SEE SECTION 7 ON SHT. S-505
33	8"	102'-6"	19"x12"	6-#7	#3 @ 12"	4'-0" E.W.	4-#5 E.W.	Α	SEE SECTION 7 ON SHT. S-505

- PIPE SUPPORT NOTES:
 1. CENTERLINE ELEVATION SET BY PUMP, APPROX. 101'-6". NOT TO EXCEED 102'-0".
- COORDINATE WITH PUMP MANUFACTURER.
- 2. CENTERLINE ELEVATION SET BY FILTER/SEPARATOR. COORDINATE WITH
- FILTER/SEPARATOR MANUFACTURER.
- 3. ENSURE THAT THE PIPE SUPPORTS AND PIPES DO NOT INTERFERE WITH THE BUILDING

COLUMNS AND/OR THEIR PEDESTALS.

US ARMY CORPS
OF ENGINEERS
OMAHA DISTRICT

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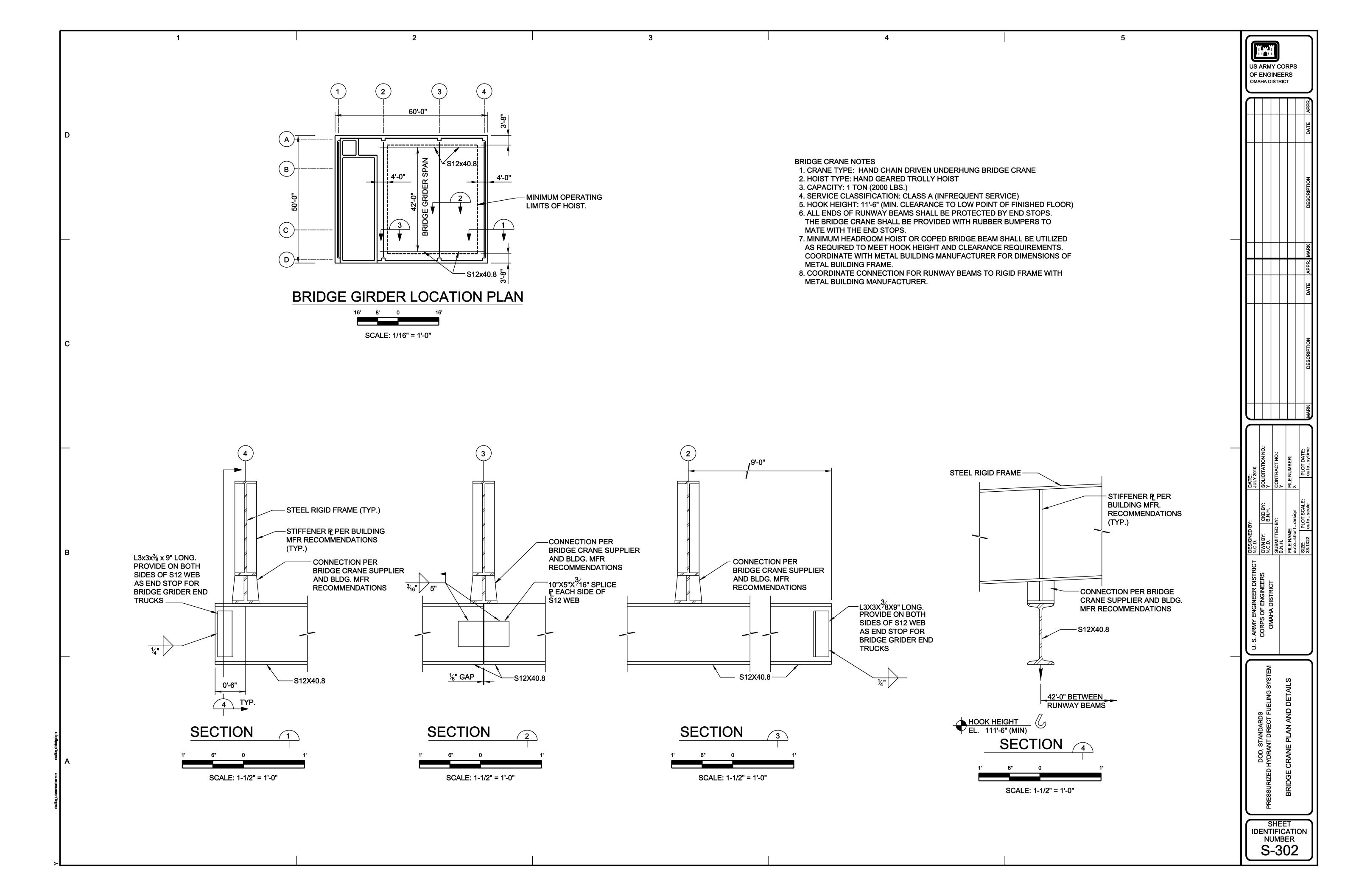


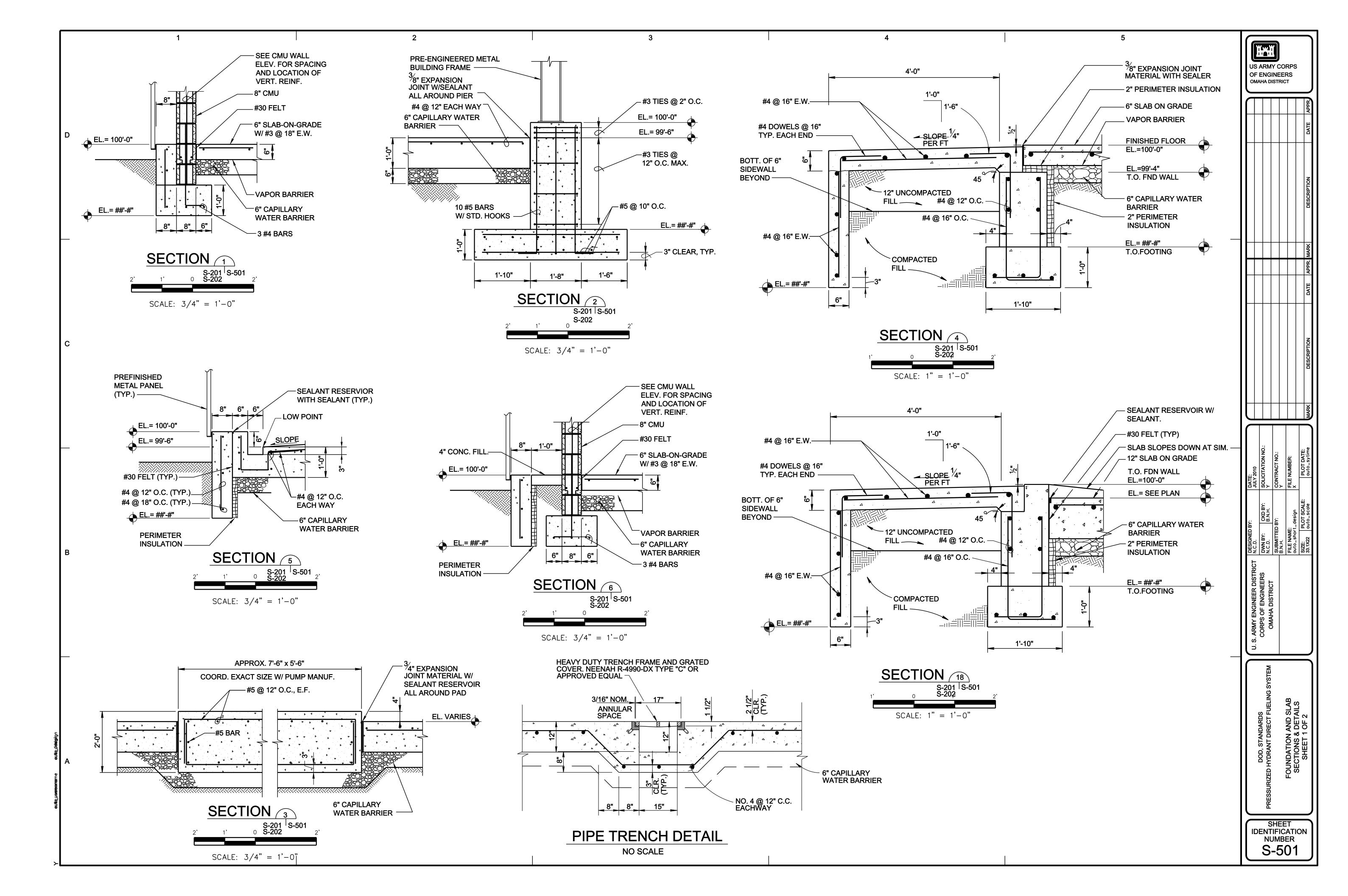
US ARMY CORPS OF ENGINEERS OMAHA DISTRICT

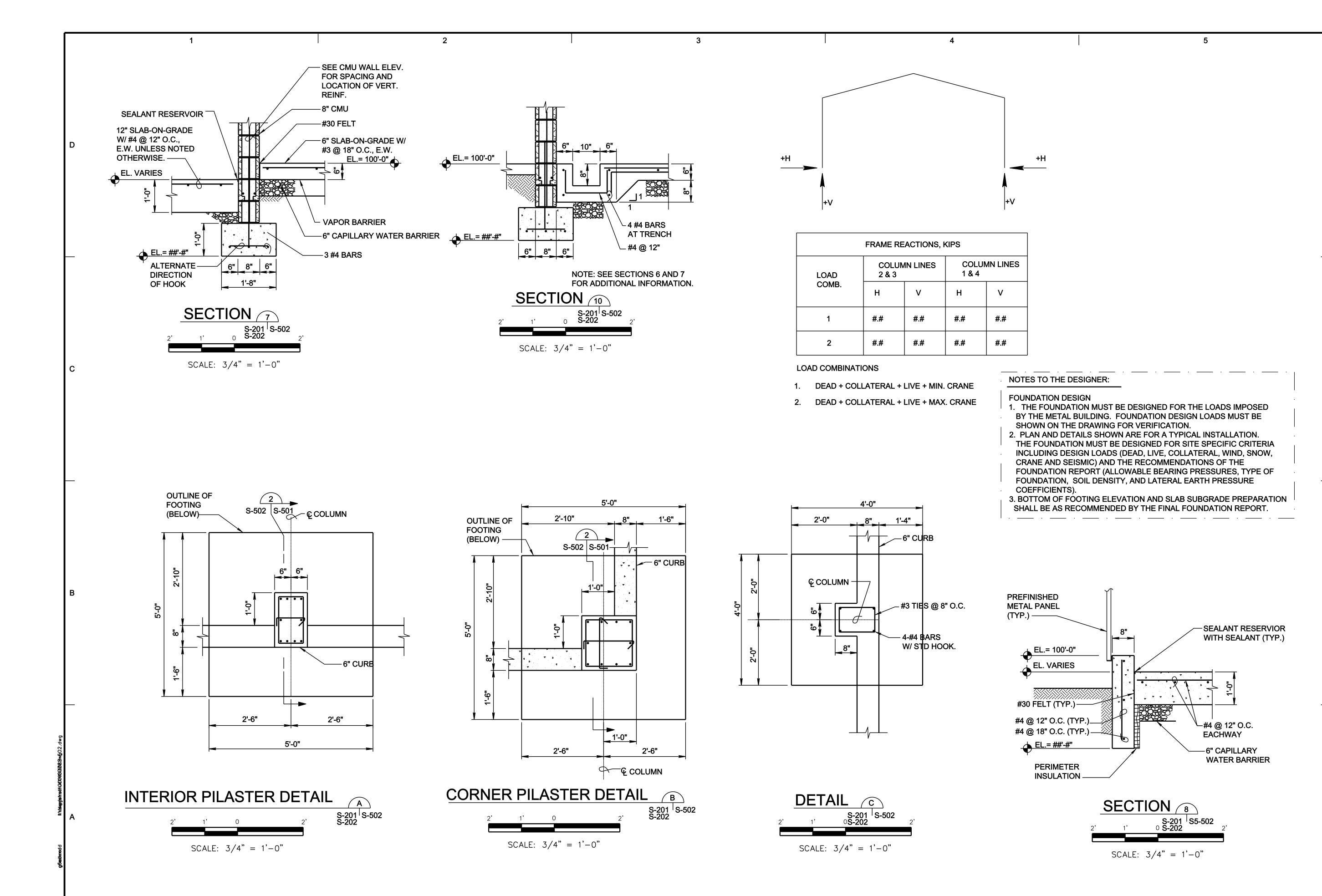
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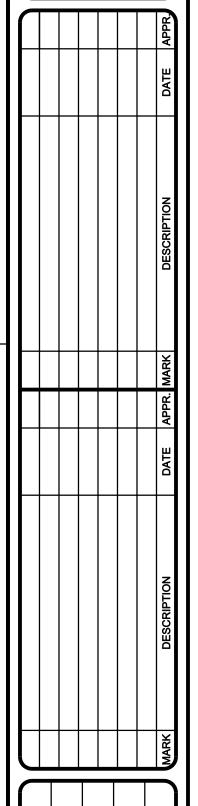
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		CKD BY:	В.И.Н.		<u>}</u>		t_design x	PLOT SCALE:	auto_scale	
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DOD, STANDARDS
PRESSURIZED HYDRANT DIRECT FUELING SY
CONTROL ROOM ROOF
PLANS, SECTIONS, AND DETAILS



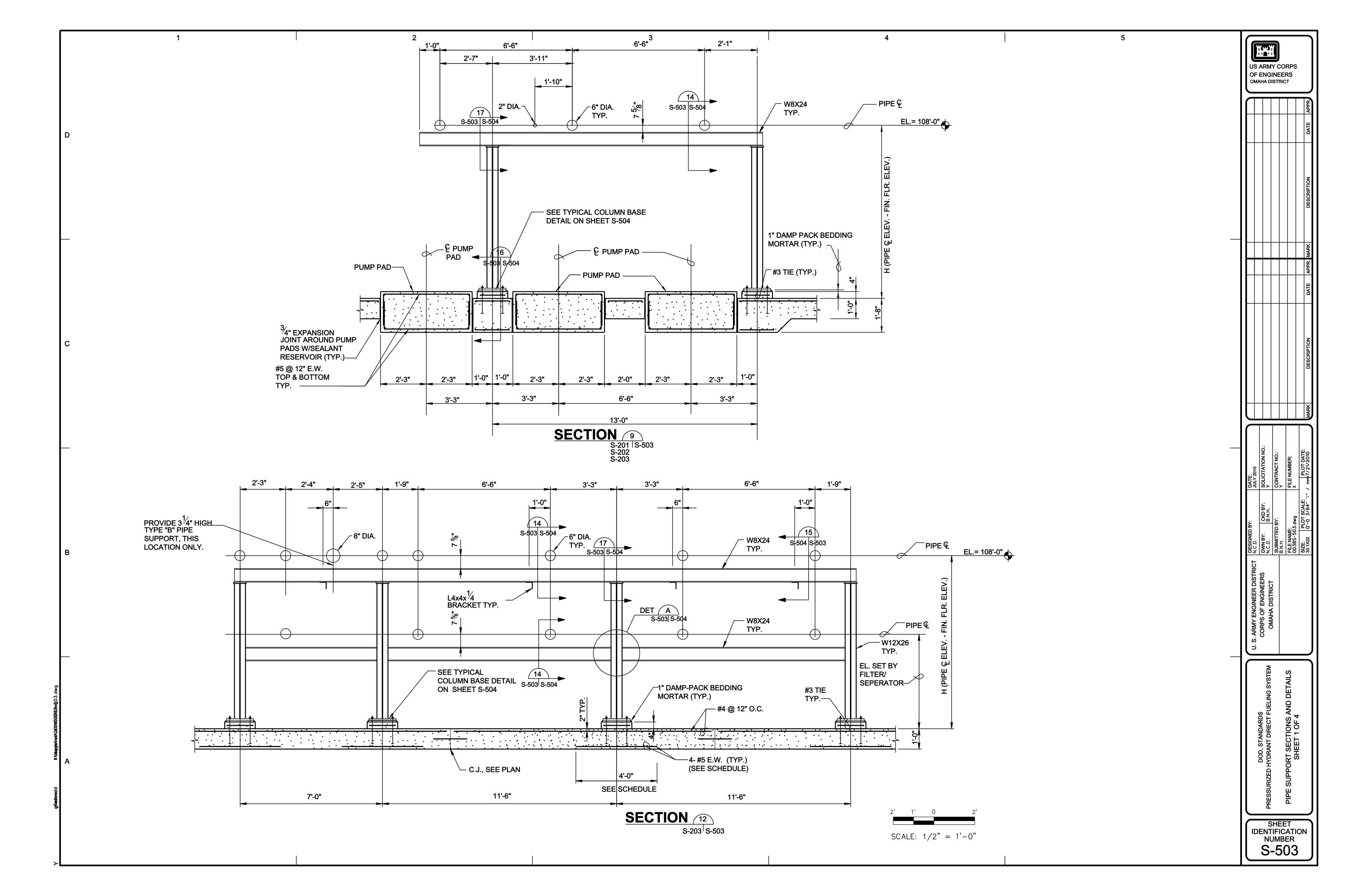


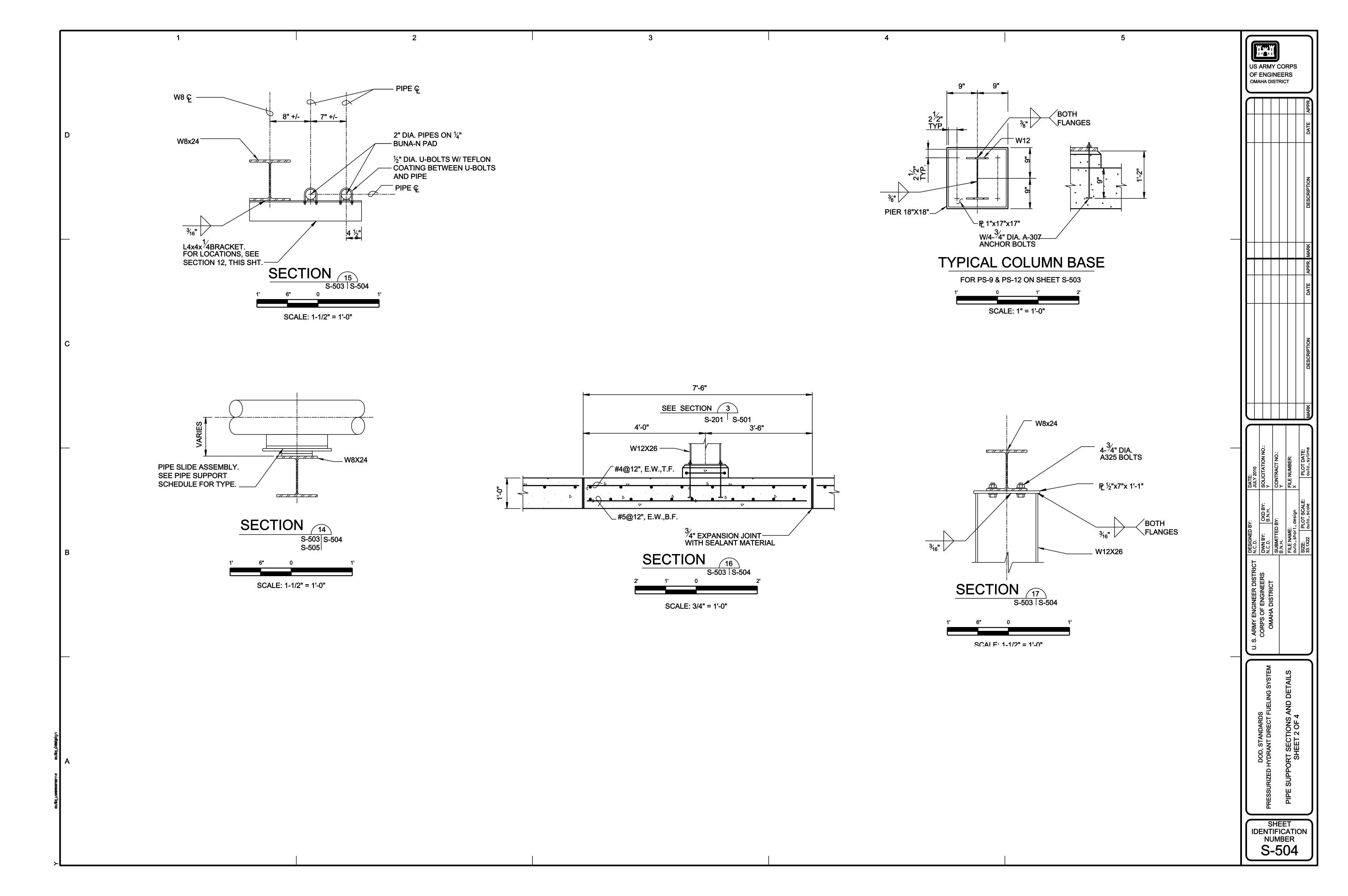


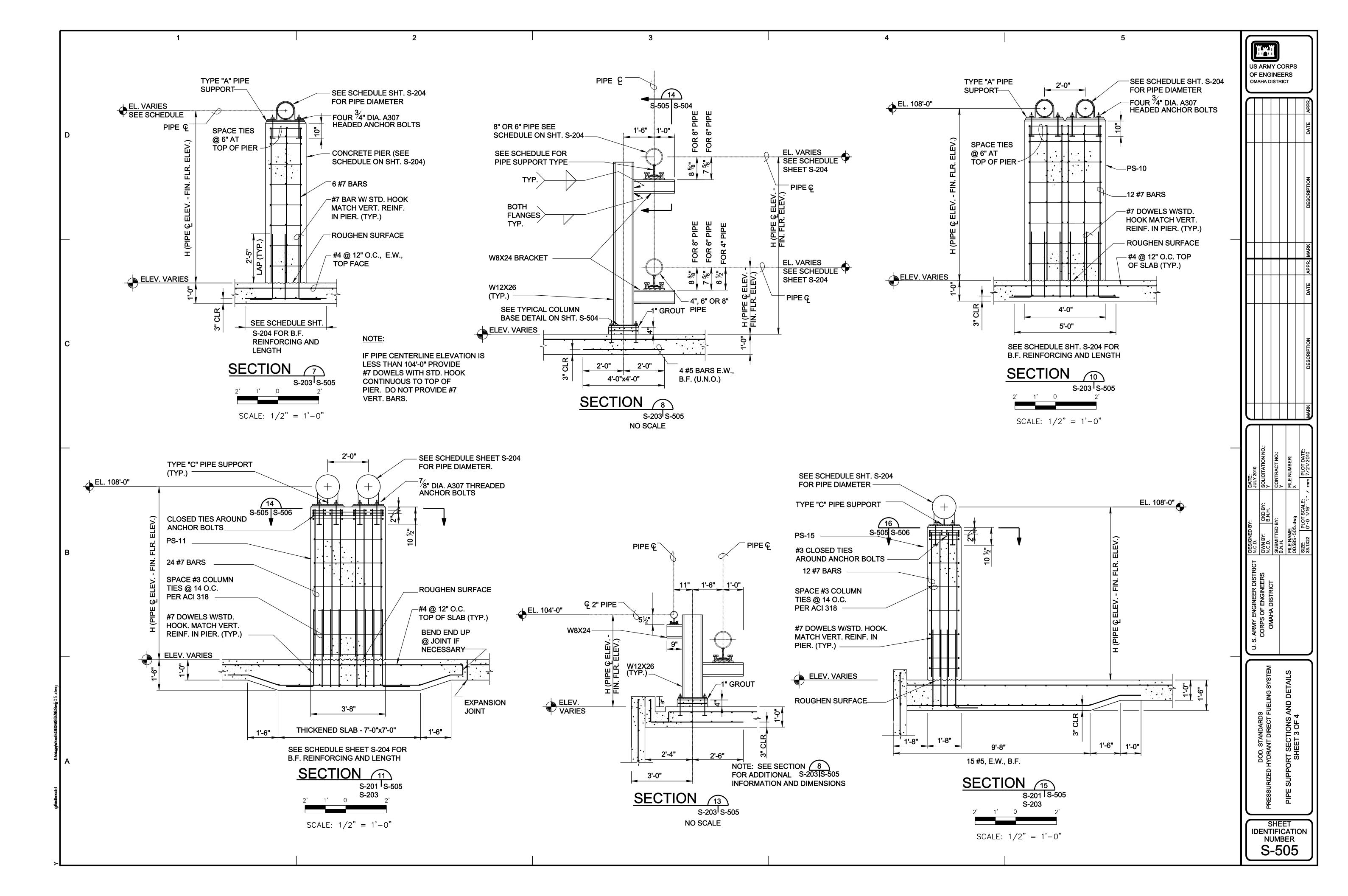


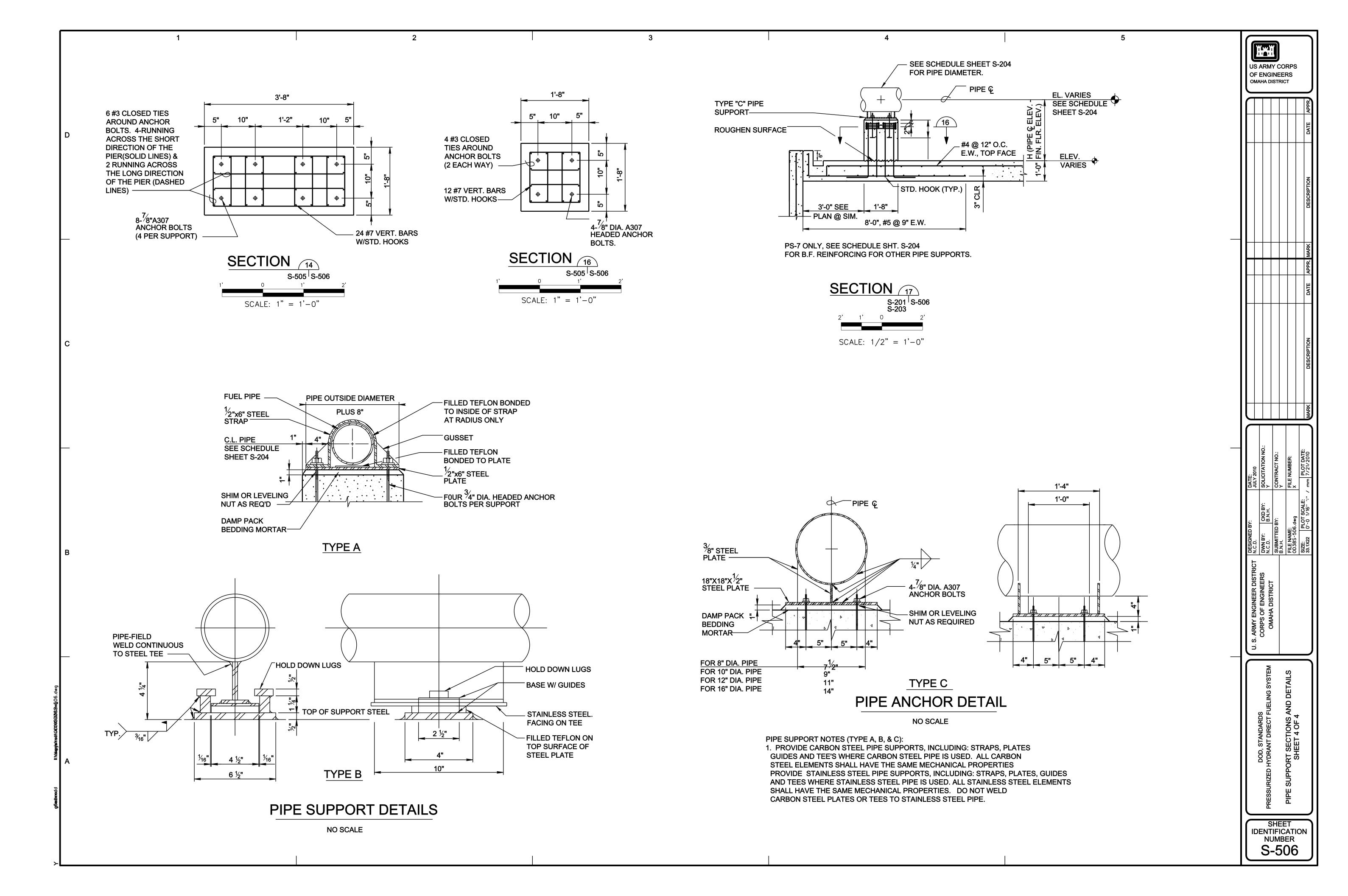
	U. S. ARMY ENGINEER DISTRICT	DESIGNED BY: N.C.D.		DATE: JULY 2010
_	CORPS OF ENGINEERS OMAHA DISTRICT	DWN BY: N.C.D.	CKD BY: B.N.H.	SOLICITATIC Y
		SUBMITTED BY:	BY:	CONTRACT
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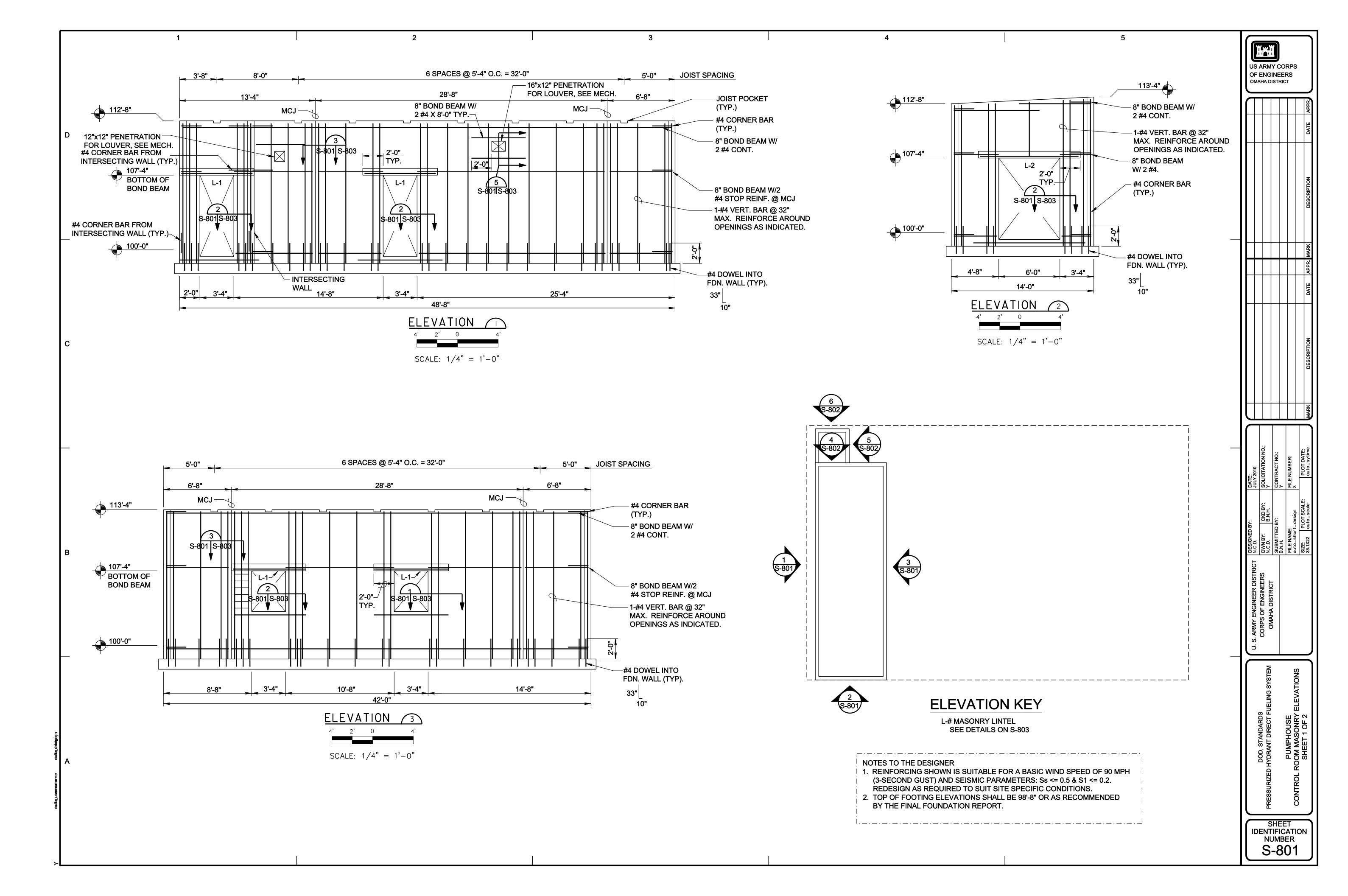
DOD, STANDARDS
PRESSURIZED HYDRANT DIRECT FUELING S
FOUNDATION AND SLAB
SECTIONS & DETAILS
SHEET 2 OF 2

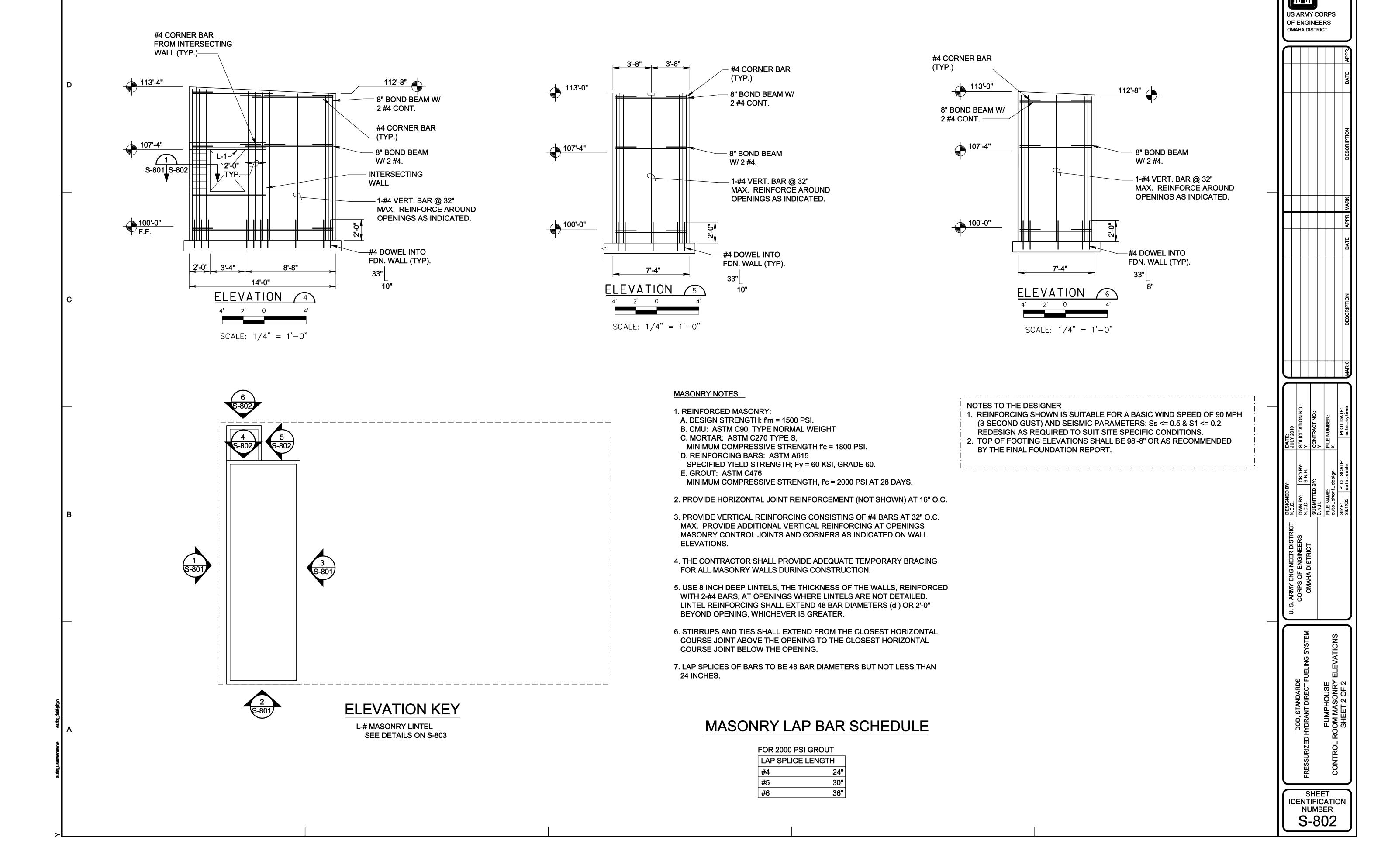


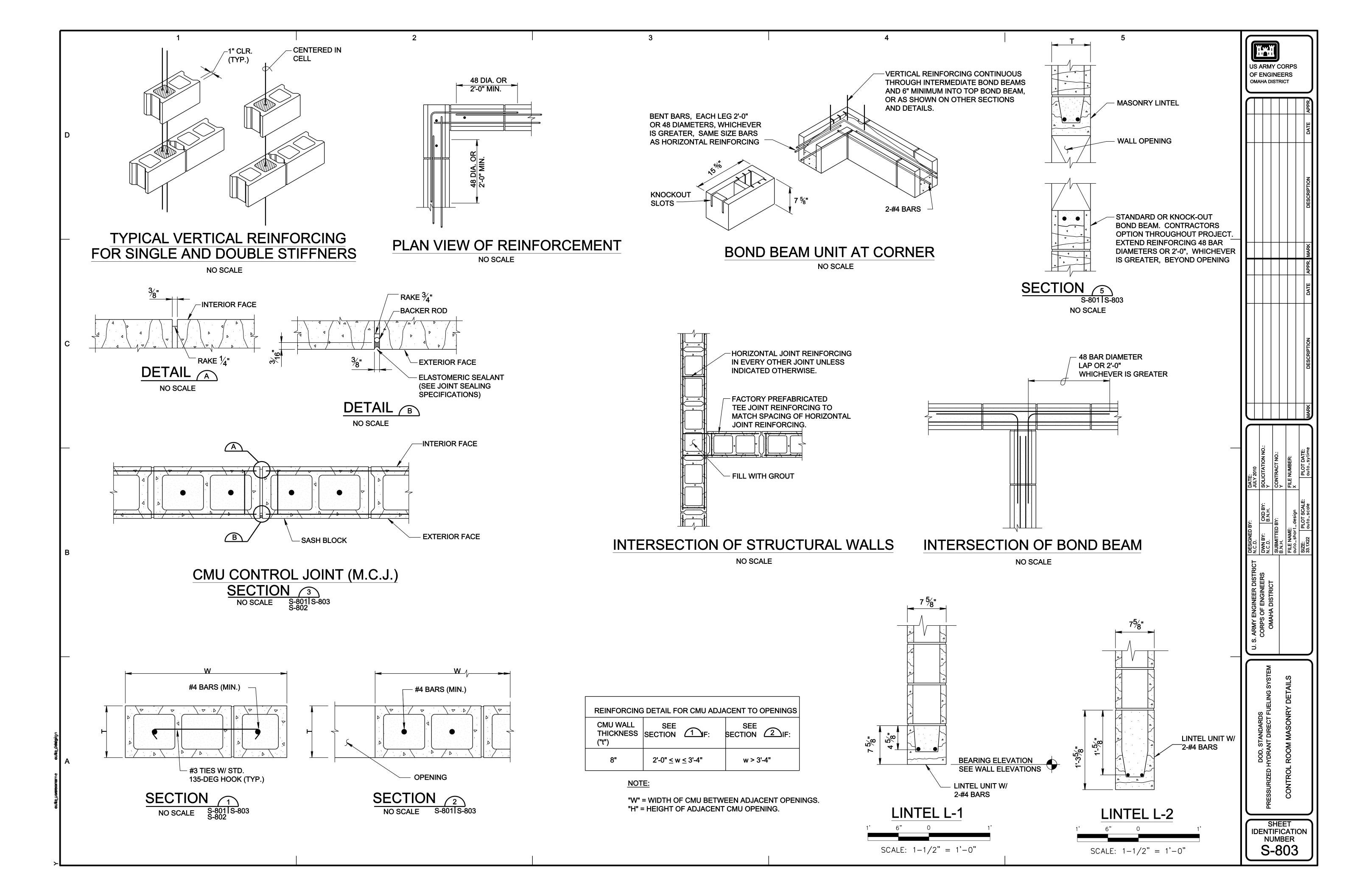


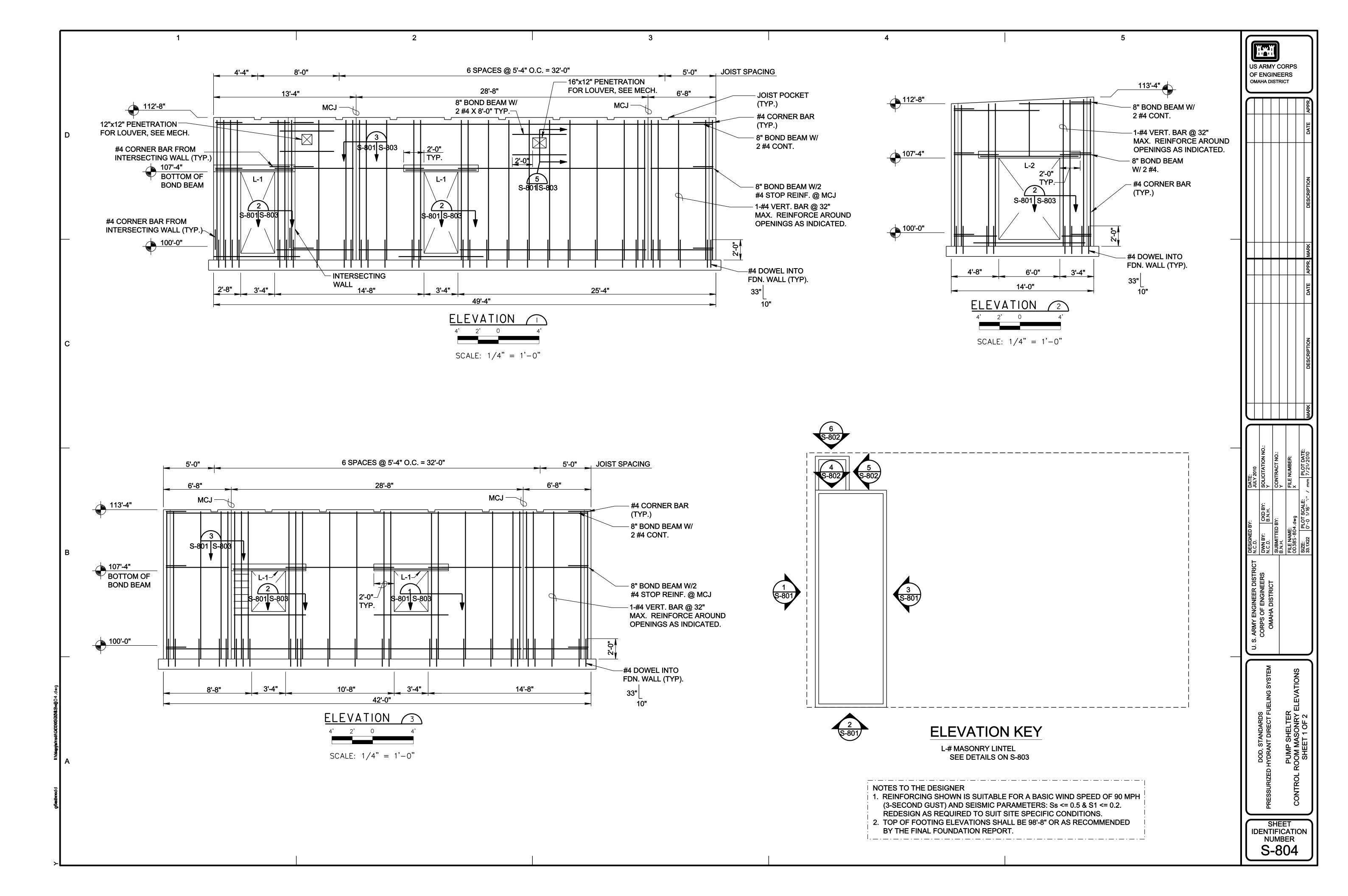


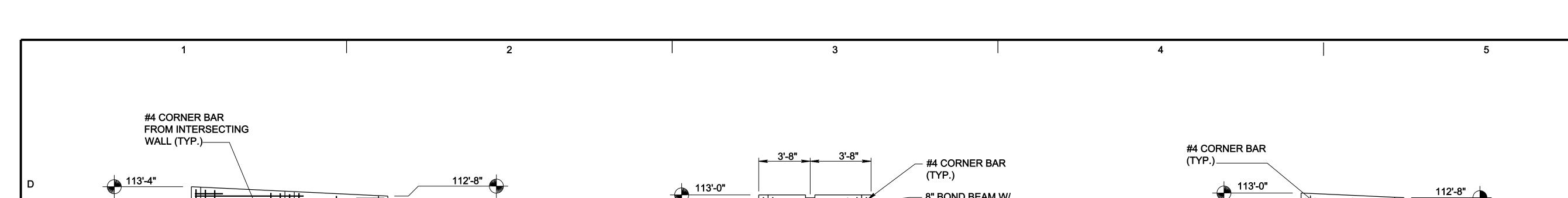


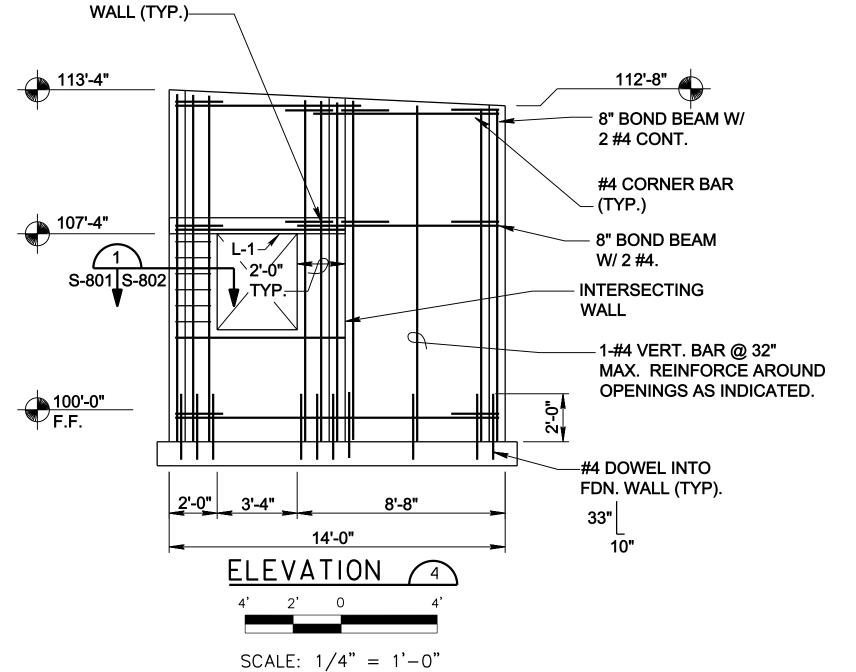


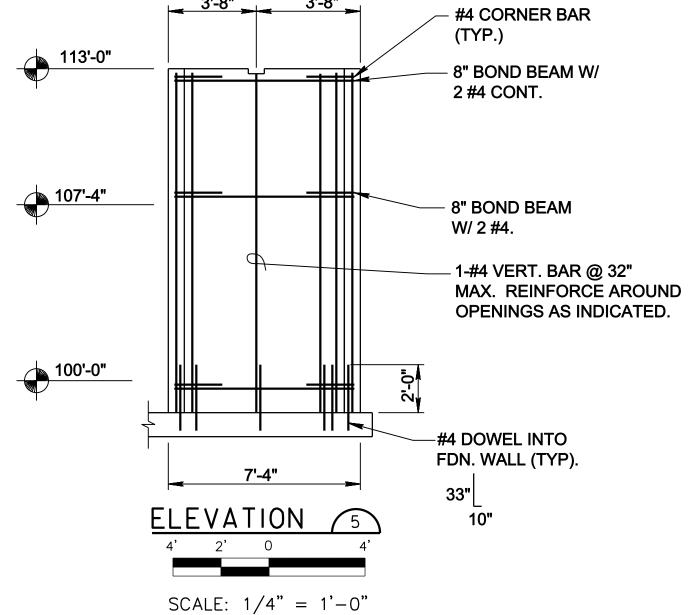


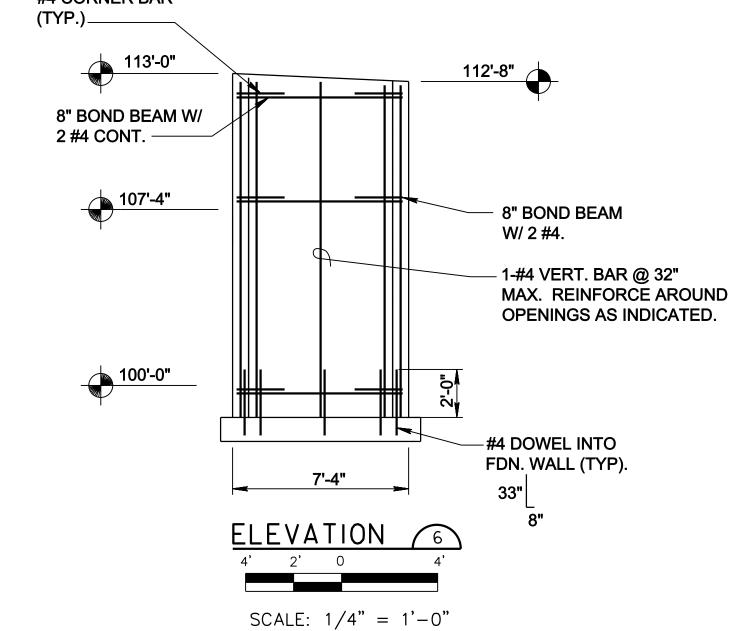














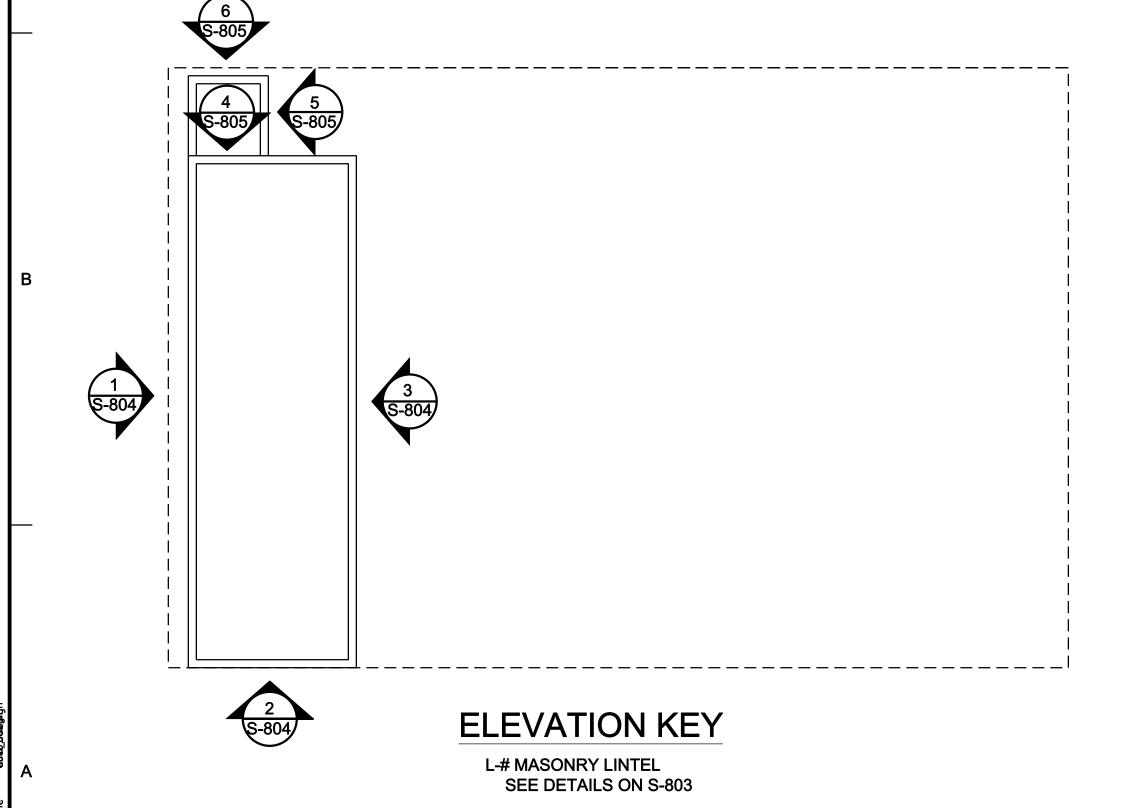
- 1. REINFORCED MASONRY:
- A. DESIGN STRENGTH: fm = 1500 PSI.
- B. CMU: ASTM C90, TYPE NORMAL WEIGHT C. MORTAR: ASTM C270 TYPE S,
- MINIMUM COMPRESSIVE STRENGTH fc = 1800 PSI.
- D. REINFORCING BARS: ASTM A615
- SPECIFIED YIELD STRENGTH; Fy = 60 KSI, GRADE 60. E. GROUT: ASTM C476
- MINIMUM COMPRESSIVE STRENGTH, fc = 2000 PSI AT 28 DAYS.

2. PROVIDE HORIZONTAL JOINT REINFORCEMENT (NOT SHOWN) AT 16" O.C.

- 3. PROVIDE VERTICAL REINFORCING CONSISTING OF #4 BARS AT 32" O.C. MAX. PROVIDE ADDITIONAL VERTICAL REINFORCING AT OPENINGS MASONRY CONTROL JOINTS AND CORNERS AS INDICATED ON WALL ELEVATIONS.
- 4. THE CONTRACTOR SHALL PROVIDE ADEQUATE TEMPORARY BRACING FOR ALL MASONRY WALLS DURING CONSTRUCTION.
- 5. USE 8 INCH DEEP LINTELS, THE THICKNESS OF THE WALLS, REINFORCED WITH 2-#4 BARS, AT OPENINGS WHERE LINTELS ARE NOT DETAILED. LINTEL REINFORCING SHALL EXTEND 48 BAR DIAMETERS (d) OR 2'-0" BEYOND OPENING, WHICHEVER IS GREATER.
- 6. STIRRUPS AND TIES SHALL EXTEND FROM THE CLOSEST HORIZONTAL COURSE JOINT ABOVE THE OPENING TO THE CLOSEST HORIZONTAL COURSE JOINT BELOW THE OPENING.
- 7. LAP SPLICES OF BARS TO BE 48 BAR DIAMETERS BUT NOT LESS THAN 24 INCHES.

NOTES TO THE DESIGNER

- 1. REINFORCING SHOWN IS SUITABLE FOR A BASIC WIND SPEED OF 90 MPH (3-SECOND GUST) AND SEISMIC PARAMETERS: Ss <= 0.5 & S1 <= 0.2. REDESIGN AS REQUIRED TO SUIT SITE SPECIFIC CONDITIONS.
- 2. TOP OF FOOTING ELEVATIONS SHALL BE 98'-8" OR AS RECOMMENDED BY THE FINAL FOUNDATION REPORT.



MASONRY LAP BAR SCHEDULE

FOR 2000 PSI GROUT

LAP SPLICE LENGTH

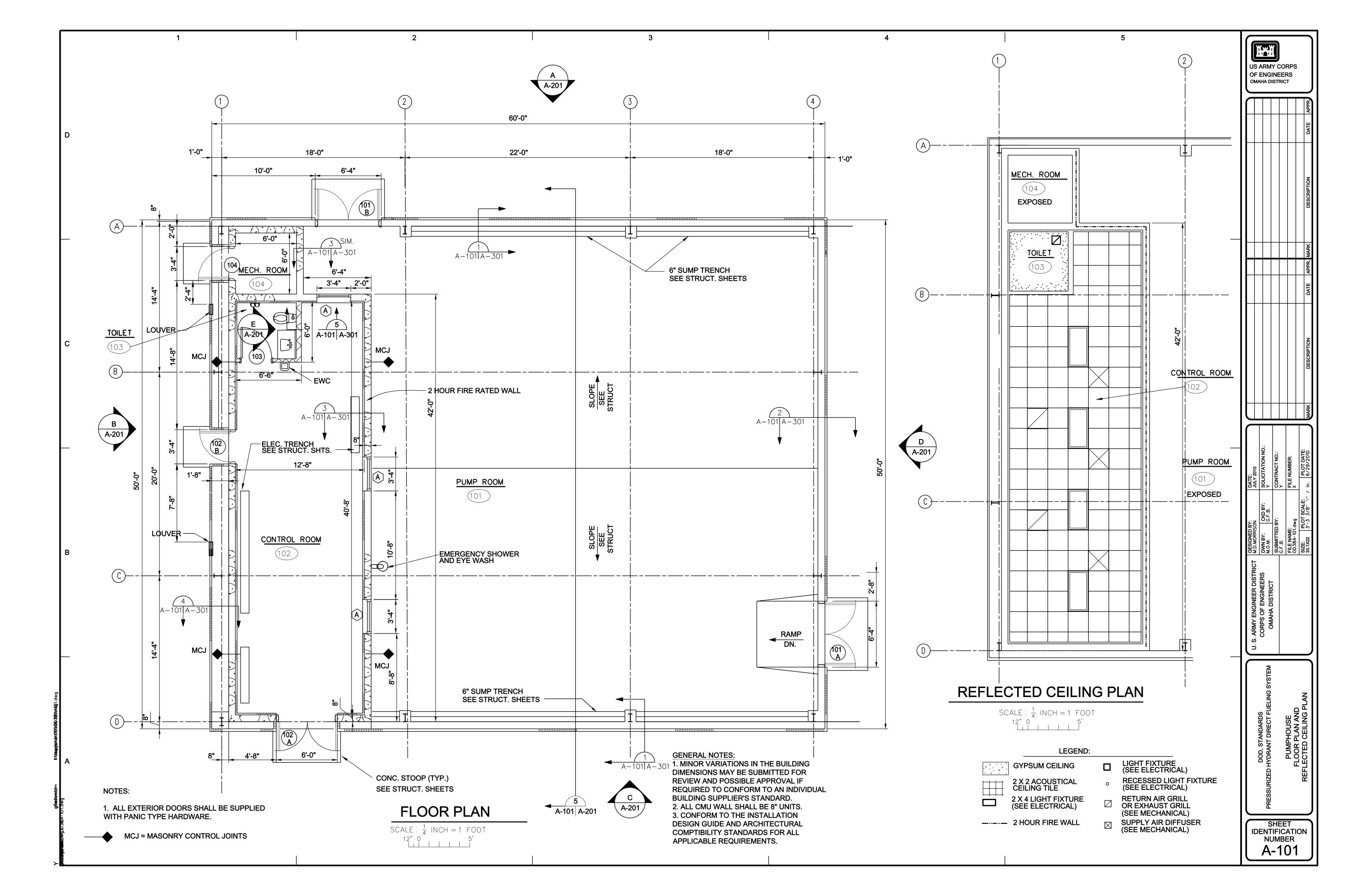
#4 24"

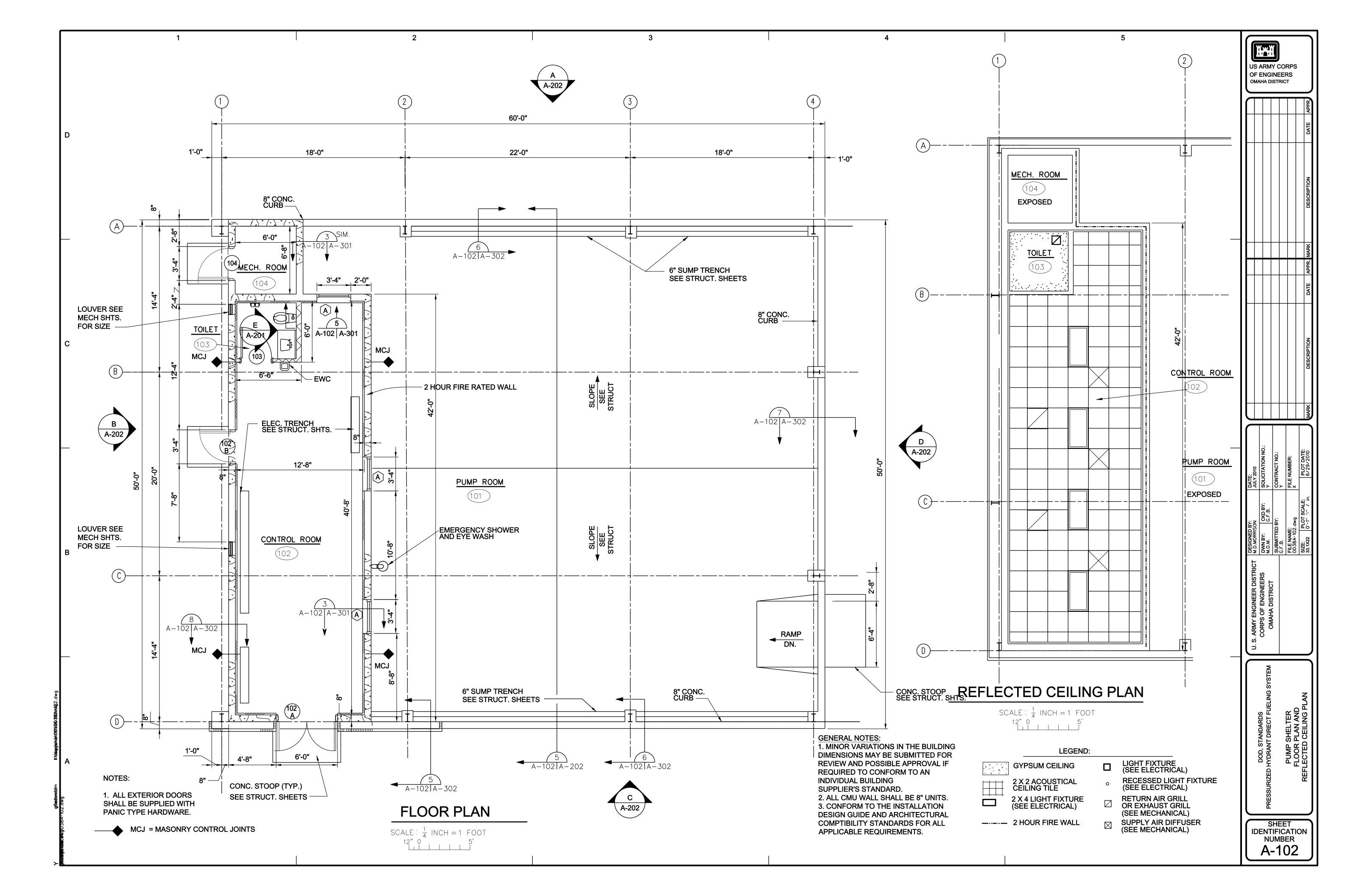
#5 30"

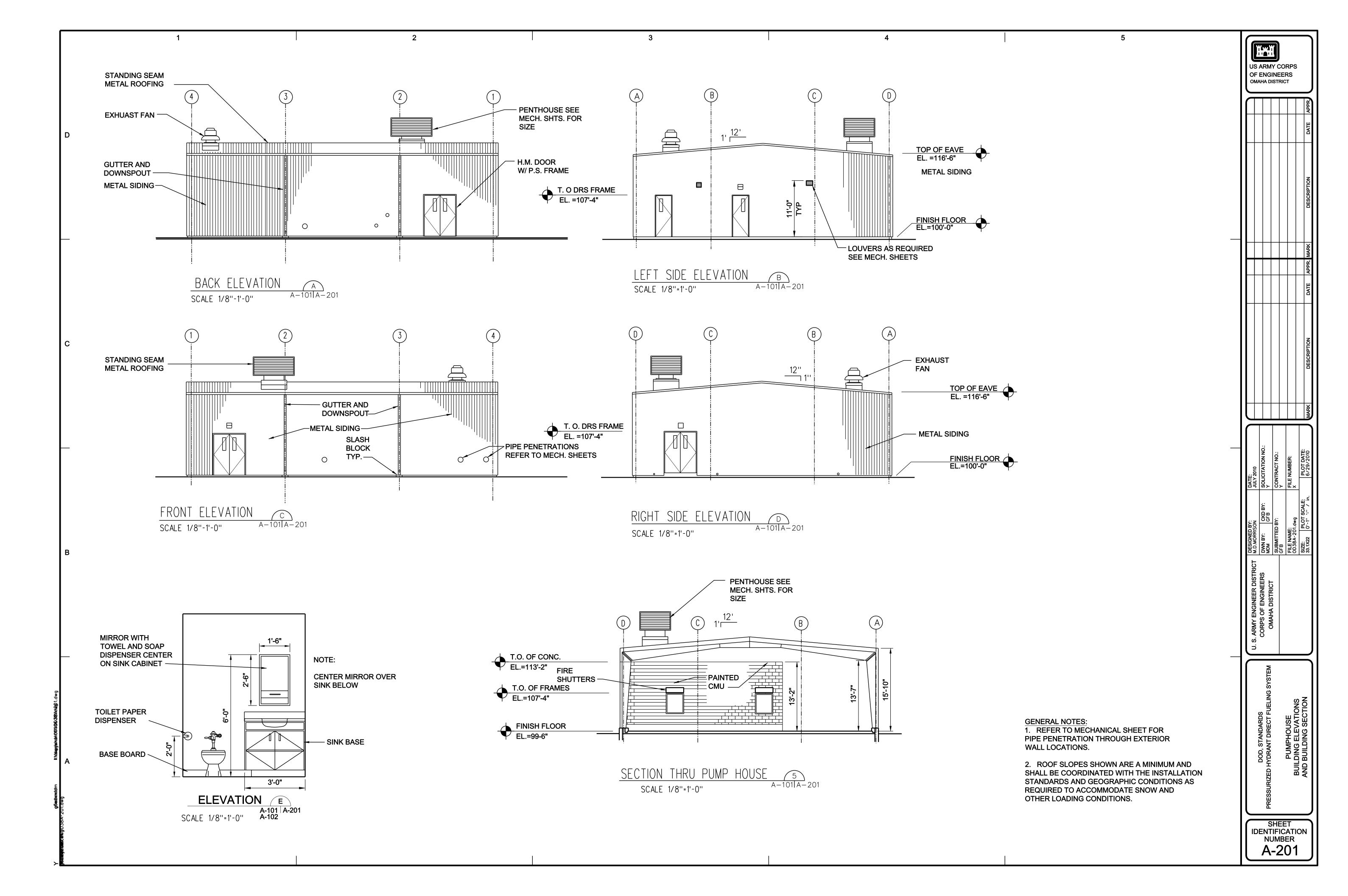
#6 36"

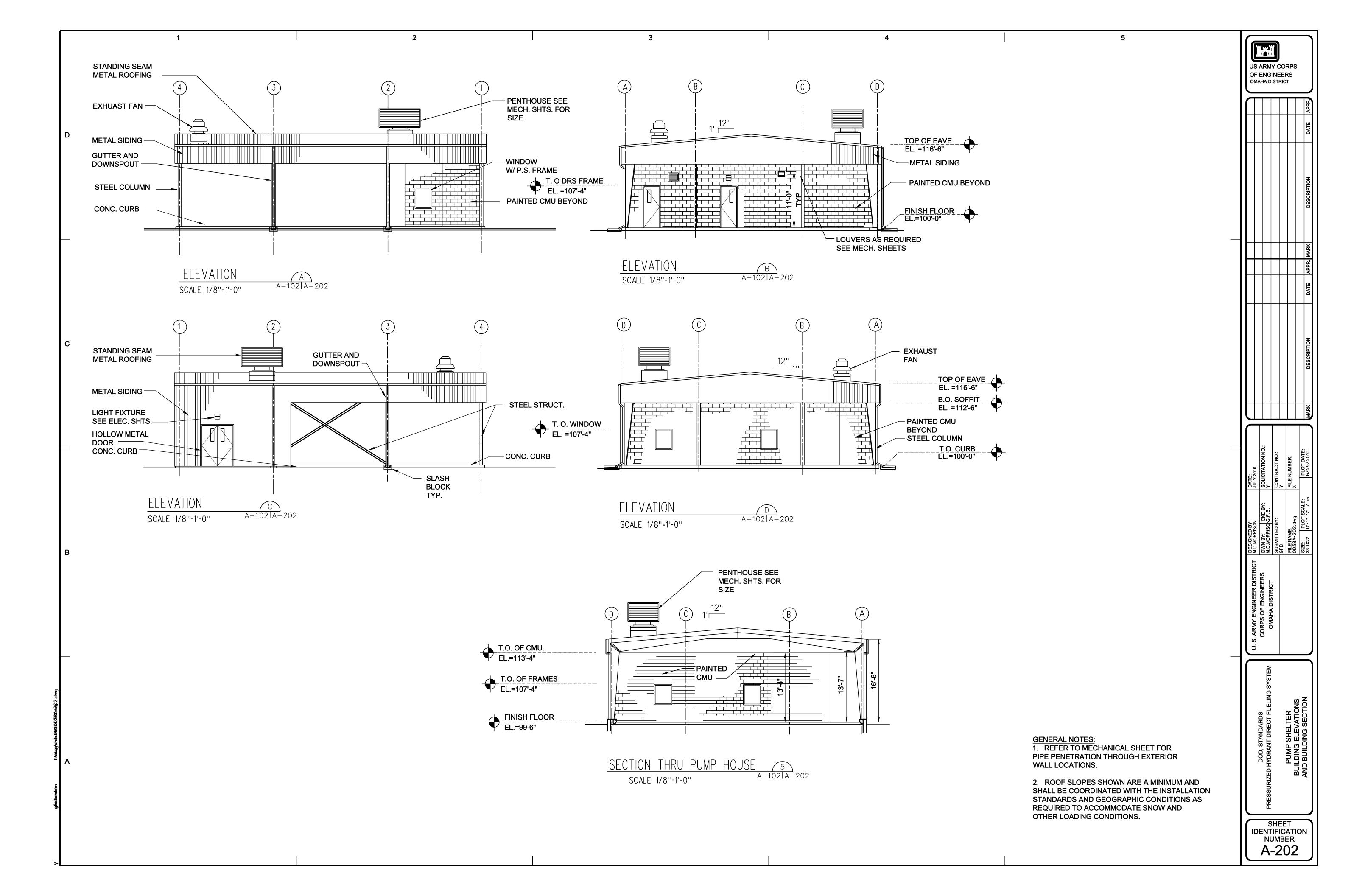
PRESSURIZED HYDRANT DIRECT FUELING SYSTEN
PUMP SHELTER
CONTROL ROOM MASONRY ELEVATIONS

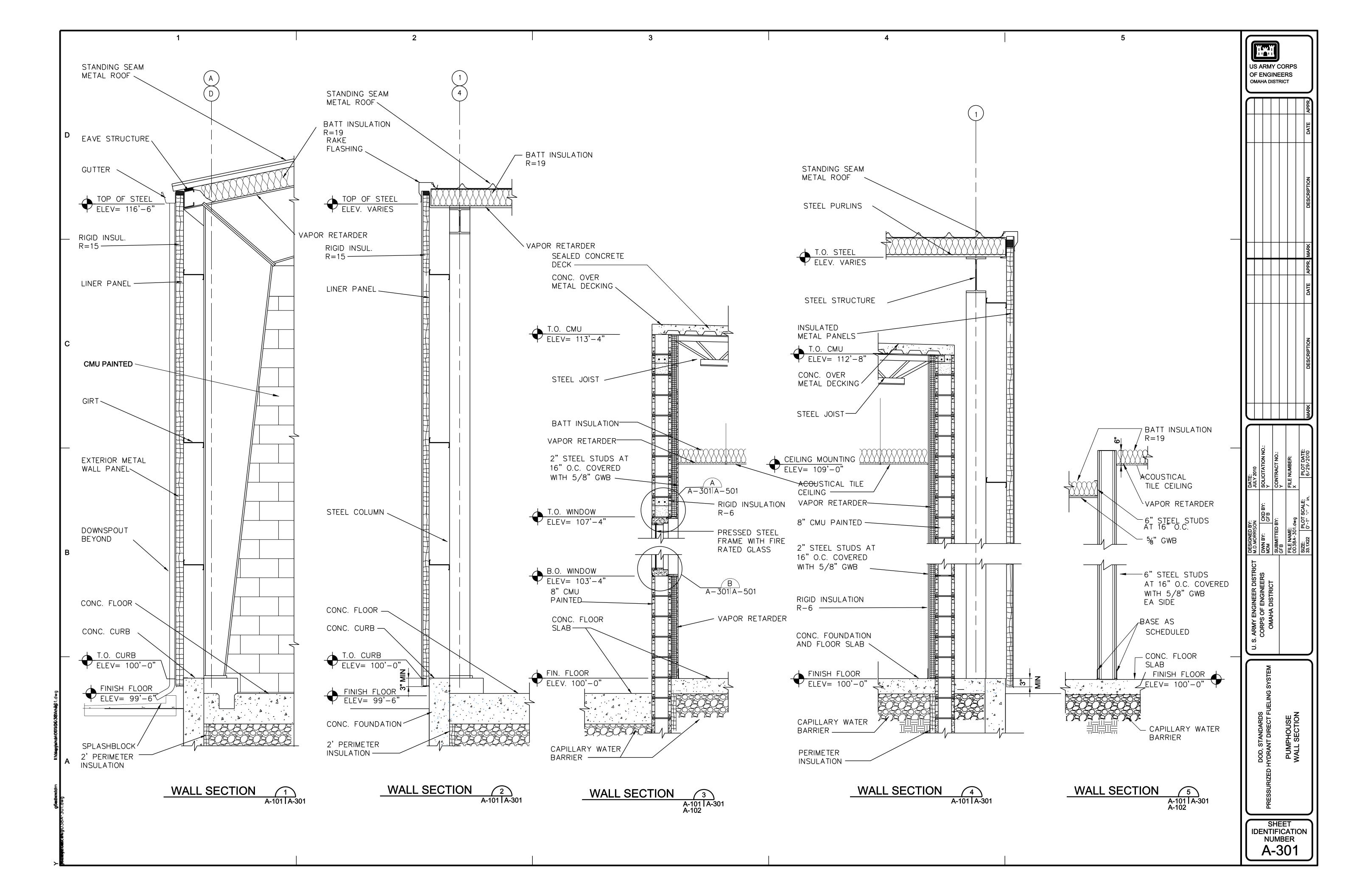
OF ENGINEERS

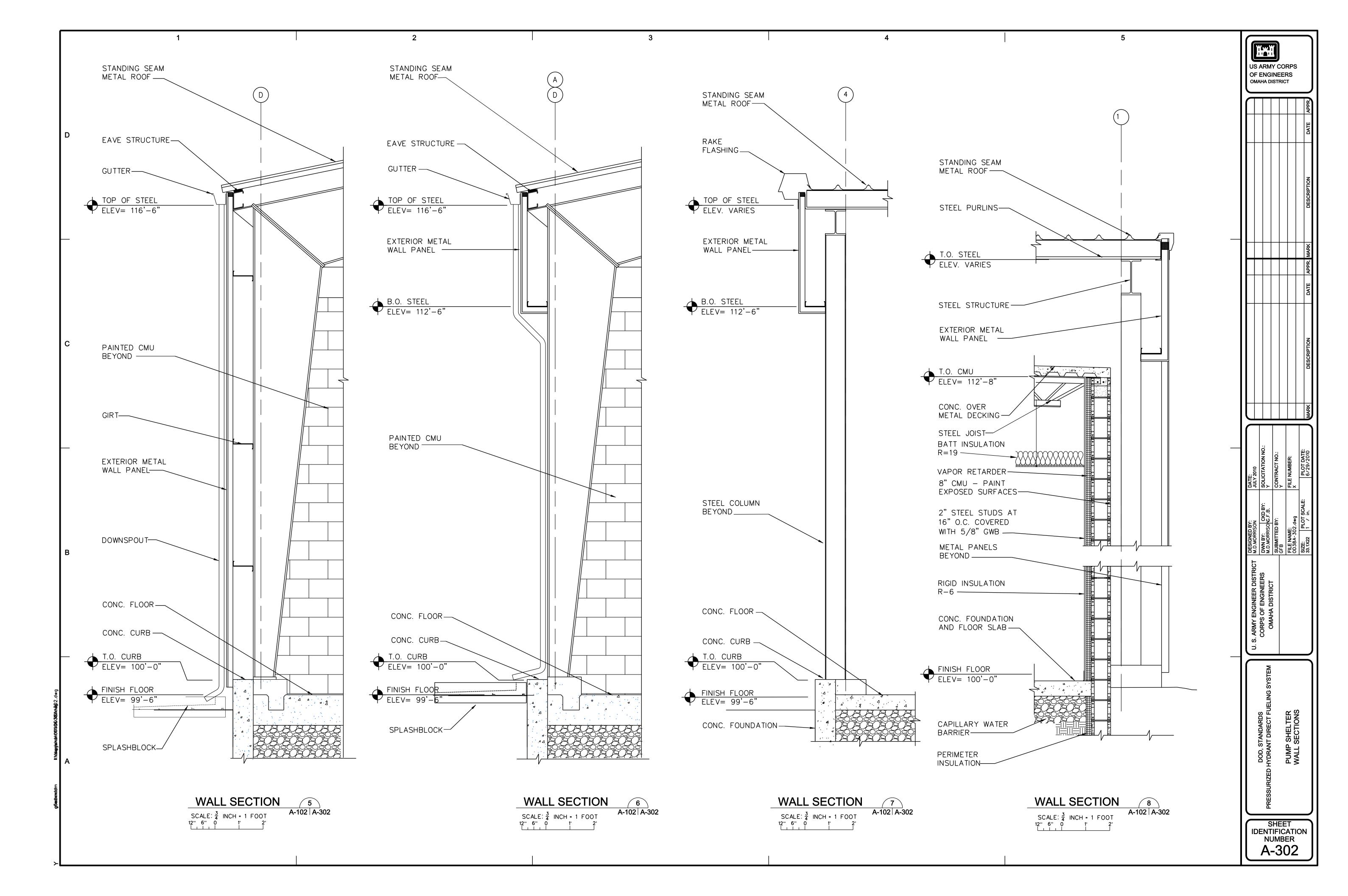


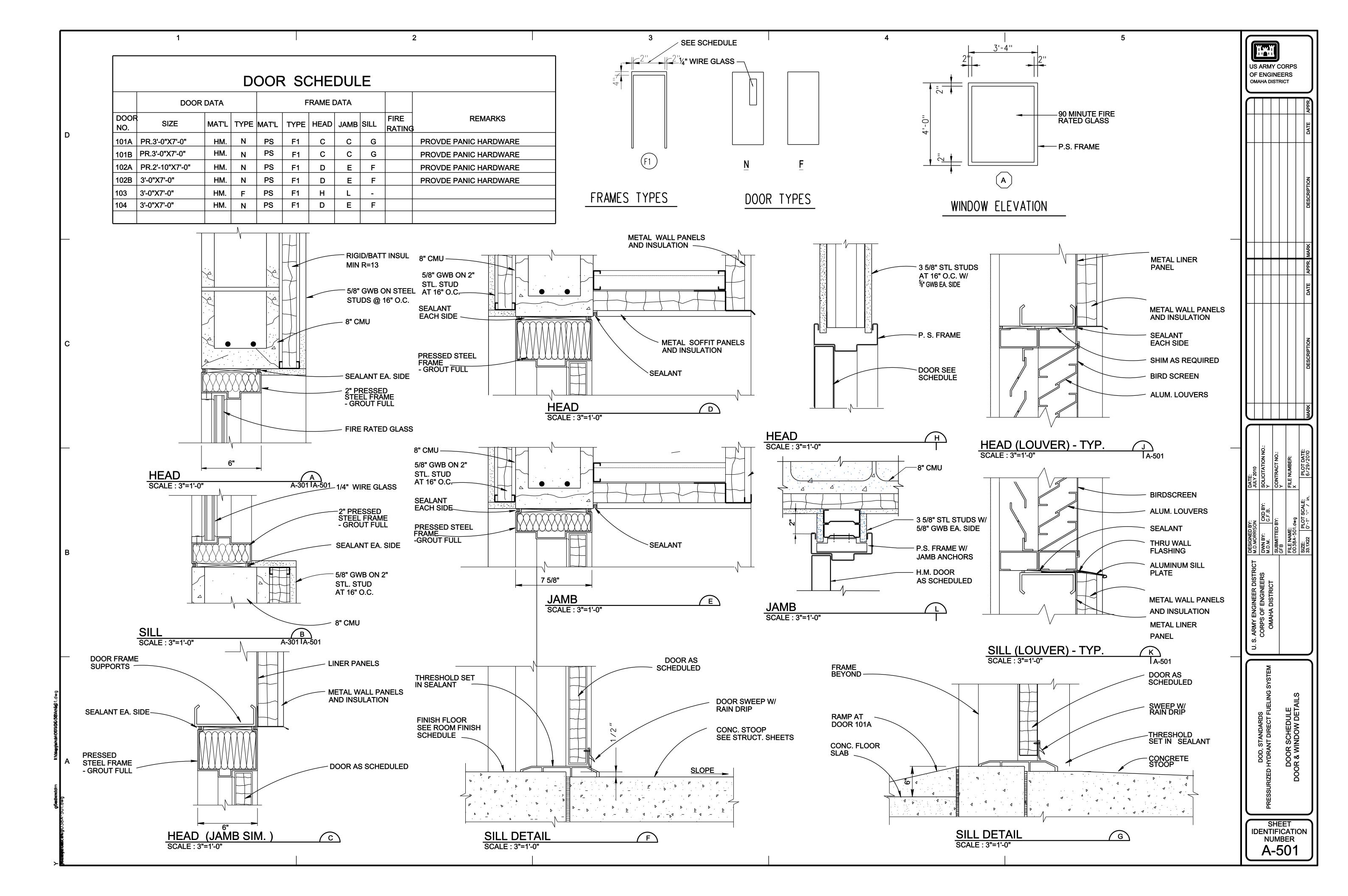












NOTES TO DESIGNER:

- 1. OPERATING TANK SIZE SELECTION AND SYSTEM CAPACITY SHALL BE VALIDATED BY COMMAND FUELS FACILITY ENGINEER IN COORDINATION WITH THE COMMAND FUELS MANAGER. TANK TYPE SHALL BE PER COMMAND FUELS FACILITY ENGINEER AND DESIGNED PER THE ABOVEGROUND TANK STANDARD OR THE CUT'N'COVER STANDARD.
- 3. THE FIFTH PUMP (FP-5) AND FILTER SEPARATOR (FSI-5), WILL ONLY BE PROVIDED WHEN DIRECTED BY THE COMMAND FUEL FACILITIES ENGINEER.
- 4. IF SUITABLE ON-BASE BULK STORAGE TANKS ARE LOCATED WITHIN ONE MILE OF THE FUELING APRON, THEY MAY BE USED AS OPERATING TANKS IF APPROVED BY THE APPLICABLE SERVICE. IF ON-BASE STORAGE TANKS ARE USED, THEY SHALL BE MODIFIED TO CONFORM TO REQUIREMENTS FOR OPERATING TANKS.
- 5. FIRE DETECTION/SUPPRESSION SYSTEM SHALL BE PROVIDED IN THE PUMP HOUSE AS REQUIRED BY COMMAND SERVICE HEADQUARTERS AND PER UFC 3-460-01.
- 6. RELIEF VALVES SHALL BE PROVIDED AT EACH LOCATION WHERE SEGMENTS OF PIPE CAN BE ISOLATED BY VALVING OR BLINDING.
- 7. TYPE AND QUANTITY OF AIRCRAFT DIRECT FUELING STATIONS AND SIZE OF PANTOGRAPHS (3" VERSUS 4") SHALL BE AS DIRECTED BY THE COMMAND FUEL FACILITIES ENGINEER.
- 8. HHLA SHALL BE LOCATED AT A LEVEL BELOW THE OPERATING TANK OVERFLOW.
- 9. ALL THERMAL RELIEF VALVES, W/O SPECIFIED SET PRESSURE, SHALL BE SET AT A PRESSURE 10% GREATER THAN THE PUMP DEAD HEAD PRESSURE, NOT TO EXCEED 265 PSIG.
- 10. SEE SHEET ES-501, NOTE 1 FOR CATHODIC PROTECTION SYSTEM DESIGN REQUIREMENTS, A/E SHALL VERIFY "IF" LOCATIONS.
- 11. PROVIDE HIGH POINT VENTS AND LOW POINT DRAINS AS REQUIRED TO ENSURE COMPLETE DRAINAGE AND COMPLETE AIR VENTING OF FUEL PIPING, LOCATE OFF-APRON WHENEVER POSSIBLE.
- 12. SEE TYPE III STANDARD FOR DETAILS.
- 13. A SEPERATE FLUSH LINE TO BE PROVIDED PER COMMAND FUELS FACILITY ENGINEER DIRECTION.
- 14. SIZE OF LOOP PIPING SHALL BE BASED ON SURGE ANALYSIS, AS WELL AS THE NEED, LOCATION AND SIZE OF HYDRAULIC SURGE ARRESTORS.
- 15. THE USE OF SURGE ARRESTORS SHALL BE BASED ON THE SURGE ANALYSIS OR AS DIRECTED BY THE COMMAND FUELS FACILITY ENGINEER.
- 16. IF THE SEPERATE PANTOGRAPH FLUSH LINE IS USED, THE SEQUENCE OF OPERATION FOR PANTOGRAPH FLUSH MODE CAN BE DELETED. PANTOGRAPH FLUSHING WOULD BE SIMILAR TO A REFUELING OPERATION.
- 17. ADAPT PUMP HOUSE LAYOUT BASED ON SITE SPECIFIC REQUIREMENTS.
- 18. SEE UFC 3-460-01 FOR DESIGN REQUIREMENTS.



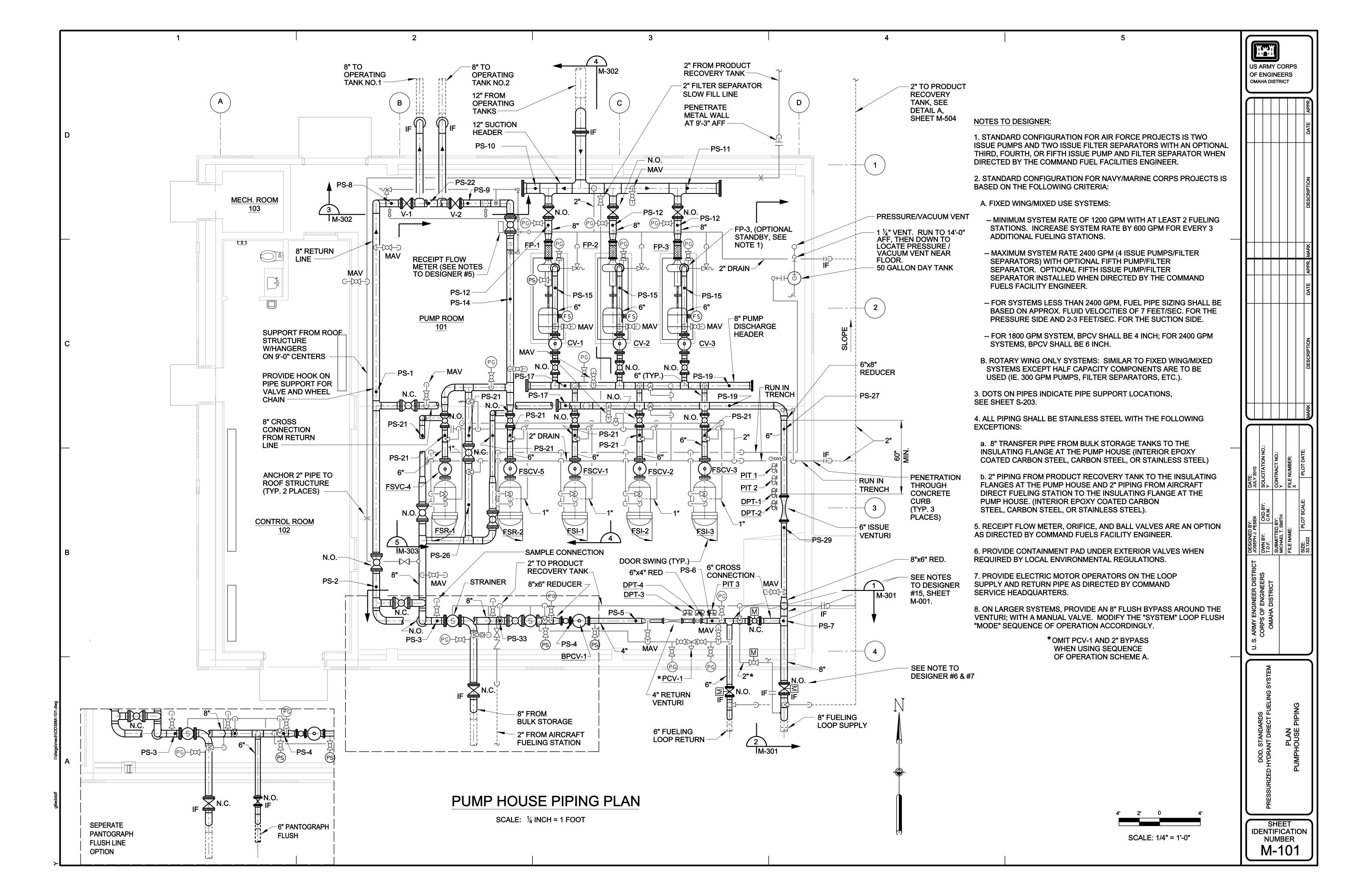
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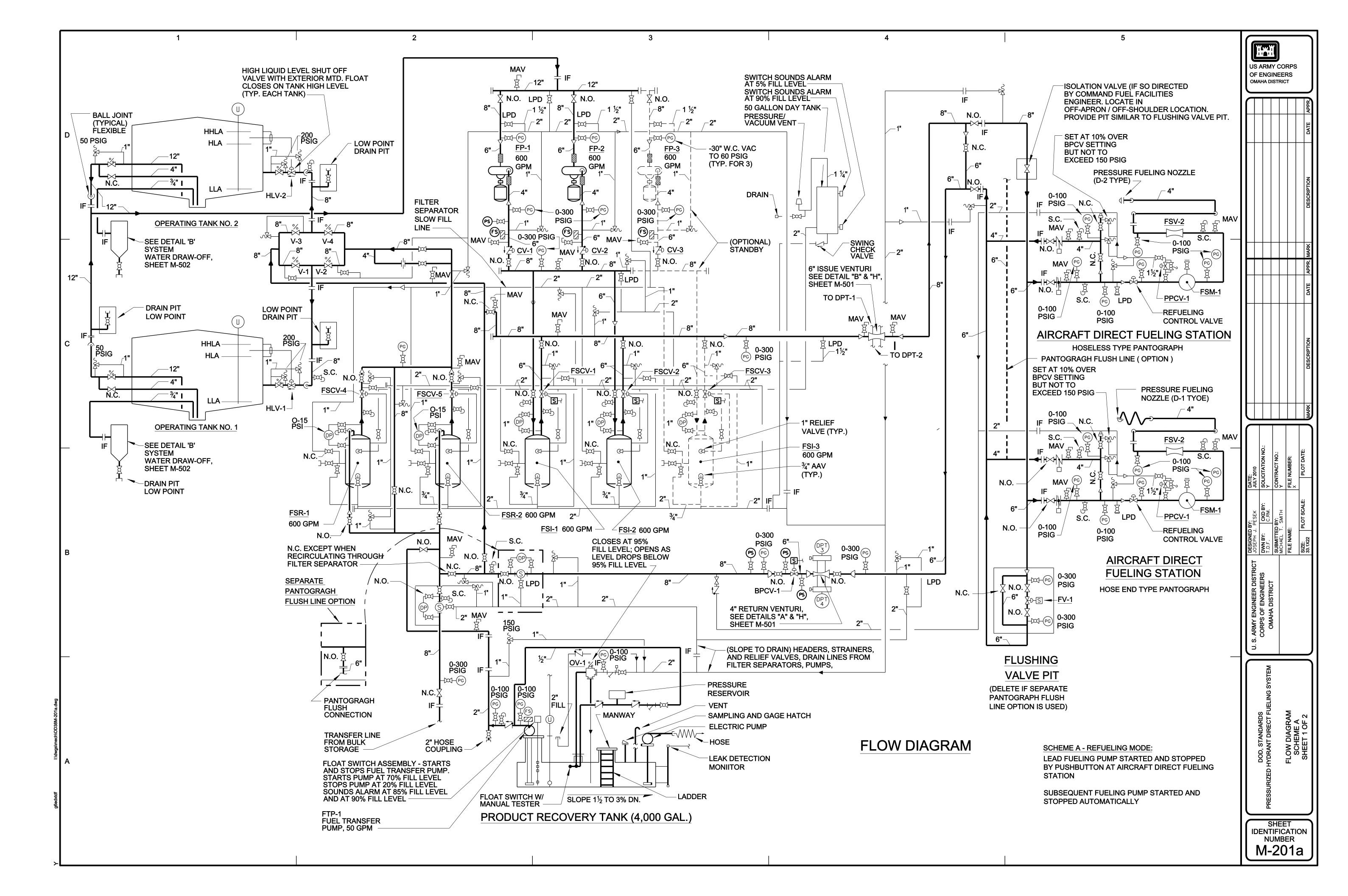
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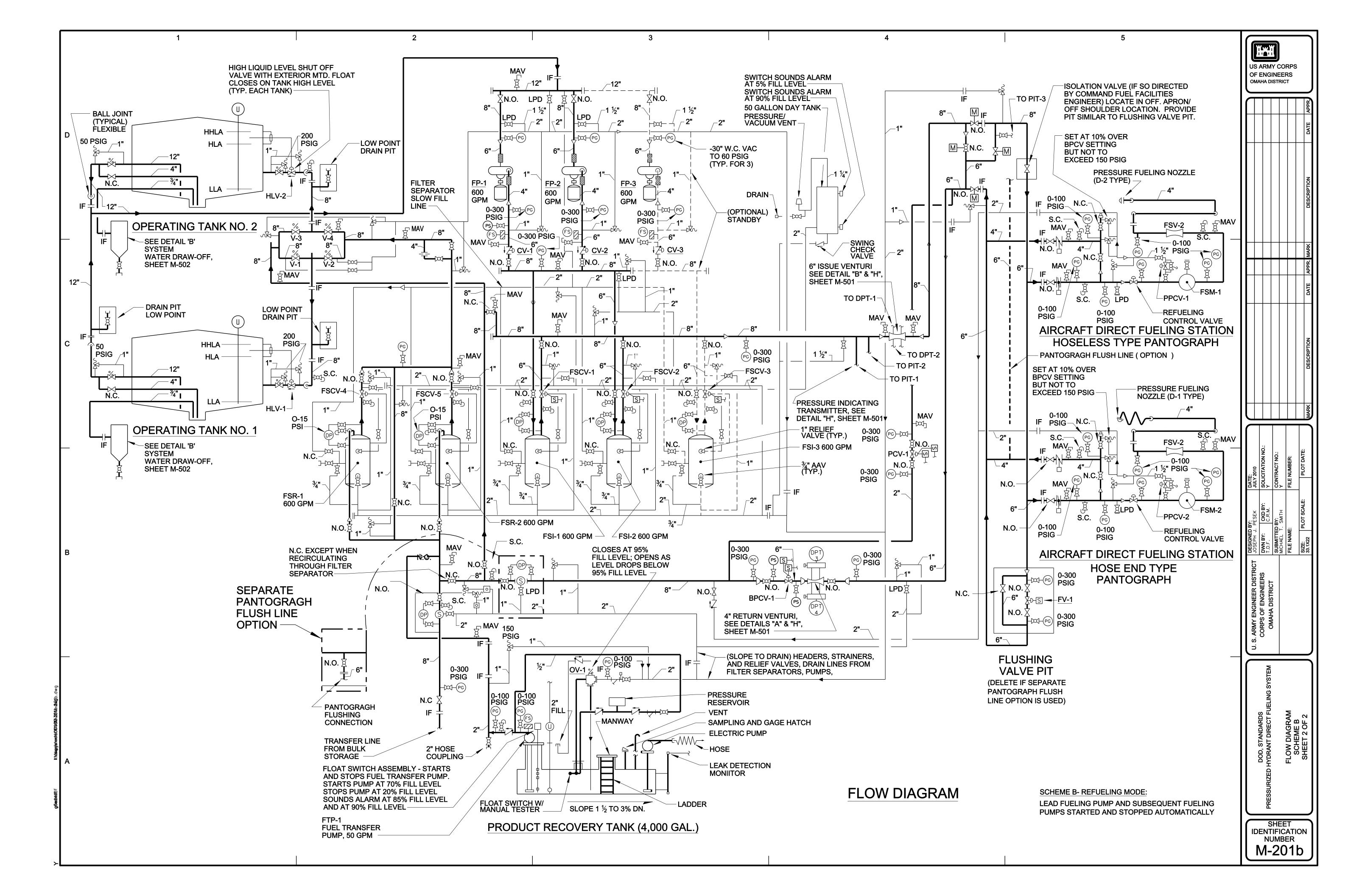
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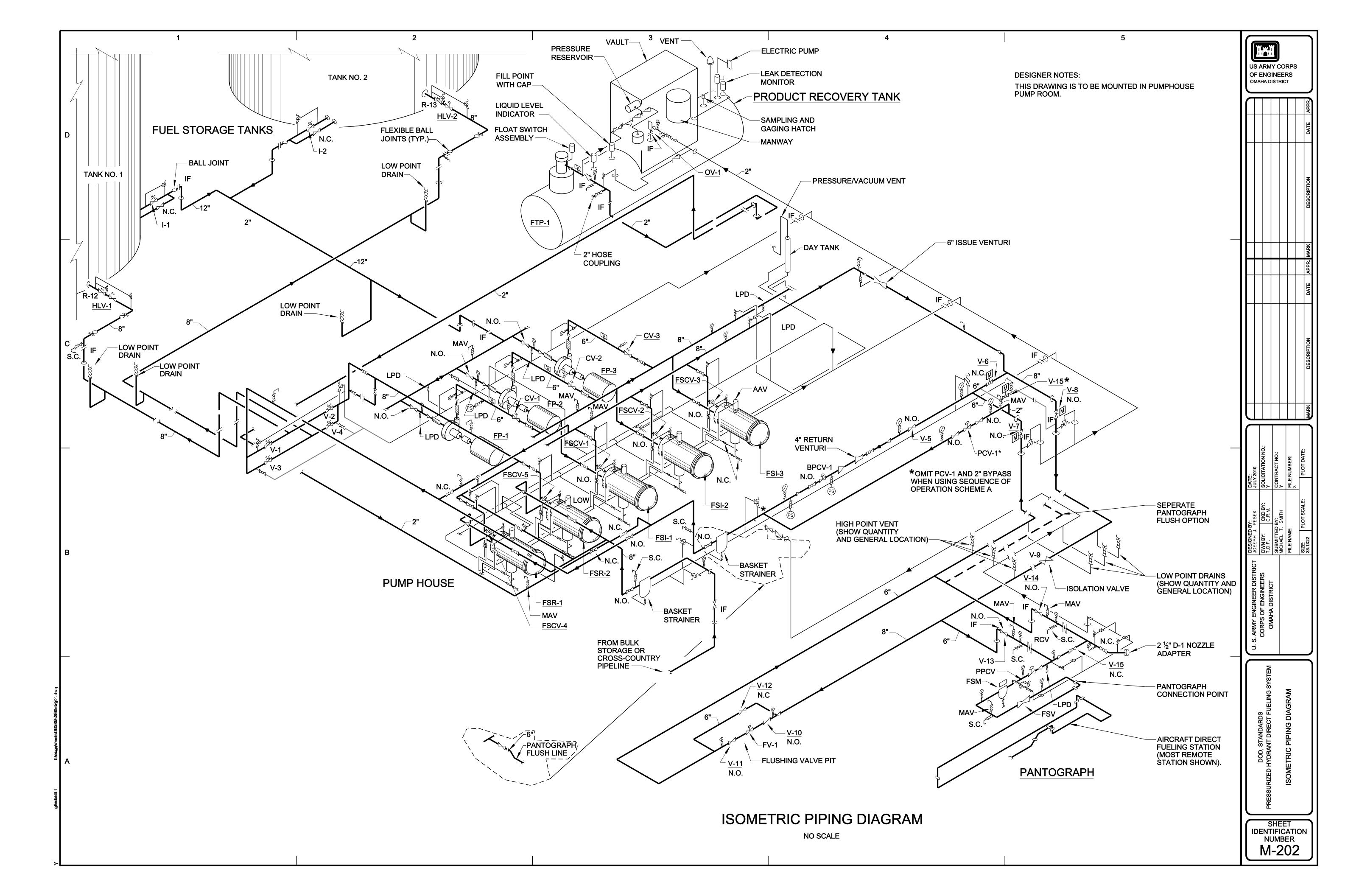
SHEET
IDENTIFICATION
NUMBER

M-001









-LEAD FUELING PUMP STARTED AND STOPPED BY PUSHBOTTON AT AIRCRAFT DIRECT FUELING STATION.

-SUBSEQUENT FUELING PUMP(S) STARTED AND STOPPED AUTOMATICALLY.

SYSTEM IN "REFUELING" MODE

TO INITIATE AN AIRCRAFT REFUELING OPERATION (PUMP SELECTOR SWITCHES, LOCATED IN CONTROL ROOM, MUST BE IN THE "AUTO" POSITION), AN OPERATOR CONNECTS PANTOGRAPH TO AIRCRAFT AND DEPRESSES START PUSHBUTTON LOCATED AT THE AIRCRAFT DIRECT FUELING STATIONS. THIS STARTS THE SELECTED LEAD FUELING PUMP ESTABLISHING A FLOW OF 600 +/- GPM THROUGH THE SYSTEM ISSUE VENTURI AND ENERGIZES THE BACK PRESSURE CONTROL VALVE (BPCV) SOLENOID ALLOWING BPCV TO MODULATE AT ITS SETPOINT:

- 1. TO REFUEL AN OPERATOR DEPRESSES THE HYDRAULIC (LINE PRESSURE) "DEADMAN" CONTROL. THIS OPENS THE REFUELING CONTROL VALVE ESTABLISHING FLOW TO THE AIRCRAFT.
- 2. WITH DPT-1 OR DPT-2 SENSING DIFFERENTIAL PRESSURE CORRESPONDING TO A FLOW RATE OF 600+/- GPM THROUGH THE ISSUE VENTURI AND DPT-3 OR DPT-4 SENSING DIFFERENTIAL PRESSURE CORRESPONDING TO A FLOW RATE OF LESS THAN 40+/- GPM THROUGH THE RETURN VENTRI FOR A PERIOD OF 10 SECONDS, THE SECOND PUMP WILL BE STARTED AUTOMATICALLY.
- 3. WITH DPT-1 OR DPT-2 SENSING DIFFERENTIAL PRESSURE CORRESPONDING TO A FLOW RATE OF 1200+/- GPM THROUGH THE ISSUE VENTURI AND DPT-3 AND DPT-4 SENSING DIFFERENTIAL PRESSURE CORRESPONDING TO A FLOW RATE GREATER THAN 40+/- GPM BUT LESS THAN 700+/- GPM, THE SECOND FUELING PUMP WILL CONTINUE TO RUN AND THE BPCV WILL CONTINUE MODULATING TO PASS FLOW AS NECESSARY TO MAINTAIN UPSTREAM PRESSURE REQUIREMENT AND NO ADDITIONAL CONTROL FUNCTIONS WILL BE INITIATED UNTIL SYSTEM OPERATING CONDITIONS CHANGE.
- A. IF DPT-3 OR DPT-4 SENSES A DIFFERENTIAL PRESSURE CORRESPONDING TO A FLOW RATE THROUGH THE RETURN VENTURI OR GREATER THAN 700+/- GPM FOR 15 SECONDS, THE CONTROL SYSTEM WILL INITIATE CONTROL SIGNALS TO SHUT DOWN THE SECOND FUELING PUMP.

NOTE

*[THE REMAINING SUBSEQUENT FUEL PUMPS WILL BE STARTED USING DPT-1 OR DPT-2 AND STOPPED AS DESCRIBED HEREIN BEFORE IN PARAGRAPH 2, 3, 3A.] THE LEAD FUELING PUMP SHUT DOWN AND RETURN TO IDLE CONDITION WILL BE AS DESCRIBED IN PARAGRAPH 3A.

*DESIGNER NOTE:

DELETE BRACKETS AND INCLUDE NOTE IF MORE THAN TWO (2) PUMPS CAN OPERATE AUTOMATICALLY.

- 4. AFTER REFUELING THE AIRCRAFT, OPERATOR RELEASES "DEADMAN" CONTROL THUS CLOSING THE REFUELING CONTROL VALVE. OPERATOR THEN DISCONNECTS AIRCRAFT DIRECT FUELING SYSTEM PANTOGRAPH FROM THE AIRCRAFT.
- 5. UPON COMPLETION OF AIRCRAFT REFUELING OPERATION, AN OPERATOR DEPRESSES AIRCRAFT DIRECT FUELING STATION STOP PUSHBUTTON. THIS STOPS THE LEAD FUELING PUMP (PROVIDED ONLY THE LEAD PUMP IS RUNNING AND FLOW THRU RETURN VENTURI IS GREATER THAN 560 GPM) AND DE-ENERGIZES THE BPCV SOLENOID (OPENING THE BPCV). AT THIS POINT THE SYSTEM HAS RETURNED TO AN IDLE. STATIC PRESSURE CONDITION.
- A. IN THE EVENT OPERATOR NEGLECTS TO PRESS STOP PUSHBUTTON, THE SYSTEM WILL AUTOMATICALLY STOP LEAD PUMP AND DE-ENERGIZE THE BPCV SOLENOID (OPENING THE BPCV) AFTER 10 MINUTES PROVIDED ONLY THE LEAD PUMP IS RUNNING AND FLOW THRU RETURN VENTURI REMAINS GREATER THAN 560 GPM.

NOTE: IN THE EVENT A FUELING PUMP IS CALLED ON AND FAILS TO START OR FAILS AFTER SUCCESSFULLY STARTING (AS INDICATED BY OPEN CONTACTS ON THE ASSOCIATED PUMP DISCHARGE FLOW SWITCH FOR A 15 SECOND INTERVAL), THE AFFECTED FUELING PUMP WILL BE CALLED OFF AND THE NEXT IDLE FUELING PUMP IN THE PREDETERMINED SEQUENCE OF PUMPS WILL BE CALLED ON AUTOMATICALLY.

SYSTEM "LOOP FLUSH" MODE

UPON ESTABLISHING A REQUIREMENT TO FLUSH THE PIPING DISTRIBUTION SYSTEM "LOOP". PERFORM THE FOLLOWING SEQUENCE:

- 1. PLACE FUELING PUMPS HAND-OFF-AUTO SELECTOR SWITCHES (LOCATED IN CONTROL ROOM) TO THE "OFF" POSITIONS.
- 2. PLACE THE MODE SELECTOR SWITCH (LOCATED IN THE CONTROL ROOM) IN THE "LOOP FLUSH" MODE. THIS WILL DE-ENERGIZE THE BPCV SOLENOID, (OPENING THE BPCV).
- 3. POSITION MANUALLY OPERATED VALVES IN THE SYSTEM TO REQUIRED POSITIONS TO DIRECT FUEL THROUGH THE DESIRED FLOW PATH (I.E. TRANSFERRING FUEL FROM ONE OPERATING TANK TO ANOTHER, FLUSHING SUSPECT FUEL FROM LOOP PIPING AND ROUTING THIS FUEL THRU THE RECEIVING FILTER SEPARATOR'S, ETC.)
- 4. SELECT PUMP TO BE USED FOR FLUSHING. PLACE THE FUELING PUMP'S HAND-OFF-AUTO SELECTOR SWITCH IN THE "HAND" POSITION. THIS WILL START THE PUMP (OPENING THE BPCV).
- NOTE: THE SECOND PUMP MAY BE STARTED MANUALLY TO OBTAIN A GREATER FLUSHING FLOW RATE.
- 5. FOLLOWING THE FLUSHING PROCEDURE, PLACE FUELING PUMP(S) HAND-OFF-AUTO SELECTOR SWITCH(ES) IN THE "OFF" POSITION. POSITION MANUALLY OPERATED VALVES TO THEIR NORMALLY OPENED OR CLOSED POSITIONS.
- 6. PLACE THE MODE SELECTOR SWITCH IN THE "REFUELING" MODE FROM THE "LOOP FLUSH" MODE, AND ALL FUELING PUMP SELECTOR SWITCHES BACK IN THE "AUTO" POSITIONS.

SYSTEM IN "PANTOGRAPH FLUSH MODE (SEE NOTES TO DESIGNER #16, SHEET M-001)

UPON ESTABLISHING A REQUIREMENT TO FLUSH THE PANTOGRAPH(S), PERFORM THE FOLLOWING SEQUENCE:

3

- 1. PLACE FULEING PUMPS HAND-OFF-AUTO SELECTOR SWITCHES (LOCATED IN CONTROL ROOM) THE "OFF" POSITIONS.
- 2. PLACE THE MODE SELECTOR SWITCH (LOCATED IN CONTROL ROOM) IN THE "PANTOGRAPH FLUSH" MODE. THIS WILL ENERGIZE THE FLUSHING VALVE (FV) SOLENOID, CLOSING THE VALVE. IT WILL ALSO DE-ENERGIZE THE BPCV SOLENOID (OPENING THE BPCV).
- 3. POSITION MANUALLY OPERATED VALVES IN THE SYSTEM TO REQUIRED POSITIONS TO DIRECT FUEL THRU THE DESIRED FLOW PATH.
- 4. CONNECT PANTOGRAPH PRESSURE FUELING NOZZLE TO THE 2-1/2" D-1 NOZZLE ADAPTER.
- 5. SELECT PUMP TO BE USED FOR FLUSHING. PLACE THE FUELING PUMP'S HAND-OFF-AUTO SELECTOR SWITCH IN THE "AUTO" POSITION. START SELECTED PUMP THRU PUSHBUTTON AT FUELING STATION. OPERATOR HAS FIFTEEN (15) SECONDS TO DEPRESS HYDRAULICALLY OPERATED "DEADMAN" CONTROL BEFORE PUMP SHUTS OFF.
- 6. USING HYDRAULICALLY OPERATED "DEADMAN" CONTROL, FLUSH ONE PANTOGRAPH AT A TIME FOR THE DESIRED INTERVAL.
- 7. AFTER OPERATOR RELEASE "DEADMAN", STOP PUMP WITHIN FIFTEEN (15) SECONDS THRU PUSHBUTTON AT FUELING STATION. OTHERWISE OPERATOR MUST "RESET" AUTOMATIC SHUT-OFF FUELING PUMP AT CONTROL ROOM PUMP CONTROL PANEL. NOTE: THE ABOVE PROCEDURE (PARAGRAPH 4 THRU 7) SHALL BE REPEATED AT EACH AIRCRAFT DIRECT FUELING STATION.
- 8. FOLLOWING THE PANTOGRAPH FLUSHING PROCEDURE, PLACE FUELING PUMP'S HAND-OFF-AUTO SELECTOR SWITCH IN THE "OFF" POSITION. POSITION MANUALLY OPERATED VALVES TO THEIR NORMALLY OPENED OR CLOSED POSITION.
- 9. PLACE THE MODE SELECTOR SWITCH IN THE "REFUELING" MODE FROM THE "PANTOGRAPH FLUSH" MODE, AND ALL FUELING PUMP SELECTOR SWITHCHES BACK IN THE "AUTO" POSITIONS.

EMERGENCY OPERATION - PLC's DOWN

IN THE EVENT BOTH PLC's ARE DOWN. THE SYSTEM MAY BE ACTIVATED FOR EMERGENCY REFUELING AS FOLLOWS:

- 1. PLACE ALL FUELING PUMP SELECTOR SWITCHES IN THE "OFF" POSITION.
- 2. ENSURE SELECTED OPERATING TANK(S) INLET AND OUTLET VALVES ARE OPEN.
- 3. MANUALLY BY-PASS SOLENOID ON BPCV ALLOWING VALVE TO MODULATE AT SET POINT.
- 4. MANUALLY START FUELING PUMP(S) AS REQUIRED BY PLACING SELECTOR SWITCHES IN THE "HAND" POSITION.

NOTE: OPERATOR IS REQUIRED TO CONTINUOUSLY VERIFY OPERATING TANK(S) FUEL LEVEL TO ENSURE AN ADEQUATE FUEL SUPPLY IS AVAILABE. FUEL LEVEL VERIFICATION SHALL BE BY MEANS OF THE OPERATING TANK(S) GROUND LEVEL READING GAGE. UPON COMPLETION OF EMERGENCY OPERATION, OPERATOR SHALL RETURN FUELING PUMP SELECTOR SWITCHES TO THEIR ORIGINAL POSITIONS.

STORAGE TANK SELECTION "AUTOMATIC MODE"
OR "PRESSURE TEST MODE"

TO INITATE FUELING OPERATION IN THE "AUTOMATIC MODE OR THE PRESSURE TEST MODE," THE 4-VALVE MANIFOLD AND THE TANK OUTLET (WITHDRAWAL) VALVES MUST BE IN THE PROPER POSITION, AS SHOWN IN THE VALVE POSITION MATRIX, TO ENABLE FUELING OPERATIONS.

EMERGENCY STOP AND RESET

- 1. DEPRESSION OF ANY EMERGENCY STOP PUSHBUTTON OR ACTUATION OF THE FIRE ALARM SYSTEM SHALL STOP FUELING PUMPS AND DE-ENERGIZE THE EMERGENCY SHUT-OFF VALVES SOLENOID CAUSING THE VALVE TO CLOSE. THIS ACTION IS EXECUTED WITHOUT REGARD FOR WHETHER PUMPS WERE AUTOMATICALLY CALLED ON OR MANUALLY STARTED.
- 2. IN ORDER TO RESET SYSTEM AFTER AN ALARM. DEPRESS "RESET" PUSHBUTTON LOCATED AT THE PUMP CONTROL PANEL. AFTER RESETTING THE INITIAL ACTIVATED EMERGENCY STOP PUSHBUTTON STATION AND/OR FIRE ALARM SYSTEM.

RELEASE PANTOGRAPH PRESSURE

OPERATOR MAY RELEASE PANTOGRAPH PRESSURE, BEFORE CONNECTING TO AIRCRAFT AND BEFORE OPENING REFUELING CONTROL VALVE, BY MEANS OF SPRING RETURN HANDLE LOCATED IN BYPASS AROUND PANTOGRAPH PRESSURE CONTROL VALVE (PPCV).

* EMERGENCY REFUELING USING RETURN LINE

IN THE EVENT THE 8 INCH FUEL SUPPLY LINE TO THE AIRCRAFT DIRECT FUELING STATION MUST BE SHUT DOWN, EMERGENCY REFUELING THRU THE RETURN LINE CAN BE USED WHILE OPERATING REFUELING PUMP MANUALLY.

- 1. CLOSE MANUALLY OPERATED VALVES V-5, V-8, V-11, V-13.
- 2. OPEN MANUALLY OPERATED VALVES V-6, V-15 IF SYSTEM CONTAINS ISOLATION VALVE)S), AN ADDITIONAL FLOW PATH FOR EMERGENCY REFUELING THRU RETURN LINE WOULD BE AS FOLLOWS:
- 1. CLOSE MANUALLY OPERATED VALVES V-5, V-8, V-9, V-11.
- 2. OPEN MANUALLY OPERATED VALVES V-6, V-12.
- * SEE SHEET M-205 FOR VALVE DESIGNATION NUMBERS.

			VALVE F	POSITION		
OPERATION		TANK #1		TANK #2		
	I 1	V-1	V-3	12	V-2	V-4
RECIRCULATION TO TANK NO. 1 & BULK RECEIPT TO TANK NO. 2	OPEN	OPEN	CLOSED	CLOSED	CLOSED	OPEN
RECIRCULATION TO TANK NO. 2 & BULK RECEIPT TO TANK NO. 1	CLOSED	CLOSED	OPEN	OPEN	OPEN	CLOSED
RECIRCULATION THROUGH RECEIPT FILTER SEPARATORS TO TANK NO. 1	OPEN	CLOSED	OPEN	CLOSED	CLOSED	CLOSED
RECIRCULATION THROUGH RECEIPT FILTER SEPARATORS TO TANK NO. 2	CLOSED	CLOSED	CLOSED	OPEN	CLOSED	OPEN

BACK PRESSURE (BPCV) SC		E
CONDITION	VALVE ACTION	SOLENOID
"REFUELING" MODE PUMP STARTUP	ENABLE	ENERGIZED
"REFUELING" MODE PUMP SHUT-OFF	OPEN	DE-ENERGIZED
"LOOP FLUSH" AND "PANTOGRAPH FLUSH" MODES	OPEN	DE-ENERGIZED
WEEKLY PRESSURE TEST	ENABLE	ENERGIZED

FLUSHING VALVE	FLUSHING VALVE (FV) OPERATION						
CONDITION	VALVE ACTION	SOLENOID					
"LOOP FLUSH" MODE	OPEN	DE-ENERGIZED					
"PANTOGRAPH FLUSH" MODE	CLOSE	ENERGIZED					
"REFUELING" MODE	OPEN	DE-ENERGIZED					



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DOD, STANDARDS
PRESSURIZED HYDRANT DIRECT FUELING
SEQUENCE OF OPERATION
SCHEME A

SHEET
IDENTIFICATION
NUMBER
M-203a

-LEAD AND SUBSEQUENT FUELING PUMPS STARTED AND STOPPED AUTOMATICALLY

SYSTEM IN "AUTOMATIC" MODE - IDLE CONDITION

THE SCHEME B SYSTEM IS INTENDED TO REMAIN <u>CONTINUOUSLY</u> PRESSURIZED WHILE IN THE IDLE CONDITION. THIS ALLOWS THE SYSTEM TO RESPOND AUTOMATICALLY/ IMMEDIATELY TO AIRCRAFT REFUELING MISSION REQUIREMENTS.

PERIODICALLY, WHILE IN THE IDLE CONDITION WITH NO AIRCRAFT REFUELING DEMANDS. THE SYSTEM WILL LOSE MINIMUM PRESSURE REQUIREMENTS. WHEN THIS OCCURS, THE CONTROL SYSTEM WILL AUTOMATICALLY RE-PRESSURIZE IN THE FOLLOWING SEQUENCE:

1. AS SYSTEM PRESSURE AT PRESSURE INDICATING TRANSMITTER PIT-1 OR PIT-2 DROPS BELOW SET POINT OF 60 PSIG, THE CONTROL SYSTEM WILL START THE SELECTED LEAD FUELING PUMP, AND CONTROL SIGNALS WILL BE INITIATED FOR THE FOLLOWING FUNCTIONS:

- -THE BACK PRESSURE CONTROL VALVE (BPCV) SOLENOID "A" WILL BE ENERGIZED TO ENABLE BPCV TO MODULATE OPEN AT ITS SET POINT.
- -THE PRESSURE CONTROL VALVE (PCV) SOLENOID WILL BE ENERGIZED TO HOLD PCV CLOSED WHILE ANY PUMP IS RUNNING.
- 2. THE LEAD FUELING PUMP WILL ESTABLISH A FLOW OF 600+/- GPM THRU THE SYSTEM ISSUE VENTURI, AND THE PRESSURE UPSTREAM OF THE BPCV WILL INCREASE UNTIL THE BPCV SET POINT OF 80 PSIG (AS DETERMINED BY HYDRAULICS OF THE SYSTEM) IS REACHED. AT THIS PRESSURE, THE BPCV WILL START TO OPEN AND THE VALVE WILL MODULATE AS REQUIRED TO MAINTAIN PRESSURE UPSTREAM OF THE VALVE.
- 3. WITH NO FUELING DEMAND, THE RETURN VENTURI WILL SEE TOTAL FLOW OF 600 +/- GPM FROM THE LEAD PUMP. IF DPT-3 OR DPT-4 SENSES DIFFERENTIAL PRESSURE CORRESPONDING TO A FLOW RATE GREATER THAN 560 GPM FOR A PERIOD OF 60 SECONDS (ADJUSTABLE), THE CONTROL SYSTEM WILL INITIATE CONTROL SIGNALS FOR THE FOLLOWING FUNCTIONS:
- -THE SOLENOID "A" WILL BE DE-ENERGIZED (PRIOR TO LEAD PUMP SHUT-OFF)
 TO CLOSE THE BPCV. SIGNAL TO STOP LEAD PUMP SHALL OCCUR WHEN
 PRESSURE INDICATING TRANSMITTER PIT-1 OR PIT-2 RISES ABOVE SET POINT OF 110 PSIG
 FOR A PERIOD OF 2 SECONDS (AS DETERMINED BY HYDRAULICS OF THE SYSTEM).
- -THE PCV SOLENOID WILL BE DE-ENERGIZED (SIMULTANEOUSLY WITH SIGNAL TO DE-ENERGIZE THE BPCV SOLENOID "A" TO BLEED SYSTEM PRESSURE TO 75 PSIG.

AT THIS POINT THE SYSTEM HAS RETURNED TO A PRESSURIZED IDLE CONDITION.

SYSTEM IN "AUTOMATIC" MODE - REFUELING CONDITION

TO INITIATE AN AIRCRAFT REFUELING OPERATION, AN OPERATOR CONNECTS PANTOGRAPH EQUIPMENT TO AN AIRCRAFT. REFUELING CONTROL VALVES HAVE HYDRAULIC LINE PRESSURE "DEADMAN" CONTROL SYSTEMS. WHEN THE OPERATOR OPENS THE REFUELING CONTROL VALVE BY USE OF THE DEADMAN, THE FOLLOWING SEQUENCE OCCURS:

- 1. AS SYSTEM PRESSURE AT PRESSURE INDICATING TRANSMITTER PIT-1 OR PIT-2 DROPS BELOW SET POINT OF 60 DUE TO DEPRESSING OF THE "DEADMAN" CONTROL, CONTROL SIGNALS WILL BE INITIATED FOR THE FOLLOWING FUNCTIONS:
- -THE BACK PRESSURE CONTROL VALVE (BPCV) SOLENOID "A" WILL BE ENERGIZED TO ENABLE BPCV TO MODULATE OPEN TO ITS SET POINT.
- -THE PRESSURE CONTROL VALVE (PCV) WILL BE ENERGIZED TO HOLD THE PCV CLOSED WHILE ANY PUMP IS RUNNING.
- 2. THE LEAD FUELING PUMP WILL ESTABLISH A FLOW OF 600+/- GPM THROUGH THE SYSTEM ISSUE VENTURI AND THE PRESSURE UPSTREAM OF THE BPCV WILL INCREASE UNTIL THE BPCV SET POINT OF 80 PSIG (AS DETERMINED BY HYDRAULICS OF THE SYSTEM) IS REACHED. AT THIS PRESSURE, THE BPCV WILL START TO OPEN AND THE VALVE WILL MODULATE AS REQUIRED TO PASS SUFFICIENT FLOW THROUGH THE RETURN VENTURI TO MAINTAIN PRESSURE UPSTREAM OF THE VALVE.
- 3. WITH DPT-1 OR DPT-2 SENSING DIFFERENTIAL PRESSURE CORRESPONDING TO A FLOW RATE OF 600+/- GPM THROUGH THE ISSUE VENTURI AND DPT-3 OR DPT-4 SENSING DIFFERENTIAL PRESSURE CORRESPONDING TO A FLOW RATE THROUGH THE RETURN VENTURI OF GREATER THAN 40+/- GPM AND LESS THAN 560+/- GPM, THE LEAD FUELING PUMP WILL CONTINUE TO RUN AND THE BPCV WILL CONTINUE MODULATING TO PASS FLOW AS NECESSARY TO MAINTAIN UPSTREAM PRESSURE REQUIREMENT AND NO ADDITIONAL CONTROL FUNCTIONS WILL BE INITIATED UNTIL SYSTEM OPERATING CONDITIONS CHANGE.

A. IF DPT-3 OR DPT-4 SENSES A DIFFERENTIAL PRESSURE CORRESPONDING TO A FLOW RATE THRU THE RETURN VENTURI OF GREATER THAN 560+/- GPM FOR 60 SECONDS (ADJUSTABLE), THE CONTROL SYSTEM WILL INITIATE CONTROL SIGNALS FOR THE FOLLOWING FUNCTIONS:

- -THE BPCV SOLENOID "A" WILL BE DE-ENERGIZED TO CLOSE THE BPCV. SIGNAL TO STOP LEAD PUMP SHALL OCCUR WHEN PRESSURE INDICATING TRANSMITTER PIT-1 OR PIT-2 RISES ABOVE SET POINT OF 110 PSIG (AS DETERMINED BY HYDRAULICS OF THE SYSTEM).
- -THE PCV SOLENOID WILL BE DE-ENERGIZED (SIMULTANEOUSLY WITH SIGNAL TO DE-ENERGIZE THE BPCV SOLENOID "A") TO BLEED SYSTEM PRESSURE TO 75 PSIG.

4. WITH DPT-1 OR DPT-2 SENSING DIFFERENTIAL PRESSURE CORRESPONDING TO A FLOW RATE OF 600+/- GPM THROUGH THE ISSUE VENTURI AND DPT-3 OR DPT-4 SENSING DIFFERENTIAL PRESSURE CORRESPONDING TO A FLOW RATE OF LESS THAN 40+/- GPM THROUGH THE RETURN VENTURI FOR A PERIOD OF 10 SECONDS A SECOND PUMP WILL BE STARTED.

5. WITH DPT-1 OR DPT-2 SENSING DIFFERENTIAL PRESSURE CORRESPONDING TO A FLOW RATE OF 1200+/- GPM THROUGH THE ISSUE VENTURI AND DPT-3 OR DPT-4 SENSING DIFFERENTIAL PRESSURE CORRESPONDING TO A FLOW RATE GREATER THAN 40+/- GPM BUT LESS THAN 700+/- GPM, THE LEAD FUELING PUMP AND SECOND FUELING PUMP WILL CONTINUE TO RUN AND THE BPCV WILL CONTINUE MODULATING TO PASS FLOW AS NECESSARY TO MAINTAIN UPSTREAM PRESSURE REQUIREMENT AND NO ADDITIONAL CONTROL FUNCTIONS WILL BE INITIATED UNTIL SYSTEM OPERATING CONDITIONS CHANGE.

A. IF DPT-3 OR DPT-4 SENSES A DIFFERENTIAL PRESSURE CORRESPONDING TO A FLOW RATE THROUGH THE RETURN VENTURI OF GREATER THAN 700+/- GPM FOR 15 SECONDS, THE CONTROL SYSTEM WILL INITIATE CONTROL SIGNALS TO SHUT DOWN THE SECOND FUELING PUMP, LEAVING THE SYSTEM TO OPERATE AS DESCRIBED IN PARAGRAPH 3.

NOTE:

*[THE REMAINING SUBSEQUENT FUELING PUMPS WILL BE STARTED USING DPT-1 OR DPT-2 AND STOPPED AS DESCRIBED HEREIN BEFORE IN PARAGRAPH 4, 5, 5A.] THE LEAD FUELING PUMP SHUT DOWN AND RETURN TO IDLE CONDITION WILL BE AS DESCRIBED IN PARAGRAPH 3A.

*DESIGNER NOTE:

DELETE BRACKETS AND INCLUDE NOTE IF MORE THAN TWO (2) PUMPS CAN OPERATE AUTOMATICALLY.

IN THE EVENT A FUELING PUMP IS AUTOMATICALLY CALLED ON AND FAILS TO START OR FAILS AFTER SUCCESSFULLY STARTING (AS INDICATED BY OPEN CONTACTS ON THE ASSOCIATED PUMP DISCHARGE FLOW SWITCH FOR A 15 SECOND INTERVAL). THE AFFECTED FUELING PUMP WILL BE CALLED OFF AND THE NEXT IDLE FUELING PUMP IN THE PREDETERMINED SEQUENCE OF PUMPS WILL BE CALLED ON AUTOMATICALLY.

SYSTEM "LOOP FLUSH" MODE

UPON ESTABLISHING A REQUIREMENT TO FLUSH THE PIPING DISTRIBUTION SYSTEM "LOOP", PERFORM THE FOLLOWING SEQUENCE:

- 1. PLACE FUELING PUMPS HAND-OFF-AUTO SELECTOR SWITCHES (LOCATED IN CONTROL ROOM) TO THE "OFF" POSITIONS.
- 2. PLACE THE MODE SELECTOR SWITCH (LOCATED IN THE CONTROL ROOM) IN THE "LOOP FLUSH" MODE. THIS WILL ENERGIZE THE BPCV SOLENOIDS "A" AND "B" (OPENING THE BPCV).
- 3. POSITION MANUALLY OPERATED VALVES IN THE SYSTEM TO REQUIRED POSITIONS TO DIRECT FUEL THROUGH THE DESIRED FLOW PATH (I.E. TRANSFERRING FUEL FROM ONE OPERATING TANK TO ANOTHER, FLUSHING SUSPECT FUEL FROM LOOP PIPING AND ROUTING THIS FUEL THRU THE RECEIVING FILTER SEPARATOR'S, ETC.)
- 4. SELECT PUMP TO BE USED FOR FLUSHING. PLACE THE FUELING PUMP'S HAND-OFF-AUTO SELECTOR SWITCH IN THE "HAND POSITION. THIS WILL START THE PUMP.

NOTE: THE SECOND PUMP MAY BE STARTED MANUALLY TO OBTAIN A GREATER FLUSHING FLOW RATE.

- 5. FOLLOWING THE FLUSHING PROCEDURE, PLACE FUELING PUMP(S) HAND-OFF-AUTO SELECTOR SWITCH(ES) IN THE "OFF" POSITION. POSITION MANUALLY OPERATED VALVES TO THEIR NORMALLY OPENED OR CLOSED POSITIONS.
- 6. PLACE THE MODE SELECTOR SWITCH IN THE "AUTOMATIC" MODE FROM THE "LOOP FLUSH" MODE, AND ALL FUELING PUMP SELECTOR SWITCHES BACK IN THE "AUTO" POSITIONS.
- 7. OBSERVE SYSTEM OPERATION TO ENSURE SYSTEM RETURNS TO PRESSURIZED IDLE CONDITION.

SYSTEM IN TIGHTNESS TEST MODE (SEE NOTE TO DESIGNER #1)

TO INITIATE A SYSTEM TIGHTNESS TEST:

- 1. PLACE THE MODE SELECTOR SWITCH IN THE "TIGHTNESS TEST" MODE. THIS WILL ENERGIZE THE PRESSURE TEST PANEL. ELECTRIC MOTOR OPERATORS CLOSE VALVES V-7 AND V-8 AND OPEN V-6.
- 2. FOLLOWING THE TEST PROCEDURES, SWITCH THE MODE SELECTOR SWITCH TO "AUTO" POSITION. THE ELECTRIC MOTOR OPERATORS CLOSE VALVE V-6, OPEN VALVES V-7 AND V-8, AND THE SYSTEM WILL RUN THROUGH A NORMAL SHUTDOWN PROCEDURE.

----- FOR CONTINUATION SEE FOLLOWING SHEET 2 OF 2 -----

US ARMY CORPS
OF ENGINEERS

OMAHA DISTRICT

NOTES TO DESIGNER:

1. THE SYSTEM IN TIGHTNESS TEST MODE ASSUMES V-7 AND V-8 HAVE ELECTRIC MOTOR OPERATORS. IF DIRECTED BY THE COMMAND SERVICE HEADQUARTERS TO USE MANUAL VALVES. RE-WRITE TEST MODE ACCORDINGLY.

PRESSURIZED HYLL

IDENTIFICATION NUMBER

M-203b

SCHEME B - SEQUENCE OF OPERATION (CONTINUATION)

SYSTEM IN "PANTOGRAPH FLUSH" MODE

(SEE NOTES TO DESIGNER #16, SHEET M-001)

UPON ESTABLISHING A REQUIREMENT TO FLUSH THE PANTOGRAPH(S), PERFORM THE FOLLOWING SEQUENCE:

- 1. PLACE FUELING PUMPS HAND-OFF-AUTO SELECTOR SWITCHES (LOCATED IN CONTROL ROOM) THE "OFF" POSITIONS.
- 2. PLACE THE MODE SELECTOR SWITCH (LOCATED IN CONTROL ROOM) IN THE "PANTOGRAPH FLUSH" MODE. THIS WILL ENERGIZE THE FLUSHING VALVE (FV) SOLENOID, CLOSING THE VALVE. IT WILL ALSO ENERGIZED THE BPCV SOLENOIDS (OPENING THE BPCV).
- 3. POSITION MANUALLY OPERATED VALVES IN THE SYSTEM TO REQUIRED POSITIONS TO DIRECT FUEL THRU THE DESIRED FLOW PATH.
- 4. CONNECT PANTOGRAPH PRESSURE FUELING NOZZLE TO THE 2-1/2" D-1 NOZZLE ADAPTER.
- 5. SELECT PUMP TO BE USED FOR FLUSHING. PLACE THE FUELING PUMP'S HAND-OFF-AUTO SELECTOR SWITCH IN THE "HAND" POSITION. THIS WILL START THE PUMP AND CLOSE THE PCV. OPERATOR HAS FIFTEEN (15) SECONDS TO DEPRESS HYDRAULICALLY OPERATED "DEADMAN" CONTROL BEFORE PUMP SHUTS OFF.
- 6. USING HYDRAULICALLY OPERATED "DEADMAN" CONTROL FLUSH ONE PANTOGRAPH AT A TIME FOR THE DESIRED INTERVAL.
- 7. AFTER OPERATOR RELEASES "DEADMAN", STOP PUMP WITHIN FIFTEEN(15) SECONDS. OTHERWISE OPERATOR MUST "RESET" AUTOMATIC SHUT-OFF OF FUELING PUMP AT CONTROL ROOM PUMP CONTROL PANEL.

NOTE: THE ABOVE PROCEDURE (PARAGRAPH 4 THRU 7) SHALL BE REPEATED AT EACH AIRCRAFT DIRECT FUELING STATION.

- 8. FOLLOWING THE PANTOGRAPH FLUSHING PROCEDURE, PLACE FUELING PUMP'S HAND-OFF-AUTO SELECTOR SWITCH IN THE "OFF" POSITION. POSITION MANUALLY OPERATED VALVES TO THEIR NORMALLY OPENED OR CLOSED POSITIONS.
- 9. PLACE THE MODE SELECTOR SWITCH IN THE "AUTOMATIC" MODE FROM THE "PANTOGRAPH FLUSH" MODE, AND ALL FUELING PUMP SELECTOR SWITCHES BACK IN THE "AUTO" POSITIONS.
- 10. OBSERVE SYSTEM OPERATION TO ENSURE SYSTEM RETURNS TO PRESSURIZED IDLE CONDITION.

EMERGENCY OPERATION - PLC's DOWN

IN THE EVENT BOTH PLC's ARE DOWN, THE SYSTEM MAY BE ACTIVATED FOR EMERGENCY REFUELING AS FOLLOWS:

- 1. PLACE ALL FUELING PUMP SELECTION SWITCHES IN THE "OFF" POSITION.
- 2. ENSURE SELECTED OPERATING TANK(S) INLET AND OUTLET VALVES ARE OPEN.
- 3. CLOSE INLET SIDE PLUG VALVE TO THE PCV.
- 4. MANUALLY BY-PASS SOLENOID "A" ON BPCV ALLOWING VALVE TO MODULATE AT SET POINT
- 5. MANUALLY START FUELING PUMP(S) AS REQUIRED BY PLACING SELECTOR SWITCH(ES) IN THE "HAND" POSITION.

NOTE:

OPERATOR IS REQUIRED TO CONTINUOUSLY VERIFY OPERATING TANK(S) FUEL LEVEL TO ENSURE AN ADEQUATE FUEL SUPPLY IS AVAILABLE. FUEL LEVEL VERIFICATION SHALL BE BY MEANS OF THE OPERATING TANK(S) GROUND LEVEL READING GAGE. UPON COMPLETION OF EMERGENCY OPERATION, OPERATOR SHALL OPEN INLET SIDE PLUG VALVE TO PCV, CLOSE SOLENOID BY-PASS VALVE ON BPCV AND RETURN FUELING PUMP SELECTOR SWITCHES TO THEIR ORIGINAL POSITIONS.

* EMERGENCY REFUELING USING RETURN LINE

IN THE EVENT THE 8 INCH FUEL SUPPLY LINE TO THE AIRCRAFT DIRECT FUELING STATION MUST BE SHUT DOWN, EMERGENCY REFUELING THRU THE RETURN LINE CAN BE USED WHILE OPERATING REFUELING PUMP MANUALLY.

METHOD:

- 1. CLOSE MANUALLY OPERATED VALVES V-5, V-8, V-11, V-13.
- 2. OPEN MANUALLY OPERATED VALVES V-6, V-15 IF SYSTEM CONTAINS ISOLATION VALVE(S), AN ADDITIONAL FLOW PATH FOR EMERGENCY REFUELING THRU RETURN LINE WOULD BE AS FOLLOWS:
- 1. CLOSE MANUALLY OPERATED VALVES V-5, V-8, V-9, V-11 2. OPEN MANUALLY OPERATED VALVES V-6, V-12
- * SEE SHEET M-202 FOR VALVE DESIGNATION NUMBERS.

RELEASE OF PANTOGRAPH PRESSURE

OPERATOR MAY RELEASE PANTOGRAPH PRESSURE, BEFORE CONNECTING TO AIRCRAFT AND BEFORE OPENING REFUELING CONTROL VALVE, BY MEANS OF SPRING RETURN HANDLE LOCATED IN BYPASS AROUND PANTOGRAPH PRESSURE CONTROL VALVE (PPCV).

EMERGENCY STOP AND RESET

- 1. DEPRESSION OF ANY EMERGENCY STOP PUSHBUTTON OR ACTUATION OF THE FIRE ALARM SYSTEM SHALL STOP FUELING PUMPS AND DE-ENERGIZE THE EMERGENCY SHUT-OFF VALVE'S SOLENOID CAUSING THE VALVE TO CLOSE. THIS ACTION IS EXECUTED WITHOUT REGARD FOR WHETHER PUMPS WERE AUTOMATICALLY CALLED ON OR MANUALLY STARTED.
- 2. IN ORDER TO RESET SYSTEM AFTER AN ALARM, DEPRESS "RESET" PUSHBUTTON LOCATED AT PUMP CONTROL PANEL AFTER RESETTING THE INITIAL ACTIVATED EMERGENCY STOP PUSHBUTTON STATION AND/OR FIRE ALARM SYSTEM.

STORAGE TANK SELECTION "AUTOMATIC MODE"
OR "TIGHTNESS TEST MODE"

TO INITATE FUELING OPERATION IN THE "AUTOMATIC MODE OR THE PRESSURE TEST MODE," THE 4-VALVE MANIFOLD AND THE TANK OUTLET (WITHDRAWAL) VALVES MUST BE IN THE PROPER POSITION, AS SHOWN IN THE VALVE POSITION MATRIX, TO ENABLE FUELING OPERATIONS.

			VALVE F	POSITION		
OPERATION		TANK #1		TANK #2		
	I1	V-1	V-3	I 2	V-2	V-4
RECIRCULATION TO TANK NO. 1 & BULK RECEIPT TO TANK NO. 2	OPEN	OPEN	CLOSED	CLOSED	CLOSED	OPEN
RECIRCULATION TO TANK NO. 2 & BULK RECEIPT TO TANK NO. 1	CLOSED	CLOSED	OPEN	OPEN	OPEN	CLOSED
RECIRCULATION THROUGH RECEIPT FILTER SEPARATORS TO TANK NO. 1	OPEN	CLOSED	OPEN	CLOSED	CLOSED	CLOSED
RECIRCULATION THROUGH RECEIPT FILTER SEPARATORS TO TANK NO. 2	CLOSED	CLOSED	CLOSED	OPEN	CLOSED	OPEN

BACK PR	RESSURE CONTI (BPCV) SOLENC		
CONDITION	VALVE ACTION	SOLENOID "A"	SOLENOID "B"
"AUTOMATIC" MODE PUMP START-UP	ENABLE	ENERGIZED	DE-ENERGIZED
"AUTOMATIC" MODE PUMP SHUT-OFF	CLOSE	DE-ENERGIZED	DE-ENERGIZED
"LOOP FLUSH" AND "PANTOGRAPH FLUSH" MODES	OPEN	ENERGIZED	DE-ENERGIZED
TIGHTNESS TEST MODE	ENABLE	DE-ENERGIZED	ENERGIZED

FLUSHING VALVE (FV) OPERATION					
CONDITION	VALVE ACTION	SOLENOID			
"LOOP FLUSH" MODE	OPEN	DE-ENERGIZED			
"PANTOGRAPH FLUSH" MODE	CLOSE	ENERGIZED			
"AUTOMATIC" MODE	OPEN	DE-ENERGIZED			
TIGHTNESS TEST MODE	OPEN	DE-ENERGIZED			

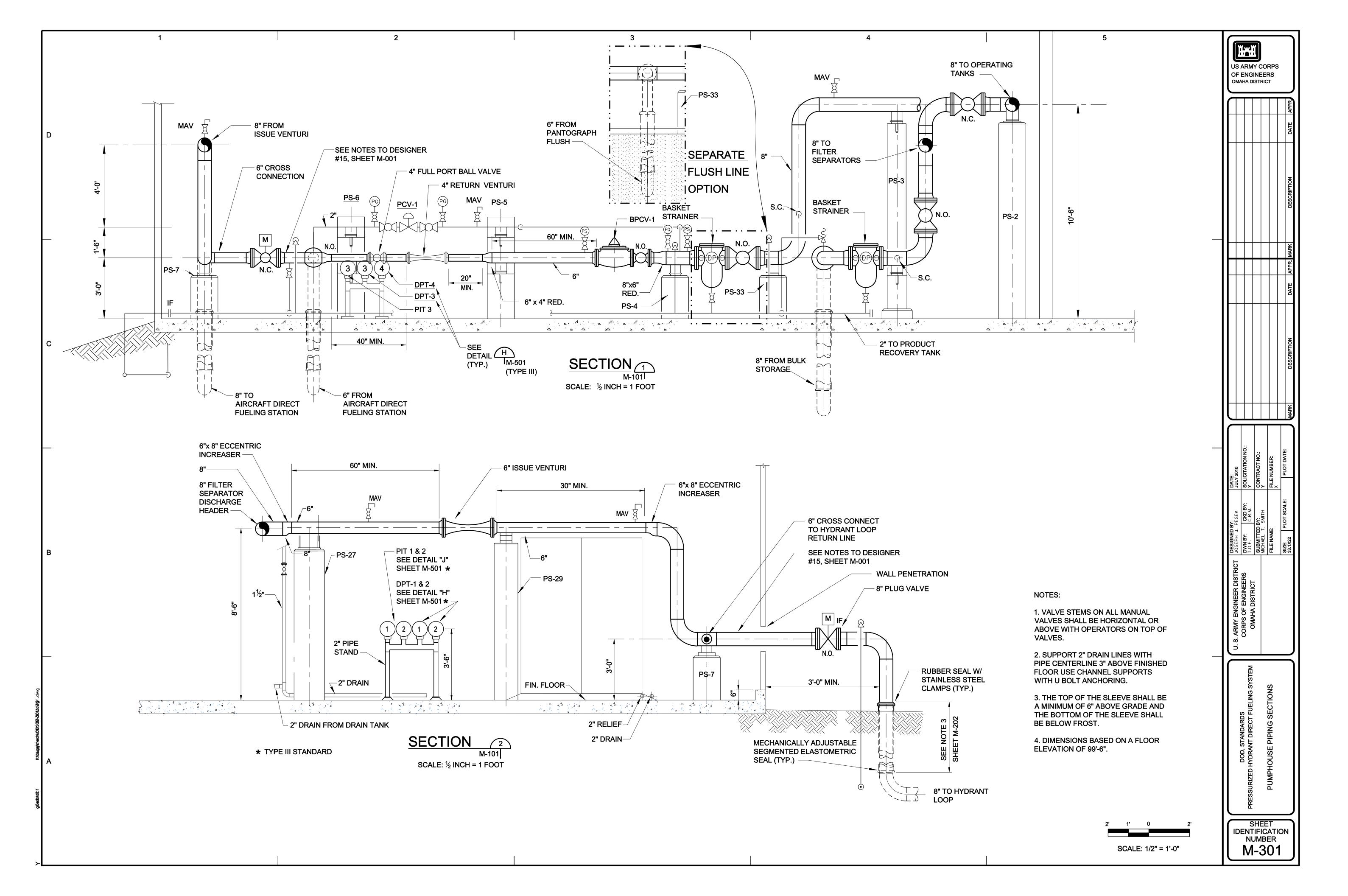
PRESSURE CONTROL VA	PRESSURE CONTROL VALVE (PCV) OPERATION						
CONDITION	VALVE ACTION	SOLENOID 'A'	SOLENOID 'B'				
PUMP START-UP (AUTO OR HAND)	CLOSE	ENERGIZED	DE-ENERGIZED				
PUMP SHUT-OFF (AUTO OR HAND)	ENABLE	DE-ENERGIZED	DE-ENERGIZED				
TIGHTNESS TEST MODE	ENABLE	ENERGIZED	ENERGIZED				

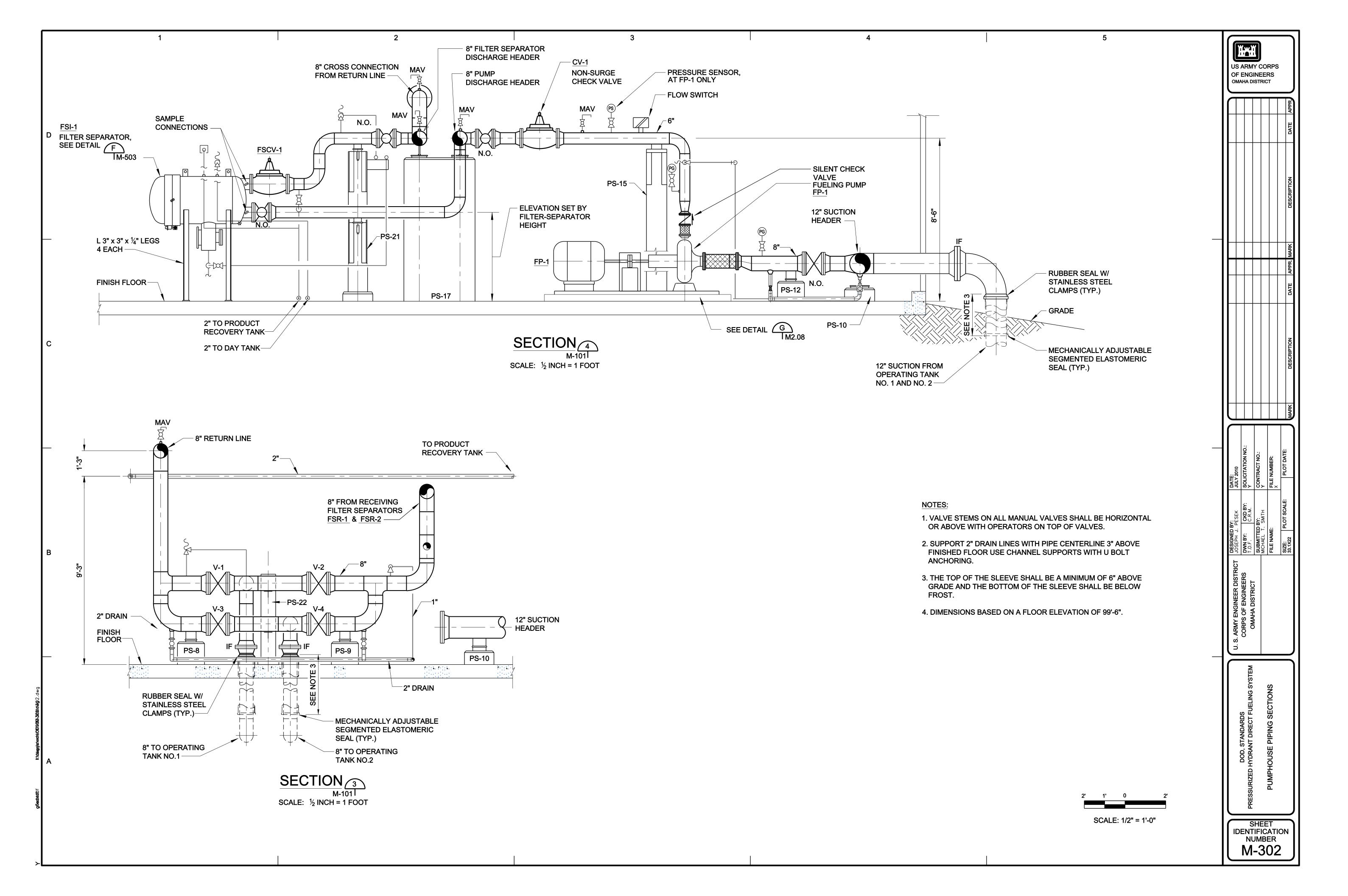


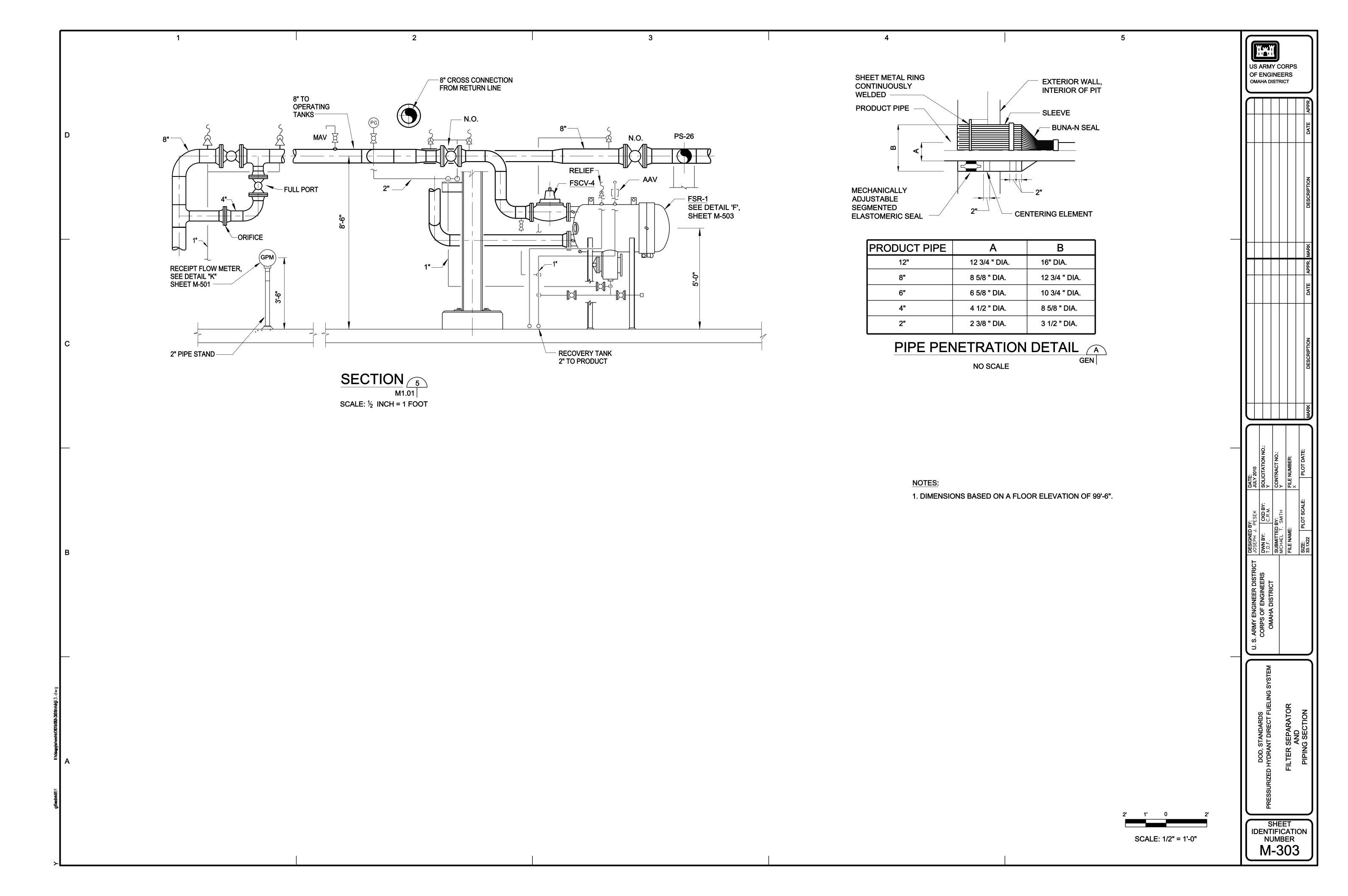
II S ARMY ENGINEER DISTRICT	DESIGNED BY:	BY: DESEK	DATE:
CORPS OF ENGINEERS	DWN RV.	CKD BY:	SOLI CITATION NO
OMAHA DISTRICT	T.D.F.	C.R.M.	\ \
	SUBMITTED BY:) BY:	CONTRACT NO.:
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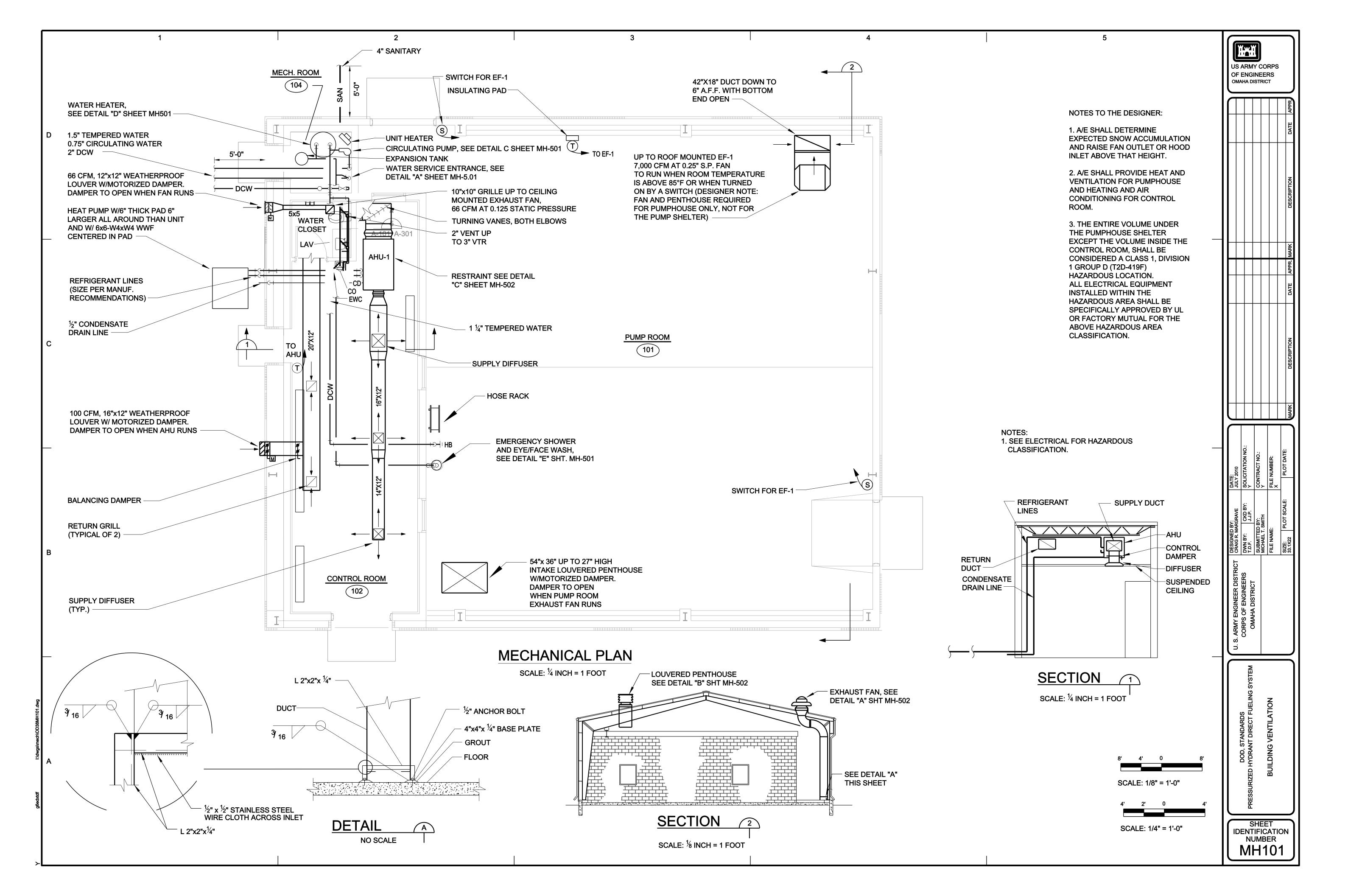
PRESSURIZED HYDRANT DIRECT FUELING
SEQUENCE OF OPERATION
SCHEME B

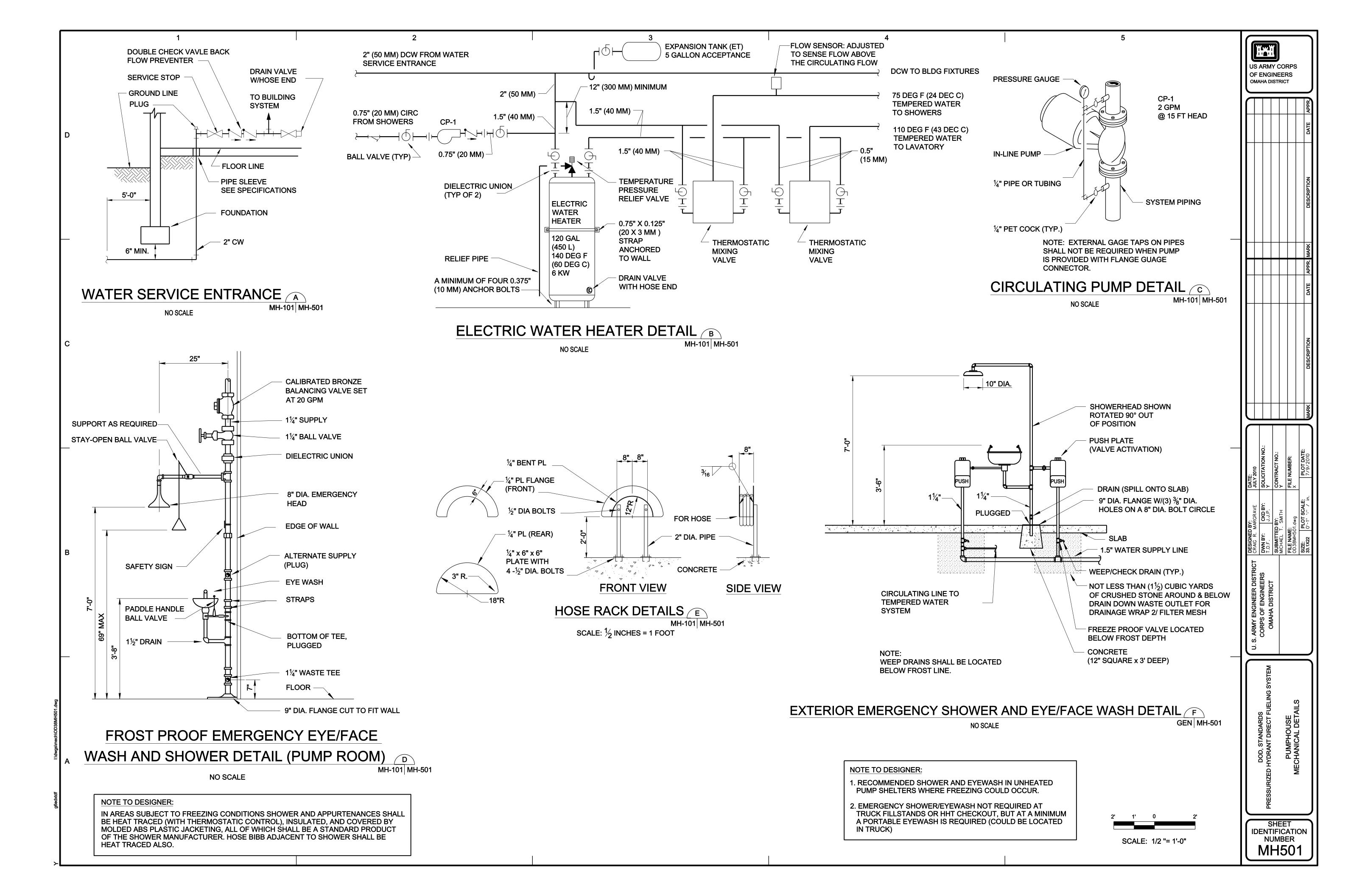
SHEET
IDENTIFICATION
NUMBER
M-204b

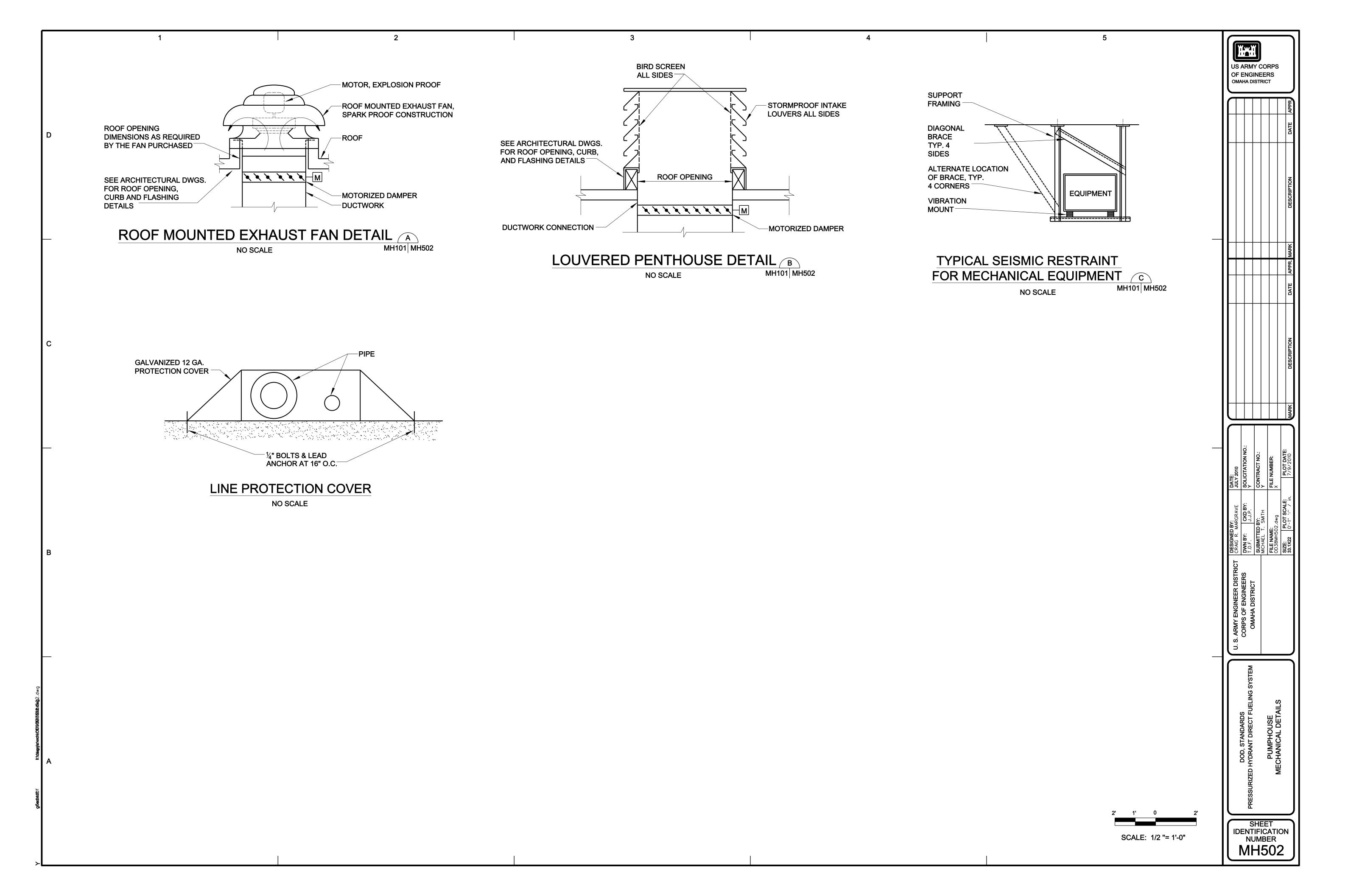


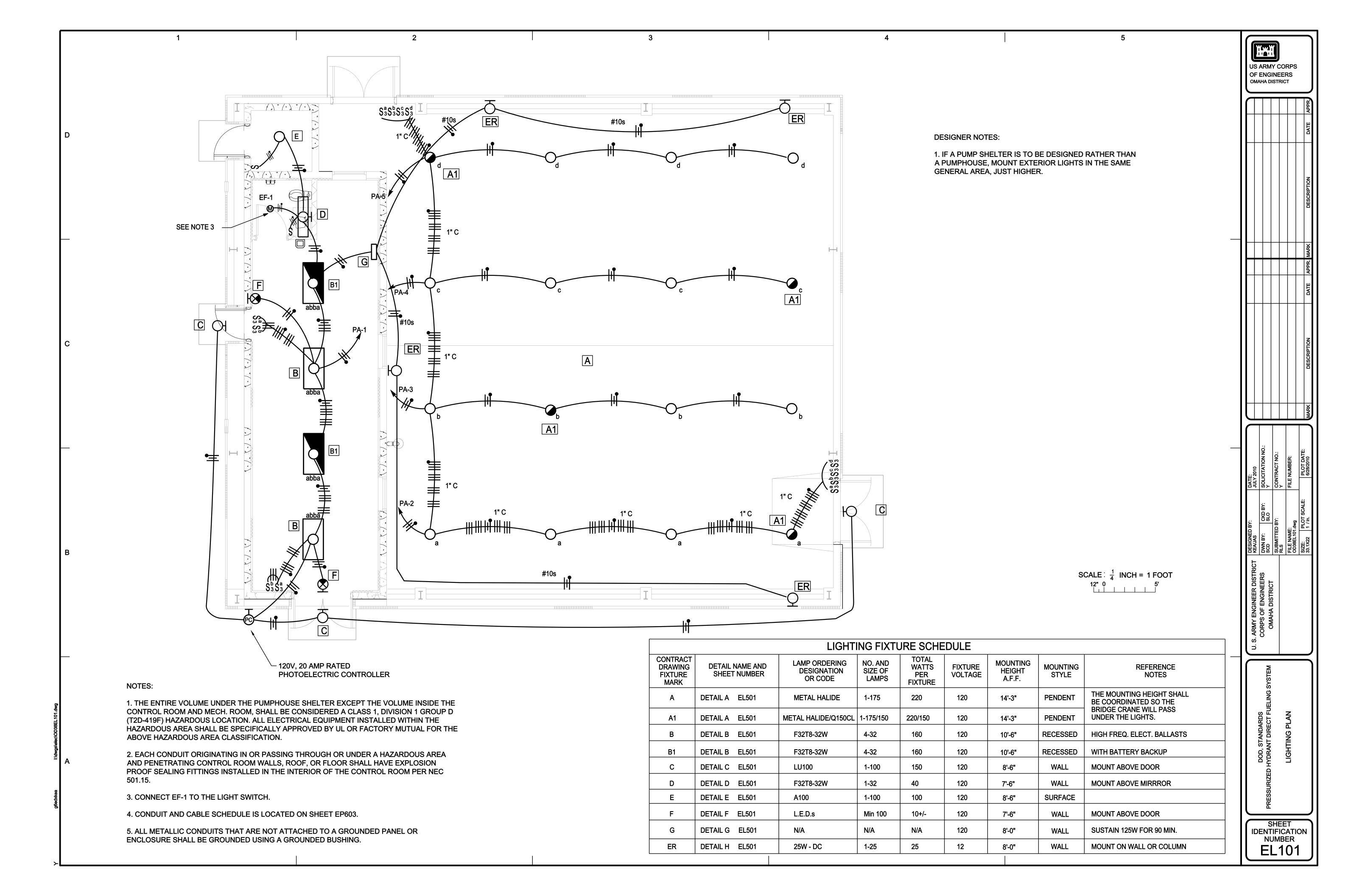












DETAIL FIXTURE TYPE "A" AND "A1" **MOUNTING DETAIL**

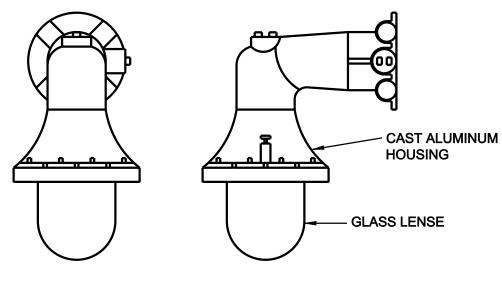
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NOTES:

HEAT AND IMPACT RESISTANT

PRE-STRESSED GLASS GLOBE

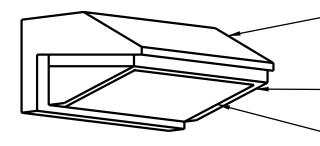
- 1. LUMINAIRE SHALL COMPLY WITH UL 844 FOR CLASS I, DIVISION I, GROUP D (T2D-419 F)
- HAZARDOUS LOCATIONS.
- 2. ALL JOINTS SHALL BE THREADED TYPE.
- 3. FIXTURE SHALL HAVE INTERNAL PROVISIONS FOR GROUNDING.
- 4. PROVIDE WIRE GUARD OVER REFRACTOR. 5. FIXTURE "A1" SHALL HAVE AN ADDITIONAL 150W
- QUARTZ HOT RESTRIKE CAPABILITY.





NOTES:

1. FIXTURE SHALL COMPLY WITH UL 844 FOR CLASS 1, DIV. 1, GROUP D (T2D-419 F) HAZARDOUS LOCATION AND CONTAIN 1-25W, 12V LAMP.



DIE CAST ALUMINUM DOOR, BACKPLATE AND HOUSING ASSEMBLY. BRUSHED ALUMINUM FINISH W/CLEAR ACRYLIC LACQUER COATING. HINGED DOOR W/STAINLESS STEEL

3

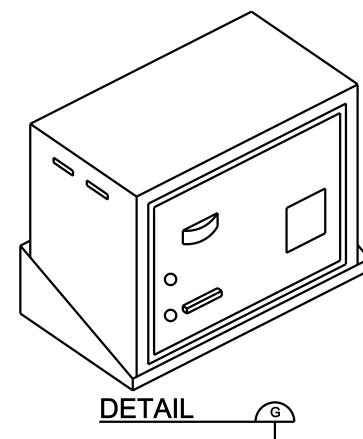
SAFETY STRAP AND LATCHES. PRISMATIC BOROSILICATE **GLASS REFRACTOR.**

DETAIL FIXTURE TYPE "C"

NO SCALE

NOTES:

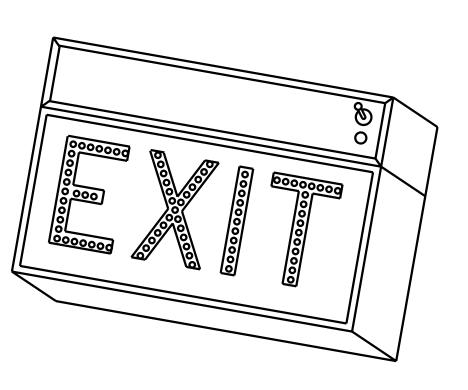
- 1. PROVIDE ANODIZED ALUMINIM REFLECTOR AND ADJUSTABLE MOGUL BASE GLAZED PORCELAN LAMPHOLDER, PREWIRED.
- 2. PROVIDE CAST KNOCKOUTS FOR RECESSED BOX MOUNTING.
- 3. FIXTURE SHALL HAVE INTERNAL PROVISIONS FOR GROUNDING.
- 4. FIXTURE SHALL CONFORM TO UL 1572 AND FOR WET LOCATIONS.
- 5. PROVIDE 120V HIGH POWER TYPE BALLAST FOR OPERATION AT AMBIENT TEMPERATURES FROM MINUS 20 DEGREES TO 105 DEGREES F.



FIXTURE TYPE "Ġ"

NO SCALE 12 VOLT EMERGENCY BATTERY POWER SUPPLY UNIT

THE UNIT SHALL CONFORM TO UL 924, AND SHALL MEET OR EXCEED THE NFPA 70 TIME AND VOLTAGE REQUIREMENTS. THE UNIT SHALL BE DUAL-RATED FOR USE ON EITHER 120-VOLT OR 277-VOLT ALTERNATING CURRENT POWER SUPPLIES. FOLLOWING SUSTAINED LOSS OF THE NORMAL POWER SUPPLY, THE UNIT SHALL BE CAPABLE OF AUTOMATICALLY AND INSTANTANEOUSLY SUPPLYING AT LEAST 125 PERCENT OF THE FULL LOAD CURRENT OF THE QUANTITY AND WATTAGE RATING OF REMOTELY-MOUNTED FLOODLIGHTS INDICATED ON APPLICABLE CONTRACT DOCUMENTS. IT SHALL ALSO BE CAPABLE OF SUPPLYING 125 PERCENT OF THE FULL LOAD CURRENT OF THE FLOODLIGHTS FOR A PERIOD OF NOT LESS THAN 90 MINUTES. AND UNTIL THE BATTERY HAS BEEN DISCHARGED TO 87.5 PERCENT OF THE NOMINAL VOLTAGE RATING OF THE FLOODLIGHTS. A BATTERY LOW-VOLTAGE CUTOUT OR DISCONNECT FEATURE SHALL BE INCORPORATED INTO THE UNIT TO PROTECT THE BATTERY AGAINST DAMAGE IF THE BATTERY VOLTAGE DROPS BELOW 87.5 PERCENT OF THE NOMINAL VOLTAGE RATING OF THE BATTERY FLOODLIGHTS INDICATED ON APPLICABLE CONTRACT DOCUMENTS. THE BATTERY SHALL BE THE SEALED MAINTENANCE-FREE TYPE DESIGNED FOR 10 YEARS OF MAINTENANCE-FREE SERVICE, AND SHALL BE PROVIDED WITH HYDROMETER INDICATORS IF OF THE LEAD-CALCIUM TYPE CONTAINING A SULFURIC ACID ELECTROLYTE. THE BATTERY CHARGER SHALL BE CAPABLE OF FULLY RECHARGING THE BATTERY WITHIN 12 HOURS AFTER DISCHARGE TO 87.5 PERCENT OF THE NOMINAL BATTERY VOLTAGE. THE BATTERY CHARGER SHALL BE THE SOLID-STATE TYPE, AND SHALL PROVIDE A CONTINUOUS, VARIABLE, CURRENT-LIMITED, FILTERED AND REGULATED CHARGE RATE. BATTERY AND CHARGER SHALL BE CONTAINED IN A STEEL CABINET NOT LESS THAN 18 GUAGE IN THICKNESS WITH AN ENAMEL FINISH, UNLESS OTHERWISE APPROVED, AND SHALL HAVE AN ELECTROLYTE-RESISTANT UNDERCOAT IF A CORROSIVE ELECTROLYTE IS HOUSED IN THE BATTERY CASE. MOUNTING BRACKETS OR A MOUNTING SHELF SHALL BE PROVIDED FOR THE CABINET, COMPLETE WITH MOUNTING HARDWARE FINISHED TO MATCH THE CABINET. MOUNTING SLOTS FOR WALL OR SHELF MOUNTING SHALL BE PROVIDED, AS INDICATED ON APPLICABLE CONTRACT DOCUMENTS. THE CABINET SHALL HAVE SEPARATE BATTERY AND BATTERY-CHARGER COMPARTMENTS TO FACILITATE REMOVAL AND REPLACEMENT OF THOSE COMPONENTS, A HINGED ACCESS DOOR, AND PROVISIONS FOR TERMINATING AC AND DC CONDUCTORS AND CONDUITS. A LOAD RELAY WITH 30-AMPERE CONTACTS SHALL BE PROVIDED IN ADDITION TO THE NUMBER OF 10-20 AMPERE DISTRIBUTION CIRCUITS AS NECESSARY TO SUPPLY 125 PERCENT OF THE LOAD DEMANDS OF THE QUANTITY AND RATING OF THE REMOTELY-MOUNTED FLOODLIGHTS. THE UNIT SHALL BE PREWIRED AND SHALL BE EQUIPPED WITH A CHARGE-INDICATOR LIGHT, AND A PUSH-TO-TEST SWITCH AND SUITABLE METER TO INDICATE THE BATTERY VOLTAGE WHEN THE SWITCH IS CLOSED.





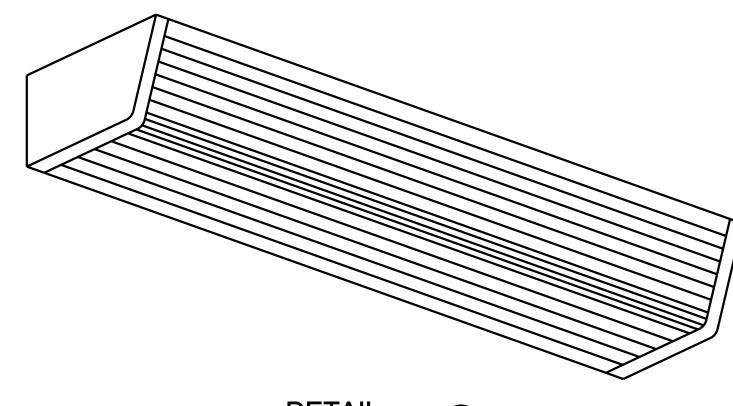
NO SCALE

NOTES:

- 1. FIXTURE SHALL CONFORM TO UL 924 & NFPA 101.
- 2. HOUSING SHALL BE ALUMINUM OR STEEL.

AND SHALL HAVE 6 INCH GREEN LETTERS WITH

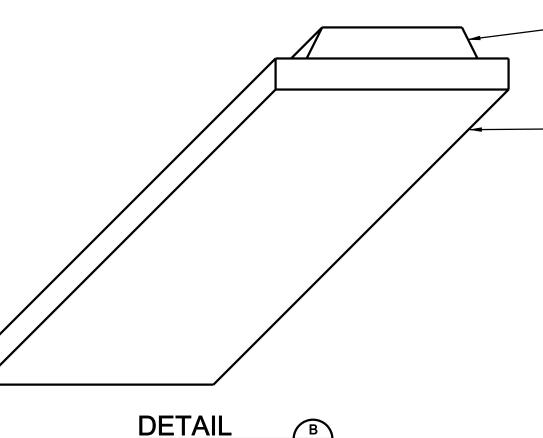
- 3. FIXTURE SHALL HAVE MIN. OF 100 LIGHT EMITTING DIODES. 4. FACE PANEL SHALL BE MOLDED POLYCARBONATE PLASTIC OR GLASS, SHALL BE OF THE WHITE DIFFUSING TYPE SIMILAR TO OPAL OR ALBALITE,
- 3/4 INCH STROKE. 5. FIXTURE SHALL BE WALL MOUNTED.
- 6. FIXTURE SHALL HAVE AN AUTOMATIC SOLID STATE CHARGER AND A SEALED, RECHARGEABLE, MAINTENANCE FREE LEAD OXIDE OR NICKEL CADMIUM BATTERY. FIXTURE SHALL HAVE A LIGHT EMITTING DIODE PILOT LIGHT TO SHOW THAT THE BATTERY CHARGER IS FUNCTIONING. A TEST SWITCH TO SIMULATE A POWER FAILURE AND ALLOW CHECKING OF EMERGENCY BATTERY
- SYSTEM SHALL BE PROVIDED. 7. FIXTURE SHALL BE PREWIRED.



DETAIL FIXTURE TYPE "D" NO SCALE

NOTES:

- 1. FIXTURE SHALL CONFORM TO UL 1570.
- 2. HOUSING SHALL BE OF DIE FORMED COLD ROLLED STEEL HAVING A MONIMAL THICKNESS OF NOT LESS THAN 0.030 INCH. THE BACK HOUSING SHALL BE ONE PIECE, SOLID ALONG ITS ENTIRE LENGTH. END PLATES SHALL BE DIE FORMED STEEL AND SHALL BE FASTENED SECURELY TO THE HOUSING IN A MANNER THAT PERMITS NO LIGHT LEAKAGE.
- 3. ALL METAL PARTS SHALL RECEIVE A RUST INHIBITIVE COATING AND A BAKED WHITE ENAMEL FINISH COAT.
- 4. LENS SHALL BE PRISMATIC, ONE PIECE, 0.125 INCH NOMINAL THICKNESS, AND 100 PERCENT VIRGIN ACRYLIC. LENS SHALL BE ATTACHED TO THE HOUSING SO THERE IS NO LIGHT LEAKAGE. LENS SHALL BE HELD IN PLACE BY CONCEALED HINGES, BY REINFORCING RIBS ALONG THE EDGES, OR BY
- RESTING ON THE END PLATES. 5. FIXTURE SHALL BE PREWIRED.



FIXTURE TYPE "B" & "B1"

1. ENTIRE HOUSING SHALL BE PAINTED WHITE.

3. THE FIXTURE SHALL BE RECESSED TYPE.

4. BALLAST SHALL BE UL LISTED, CLASS P,

5. FIXTURE SHALL HAVE INTERNAL PROVISIONS

6. FIXTURE B1 IS THE SAME AS B EXCEPT THAT

LIFTED BY ONE CORNER.

TWO IN THE TOP OF HOUSING.

WITH SOUND RATING OF "A".

IT INCLUDES BATTERY BACKUP.

FOR GROUNDING.

HOUSING SHALL NOT PERMANENTLY DEFORM

2. HOUSING ENDS SHALL BE SECURED BY RIVETS OR

SCREWS. PROVIDE A KNOCKOUT IN EACH END AND

NOR SHALL IT DEFLECT MORE THAN 1" WHEN

NOTES:

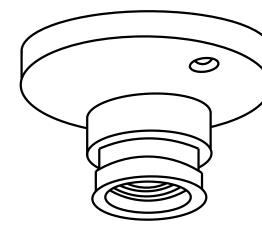
NO SCALE

W/CHEMICAL TREATMENT FOR RUST PREVENTION AND BAKED WHITE ENAMEL FINISH.

PRISMATIC CLEAR EXTRUDED 100 PERCENT ACRYLIC LENS HAVING MIN. OVERALL THICKNESS OF 0.10 INCHES WITH MAX. PRISM PENETRATION DEPTH OF 0.07 INCHES AT BOTTOM OF LENS.

.026 MIN. THICKNESS STEEL HOUSING

LAMP TYPE: 100W A21/IF PROFILE: 1 LAMP



NOM. DIMENSIONS 102 mm X 60 mm (4" DIA. X 2□" D)

GENERAL DESCRIPTION

HOUSING: PORCELAIN SOCKET LAMP HOLDER WITH MEDIUM BASE SOCKET

ELECTRICAL: 120 VOLT

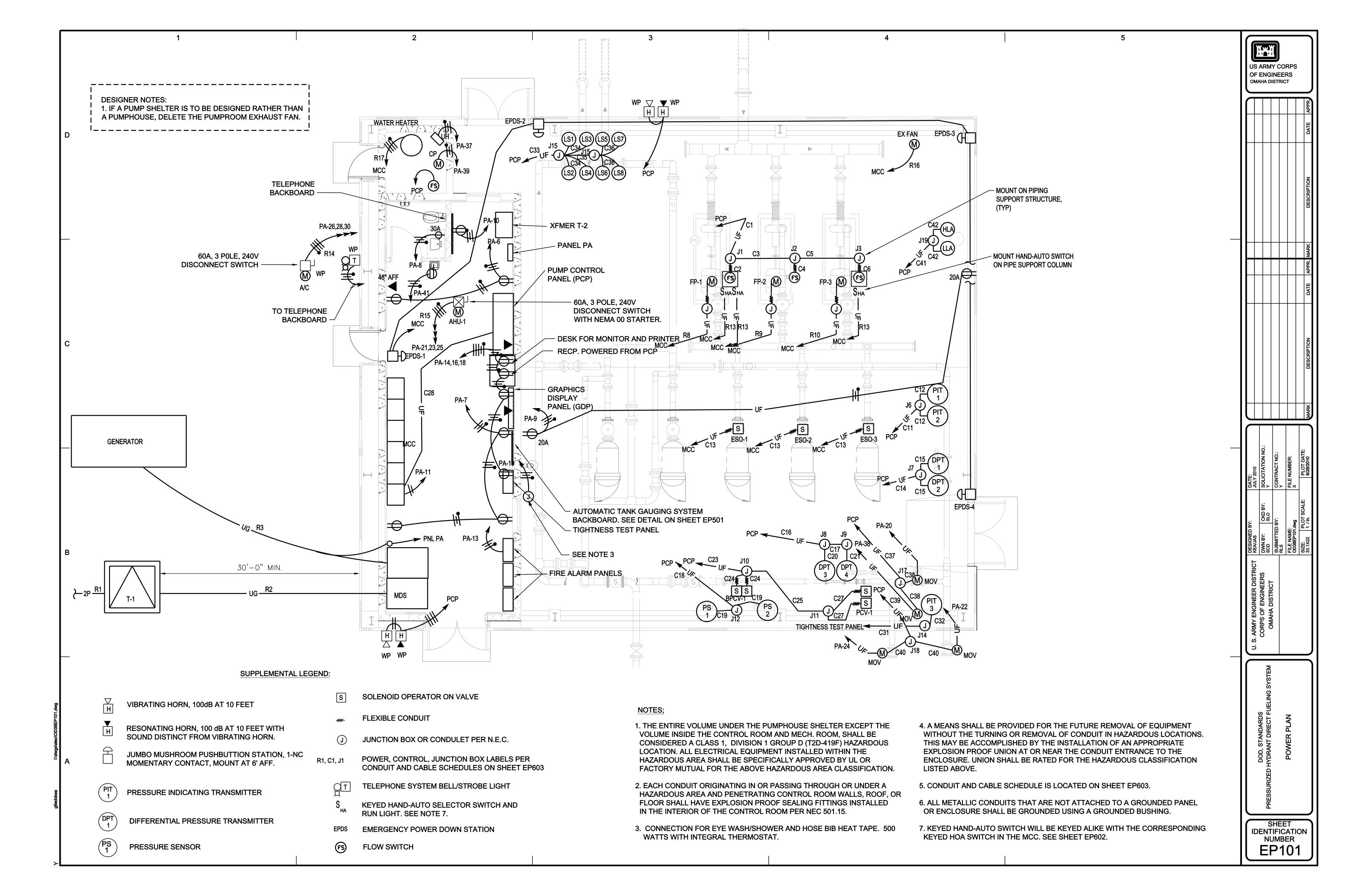
FINISH: WHITE

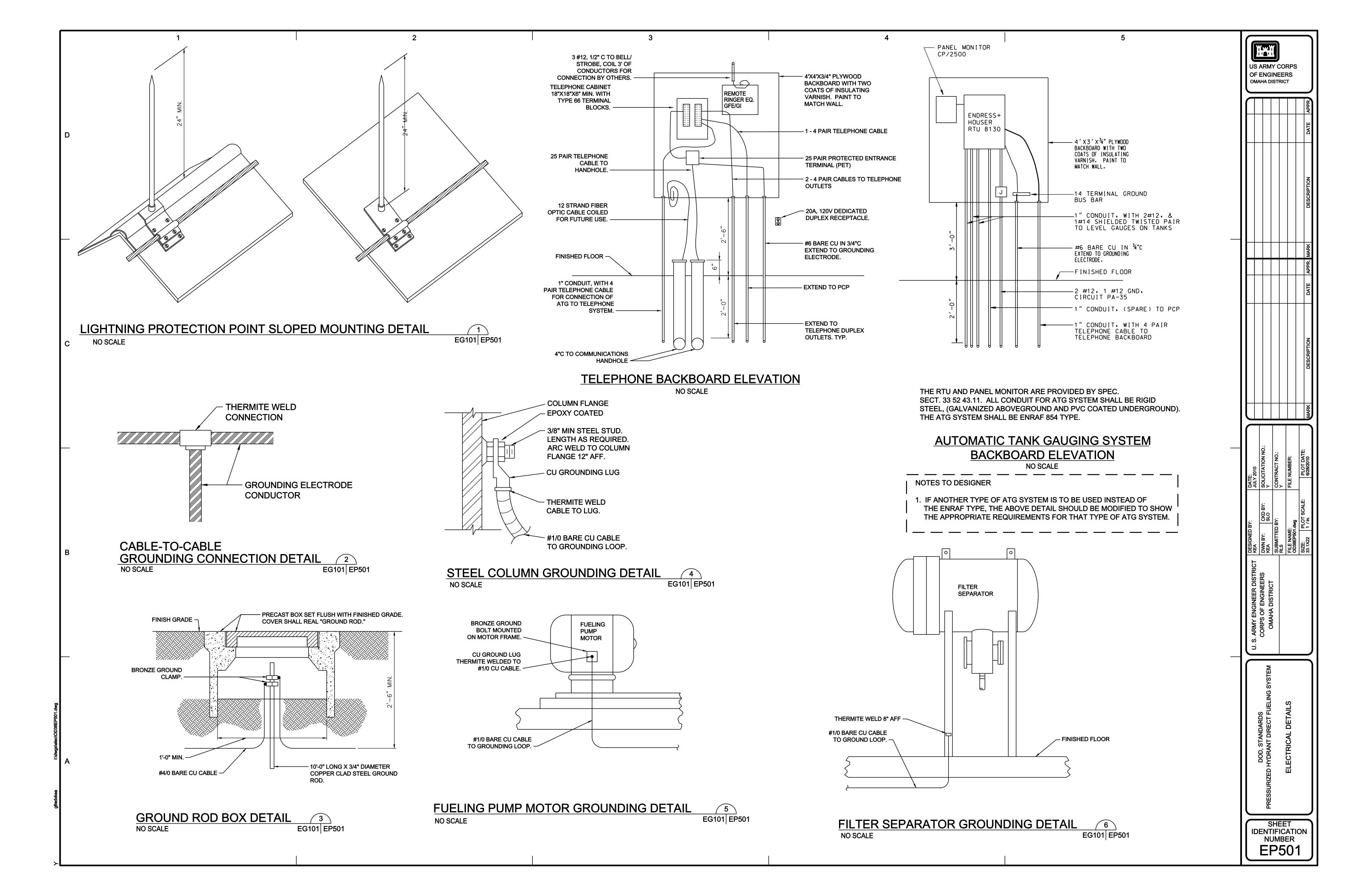


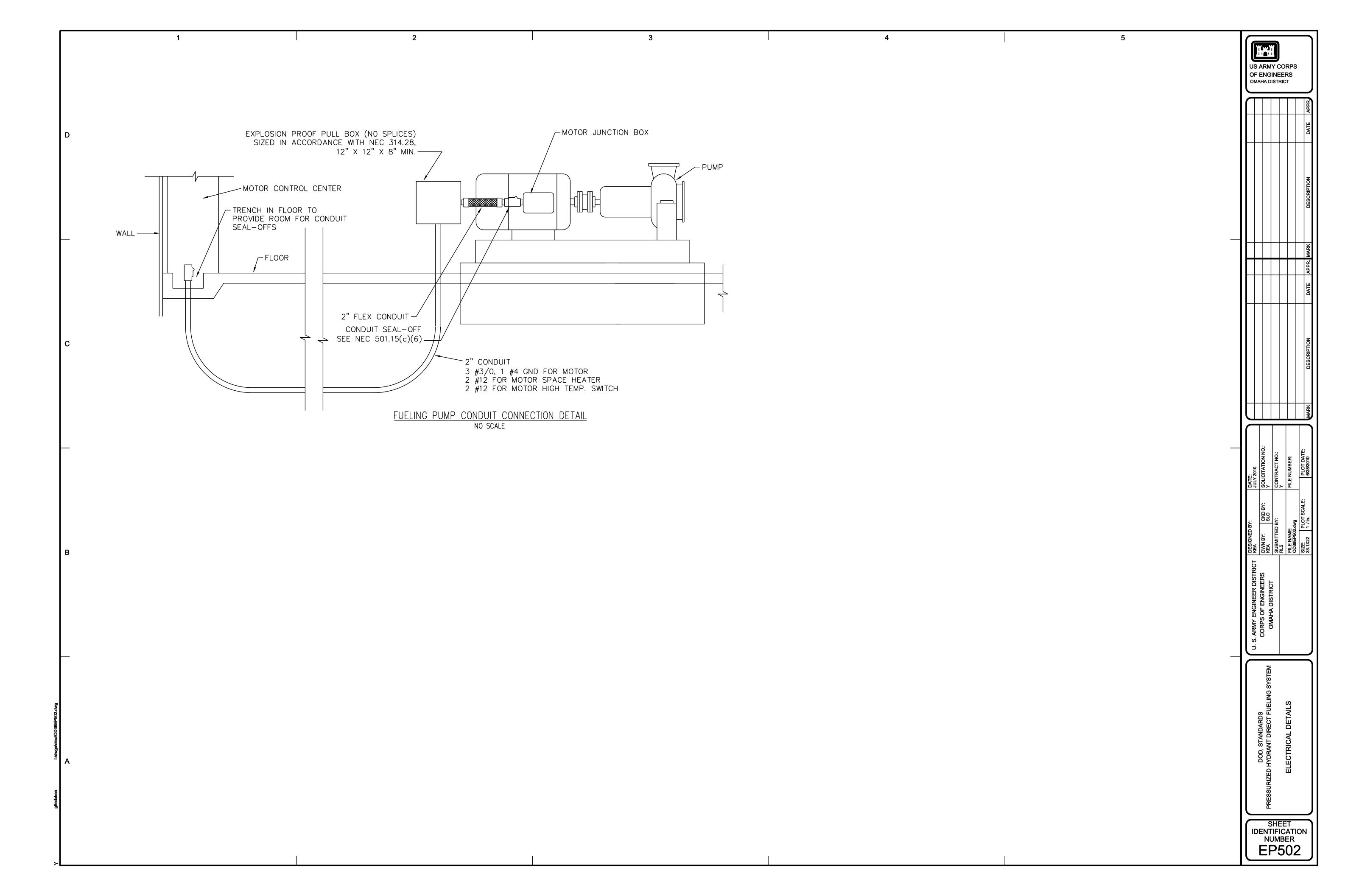
US ARMY CORPS OF ENGINEERS

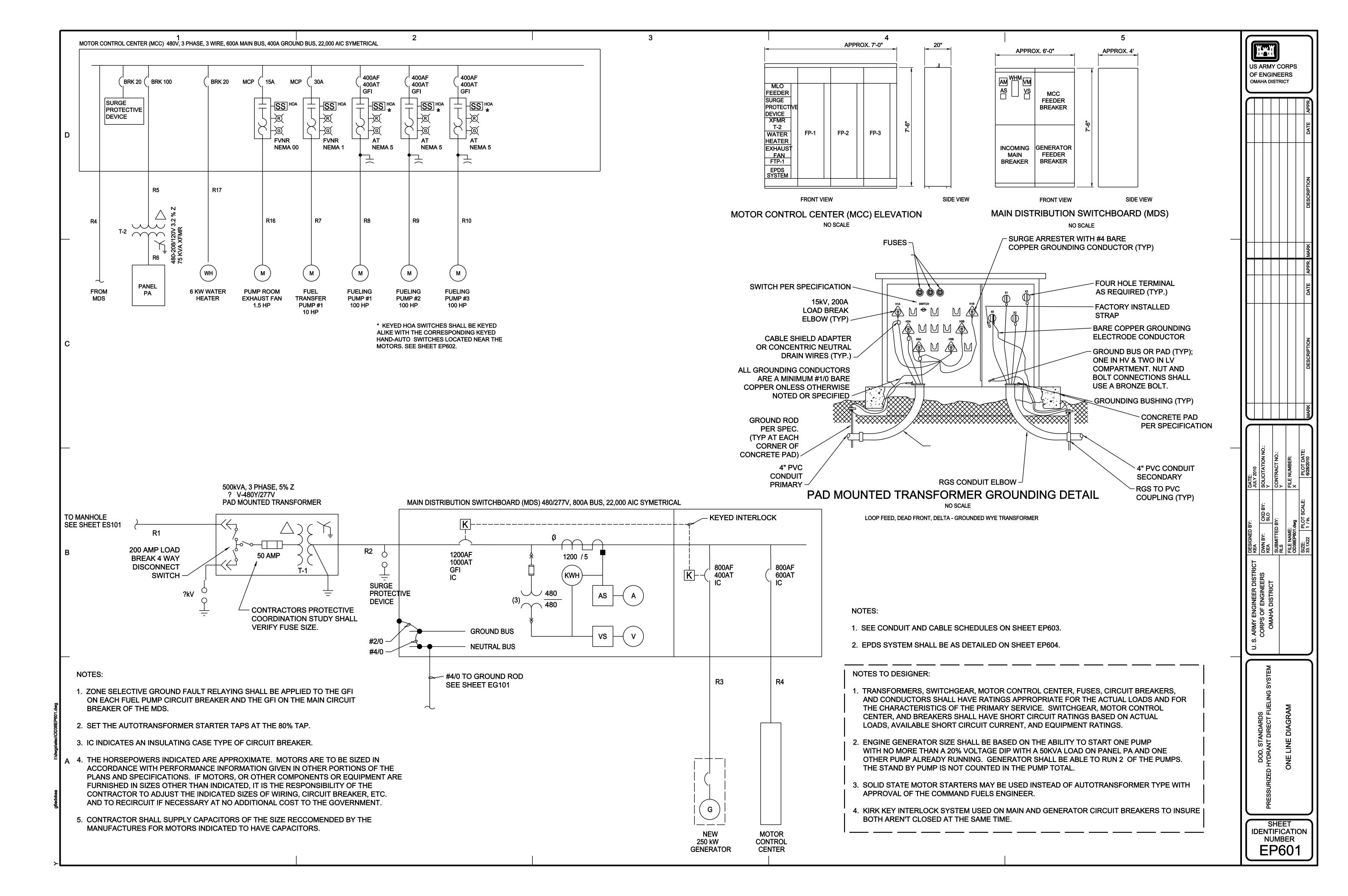
OMAHA DISTRICT

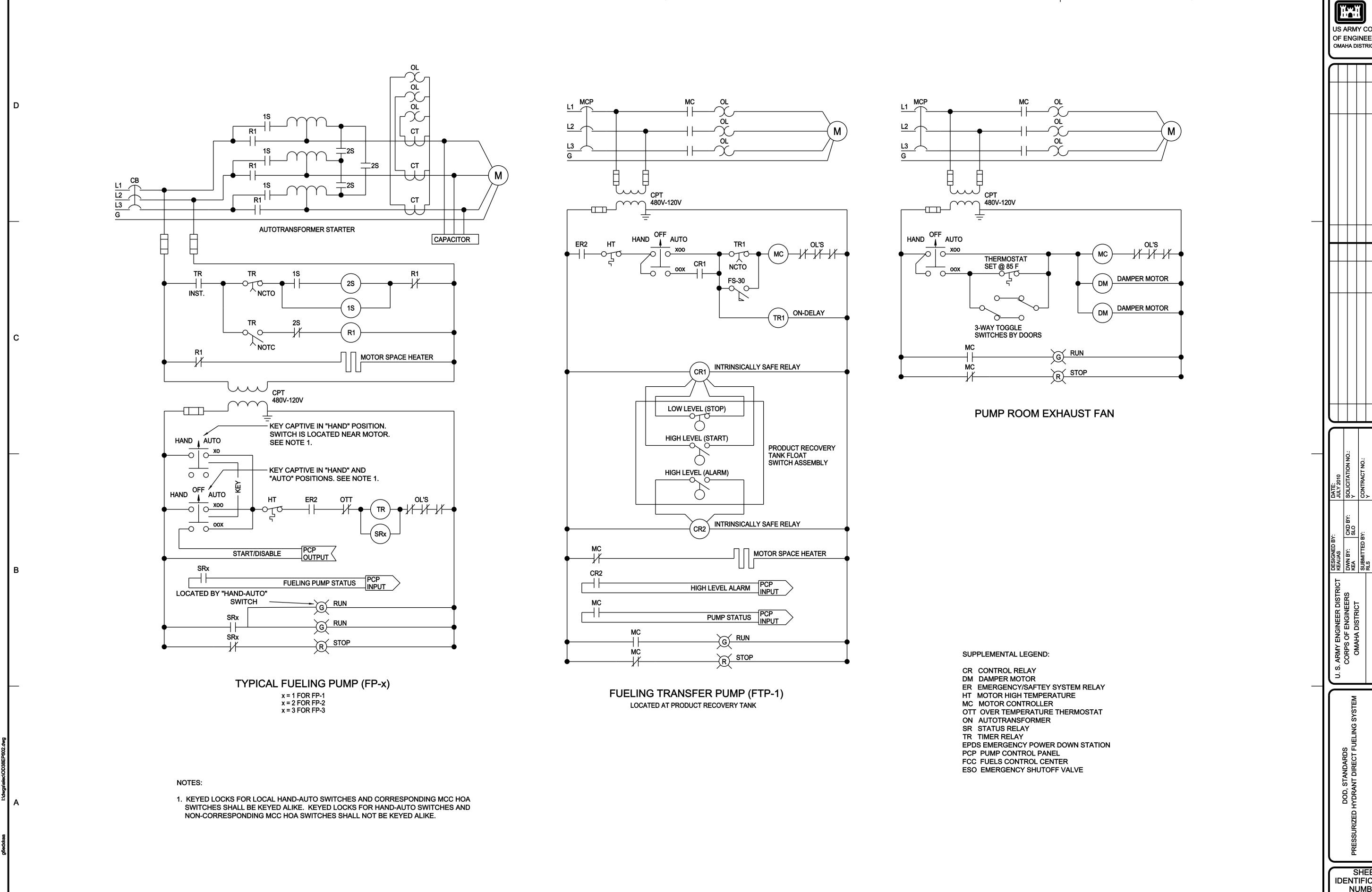
SHEET **IDENTIFICATION** NUMBER **EL50**′











US ARMY CORPS OF ENGINEERS OMAHA DISTRICT

IDENTIFICATION NUMBER EP602

3 Panel Schedule PANEL PA 3 Phase 4 Wire Voltage LL: 208 Voltage LG: 120 MOUNTING: SURFACE BUS RATING: 225 OC DEVICES: BREAKER DEVICE FAMILY: BOLT-ON **ENCLOSURE: NEMA 1** FAULT DUTY: 10000 AIC COMMENTS: 200A MAIN BREAKER CKT. DESCRIPTION/ *LOAD CRITERIA* **TOTAL** DEVICE P DEVICE CKT TOTAL *LOAD CRITERIA* DESCRIPTION/ TYPE EA QTY. DEM. VA. REMARKS AMPS P H AMPS P REMARKS VA TYPE EA QTY. DEM. LOCATION NO. NO. LOCATION 2 1800 2 540 20 | 1 | A | 20 LTG LTG LIGHTING 2 LIGHTING AND EF-1 20 1 B 20 LTG LTG LIGHTING 540 LIGHTING 4 D 5 LIGHTING 2 540 20 1 C 20 1 LTG 540 RECP RECEPTACLE 6 20 1 A 20 1000 RECEPTACLE RECP 3 540 SPR SPARE RECEPTACLE (TEL) 3 | 1000 20 1 B 20 500 RECEPTACLE RECP **RECP** 10 1 | 500 11 SAFETY CIRCUIT POWER 20 1 C 20 1600 MOT PROD. RET. PUMP 1&2 12 GEN 20 1 A 20 1000 PCP CONTROL POWER 13 FIRE ALARM 500 14

20 1 B 20

20 1 A 20

30 3 B 20

20 | 1 | A | 20

20 1 B 20

20 1 C 20

20 1 A 20 20 1 B 20 20 1 C 20

20 | 1 | B

20 1 C

20 1 C 20 1

C 20 1

A 40 3

1000

1000

1000

1000

1000

4200

4200

4200

1240

1550

930

1000

1000

CT

CT

MOT

MOT

MOT

MOT

MOT

MOT

LTS

MOT

SPR

1000 | SPR

310 4

LTS 310 5

LTS 310 3

PCP CONTROL POWER

PCP CONTROL POWER

MOV

MOV

A/C COND

A/C COND

A/C COND

MOV

SPARE

SPARE

EXTERIOR LTS

EXTERIOR LTS

EXTERIOR LTS

10 | MOV

16

18

20

22

24

26

28

30

32

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42

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1 | 500

5 500

9 2771

9 2771

9 2771

4 | 1000

1 1000

9 | 1000

1 500

5 500

9 500 3 500

5

1600

THIS PANEL IS LOCATED IN THE CONTROL ROOM	١.

SPR

HTR

MOT

MOT

SPR

HTR

MDT

HTR

MOT

RECP

CT

15 SPARE

23 AHU-1

25 AHU-1

27 SPARE

35 ATG

19 | HEAT TAPE

17 PRO. RET. TNK LEAK

21 AHU-1 (FAN & 7.2KW)

31 LUBE OIL HEATER

33 WATER REM PUMP

41 WATER COOLER RECP

37 UNIT HEATER

39 | CIR PUMP

29 GEN. BATTERY CHARGER CT

		CONDUIT AND	CABLE	SCHE	DULE	(POWER)			
СКТ		CIRCUIT	COI	NDUIT	CONDUCTORS PER		ER CON	DUIT	NOTES
NO	FROM	ТО	QTY	SIZE	QTY	SIZE	GND	TYPE	NOTES
R1	EXIST ELECT MANHOLE	T-1 PRIMARY	2	4"	3	1 (15kV)		XLP	1 SPARE 4" CONDUIT
R2	T-1 SECONDARY	MDS	4	4"	4	500		THWN	1 SPARE 4" CONDUIT
R3	MDS & PANEL PA	GENERATOR	2	4" 2"	4	250	2	THWN TW	POWER CONDUCTORS SEE NOTE #1
R4	MDS	MCC	2	4"	3	500	1/0	THWN	
R5	MCC	T-2 PRIMARY	1	1 1/2 "	3	1/0	6	THWN	
R6	T-2 SECONDARY	PANEL PA	1	3"	4	250	2	THWN	
R7	мсс	FTP-1	1	1 1/2 "	3 11	10 12	10	TW TW	MOTOR HEATER & CONTROLS
R8	MCC	FP-1	1	2"	3 4	3/0 12	4	THWN TW	MOTOR HEATER & HIGH TEMP. SW
R9	мсс	FP-2	1	2"	3 4	3/0 12	4	THWN TW	MOTOR HEATER & HIGH TEMP. SW
R10	мсс	FP-3	1	2"	3 4	3/0 12	4	THWN TW	MOTOR HEATER & HIGH TEMP. SW
R11	NOT USED								
R12	NOT USED								
R13	MCC	HA SWITCH & LIGHT	1	3/4 "	4	12		TW	CONTROLS
R14	PANEL PA	A/C UNIT	1	3/4 "	3	8	10	TW	
R15	PANEL PA	AHU	1	3/4 "	3	8	10	TW	
R16	мсс	PUMP ROOM EXHAUST FAN	1	3/4 "	3	12	12	TW	CONDUIT SIZE AND CONTROL CONDUCTORS AS REQUIRED
R17	мсс	WATER HEATER	1	3/4 "	3	12	12	TW	

NOTES

OVT	1	CONDUIT A		NDUIT		NDUCTORS		דווות	1		
CKT NO	FROM	TO		SIZE	QTY	SIZE	GND	TYPE	NOTES		
C1	PCP	J1	1	1"	16	14	OND	TW	INCLUDE SPARES		
C2	J1	FS-1	1	1/2 "	4	14		TW	INCLUDE OF ARCE		
C3	J1	J2		3/4 "	8	14		TW			
C4	J2	FS-2		1/2 "	4	14		TW			
C5	J2	J3	1	1"	4	14		TW			
C6	J3	FS-3	1	1/2 "	4	14		TW			
C7	NOT USED										
 C8	NOT USED										
C9	NOT USED										
C10	NOT USED										
C11	PCP	J6	1	1"	2	2/C 14		TC	SHIELDED CABLE		
C12	J6	PIT-1 & PIT-2	1	1/2 "	1	2/C 14		TC	SHIELDED CABLE		
C13	MCC	ESO-1,2,3,4, & 5	1	1/2 "	2	14		TW			
C14	PCP	J7	1	1"	2	2/C 14		TC	SHIELDED CABLE		
C15	J7	DPT-1 & DPT-2	1	1/2 "	1	2/C 14		TC	SHIELDED CABLE		
C16	PCP	J8	1	1"	2	2/C 14		TC	SHIELDED CABLE		
C17	J8	J9	1	1/2 "	1	2/C 14		TC	SHIELDED CABLE		
C18	PCP	J12	1	1"	2	2/C 14		TC	SHIELDED CABLE		
C19	J12	PS1 OR PS2	1	1/2 "	1	2/C 14		TC	SHIELDED CABLE		
C20	J8	DPT-3	1	1/2 "	1	2/C 14		TC	SHIELDED CABLE		
C21	J9	DPT-4	1	1/2 "	1	2/C 14		TC	SHIELDED CABLE		
C22	NOT USED										
C23	PCP	J10	1	3/4 "	8	14		TW			
C24	J10	BPCV-1 A&B	1	1/2 "	2	14		TW			
C25	J10	J11	1	1/2 "	4	14		TW			
C26	NOT USED										
C27	J11	PCV A&B	1	1/2 "	2	14		TW			
C28	PCP	MCC	1	2"	40	14		TW	CONTROL, INCLUDES SPARES		
C29	NOT USED										
C30	NOT USED										
C31	PCP	J14	1	1"	2	2/C 14		TC	SHIELDED CABLE		
C32	J14	PS4 OR TS1	+	1/2 "	1	2/C 14		TC	SHIELDED CABLE		
C33	PCP	J15	1	2"	20	14		TW	CONTROL, INCLUDES SPARES		
C34	J15	LS1 THRU LS4	+	1/2 "	2	14		TW			
C35	J15	J16	1	1"	10	14		TW	CONTROL, INCLUDES SPARES		
C36	J16	LS5 THRU LS8	+	1/2 "	2	14		TW			
C37	PCP	J17	1	1"	16	14		TW			
C38	J17	MOVs	1	3/4 "	8	14		TW			
C39	PCP	J18	1	1"	16	14		TW			
C40	J17	MOVs	1	3/4 "	8	14		TW			
C41	PCP	J19	1	3/4 "	6	14		TW TW	CONTROL, INCLUDES SPARES CONTROL		

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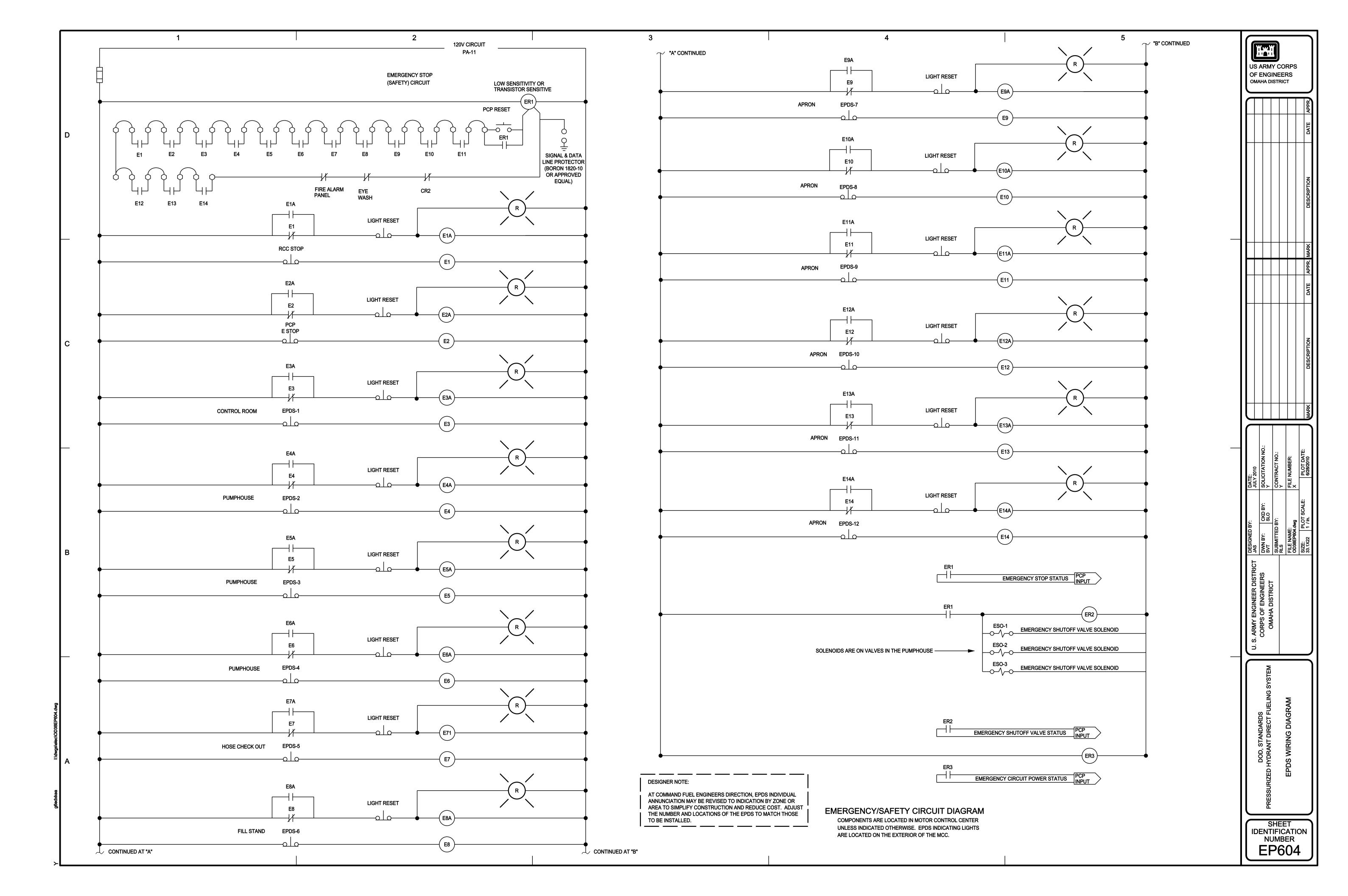
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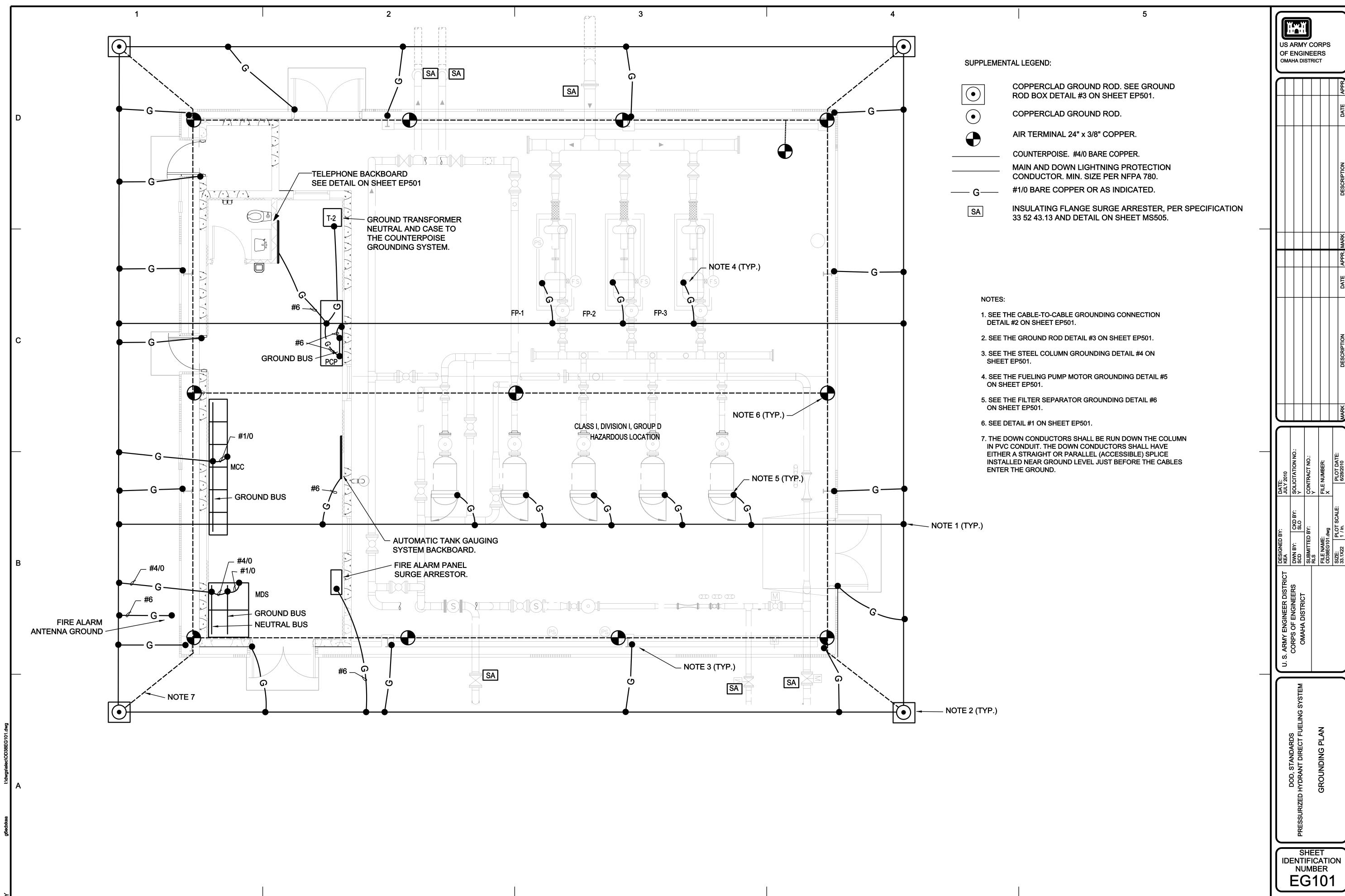
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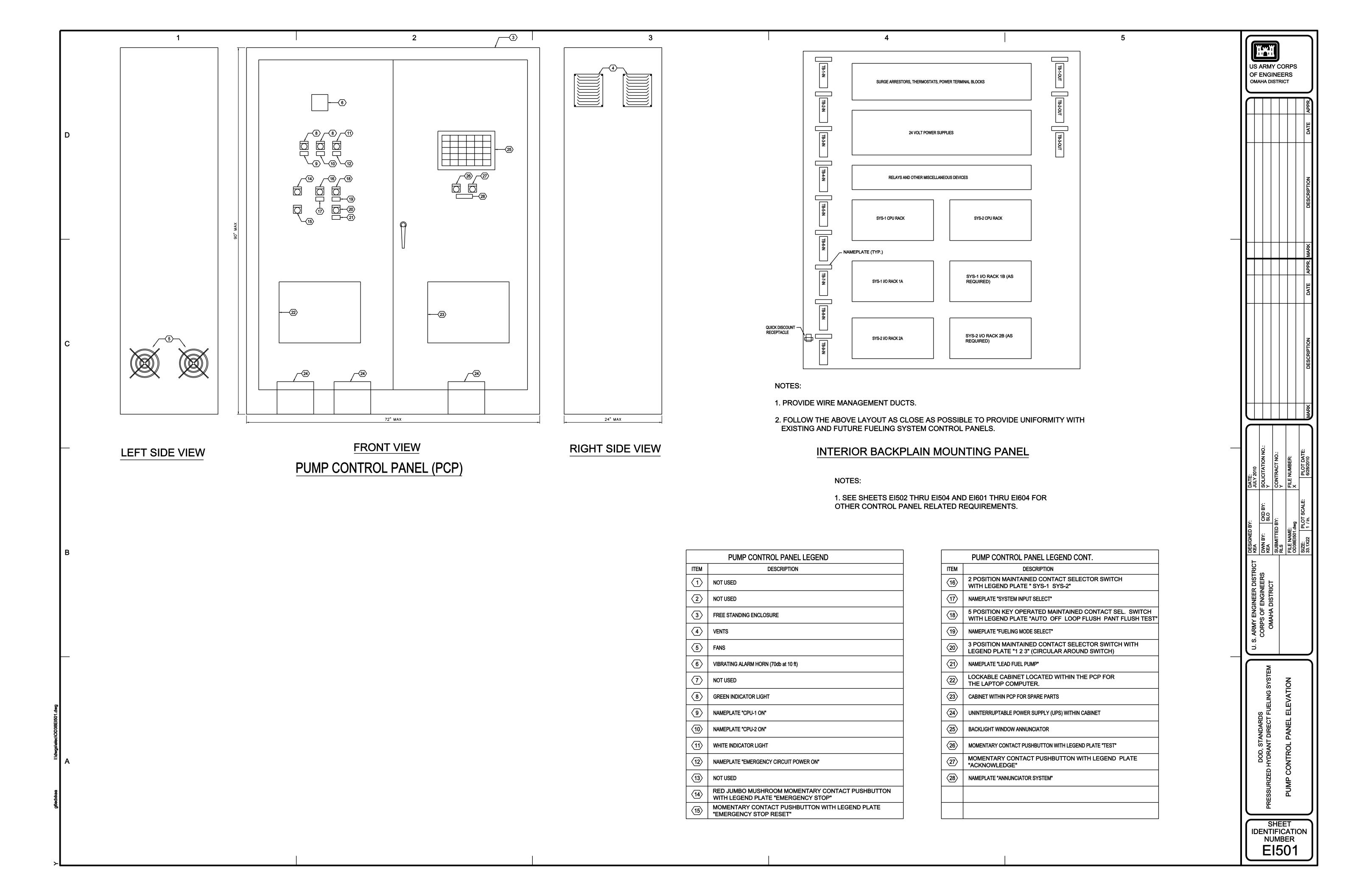
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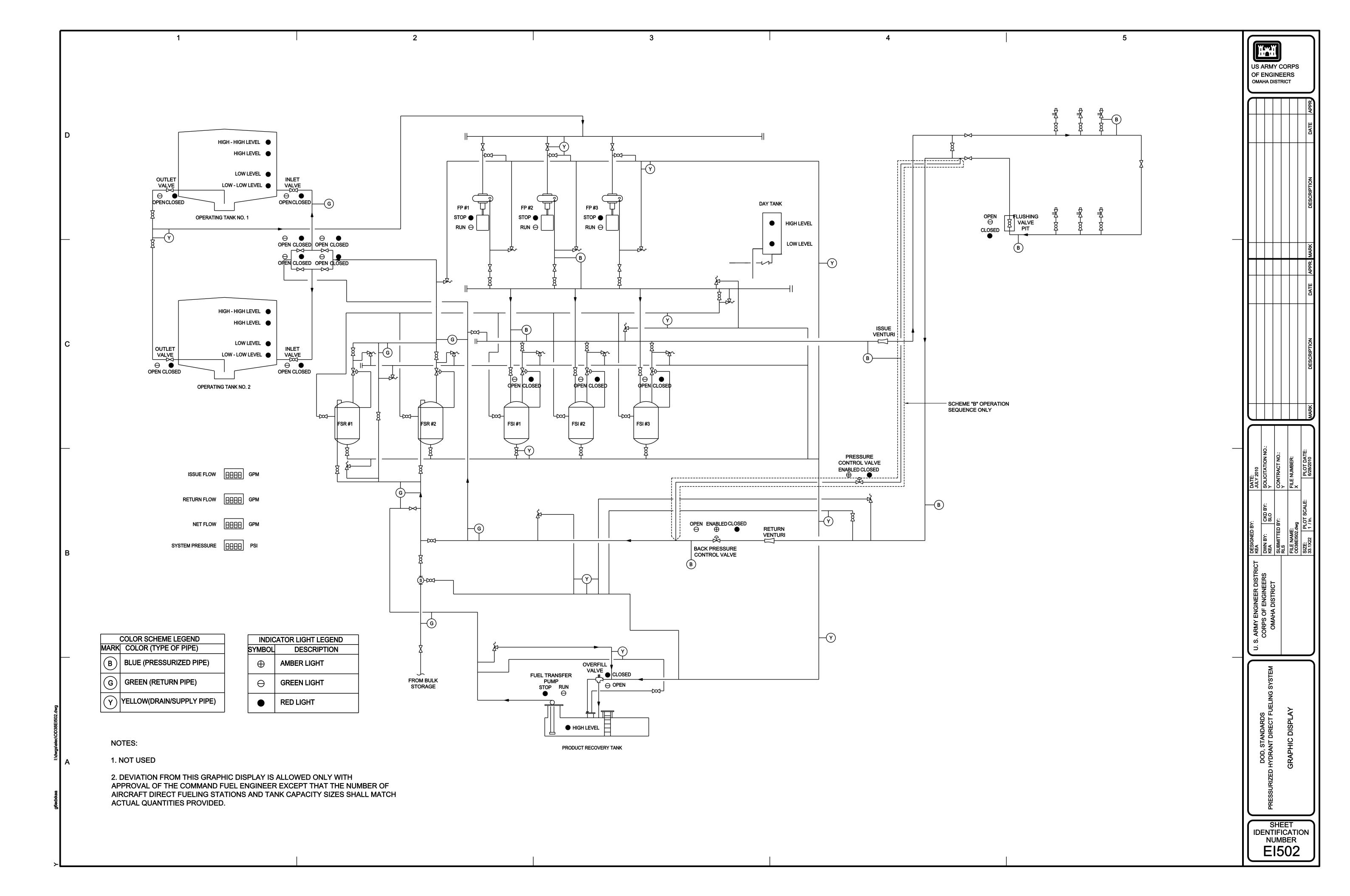
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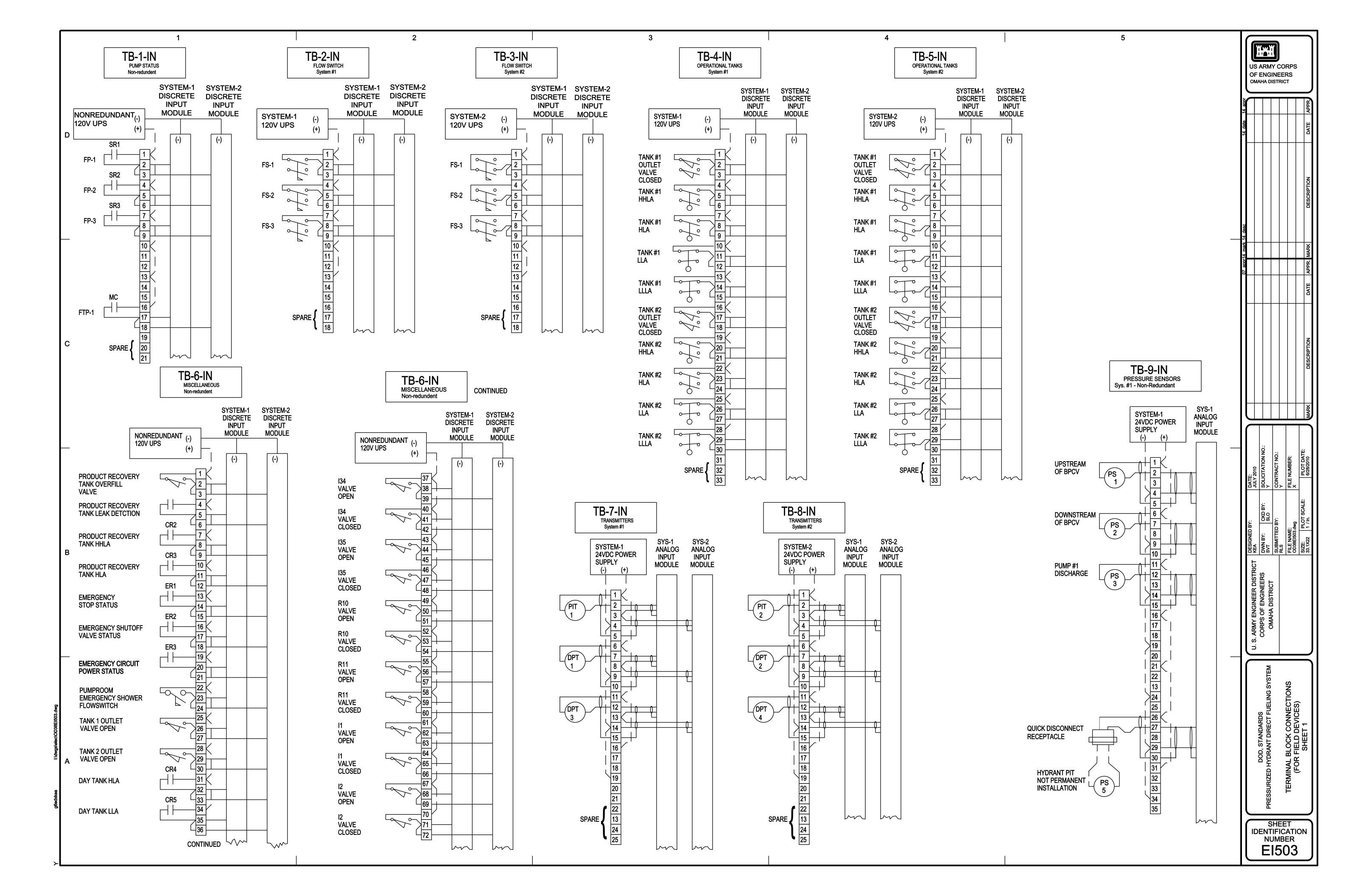
^{1.} PROVIDE CONDUCTORS FOR SITE SPECIFIC GENERATOR AUXILLARY EQUIPMENT AS REQUIRED. (E.G., BATTERY CHARGER, LUBE OIL HEATER, GLOW PLUGS, JACKET WATER HEATER, ETC.)

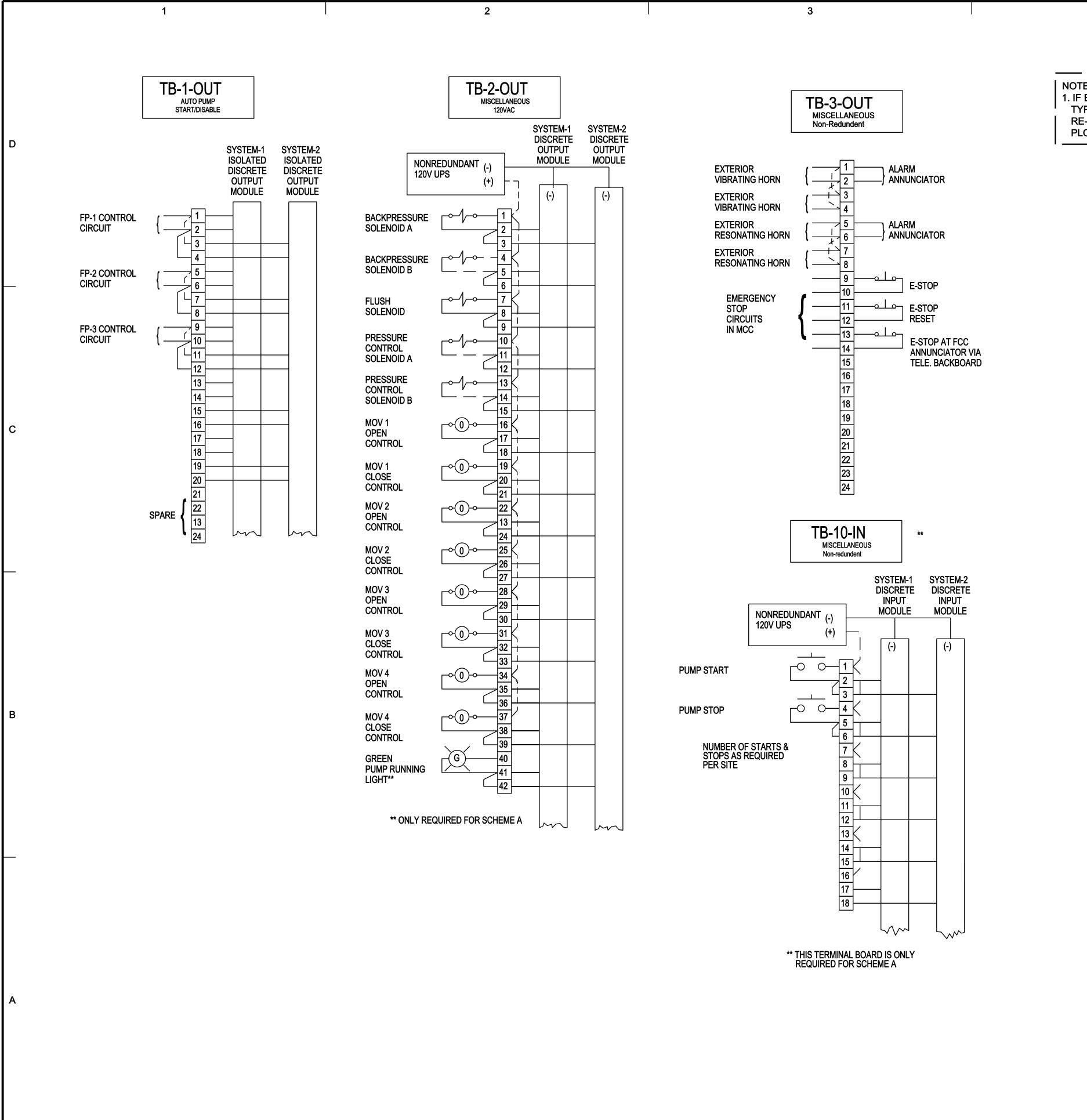












NOTES TO DESIGNER:

1. IF ELECTRONIC TYPE LEVEL ALARMS ARE TO BE USED INSTEAD OF MECHANICAL FLOAT TYPE AS SHOWN ON TERMINAL BOARDS TB-4-IN AND TB-5-IN, THE DESIGNER SHALL RE-ARRANGE INPUTS AS REQUIRED TO ACCOMODATE THE ELECTRONIC INPUTS INTO THE PLCS.

TB-1-IN
PUMP STATUS
Non-redundent

FIRST LINE OF TEXT SHALL BE 1/4 " HEIGHT AND THE SECOND AND/OR THIRD LINES SHALL BE 1/8 " HEIGHT. SEE THIS SHEET FOR FULL TEXT.

TYPICAL TERMINAL BLOCK NAMEPLATE

NOTE:

THESE TERMINAL BLOCK CONNECTIONS ARE INTENDED TO SHOW CONNECTIONS TO FIELD DEVICES ONLY. THE PUMP CONTROL PANEL MANUFACTURER MAY REQUIRE SEVERAL MORE TERMINAL BLOCKS FOR CONNECTIONS TO ANNUNCIATOR, HORNS, ETC.

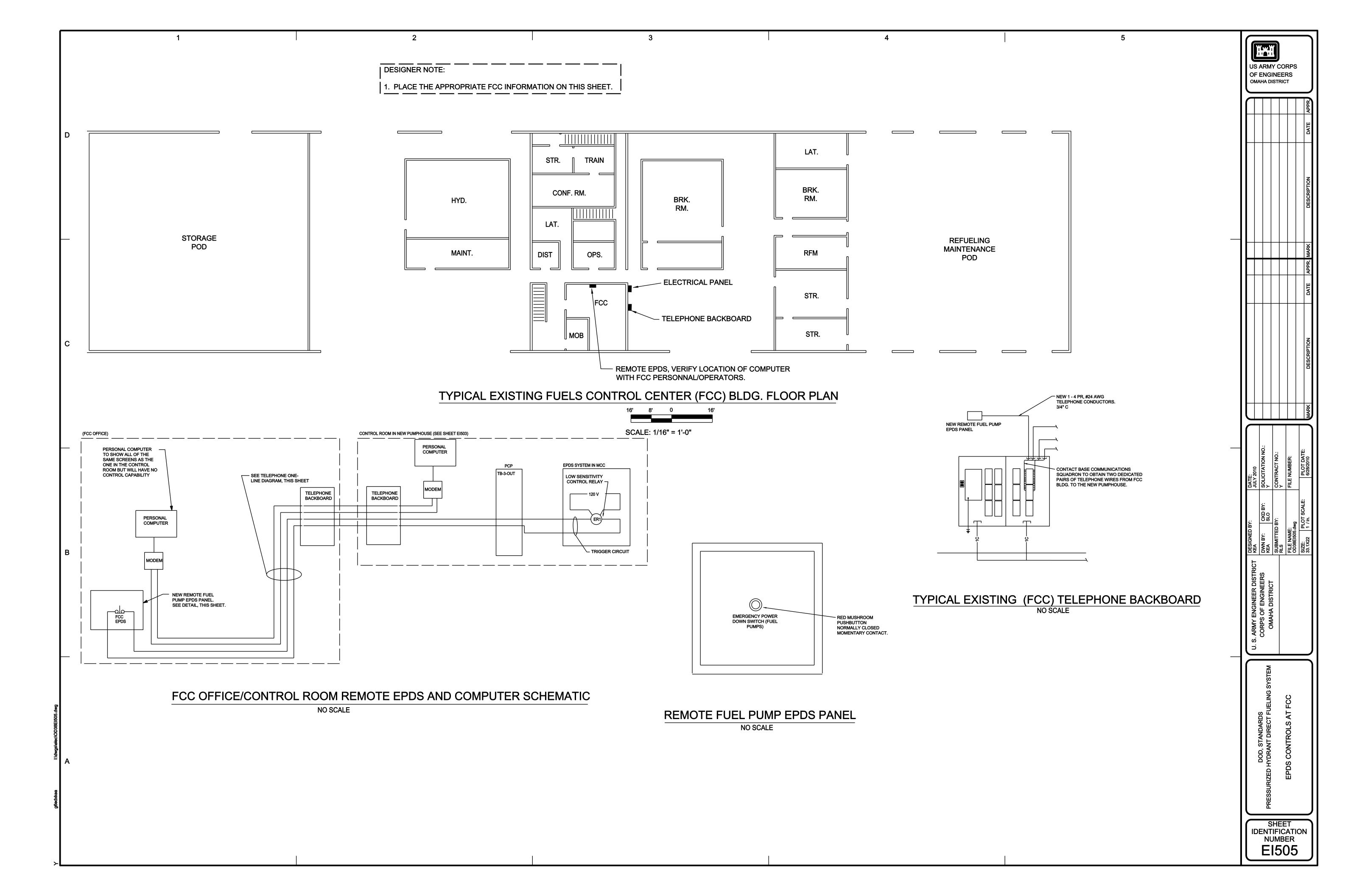
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OF ENGINEERS
OMAHA DISTRICT

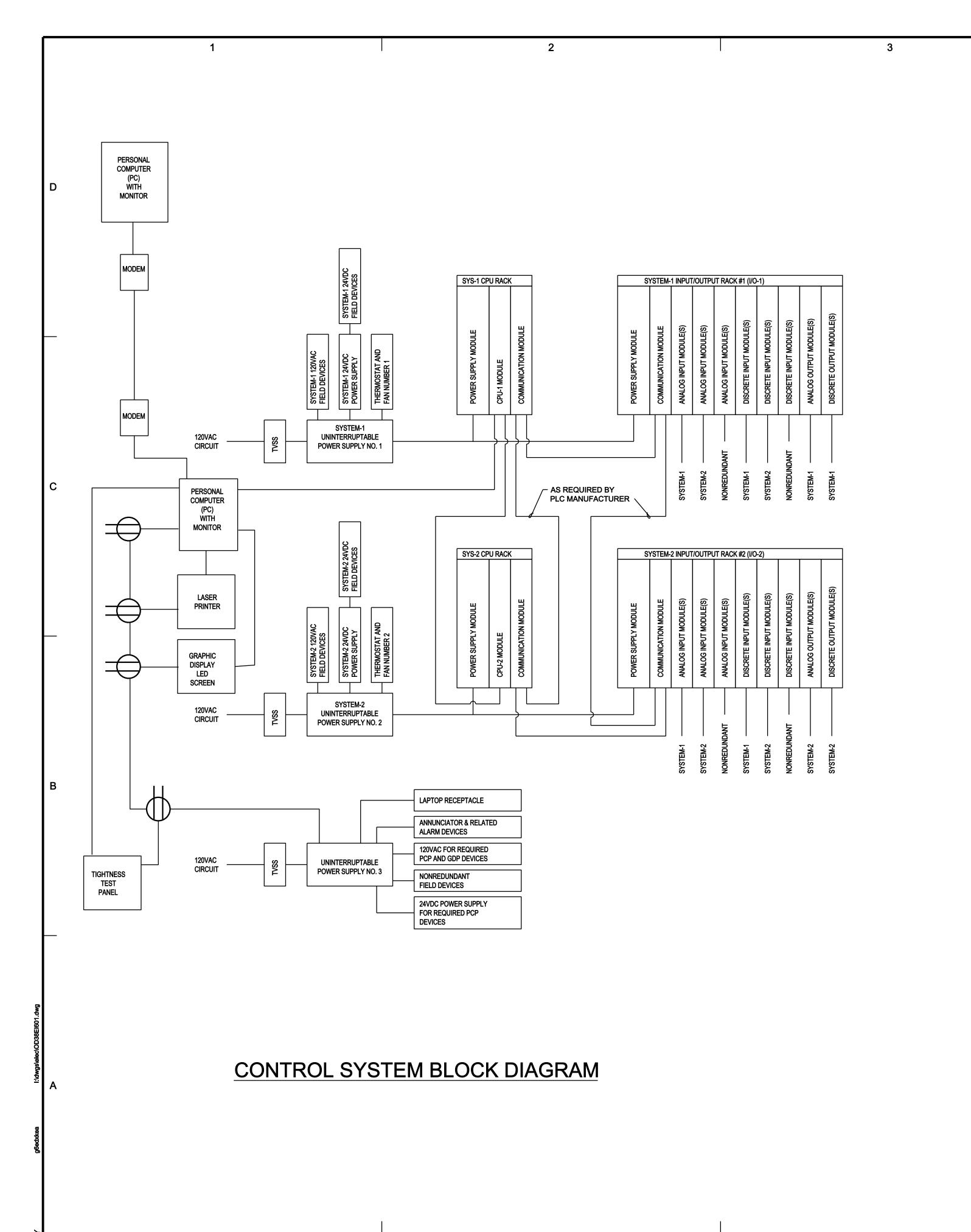
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U. S. ARMY ENGINEER DISTRICT	CORPS OF ENGINEERS OMAHA DISTRICT			

PRESSURIZED HYDRANT DIRECT FUELING SYST TERMINAL BLOCK CONNECTIONS (FOR FIELD DEVICES)

SHEET IDENTIFICATION NUMBER F1504





OPERATING TANK #1 HIGH-HIGH LEVEL	OPERATING TANK #2 HIGH-HIGH LEVEL	DAY TANK HIGH LEVEL	(RED)	FUEL PUMP #1 FAILURE	(WHITE)	EMERGENCY STOP	(RED)
OPERATING TANK #1 HIGH LEVEL	OPERATING TANK #2 HIGH 皇 LEVEL	DAY TANK LOW LEVEL	(WHITE)	FUEL PUMP #2 FAILURE	(WHITE)	EMERGENCY SHOWER ALARM	(RED)
OPERATING TANK #1 LOW LEVEL	OPERATING TANK #2 LOW LEVEL	(BLANK)	(WHITE)	FUEL PUMP #3 FAILURE	(WHITE)	SYSTEM-1 PLC FAILURE	(WHITE)
OPERATING TANK #1 LOW-LOW LEVEL	OPERATING TANK #2 LOW-LOW LEVEL	(BLANK)	(WHITE)	(BLANK)	(WHITE)	SYSTEM-1 DATA FAILURE	(WHITE)
PRODUCT RECOVERY TANK HIGH-HIGH LEVEL	PRODUCT RECOVERY TANK OVERFILL VALVE	4 VALVE MANIFOLD/TANK SETUP ERROR	(WHITE)	(BLANK)	(WHITE)	SYSTEM-2 PLC FAILURE	(WHITE)
PRODUCT RECOVERY	PRODUCT RECOVERY TANK LEAK DETECTED	PCP HIGH TEMPERATURE	(WHITE)	(BLANK)	(WHITE)	SYSTEM-2 DATA FAILURE	(WНІТЕ)

ANNUNCIATOR PANEL LAYOUT

NOTES:

- 1. (WHITE) WHITE WINDOW WITH BLACK LETTERS
- 2. (RED) RED WINDOW WITH WHITE LETTERS
- 3. RED WINDOW ALARMS (CRITICAL) SHALL SOUND THE EXTERIOR RESONATING HORNS AND PUMP CONTROL PANEL HORN.
 THE WHITE WINDOW ALARMS (NON-CRITICAL) SHALL SOUND THE EXTERIOR VIBRATING HORNS AND THE PUMP CONTROL
 PANEL HORN.
- 4. CRITICAL ALARMS SHALL STOP ALL PUMPS RUNNING IN AUTOMATIC MODE.

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DOD, STANDARDS
PRESSURIZED HYDRANT DIRECT FUELING S'
CONTROL SYSTEM DIAGRAMS

SHEET IDENTIFICATION NUMBER EI601

