

**Figure 1.3-1 – Production Building Subfloor Plans Preliminary Arrangement**

*Security-Related Information – Withhold Under 10 CFR 2.390*

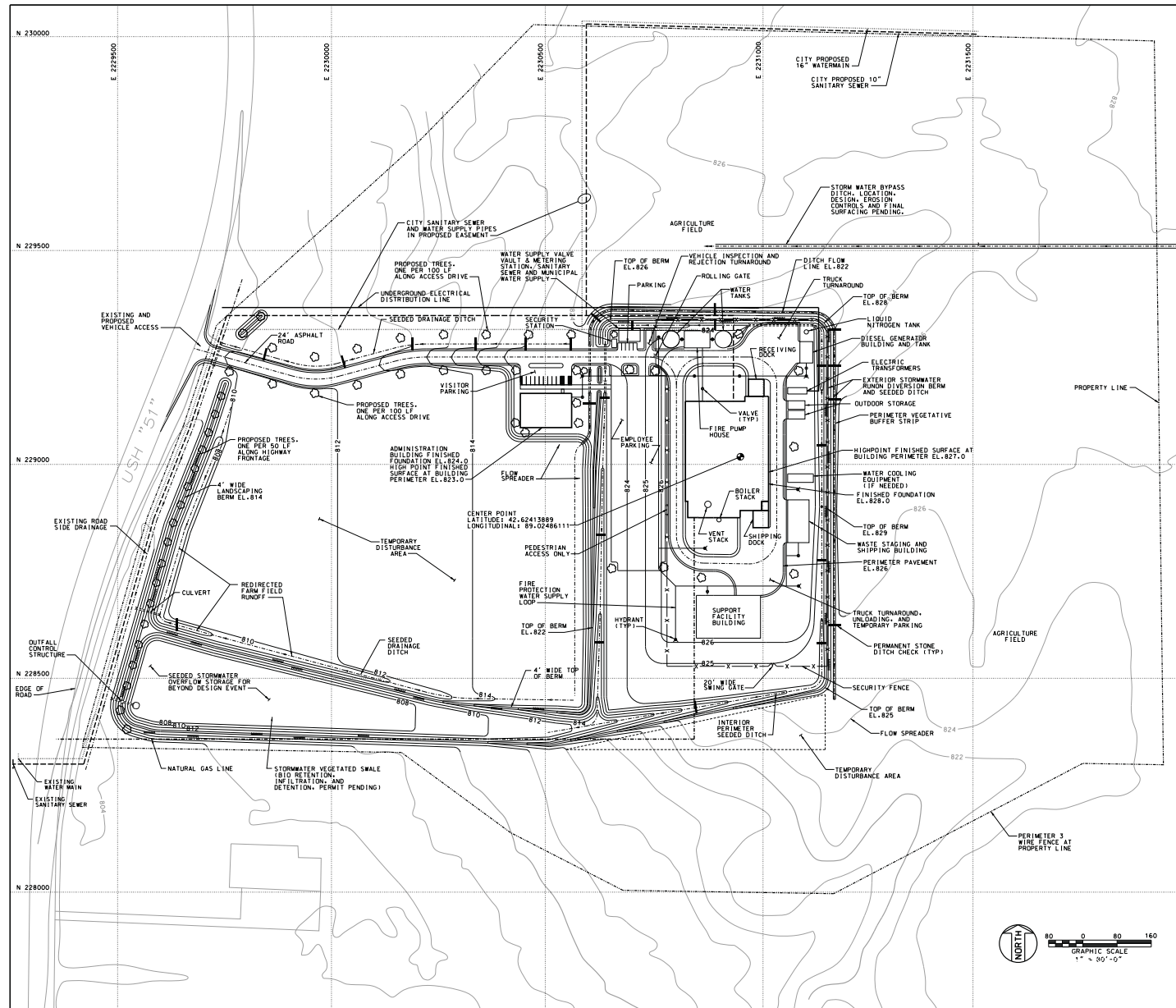
**Figure 1.3-2 – Production Building Floor Plans Preliminary Arrangement**

*Security-Related Information – Withhold Under 10 CFR 2.390*

**Figure 1.3-3 – Production Building Sections Preliminary Arrangement**

*Security-Related Information – Withhold Under 10 CFR 2.390*

Figure 1.3-4 – SHINE Facility Site Layout



**Figure 1.3-5 – RCA Boundaries**

*Security-Related Information – Withhold Under 10 CFR 2.390*

Sheet 1 of 2

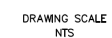
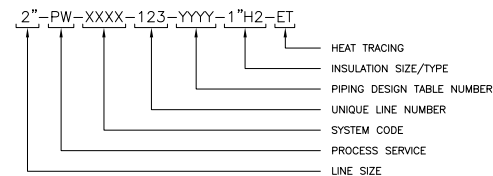


Figure 1.3-6 – Legend for Process Flow Diagrams  
(Sheet 2 of 2)

PIPING NUMBERING SYSTEM



PROCESS SERVICE IDENTIFICATION

A	– AIR	MS	– MEDIUM PRESSURE STEAM
AH	– AMMONIUM HYDROXIDE	NG	– NATURAL GAS
AV	– ATMOSPHERIC VENT	N	– NITROGEN
BA	– BREATHING AIR	NA	– CAUSTIC
BD	– BLOWDOWN	NH	– AMMONIA
BFW	– BOILER FEED WATER	NT	– NITRIC ACID
C	– CHEMICAL FEED (MISC.)	OX	– OXYGEN
CD	– CONDENSATE	OWS	– OILY WATER SEWER
CG	– COVER GAS	PA	– PLANT AIR
CHS	– CHEMICAL SEWER	PC	– PROCESS CONDENSATE
CHW	– CHILLED WATER	PG	– PROCESS GAS
CO2	– CARBON DIOXIDE	PP	– POTASSIUM PERMANGANATE
CWR	– COOLING WATER RETURN	PTW	– POTABLE WATER
CWS	– COOLING WATER SUPPLY	PW	– PROCESS WATER
DMW	– DEMINERALIZED WATER	RV	– RELIEF VENT
DR	– DRAIN	RW	– RADIOACTIVE LIQUID WASTE
FF	– FLUSHING FLUID	SA	– SULFURIC ACID
FO	– FUEL OIL	SC	– STEAM CONDENSATE
FW	– FIRE WATER	SL	– UREX SOLVENT
GLR	– GLYCOL RETURN	SO	– SEAL OIL
GLS	– GLYCOL SUPPLY	SS	– SANITARY SEWER
H	– HYDROGEN	STS	– STORM SEWER
HA	– HOT FLUE GAS	TS	– TARGET SOLUTION
HS	– HIGH PRESSURE STEAM	UN	– URANYL NITRATE
IA	– INSTRUMENT AIR	V	– VACUUM
LO	– LUBE OIL	WW	– WASTE WATER
LN	– LIQUID NITROGEN		
LS	– LOW PRESSURE STEAM		

ABBREVIATIONS

AG	– ABOVE GROUND
ATM	– ATMOSPHERE
BYP	– BYPASS
CC	– CHEMICAL CLEANOUT
CL	– CENTERLINE
CO	– CLEANOUT
CONN	– CONNECTION
DES	– DESIGN
D/P	– DIFFERENTIAL PRESSURE
EL	– ELEVATION
ESD	– EMERGENCY SHUTDOWN
FOF	– FACE OF FLANGE
FLG	– FLANGE
FP	– FULL PORT
FV	– FULL VACUUM
GO	– GEAR OPERATED
GR	– GRADE
HC	– HOSE CONNECTION
HH	– HAND HOLE
HP	– HIGH PRESSURE
IAS	– INSTRUMENT AIR SUPPLY
ISBL	– INSIDE BATTERY LIMITS
LP	– LOW PRESSURE
MOC	– MATERIALS OF CONSTRUCTION
NNF	– NORMALLY NO FLOW
OSBL	– OUTSIDE BATTERY LIMITS
OVHD	– OVERHEAD
R	– RELOCATED
REQD	– REQUIRED
SC	– SAMPLE CONNECTION
SCH	– SCHEDULE
SD	– SHUTDOWN
SG	– SPECIFIC GRAVITY
SP	– SET POINT
SS	– STAINLESS STEEL
STD	– STANDARD
T/C	– THERMOCOUPLE
TEMP	– TEMPERATURE
THRD	– THREADED
TL	– TANGENT LINE
T/T	– TANGENT TO TANGENT
TYP	– TYPICAL
UG	– UNDERGROUND
VF	– VENDOR FURNISHED

VALVE LIST KEY

1st LETTER	2nd NO TYPE	3rd NO CLASS	4th NO END CONNECTION	5th NO MATERIAL
V – VALVE	1 – BALL 2 – CHECK 3 – GATE 4 – GLOBE 5 – BUTTERFLY 6 – PLUG 7 – TRIPLE OFFSET	0 – 125 1 – 150 2 – 300 3 – 600 4 – 800 5 – 900 6 – 1500	1 – SW 2 – SW/BW 3 – BW 4 – BW/FLG 5 – FLG 6 – THREADED 7 – LUGGED 8 – NON-LUGGED 9 – WAFER 0 – SWxFLG	1 – CAST IRON/DUCTILE IRON 2 – LOW CARBON STEEL 3 – STAINLESS 4 – KILLED CARBON STEEL (NACE MR0175 COMPLIANT) 5 – LOW & INTERMEDIATE ALLOY STEEL

ABBREVIATIONS FOR VALVES

FO	– FAIL OPEN	FTV	– FAIL TO VENT	HPT	– HIGH POINT	LPT	– LOW POINT
FC	– FAIL CLOSED	CSO	– CAR SEAL OPEN	LO	– LOCK OPEN	NO	– NORMALLY OPEN
FL	– FAIL IN LAST POSITION	CSC	– CAR SEAL CLOSED	LC	– LOCK CLOSED	NC	– NORMALLY CLOSED

ABBREVIATIONS FOR HAND SWITCHES

HOA	– HAND OFF AUTOMATIC	F/R	– FORWARD REVERSE	OCA	– OPEN CLOSED AUTOMATIC	S/S	– START/STOP
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ABBREVIATIONS FOR EQUIPMENT TAGS

A	– EXCHANGERS, CONDENSERS
C	– (LATER)
D	– COMPRESSORS, BLOWERS, VACUUM PUMPS, FANS, EXHAUSTERS, REFRIGERATION UNITS AND THEIR DRIVES, GEARS, AND FLUID DRIVES
E	– DEMINERALIZERS, ABSORBERS, CLARIFIERS, AIR DRYERS, EVAPORATORS, AERATORS, DECARBONATORS, AND DEGASIFIERS
F	– ELECTRICAL EQUIPMENT (INCLUDING SWITCHGEAR, MOTOR CONTROL CENTERS, TRANSFORMERS, SWITCH BOARDS, ETC.)
G	– FILTERS, STRAINERS, PURIFIERS, CENTRIFUGES, AND SILENCERS
H	– HANDLING EQUIPMENT, CRANES, HOISTS, AND DRIVERS
I	– HUMIDIFICATION/DEHUMIDIFICATION EQUIPMENT
J	– INSTRUMENT AND CONTROL BOARDS, PANELS, AND CABINETS
K	– DIESEL GENERATORS, DIESEL ENGINES
M	– PIPING SPECIALTIES (TRAPS, HOSES, EXPANSION JOINTS, RESTRICTION ORIFICES, ETC.)
P	– PUMPS AND THEIR DRIVES, GEARS, AND FLUID DRIVES
R	– RACKS
S	– SPECIAL PACKAGED ITEMS OR SYSTEMS
T	– TANKS AND RESERVOIRS
V	– VESSELS
X	– MISCELLANEOUS AIR HANDLING DEVICES (INCLUDING AIR MIXING BOXES, DUCT SILENCERS, DAMPERS, ETC.)
Y	– (LATER)
Z	– MISCELLANEOUS EQUIPMENT

INSULATION/HEAT TRACING

AC	– ACOUSTIC CONTROL INSULATION	HJ	– HOT FLUID JACKETED
CC	– COLD SERVICE INSULATION	HT	– HOT FLUID TRACED
CJ	– CHILLED FLUID JACKETED	PF	– PREVENTION FROM FREEZING INSULATION
CP	– CONDENSATION CONTROL	PI	– PERSONNEL PROTECTION INSULATION
CT	– CHILLED FLUID TRACED	PS	– PROCESS STABILITY INSULATION
ET	– ELECTRIC TRACED	SJ	– STEAM JACKETED
FP	– FIRE PROTECTION INSULATION	ST	– STEAM TRACED
HC	– HEAT CONSERVATION INSULATION		

INSTRUMENT IDENTIFICATION TABLE

SYMBOL	FIRST LETTER	MEASURING DEVICES								CONTROLLING DEVICES								ALARMS*								SWITCHES*				MISC.									
		E	W	R	I	T	IT	G	RC	IC	C	CV	V	Z	A	L	LL	H	HH	IS	S	Y	XSL	XSH															
	MEASURED OR INITIAL VARIABLE	PRIMARY ELEMENT	WELL	READOUT (RECORDING)	TRANSMITTER (RECORDING)	TRANSMITTER (BLIND)	TRANSMITTER (RECORDING)	OBSERVATION (LOCAL)	CONTROLLERS (RECORDING)	CONTROLLERS (INDICATING)	CONTROLLERS (BLIND)	S. CONTAINED CONTROL VALVE	CONTROL ELEMENT	CONTROL ELEMENT	BLIND	LOW	LOW	LOW	HIGH	HIGH	INDICATING	BLIND	RELAY	SHUTDOWN LOW (XSL)	SHUTDOWN HIGH (XSH)														
A	ANALYZER	AE	AW	AR	AI	AT	ART	AIT	ARC	AIC	AC		AV		AA	AAL/AALL	AAH/AHHH	AIS	AS	AY	AXSL	AXSH																	
B	BURNER, COMBUSTION	BE	BW	BR	BI	BT	BRT	BIT	BGC	BIC	BC			BZ	BA	BAL/BALL	BAH/BAHH	BIS	BS	BY	BXSL	BXSH																	
C	CONDUCTIVITY (ELECTRICAL)	CE		CR	CI	CT	CRT	CIT	CRC	CIC	CC			CZ	CA	CAL/CALL	CAH/CAHH	CIS	CS	CY	CXSL	CXSH																	
D	DENSITY OR SPEC. GRAV.	DE		DR	DI	DT	DRT	DIT	DRC	DIC	DC			DA	DAL/DALL	DAH/DAHH	DIS	DS	DY	DXSL	DXSH																		
E	VOLTAGE	EE		ER	EI	ET	ERT	ETI	ERC	EIC	EC			EZ	EA	EAL/EALL	EAH/EAHH	EIS	ES	EY	EXSL	EXSH																	
F	FLOW	FE		FR	FI	FT	FRT	FIT	FG	FRC	FIC	FC	FCV	FV	FA	FAL/FALL	FAH/FAHH	FIS	FS	FY	FXSL	FXSH																	
G	USER'S CHOICE																																						
H	HAND INITIATED CURRENT (ELECTRICAL)	IE		IR	II	IT	IRT	ITI	IRC	IIC		HC	HCV	HV																									
J	POWER	JE		JR	JI	JT	JRT	JIT	JRC	JIC				IZ	JA	JAL/JALL	JAH/JAHH	JIS	JS	JY	JXSL	JXSH																	
K	TIME OR TIME SCHEDULE	KE		KR	KI	KT	KRT	KIT	KRC	KIC	KC	KCV		KZ	KA	KAL/KALL	KAH/KAHH	KIS	KS	KY	KXSL	KXSH																	
L	LEVEL	LE	LV	LR	LI	LT	LRT	LIT	LG	LAL	LIL	LC	LCV	LV	LA	LAL/LALL	LAL/LAHH	LIS	LS	LY	LXSL	LXSH																	
M	MOISTURE OR HUMIDITY	ME		MR	MI	MT	MRT	MIT	MRC	MIC	MC		MV	MA	MAL/MALL	MAH/MAHH	MIS	MS	MY	MXSL	MXSH																		
N	USER'S CHOICE																																						
O	USER'S CHOICE																																						
P	PRESSURE OR VACUUM	PE		PR	PI	PT	PRT	PIT	PRC	PIC	PC	PCV	PV		PA	PAL/PALL	PAH/PAHH	PIS	PS	PY	PXSL	PXSH	PSV	PSE															
Q	QUANTITY OR EVENT	QE		QR	QI	QT	QRT	QIT	QRC	QIC				QZ	QA	QAL/QALL	QAH/QAHH	QIS	QS	QY	QXSL	QXSH																	
R	RADIOACTIVITY	RE	RW	RR	RI	RT	RRT	RTI	RRC	RIC	RC			RZ	RA	RAL/RALL	RAH/RAHH	RIS	RS	RY	RXSL	RXSH																	
S	SPEED OR FREQUENCY	SE		SR	SI	ST	SRT	SIT	SRC	SIC	SC	SCV	SV	SZ	SA	SAL/SALL	SAH/SAHH	SIS	SS	SY	SXSL	SXSH																	
T	TEMPERATURE	TE	TW	TR	TI	TT	TRT	TTI	TRC	TIC	TC	TCV	TV	TA	TAL/TALL	TAL/TAHH	TIS	TS	TY	TXSL	TXSH	TSE																	
U	MULTI-VARIABLE			VR	VI	VT	VRT	VIT					UV	UA																									
V	VIBRATION	VE		VR	VI	VT	VRT	VIT						VA			VAH/VAHH	VIS	VS	VY	VXSL	VXSH																	
W	WEIGHT OR FORCE	WE		WR	WI	WT	WRT	WIT		WRC	WIC	WC	WCV	WZ	WA	WAL/WALL	WAH/WAHH	WIS	WS	WY	WXSL	WXSH																	
X	SHUTDOWN												XV	XA	XAL/XALL	XAH/XAHH																							
Y	EVENT, STATE OR PRESENCE																																						
Z	POSITION	ZE		ZR	ZI	ZT	ZRT	ZIT	ZRC	ZIC	ZC	ZCV	ZV	ZA	ZAL/CLOSE	ZAH/OPEN	ZIS	ZS	ZY																				
*S, SWITCH, THE ACTUATING DEVICE MAY BE USED IN THE SAME FASHION AS A, ALARM, THE ANNUNCIATING DEVICE.																																							
THE FOLLOWING IS A GUIDE FOR ADDING ABBREVIATIONS (USUAL OR PREFERRED USAGE)																																							
FIRST POSITION					SECOND POSITION					THIRD POSITION					FOURTH POSITION					FIRST POSITION					SECOND POSITION					THIRD POSITION					FOURTH POSITION				
A	ANALYSIS				ALARM					ALARM BOARD					CONTROLLER					O	PRESSURE OR VACUUM					ORIFICE (RESTRICTION) POINT (TEXT CONN.)													
B	BURNER				CONTROL, CONTROLLER					CONTROL, CONTROLLER										P	QUANTITY OR EVENT					INTEGRATE (TOTALIZE)													
C	CONDUCTIVITY (ELECTRICAL)				DIFFERENTIAL ELEMENT					DIFFERENTIAL ELEMENT										R	RADIOACTIVITY					RECORDER													
D	DENSITY OR SPECIFIC GRAVITY				FRACTION (RATIO)					FRACTION (RATIO)										S	SPEED OR FREQUENCY					RECORDER													
E	VOLTAGE (EMF)				GLASS					GLASS										T	TEMPERATURE					RECORDER													
F	FLOW																			U	MULTIVARIABLE					RECORDER													
G																				V	VIBRATION, MECH. ANALYSIS					RECORDER													
H	HAND INITIATED				INDICATOR, INDICATING					HIGH INDICATOR										W	WEIGHT OR FORCE					RECORDER													
I	CURRENT (ELECTRICAL)				SCAN					SCAN										X	SHUTDOWN					RECORDER													
J	POWER				TIME RATE OF CHANGE					TIME RATE OF CHANGE										Y	EVENT, STATE OR PRESENCE					RECORDER													
K	TIME				LOW					LOW										Z	POSITION					RECORDER													
L	LEVEL				MOMENTARY					MOMENTARY																RECORDER													
M	MOISTURE OR HUMIDITY																									RECORDER													