

AUTOMATED METAL ETCH SYSTEMSⁱ

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

At REL, our approach to designing, building, and installing automated metal etch processing lines and chemical cleaning processing lines 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 to view all of REL's products.

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METAL ETCH

Complex challenges. Convenient Controlled Solutions.

Exact Metal Etch Equipment

Effective cleaning and surface etch preparation is a critical step in the quality control of precision parts for all part manufacturers, especially those providing parts to aerospace and outer space vehicles. At REL, our approach to designing, building, and installing automated metal etch and chemical cleaning processing lines has been built on decades of experience solving complex technical challenges for our customers to create scientifically sound, industry certified, high throughput, reliable, and long-lasting equipment.

REL automated Metal Etching lines allow for effective surface removal before Non-Destructive Evaluation of your Safety Critical Components. Removing exact material thickness to expose subsurface material structure allows for subsequent material integrity evaluation or surface preparation for the next coating operation. Utilize your current chemical supplier and REL equipment. Design and implement processing recipes with real time etch rate control, and automated chemical dosing, and log all processing data with our dynamic motion control and infinite processing memory.

REL automated Chemical Cleaning lines allow for effective surface cleaning prep before Non-Destructive Testing of your Safety Critical Components. Remove surface coatings and tarnishes utilizing your chosen chemical supplier and REL equipment. Design and implement processing recipes 'on the fly', and log all processing data with our dynamic motion control and infinite processing memory.

AUTOMATED METAL ETCH LINES

We ‘cut our teeth’ on material removal.

Material removal via chemical reaction is Metal Etching. How else can you remove precisely 0.0002” of material over the equivalent surface area of a football field on a part with complex geometry? This process is utilized for surface material removal and/or surface prep for a plethora of aerospace and rocket parts. As a manufacturer of automated processing metal etch equipment, we maximize our metallurgical and chemical understanding of materials that make up things that move in the world. Our automated systems use a range of overhead conveyance methods and precision carriers, to move multiple parts with complex geometries and varying weights carefully and smoothly through the stages of your specific process requirements.

Our equipment has real time control to meet exact etching requirements. Etch rates can be predicted and learned on the control to increase throughput without guessing, and checking to verify surface material removal.

Our Automated Metal Etch and Chemical Processing Systems are run on our comprehensive Control Systems platform. Each automated line is controlled and monitored using a historian database that can be configured to exacting specifications. The intuitive user interface (UI) stores recipes which can be selected and applied to individual baskets. Random loading high throughput lines are our standard and our specialty. Coho Control, the breakthrough software Industry 4.0 component of our control system platform, provides real time data enabling real time database queries, rapid trouble shooting, in depth analytics, and compliance reporting.



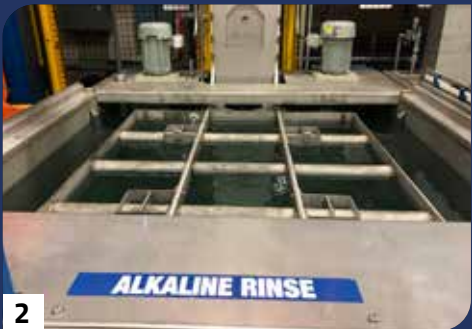
1. Chemical processing tank with eductor agitation
2. Process visibility with REL process control
3. Anodized parts from an REL automated anodizing process
4. Integrated safety in process control

AUTOMATED CLEANING LINES

Cleanliness. Demanded.

Cleaning and surface preparation are a critical step in the quality control of precision parts for all part manufacturers, especially those providing parts to aerospace and outer space vehicles. At REL, our approach to designing, building, and installing automated precision Chemical Cleaning lines has been built on decades of experience in solving complex technical challenges for our customers.

Our automated systems use a range of overhead conveyance methods and precision basket carriers to move multiple parts with complex geometries and varying weights carefully and smoothly through the stages of your specific cleaning process requirements. We excel in working with all stakeholders in the process including chemical suppliers, wastewater treatment suppliers, factory secondary/tertiary containment, backup power integration and air quality requirements to keep your employees and everyone's environment safe.



1. Servo index setup screen for the automated system transporter
2. Integrated stainless steel lowerator in a cleaning process
3. View of air ventilation, plumbing and electrical packaging on a cleaning system
4. Motor control components and protection for run monitoring and service

Features and Benefits

- High throughput random loading
- Web based UI for maximum process visibility and safety
- State-based recovery from industrial grade on-site server
- Designed specially to integrate with Allen Bradley PLC's
- On-the-fly tank configurations
- Real-time Automated Tank Filling with adjustable chemical concentrations
- Infinite process recipe flexibility with the ability to move multi-directionally through processing
- Dynamic Tank Control - Individual tanks can be 'Blocked' (from processing parts) or 'Disabled' (taken out of service) during processing



REL SYSTEMS WITH PART ENVELOPES SHOWN

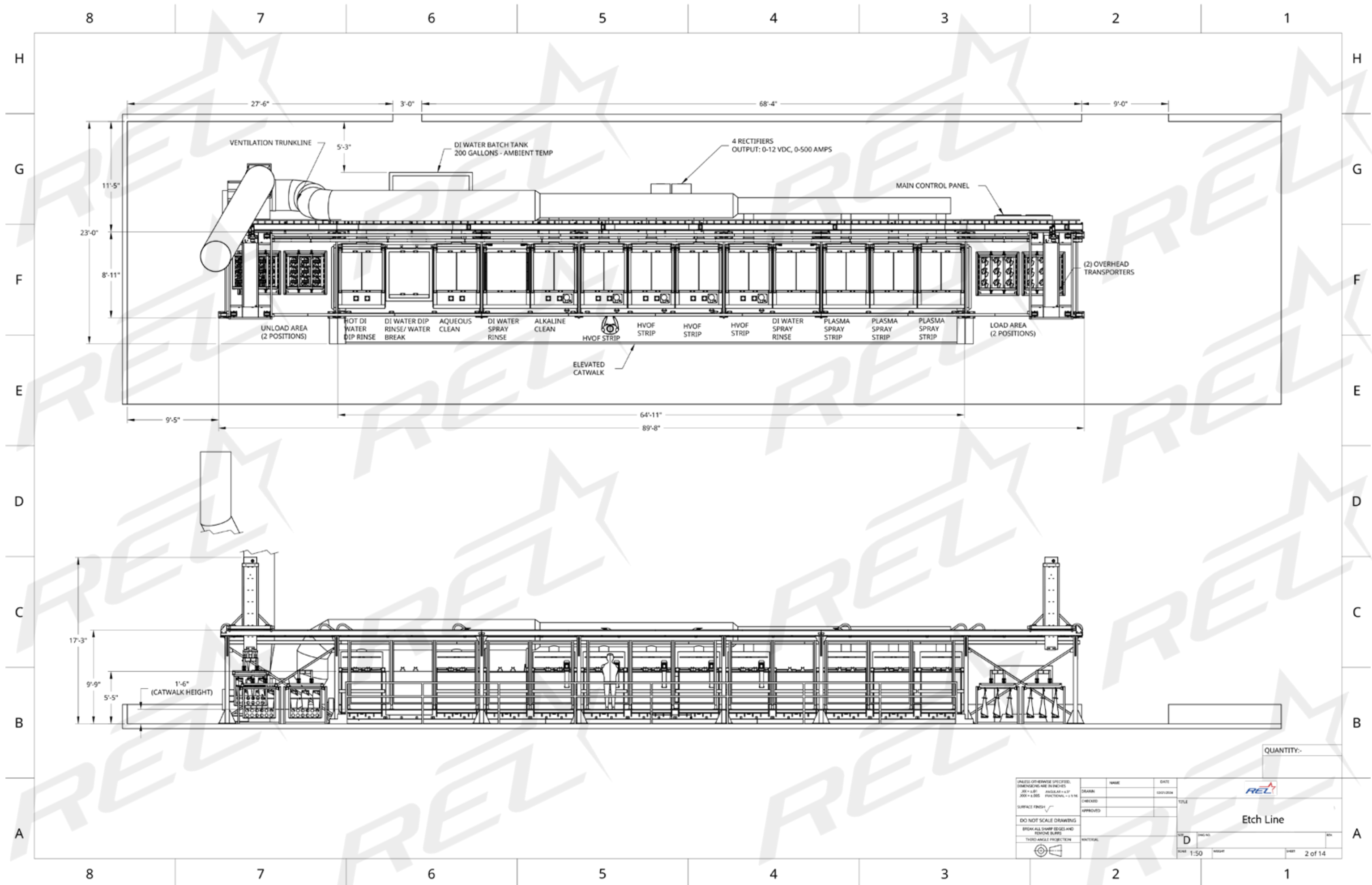


Strip Line
Model #SL444438

38"

44"

44"





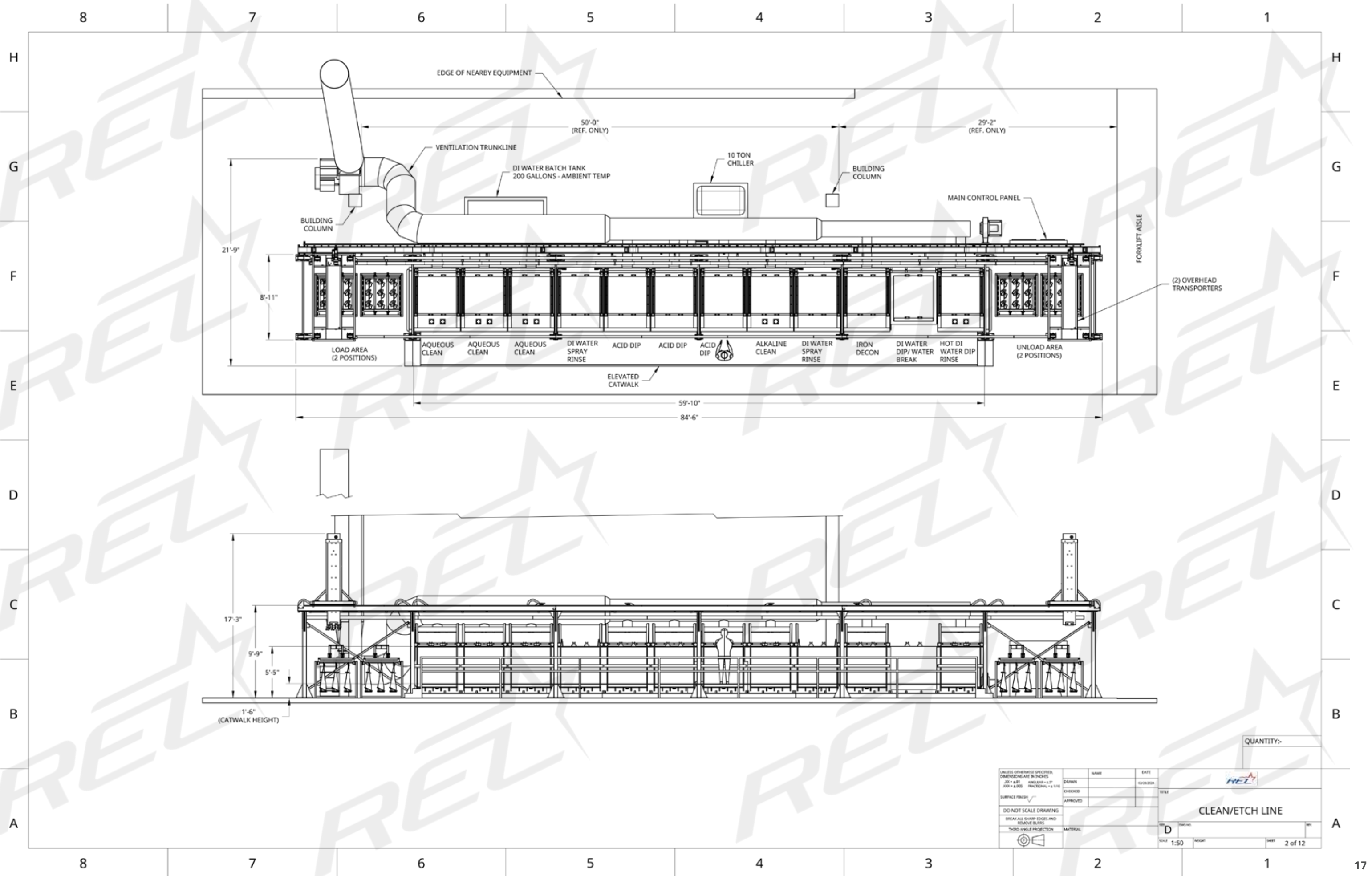
TRANSPORTER 2

38"

44"

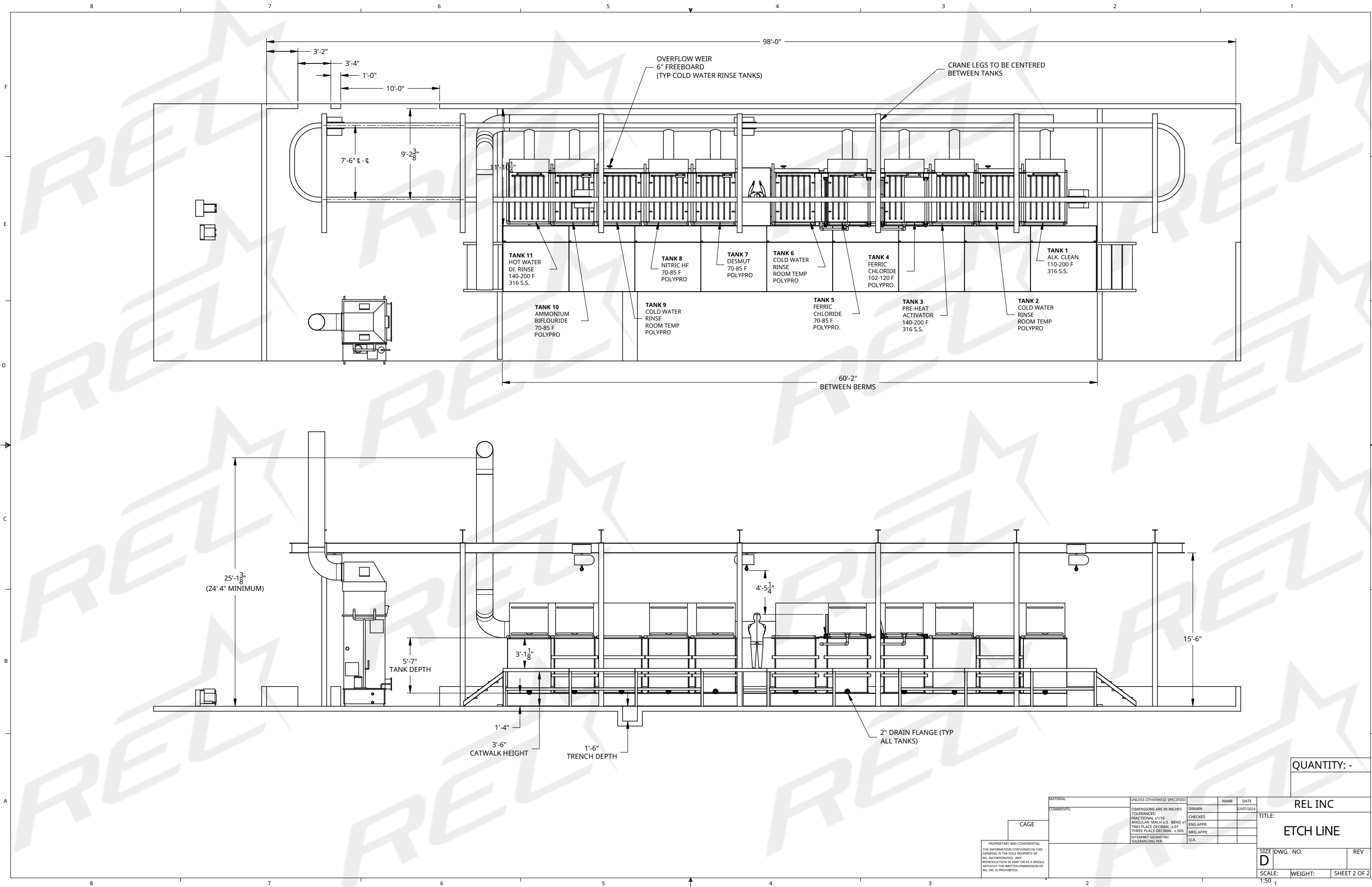
44"

Clean/Etch Line
Model #CL444438





**Ferric Etch Line
Model #CE486066**





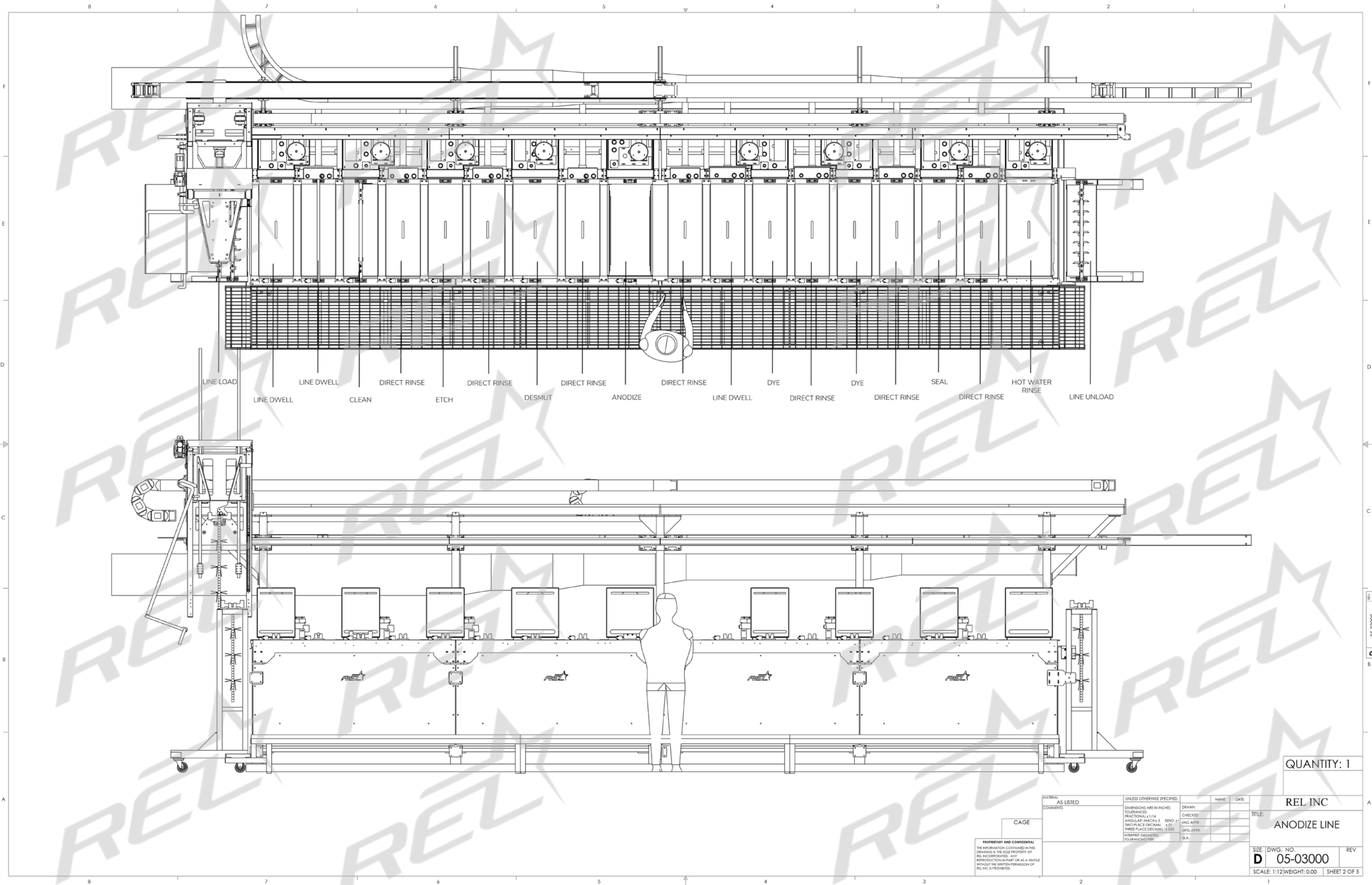
WASTE

33"

28"

11"

**Automated Anodize Line
Model #A331128**



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CAGE

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± 1/16
ANGULAR: MAX ± 5° BEND ± 1°
TWO PLACE DECIMAL ± 0.01
THREE PLACE DECIMAL ± 0.005
INTERPRET GEOMETRIC
TOLERANCING FIG.

NAME DATE
DRAWN
CHECKED
ENG APPR.
MFG APPR.
Q.A.

REL INC
ANODIZE LINE

SIZE DWG. NO. REV
D 05-03000
SCALE: 1:12 WEIGHT: 0.00 SHEET 2 OF 5

QUANTITY: 1

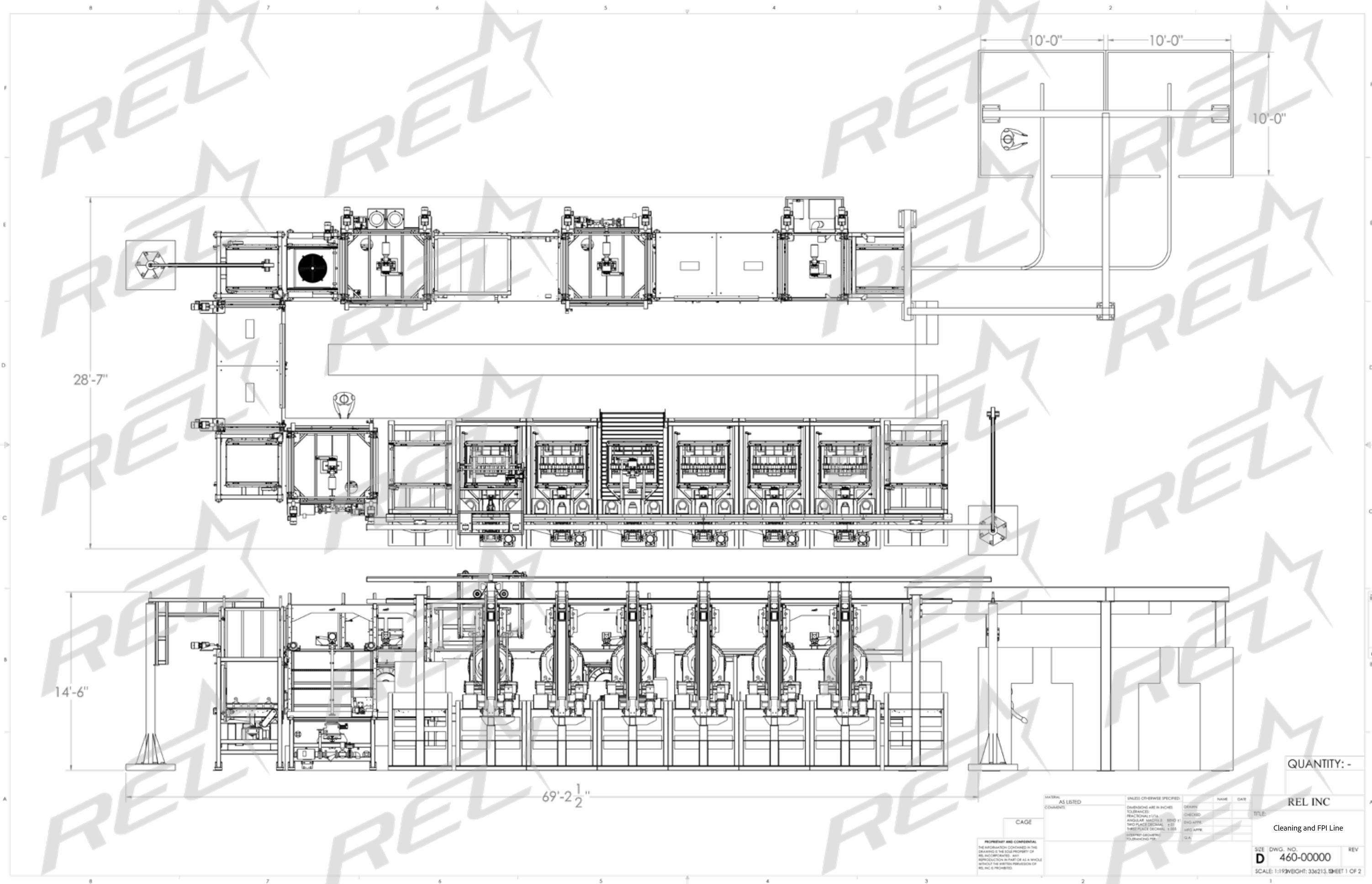


44"

44"

30"

Cleaning and FPI Line
Model #CLFPI304444





50"

48"

38"

**Cleaning Line
Model #CL504838**



55'

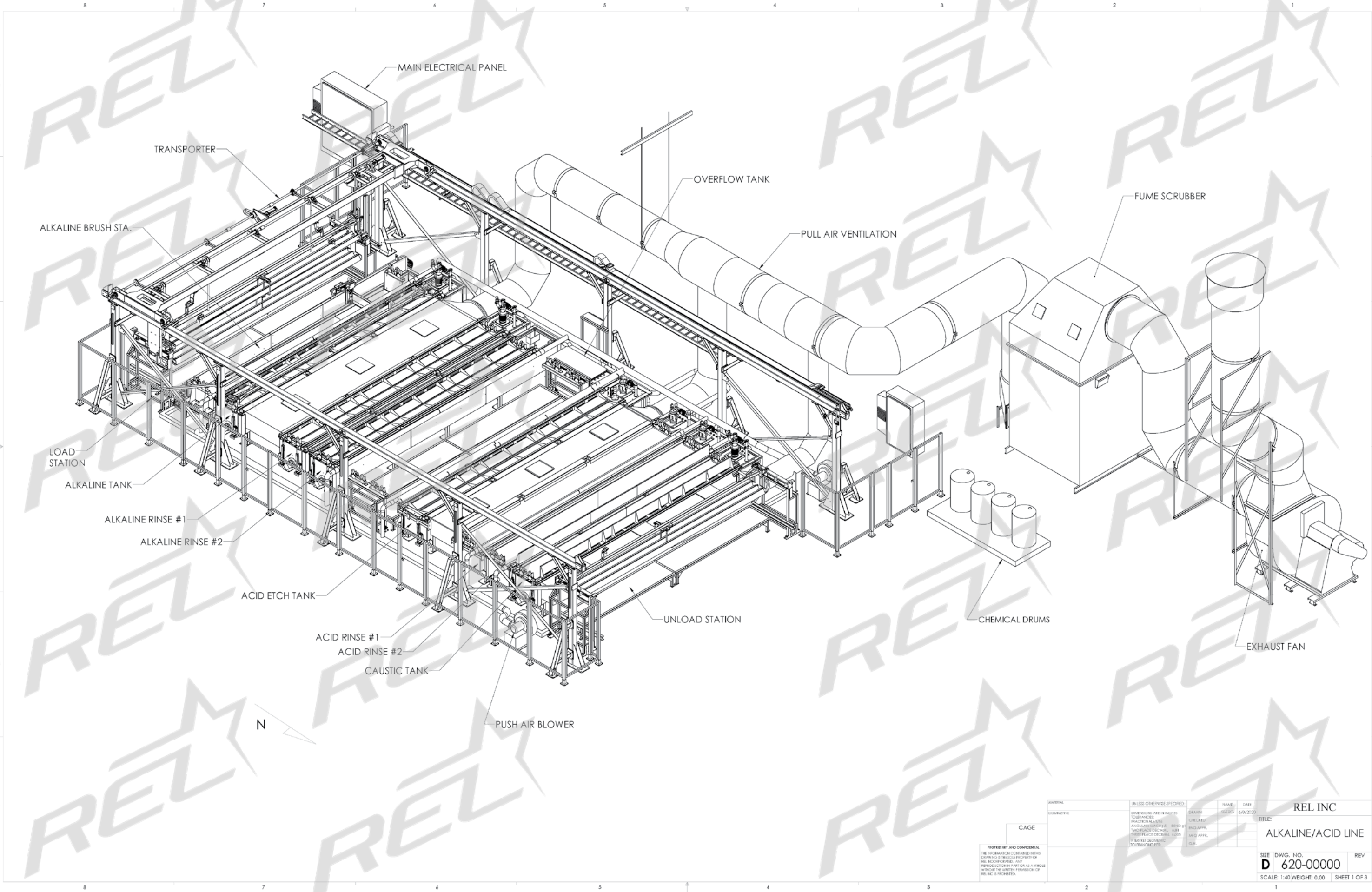
34'

252"

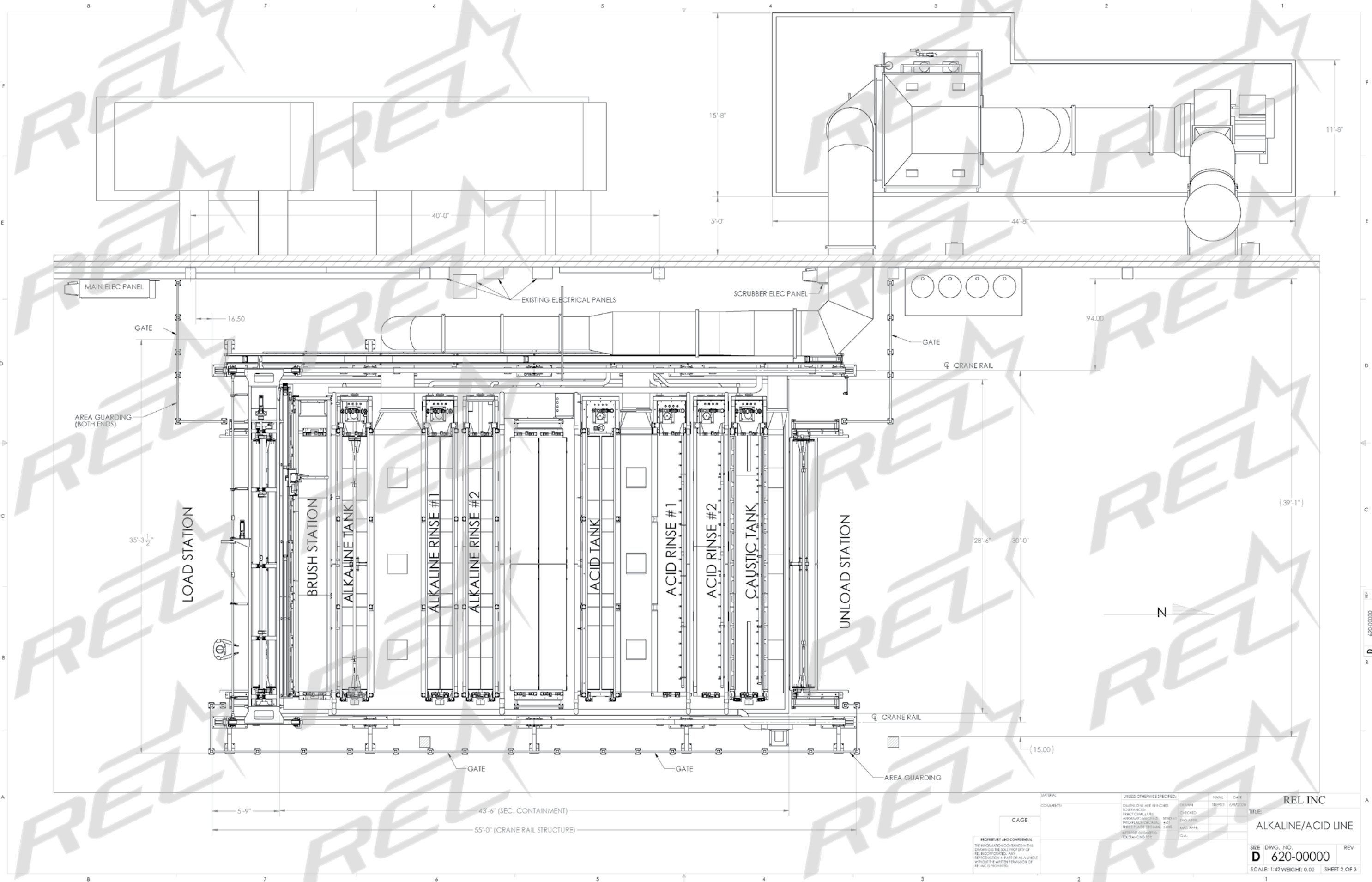
14"

24"

Cleaning and Etch Line
Model #WPR2930025



MATERIAL		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	REL INC	
COMMENTS:		DIMENSIONS ARE IN INCHES		DRAWN	6/8/2020	TITLE	
		TOLERANCES:		CHECKED		ALKALINE/ACID LINE	
		FRACTIONAL SIZES				SIZE DWG. NO.	
		ANGULAR DIMENSIONS				D 620-00000	
		BENDS				SCALE: 1:40 WEIGHT: 0.00	
		THREE PLACE DECIMAL				SHEET 1 OF 3	
		INTERFER GEOMETRIC					
		TOLERANCES					
CAGE							
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the USA**

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