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APPENDIX 4A
FIGURES AND DRAWINGS

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**APPENDIX 4A
ENGINEERING FIGURES**

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The figures listed below are included in this appendix, and are to be used in conjunction with the text in the Dangerous Waste Permit (DWP) Chapter 4.

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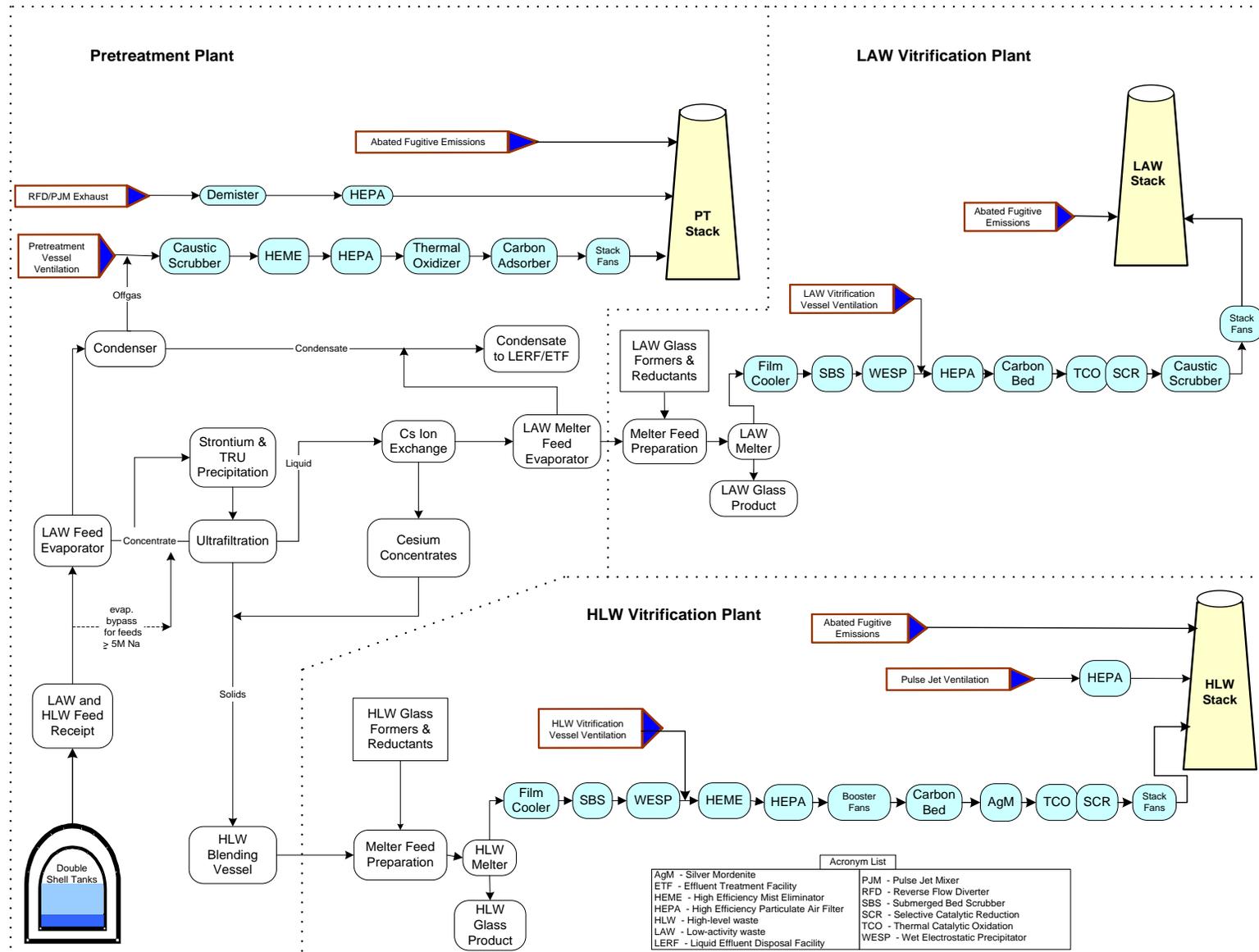
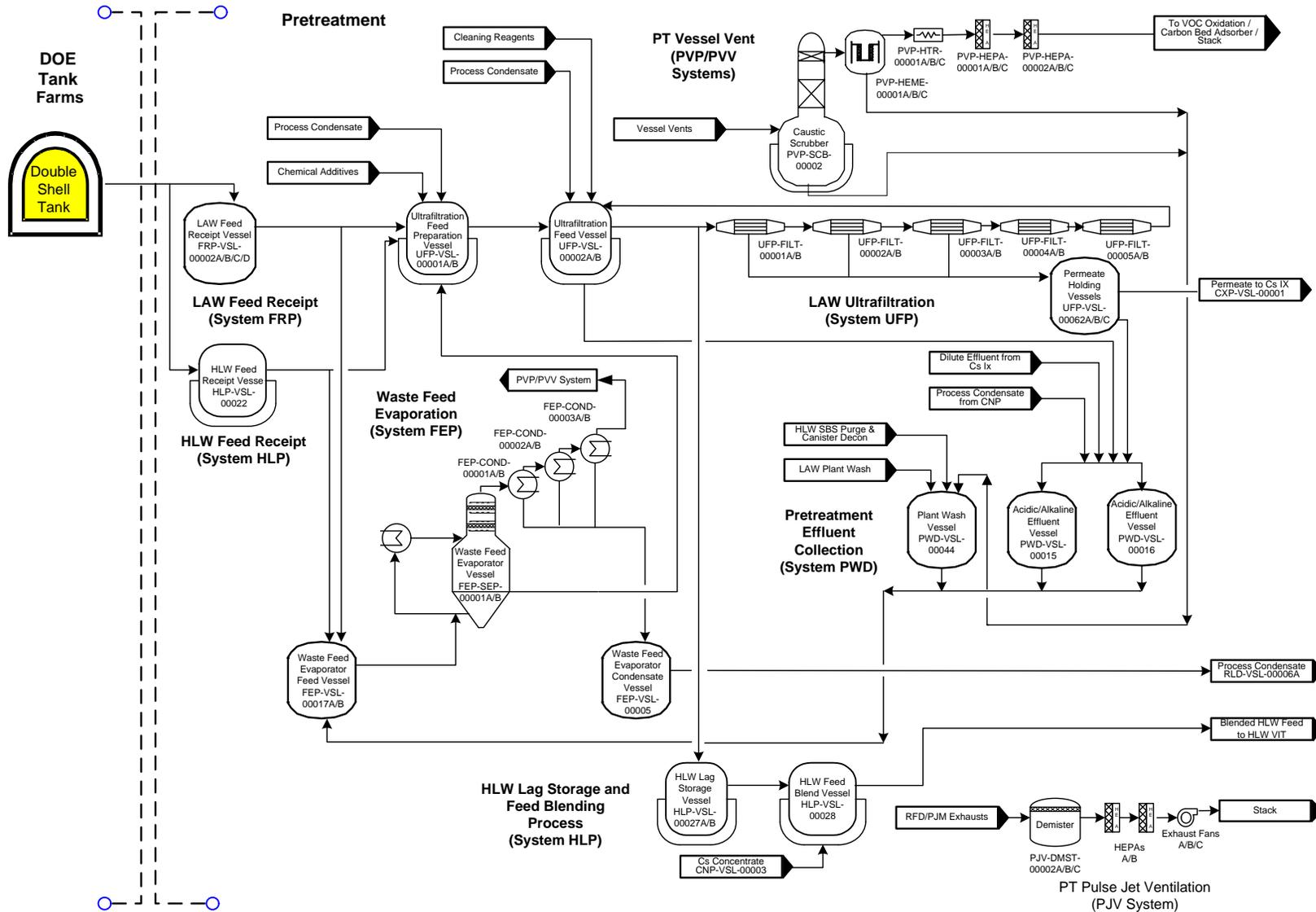


Figure 4A-1 WTP Simplified Flow Diagram

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Figure 4A-2 Primary Pretreatment Process Systems

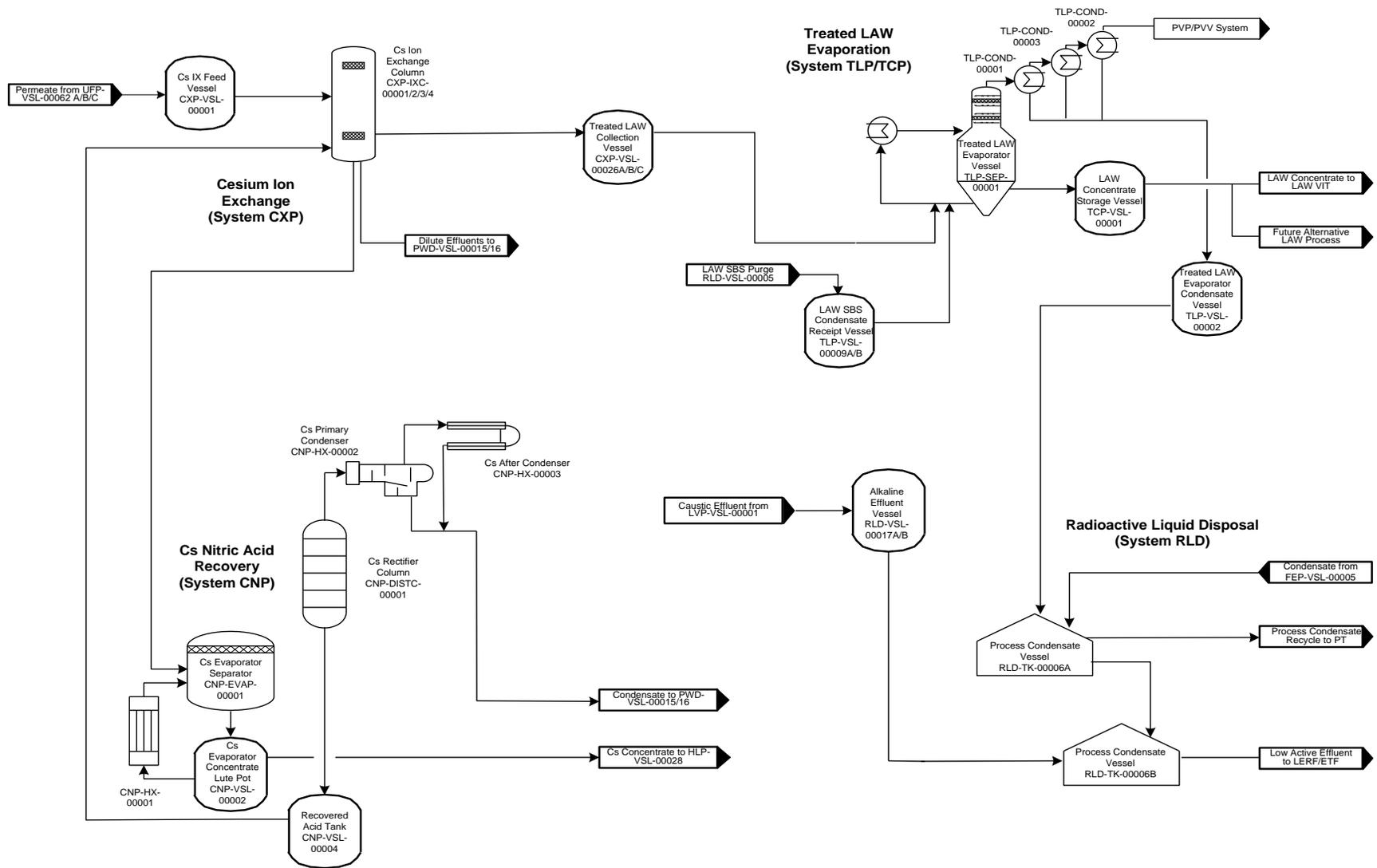


Figure 4A-2A Primary Pretreatment Process Systems (Continued)

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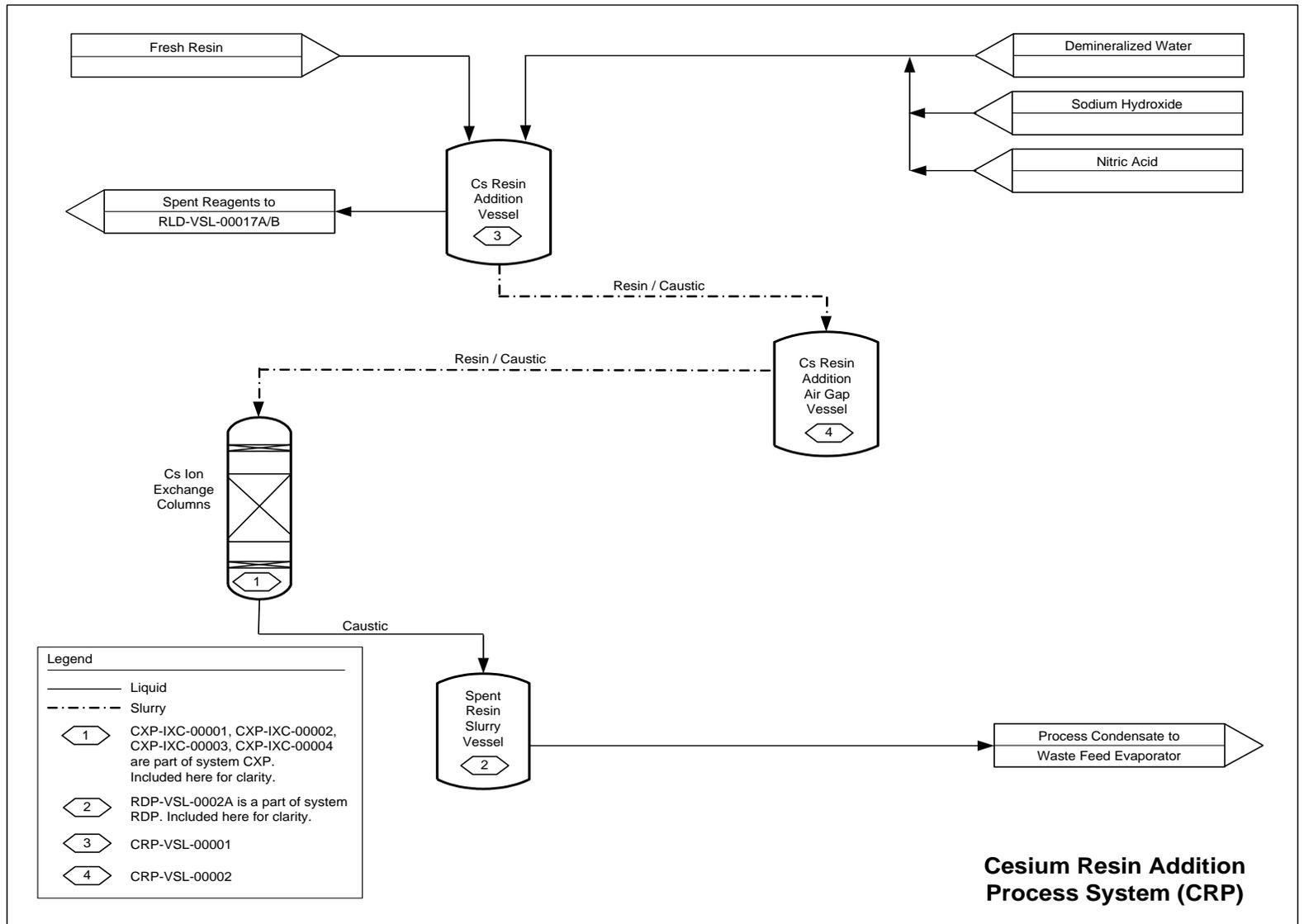


Figure 4A-11 Cesium Resin Addition Process System (CRP)

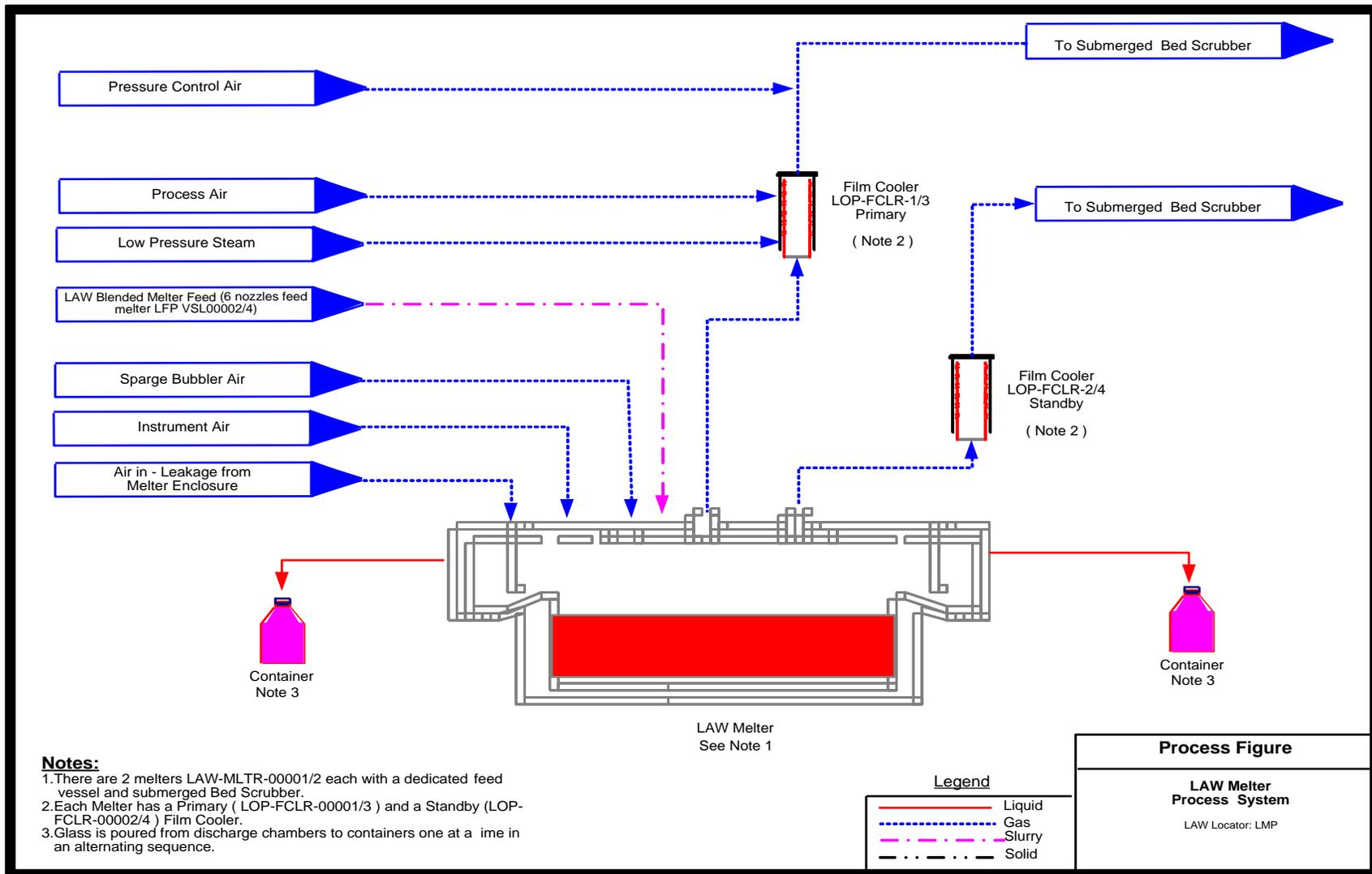
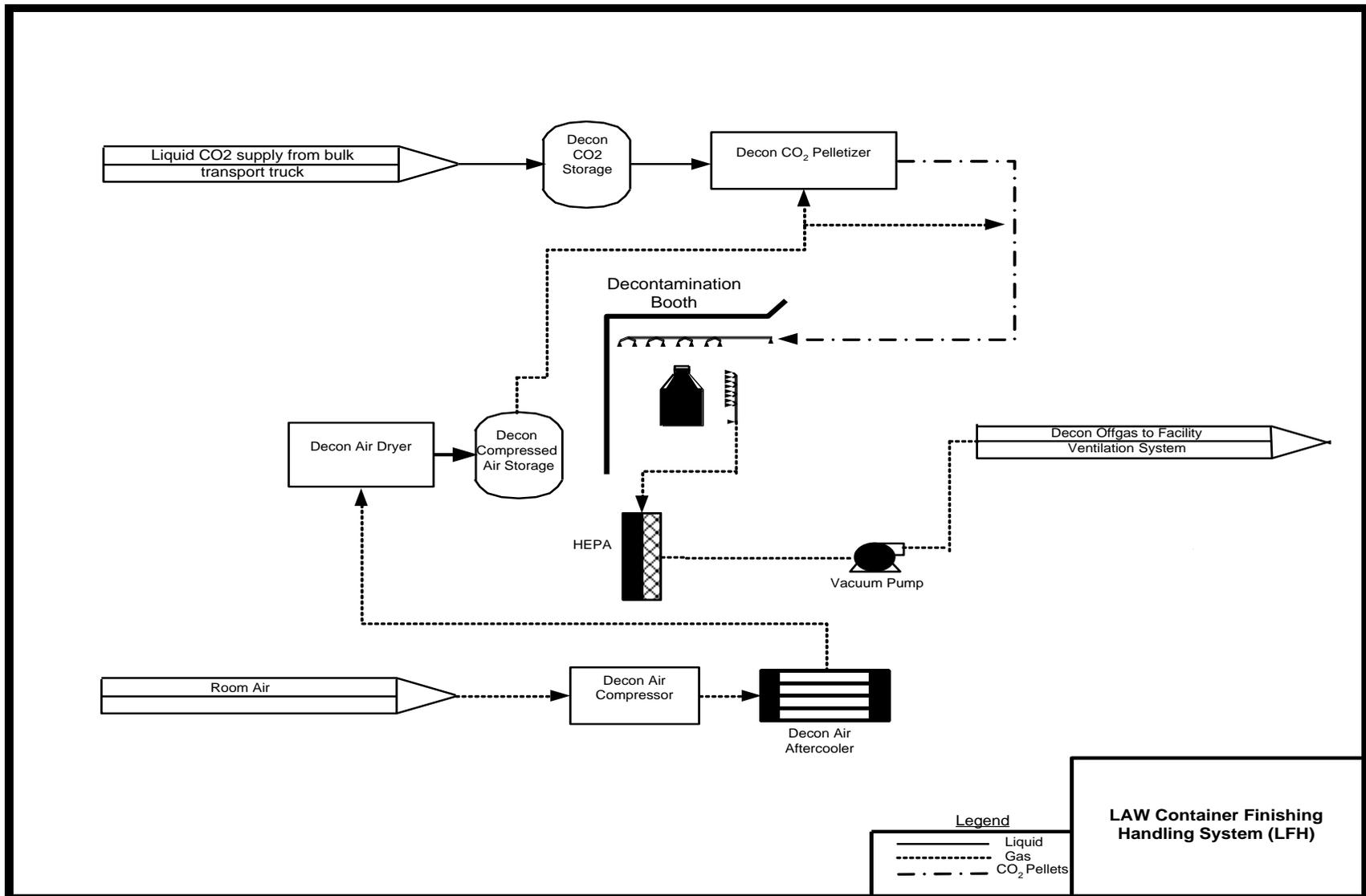


Figure 4A-21 LAW Melter Process System (LMP)



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Figure 4A-24 LAW Container Finishing Handling System (LFH)

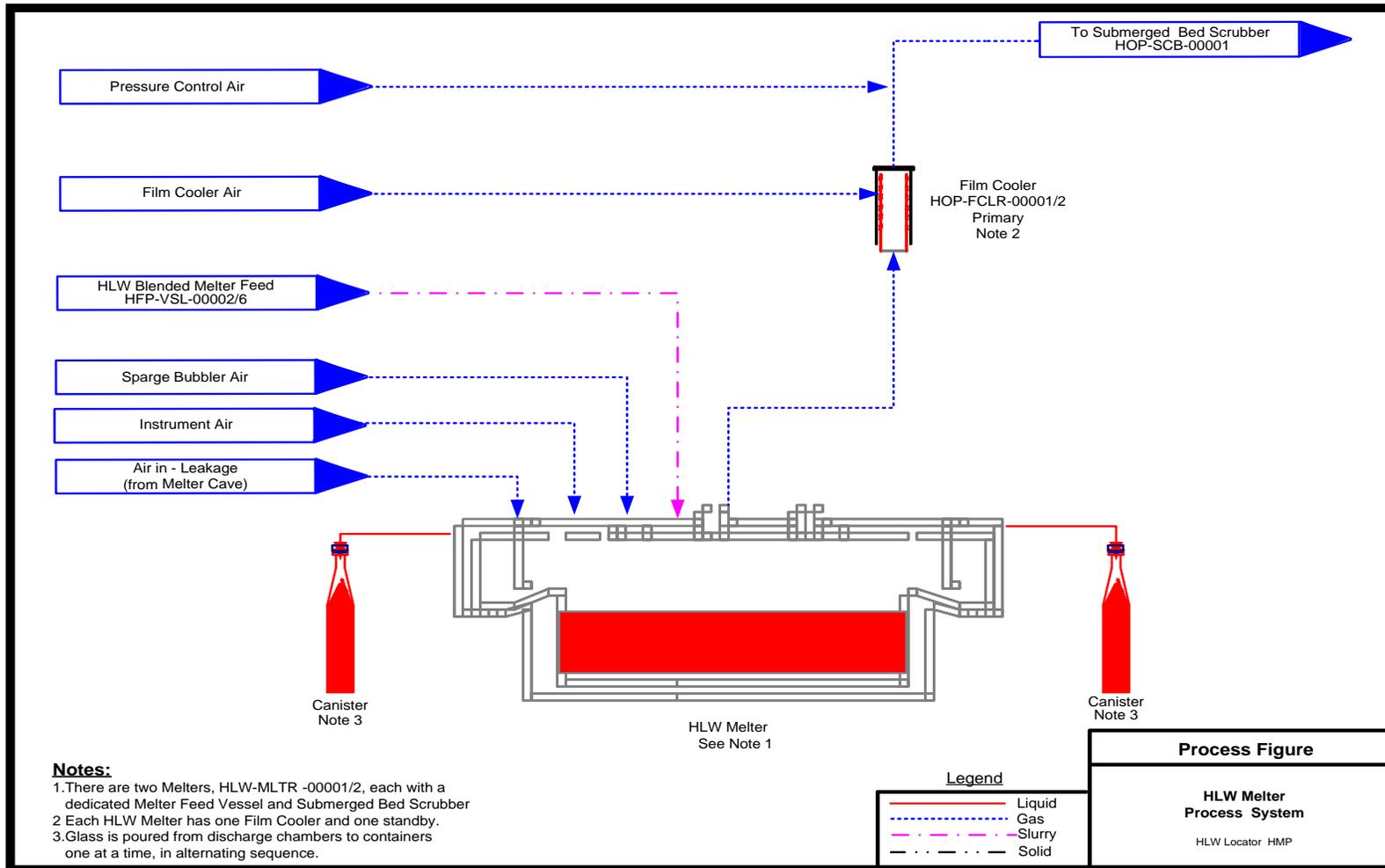
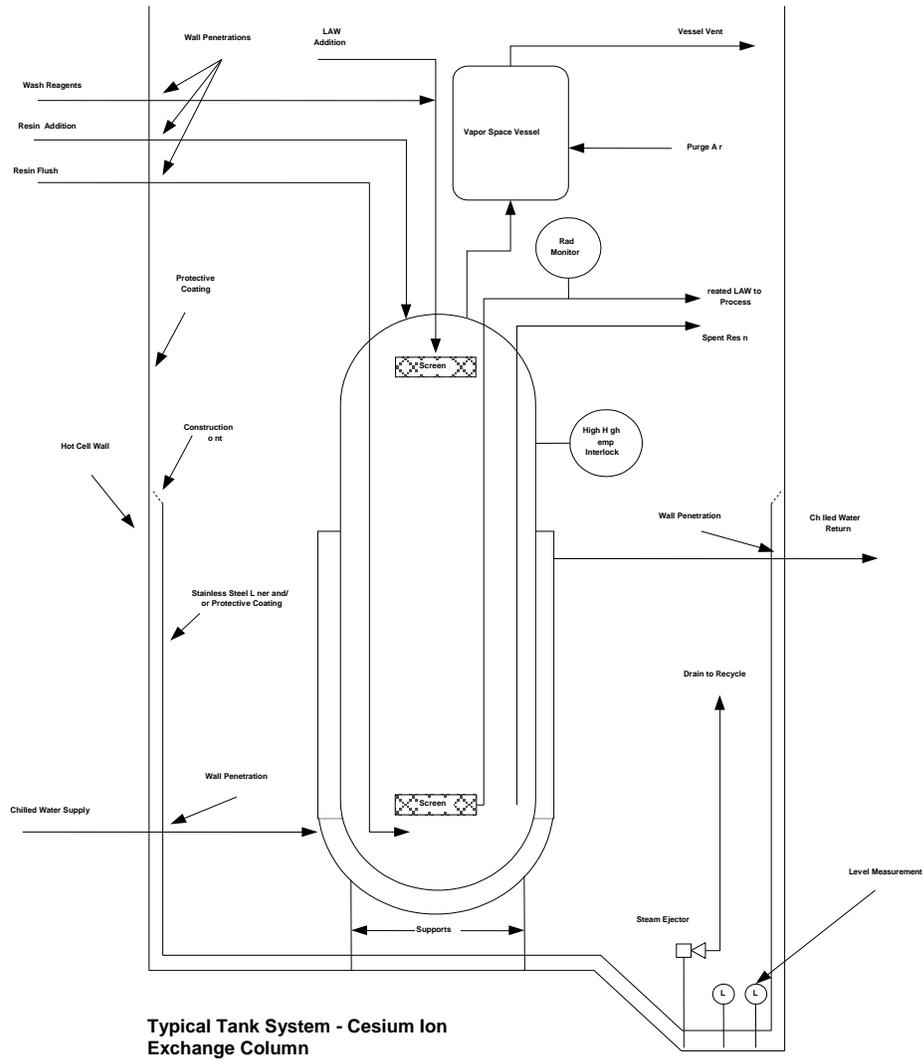


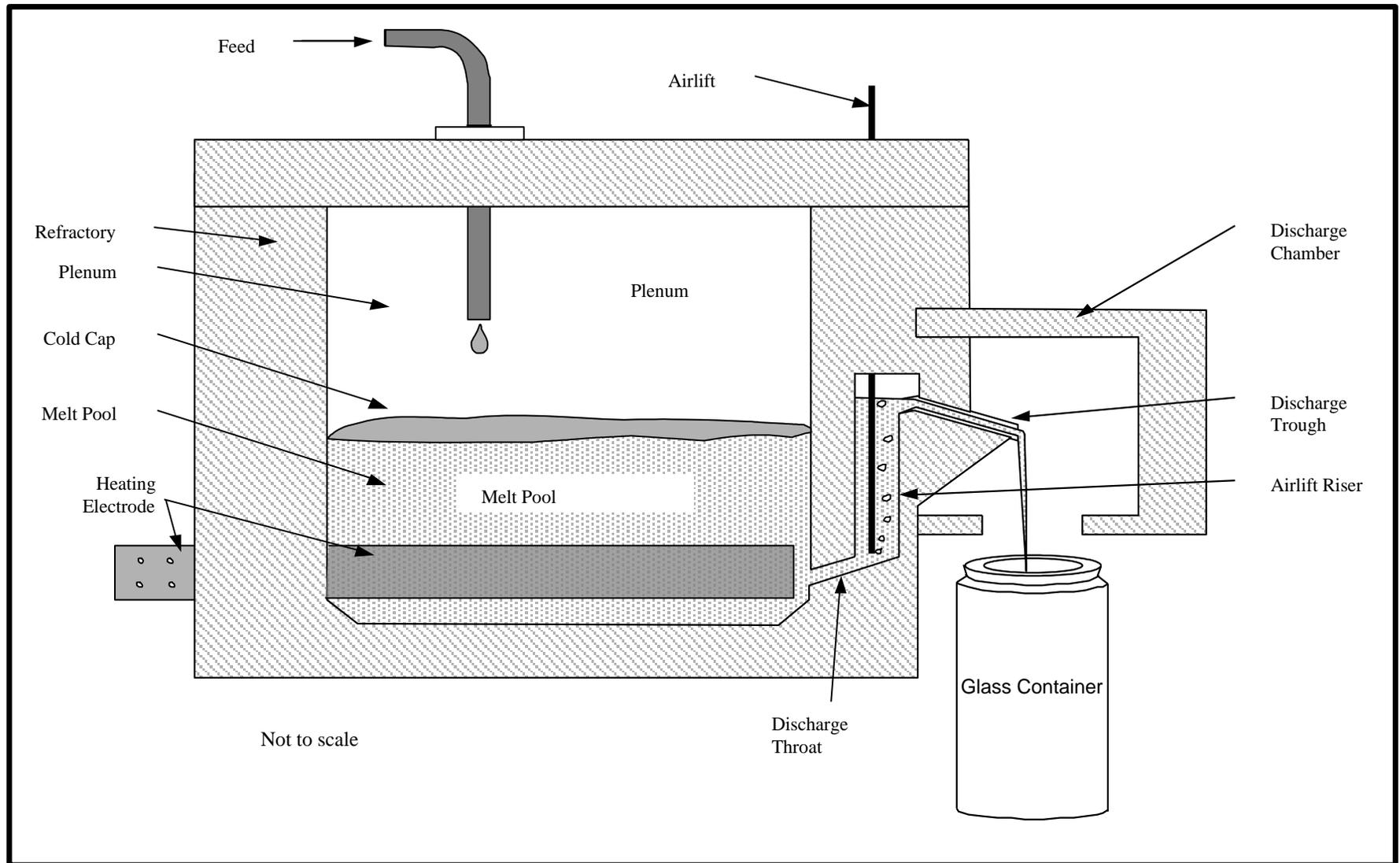
Figure 4A-27 HLW Melter Process System (HMP)

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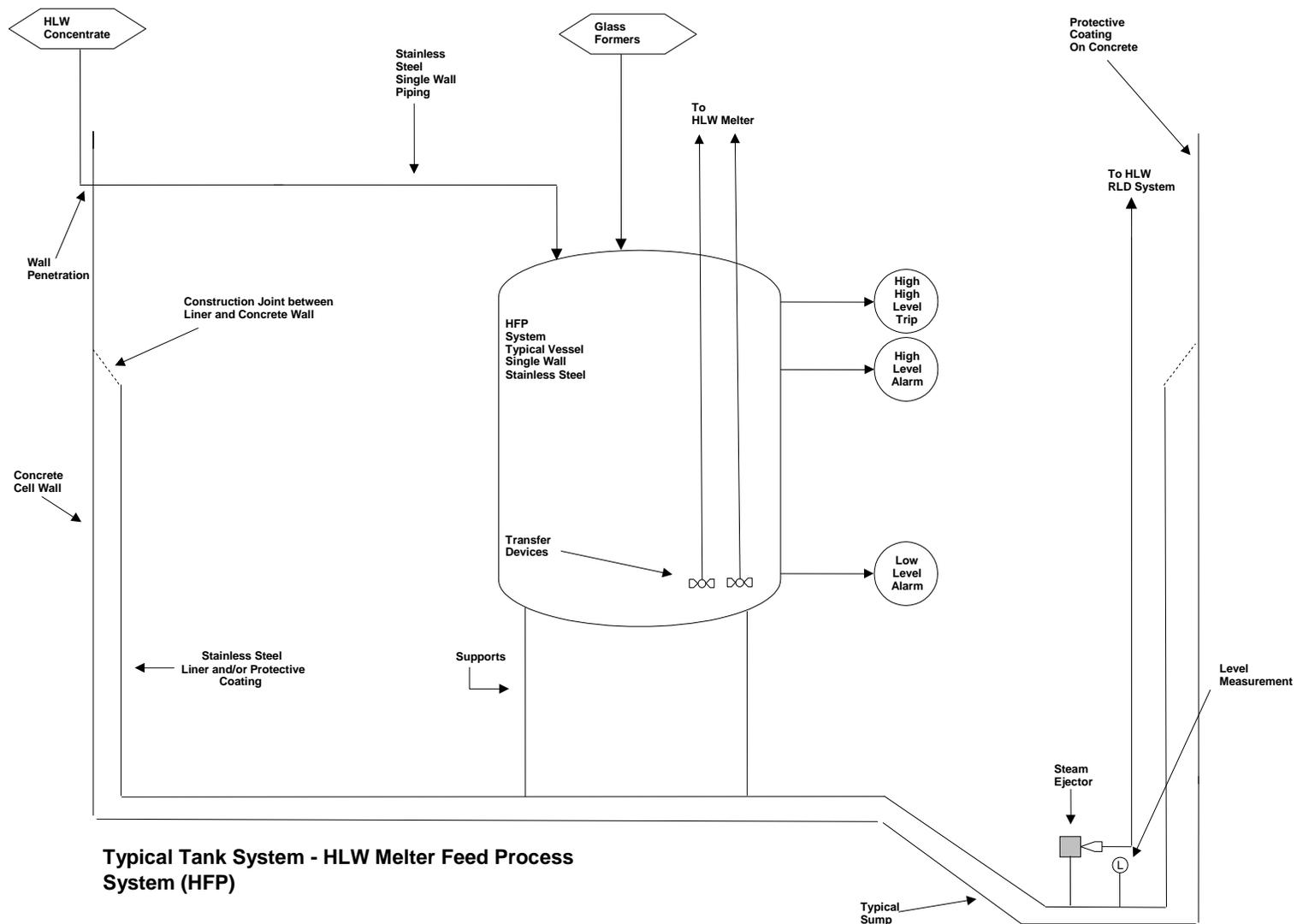
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Figure 4A-38 Typical Tank System – Cesium Ion Exchange Column



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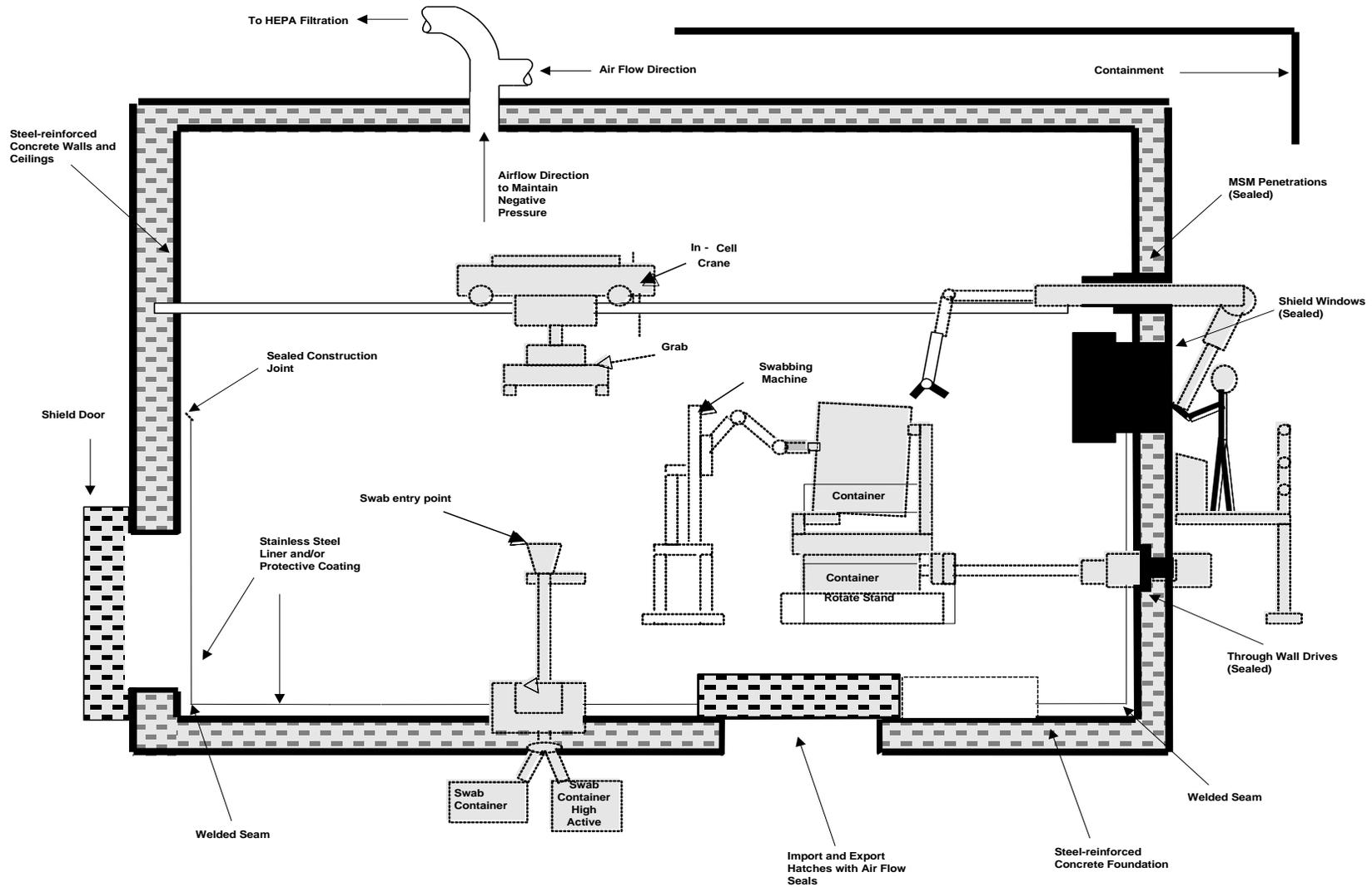
Figure 4A-48 Typical System - LAW Melter Process System (LMP)



Typical Tank System - HLW Melter Feed Process System (HFP)

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Figure 4A-53 Typical Tank System – HLW Melter Feed Process System (HFP)



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Typical System - Containment Building

Figure 4A-59 Typical System - Containment Building (Sheet 1)

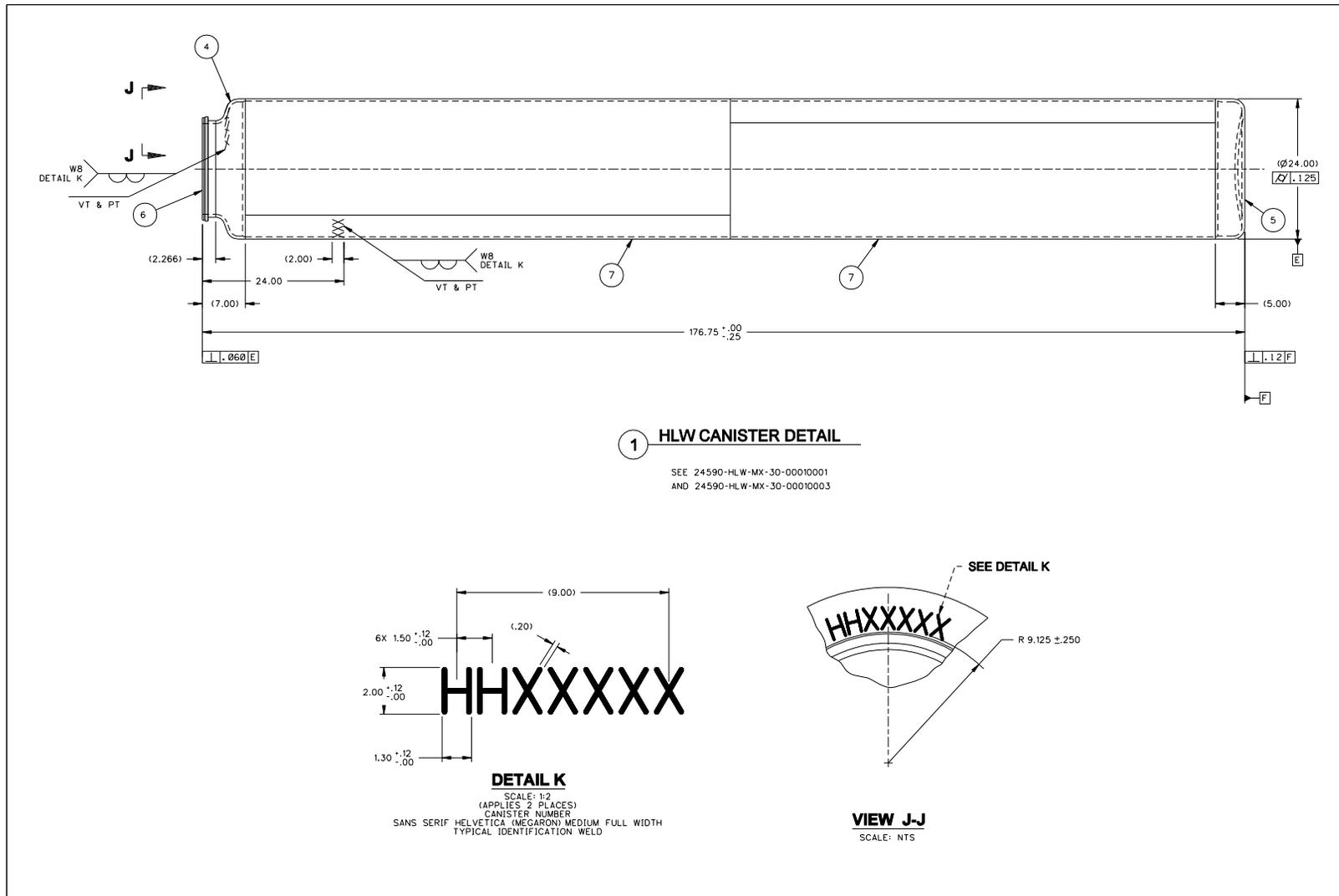
1 **Figure 4A-59 Typical System - Containment Building Typical Design Features Crosswalk**
 2 **(Sheet 2)**

	Negative Cell Air Pressure	Air Flow to HEPA Filters	SS Liner With Welded Seams	Import / Export Hatch - (Controlled Air Gap)	Shield Windows - (Sealed)	Steel Reinforced Concrete Floor/Foundation	Steel Reinforced Concrete Walls & Ceilings	Through Wall MSMs - (Sealed)	In - Cell Bridge Crane / Monorail	Horiz./Vertical Shield Doors - (Controlled Air Gap)	Miscellaneous In-cell Room Equipment
Containment Building											
Pretreatment Plant											
Pretreatment Hot Cell Containment Building (P-0123)	X	X	X	X	X	X	X	X	X	X	X
Pretreatment Maintenance Containment Building											
PM0124 Hot Cell Crane Maintenance Mezzanine	X				X	X	X		X		X
P-0121A Spent Resin Dewatering	X	X		X	X	X	X				X
P-0122A Waste Packaging Area	X	X		X	X	X	X				X
P-0123A Remote Decontamination Maintenance Cave	X	X	X	X	X	X	X		X		X
P-0124 C3 Workshop	X	X		X	X	X	X		X		X
P-012C1 C3 Workshop	X	X		X	X	X	X		X		X
P-0125 Cask Lidding Airlock	X	X		X	X	X	X			X	X
P-0125A Cask Lidding Room	X	X		X	X	X	X		X		X
P-0128A MSM Repair Area	X	X		X	X	X	X				X
P-0128 Temporary Storage Room	X				X	X	X				X
Pretreatment Spent Filter Drum Handling Area Containment Building (P-0223)	X	X				X	X			X	X
Pretreatment Filter Cave Room-Containment Building (P-0335)	X	X	X			X	X			X	X
Pretreatment PJV Secondary HEPA Filter Room Containment Building (P-0431A)	X	X				X	X				

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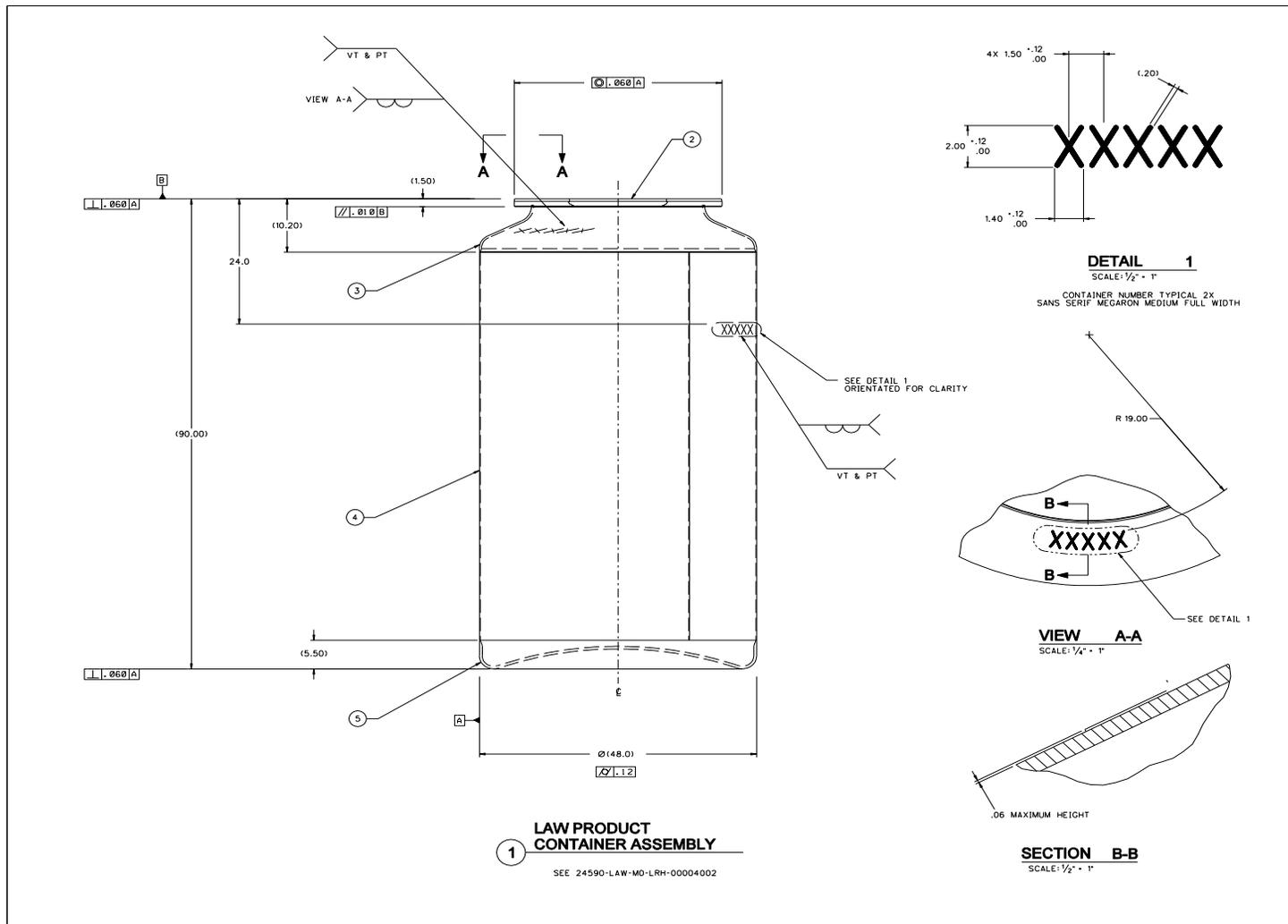
	Negative Cell Air Pressure	Air Flow to HEPA Filters	SS Liner With Welded Seams	Import / Export Hatch - (Controlled Air Gap)	Shield Windows - (Sealed)	Steel Reinforced Concrete Floor/Foundation	Steel Reinforced Concrete Walls & Ceilings	Through Wall MSMs - (Sealed)	In - Cell Bridge Crane / Monorail	Horiz./Vertical Shield Doors - (Controlled Air Gap)	Miscellaneous In-cell Room Equipment
Containment Building											
LAW Vitrification Plant											
LAW LSM Gallery Containment Building (L-0112)	X	X				X	X			X	X
ILAW Container Finishing Containment Building											
L-0109B Swabbing Cell North Line	X	X		X	X	X	X	X	X	X	X
L-0109C Decontamination Area North Line	X	X		X	X	X	X	X	X	X	X
L-0109D Inert Fill / Welding Area North Line	X	X		X	X	X	X	X	X	X	X
L-0115B Swabbing Cell South Line	X	X		X	X	X	X	X	X	X	X
L-0115C Decontamination Area South Line	X	X		X	X	X	X	X	X	X	X
L-0115D Inert Fill / Welding Area South Line	X	X		X	X	X	X	X	X	X	X
L-0109E Container Monitoring/Export Area - North Line	X	X		X	X	X	X	X	X	X	X
L-0115E Container Monitoring/Export Area - South Line	X	X		X	X	X	X	X	X	X	X
LAW Vit Plant C3 Workshop Containment Building (L-226A)	X	X				X	X		X		X
LAW Consumable Import/Export Containment Building (L-0119B)	X	X				X	X		X		X
LAW Pour Cave Containment Building											
L-B015A Pour Cave (Melter 1)	X	X		X	X	X	X	X	X	X	X
L-B013C Pour Cave (Melter 1)	X	X		X	X	X	X	X	X	X	X
L-B013B Pour Cave (Melter 2)	X	X		X	X	X	X	X	X	X	X
L-B011C Pour Cave (Melter 2)	X	X		X	X	X	X	X	X	X	X
L-B011B (Spare)	X	X		X	X	X	X	X	X	X	X
L-B009B (Spare)	X	X		X	X	X	X	X	X	X	X
ILAW Container Buffer Storage Containment Building											
L-B025C											
L-B025D											

	Negative Cell Air Pressure	Air Flow to HEPA Filters	SS Liner With Welded Seams	Import / Export Hatch - (Controlled Air Gap)	Shield Windows - (Sealed)	Steel Reinforced Concrete Floor/Foundation	Steel Reinforced Concrete Walls & Ceilings	Through Wall MSMs - (Sealed)	In - Cell Bridge Crane / Monorail Hoist/Vertical Shield Doors - (Controlled Air Gap)	Miscellaneous In-cell Room Equipment
Containment Building										
HLW Vitrification Plant										
HLW Melter Cave 1 Containment Building:	X	X	X	X	X	X	X	X	X	X
H-0117 Melter Cave 1	X	X	X	X	X	X	X	X	X	X
H-0116B Melter Cave 1 - C2/C3 Airlock	X	X				X	X		X	
H-0310A Melter Cave 1 Equipment Decon Pit	X	X	X	X	X	X	X	X	X	
HLW Melter Cave2 Containment Building:	X	X	X	X	X	X	X	X	X	X
H-0106 Melter Cave 2	X	X	X	X	X	X	X	X	X	X
H-0105B Melter Cave 2 - C2/C3/ Airlock	X	X				X	X		X	
1 H-0304A Melter Cave 2 Equipment Decontamination Area	X	X	X	X	X	X	X	X	X	
IHLW Canister Handling Cave Containment Building (H-0136)	X	X	X	X	X	X	X	X	X	X
IHLW Canister Swab and Monitoring Cave Containment Building (H-0133)	X	X		X	X	X	X	X	X	
C3 Workshop Containment Building:	X	X				X	X			X
C3 Workshop (H-0311A)	X	X				X	X			X
C3 MSM Maintenance Workshop (H-0311B)	X	X				X	X			
HLW Filter Cave Containment Building (H-0104)	X	X		X	X	X	X	X	X	X
HLW Waste Handling Area Containment Building:	X	X				X	X			
H-0410B E&I Room	X	X				X	X			
H-0411 Waste Handling Room	X	X				X	X			
HLW Pour Tunnel 1 Containment Building (H-B032)	X	X	X	X		X	X		X	
HLW Pour Tunnel 2 Containment Building (H-B005A)	X	X	X	X		X	X		X	
HLW Drum Swabbing and Monitoring Area Containment Building:	X	X				X	X		X	
H-0126A Crane Maintenance Room	X	X				X	X			
H-0126B Swabbing and Monitoring Room	X	X				X	X			
H-B028 Cask Import/Export Room	X	X				X	X		X	

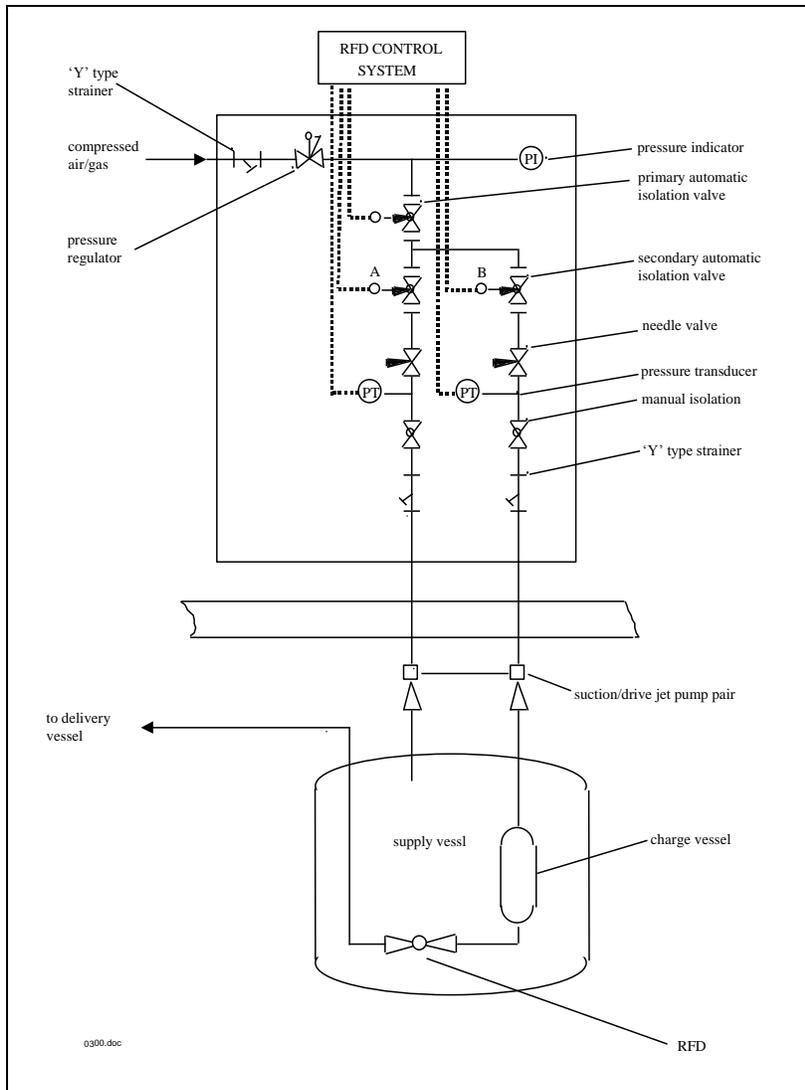


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 2 **Figure 4A-118 Schematic of an Example IHLW Container and Label**

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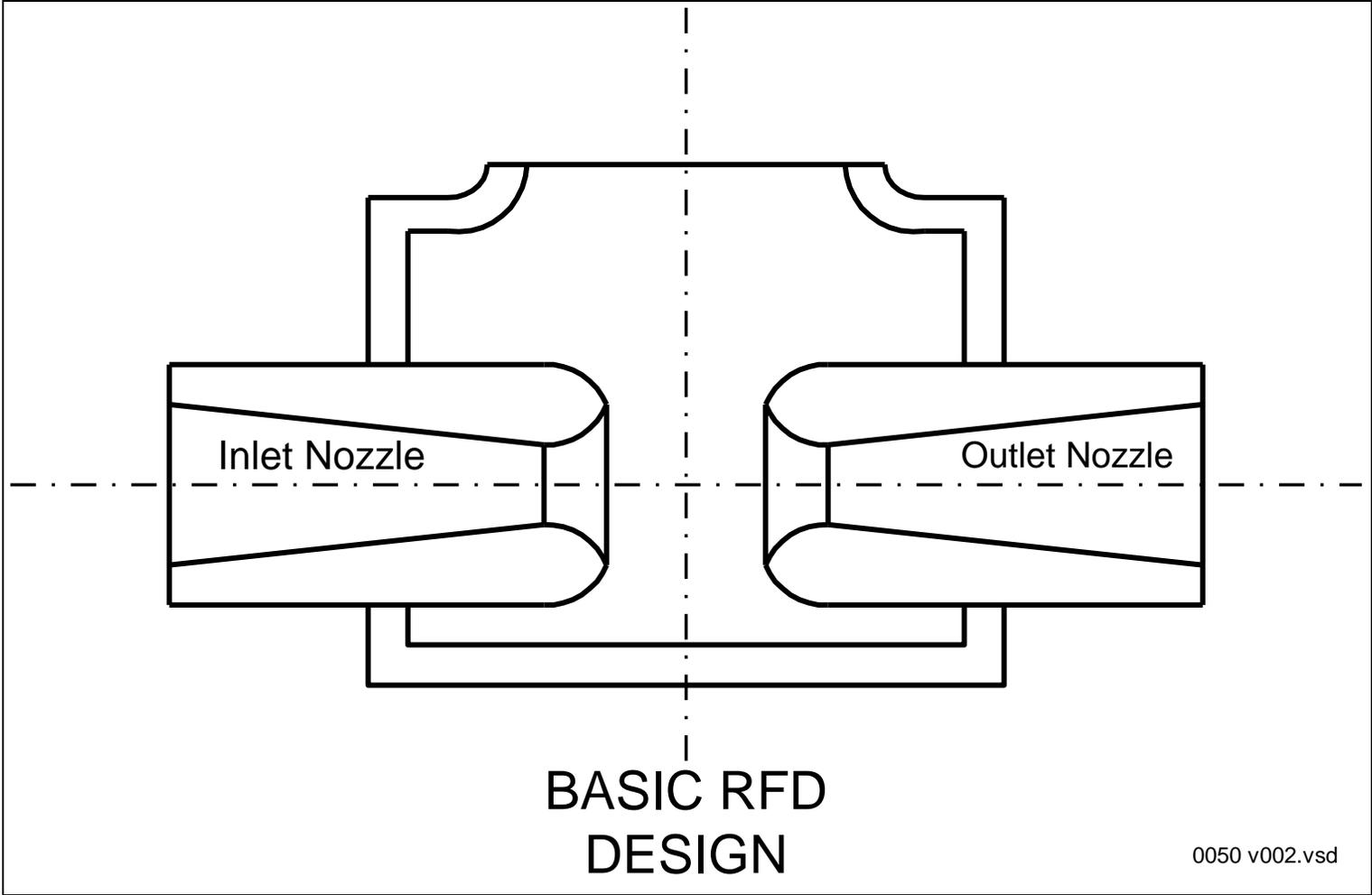
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 2 **Figure 4A-119 Schematic of an Example ILAW Container and Label**
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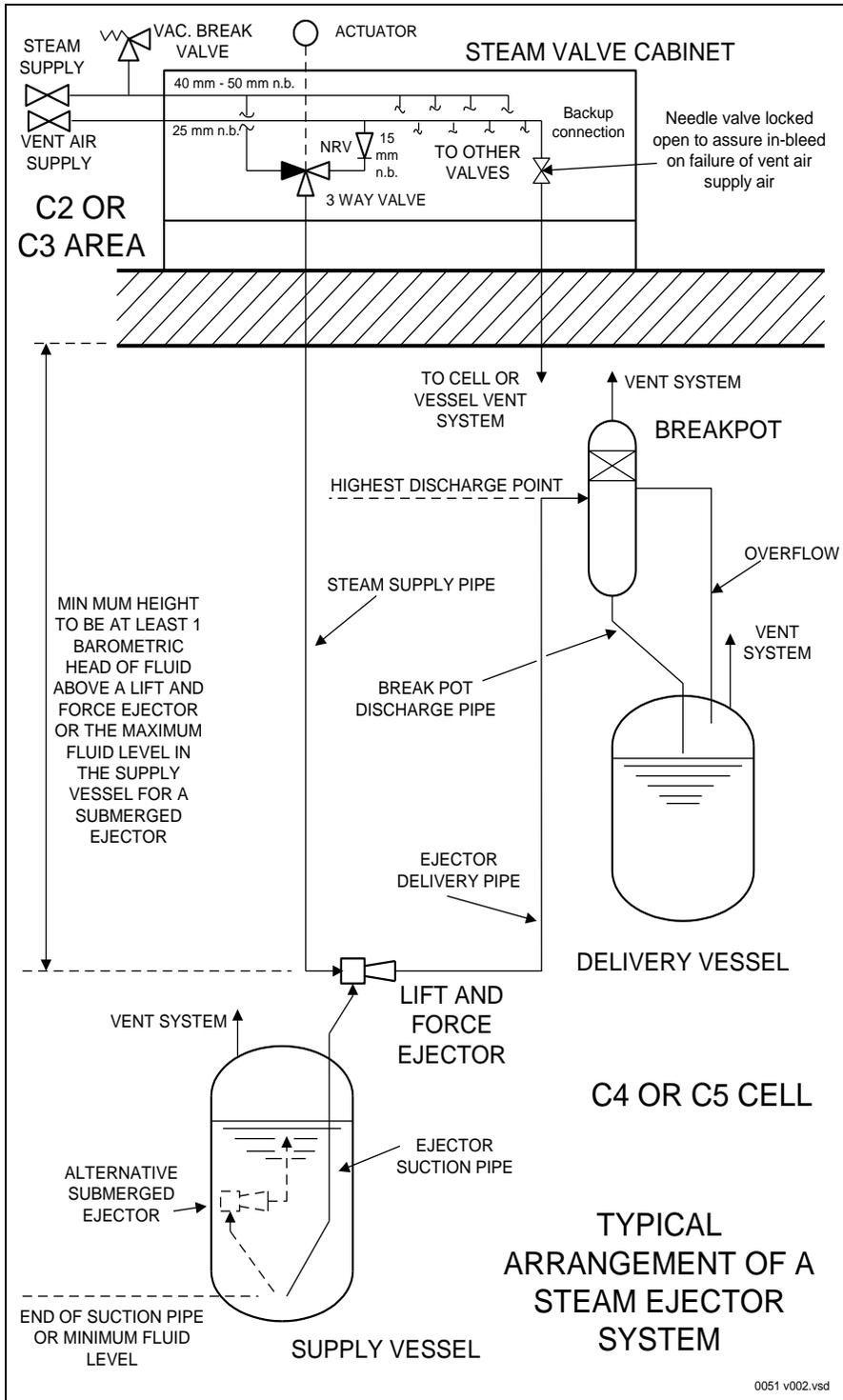
Figure 4A-120 Typical Arrangement of a Reverse Flow Diverter

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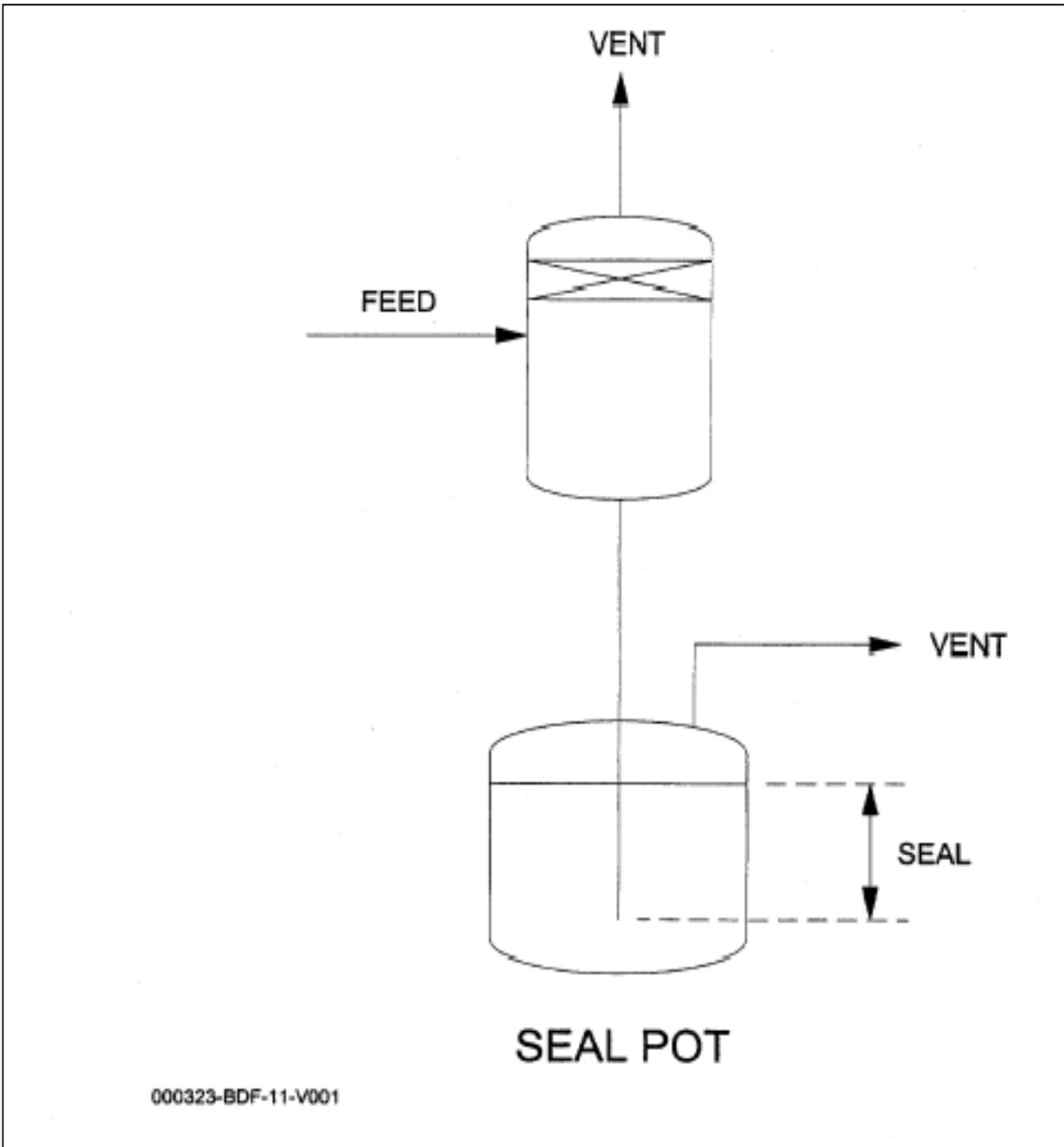
Figure 4A-121 Basic Reverse Flow Diverter Design



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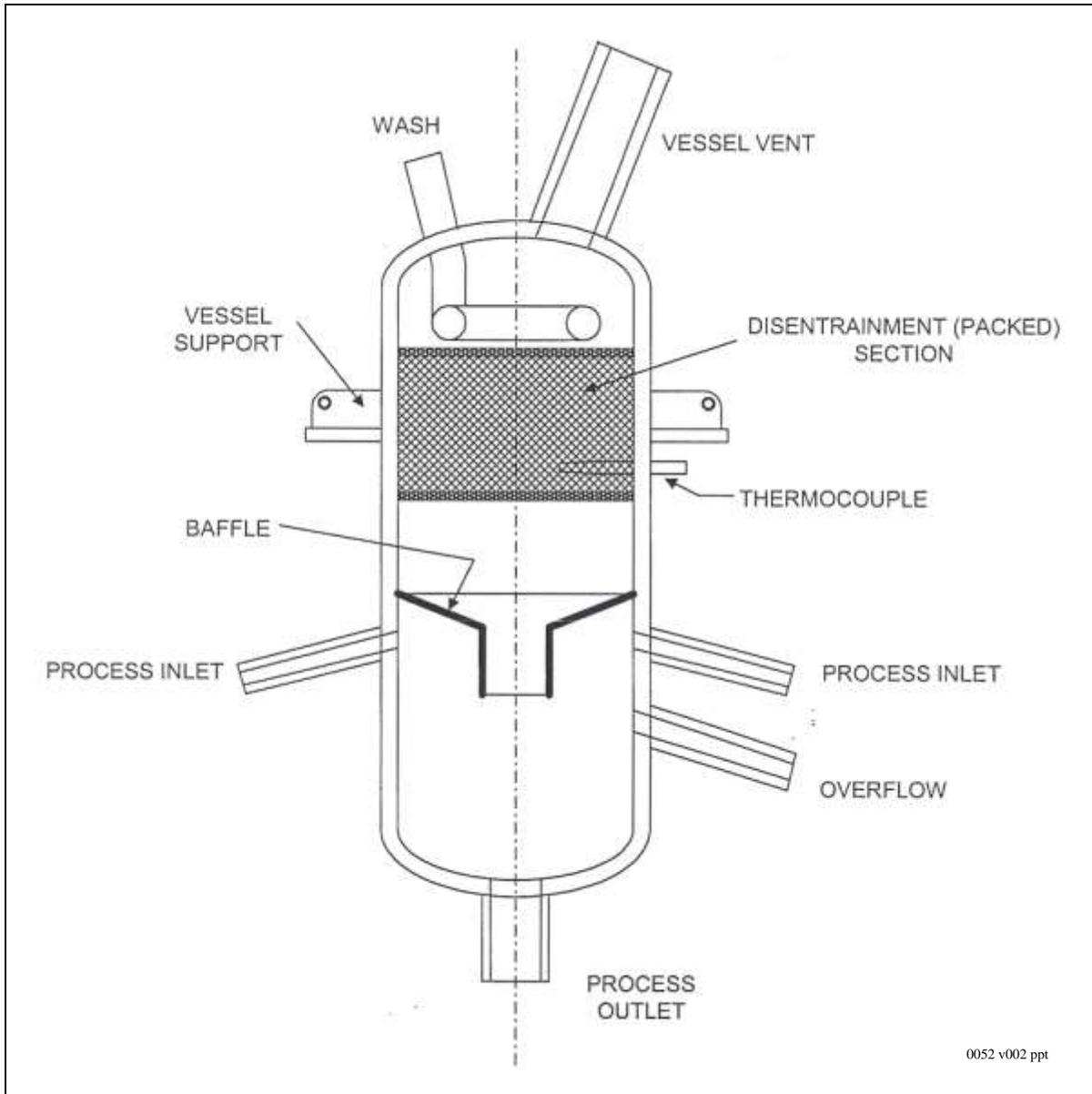
Figure 4A-122 Typical Arrangement of a Steam Ejector System

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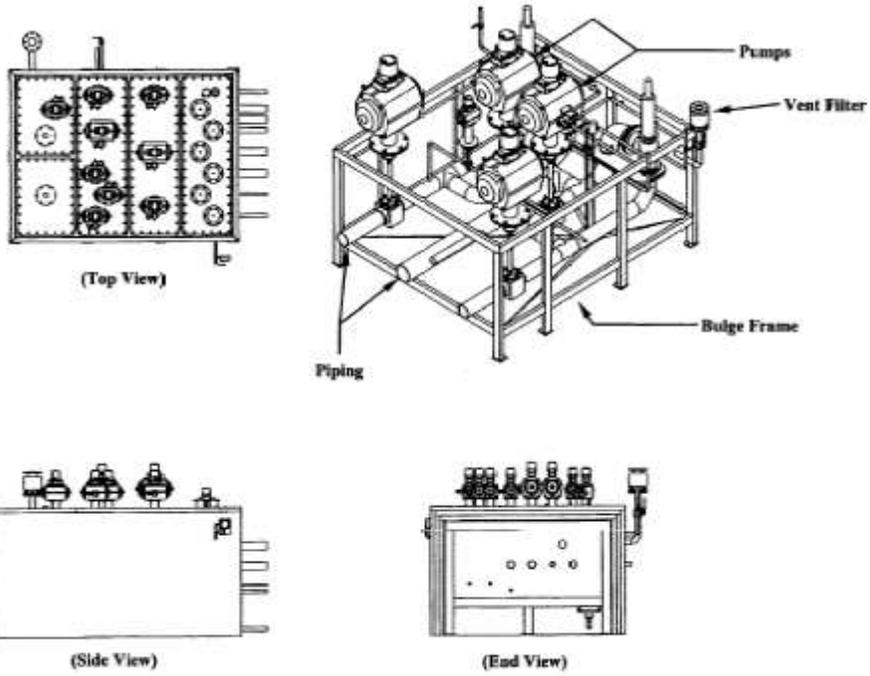
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Figure 4A-123 Typical Seal Pot Arrangement



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Figure 4A-124 Typical Breakpot Arrangement



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Figure 4A-127 Typical Bulge Configuration

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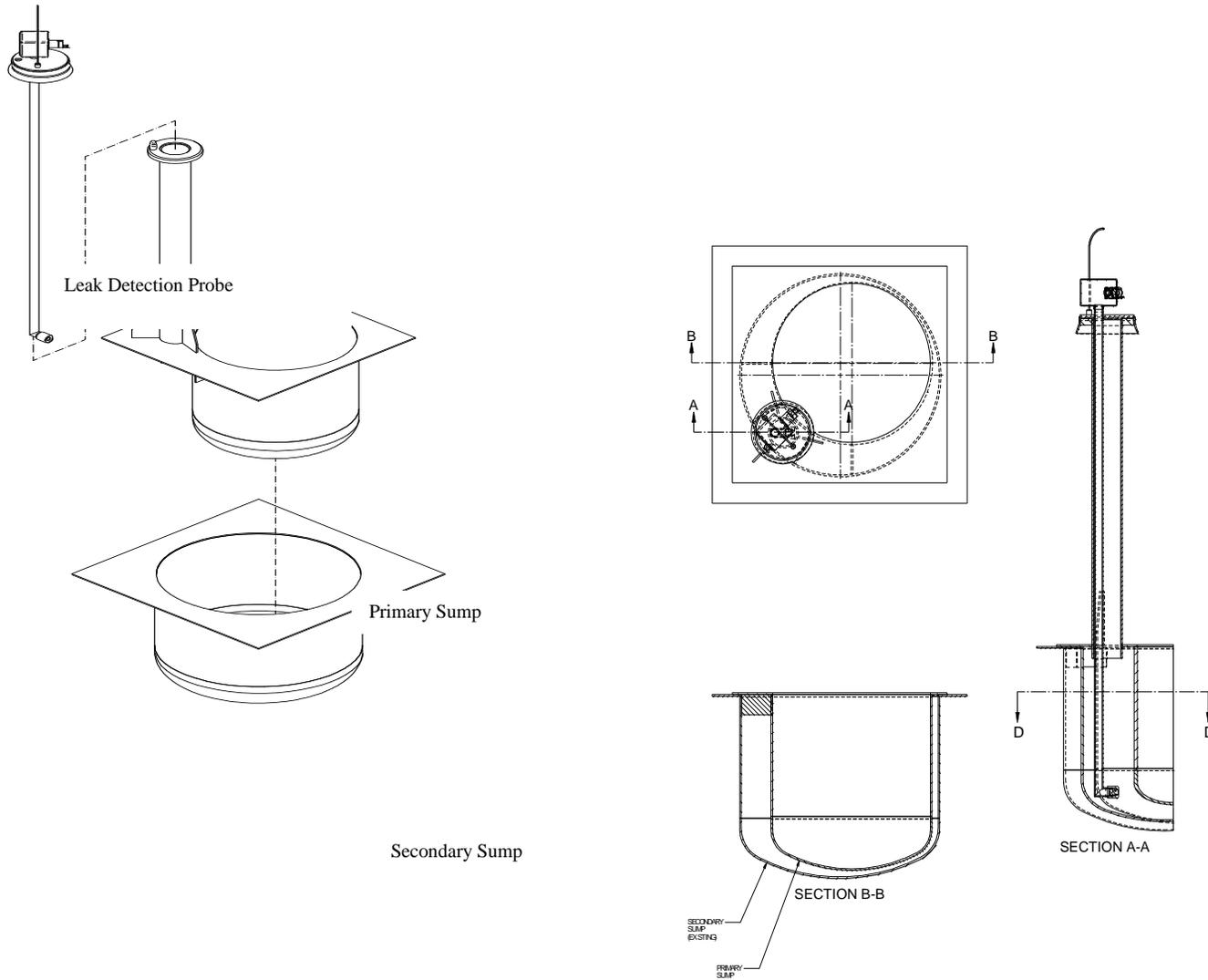


Figure 4A-128

Typical Primary Containment Sump Conceptual Design

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