

# Renfrew Collegiate Institute

## Transportation Technology

### Project Name — Shop Safety Practices and Procedures

**Design Brief:** To become aware of all the safety procedures in the shop.

**Context:** Most accidents are caused, they don't just happen. Safety procedures help to ensure everyone's safety. Safety procedures, routines, and common sense must be followed at all times to promote safe and enjoyable working conditions in the shop and to make learning as efficient as possible.

**Possible Solutions:** Read the procedures, discuss the procedures, explore common sense safety, look at the effects of not following the correct procedures.

**Design Constraints:** The following are some constraints or limitations for this project:

1. You will work individually and as a class.
2. All safety procedures must be reviewed.
3. Your initials are required at each section upon completion of reading it (*for example: ACF Routines*).

**Detail Design:** The following are the steps to follow for developing your awareness of shop safety practices and procedures:

#### 1. \_\_\_\_\_ **Routines**

- 1.1 Students must arrive to class promptly. This will affect your learning skills marks.
- 1.2 A lesson on new topics may be given at the beginning of each period.
- 1.3 Always bring your notebook and textbook to class.
- 1.4 Always bring writing supplies to class.
- 1.5 Log sheets will be filled out before being dismissed.
- 1.6 All students will participate in the clean up at the end of the period. Some of the clean-up duties include the following tasks:
  - 1.6.1 Clean and return tools to their proper place in the tool cabinets.
  - 1.6.2 Put your name on each piece of your project and store it in a safe place.
  - 1.6.3 Carry out any specifically assigned clean-up duties.
  - 1.6.4 No one may leave without being dismissed, even if the chime has sounded.
  - 1.6.5 Do not congregate near the door.
  - 1.6.6 The shop door must remain closed until you are dismissed.

#### 2. \_\_\_\_\_ **Safety Awareness**

- 2.1 Oily rags must be kept in a steel container equipped with an air-tight lid.
  - 2.1.1 The container must be emptied daily.
- 2.2 Never leave creepers in walk or work areas.
- 2.3 Sheet metal and other sharp materials must be stored so they don't present a hazard.
- 2.4 When lifting, always use the correct lifting techniques (i.e., keep your back straight and lift with your legs and not with your back), obtain assistance, or use a lifting device. Never attempt to lift or move an engine or other heavy object. Use the correct lifting device.
- 2.5 A fire extinguisher of an approved style and size must be on-hand when welding; and when starting an engine after repairs are complete.

- 2.6 Incorrectly removing the radiator cap from a hot radiator can cause serious scalds or eye injuries. Consult Mr. Ferguson before proceeding.
- 2.7 Do *not* use any of the machines until you have received proper instruction for that machine by Mr. Ferguson.
- 2.8 All safety guards must be in their proper position at all times.
- 2.9 Machines must not be operated while the instructor is out of the room.
- 2.10 All tools must be removed from the machine before it is turned on.
- 2.11 Machines must come to a complete stop before adjustments are made.
- 2.12 Do not distract or allow your attention to be distracted while using any of the machines.
- 2.13 The floor around machines must be clear of scraps, shavings, or other items that may be in the way of the operators feet.
- 2.14 Power must be turned off immediately after using a machine.
- 2.15 The throwing of any object, running, or any form of undisciplined conduct (e.g., horse-play) is absolutely forbidden at all times. Student conduct must reflect good safety practices at all times.
- 2.16 No student should start or stop a machine for another student.
- 2.17 Students under the influence of prescribed drugs must inform Mr. Ferguson.
- 2.18 The operator must ensure that everyone is clear of the machine before turning it on.
- 2.19 Only one person may operate a machine at one time. Do not crowd the person operating a machine. Stand at least 3' away from the operator.
- 2.20 Do not attempt any adjustments on the machines. If the machine is not set-up correctly or to your requirements, check with Mr. Ferguson.
- 2.21 Inform Mr. Ferguson of any unsafe conditions existing in the shop. Watch for or listen for signals indicating a machine or piece of equipment is failing.
- 2.22 Keep hands, ties, sleeves, tools, and other objects away from the engine fan and fan belt when the engine is running.
- 2.23 Each student is responsible for others as well as himself/herself to:
  - 2.23.1. Ensure any action he/she takes will not place another student in danger.
  - 2.23.2. Ensure any action he/she *doesn't* take will not place another student in danger.
  - 2.23.3. Report to Mr. Ferguson if another student if is not well, or is behaving in an unusual manner.
- 2.24 Students must follow the instructions provided during the lesson or demonstration. If there is something that you do not understand, ask for clarification.
- 2.25 Always use common sense. You, the student, must accept ultimate responsibility for your own safety, even though Mr. Ferguson and the school goes to great effort to protect you. Active participation is encouraged in the shop safety program and suggestions are most welcome.

### **3. \_\_\_\_\_ *Personal Protection and Protective Equipment***

- 3.1 Eye glass and a “particulate mask” (i.e., dust mask approved for specific use) must be worn when working with fiberglass or graphite materials.
- 3.2 Safety glasses must be worn while operating machinery and power tools.
- 3.3 Loose clothing must be fastened or removed.
- 3.4 Keep hands, ties, sleeves, tools, and other objects away from the engine fan and fan belt when the engine is running.

- 3.5 Dangling jewelry, rings, and wristwatches must be removed.
- 3.6 Short sleeves or pulled-up long sleeve clothing is acceptable.
- 3.7 Boots or shoes that fully enclose the foot must be worn (i.e., no sandals).
- 3.8 Always wear rubber gloves and cup-type eye protectors when working with carburetor cleaners.
- 3.9 If carburetor cleaner is spilled on any part of your body, wash it off with plenty of water.
- 3.10 Properly shielded hoods must be worn for welding operations.
- 3.11 Long Hair must be tied back. If hair is of a length that a flick of the head will cause a lock of it to fall free, then it must be completely contained in a net or appropriate safety cap when the student is involved with “rotating” equipment or with open flames.
- 3.12 When using an air-driven wrench, use proper eye protection.
- 3.13 Working under a vehicle requires eye protection against debris, rust, and leaking fluids.
- 3.14 Portable sand blasters require the use of full-gauntlet gloves and full-face protection.
- 3.15 Greasy coveralls and frayed clothing can catch fire easily from welding or grinding operations. Grease and oil contaminated clothes may cause skin irritation or dermatitis. Ensure that coveralls are cleaned on a regular basis.

#### **4. \_\_\_\_\_ Compressed Air**

- 4.1 Spinning bearings with the air hose is a dangerous practice: the bearing can disintegrate at high speed causing injury and damage.
- 4.2 Never use the air hose to clean yourself. The high pressure blast can drive dirt, grease, or air under your skin or into your blood causing serious injury or even death.

#### **5. \_\_\_\_\_ Batteries**

- 5.1 Sulfuric battery acid can damage eyes and skin. Flush an acid splash immediately with copious quantities of water to prevent injury. Flush eyes for at least 15 minutes. See a doctor.
- 5.2 Acid spills on fabric may be neutralized by applying a solution of baking soda and water.
- 5.3 adequate ventilation is required while charging batteries. Battery caps should be loosened or removed (if applicable) to prevent the build-up of flammable gasses.
- 5.4 Never set tools on top of a battery.

#### **6. \_\_\_\_\_ Hazardous Materials**

- 6.1 Fuel must be stored in approved and labeled containers in the steel, inflammable cupboard.
- 6.2 Priming an engine with raw gasoline should be avoided because it can cause fire, injury, or death.
- 6.3 Never use gasoline as a cleaning solvent for hands, clothes, or equipment.
- 6.4 Never allow any form of ignition in a gasoline handling area or where gasoline vapours are present.
- 6.5 A bonding cable must be used to prevent static ignition when refueling vehicles from portable, metal, gasoline containers. Static can also be prevented by pressing the filling nozzle against the filler neck of the vehicle.
- 6.6 Welding and cutting operations must not be performed in the vicinity of the fuel tank or supply lines.
- 6.7 Propane powered vehicles are not allowed to stay in the shop overnight.
- 6.8 Extension lamps and power tools must be kept away from leaking gas lines, tanks, or spills.

- 6.9 The parts cleaning tank must be used with adequate ventilation. Face protection and rubber gloves are recommended.
- 6.10 The lid of the parts cleaning tank must be kept closed when not in use and it must be fitted with a thermal-lid closure device.
- 6.11 Incorrectly removing the radiator cap from a hot radiator can cause serious scalds or eye injuries. Consult Mr. Ferguson before proceeding. Antifreeze/engine coolant is toxic: do not ingest.
- 6.12 Penetrating fluid and brake fluid react with paints, plastics, synthetics, and upholstery. Treat it with caution and wipe up spills immediately.

## **7. \_\_\_\_\_ *Lifting Devices***

- 7.1 Before working under a vehicle, it must be supported securely on approved stands placed at strategic lift points. Mr. Ferguson must inspect their placement before the vehicle can be lifted.
- 7.2 Keep jack handles secure, out of the way, or removed to prevent damage and injury should they fall.
- 7.3 Hydraulic jacks should be extended only the minimum amount to relocate a vehicle.
- 7.4 Never jack a vehicle up or down when anyone is working underneath the vehicle. The jack might slip, allowing the vehicle to drop.
- 7.5 Safety stands are to be used at all times.
- 7.6 Jacks must be used within their rated capacity. The lift must be vertical — never on an angle. Lift in line with the vehicle to prevent toppling.
- 7.7 Engine slings must be fastened to the engine before lifting. Fasteners must be of correct size for the lifting weight and fully tightened to secure sling lugs.

## **8. \_\_\_\_\_ *Air Conditioning***

- 8.1 Do not run an automobile, air-conditioning system without adequate air flow through the condenser. Overheating can cause hoses to burst or the relief valve to purge.

## **9. \_\_\_\_\_ *Small Engines***

- 9.1 Small engines must be operated outdoors or properly exhausted.
- 9.2 All engines must be securely clamped.
- 9.3 Larger, engine-driven, equipment must be tested outdoors only (not automotive).

## **10. \_\_\_\_\_ *Operating Engines***

- 10.1 When a vehicle is brought into or is leaving the shop during class time, all of the students must move to the designated safety area (desks), Mr. Ferguson will honk the horn twice, and he will bring the vehicle into the shop.
- 10.2 Any vehicle (skidoos, ATVs, motorcycles, cars, trucks, etc.) that will have its engine cranked shall have wheel blocks placed in front of and behind the drive wheels.
- 10.3 Automobile engines must be properly connected to the exhaust ventilation system.
- 10.4 Never run an engine at wide-open throttle (even under load) unless Mr. Ferguson is present and aware of the operation.
- 10.5 Don't attempt to start an engine unless permission has been granted.
- 10.6 Use caution when working around engine fans. Especially the electric type as the fan can start without warning when the engine is running or when the key is on.

**Materials:** sheet of paper, pencil, eraser, and common sense.

**Commissioning:** Were you successful in becoming aware shop safety practices and procedures?

**Evaluation:** Were the practices and procedures as you would have expected them to be?

**Reflection:** Did you enjoy this? What were you most proud of? What would you do differently?

### Student's Declaration

I, \_\_\_\_\_ (*print name*), hereby declare that I have read and comprehend all of the shop safety practices and procedures and promise to abide by them. I will always exercise common sense. I recognize that if I fail to comply with the shop safety practices and procedures I can be removed from the course and my credit will be forfeited. I realize that I will not be allowed to undertake any practical projects or labs until this safety form is completed and returned to Mr. Ferguson.

Student's Signature: \_\_\_\_\_

### Parent's/Guardian's Declaration

I, \_\_\_\_\_ (*print name*), hereby declare that I have read and comprehend all of the shop safety practices and procedures that my son/daughter promise to abide by. I recognize that if my son/daughter fails to comply with the shop safety practices and procedures my he/she can be removed from the course and his/her credit will be forfeited. I'm aware that my son/daughter will not be allowed to undertake any practical projects or labs until he/she completes and returns this safety form to Mr. Ferguson.

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