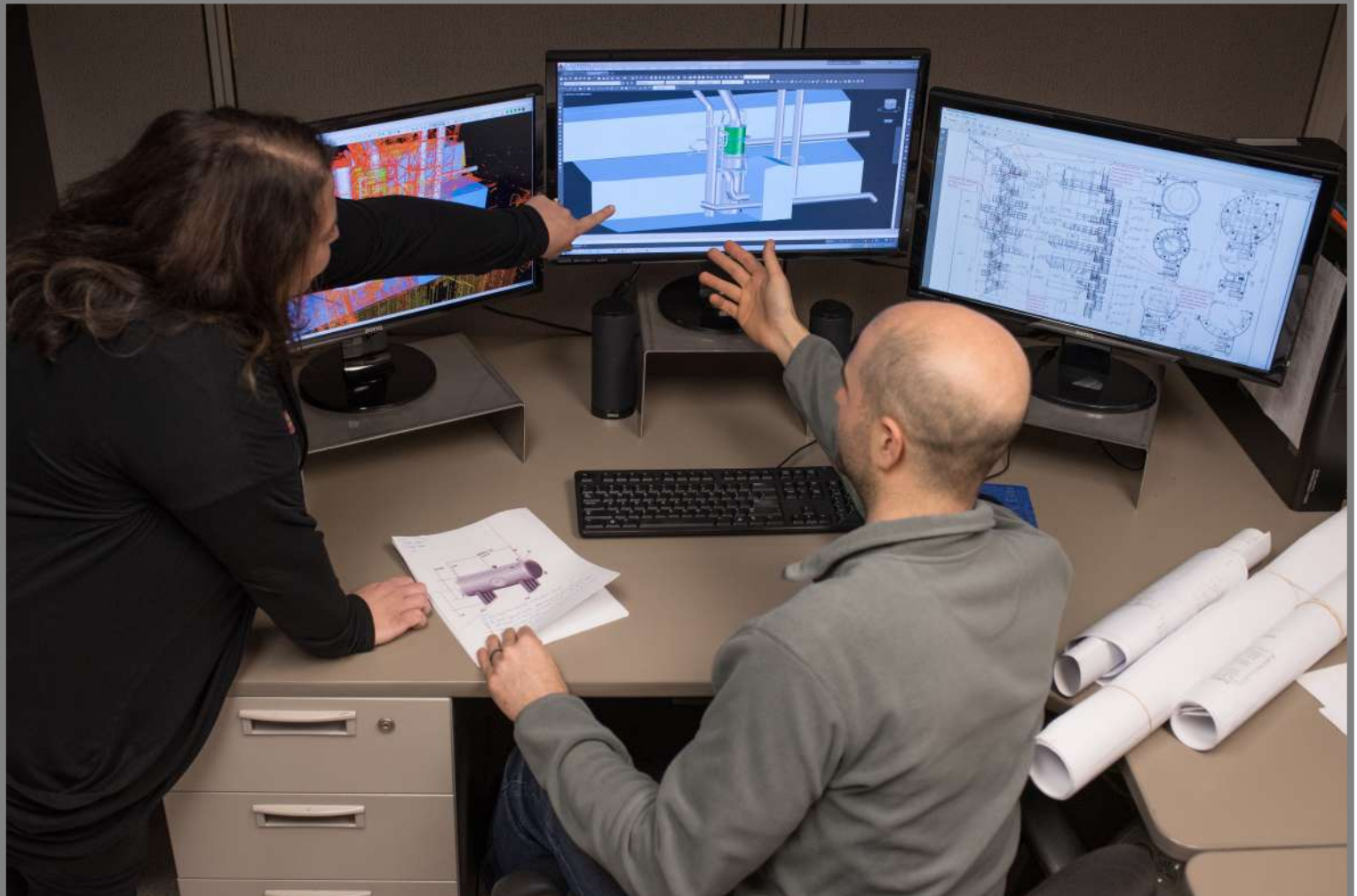


# E.S. Fox Limited

## Engineering



### COMPANY CONTACT

E.S. Fox Limited — Engineering

[www.esfox.com](http://www.esfox.com)

905-354-3700 x1210

#### HEAD OFFICE

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PORT ROBINSON  
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KINGSTON  
KINCARDINE  
OSHAWA



Founder - Edward (Ted) Fox

## E.S. Fox Limited

### CORPORATE OVERVIEW

Since 1934, E.S. Fox Limited (ESFL) has set the standard for safety and quality in the fabrication and construction industry. ESFL is a privately owned, Canadian, multi-trade company, providing a single source for industrial, institutional, commercial and Power Generation projects. With over 3.0 million direct-hire man-hours last year, we self-perform Structural Steel Fabrication and Erection, Mechanical, Electrical, Sheet Metal, HVAC, Refrigeration, Millwright / Rigging, and Boiler Making.

The strength of our company stems from the vast experience of its people, the integration of a variety of skilled trades, and dedication to total control of construction through computerized planning and monitoring techniques.

ESFL has established a reputation for high quality workmanship, operational flexibility, efficiency, and timely project completion.

### CONSTRUCTION CAPABILITIES

As a fully integrated, multi-trade construction firm, E.S. Fox Limited provides clients with a single source solution for their detail engineering, fabrication, construction, and maintenance needs. We are a solutions based provider that delivers a superior level of service from "cradle-to-grave," as we offer multi-trade, service oriented solutions for all your ICI and Power Generation projects.

### FABRICATION CAPABILITIES

E.S. Fox Limited is proud to operate three state-of-the-art fabrication facilities across Ontario. At our main fabrication facility in Port Robinson, we offer over 83,000 square feet of production space. We work to the highest standards to produce Pipe Spools, Modules, Cryogenic Cold Boxes, and Pressure Vessels. With over 800 weld procedures and 40 quality certifications including nuclear, E.S. Fox Limited continues to be a leader and a symbol of Canadian strength and tradition in the supply of Quality Fabrication Services for the Industrial, Commercial, Institutional, and Power generation markets for over eight decades.

### SERVICES

- ENGINEERING
- FABRICATION
- STRUCTURAL DESIGN
- STRUCTURAL STEEL ERECTION
- BRIDGE ERECTION
- MILLWRIGHTING | RIGGING
- BOILERMAKING
- MECHANICAL SERVICES
- ELECTRICAL SERVICES
- SHEET METAL
- REFRIGERATION
- HVAC

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# E.S. Fox Limited

## Environmental Health and Safety

### SAFETY CULTURE

At ESFL, employee safety, protection of the environment, and work quality are the main focus of our safety culture. Both management and employees work together in an effort to further advance knowledge of safety and incident prevention. Together we work to ensure a safe work environment for all. Our employees believe in the fundamental principle that safety is everyone's responsibility.

One of our core values is to "Prevent the Event." Incident prevention is the integral part of every job with the safety and well-being of each individual the number one priority.

### SAFETY PROGRAM KEY ELEMENTS

- Corporate Safety Manual
- Site Specific Safety Plans
- Orientation and Training
- Incident Investigation
- Lessons Learned Bulletins
- Job Safety Analysis
- Workplace Inspections
- Senior Management Review
- Safety First Attitude
- Trending and Analysis
- Setting Objectives and Targets
- Safety Workshops
- Mentoring Program
- J.H.S.C.
- Strong Communication
- Accountable Supervision
- Safety Meetings



International  
Organization for  
Standardization

ISO 45001:2018

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# E.S. Fox Limited

## Quality Assurance



ISO	CSA	ASME
<ul style="list-style-type: none"> <li>• ISO 9001:2015</li> <li>• ISO 14001</li> <li>• ISO 18001</li> </ul>	<ul style="list-style-type: none"> <li>• CSA N285.0 Nuclear Class 1,2,3, &amp; 4 Parts, Components &amp; Support (Shop &amp; Field)</li> <li>• CSA N285.0 Nuclear Material Supply Ferrous and Non-Ferrous (3 Locations)</li> <li>• CSA N286-12 Nuclear</li> <li>• CSA N299.1 – 2016</li> <li>• CSA B51 Boiler, Pressure Vessels &amp; Pressure Piping &amp; Repairs (Shop &amp; Field)</li> <li>• CSA B51 Category A, B, C, E &amp; H Type Welded Non-Welded Fittings (Shop &amp; Field)</li> <li>• CSA B51 Hot Tap &amp; Line Stopping (Shop &amp; Field)</li> <li>• CSA Z7396. 1-17 Medical Gas Pipeline Systems Part 1</li> </ul>	<ul style="list-style-type: none"> <li>• National Board Registration for ASME Section III, R, VIII (Shop &amp; Field)</li> <li>• ASME Section III, Division 1: N, NPT, NA, NS</li> <li>• ASME Section VIII, Division 1 &amp; 2 Pressure Vessels (Shop &amp; Field)</li> <li>• ASME U, U2, S, &amp; PP Stamps (Shop &amp; Field)</li> <li>• ASME U, UM Stamps: Edmonton Division (Shop &amp; Field)</li> <li>• ASME B31.1 Power Piping (Shop &amp; Field)</li> <li>• ASME B31.3 Process Piping (Shop &amp; Field)</li> <li>• ASME B31.5 Refrigeration Piping (Shop &amp; Field)</li> <li>• CSA B52 Mechanical Refrigeration Code</li> </ul>
CWB		
Structural Steel CWB W47.1 Div. 1  Structural Aluminum CWB W47.2 Div. 1		



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# E.S. Fox Limited

## Locations & Facilities

**Head Office: Niagara Falls, ON —240,000 square feet**

Branch Location	Capabilities		Square Footage
Darlington, ON	Construction		
Hamilton, ON	Construction	Fabrication	3,000 sq. ft.
Kingston, ON	Construction	Fabrication	17,000 sq. ft.
Port Robinson, ON		Fabrication	83,000 sq. ft.
Sudbury, ON	Construction		
Thunder Bay, ON	Construction	Fabrication	5,000 sq. ft.
Tiverton (Kincardine), ON	Construction		
Vaughan (Toronto), ON	Construction		
Oshawa, ON	Construction		
		<b>Total Fabrication</b>	<b>108,000 sq. ft.</b>



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# E.S. Fox Limited

## Capabilities

### CONSTRUCTION CAPABILITIES

As a fully integrated, multi-trade construction firm, E.S. Fox Limited provides clients with a single source solution for their detail engineering, fabrication, construction, and maintenance needs. We are a solutions based provider that delivers a superior level of service from “cradle-to-grave,” as we offer multi-trade, service oriented solutions for all your ICI and power sector projects.

We provide the following construction services:

- ◆ Piping
- ◆ Electrical
- ◆ Structural Steel
- ◆ Ironworkers
- ◆ Millwrights
- ◆ Boiler Making
- ◆ Sheet Metal
- ◆ HVAC
- ◆ Instrumentation & Controls
- ◆ Operating Engineering
- ◆ Insulation
- ◆ Carpenters
- ◆ Labourers
- ◆ Refrigeration



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# E.S. Fox Limited

## Capabilities

### FABRICATION CAPABILITIES

At our main fabrication facility in Port Robinson, Ontario, we offer over 83,000 square feet of production space. We work to the highest standards required to produce Cryogenic Cold Boxes, Pipe Spools, Modules, and Pressure Vessels. With more than 800 weld procedures, we fabricate:

#### Modules and Vessels

- ◆ Process Modules and Equipment Skids
- ◆ Cryogenic Air Distillation Columns for:  
Oxygen, Nitrogen, and Argon
- ◆ Air Liquefaction / Separation
- ◆ Hydrogen Purification
- ◆ Catalyst Reclamation
- ◆ Oil/Water Purification

#### Pipe Fabrication

- ◆ Stand alone contracts & support of field projects and other fabrication projects
- ◆ Area of expertise is high alloy materials:  
Stainless Steel, Aluminum, Titanium, Chrome-Moly
- ◆ Carbon Steel up to 84" Diameter
- ◆ Victaulic—Roll Grooved Piping up to 48" Dia.
- ◆ Jacketed Pipe



Pressure Vessel



Cryogenic Cold Box

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# E.S. Fox Limited

## Capabilities

### SHIPPING CAPABILITIES

We are unique in that we have access to the Welland Canal at our Port Robinson facility. This includes our own loading docks, where we can ship oversized modules from up to 800 tons to any water accessible location in the world.

#### Transportation Access & Dock Facilities

- ◆ 1/2 mile from Highway 406 extension providing direct access to Queen Elizabeth Highway
- ◆ 1/4 mile from Canadian National Railroad line
- ◆ Heavy Barge Roll On/Roll Off Loading Dock extending into the Welland Ship Canal turning basin providing 10' draught and 400 ton capacity
- ◆ Heavy Lift Dock of 800 ton capacity, dock face 475 ft. draught 25 ft. The dock can accommodate maximum Seaway length vessels
- ◆ The site incorporates 5 acres of level, well compacted, crushed stone assembly area



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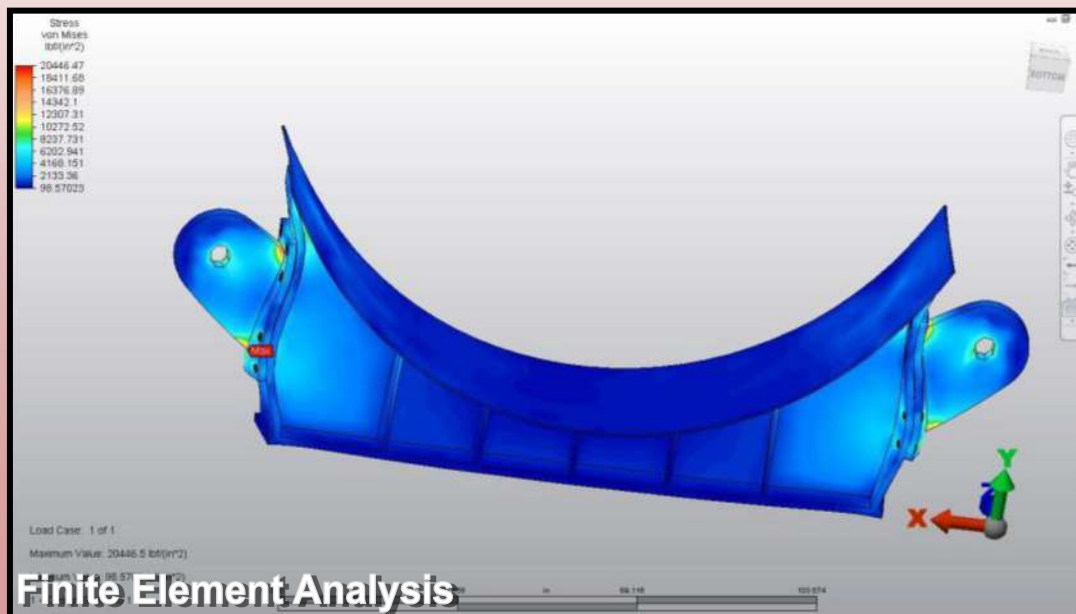
# E.S. Fox Limited

## Engineering Capabilities

### FINITE ELEMENT ANALYSIS (FEA)

ESFL's Engineering has a wide range of FEA capabilities; ranging from structural assemblies, to fittings, vessel designs (including nuclear and non-nuclear) to piping. ESFL uses off the shelf software that is verified in-house for the intended applications. This is performed in addition to the vendor software verification manuals to ensure that there is no doubt that the software is functioning correctly. ESFL has staff that has been exposed to and been using FEA for approximately 25 years.

CSA standards and Provincial rules (main Alberta and Ontario) govern how we perform and document FEA designs. This ensures the activities are setup and performed correctly, and the results are interpreted in a manner that will clearly show code compliance.



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## Engineering Capabilities

### DESIGN ENGINEERING

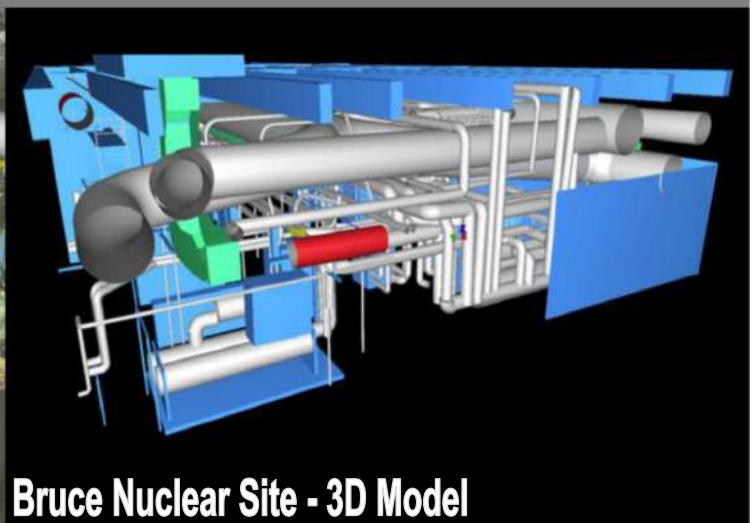
- ASME Section III, VIII-1 & 2, CSA B51/B31 design
- Canadian Design Registration Support
- FEA advanced engineering
- Structural and General Mechanical Engineering

### VIRTUAL CONSTRUCTION

- High definition 3D scanning and model generation
- Post data capture analysis, including equipment/piping layout and interference checks
- Dimensional verification services



Bruce Nuclear Site - 3D Scan



Bruce Nuclear Site - 3D Model

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# E.S. Fox Limited

## Engineering Capabilities

### TOTAL STATION SURVEYING

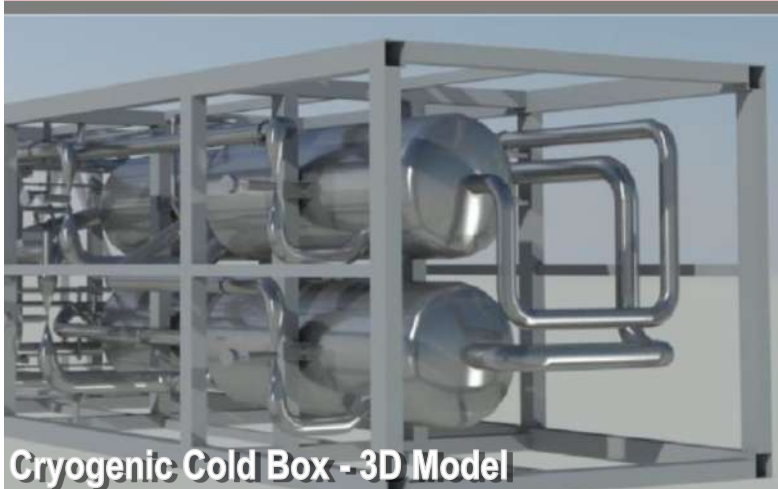
- Mechanical, Electrical, and Plumbing (MEP) layout
- As-built data capture

### CAD SERVICES

- Development of detailed fabrication drawing and BOMs
- CNC metal cutting support in conjunction with E.S. Fox Limited fabrication
- 2D and 3D modeling

### WELDING, MANUFACTURING AND METALLURGICAL ENGINEERING

- Welding, Brazing, Bonding, and Heat Treatment Procedure Development and Welder/Brazer Qualification Development
- Weld Engineering Support and expertise in material properties of metallic and nonmetallic materials for all types of fit-up, cutting, heat straightening, fabrication, welding/brazing, and bonding activity



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