



**AUTOMATED FLUORESCENT PENETRANT  
INSPECTION SYSTEMS<sup>i</sup>**

# Designed. Engineered. Manufactured. **Supported.**

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At REL, our approach to designing, building, and installing automated non-destructive testing equipment for fluorescent penetrant and magnetic particle inspection has been built on decades of experience solving complex technical challenges for our customers. REL ideates and manufactures world class, Industry 4.0, reliable, and exactly controlled equipment.

**Visit [relinc.com](https://relinc.com) to view all of REL's products.**

**AUTOMATED FLUORESCENT PENETRANT  
INSPECTION**

**2**

**AUTOMATED FLUORESCENT PENETRANT  
INSPECTION LINES**

**4**

**PAST SYSTEM'S PART ENVELOPES**

**8**

A black and white photograph of industrial fluorescent penetrant inspection (FPI) equipment. The machine consists of a large, white, box-like structure with a conveyor system. A metal mesh safety fence runs along the side of the machine. The background shows a factory setting with various pipes and structural elements.

## AUTOMATED FLUORESCENT PENETRANT INSPECTION

At REL, we design, manufacture, and install custom non-destructive testing equipment for fluorescent penetrant and magnetic particle inspection.

**When customers ask us for the impossible, we ask  
“when would you like it?”**

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Backed by decades of scientific knowledge, technical acumen, and practical expertise, we excel at identifying and solving the complicated engineering challenges involving part presentation and part movement in a well-designed, long-lasting, non-destructive testing line. From multiple complex part geometries moving at a rapid clip through an automated system according to recipe-driven processing, to understanding operator safety and health in industrial environments, we have REaL solutions for any individual or multi-facility manufacturing operation.

REL's automated fluorescent penetrant inspection (FPI) lines are precision engineered to solve your specific non-destructive testing challenges, maximize accuracy, and ensure part volume and speed for your facility.

# AUTOMATED FLUORESCENT PENETRANT INSPECTION LINES



We provide premium automated non-destructive testing lines.

REL automated fluorescent penetrant inspection (FPI) lines feature innovative process methods designed to increase our customer's productivity and throughput within their facilities. We design, manufacture, and install automated NDT Processing lines that are designed to handle specific complex part geometry. We specialize in the application of penetrant electrostatically. Why not save 80% of the penetrant cost compared to dip processing? Utilizing process water more than once for pre-rinsing also saves effluent that must be discharged or treated. These techniques along with REL's expertise in building fixtures minimizes Level III skepticism associated with safety critical components that are automatically processed.

REL's systems are designed to allow for safe operator intervention throughout the process for verification and required process check-offs during the process. If the plant loses power, there is no panic in the NDT department, because REL equipment has STATE Based recovery akin to desktop computers. This recovery allows for the system to pick up processing right where it left off before the power outage. The system standard UPS will keep the industrial grade server and the PLC under power for 24 hours to ensure no data is lost!



1



2



3



4

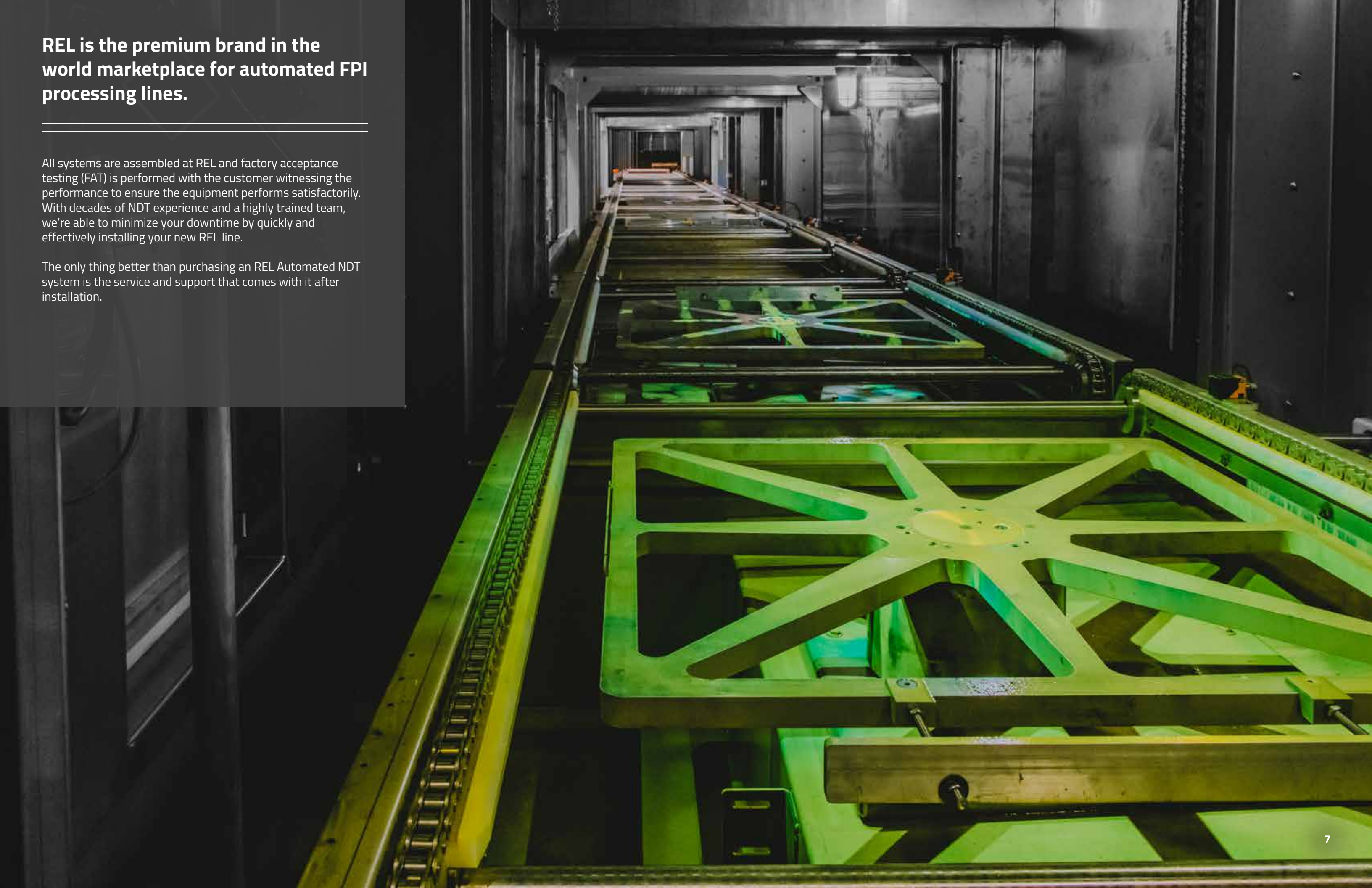
1. Electrostatic penetrant application
2. 16' L x 10' W x 10' H large part dryer
3. Line material handling individually driven chain conveyors to avoid process cross contamination
4. System carrier with integrated part baskets for small part processing

**REL is the premium brand in the world marketplace for automated FPI processing lines.**

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All systems are assembled at REL and factory acceptance testing (FAT) is performed with the customer witnessing the performance to ensure the equipment performs satisfactorily. With decades of NDT experience and a highly trained team, we're able to minimize your downtime by quickly and effectively installing your new REL line.

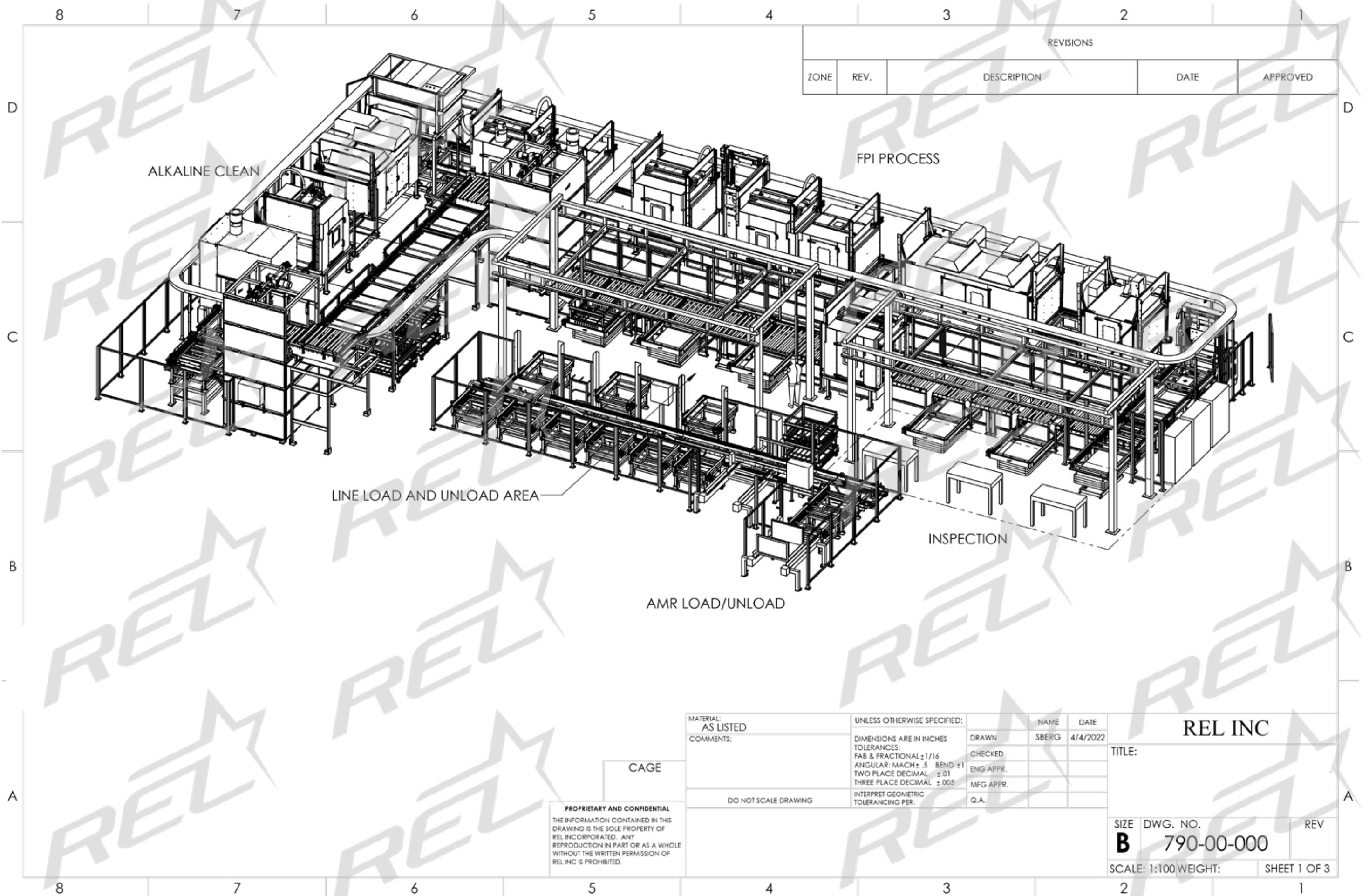
The only thing better than purchasing an REL Automated NDT system is the service and support that comes with it after installation.



# REL SYSTEMS WITH PART ENVELOPES SHOWN



Cleaning and FPI Line  
Model #CLFPI484836

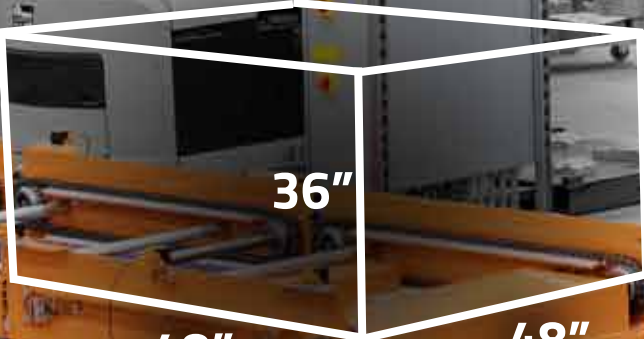


REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED

MATERIAL: AS LISTED	UNLESS OTHERWISE SPECIFIED:		NAME	DATE	REL INC		
COMMENTS:	DIMENSIONS ARE IN INCHES TOLERANCES: FAB & FRACTIONAL ±1/16 ANGULAR: MACH± .5 BEND ±1 TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	DRAWN	SBERG	4/4/2022	TITLE:		
		CHECKED					
		ENG APPR.					
		MFG APPR.					
DO NOT SCALE DRAWING	INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.					
					SIZE	DWG. NO.	REV
					B	790-00-000	
					SCALE: 1:100 WEIGHT:		SHEET 1 OF 3

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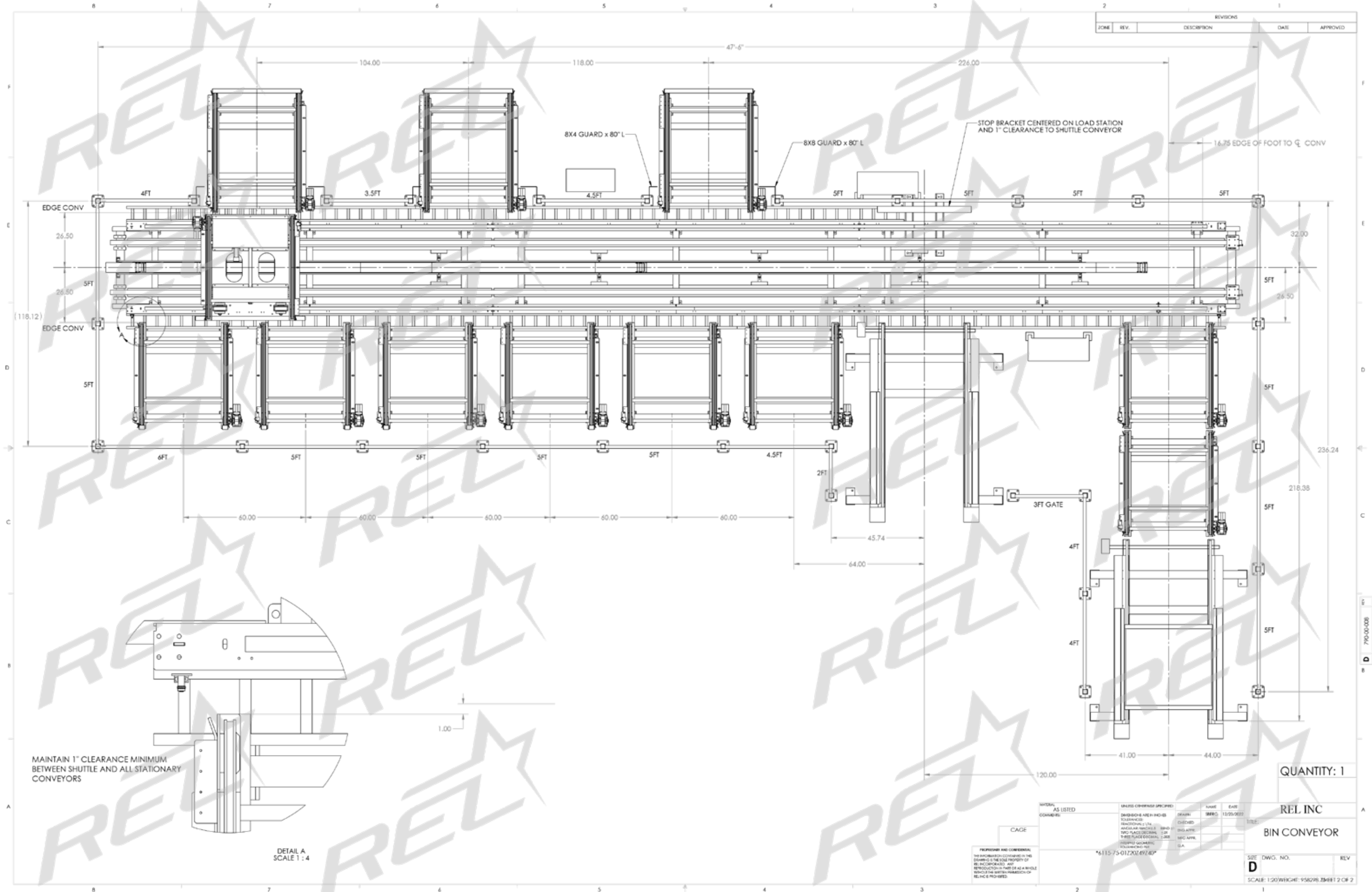


36"

48"

48"

**Bin Conveyor Line**  
**Model #CLFPI484836**





48"

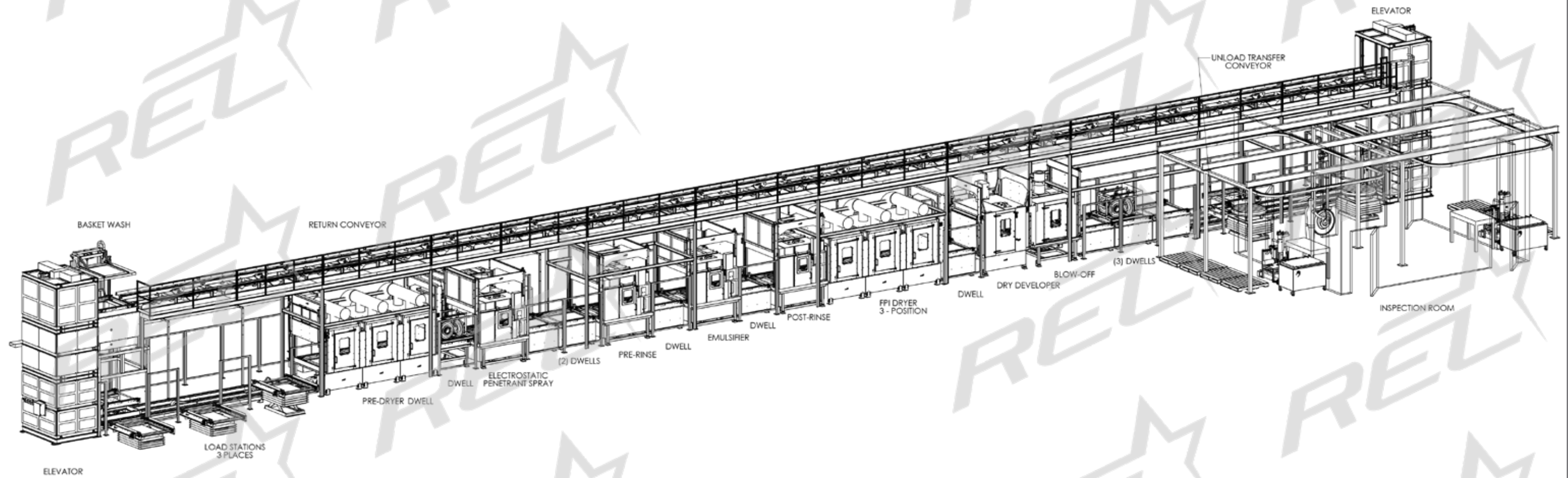
48"

36"

DWELL  
600

PENETRANT SPRAY  
700

**Fluorescent Penetrant  
Inspection Line  
Model #FPI484836**



HEAT TREATMENT		FPI LINE		
	SCALE			
	DATE			
	DRAWN	NAME		
	CHECKED			
	APPROVED	MATERIAL		
TOLERANCES				
ALL FRACTIONAL TOLERANCES $\pm 1/16$ UNLESS OTHERWISE SPECIFIED		DATE PLOTTED TO DWS	EST. WEIGHT	DWG. NO.
ALL ANGULAR TOLERANCES $\pm 1/2$ UNLESS OTHERWISE SPECIFIED		FORMAT	EQUIP. NO.	REV.
ALL FINISHES 250 RMS UNLESS OTHERWISE SPECIFIED				



**Fluorescent Penetrant  
Inspection Line  
Model #FPI467860**



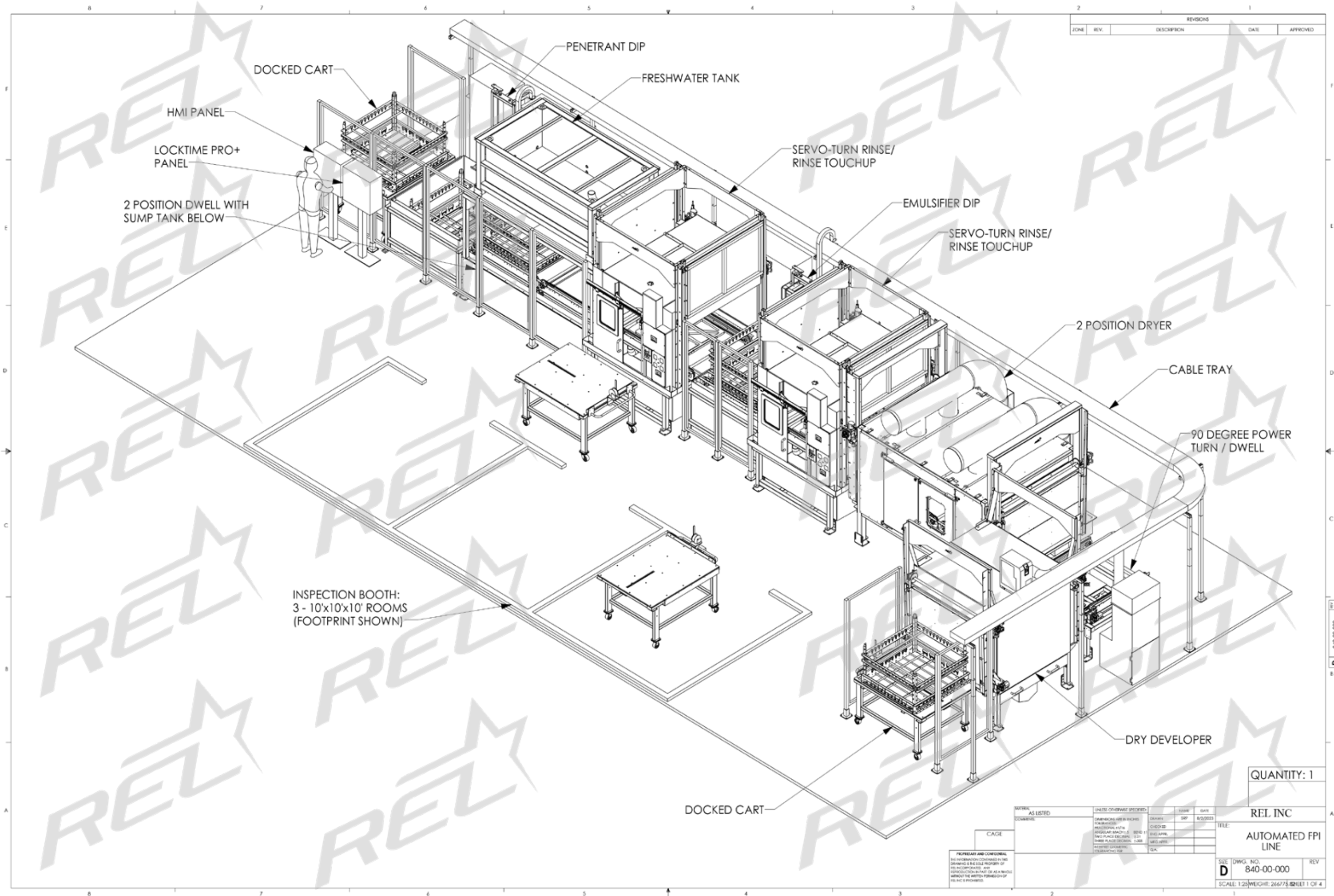


20"

48"

48"

**Fluorescent Penetrant  
Inspection Line  
Model #FPI484820**



REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED

QUANTITY: 1

REL INC  
TITLE:  
AUTOMATED FPI  
LINE

SIZE DWG. NO. 840-00-000  
D 840-00-000  
SCALE: 1:25 WEIGHT: 26675 SHEET 1 OF 4

DATE	BY	CHKD	APPD	DATE
8/2/2023				

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**Cleaning and FPI Line  
Model #CLFPI304444**





22"

36"

30"

**Fluorescent Penetrant  
Inspection Line  
Model #MLF303622**

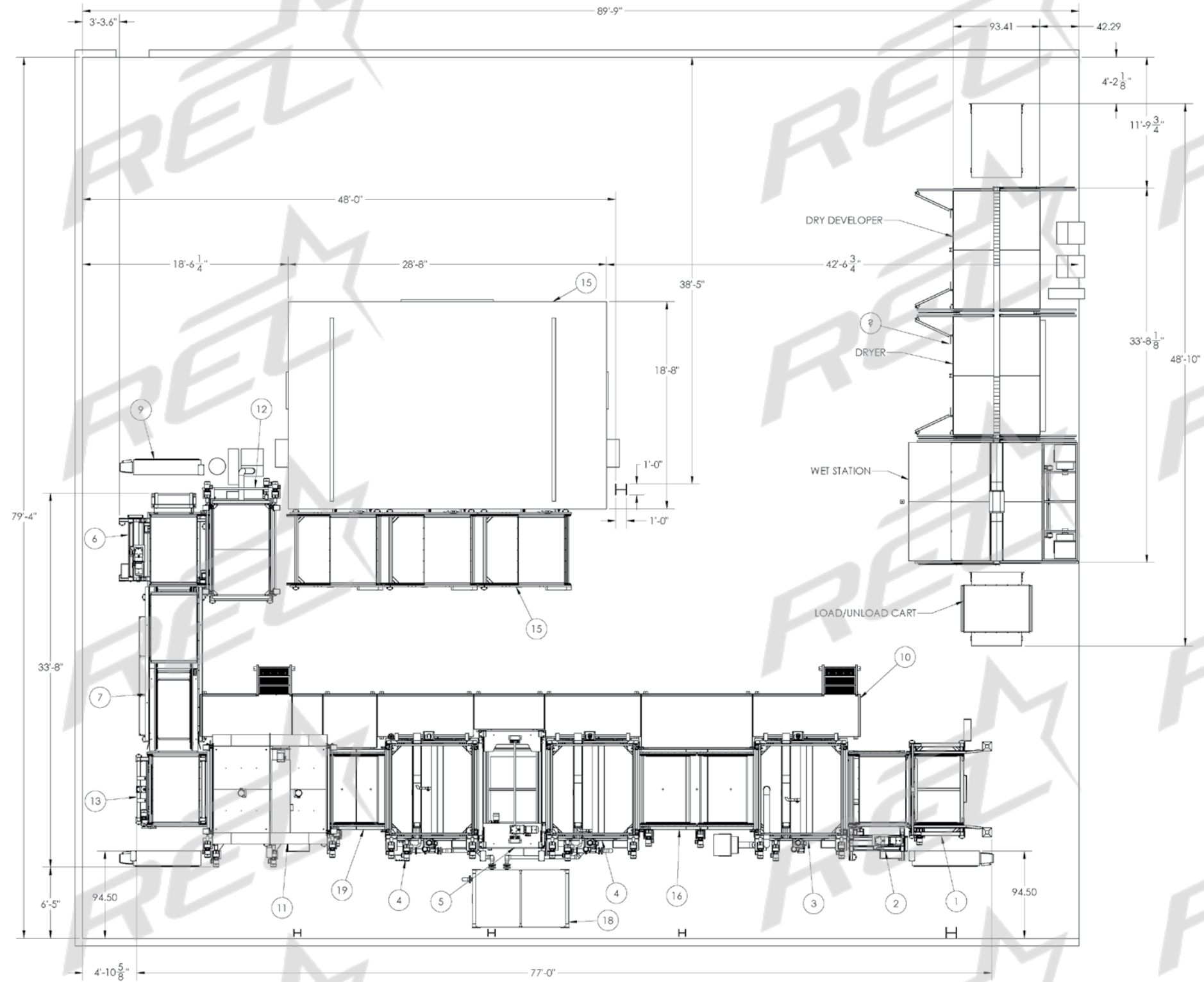


**Fluorescent Penetrant  
Inspection Line  
Model #MLF303622**



**Fluorescent Penetrant  
Inspection Line  
Model #RBF487242**

ITEM NO.	DESCRIPTION	Default/ QTY.
1	LOAD STATION	1
2	LIFT STATION	1
3	PENETRANT STATION	1
4	RINSE STATION	2
5	EMULSIFIER DIP STATION	1
6	LOWRATOR CORNER TRANSFER	1
7	STRAIGHT CONVEYOR	1
9	ELECTRICAL PANEL	3
10	CATWALK	1
11	DRYER	1
12	DRY DEVELOPER	1
13	CORNER TRANSFER	1
14	MANUAL FPI LINE	1
15		1
16	DOUBLE DWELL STATION	1
17		1
18	FRESH WATER TANK	1
19	SINGLE DWELL STATION	1



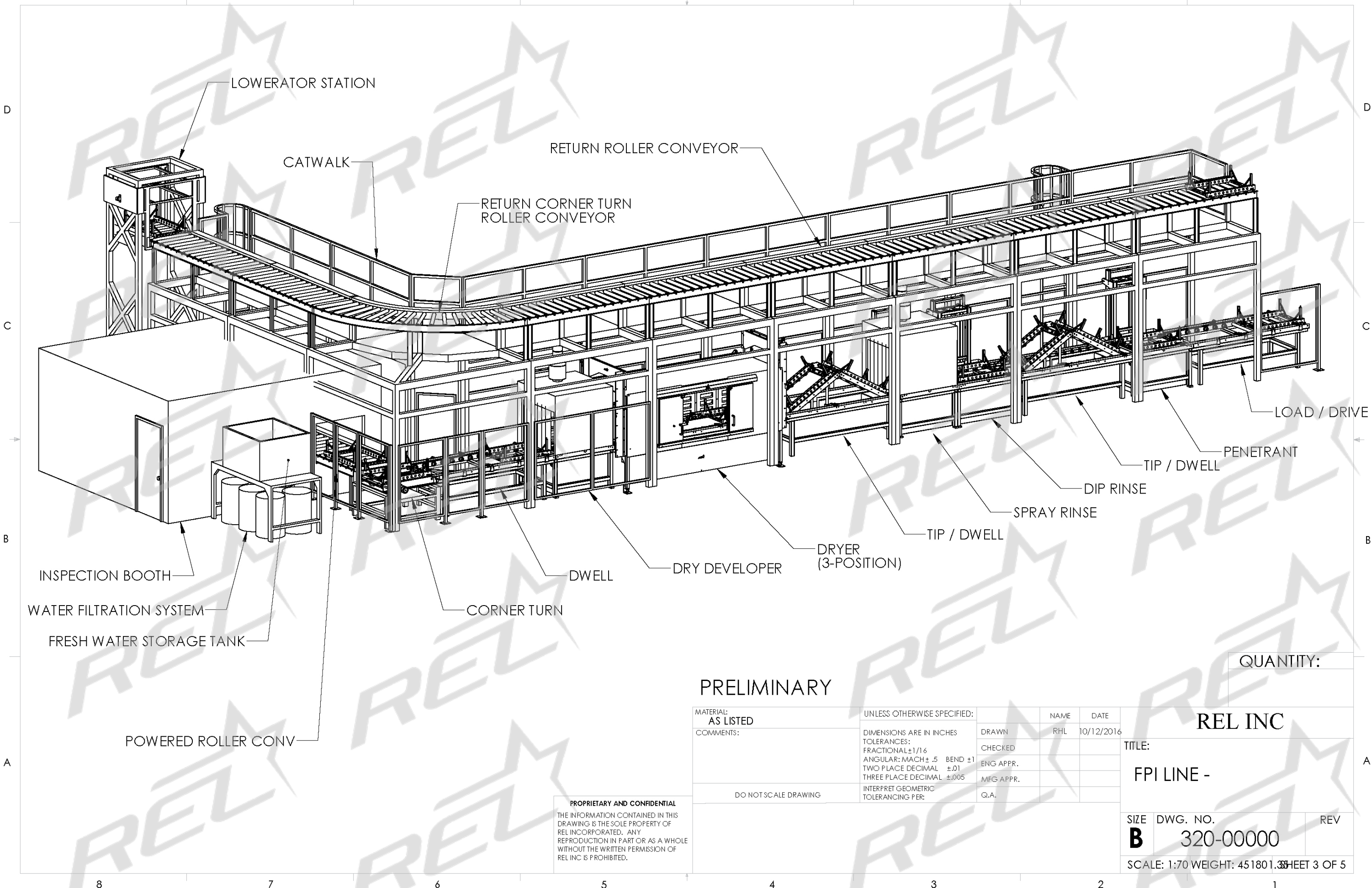
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UNLESS OTHERWISE SPECIFIED:	NAME	DATE
DRAWN	REARSON	9-2-14
CHECKED		
ENG. APPR.		
MTG. APPR.		
QA		
COMMENTS:		
INTERFERED GEOMETRIC TOLERANCES PER MATERIAL		
FRESH		
USE/ON		
APPLICATION		

QUANTITY: 1	REL INC
TITLE:	PLANT LAYOUT
SIZE DWG. NO.	REV
D 130-00000	
SCALE: 1:64 WEIGHT:	SHEET 1 OF 4



**Fluorescent Penetrant  
Inspection Line  
Model #SAF472819**



PRELIMINARY

MATERIAL: AS LISTED	UNLESS OTHERWISE SPECIFIED:	NAME	DATE
COMMENTS:	DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm .5$ BEND $\pm 1$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$	DRAWN RHL	10/12/2016
		CHECKED	
		ENG APPR.	
		MFG APPR.	
		Q.A.	
DO NOT SCALE DRAWING	INTERPRET GEOMETRIC TOLERANCING PER:		

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QUANTITY:

REL INC

TITLE:  
FPI LINE -

SIZE <b>B</b>	DWG. NO. 320-00000	REV
SCALE: 1:70 WEIGHT: 451801.35		SHEET 3 OF 5



28"

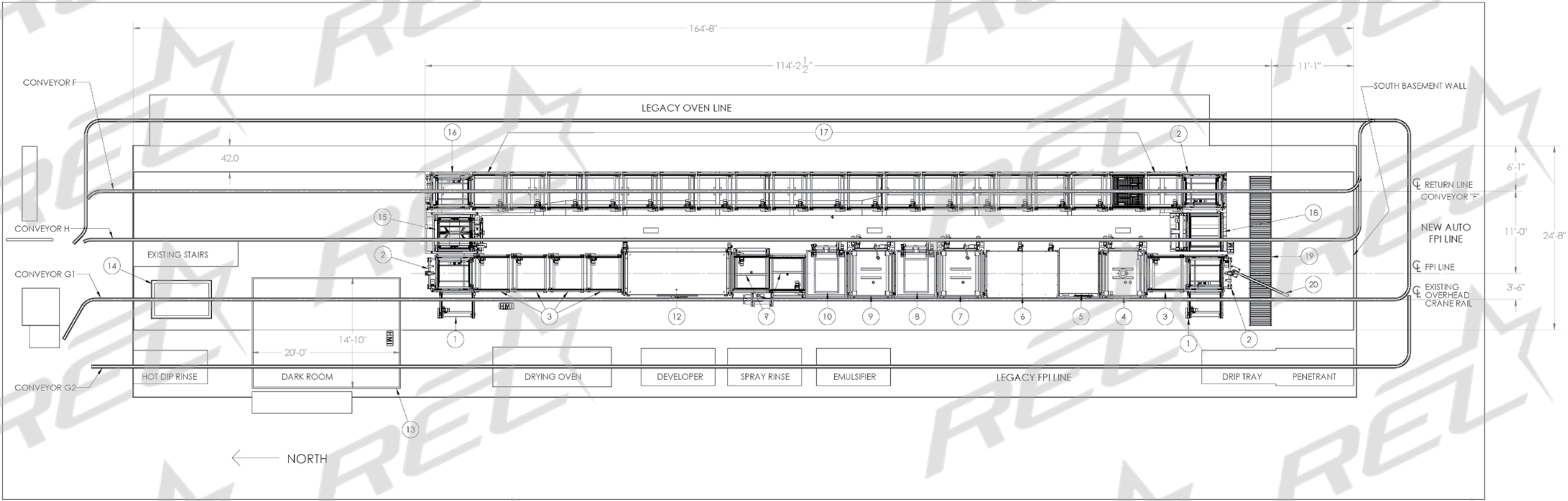
48"

56"

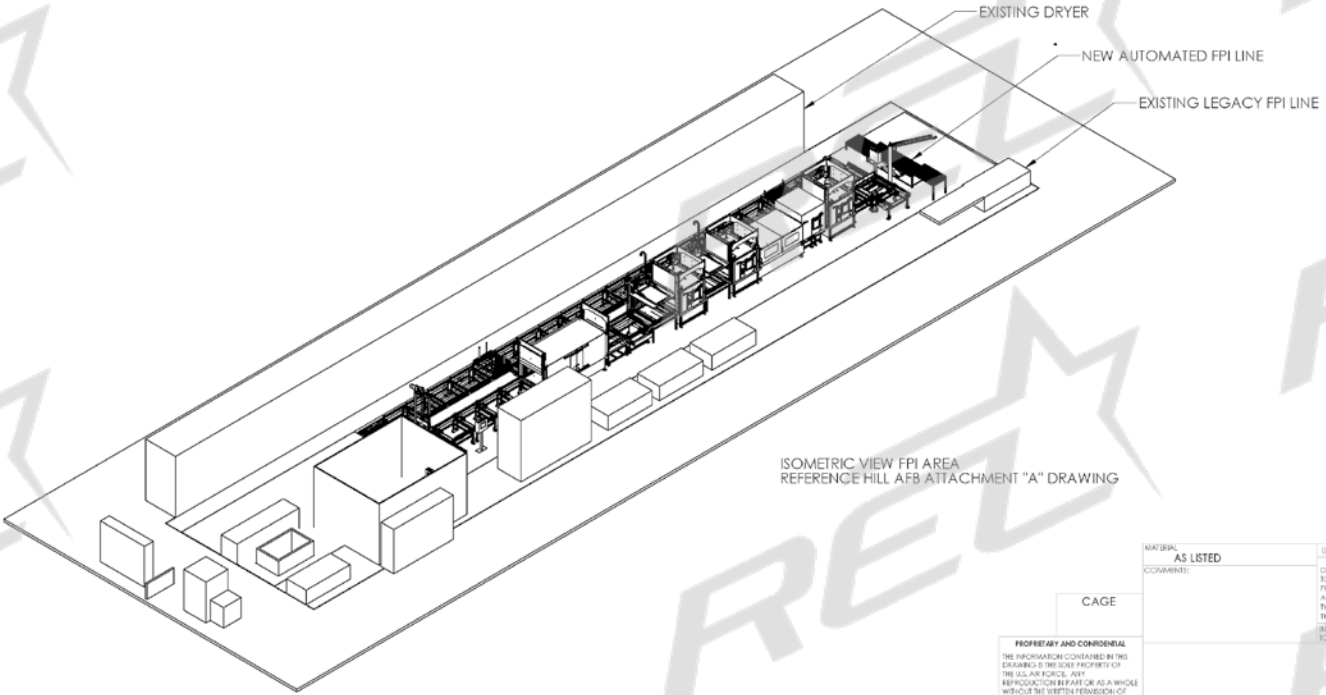
**Fluorescent Penetrant  
Inspection Line  
Model #FPI244848**

PLAN VIEW AUTO FPI LINE LAYOUT

- NOTES:
1. AREA FOR NEW AUTO FPI LINE 164'-8" X 24'-8".
  2. NEW AUTO FPI LINE LOCATED IN PLACE OF EXISTING EAST FPI LINE AND DECOMMISSIONED CLEANING LINES. OLD EQUIPMENT TO BE REMOVED PER ATTACHED DEMOLITION DRAWINGS.
  3. WEST LEGACY FPI LINE AND DRYING OVEN TO THE EAST OF AUTO FPI AREA REMAIN AS SHOWN.
  4. EXISTING DARK ROOM WITH CURTAIN AND LIGHTING UPGRADES PER SPEC.
  5. REFERENCE OVERHEAD CONVEYOR INTEGRATION DRAWING FOR LOAD STOP POSITIONS.
  6. REFERENCE HILL AFB ATTACHMENT "A" FPI AREA DRAWING FOR EXISTING EQUIPMENT LAYOUT.



NUMBER	STATION NAME	WETTED	DRY
1	LOAD/UNLOAD STATION		X
2	TRANSFER STATION		X
3	DWELL STATION		X
4	PENETRANT STATION, ELECTROSTATIC	X	
5	INSPECTION/TOUCH-UP STATION	X	
6	COVERED DWELL STATION, 2-POSITION	X	
7	PRE-RINSE STATION	X	
8	EMULSIFIER DIP STATION	X	
9	POST-RINSE STATION	X	
10	DEVELOPER DIP STATION	X	
11	TILT/DWELL STATION	X	
12	DRYER, 3-POSITION	X	
13	INSPECTION BOOTH		X
14	HOT WATER RINSE	X	
15	CARRIER WASH	X	
16	COOLING TRANSFER CONVEYER	X	
17	RETURN CONVEYORS		X
18	ELEVATOR STATION		X
19	ROLLER CONVEYOR TABLE		X
20	CRANE		X



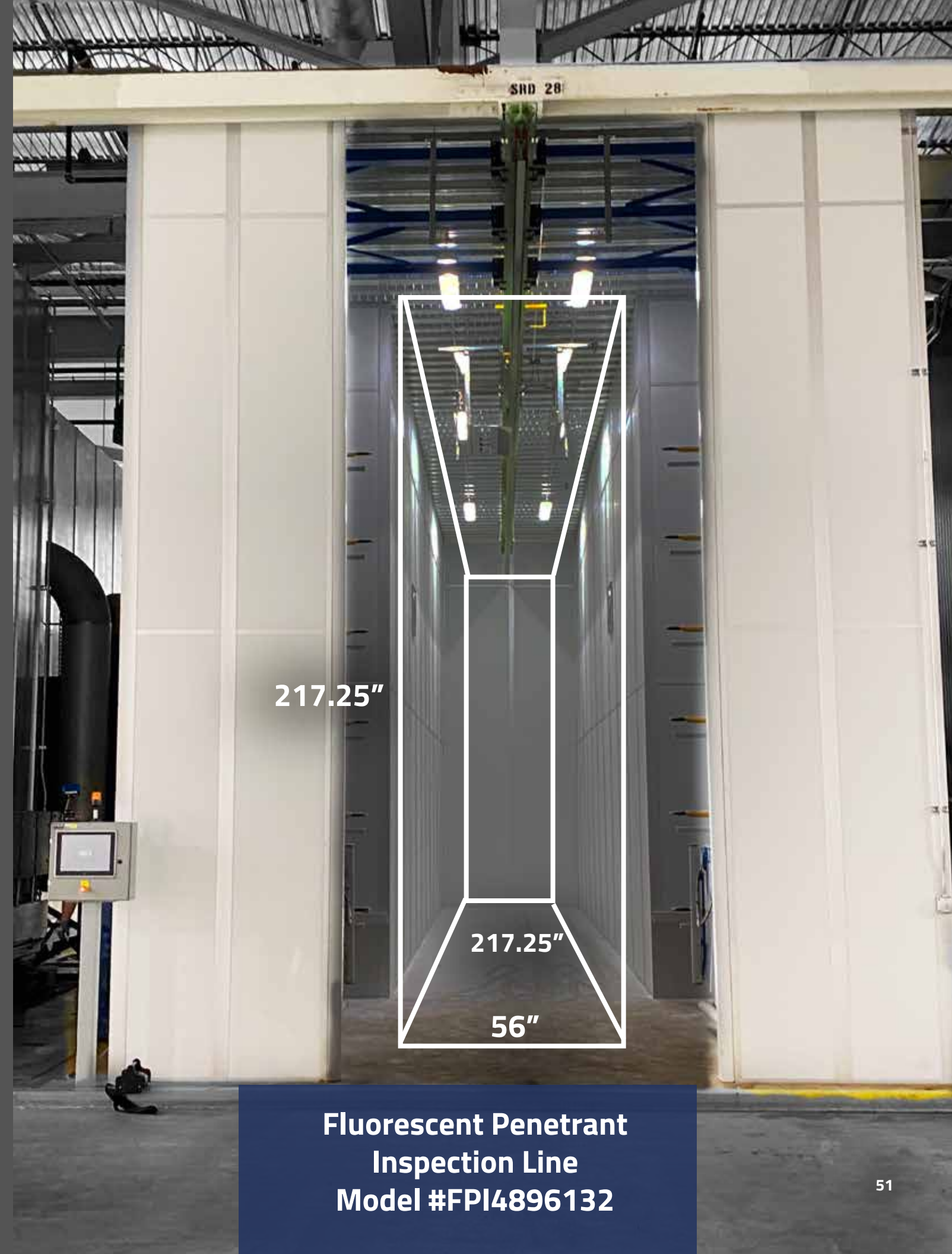
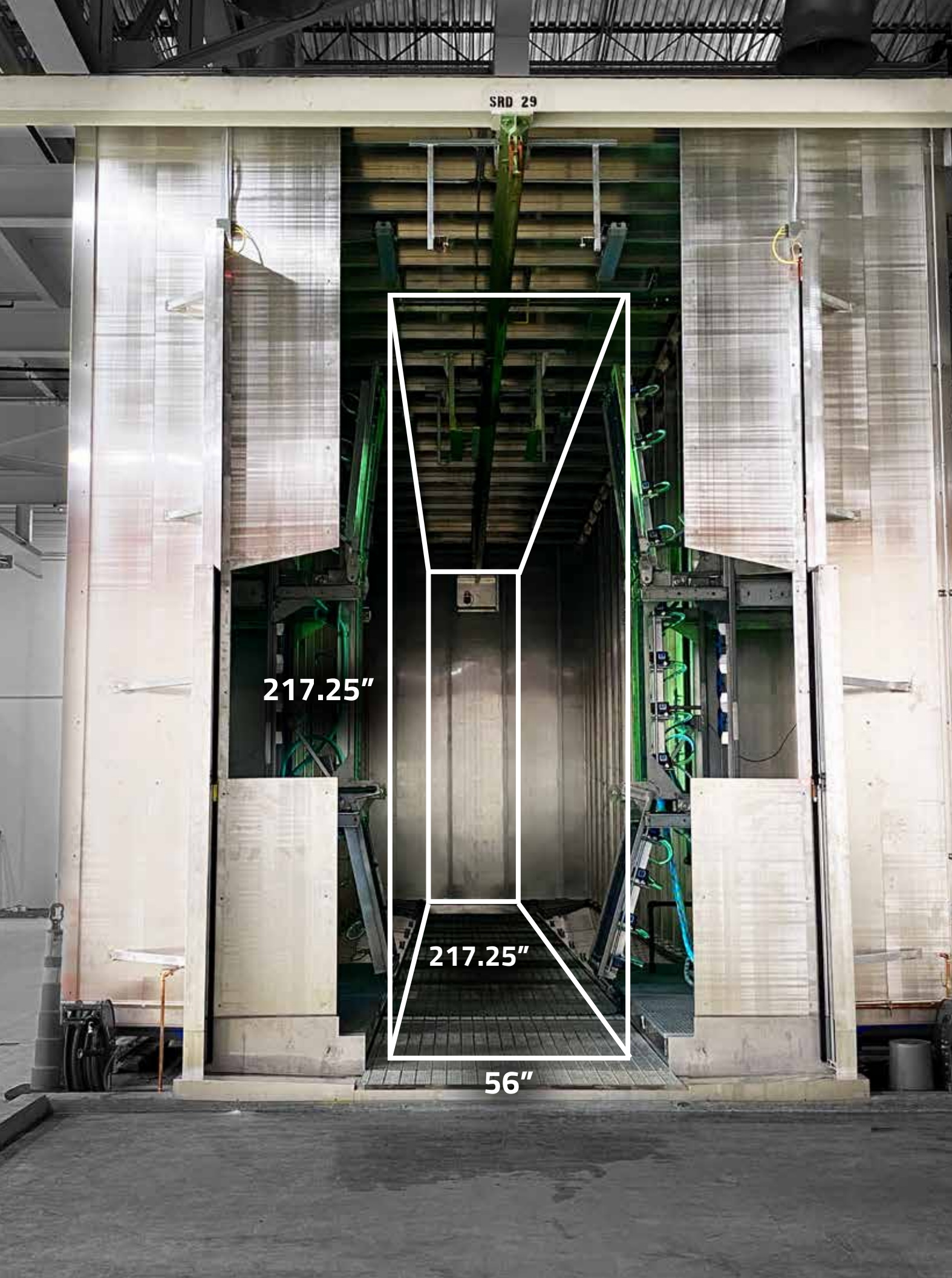
ISOMETRIC VIEW FPI AREA  
REFERENCE HILL AFB ATTACHMENT "A" DRAWING

QUANTITY: -

NATURAL AS LISTED		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
COMMENTS:		DIMENSIONS ARE IN INCHES FRACTIONS SHALL BE ANGULAR DIMENSIONS TWO PLACE DECIMAL THREE PLACE DECIMAL TOLERANCING PER:		DESIGNED CHECKED BY DATE	3/21/2019
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		SIZE DWG. NO. D KRSM 8507-CP2018-M-1 001		REV	
		SCALE: 1:80 WEIGHT:		SHEET 1 OF 1	



**Fluorescent Penetrant  
Inspection Line  
Model #EXBF57630144**



**Fluorescent Penetrant  
Inspection Line  
Model #FPI4896132**





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