Career Exploration Centre

Online

SAIT YOUNG ORIGINALS

Aircraft Structures Technician

Career Description

Aircraft structures technicians ASTs, also called aircraft mechanics) maintain, repair, overhaul, modify, and test the structural, mechanical, and hydraulic systems of aircrafts.

They are employed by:

- Aircraft manufacturing companies
- Maintenance, repair and overhaul companies
- Airline and other aircraft operators

Working conditions:

Aircraft structures technicians work shifts. They may need to work evenings or nights, when aircraft are less frequently in use. They work in hangars or shops, and sometimes outdoors on airport ramps. Proper clothing and use of safety equipment are essential, and their work area may be noisy at times.

Skills and abilities:

Aircraft structures technicians need to possess:

- The ability to be accurate and detail oriented
- A high level of organization and time management skills
- Good hearing, eyesight, and manual dexterity
- The ability to lift up to 20 kg

Stats:

Average salary In Alberta: $75,784.00 Annually*

Average wage: $34.95/Hour*

*Statistics from 2018, alis.alberta.ca

Minimum education: 1-year post-secondary

For more Alberta career Information stats: https://alis.alberta.ca/tools-and-resources/about-alis/search/?s=aircraft+structures+technician

Activity Mission

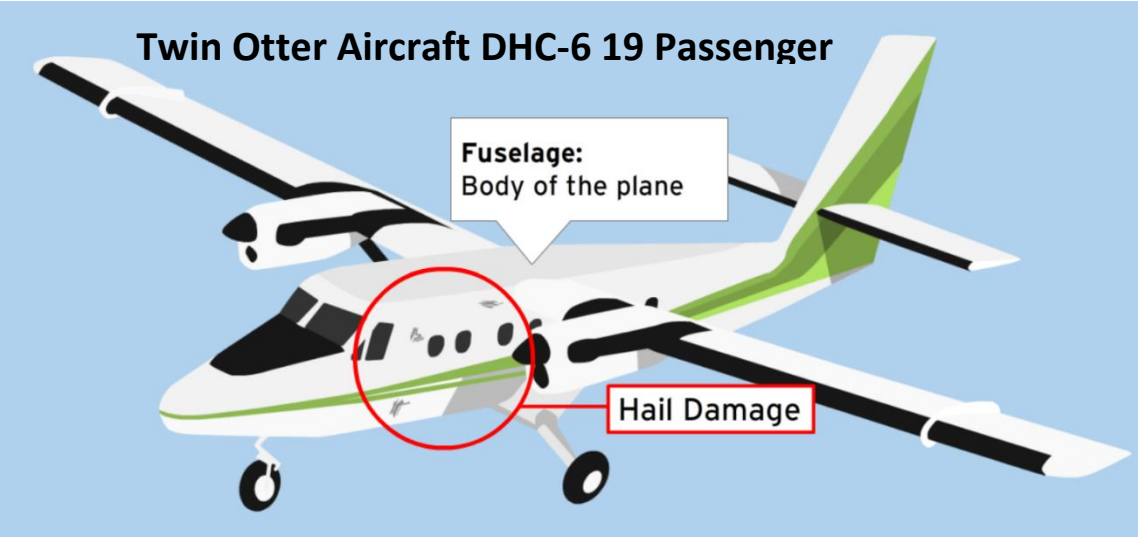
You will complete two duties of an aircraft structures technician:

1. Identify repair type
2. Determine patch size

Tools:

Pen or pencil and paper

Task 1: Identify Repair Type



Background:

The maintenance logbook of this small aircraft indicates that it was flown through a hailstorm, which caused damage to the front left side of the fuselage. After a visual inspection, it was decided that the damaged areas were outside tolerable levels* and must be repaired. The plane has a full schedule of flights and must be repaired quickly. You job Is to determine the best way to repair the damage to the aircraft.

* the damage can affect how the aircraft flies.

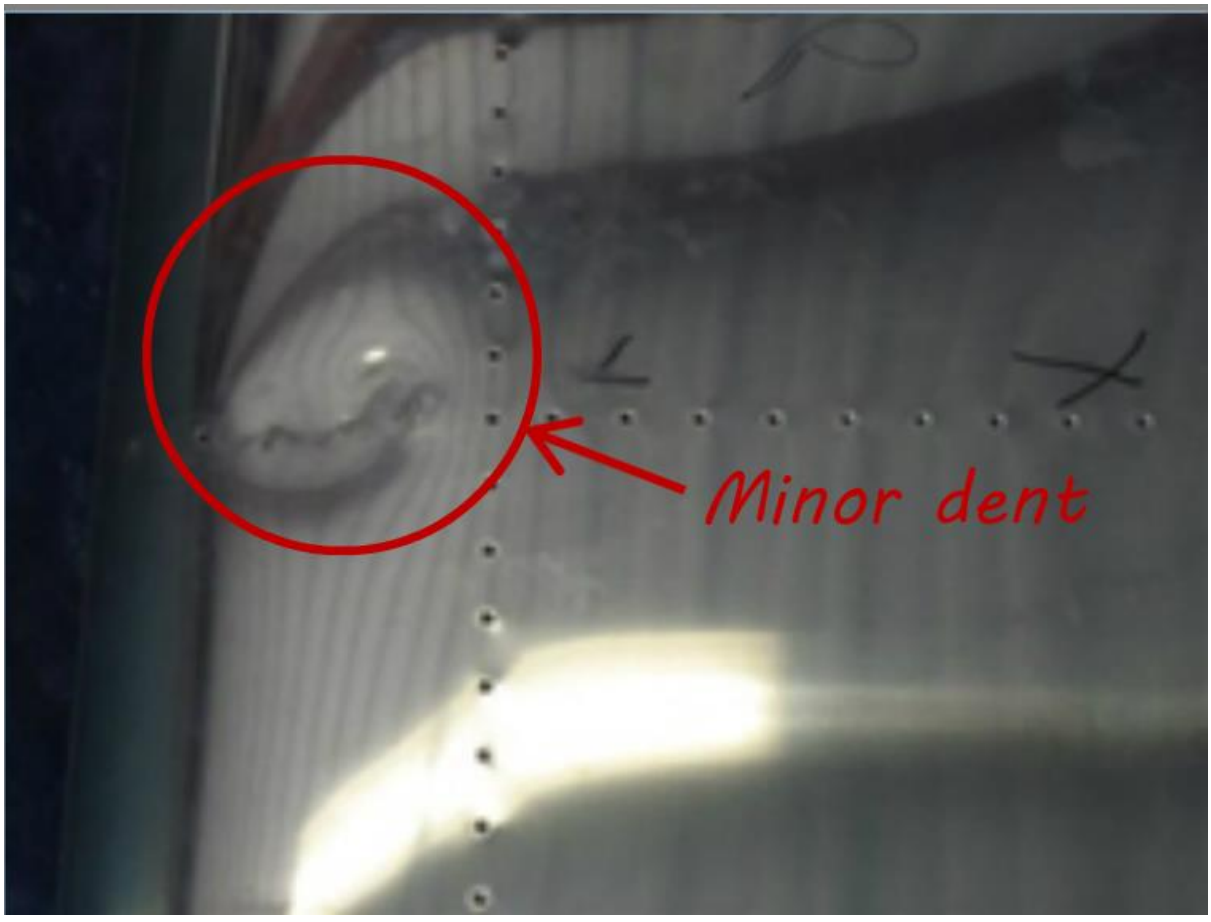
Instructions:

1. Review the four repair types on the following pages.
2. Decide which repair type you should use to repair the damage.
3. Review the answer key at the end of the activity.

Repair Type 1 - None

No repair Is needed when:

- The damage consists of minor dents, cracks, and holes on the fuselage.
- The damage Is not outside tolerable levels according to standard aircraft practice.

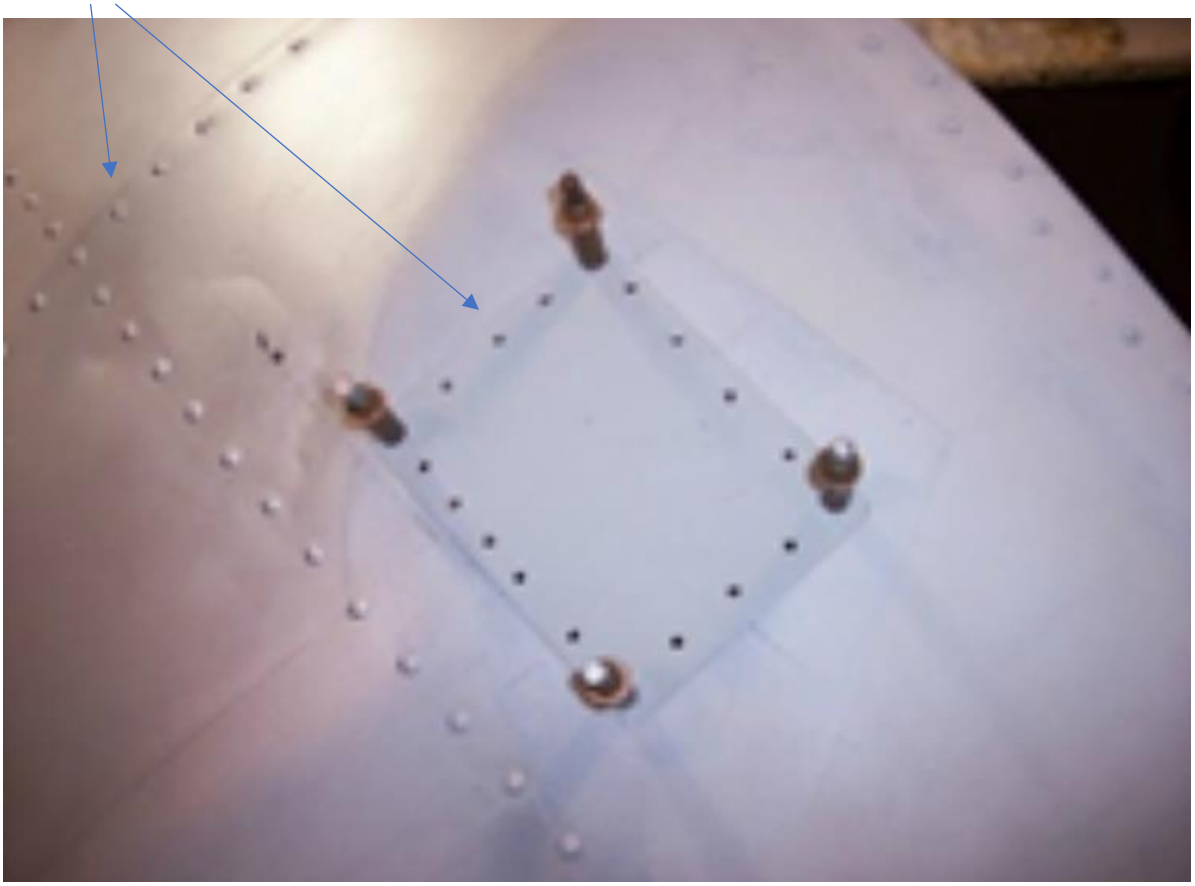


Repair Type 2

Skin patch:

- The repair Is needed quickly, this is the easiest repair to perform.
- The most common type of repair.
- Used for damage that Is outside tolerable levels.
- Performed by cutting out the damaged section and attaching a patch over the existing material with rivets*
- The thickness and size of the damage being repaired determines the number of rows of rivets that are used to attach the patch, as well as how thick the patch needs to be.

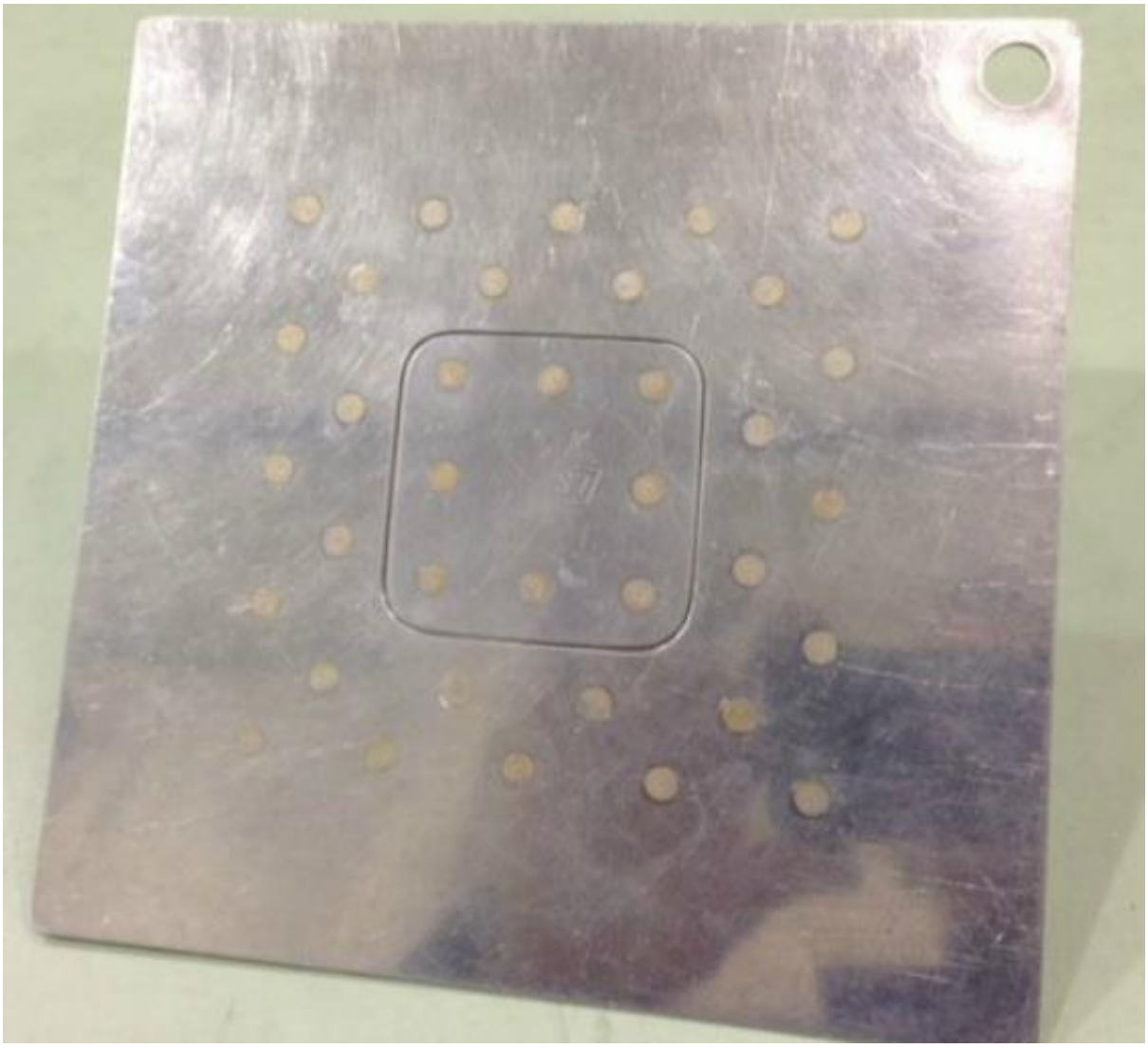
*Rivets are metal pins that bolt two pieces of metal in place.



Repair Type 3 - Flush Patch

This repair Is needed when:

- When a skin patch cannot be used because of the location of the damage.
- Performed by cutting out the damaged section, then attaching the patch In line (flush) with the existing material.
- A much smoother and better-looking repair, it takes more time to perform.



Repair Type 4 - Part Replacement

Type 4 Is needed when:

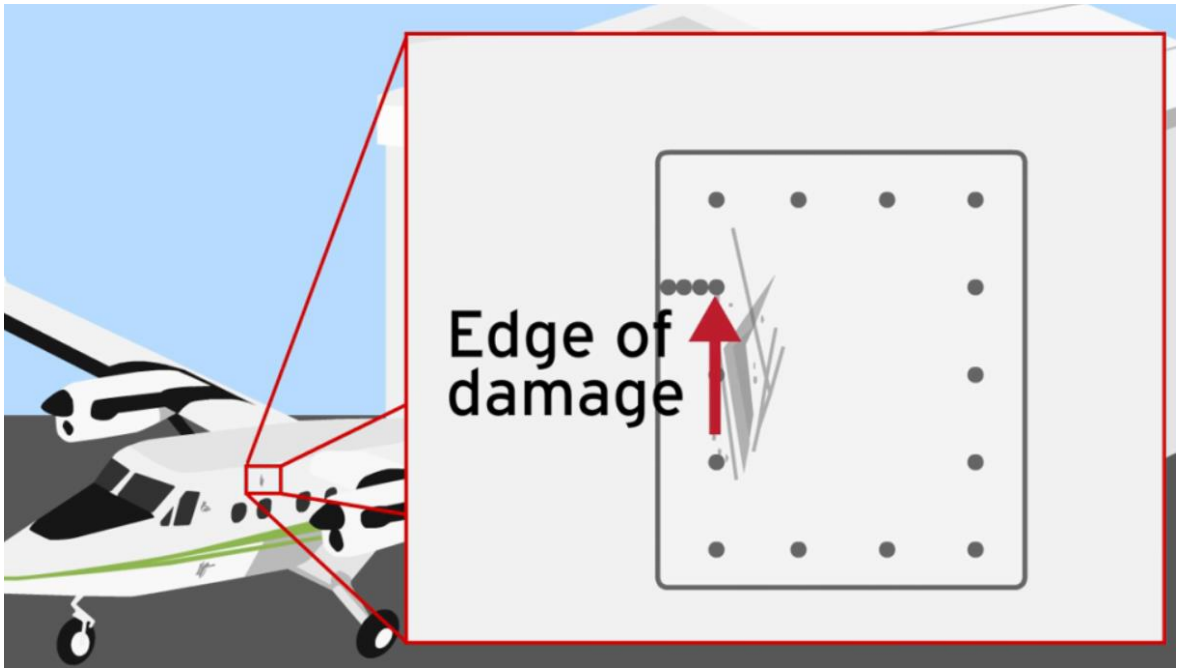
- Used when repairing the part would be costlier and more time-consuming than replacing the part.
- This repair can take time to repair depending on which part needs to be replaced, and whether It Is In stock or the part must be ordered.

Task 2: Determine Patch Size

Background

The standard aircraft practice when repairing damage Is:

- The distance from the edge of the damage to the first row of rivets must be **no more** than 4 times the diameter of the rivet, or 4:1.



Instructions

1. On the next page, you will find the worksheet titled **Determining Patch Size.**
2. Use a pen or pencil and some paper to figure out the patch sizes for each of the 3 Index numbers (damaged areas.)
3. Check the answer key at the end of the activity to see how you did.

Determining the Patch Size

Index Number *(damaged area)*	Rivet Size *(in inches)*		4 x Diameter of the Rivet		Equals		Reduce the Fraction		Required space from damage (in inches)
8	1/4"	x	4/1"	=		=		=	
4	1/2"	x	4/1"	=		=		=	
7	3/8"	x	4/1"	=		=		=	

Need help?

Multiplying Fractions:

Multiply the numerators

$$\frac{2}{5} \times \frac{3}{4} = \frac{6}{\ }$$

Multiply the denominators

$$\frac{2}{5} \times \frac{3}{4} = \frac{6}{20}$$

Reduce the fraction if necessary

$$\frac{6}{20} = \frac{3}{10}$$

Find the lowest number that divides into both 6 and 20. It is 2.

Converting a fraction to a decimal:

Use a calculator.

Divide the numerator by the denominator.

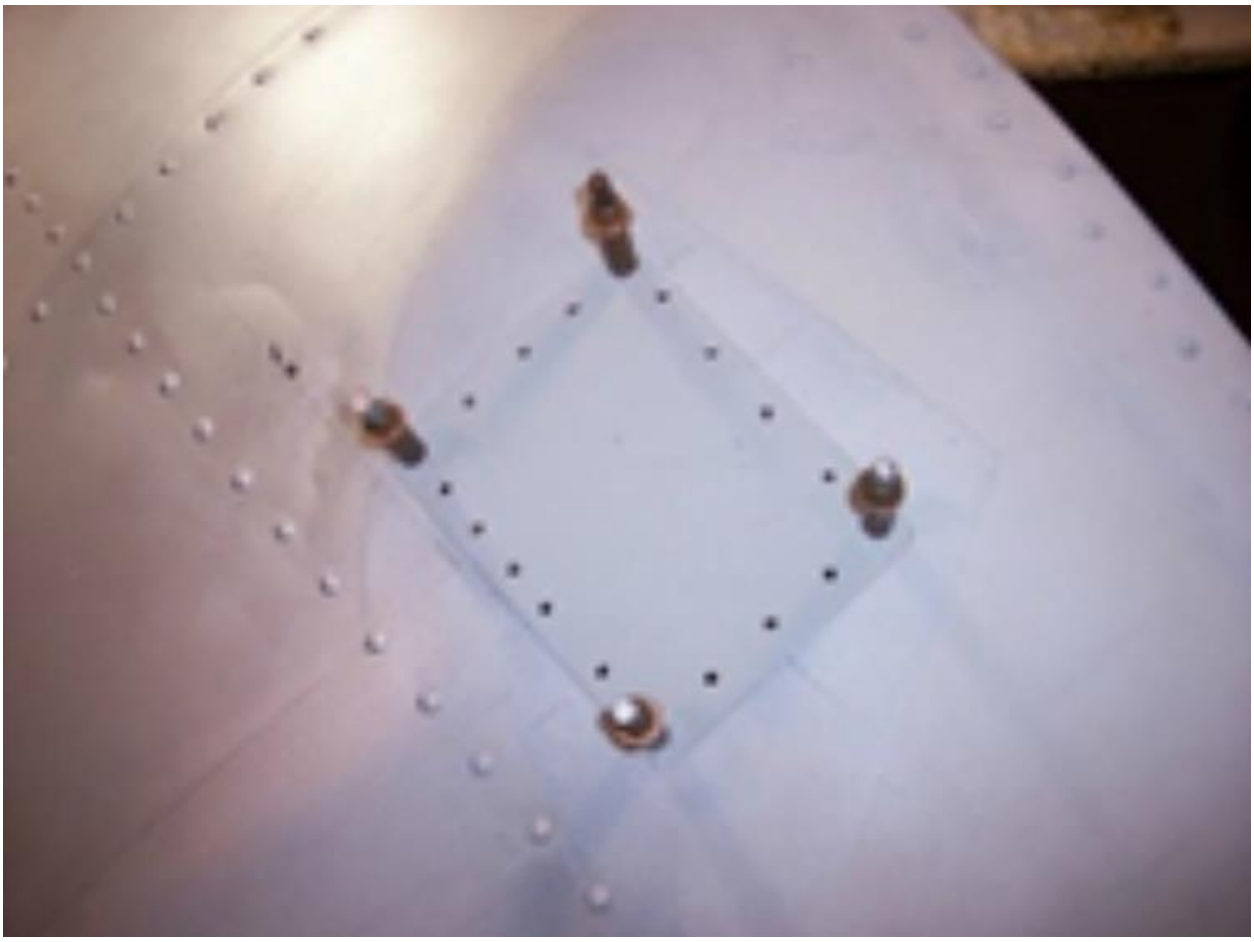
Numerator

divided by $\frac{3}{10} = 0.3''$

Denominator

Task 1 Answer Key

Repair Type 2 - Skins Patch



Why the skin patch?

It Is the quickest and most common type of repair, which means the plane can get back to Its busy flight schedule as quickly as possible.

It Is also a repair that is used for damage that Is outside tolerable levels, which Is the damage that was reported on this aircraft.

Task 2: Answer Key

Determining the Patch Size

Index # (damaged area)	Rivet Size (inches)		4 x Diameter of the Rivet		Equals		Reduce the Fraction		Required Space from Damage (inches)
8	$\frac{1}{4}$"	X	$\frac{4}{1}$"	=	$\frac{4}{4}$	=	$\frac{1}{1}$	=	1 inch
4	$\frac{1}{2}$"	X	$\frac{4}{1}$	=	$\frac{4}{2}$	=	$\frac{2}{1}$	=	2 inches
7	$\frac{3}{8}$"	X	$\frac{4}{1}$	=	$\frac{12}{8}$	=	$\frac{3}{2}$	=	1·5 inches

To learn about SAIT's Aircraft Structures Technician program, please visit:

https://www.sait.ca/programs-and-courses/full-time-studies/certificates/aircraft-structures-technician