



# **2025 Formula SAE Japan**

## **2025 Formula SAE Japan Local Rules**

2nd Edition Issued:

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## **2025 Formula SAE Japan Local Rules (2nd Edition)**

Issued: February 12, 2025

The purpose of this document is to inform of the local rules that must apply to 2025 Formula SAE Japan. Any additional local rules that become necessary must be posted on the FSAEJ official website as they become available. These local rules are valid for 2025 Formula SAE Japan only.

Formula SAE Japan Rules Committee

### **GR - General Regulations**

#### **J2025-GR-01 Competition Year**

**(refer to Formula SAE® Rules 2025 GR. 9.2.1, FSAEJ 2025 Participation Rules Article 10)**

Competition Year starts when the vehicle takes its first technical inspection at the competition, not when the team registers.

#### **J2025-GR-02 Formula SAE Japan Eligibility(refer to Formula SAE® Rules 2025 GR.9.3.2, FSAEJ 2025 Participation Rules Article 10)**

Second Year Vehicles may enter Formula SAE Japan only in the EV Class, if they meet or are modified to meet all the rules of 2025 Formula SAE Japan.

### **F - Chassis and Structural**

#### **J2025-F-01 Baseline Steel Material**

**(refer to Formula SAE® Rules 2025 F.3.4.2)**

The baseline steel material must be a material that satisfies the following condition.

Mild or alloy steel with a minimum tensile strength of 290 N/mm<sup>2</sup> as guaranteed by a mechanical strength standard. The “STKM11A” is one of them.

#### **J2025-F-02 Upper Side Impact Member and IA height**

**(refer to Formula SAE® Rules 2025 F.6.4.4, F.8.5.6)**

The followings are accepted at the Technical Inspection:

(1) Photo evidence

Teams may bring photo evidence shown in APPENDIX J-F-1 and skip the measurement.

(2) Team proposed measurement methods

Teams may propose measurement methods if they are appropriate.

If none of the above is presented, the Technical Inspectors indicate the measurement methods, and teams must follow them.

#### **J2025-F-03 Custom Impact Attenuator**

**(refer to Formula SAE® Rules 2025 F.8.4.2)**

**Add the following to F.8.4.2 as e.**

e. Designed with a closed front section.

#### **J2025-F-04 Standard Foam Impact Attenuator**

**(refer to Formula SAE® Rules 2025 F.8.3.3d)**

DuPont Styro Corporation's DX-45 is considered equivalent material to IMPAXX™ 700 for Standard Foam Impact Attenuator.

#### **J2025-F-05 Thickness of the floor or bottom for Accumulator Container**

**(refer to Formula SAE® Rules 2025 F.10.2.1.b)**

An aluminum sheet thickness of 3.2 mm (0.125 inches) is accepted up to a negative tolerance of 10%.

**J2025-F-06 Detachable Rear Impact Protection**  
**(refer to Formula SAE® Rules 2025 F.11.3, F.5.1.2)**

For Detachable Rear Impact Protection (Rear Bulkhead and bracing)

Tubing Attachments must meet all of below:

- F.5.4 Fasteners in Primary Structure
- F.5.13 Other Bracing Requirements

*Using Welded Tube Inserts is strongly recommended.*

Composite Attachment must meet all of below:

- F.5.4 Fasteners in Primary Structure
- F.7.8.1 Strength per an attachment
- F.7.8.3 Load condition
- F.7.8.4 Proof in the SES
- F.7.8.5 Minimum fastener requirement
- F.7.8.6 Backing Plate
- F.7.8.8 Solid inserts or local elimination.

*Be sure to understand that RIP is F.1.10 Primary Structure*

**J2025-F-07 Clarification regarding Monocoque**  
**(refer to Formula SAE® Rules 2025 F.4.2.2)**

Add to F.4.2.2

- g. The thickness of Outer/Inner Skin and Core described about Laminate Test in the SES must be actual measured value. And, they must NOT be local minimum thickness.

*Since this item is a test report, it is inappropriate to evaluate it using design thickness.*

- h. Any changes to the value described about Laminate Test in the SES after approval are prohibited. However, if changes are unavoidable, resubmission may be permitted depending on the reason until the submission of the shakedown certificate.

**(refer to Formula SAE® Rules 2025 F.7.1.4)**

Inspection holes are required for:

- FB (Front Bulkhead)
- FBHS (Front Bulkhead Support)
- FHB (Front Hoop Brace)
- SIS Floor (Floor of Side Impact Structure)
- MBHS (Main Hoop Brace Support)
- SP (Steering Protection)
- (EV only) ASP (Accumulator Side Protection)
- (EV only) TSP (Tractive System Side Protection)
- (EV only) RIP (Rear Impact Protection)

They are NOT required for any attachment points.

The area around the inspection hole (approximately 10 mm from the center of the hole) must not be painted, have stickers or sheets attached.

## **T - Technical Aspects**

### **J2025-T-01 Method of Inspection for Cockpit Opening and Internal Cross Section**

**(refer to Formula SAE® Rules 2025 T.1.1.1, T.1.2.1)**

- (1) Template **T.1.2.1** may be moved vertically within 50 mm only in order to avoid interference with the rack and pinion unit.
- (2) Template **T.1.2.1** may be split into left and right sections to enable inspection even when the rack and pinion unit is positioned on the lower frame. In other words, the slit in template **T.1.2.1** may be extended to the top and bottom sides.
- (3) Template **T.1.2.1** must be placed perpendicular to an axis formed assuming a straight line from the cockpit to the pedals and moved parallel to that axis. During this movement, template **T.1.2.1** may be rotated within  $\pm 45$  degrees around the back and forth axis.
- (4) The splined part of the steering shaft may be excluded from the inspection range of Template **T.1.1.1**.

### **J2025-T-02 Driver Harness Installation**

**(refer to Formula SAE® Rules 2025 T.2.5 - T.2.7)**

One belt may be attached to the eyebolt compliance with JIS B 1168-1994.

- If shoulder or lap harness is mounted to the above as an eyebolt, it must be M10 or greater.
- If anti-submarine harness is mounted to the above as an eyebolt, it must be M8 or greater.

*“As an eyebolt” stands for fastening with its thread.*

- T.2.4.4b is NOT required for the above as a pad-eye, if its base is welded all perimeter.

*“As a pad-eye” stands for cut off its thread part and welding its eye part.*

*For shoulder and/or anti-submarine, wrap mounting is recommended.*

Refer to the table of APPENDIX J-T-1.

### **J2025-T-03 Relaxation of Requirement for Accelerator Pedal Position Sensors (APPS)**

**(refer to Formula SAE® Rules 2025-T.4.2.3)**

APPS sensors do not need to satisfy the rule T.4.2.3.

### **J2025-T-04 Scatter Shield**

**(refer to Formula SAE® Rules 2025 T.5.3.2)**

The small gap between the Scatter Shields adjacent to the hole in the motor casing is permitted.

The scatter shield is not required if the motor holes are on a surface perpendicular to the axis of rotation.

### **J2025-T-05 Material of Firewall**

**(refer to Formula SAE® Rules 2025 T.1.8)**

Based on GR1.5, the following rules are established.

Material of Firewall must be, at minimum, one of these:

- Steel thickness 0.5mm
- Aluminum thickness 0.7mm
- embrella® (Multi-layer any thickness or Single-layer over 1.0mm)
- Equivalent above and meet F.1.18 (Evidence will be required in the technical inspection)

Aluminum Tape must NOT be used as Firewall.

### **J2025-T-06 The heat-resistant temperature of the catch tank**

**(refer to Formula SAE® Rules 2025 T.5.6)**

Based on GR1.5, the following rules are established.

The heat-resistant temperature of catch tank must be appropriate.

For ICV coolant, it must be 120°C or higher.

For ICV engine oil, it must be 140°C or higher.

For EV coolant & oil, it should be 120°C or higher, and it must be higher than 100°C.

The temperature of boiling water with pressure type radiator cap will be higher than 120°C.

## **VE - Vehicle and Driver Equipment**

### **J2025-VE-01 Vehicle Number stickers**

**(refer to Formula SAE® Rules 2025 1.1)**

The Vehicle Number stickers will be supplied to the teams at the competition site by the organizer (APPENDIX J-VE-1). They have approximate dimensions of 297 mm (width) × 210 mm (height). Locations; In three places, on the front of the chassis and the left and right sides. The left and right sides must be attached in a place that can be seen from the side.

### **J2025-VE-02 SAE Logo**

**(refer to Formula SAE® Rules 2025 VE.1.3)**

The SAE International Logo is not required.

### **J2025-VE-03 Size of Technical Inspection Stickers**

**(refer to Formula SAE® Rules 2025 VE.1.4)**

The stickers indicating that the technical inspection has been passed are divided in parts, with total dimensions of 150 mm (width) × 100 mm (height).

### **J2025-VE-04 Transponder**

**(refer to Formula SAE® Rules 2025 VE.1.5)**

Any transponder is NOT used in 2025 Formula SAE Japan.

### **J2025-VE-05 Quick Jack**

**(refer to Formula SAE® Rules 2025 VE.2.1)**

It must be possible to move the vehicle at all times using the quick jack shown in the APPENDIX J-VE-2 without any additional manual effort. It must also be possible to utilize the quick jack without interfering with the vehicle body (i.e., the cowling, undercover, and so on).

### **J2025-VE-06 Fire Extinguishers**

**(refer to Formula SAE® Rules 2025 VE.2.3)**

- (1) Teams may use fire extinguishers with NO pressure gauge. However, each fire extinguisher must be within its expiration date and the operation lever seal must be in place. For fire extinguishers without a displayed expiration date, it must be within 5 years from the date of manufacture.
- (2) The fire extinguishers should be 3-ABC type
- (3) There is no problem when CO2 type is used outside, but there is a risk of suffocation when used indoors such as garages.

Therefore, care must be taken. (Ex of security: Preparing indoor & outdoor products.)

“Refer to [Carbon Dioxide as a Fire Suppressant: Examining the Risks | US EPA](#) “

### **J2025-VE-07 Driver's Equipment**

**(refer to Formula SAE® Rules 2025 VE.3)**

The equipment in accordance with the latest standards which is equivalent or safer than Formula SAE® Rules 2025 is accepted.



## **IC – Internal Combustion Engine Vehicles**

### **J2025-IC-01 Fuel Allowed at FSAEJ**

**(refer to Formula SAE® Rules 2025 IC.5.1.1)**

The fuel provided is only unleaded gasoline with Research Octane Number (RON) of 100.

### **J2025-IC-02 Fuel Supply**

**(refer to Formula SAE® Rules 2025 IC.5.2)**

Teams may fully refuel the tank of the vehicle at the fueling station before undergoing the Technical Inspections.

### **J2025-IC-03 Extracting fuel from the Fuel Tank**

**(refer to Formula SAE® Rules 2025 IC.5.3.5)**

The Fuel System must have a provision for emptying the Fuel Tank without any electric motor pump.

### **J2025-IC-04 Color of Master Switches**

**(refer to Formula SAE® Rules 2025 IC.9.4)**

In ICV Class, the Master Switches must be red.

The cockpit-mounted switches except the Master Switch must NOT be red.

## **EV – Electric Vehicles**

### **J2025-EV-01 Energy Meter Specification**

**(refer to Formula SAE® Rules 2025 EV.3.2.1 , AD.2.2)**

EV teams must use the Energy Meter distributed by the organizer for the Dynamic Event. Formula Student Germany FSE2016 Energy meters will be used as Energy Meters.

### **J2025-EV-02 Energy Meter data download**

**(refer to Formula SAE® Rules 2025 EV.3.4.2)**

The EM data download will be conducted by officials.

Immediately after participating in each Dynamic Event, each team must bring its vehicle to the designated data download area

### **J2025-EV-03 Relaxation of Tractive System connectors**

**(refer to Formula SAE® Rules 2025 EV.5.9, IN.4.7.1)**

Tractive System connectors outside of a housing must meet one of the two:

- Contain an Interlock EV.7.8 which must Open the Shutdown Circuit EV.7.2.2
- Be sealed at EV Inspection IN.4.7.1

### **J2025-EV-04 Relaxation of Requirement for Bolted Electrical Connections**

**(refer to Formula SAE® Rules 2025 EV.6.4.3)**

The positive locking features of bolted electrical connections in EV.6.4.3 is not required if the following three conditions are met.

- The connections must be properly fastened.
- Connections must not be subjected to external forces (tension, torsion, bending) from the wiring.
- The above conditions of the connections must be demonstrated at the EV inspection. (Proper fastening can be indicated by records of the tightening torque and/or rivet crimping force).

### **J2025-EV-05 Relaxation of insulation distance**

**(refer to Formula SAE® Rules 2025 EV.6.5.7)**

When devices such as opto-couplers are used on the printed circuit board and the devices themselves have an approved isolation voltage (e.g. 3KV recognized by UL1577) above the maximum tractive system voltage, the internal structure of the device does not need to comply with the spacing in EV.6.5.7.

### **J2025-EV-06 Relaxation of Requirement for the Overcurrent Protection**

**(refer to Formula SAE® Rules 2025 EV.6.6.3)**

In the case of using parallel connected cells / strings, if each parallel cell / string has an overcurrent protection device designed to protect when all the current flows through only one side of the cell / string, then the overcurrent protection device do not need to comply with EV.6.6.3.

### **J2025-EV-07 Relaxation of BMS galvanic insulation**

**(refer to Formula SAE® Rules 2025 EV.7.3.2)**

The BMS does not need to comply with EV.7.3.2 if a non-modified ready-made BMS with a data sheet is used, as approved in the ESF.

### **J2025-EV-08 Relaxation of Prohibition of Cell Balancing during shutdown**

**(refer to Formula SAE® Rules 2025 EV.7.3.3)**

Cell balancing function on the BMS does not need to comply with EV.7.3.3.

### **J2025-EV-09 Relaxation of Placement of Temperature Sensor**

**(refer to Formula SAE® Rules 2025 EV.7.5.3, EV.7.5.4)**

If the team uses a ready-made cell assembly with integrated temperature sensors without any modification, the temperature sensor is not required to apply to EV.7.5.3 and EV.7.5.4., as approved in the ESF.

### **J2025-EV-10 Relaxation of BSPD inspection methods**

**(refer to Formula SAE® Rules 2025 EV.7.7.4.b)**

The BSPD test excludes the application of EV.7.7.4 b.

In EV vehicle inspections, the output signal of the current sensor can be replaced by a voltage signal from the power supply.

### **J2025-EV-11 Color of Shutdown Buttons**

**(refer to Formula SAE® Rules 2025 EV.7.10.3, EV.7.10.4)**

The color of the EV shutdown button must be red.

All switches in the driver's cockpit other than the shutdown button must be other than red or orange.

### **J2025-EV-12 Relaxation of Chargers Requirements**

**(refer to Formula SAE® Rules 2025 EV.8.2.4, EV.8.4.1)**

The following three functions may be exempted, provided that the Electrical System Form (ESF) describes the “Charging Procedure” and the “Charging Abnormality Procedure” and that the charging is performed by trained and skilled team members based on these procedures as approved in the ESF, with monitoring of the charging status.

(1) Interlock function related to the connection status of the connector specified in EV.8.2.4.

The ESF “Charging Procedure” must include a procedure for checking the connection status of the connector between the charger and the Accumulator Container.

(2) Function to open Charging Shutdown Circuit by BMS specified in EV.8.4.1 b.

(BMS abnormality detection information must be visible. The ESF must list the BMS abnormality detection items and their detection thresholds, along with the procedure for terminating charging.)

(3) Function to open Charging Shutdown Circuit by BMS specified in EV.8.4.1 b.

(The detection status of the IMD must be visually confirmed at all times, and the ESF “Charging Abnormality Procedure” must include the thresholds for determining when an abnormality is detected by the IMD, along with the procedure for terminating charging).

### **J2025-EV-13 Ready-To-Drive-Sound**

**(refer to Formula SAE® Rules 2025 EV.9.5)**

Ready to Drive (RTD) indicator must be installed on the vehicle. Ready to Drive sound in EV.9.6 is not required and may be installed at the team's discretion.

The vehicle is not required to apply EV.9.5, if a Ready to Drive (RTD) indicator is provided.

The RTD Indicator Light must be:

- a. Turn on when vehicle status is Ready to Drive
- b. Color: Green
- c. Clearly visible to the seated driver in bright sunlight
- d. Clearly marked with the lettering “RTD”

## **IN - Technical Inspection**

### **J2025-IN-01 Seals for the Rain Test**

**(refer to Formula SAE® Rules 2025 IN.2.6, IN.15.2, IN.11)**

Any temporary equipment (tape, wrapping, etc.) installed on the vehicle for waterproofing or other purposes must be sealed after the rain test. If these seals are damaged or lost, the rain test must be done again.

### **J2025-IN-02 Driver Egress Test**

**(refer to Formula SAE® Rules 2025 IN.5.2)**

In the Driver Egress Test, the direction of egress (i.e., to the left or right of the vehicle) will be instructed by the judges at that time.

### **J2025-IN-03 Measuring noise after an endurance run**

**(refer to Formula SAE® Rules 2025 IN.10)**

When measuring noise after an endurance run, changes to the engine adjustment map are not permitted.

### **J2025-IN-04 Sound Measuring Procedure for CVT-Equipped Vehicles**

**(refer to Formula SAE® Rules 2025 IN.10.1.1)**

Teams using a vehicle equipped with a CVT without a neutral position must prepare an apparatus that can safely hold the driving wheels in a completely floating state during sound measurement.

### **J2025-IN-05 Sound Measuring Procedure**

**(refer to Formula SAE® Rules 2025 IN.10.1.2)**

There is no change to the measurement speed for engines used in 2025 Formula SAE Japan. The measurement speeds for other engines must be released on the team page later. The location of the microphone at an angle of 45° with the outlet in the horizontal plane must be instructed by the judges at that time.

Measuring time will be within 5 minutes from the microphone set up.

The function of stopping engine by master switch is also checked at this section.

### **J2025-IN-06 Remeasurement of Noise**

**(refer to Formula SAE® Rules 2025 IN.10.4.3, IN.10.5)**

- (1) The vehicle that completed the Endurance Event is subject to the noise test.
- (2) The method of the noise testing applies IN.10.1.2 and local rule J2025-IN-05 correspondingly.
- (3) It calls a penalty as follows according to measurements.
  - Up to +1dB of Reference Value (RV) is NO penalty.
  - Over +1dB up to +2dB of RV is a penalty of 10 points.
  - Over +2dB of RV is a penalty of 20 points.
- (4) If it cannot be measured regardless of the reason, the same penalty as the case of Over +2dB will be applied.

### **J2025-IN-07 Technical Inspection After the Endurance**

**(refer to Formula SAE® Rules 2025 IN.15, D.14)**

The vehicles may be re-inspected after the Endurance and refueling are completed.

If any rule violation is found (in the vehicle or in the driver's equipment), a penalty may be applied.

## **J2025-IN-08 Clarification regarding Monocoque**

### **(refer to Formula SAE® Rules 2025 IN.8.3.1)**

The laminate thickness (In some cases the skin thickness also) will be measured using the special caliper shown in APPENDIX J-IN-1.

And both sides of the inspection holes must be directly visible. Evidence by photographs will not be accepted.

### **(refer to Formula SAE® Rules 2025 IN.8.3.4)**

If the laminate test sample is thicker than the thickness described about Laminate Test (F.4.2) in the SES, the vehicle will be disqualified from the inspection.

If the laminate thickness of the actual vehicle is thinner than that described in the SES, F.4.4 Flat Panel calculation based on actual measurements must be equivalent or more. If it is not equivalent, the vehicle will be disqualified from the inspection.

The thickness of laminate in the SES will be adjusted by that of core. Scale option (layer repeats) must NOT be changed.

## **S - Static Events**

### **J2025-S-01 No show at Static Events**

#### **(refer to Formula SAE® Rules 2025 S.3.16.4, S.4.10.3 and 2025 FSAEJ Participation Rules Article 13)**

No show at Static Events is recognized as “Document Non-submission” and will receive penalties shown in 2025 FSAEJ Participation Rules Article 13.

### **J2025-S-02 Presentation Concept**

#### **(refer to Formula SAE® Rules 2025 S.2.2 and 2025 FSAEJ Participation Rules Article 19)**

The concept for the Presentation Event in this year’s Formula SAE Japan (FSAEJ) is as follows.

Your company (use your school’s name as the name of your company) is in-house venture company to design and sell an FSAE car.

The FSAE industry has recently experienced rapid environmental changes, and it is necessary to review the previous business plan in order to ensure the continued operation of the company and revise the business plan. We would like your company to once again clarify your company's vision by considering any of the following, and then propose a business plan to achieve that vision through the design, sales, and outsourcing of formula car manufacturing.

Ex)

- What kind of society do we want to realize?
- What social issues do you want to solve?
- What kind of new social value do you want to create?

This business plan must include elements such as business purpose, business content, business scale, sales revenue, and necessary expenses.

We have high expectations for your company's presentation of a business plan that is in line with the current social situation.

However, since other in-house venture companies are also planning similar presentations today, we ask that you only give a 10-minute presentation.

#### **Assumptions**

- Teams that participated in FSAEJ in a previous year are regarded as in-house venture company and should refer to the presentation that they made that year as “the initial plan,” assuming that they are currently having a business operation. Teams that did not participate in FSAEJ in a previous year are regarded as new in-house venture company entering the market and should present a business plan.
- We manufacture formula cars at our company. Therefore, we decided to use the production scale that we assume is possible (see Figure 1 below for the production scale model)..

- We include people with various different backgrounds (engineering, manufacturing, sales, marketing, materials, and the like) and different amounts of experience in each field.
- These conditions apply to both teams participating for the first time and teams that have participated before.

**J2025-S-03 Submission of Business Plan Proposal (BPP)**

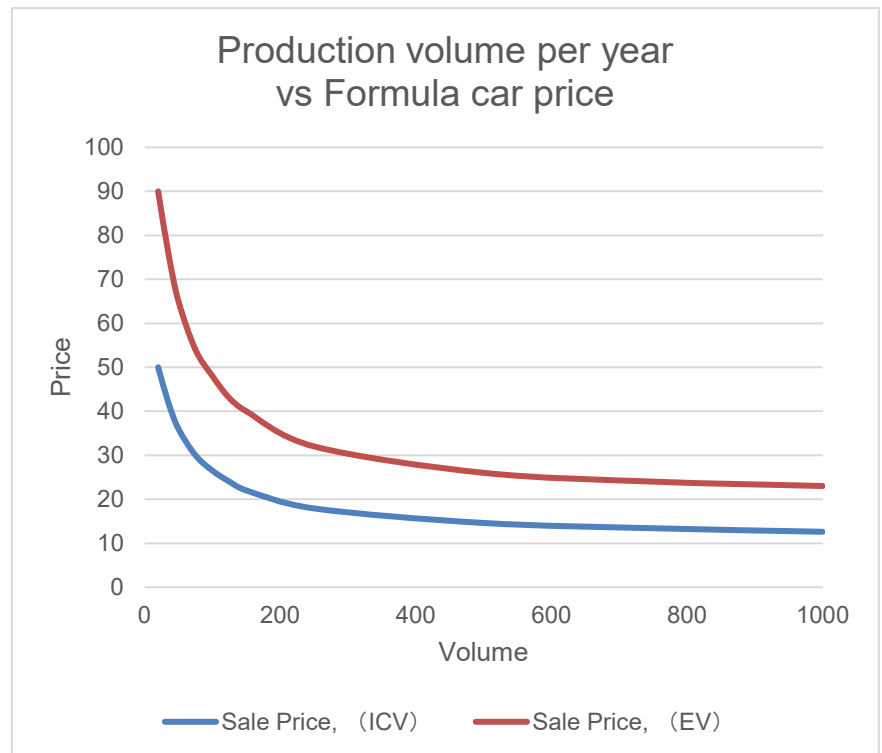
**(refer to Formula SAE® Rules 2025 S.2.2 and S.2.4, and 2025 FSAEJ Participation Rules Article 13)**

Business Plan Proposal (BPP) shall include the following details based on the business plan.

- Summary of request details (Vehicle manufacturing, investment request, etc.)
- The philosophy of your company
- Vision (the society we want to achieve, solving problems, creating new value)
- Information about your company’s awareness of the business environment in and after 2025, and how your business or vehicle design reflects these trends (for example, Carbon neutrality, circular economy, shortage of semiconductors, conflicts, depreciation of yen, SDGs etc.).
- Market analysis
- Business plan

\* The available capital and company scale should be defined in reference to the sales volume/price chart below. This chart shall be linked with your business plan. (Our production scale)

Volume cars sold per year	Sale Price, (k \$) (ICV)	Sale Price, (k \$) (EV)
20	50.0	90.0
35	42.0	76.0
50	36.0	65.0
75	30.0	54.0
100	26.5	48.0
125	24.0	43.0
150	22.0	40.0
250	17.9	32.0
500	14.6	26.0
750	13.4	24.0
1000	12.6	23.0



- Business targets: profitability by year X after founding the business, accumulated losses eliminated by year Y, etc.
- Our profit forecast: First future year \*\* k\$, future fiscal years onward: \*\* k\$
- Basic specifications (consistency with the Design Briefing)
- Main performance targets (consistency with the Design Briefing)
- Commercialization milestones and schedule

Descriptions in this document related to the car to be design and sales are required to be consistent with the Design Briefing (i.e., the vehicle must be based on this year’s car.). However, teams are permitted to make changes related to cost in accordance with the sales strategy.

The minimum font size in the Sales Presentation Document must be 10-point for both Japanese and English descriptions (10-point as defined in desktop publishing (DTP) software applications), and uniform font sizes must be used. The written language must be either in English or Japanese, and must not be written in both Japanese and English.

The number of pages and format may not be changed. Enter your details in the yellow fields provided. The gray explanations in the yellow fields should be deleted.

The purpose of this document is to describe details. This means that the form should be completely filled in without omissions using logical and convincing language.

In the following cases, this document will be regarded as “not submitted” or ” penalty”.

a) If the content of business plan could be mistaken for the same as a previously submitted document

b) If the descriptions are judged to be flimsy or lacking proper study

c) If you significantly change the specified format

d) If the market analysis or sales strategy is the same or very similar at participation in both the ICV class and the EV class. (Even with participation in both the ICV class and the EV class, each team is assumed to be a separate in-house venture company.)

#### **J2025-S-04 Procedure for Presentation Event**

**(refer to Formula SAE® Rules 2025 S.2.3, S.2.5, and S.2.6, and 2025 FSAEJ Participation Rules Article 19)**

The following times are allotted to each team in the Presentation Event: no more than 10 minutes to set up the necessary equipment (Projectors, screens, etc. necessary for projection), no more than 10 minutes from enter the room for the actual presentation, and a question and answer session lasting approximately 10 minutes.

Teams that fail to set up their equipment or prepare to speak within the allotted time and cannot begin their presentation at the scheduled time shall be disqualified and receive 0 points.

Please refer to the handbook to be issued later for details regarding access to the Presentation Event venue, methods of setting up equipment before the event starts, and other related information.

Teams that fail to finish their presentation within the allotted time shall be cut off and points awarded based on the material presented within the allotted time.

Presentations shall be carried out by a maximum of three team members, including those participating in the question and answer session and those operating the equipment.

A maximum of six people are permitted to be present in the online presentation venue during the presentation, including members of the audience. The audience is not permitted to assist the presentation team in any way, including the setting up and removal of equipment, participation in the question and answer session, and time keeping. If such assistance is discovered, the presentation shall be suspended immediately and the team shall be awarded 0 points.

#### **J2025-S-05 Evaluation Criteria**

**(refer to Formula SAE® Rules 2025 S.2.7, 2025 FSAEJ Participation Rules Article 19)**

Presenting the vision, business plan scenario, and appeal points based on the content of BPP.

However, if there are any changes in the content between the presentation and the Business Plan Proposal document, please report the details of the changes, and those reasons at the beginning of the presentation.

FSAEJ Presentation Event Judging Score Sheet:. The items are the same as SAE, but the scoring is different and it is issued separately.

#### **J2025-S-06 Cost and Manufacturing Event**

**(refer to 2025 FSAEJ Participation Rules Article 19, Formula SAE® Rules 2025 DR.1.2.5)**

##### **1. Cost Report**

In accordance with Local Rules **J2025-S-08**, each team must submit as electronic data a Cost Report containing (1) Bill of Materials (BOM), (2) Cost estimate data for each assembly or part (FCA), and (3) Supplement documentation for cost estimation.

The Cost Report must be submitted using a storage service as instructed in the Cost Report Entry Sheet (issued separately).

In addition, teams must fill in the necessary items and submit the Cost Report Entry Sheet via the team page by the Cost Report submission deadline. Teams may not update the electronic Cost Report data in the storage

service after submission of the Cost Report Entry Sheet.

The configuration of the electronic Cost Report data to be submitted must be in accordance with the Local Rules **J2025-S-08**.

## **2. Re-Submission of the Cost Report**

In the event that a serious insufficiency is found with the electronic data of the Cost Report submitted by the team, the judges may request the team to resubmit the electronic data of the Cost Report. The method of resubmission must be instructed when the resubmission request is issued. Re-submission requests are scheduled to be issued in around the end of June **2025**.

Teams that are requested to resubmit the Cost Report must resubmit the electronic data within 48 hours of the request. A request to resubmit the Cost Report will generate a 40-point penalty. Teams that fail to resubmit when requested to do so will be regarded as “not submitted”.

## **3. Non-Submission of the Cost Report**

In addition to rule DR.1.2.5 of the Formula SAE® Rules **2025**, the Cost Report must be regarded as “not submitted” in the following cases.

- a. If resubmission of the Cost Report is requested but the Cost Report is not resubmitted by the deadline.
- b. If the BOM is incomplete.
- c. If the cost estimate data for each assembly or part (FCA) is incomplete.

## **J2025-S-07 Preconditions for Preparation of Cost Report**

(refer to Formula SAE® Rules **2025 S.3.4, S.3.8**)

The costs estimated in the Cost Report do not include R&D cost, Overhead cost, profits, and the like.

Production of the formula car is defined as 1,000 units per year, and 3,000 units per life.

In addition, in creating the cost report, the team must use the FSAEJ cost table posted separately on the team page.

## **J2025-S-08 Submission Items for Cost and Manufacturing Event**

(refer to Formula SAE® Rules **2025 DR.1 - DR.3, S.3.4, S.3.5**)

For FSAEJ, the FSAE Online website must not be used to prepare the Bill of Materials (BOM) and cost estimate data (FCA).

The Cost Report must submit the following electronic data.

The structure of the electronic data to be submitted must conform to the Local Rules Appendix J-S-3 or J-S-4.

### **1. Bill of Materials (BOM)**

This is a sheet for estimating the cost of one whole vehicle unit. This sheet must be submitted using the official FSAEJ format (to be posted on the team page in end of February 2025). If submitted in a different format, the Cost Report will be judged as “not submitted.”

In addition, teams must submit both the Excel file and their converted PDF file using the software in Excel.

\* File name and file format:

**Carnumber\_abbreviatedschoolname\_FSAEJ\_CR\_BOM.xlsx**

**Carnumber\_abbreviatedschoolname\_FSAEJ\_CR\_BOM.pdf**

(The abbreviated school name must consist of no more than 30 letters.)

### **2. Cost estimate data for each assembly or part (FCA)**

These are sheets for estimating the cost of each assembly or part. These sheets must be submitted using the official FSAEJ format (to be posted on the team page in end of February 2025). If submitted in a different format, the Cost Report will be judged as “not submitted.”

FCA must be divided into each system shown in the Local Rule Appendix J-S-1 and J-S-2.

In addition, teams must submit both the Excel files and their converted PDF files using the software in Excel.

\* File name and file format:

**Carnumber\_abbreviatedschoolname\_FSAEJ\_CR\_FCA\_system designation.xlsx**

**Carnumber\_abbreviatedschoolname\_FSAEJ\_CR\_FCA\_system designation.pdf**

(The abbreviated school name must consist of no more than 30 letters.)

NOTE: Photographs or drawing data must NOT be included in the BOM and the FCA.

NOTE: The Excel file and the converted PDF file must have the same numerical value

### **3. Supplement documentation for cost estimation**

These are materials that provide evidence to support the accuracy of the figures required to calculate the costs of each part. Any format is acceptable.

The supplement must be divided into each system shown in the Local Rule Appendix J-S-1 and J-S-2.

\* File name and file format:

**Carnumber\_abbreviatedschoolname\_FSAEJ\_CR\_Suppl\_system designation.pdf**

(The abbreviated school name must consist of no more than 30 letters.)

The supplement must include the following materials as a minimum requirement.

- a. Parts production drawings (three-view drawings) or materials equivalent to parts production drawings (three-view drawings) for parts defined as “Made” in Formula SAE® Rules 2025 S.3.9 (refer to the Cost Tables and Formula SAE® Cost Event Supplement\_V3.0 CR.2).
- b. In the case of composite parts, the material compositions, structures, and processes of each component part in addition to parts production drawings (three-view drawings) or materials equivalent to parts production drawings (three-view drawings).
- c. In the case of wire harnesses, wiring diagrams in addition to parts production drawings or materials equivalent to parts production drawings.  
In addition, for EVs, separate parts production drawings (or materials equivalent to parts production drawings) and wiring diagrams must be prepared for the EV high-voltage wire harnesses (HV Wiring: System Drivetrain – DT-EV) and other wire harnesses (Wire Harness: System Electrical – EL-WH), and these must be saved in each system.

### **J2025-S-09 Cost Event Addendum**

**(refer to Formula SAE® Rules 2025 S.3.7)**

The Cost Event Addendum reflecting design changes implemented after the submission of the original Cost Report must use the official FSAEJ format (to be posted on the team page in the middle of July 2025). Addendum submitted in any other format will not be accepted.

In addition, revisions of calculation errors in the Cost Report and the like must not be included in the addendum.

Photos before and after the design change must be added to the addendum.

Addendum must be submitted to the Judges in electronic data (PDF) by the deadline (14:00 on Sept. 4th (Thu.), 2025 (JST), Japan time).



**J2025-S-10 Add Item Requests for Cost Tables**  
**(refer to Formula SAE® Rules 2025 S.3.8, S.3.10)**

The first version of the official Cost Tables for FSAEJ will be released at the end of March 2025 on the team page. If “Bought” parts, Processes, etc. used in the vehicle are not included in these Cost Tables, the team must submit an “Add Item Request” via the “Cost Table Add Item Request” page of the Q&A system. The completed “Add Item Request” Excel file (to be specified separately) and supporting documentation must be compressed using the zip format and submitted by 14:00 on May 1st (Thu.), 2025 (JST), Japan time. The final version of the Cost Tables incorporating this information will be issued in the middle of May, 2025 and their details will be frozen at this time.

If cost information shown in the final FSAEJ Cost Tables differs from that in the Formula SAE® Cost Tables, the FSAEJ version has the priority, even if the Formula SAE® Cost Tables feature an additional part.

If the Add Item Request could not be completed when creating the Cost Report and parts not listed in the Cost Tables need to be entered in the report, the team must appraise the costs of these items and identify them clearly in the Cost Report (e.g., through the use of colored cells). The Cost Judges may re-evaluate the costs and deduct points appropriately.

**J2025-S-11 Scoring of the Cost Report**  
**(refer to Formula SAE® Rules 2025 S.3.12)**

ICV : If the Adjusted Cost (including penalties) is found to exceed \$ 40,000 in the pre-screening procedure of the Cost Report, the Adjusted Cost will be defined as exactly \$ 40,000.

EV : If the Adjusted Cost (including penalties) is found to exceed \$ 60,000 in the pre-screening procedure of the Cost Report, the Adjusted Cost will be defined as exactly \$ 60,000.

**J2025-S-12 Scoring of the Cost and Manufacturing Event**  
**(refer to Formula SAE® Rules 2025 S.3.12, S.3.16)**

The points scoring in the Cost and Manufacturing Event will be as follows.

- Price Score: 0 to 40 points
- Discussion Score: 0 to 40 points
- Scenario Score: 0 to 20 points
- Total Score: 0 to 100 points

FSAEJ does not use Penalty Points. Penalty A will be deducted from the Discussion Score. If the Discussion Score becomes zero, all remaining penalties will be calculated as Penalty B and added to the Adjusted Cost.

**J2025-S-13 Submitted Items for EV Cost Report Review**  
**(refer to Formula SAE® Rules 2025 S.3.13)**

On the day of the Cost and Manufacturing Event, if requested by a Cost Judge, photographs of dedicated EV parts that are not visible due to enclosure within a sealed structure or the like must be submitted as evidence of the cost estimation for those parts.

Teams unable to submit photographs on request will be penalized a maximum of 20 points.

**J2025-S-14 Procedure for the Cost and Manufacturing Event  
(refer to Formula SAE® Rules 2025 S.3.12, S.3.13, S.3.15)**

A maximum of six team members may be present in the event booth to explain the necessary items. During the judging, these team members may be interchanged freely.

(1) Cost Audit (Confirmation of consistency between the Cost Report) and feedback of document screening results (25 minutes)

The Judges will confirm the consistency between pre-submitted the Cost Report and Cost Addendum. If any inconsistencies are discovered, penalties will be awarded in accordance with FSAE® Rules 2025 S.3.12.

The Judges will also provide feedback on the Cost Report judging results and discuss the Cost Report with the team.

(2) Real case scenario (Cost Scenario) (15 minutes)

The issues for the real case scenario that affect cost and manufacturing will be disclosed in early Aug. 2025 (These issues will be posted on the team page.)

Teams must report the results, which they have considered in advance based on these issues, to the Judges (5 minutes).

Teams must submit electronic data (PDF) of the materials to be reported by the deadline.

The Judges will question the team about this report and ask for additional explanations as necessary (10 minutes).

(3) Delays in starting time

The scheduled finishing time of judging will not be adjusted if the start of judging is delayed by the team.

If the start of judging is delayed by 10 minutes or more, the real case scenario will be omitted. In this case, the team will be scored 0 points in the Scenario Score.

**J2025-S-15 Cost Audit**

**(refer to Formula SAE® Rules 2025 S.3.14)**

Cost Audit of all teams will be conducted during the Cost and Manufacturing Event.

**J2025-S-16 Part Numbering on Drawings**

**(refer to Formula SAE® Cost Event Supplement\_V3.0 CL.2)**

Parts production drawings (three-view drawings) or materials equivalent to parts production drawings (three-view drawings) attached as supporting documentation for the Cost Report must include part numbers and the abbreviated name of the school.

**J2025-S-17 Design Documents**

**(refer to Formula SAE® Rules 2025 DR.2, S.4.2/3/4/5)**

The Design Documents must consist of Design Briefing, Design Spec Sheet, and Vehicle Drawings. The language in Design Documents is **English only**. The words in the other languages will be recognized as not submitted.

The requirements on Design Briefing are on the 2025 Design Review Briefing PPT Template published on FSAE Online.

The following dimensions must be included in Vehicle Drawings as the minimum requirement: overall length, overall width, overall height, wheelbase, front and rear track, and minimum ground clearance.

Teams must fill all the figures on Design Spec Sheet unless figures are not applicable to the vehicle. For example, Aerodynamics Coefficients & Reference Area must be filled even if the car does not have any aerodynamics devices.

Lack of information and avoidable blanks/"N.A." on the Design Documents may receive penalty points.

## **J2025-S-18 Insufficient Redesign**

Copying of content from a previous Design Briefing, or expressions that closely resemble previous content will result in the corresponding components being defined as insufficiently redesigned, and points will not be scored. If more than one-third of the Design Briefing (including drawings) are judged as blank and/or a copy from a previous, all Design Documents will be regarded as “not submitted”.

## **J2025-S-19 Procedure for Design Event**

The Design Event consists of 3 phases: Design Document Review, First Round Review and Design Final. Recording and photographing during the judging process is prohibited.

### **1. Design Document Review procedure**

The Design Document Review will start with the submission of the Design Documents. In the Design Document Review, the Insufficient Redesign will be checked, and disqualified teams will be determined based on the Design Documents.

### **2. First Round Review procedure**

The First Round Review will be held with 3 judges at the designated location in the event venue. Additional judges may participate partially. A maximum of 6 team members may participate in the First Round Review. Members may be substituted on team’s demand during a review.

Teams must be ready to start judging at least 5 minutes before the instructed time with the vehicle and support materials. The vehicle must be in the condition described in the Rules. It is expected that the cowls and covers are ready to be removed quickly upon judges’ request.

At the designated time, the First Round Review will be held on the agenda shown below.

- a. Introduction of judges and procedures
- b. Team and vehicle’s overall introduction
- c. Q&A session with each judge
- d. Brief review and closing

Each section will be held as follows.

#### a. Introduction of judges and procedures

Each judge will introduce her/himself with their own expertise and judging scope. Also, the First Round Review agenda above will be reminded.

#### b. Team and vehicle’s overall introduction

The team may briefly explain topics such as the team itself, the team objects, the overall targets, the vehicle targets, the reviews from past experiences, the highlights/lowlights and the achievements. As the time for this section is limited, the team must manage own time and is expected to explain briefly and efficiently.

#### c. Q&A session with each judge

The team members will move into 3 groups with 1 judge each. In this section, each judge will dive into details on your presentations and/or with questions from judges. Teams are expected to convince the judges of what you have learned, investigated, done, achieved and to be done with any evidence, such as photographs, drawings, charts, spare parts, data in electrical devices and materials in any format. Meaning, teams do not have to stick to show Design Briefing

Judging coverages for each judge are shown in the Local Rule Appendix J-S-7.

#### d. Brief review and closing

At the end, all the members in judging will gather and the judges will give brief comments to the team; what is good and what is to be improved.

### 3. Design Final

The Design Final has 2 objects as below.

Object 1: To judge the Finalists much deeper than what was judged in the limited time of the First Round Review.

Object 2: To introduce good efforts and achievements to the other teams, which may contribute to improving all the Formula SAE/Formula Student teams.

A few selected teams from the First Round Review (hereinafter called "the Finalists") will have the Design Final. In accordance with the Object 2, the Design Final may be open to the audience and/or recorded to be published.

The Finalists will be shown on an Official Announcement of the Design Event. Here, the scores of the Finalists will not be shown but marked "FINAL".

The Finalists will be judged in a few rounds. In a round, the representative judges will interview the Finalist via microphone. The content of the interview may be aligned with the Finalists in advance.

In the other rounds, the judges will challenge the Finalists to dig much deeper than the First Round Review, in accordance with the Object 1.

The scores of the Finalists will be determined based on both the First Round Review and the Design Final. In other words, the Design Final discussions are to be eligible for additional points basically. The Official Announcement of the Design Event will be re-published after the scores of the Finalists are fixed.

### J2025-S-20 Design Free Talk

The Design judges will be available to discuss openly with teams complying with the Rules. It is called "Design Free Talk".

The Design Free Talk will be held at the team's request. Details of registration and procedures will be shown in the Teams Handbook. Please refer to it and make good use of it for you and your team's next steps

## D - Dynamic Events

### J2025-D-01 Understanding of Flags Used in Dynamic Events

(refer to Formula SAE® Rules 2025 D.3.8, D.4)

Only team members that pass the Flag Test\* in the Technical Inspection will be permitted to drive in the Dynamic Events. Team members that have passed the Flag Test will be awarded a driver's wristband. Drivers without a wristband must not be permitted to participate in the Dynamic Events. The maximum penalty for any irregularity will be disqualification from the relevant events.

\* Flag test: Team members must be shown several types of flags and asked to promptly describe in words

the actions that must be taken in reaction to the flag

(e.g., red flag = come to an immediate safe controlled stop, etc.).

### J2025-D-02 Participation in the Acceleration, Skid-Pad, and Autocross Events

(refer to Formula SAE® Rules 2025 D.9 - D.11)

- a. Cars in the ICV and EV classes will participate together in these events under mixed running conditions (these cars will not participate in these events at separate times).
- b. In the heats of each event, one driver must continuously perform two runs. After completing the first run, the driver may join the line of cars waiting in the start lane. Therefore, if a car pulls out due to mechanical problems or the like during the first run, the car will not be permitted to make the second run.
- c. If a car pulls out before receiving the instruction to begin the first run (i.e., the official start instruction), the car may be permitted to start by re-joining the waiting line for the start lane.

### **J2025-D-03 Participation in the Endurance and Efficiency Events**

**(refer to Formula SAE® Rules 2025 D.12, D.13)**

- a. Cars that fail to record a lap time in the Autocross event within 145% of the fastest lap time (all times in this section include penalties) recorded by each ICVs and EVs will not be permitted to participate in the Endurance and Efficiency events.
- b. Each ICVs and EVs will be divided respectively into Groups A, B, and C in order of the fastest lap times recorded in the Autocross event. The Endurance Event will be held on the first day for Groups B and C, and on the second day for Group A.
- c. The running order for Groups B and C will start from the cars with the fastest laps recorded in the Autocross event. The running order for Group A will start from the car with the slowest lap recorded in the Autocross event.
- d. The Run order of EV Class takes into consideration the battery charging time.
- e. Only 2 or 3 cars will be permitted to be on the course at the same time.

\* However, it may be necessary to change rule J2025-D-05 because of the weather or other circumstances. In this case, any changes in the rule will be announced in advance.

(Refer to Formula SAE® Rules 2025 D.5)

### **J2025-D-04 Energy Meter initialization for Endurance Event**

**(refer to Formula SAE® Rules 2025 D.12.3.2, D.12.4.1)**

(EV only) Each team must bring their vehicle to the data download area for Energy Meter initialization prior to staging per the Endurance Run Order.

### **J2025-D-05 Limitation on Number of People in Driver Change Area for EV Class Endurance Event**

**(refer to Formula SAE® Rules 2025 D.12.7.1.b)**

For the EV class, the three team members that are permitted to be in the Driver Change Area may consist of (1) an ESO and two drivers, or (2) an ESO, a driver, and another team member.

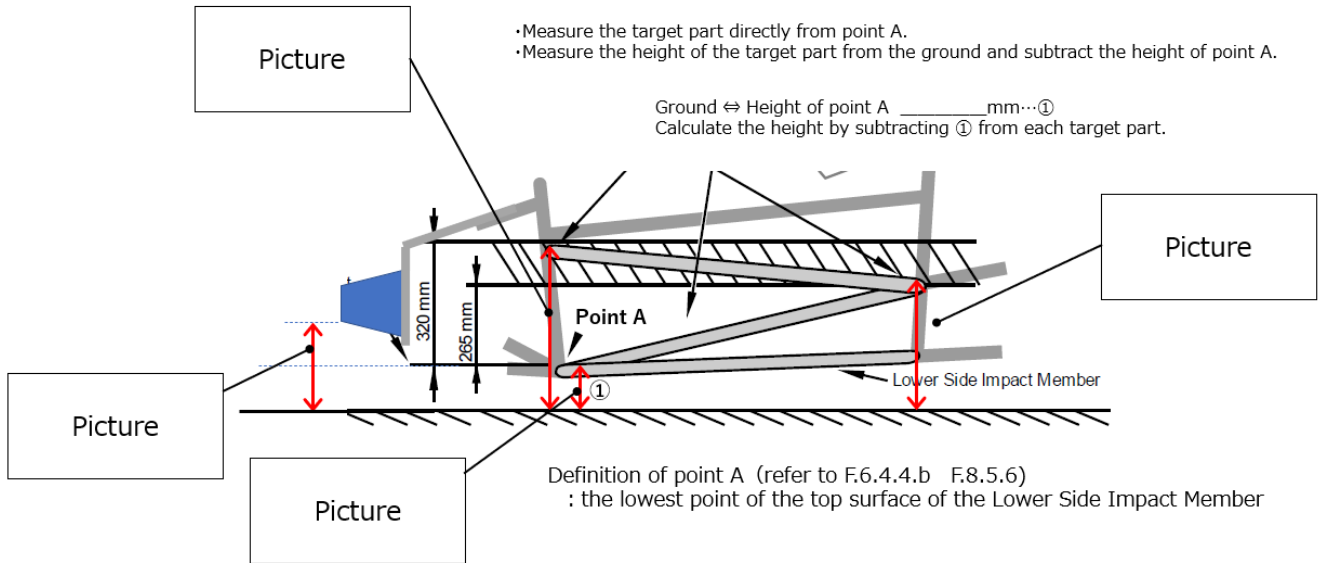
### **J2025-D-06 Cone Penalties in Endurance Event**

**(refer to rule Formula SAE® Rules 2025 D.12.12.1)**

In the Endurance Event, if a car incurs more than nine cone penalties, the number of penalties will be rounded up to the nearest ten, and the car will be penalized by 30 seconds for each multiple of ten penalties. However, any car that incurs more than 30 cone penalties may be DNF.

## APPENDIX J-F-1 Photo Evidence (J2025-F-02)

The dimensions that can prove conformity to each regulation are presented with photo evidence.



## APPENDIX J-T-1 Driver Harness Installation (J2025-T-02)

		1 Belt		2 Belts
		Shoulder/Lap	Anti-sub	All
Eye-Bolt compliance with JIS B 1168-1994	M8	Not OK	OK	Not OK
	M10 or more	OK	OK	Not OK
above as Pad-Eye (welded all perimeter)	M8 or more	OK	OK	Not OK

**APPENDIX J-VE-1 Vehicle Number stickers (J2025-VE-01)**

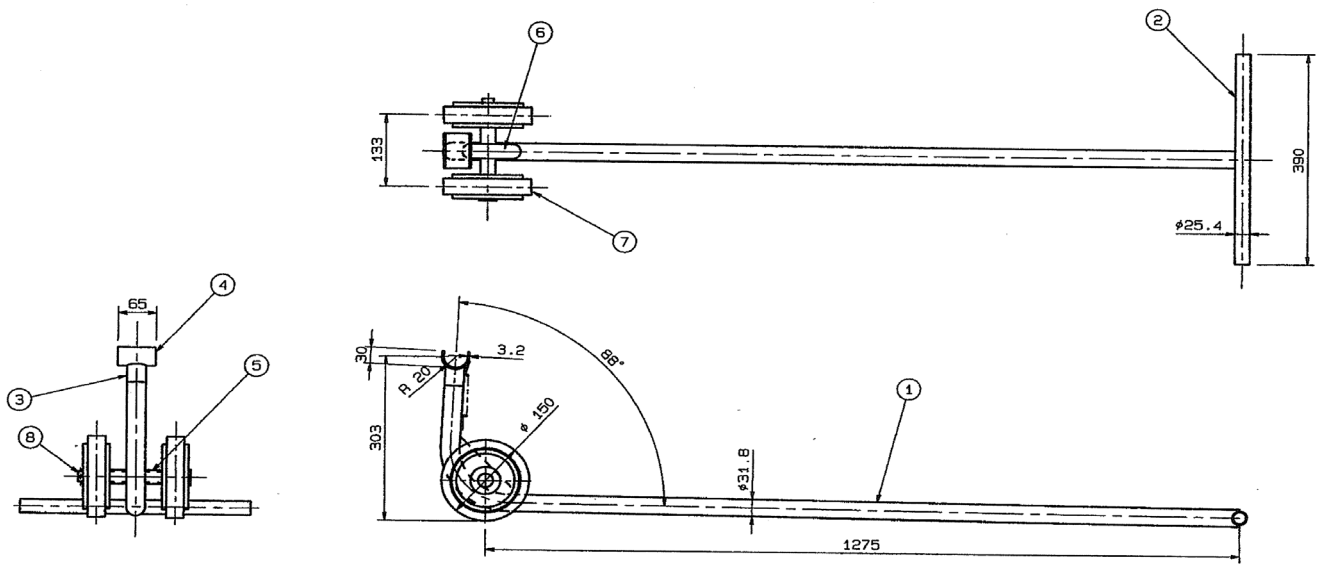
[ICV class]



[EV class]



**APPENDIX J-VE-2 Quick Jack (J2025-VE-05)**

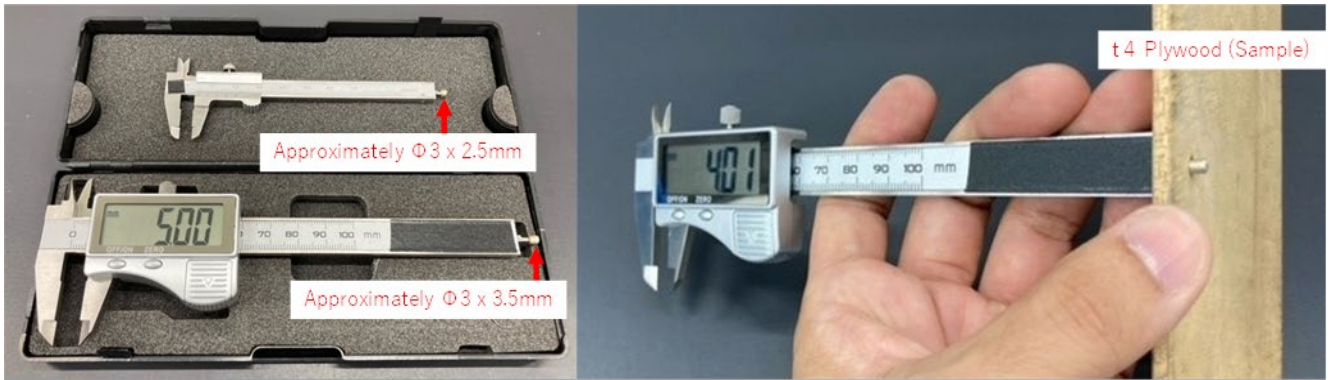


8		SHAFT	1	S45C
7		TYRE	2	
6		GUSSET	1	SPCC t1.6
5		HOUSING	1	SPCC t3.4x2.3
4		SUPPORT	1	SPCC t3.2
3		NECK	1	SS400
2		HANDLE	1	SIKW25.4t1.6
1		MAIN TUBE	1	SIKW31.8x1.6
		QUICK LIFT JACK	1	
NO	PART NO	NAME	QTY	MATERIAL





**APPENDIX J-IN-1 Special caliper for measuring laminate thickness (J2025-IN-08)**



**APPENDIX J-S-1 Systems in Cost Report**  
**(refer to Formula SAE® Cost Event Supplement\_V3.0 CL.1)**

The Cost Report must follow the organized list of Systems in the following sequence:

Area	System name	System Designation	Sub System name	Sub System Designation
1	Brake System	BR	Master Cylinder and Balance Bar	BR-MB
			Calipers and Discs	BR-CD
			Brake Lines and Other	BR-LO
2	Drivetrain --- ICV case ---	DT	Engine	DT-EN
			Intake and Exhaust	DT-IE
			Fuel	DT-FU
			Cooling	DT-CO
	Drivetrain --- EV case ---	DT	Drivetrain	DT-DT
			EV System	DT-EV
			Auxiliary Parts	DT-AU
			Cooling	DT-CO
3	Frame & Body	FR	Frame	FR-FR
			Cowl and Aerodynamic Parts	FR-CA
			Pedals and Shifter	FR-PS
			Final Assembly	FR-FA
4	Electrical --- ICV case ---	EL	Wire Harness	EL-WH
			Dash Panel and ECU	EL-DP
			Battery and Others	EL-BO
	Electrical --- EV case ---	EL	Wire Harness	EL-WH
			Dash Panel	EL-DP
			Others	EL-BO
5	Miscellaneous, Finish and Assembly	MS	-----	-----
6	Steering System	ST	Steering Rack	ST-RA
			Steering Wheel and Shaft	ST-WS
7	Suspension System	SU	Springs and Dampers	SU-SD
			Arms and Links	SU-AL
			Stabilizer	SU-ST
8	Wheels, Wheel Bearings and Tires	WT	-----	-----
---	Fasteners (regardless of where used)	FS	-----	-----

Assignment of Assemblies to each System is provided in the Local Rules Appendix J-S-2.

## **APPENDIX J-S-2 System and Assembly List in Cost Report**

(refer to Formula SAE® Cost Event Supplement\_V3.0 CL.4, CL.5 and CL.6)

### **A) SYSTEM AND ASSEMBLY LIST – ALL VEHICLES**

#### **1. Brake System - BR**

##### **1-1. Master Cylinder and Balance Bar - BR-MB**

Brake Master Cylinder  
Balance Bar  
Clevis  
Hydraulic Fluid Reservoir  
Proportioning Valve

##### **1-2. Calipers and Discs - BR-CD**

Brake Rotor Floating Pins  
Front Brake Discs / Rotors  
Front Brake Pads  
Front Calipers  
Rear Brake Discs / Rotors  
Rear Brake Pads  
Rear Calipers

##### **1-3. Brake Lines and Other - BR-LO**

ABS Kit  
Banjo Bolts  
Brake Cooling Ducts  
Brake Fluid  
Brake Lines

#### **3. Frame & Body - FR**

##### **3-1. Frame - FR-FR**

Composite Monocoque Chassis  
Frame / Frame Tubes  
Mounts Integral to Frame

##### **3-2. Cowl and Aerodynamic Parts - FR-CA**

Cowl / Body  
Floor Pan  
Front Wing  
Rear Wing

##### **3-3. Pedals and Shifter - FR-PS**

Accelerator Pedal / Throttle Controls  
Brake Pedal  
Clutch Pedal / Lever  
Shifter  
Shifter Cable / Linkage

##### **3-4. Final Assembly - FR-FA**

Final Assembly

#### **5. Miscellaneous, Finish and Assembly - MS**

Driver's Harness  
Firewall  
Headrest / Restraints  
Impact Attenuator  
Mirrors  
Paint - Body

Paint - Frame

Seats  
Shields

#### **6. Steering System - ST**

##### **6-1. Steering Rack - ST-RA**

Rod Ends / Clevis  
Steering Rack  
Tie Rods

##### **6-2. Steering Wheel and Shaft - ST-WS**

Steering Shaft  
Steering Wheel  
Steering Wheel Quick Release

#### **7. Suspension System - SU**

##### **7-1. Springs and Dampers - SU-SD**

Front Bell Cranks  
Front Pushrods / Pullrods  
Front Shocks / Dampers  
Front Springs  
Rear Bell Cranks  
Rear Pushrods / Pullrods  
Rear Shocks / Dampers  
Rear Springs  
Rod Ends

##### **7-2. Arms and Links - SU-AL**

Front Lower A-Arms  
Front Upper A-Arms  
Front Uprights  
Rear Links  
Rear Lower A-Arms  
Rear Upper A-Arms  
Rear Uprights  
Rod Ends

##### **7-3. Stabilizer - SU-ST**

Front Suspension Stabilizer  
Rear Suspension Stabilizer

#### **8. Wheels, Wheel Bearings and Tires - WT**

Front Hubs  
Front Wheel Bearings  
Lug Nuts Rear Hubs  
Rear Wheel Bearings  
Tires  
Valve Stems  
Wheel Studs  
Wheel Weights  
Wheels

## **B) SYSTEM AND ASSEMBLY LIST – INTERNAL COMBUSTION VEHICLES**

### **2. Drivetrain – DT**

#### **2-1. Engine - DT-EN**

Engine  
Engine Mounts  
Engine Oil

#### **2-2. Intake and Exhaust - DT-IE**

Air Filter  
Carburetor  
Exhaust Manifold  
Intake Manifold  
Muffler  
Restrictor  
Throttle Body  
Turbocharger / Supercharger

#### **2-3. Fuel - DT-FU**

Fuel Filter  
Fuel Injectors  
Fuel Lines/Rails  
Fuel Pressure Regulator  
Fuel Pump  
Fuel Tank  
Fuel Vent / Check Valve

#### **2-4. Cooling - DT-CO**

Coolant  
Coolant Lines  
Hose Clamps  
Oil Cooler  
Overflow Bottles  
Radiator  
Radiator Fans

#### **2-5. Drivetrain - DT-DT**

Axles  
Chain / Belt  
CV Joints / U Joints  
Differential  
Differential Bearings  
Differential Mounts  
Differential Oil  
Shields  
Sprockets / Pulleys

### **4. Electrical - EL**

#### **4-1. Wire Harness - EL-WH**

Connectors  
Wire Harness

#### **4-2. Dash Panel and ECU - EL-DP**

CCM  
Dash Panel  
Data Logger  
Displays  
ECU / Engine Electronics  
Indicator Lights  
Switches / Buttons / Controls

#### **4-3. Battery and Others - EL-BO**

Battery  
Brake Light  
Bulbs  
Fuses  
Gages (any)  
Relays  
Solenoid

## C) SYSTEM AND ASSEMBLY LIST – ELECTRIC VEHICLES

### **2. Drivetrain - DT**

#### **2-1. EV System - DT-EV**

Accumulator Container  
Accumulator Isolation Relays (AIR)  
Accumulators / Batteries  
Battery Management System (BMS/AMS)  
CCM  
Cell Module  
Converter (AC-DC / DC-DC)  
ECU  
HV Wiring  
Inertia Switch  
Motor Controller  
Motor Mounts  
Motors

#### **2-2. Auxiliary Parts - DT-AU**

Isolation Monitoring Device (IMD)  
Tractive System Active Light  
TSMP

#### **2-3. Cooling - DT-CO**

Coolant  
Coolant Lines  
Hose Clamps  
Overflow Bottles  
Radiator  
Radiator Fans

#### **2-4. Drivetrain - DT-DT**

Axles  
Chain / Belt  
CV Joints / U Joints Differential  
Differential Bearings  
Differential Mounts  
Differential Oil  
Shields  
Sprockets / Pulleys

### **4. Electrical - EL**

#### **4-1. Wire Harness - EL-WH**

Connectors  
Wire Harness (LV)

#### **4-2. Dash Panel - EL-DP**

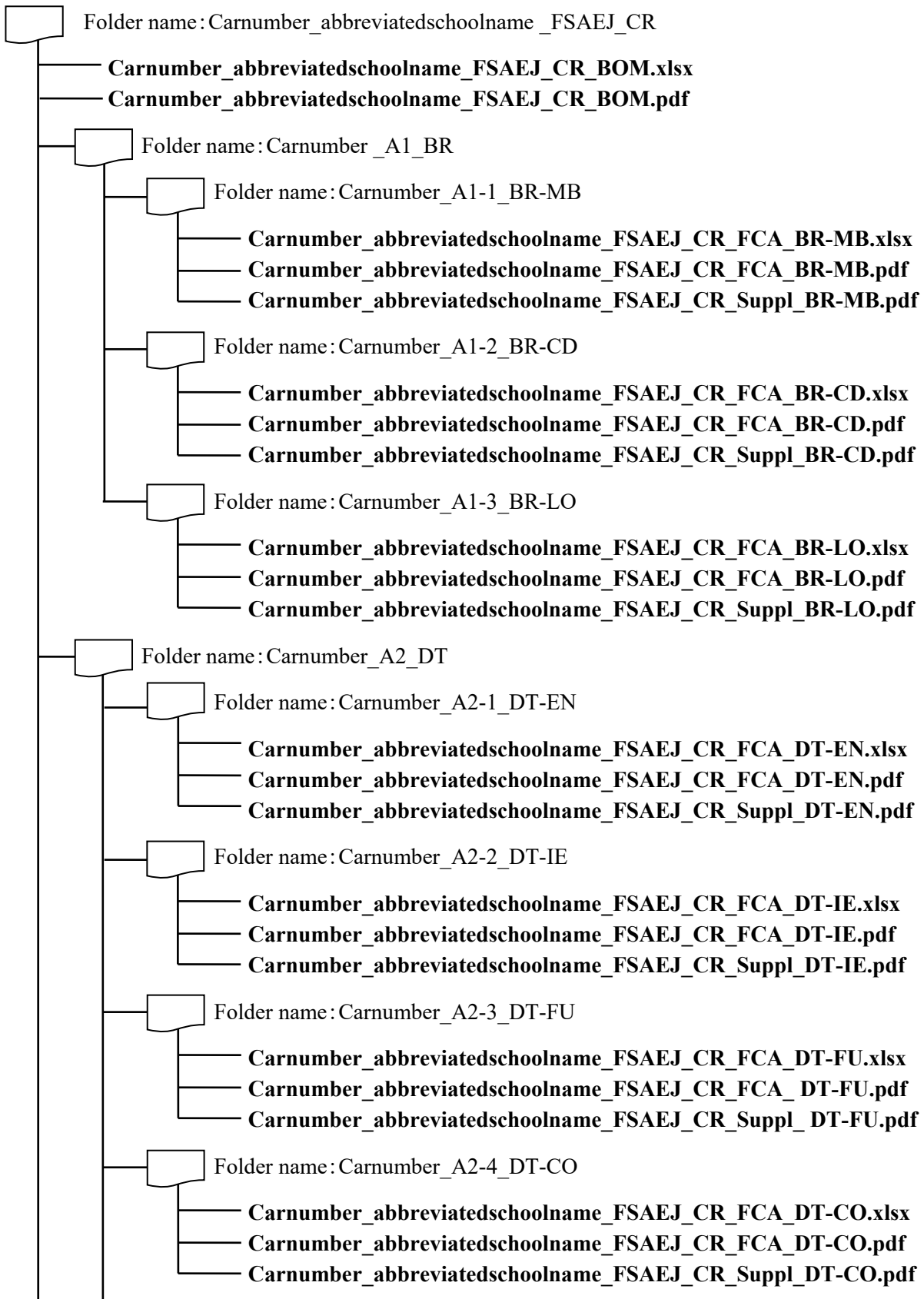
Dash Panel  
Data Logger  
Displays  
Indicator Lights  
Switches / Buttons / Controls

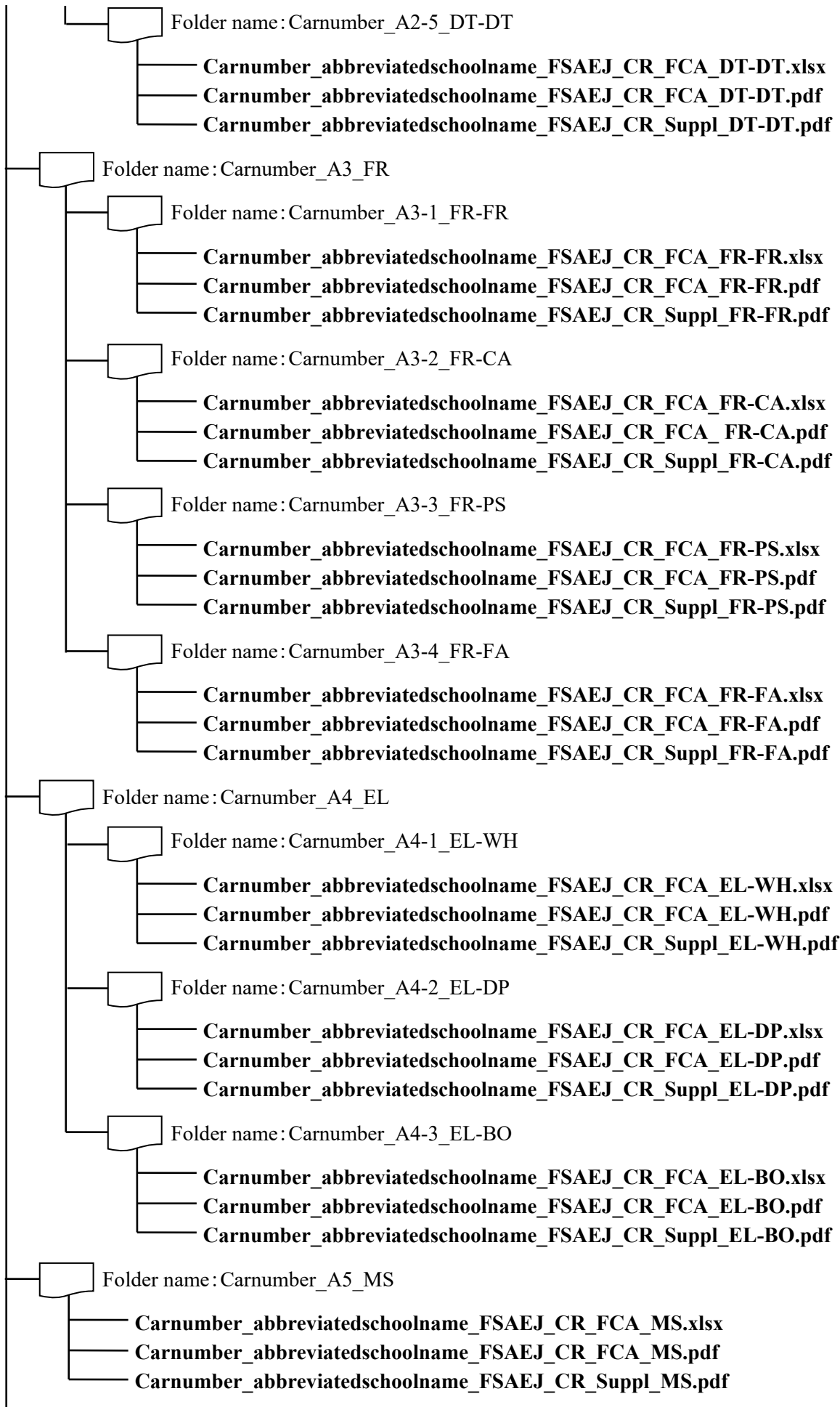
#### **4-3. Others - EL-BO**

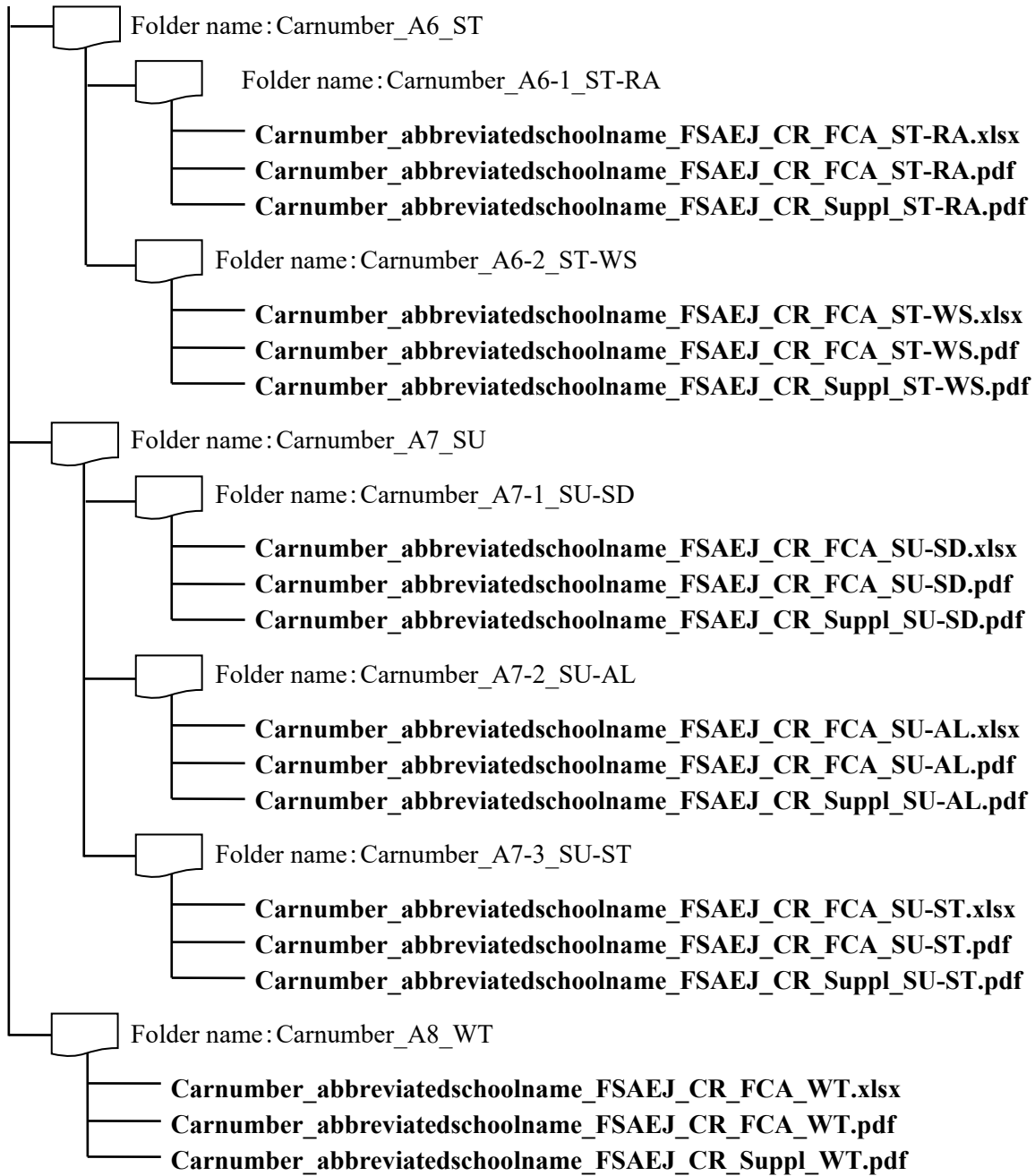
Brake Light  
Bulbs  
Fuses  
Gages (any)  
Relays  
Solenoids

**APPENDIX J-S-3 Structure of Cost Report electric data – ICV case**

The folder hierarchy of cost report electronic data must be created in the hierarchy shown below. The abbreviated school name must consist of no more than 30 letters.



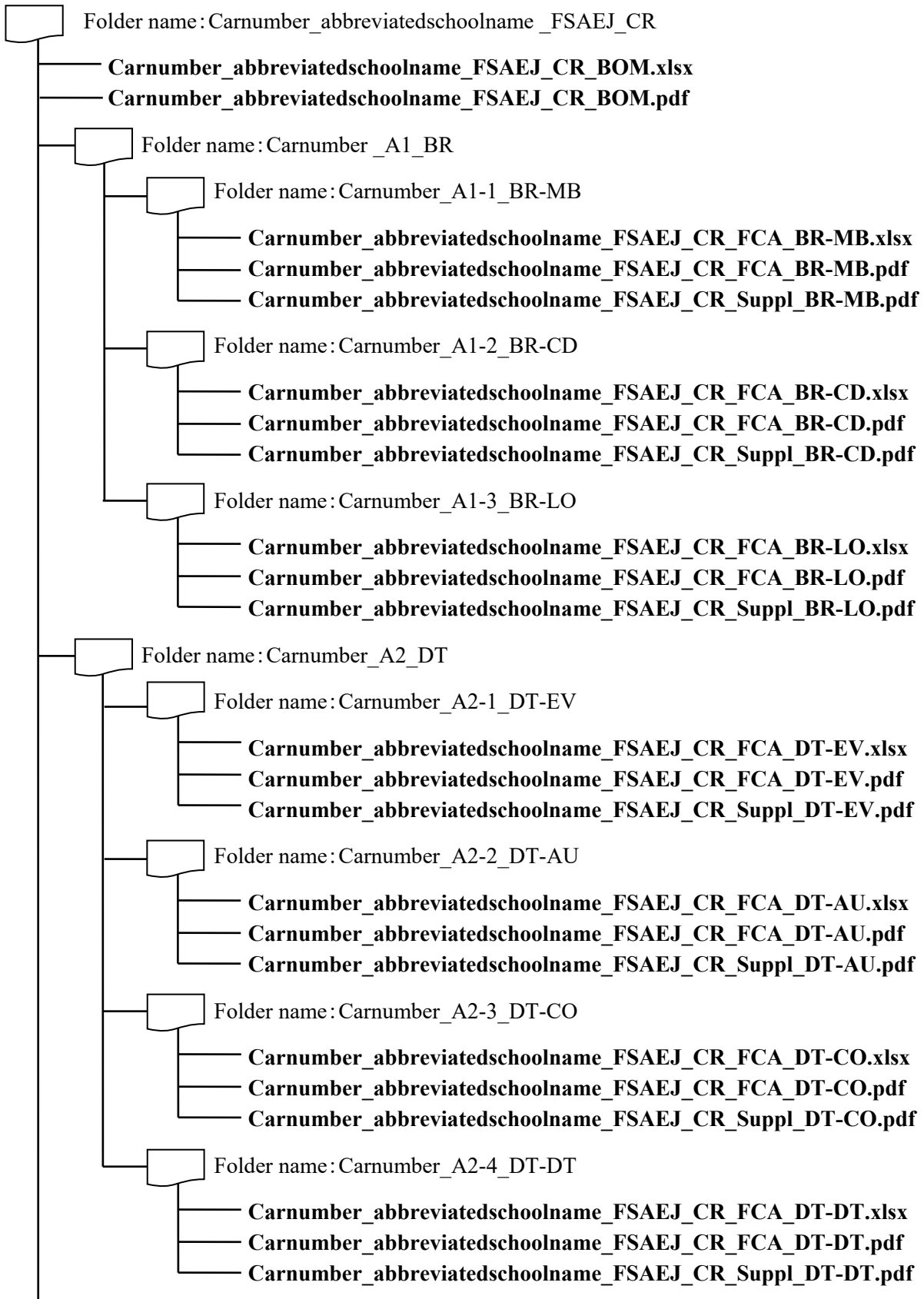


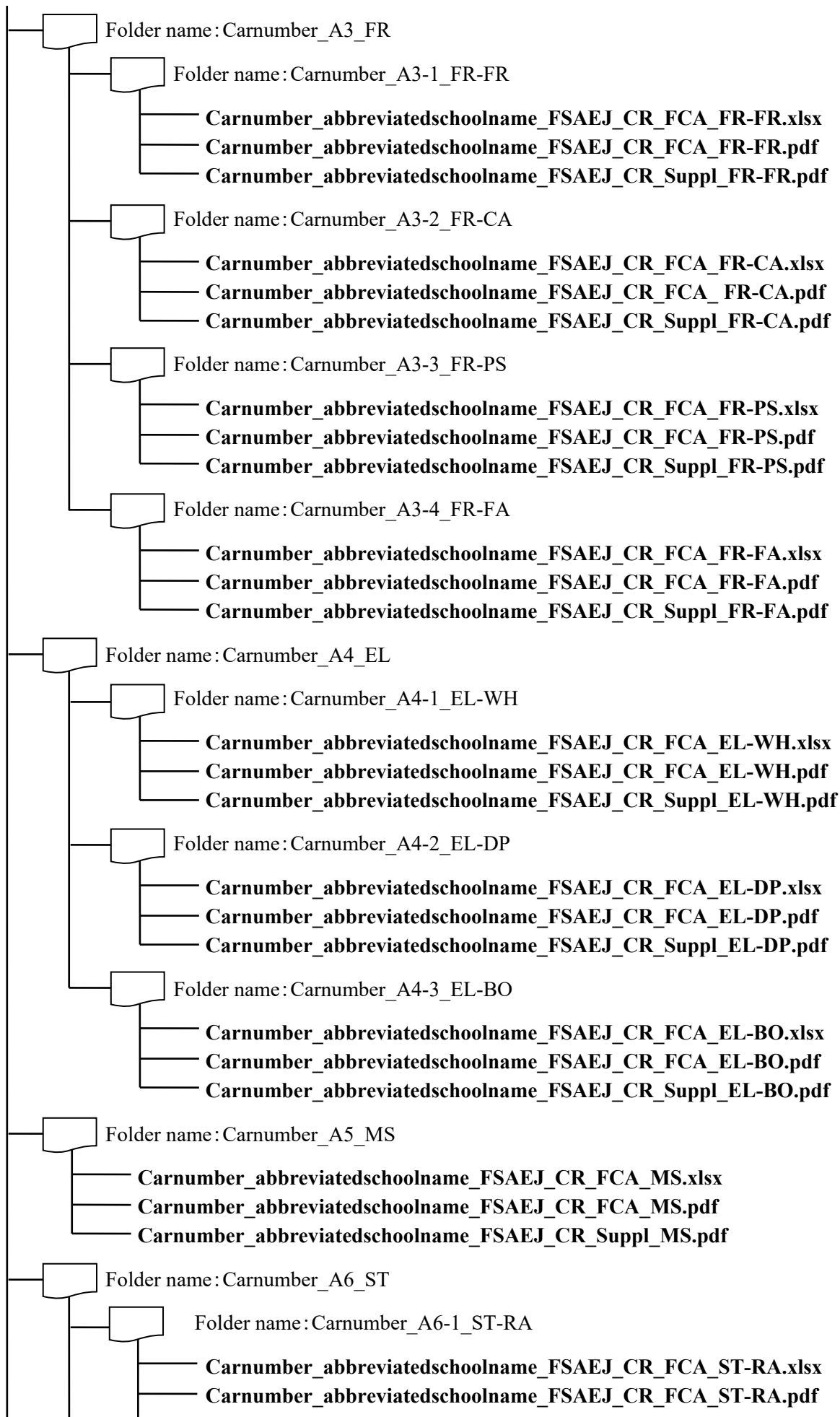


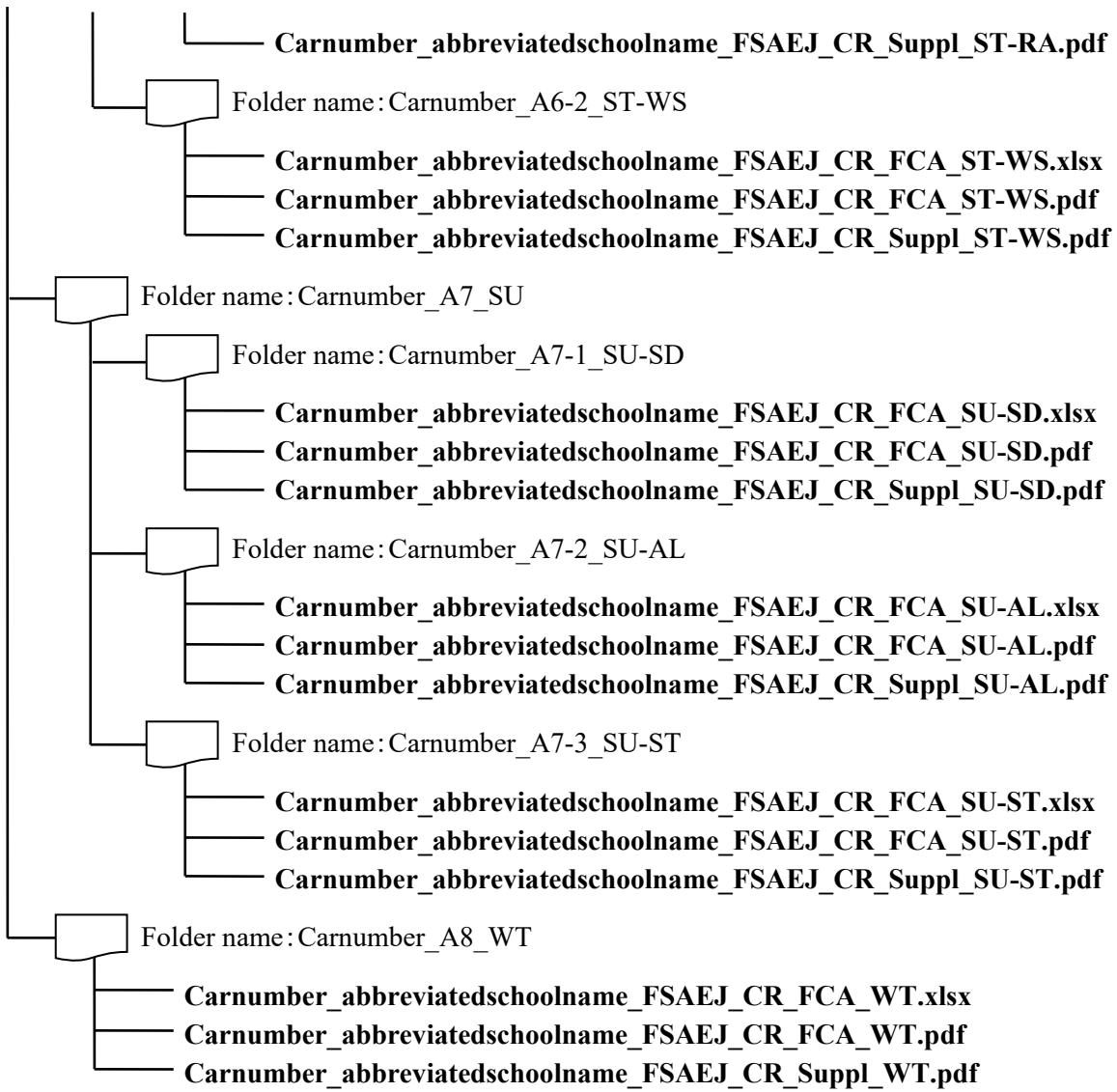


**APPENDIX J-S-4 Structure of Cost Report electric data – EV case**

The folder hierarchy of cost report electronic data must be created in the hierarchy shown below. The abbreviated school name must consist of no more than 30 letters.







**APPENDIX J-S-5 Design Judging coverage of each judge**

In the Q&A session, the judges will discuss with the team members in accordance with the coverages below.

JUDGE CATEGORY	JUDGING COVERAGE		
	ORGANIZATION, FEASIBILITY STUDY AND VALIDATIONS	HARDWARE	SOFTWARE AND CONTROLLING
BODY	Team management/Overall layout/Ergonomics	Frame/Monocoque/Cowls/Aero devices/Driver interfaces, meter, indicator/Cockpit control, pedals, switches, and levers	Body control, display control
SUSPENSION	Vehicle dynamics simulation and validation /Suspension kinematics and mechanics/Tire data	Suspension system/Brake system/Steering system/Wheels and tires	Brake Control (ex. ABS)/Steering control (ex. 4WS)/Vehicle dynamics control (over multiple tires, ex. Yaw control)
POWER-TRAIN (ICV and EV respectively)	Power dyno/Drivetrain simulation and testing/HV testing/EMC test/Noise testing/Cooling simulation and testing	Engine/Intake and Exhaust system/Motor/Fuel system/Energy storage system/High Voltage systems/Inverters and converters/Transmission and clutch/Final Drive and differential gear/Cooling system/Low voltage systems	Throttle control/Fuel control/Battery management/Energy management (power output and re-generation)/Vehicle communication/Functional safety/Traction control (longitudinal only)

※Topics such as data logging, infotainment, simulations, material studies and application/tuning are judged in the category of its intended usages.

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