# Idaho's 2026 WELDING FABRICATION

## Theme

The project for the Welding Fabrication event will be a "Rocket Stove". Each team will have 6 hours to complete their Rocket Stove. The plans will be altered prior to competition day. Please remember that weld sizes, weld layout, built to print and project squareness will be heavily scrutinized.
***Each team may bring 1) 8"x8"x1/4" plate with a design or school logo centered***

**SMAW, GTAW and GMAW welds will be on the project and teams will be required to perform OFC or plasma cutting during the competition.**

## Preparation/General Rules

The SkillsUSA Idaho welding fabrication contest will be held at the CWI Micron Center welding lab on Thursday, March 5th. The contest will start at 8 am with orientation followed by the skills test.

The students should be proficient at reading blueprints and weld symbols as well as proficiency in the SMAW, GTAW, GMAW processes and either OFC or Plasma Cutting.

All welds will be left in the as welded condition (no grinding or sanding of the welds). The grinder may be used to prep the project to be welded. You may clean the project and welds with wire wheels. Grinding on OFC or plasma cut edges may preformed after judges have graded the cuts.

PURPOSE
To evaluate each contestant's preparation for employment, and to recognize outstanding students for excellence and professionalism in the field of welding fabrication.

CLOTHING REQUIREMENT
Clean 100% cotton work clothes, leather work shoes, and safety glasses with side shields or goggles. (Prescription glasses can be used only if they are equipped with side shields. If not, they must be covered with goggles.)

## ELIGIBILITY

Open to active SkillsUSA members enrolled in programs with welding as the occupational objective. This is a team event. Each Team will be comprised of three student members from the same school and training program.

## EQUIPMENT AND MATERIALS:

1. Supplied by the technical committee:
   - All necessary welding equipment
   - All Oxy-fuel torches
   - Chop Saws or band saws

2. Supplied by the contestant Team as needed:
   - We have always ended up with sponsors to donate material, however if we do not end up with sponsors, I'll let you know a week prior to the week of the competition if there is anything you need to bring.
   - *****If there are tools that are not on the list that your team would like to use, please let know and I may approve additional tools.*****

   - Hearing and/or ear protection
   - Safety Glass with side shields (Z87 approved)
   - Welding and cutting gloves
   - Welding helmet with appropriate filter plate/lens auto darkening shields are permissible. Face shields and tinted cutting shields
   - Pocket calculator
   - Lead pencil and/or ballpoint pen
   - Soap stone with holder
   - Scribe with magnet
   - Combination square set
   - Fillet weld gauge
   - Wrap a round
   - Speed square
   - Tape measure and steel rulers
   - Straight edge
   - Hammer
   - Vise grips
   - C grips, C clamps, or pipe clamps
   - Channel locks
   - Crescent wrench 12"
   - Protractor or angle finder
   - Angle bevel
   - Files any size or shape
   - 50'power cord (120 V)
   - Corded or cordless drill and drill bits
   - Tap & Dies and oil
   - 4 1/2" grinder with wheels (Cut off wheels, grinding wheels, and sanding disk, ect)
   - Wire wheels

- Clear face shields (for grinding and buffing)
- Center punches
- Chipping hammer with or without wire brush
- wire brushes
- Knee pads
- Striker for OFC
- Sand paper or emery cloth

## SCOPE OF THE CONTEST

Knowledge Performance
The contest will include assessments of the practical knowledge of welding, including safety, measurement and blueprint reading. Other common fabrication operations will also be assessed such as saw operation, drilling, grinding, and material handling.

## Committee Identified Academic Skills

The technical committee has identified that the following academic skills are embedded in this contest.

## Math Skills

• Use fractions to solve practical problems
• Measure angles
• Construct three-dimensional models

## Science Skills

• Recognition of solids, liquids and gases
• Knowledge of principles of electricity and magnetism

## Contest Guidelines/Build Requirements

1. Contestants must correctly use the welding equipment during the contest. The contest chairman and contest coordinator may stop a contestant at any time of the contest if they deem a contestant's manner to be hazardous to either themselves or others. Such stoppage may disqualify the participant for that section of the contest. If the contestant is warned a second time, he or she will be disqualified as a contest participant.

2. While the contest is in progress, there shall be no communication between the contestants and their instructors, other teams or anyone else, except as directed by a judge, contest coordinator or contest chair. It is expected that team members will communicate with each other.

3. Time limits will be established on the contest **(6 hours)**

4. Welding and cutting operation instructions will be specified in drawings

5. Welding equipment used in the contest may be obtained from a variety of manufacturers and may include transformers, rectifiers and/or inverters.

6. Filler metals will be compatible with the metals being welded and will be detailed on the contest procedure sheet. Instructions to the contestants will define more specifically the filler metals that may be used.

7. Tack welds may be made with any process.

8. Welds will be evaluated visually utilizing a rating system as established by the SkillsUSA technical committee. Nondestructive tests may be used to complete the project evaluation.

9. Final judging of the welded projects will be evaluated per the difficulty of the assigned task and by utilizing the following visual inspection criteria: dimensional accuracy, including distortion; conformity to drawing requirements.

**WELDING CONSUMABLES SUPPLIED BY COMMITTEE**

- .035” ER 70S-6 (GMAW)
- 3/32” ER 70S-2 (GTAW TIG Rod)
- 3/32”/1/8” 7018 SMAW Electrodes
- 3/32”/1/8” 6010 SMAW Electrodes

Feel free to contact me with any questions you may have

Thanks

Kirk Webb

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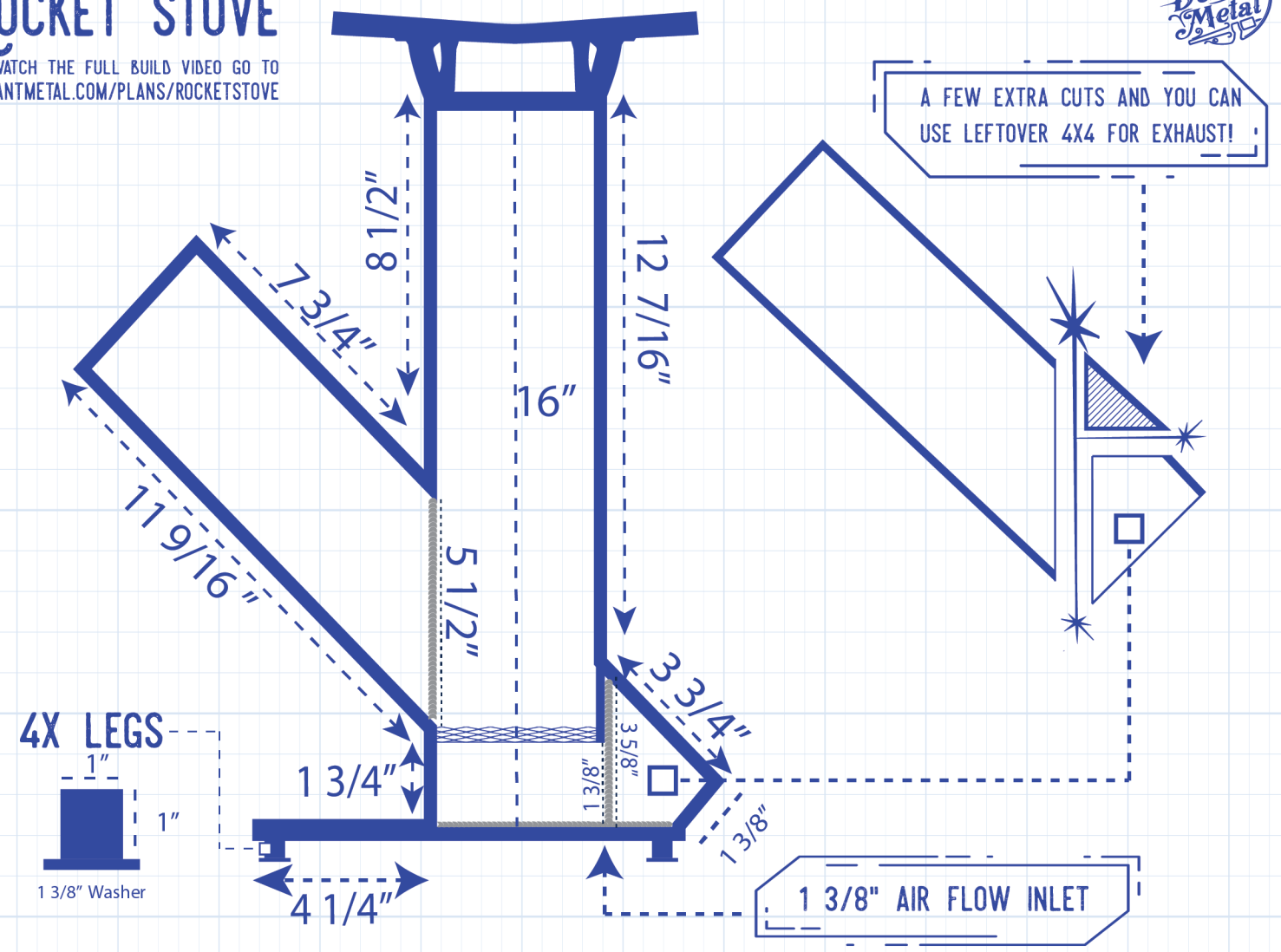
PROJECT:

# ROCKET STOVE

TO WATCH THE FULL BUILD VIDEO GO TO
DEFIANTMETAL.COM/PLANS/ROCKETSTOVE

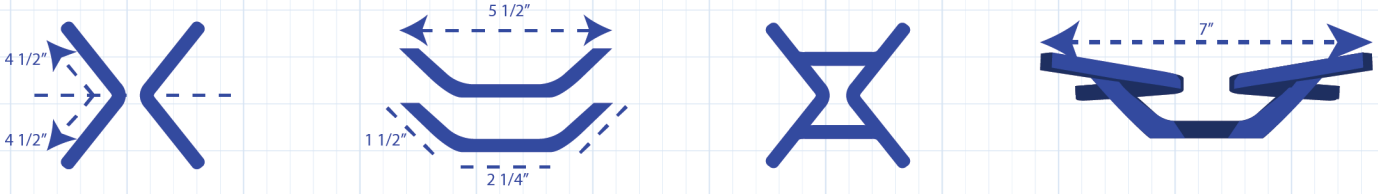


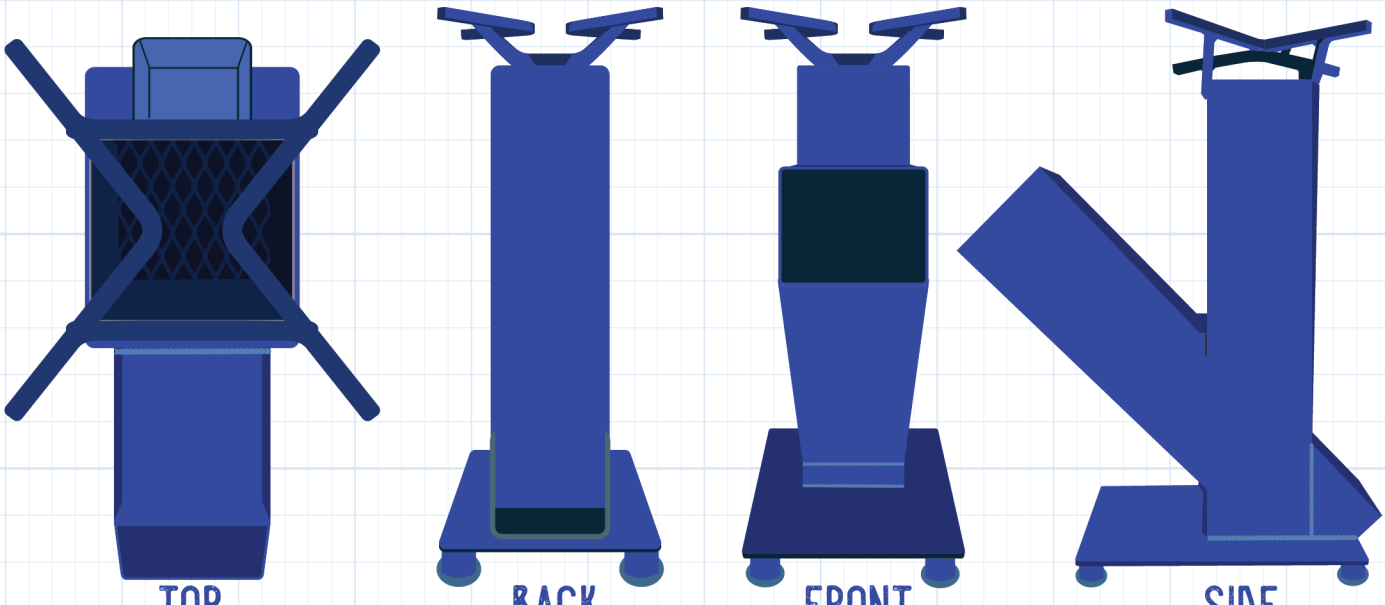

A FEW EXTRA CUTS AND YOU CAN USE LEFTOVER 4X4 FOR EXHAUST!






1 3/8" AIR FLOW INLET



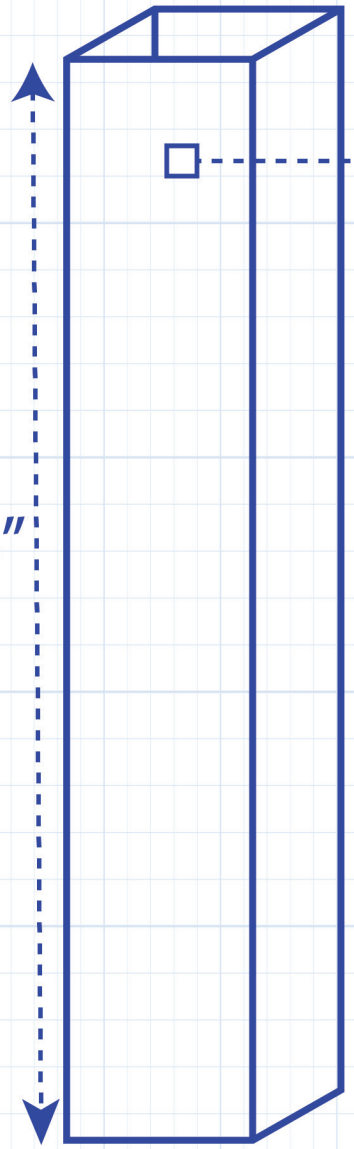



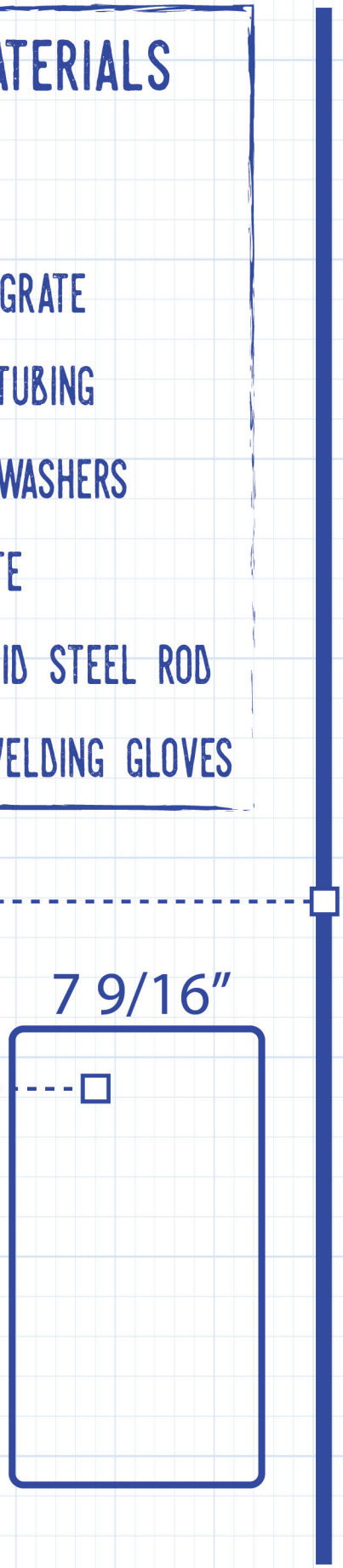
TOP BACK FRONT SIDE

# MATERIAL LIST

## STARTING MATERIALS

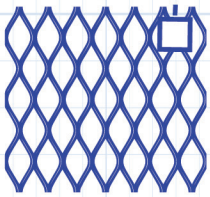
- 1/8" THICK 4X4" STEEL TUBING
- EXPANDED METAL GRATE
- 1" ROUND STEEL TUBING
- X4 1"3/8" STEEL WASHERS
- 3/16" STEEL PLATE
- 3/8" SQUARE SOLID STEEL ROD
- DEFIANT METAL WELDING GLOVES



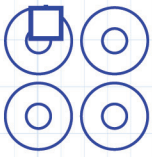













ALL SIZES ARE THE MINIMUM REQUIRED. MORE MAY BE NEEDED FOR CUTTING OR BENDING.

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PROJECT:

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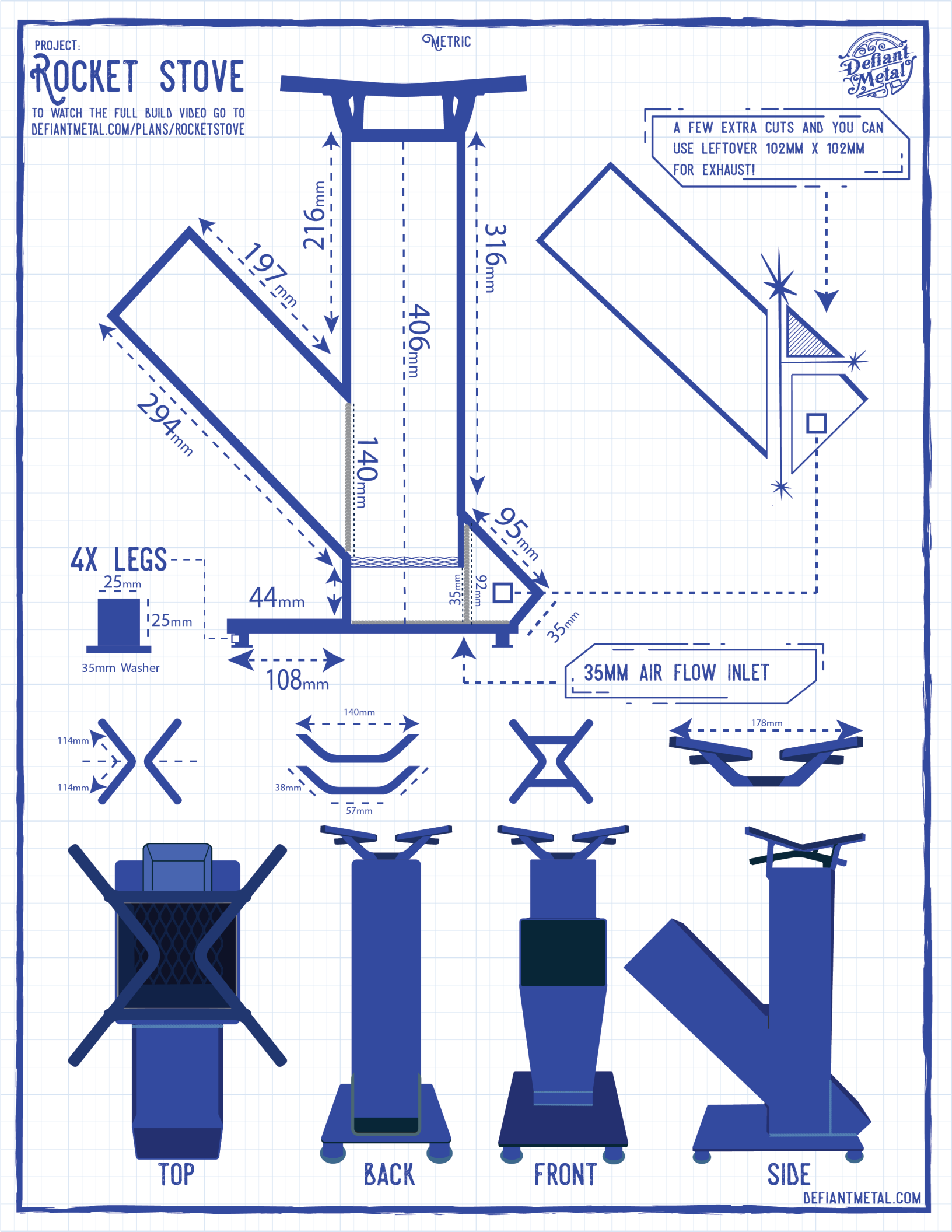
TO WATCH THE FULL BUILD VIDEO GO TO DEFIANTMETAL.COM/PLANS/ROCKETSTOVE

METRIC

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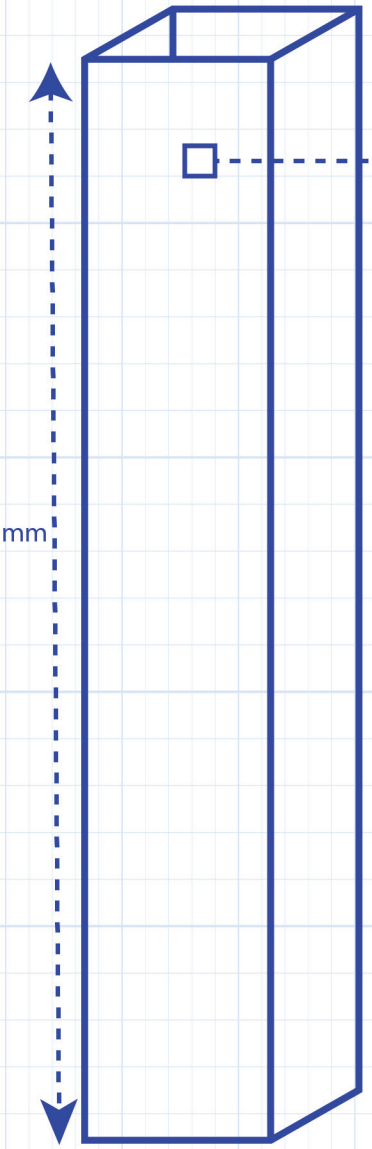
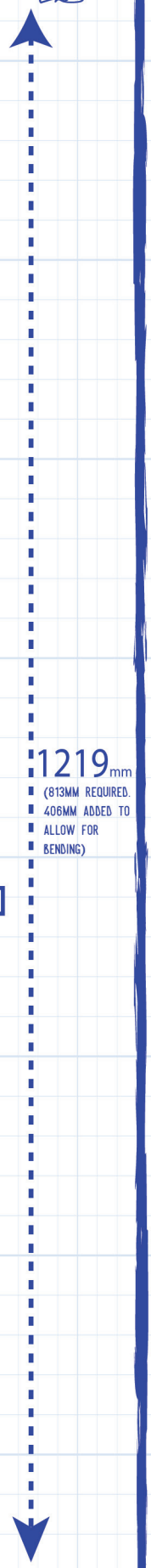
# MATERIAL LIST

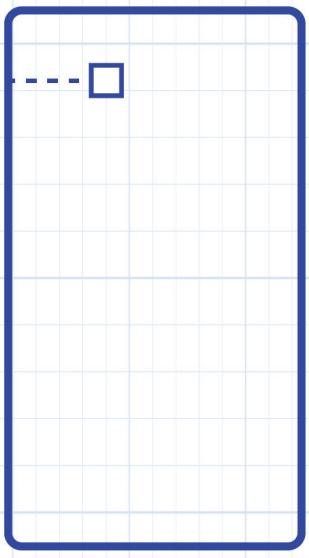
METRIC

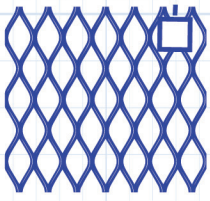
## STARTING MATERIALS

- 3MM THICK 102MM X 102MM STEEL TUBING
- EXPANDED METAL GRATE
- 25MM ROUND STEEL TUBING
- X4 35MM STEEL WASHERS
- 5MM THICK STEEL PLATE
- 10MM SQUARE SOLID STEEL ROD
- DEFIANT METAL WELDING GLOVES

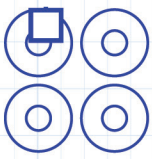






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