

2021 Formula SAE Japan Local Rules Number 2

Issued: August 6, 2021 (Second Edition)

The purpose of this document is to inform of the local rules that must apply to 2021 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 2021 Formula SAE Japan only.

Formula SAE Japan Rules Committee

J2021-2-01 Schedule for Online Static Events (refer to 2021 FSAEJ Participation Rules Article 18, 19, 20)

-End of May, 2021: Guideline for Online Static Events.

-End of July, 2021: Static Document Results with penalties

-August 24 and 25, 2021: Presentation Event.

-August 26 and 27, 2021: Design Event. **-September 2, 2021:** Design FINAL Event.

-August 31 and September 1, 2021: Cost and Manufacturing Event.

Online platform will be Cisco Webex Meetings

J2021-2-02 Submission Documents for Static Events (refer to 2021 FSAEJ Participation Rules Article 13)

Category	Items to be submitted	Submission format at (file format/maximum size)	Submit to	Refer to	Deadline	Delay Deadline				
Cost and Manufacturing Event	Cost Report : Electronic data		Team page	Local Rules J2021-2-10	14:00, June 2	14:00, June 4				
	Entry sheet for Cost Report	dedicated format for FSAEJ, Excel/3M								
	*Total 300MB	Bill of Materials (BOM) *	dedicated format for FSAEJ, Excel and PDF				/			
		Cost calculation data (FCA) for each part*								
		Supporting documentation for cost calculation*	PDF							
	Photos of the assembly parts	PDF(zip)/30MB	Team page					Local Rules J2021-2-11	14:00, Aug. 2	-
	Photos of the vehicle	PDF(zip)/3MB							14:00, Aug. 23	-
	Cost Event Addendum (When there is a design change.)	PDF/20MB	Team page					Local Rules J2021-2-12	14:00, Aug. 25	-
Real case scenario	PDF/3MB	Team page	Local Rules J2021-2-18	14:00, Aug. 30	-					
Design Event	Design Documents		Team page	Local Rules J2021-2-23	14:00, June 15	14:00, June 17				
	Design Report	PDF/10MB								
	Design Specification Sheet	Excel/3MB								
	Design Video	Guideline								
	Design Photos	Guideline		Local Rules J2021-2-25	14:00, Aug. 2					
Presentation Event	Sales Presentation Document (SPD)	dedicated format for FSAEJ, PDF/10MB		Local Rules J2021-2-05	14:00, June 22	14:00, June 24				

The following penalty will be counted on the Overall Score

Category	Submission past deadline	Re-submission	Required level not achieved	Non-submission
Cost and Manufacturing Event	Uniform 20-point penalty	40-point penalty	Regarded as “not submitted”	Disqualified from FSAEJ or Penalized
Design Event				
Presentation Event				

J2021-2-03 Document Screening for Static Events (refer to Formula SAE® Rules 2021 DR.3.4, 2021 FSAEJ Participation Rules Article 13)

Judges chooses case A or case B if the following Documents of the Static Event is not submitted or equivalent to not submitted.

Events	Documents/Items	Case A	Case B
Cost and Manufacturing	Cost Report	Disqualified from FSAEJ	Removed from Cost and Manufacturing Event and score -100 points in Total Score
Design	Design Documents	Disqualified from FSAEJ	Removed from Design Event and score -20 points in Total Score
	Design Video		
Presentation	Sales Presentation Document	Disqualified from FSAEJ	Removed from Presentation Event and score -20 points in Total Score

J2021-2-04 Presentation Concept (refer to Formula SAE® Rules 2021 S.2.2, 2021 FSAEJ Participation Rules Article 18)

The concept for the Presentation Event in FSAEJ is as follows:

Your company [simulated by team] develops and sells FSAE vehicles.

Your company is designing a new vehicle to increase the sales in an existing or new market, and plans to committing the consignment company [simulated by Presentation Judges] to manufacture it again or anew.

If your team is a rookie, please offer on your business plan.

If your team has participated in Japanese competition(s) before, the presentation of the previous competition is recognized as “the initial plan”, and it is being produced by the consignment company. However, your vehicle has been in a business slump of only achieving 80% sales and 50% profit of the initial plan, making it insufficient to update the facility.

Either case, your company is/becomes unable to purchase all the products with the inadequate cash flow forecasts even if the production is performed according to your business plan of a rookie team/the initial plan from the previous competition.

Today, your company is expected to make a presentation for business acquisition/recovery. Your presentation time is 10 minutes due to other commitments.

Appendix:

Your company [simulated by team] is an existing company if your team is not a rookie.

This means the consignment company [simulated by Presentation Judges] has already been producing 5 companies’ products, including your company, which production capacity is 150% to the present productions.

(e.g., if your production plan was 100 vehicles:

100×0.8×1.5=120 vehicles, the production capacity for your company)

The profits of the consignment company are distributed equally to its shareholders, employees, and updating facilities. However, for existing companies, the previous profits return was 80% to the shareholders, 20% to the employees, and 0% to updating facilities from the initial plan.

The interviewers of your presentation are composed of each different carrier and business experience, Engineering, Manufacturing, Sales Planning, Marketing, and Material Procurement.

J2021-2-05 Submission of Sales Presentation Document (SPD) (refer to Formula SAE® Rules 2021 S.2.2, S.2.4, 2021 FSAEJ Participation Rules Article 13)

The following details must be described in the Sales Presentation Document according to the Presentation Concept.

- Your company's Profile
(e.g., Capital Stock, Business Type, Number of employees, Activity Base, Revenue, Sales Revenue, etc.)
- Review from the previous competition [ONLY FOR non-rookies]: Problems and actions for the current year
- Market Analysis
- Sales Strategy
- Business Targets
- Vehicle Strategy and Performance for promoting its sales
- Plans for Efficient Design to the consignment company [simulated by Presentation Judges]

Descriptions in this document related to the formula car to be sold are required to be consistent with the Design Report. However, teams are permitted to make changes related to cost in accordance with the business plan.

The minimum font size in the Sales Presentation Document must be 10-point (DTP) for both English and Japanese descriptions.

A detailed description means a logical and convincing description without blanks in the SPD form.

If SPD is deemed too weak to be considered, it will be regarded as “not submitted”.

(We expect at least 2/3 of the SPD form to be filled out.)

J2021-2-06 Procedure for Presentation Event (refer to Formula SAE® Rules 2021 S.2.3, S.2.5, S.2.6, 2021 FSAEJ Participation Rules Article 18)

The Presentation Event will be held online on specified dates. For details on how to set up the Online Event, please refer to the Guideline for Online Static Events to be published at the end of May.

The following times are allotted to each team in the Presentation Event: no more than 15 minutes to set up the necessary equipment, no more than 10 minutes for the actual presentation, and a question and answer session lasting approximately 5 minutes. Teams that fail to set up their equipment within the allotted time and cannot begin their presentation at the scheduled time will be disqualified and receive 0 points.

Points will be deducted from teams that do not finish their presentation within the allotted time.

Presentations must be carried out by a maximum of three team’s presentation members, including those participating in the question and answer session and those operating the equipment. A maximum of six team members, including its presentation members, may be present as an audience during the online presentation.

J2021-2-07 Evaluation Criteria (refer to Formula SAE® Rules 2021 S.2.7, 2021 FSAEJ Participation Rules Article 18)

If an inconsistency exists between the presentation and Sales Presentation Document, the details must be announced at the beginning of the presentation.

J2021-2-08 Cost and Manufacturing Event (refer to 2021 FSAEJ Participation Rules Article 19)

1. Cost Report

In accordance with Local Rules **J2021-2-10**, 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 **J2021-2-10**.

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 middle of June 2021.

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 2021, 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.

J2021-2-09 Preconditions for Preparation of Cost Report (refer to Formula SAE® Rules 2021 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.

J2021-2-10 Submission Items for Cost and Manufacturing Event (refer to Formula SAE® Rules 2021 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-4 or J-5.

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 early February 2021). 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 early February 2021). 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-2 and J-3.

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.

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-2 and J-3.

* 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 2021 S.3.9 (see the Cost Tables and Formula SAE® Cost Event Supplement 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 Engine and Drivetrain – EN-EV) and other wire harnesses (Wire Harness: System Electrical – EL-WH), and these must be saved in each system.

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

J2021-2-11 Submit vehicle and assembly parts photos for online review of the Cost and Manufacturing Events

The team must submit photos of the vehicle and assembly parts for online review of the Cost and Manufacturing events.

- Photos submission deadline

Photos of the vehicle. : August 23

Photos of the assembly parts. : August 2 (Only a sub system will be admit to be submitted on August 23 if there are any unfinished assembly parts.)

- State of the photos

Photos of the vehicle. : must follow the Appendix J-6.

Photos of the assembly parts. : must be photos that can identify the specifications of the assembly parts.

- Photos submission format : PDF

- PDF file name

Photos of the vehicle is “Vehicle” only

Photos of the assembly parts is 22 PDF files. (EV is 21 PDF files)

Must follow Local Rule “Appendix J2” and “Appendix J7”.

In the photos of assembly parts, write the assembly parts number for each photos.

The assembly parts number must be the same as the one listed on the BOM.

J2021-2-12 Cost Event Addendum (refer to Formula SAE® Rules 2021 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 2021). 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 for online event.

Addendum must be submitted to the Judges in electronic data (PDF) by August 25 (before to the Cost and Manufacturing Event).

J2021-2-13 Add Item Requests for Cost Tables (refer to Formula SAE® Rules 2021 S.3.8, S.3.10)

The first version of the official Cost Tables for FSAEJ will be released at the end of March 2021 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 April 26 (Mon.), 2021 (JST), Japan time. The final version of the Cost Tables incorporating this information will be issued in the middle of May, 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.

J2021-2-14 Scoring of the Cost Report (refer to Formula SAE® Rules 2021 S.3.12)

If the Adjusted Cost (including penalties) is found to exceed \$ 45,000 in the pre-screening procedure of the Cost Report, the Adjusted Cost will be defined as exactly \$ 45,000.

J2021-2-15 EV incentives in the Cost Report (refer to Formula SAE® Rules 2021 S.3.12)

Give incentive of \$ 8,000 to EV. In this way, as for the Adjusted Cost of EV, it will be reduced \$ 8,000.

J2021-2-16 Scoring of the Cost and Manufacturing Event (refer to Formula SAE® Rules 2021 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.

J2021-2-17 Submitted Items for EV Cost Report Review (refer to Formula SAE® Rules 2021 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.

J2021-2-18 Procedure for the Cost and Manufacturing Event (refer to Formula SAE® Rules 2021 S.3.13, S.3.15)

The Cost and Manufacturing Event will be held online on specified dates. For details on how to set up the Online Event, please refer to the Guideline for Online Static Events to be published at the end of May.

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

(1) Confirmation of consistency between the Cost Report and the Cost Photos, and feedback of document screening results (15 minutes)

The Judges will confirm the consistency between pre-submitted the Cost Photos, Cost Report and Cost Addendum. If any inconsistencies are discovered, penalties will be awarded in accordance with FSAE® Rules 2021 S.3.14.

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

If necessary, the judge will request additional photos. The team must have photos ready that may be required during the online review.

(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 August. (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 August 30.

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.

J2021-2-19 Cost Audit (refer to Formula SAE® Rules 2021 S.3.14)

FSAEJ does not perform a Cost Audit since the Cost Reports are subject to document screening.

J2021-2-20 Excluded Items for Cost Report (refer to Formula SAE® Cost Event Supplement_V2.0 CS.5, Local Rule J2021-1-28)

The Ready-To-Drive-Sound (Tractive System Active Sound (TTAS)) does not have to be included in the Cost Report.

J2021-2-21 Part Numbering on Drawings (refer to Formula SAE® Cost Event Supplement_V2.0 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.

J2021-2-22 Design Event (refer to 2021 FSAEJ Participation Rules Article 20)

In order to ensure fair and accurate judging, the Design Video and Design Photos will be required in addition to the Design Documents (Design Report and Design Spec Sheet).

J2021-2-23 Design Documents (refer to Formula SAE® Rules 2021 DR.2, S.4.2)

The Design Documents must consist of the Design Report and Design Spec Sheet.

The font size on the text pages of the Design Report must be no smaller than 8-point (DTP), both English and Japanese descriptions. The margins at the top, bottom, left, and right of each page must be 10 mm or more. The spacing between characters must not be too narrow. The font size restrictions must not be applied to characters in figures and graphs. If the documents printed by A4 size are unreadable, the part of them will be regarded as blank and scoreless.

The following dimensions must be included in three-view drawings as a minimum requirement: overall length, overall width, overall height, wheelbase, front and rear track, and minimum ground clearance.

All paper design documents must be A4- or letter-sized (8.5×11 inches).

If the Spec Sheet printed by A4 size is composed of more than 2 pages, exceeding pages will not be read. Teams should be careful to modify its format.

NOTE: The design review process begins when the Design Documents are submitted. Teams should understand the significance of the Design Event and submit a highly complete documentation.

J2021-2-24 Design Video

The Design Video is a video within 5 minutes that explains the concept and appeal of the design, showing the vehicle, its components, data graphs, etc. The content and composition depend on the teams. If the video is longer than 5 minutes, the overtime part will not be reviewed. Design video will be uploaded to the team page or submitted to video sites such as YouTube.

The file format of the video, the resolution, file size, etc. will be indicated later. (Scheduled for around April 30)

The deadline to submit the Design Video is the same as the Design Documents. However, the judges understand that the vehicle may not be completed at this time.

The purpose of the Design Video is for the judges to get an overall view of the team's vehicle development, so showing an unfinished vehicle at the time of the submission deadline will not reduce the score. In this case, it is better to show how to get to proceed to the competition.

J2021-2-25 Design Photos

The Design Photos are enlargements of the entire vehicle and details of the cockpit and suspension etc. The upload category will be open at the same time as the Design Document uploads, as the Design Photos will also help at the screening process with the Design Documents. Please upload the Design Photos as soon as possible when they deserve to be upload.

The file format of the photos is planned to be JPEG, and the area to be photographed, direction, number of pictures, resolution, file size, etc. will be indicated later. (Scheduled for around April 30)

J2021-2-26 Procedure for Design Event

The Design Event will be held online on specified dates. For details on how to set up the Online Event, please refer to the Guideline for Online Static Events to be published at the end of May.

The Online Design Event will be conducted by connecting the team's location to the judges via Web Conference. Be ready to connect at least 5 minutes before the instructed time with the vehicle and support materials in front of the team members. A maximum of six team members may be present in the online Design Event. To avoid crowding, the vehicle should be located in a well-ventilated area, and the team members are sure to practice social distancing. The web conference can be accessed 3 minutes before the event.

At the designated time, the judges will have 2 minutes to introduce their expert area and the teams will have 5 minutes to describe their vehicles. At this point, the vehicle should have cowls and ready to drive. Next, we remove the cowl and move to the breakout room, which is divided into three areas: suspension, powertrain, and body. Therefore, the team needs at least three devices to connect to the web conference. (It is

the best for all six members to have their own individual devices).

The Q&A session in each breakout room is limited to 30 minutes, during which time the team members may show video of each part of the vehicle and share verification data, etc., as requested by the judge. Then return from each breakout room for a brief 3 minute review.

There are two stages for Design Event: the first online Design judging for all teams, and the Design Finals for approximately two to four teams selected from the online Design judging. The Design Finals will be conducted online as its first round.

The Online Design Event may be recorded. Also, depending on the status of COVID-19 infection, online judging with the actual vehicle will not be conducted. In this case, the online judging will be conducted using only the Design Photos.

J2021-2-27 Design Event - Vehicle Condition (refer to Formula SAE® Rules 2021 S.4.4)

Design Judges realize that the car at the Design Event might have some design changes after the Design Document and Video submission. In the case of large-scale changes, including differences in the configuration of components, the details of the changes must be declared by teams and explained via documentation at least 24 hours before the online Design Event to email to the FSAEJ Office (formula@jsae.or.jp). The declaration form will be uploaded on the team page by July 31. If unsure whether a declaration is required, teams should confirm in advance by official Q&A. Please note that this does not apply to tuning elements such as wheel rates, shock absorber damping, and the like.

J2021-2-28 Insufficient Redesign

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

APPENDIX J-2 Systems in Cost Report (refer to Formula SAE® Cost Event Supplement_V2.0 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	Engine and Drivetrain --- ICV case ---	EN	Engine	EN-EN
			Intake and Exhaust	EN-IE
			Fuel	EN-FU
			Cooling	EN-CO
	Engine and Drivetrain --- EV case ---	EN	Drivetrain	EN-DT
			EV System	EN-EV
			Auxiliary Parts	EN-AU
			Cooling	EN-CO
3	Frame & Body	FR	Drivetrain	EN-DT
			Frame	FR-FR
			Cowl and Aerodynamic Parts	FR-CA
			Pedals and Shifter	FR-PS
4	Electrical --- ICV case ---	EL	Final Assembly	FR-FA
			Wire Harness	EL-WH
			Dash Panel and ECU	EL-DP
	Electrical --- EV case ---	EL	Battery and Others	EL-BO
			Wire Harness	EL-WH
			Dash Panel	EL-DP
5	Miscellaneous, Finish and Assembly	MS	Others	EL-BO
			-----	-----
			-----	-----
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-3.

APPENDIX J-3 System and Assembly List in Cost Report (refer to Formula SAE® Cost Event Supplement_V2.0 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. Engine and Drivetrain - EN

2-1. Engine - EN-EN

Engine
Engine Mounts
Engine Oil

2-2. Intake and Exhaust - EN-IE

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

2-3. Fuel - EN-FU

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

2-4. Cooling - EN-CO

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

2-5. Drivetrain - EN-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. Engine and Drivetrain - EN

2-1. EV System - EN-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 - EN-AU

Isolation Monitoring Device (IMD)
Tractive System Active Light
TSMP

2-3. Cooling - EN-CO

Coolant
Coolant Lines
Hose Clamps
Overflow Bottles
Radiator
Radiator Fans

2-4. Drivetrain - EN-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

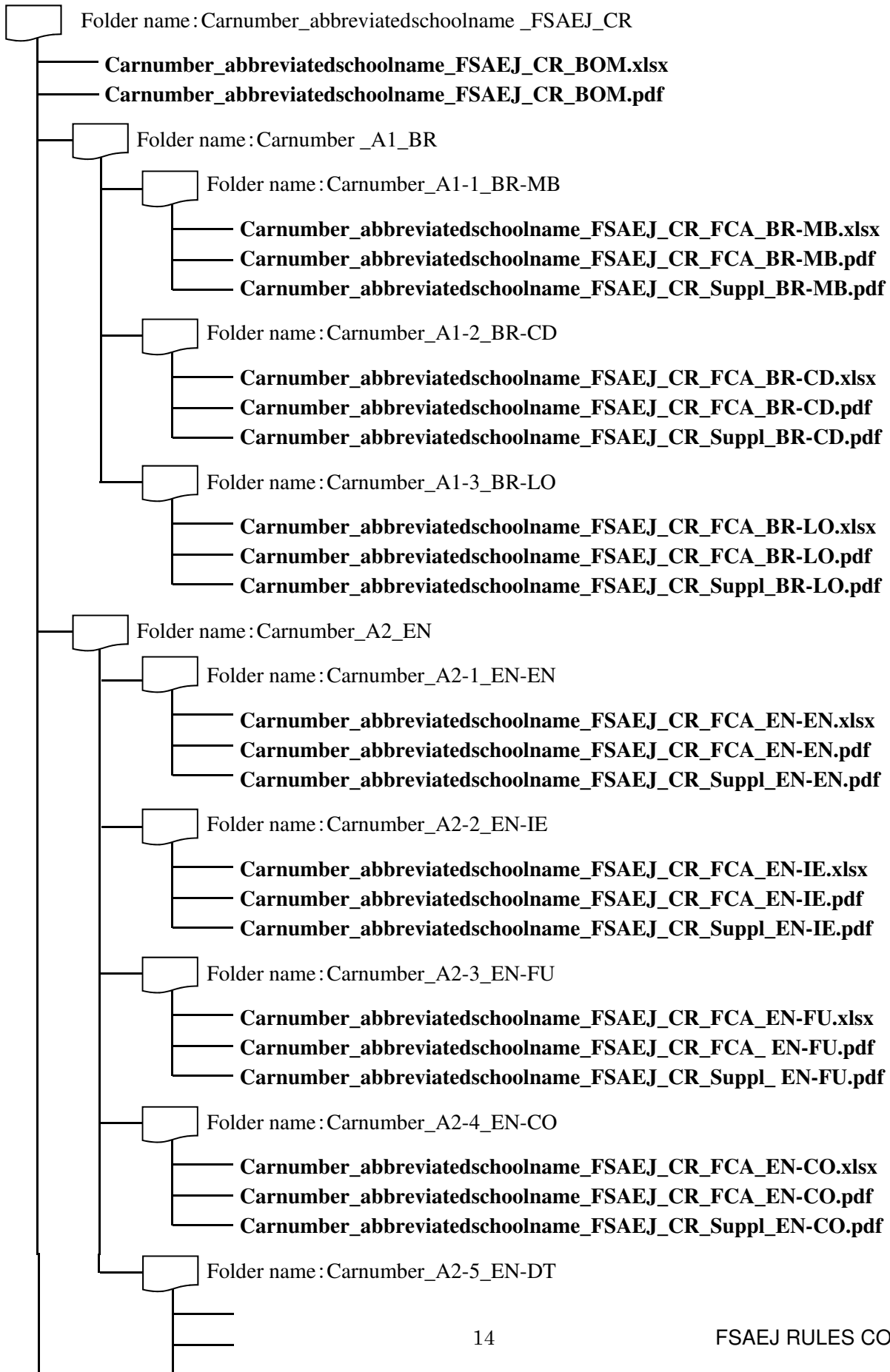
Dash Panel_
Data Logger
Displays
Indicator Lights
Switches / Buttons / Controls

4-3. Others - EL-BO

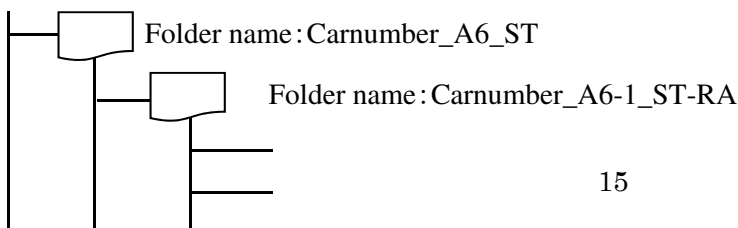
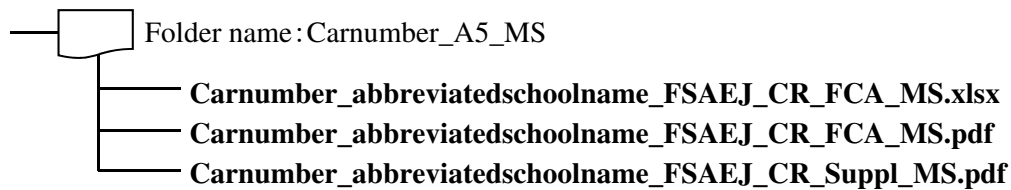
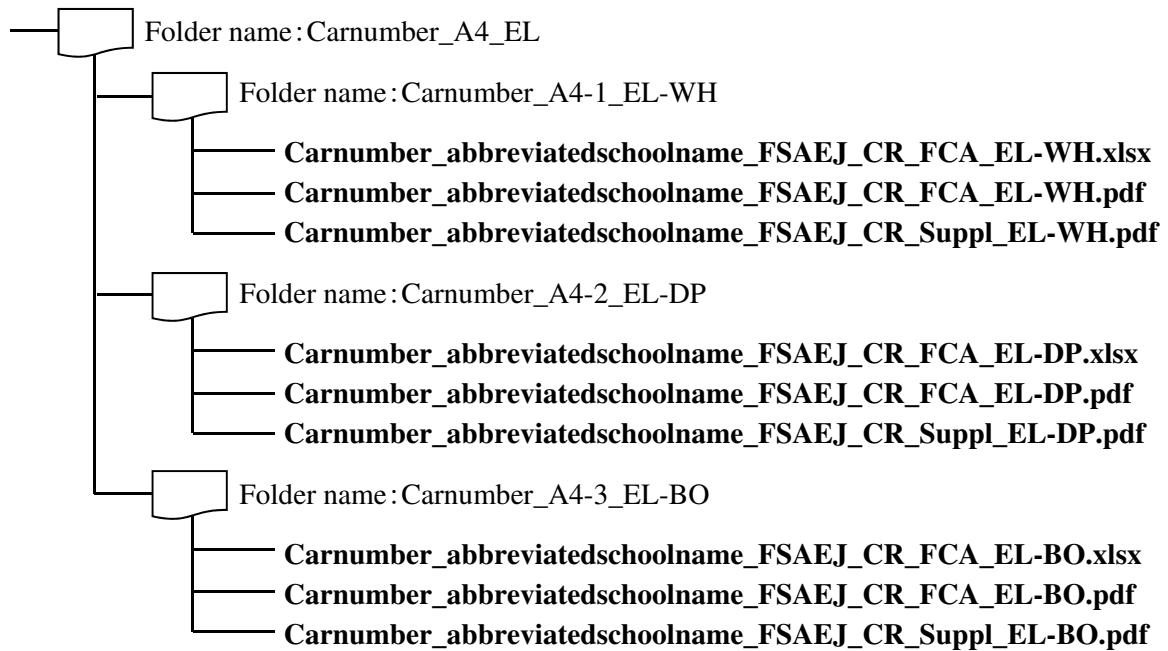
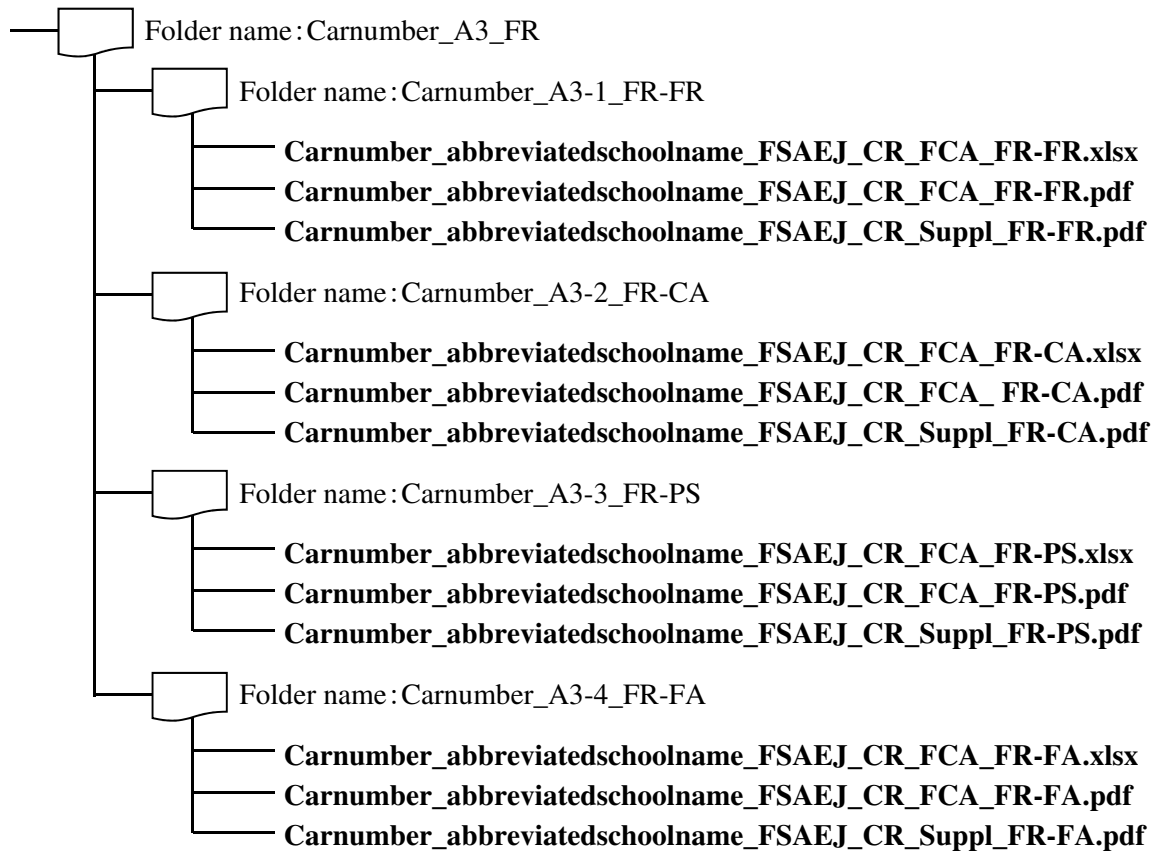
Brake Light
Bulbs
Fuses
Gages (any)
Relays
Solenoids

APPENDIX J-4 Structure of Cost Report electric data – ICV case

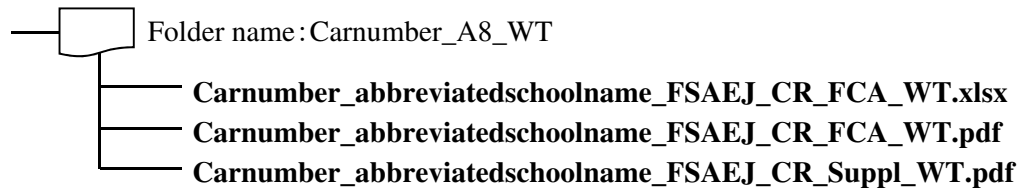
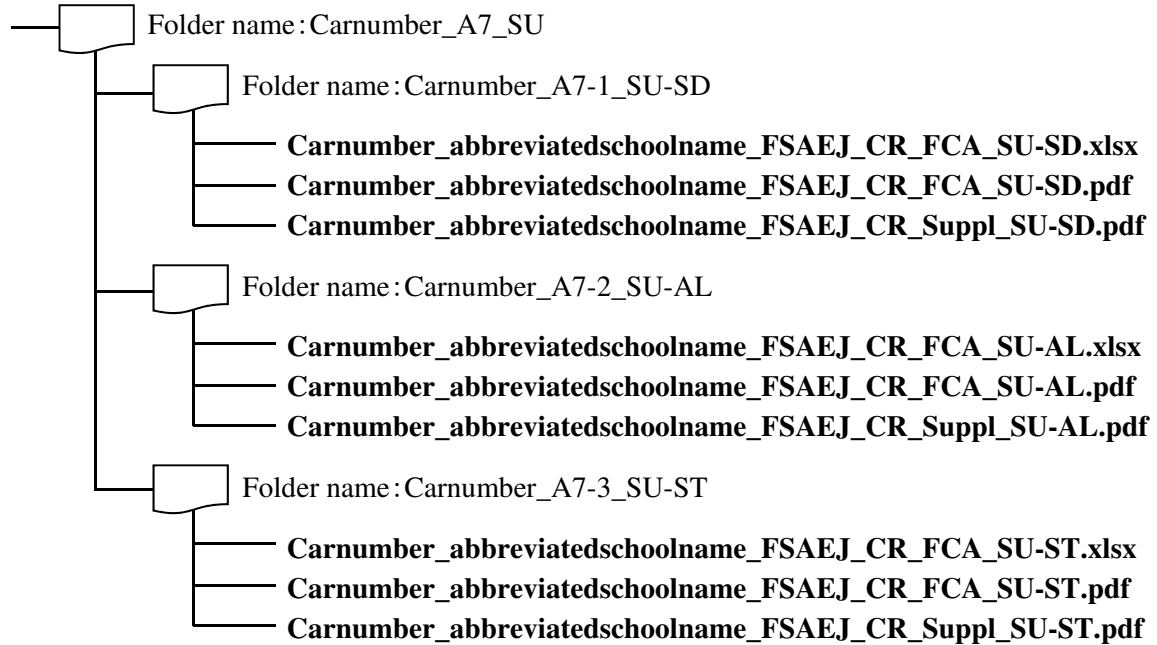
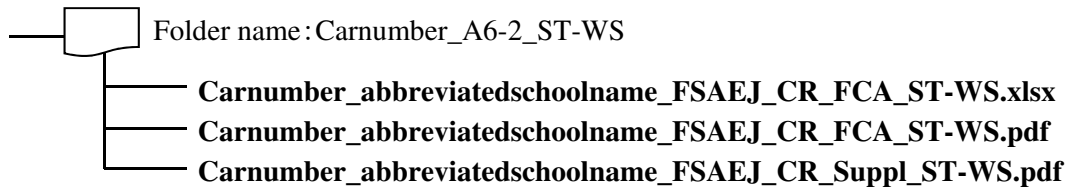
The folder hierarchy of cost report electronic data must be created in the hierarchy shown below. The abbreviated school name must consist of no more than 30 letters.



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Carnumber_abbreviatedschoolname_FSAEJ_CR_Suppl_EN-DT.pdf

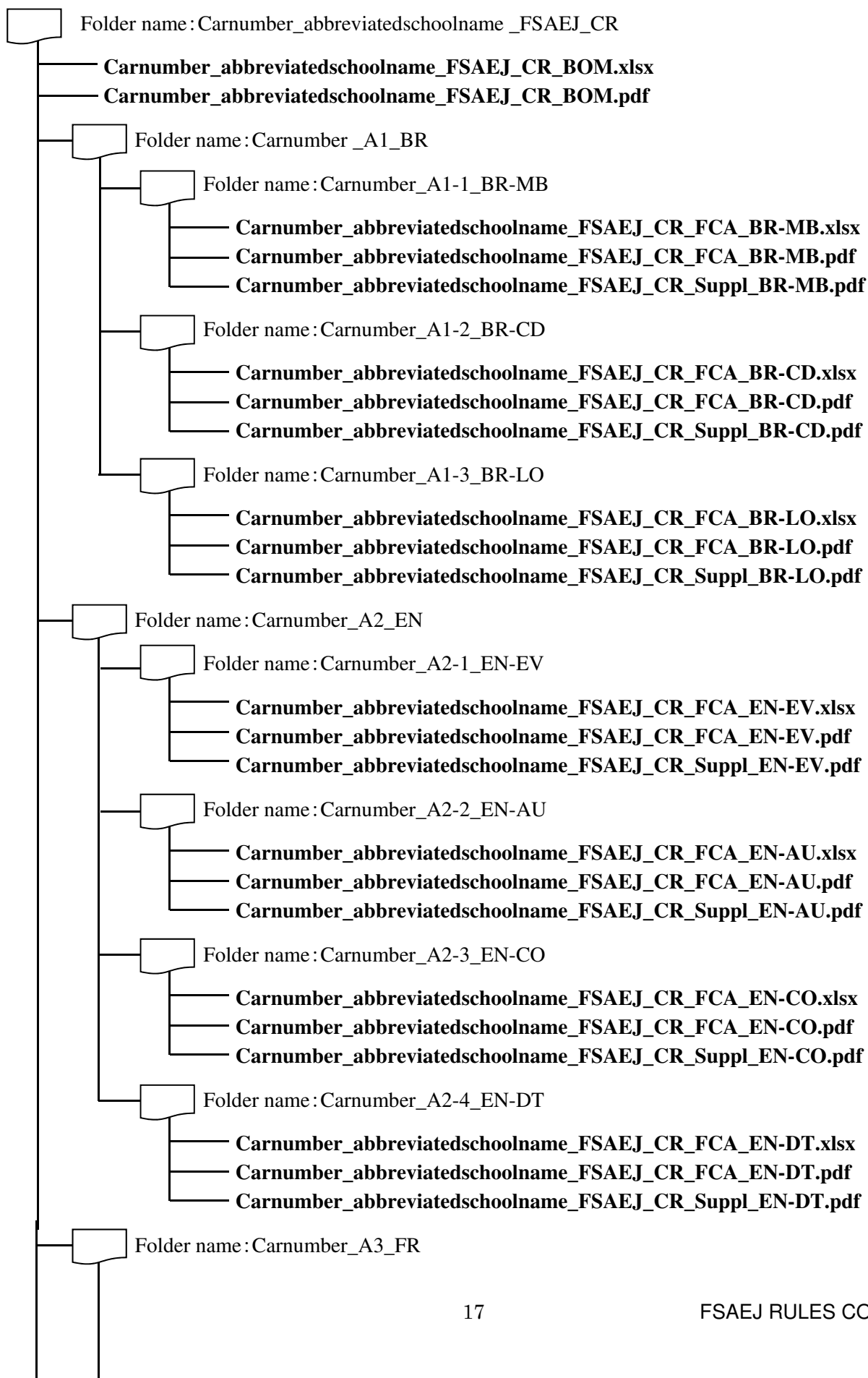


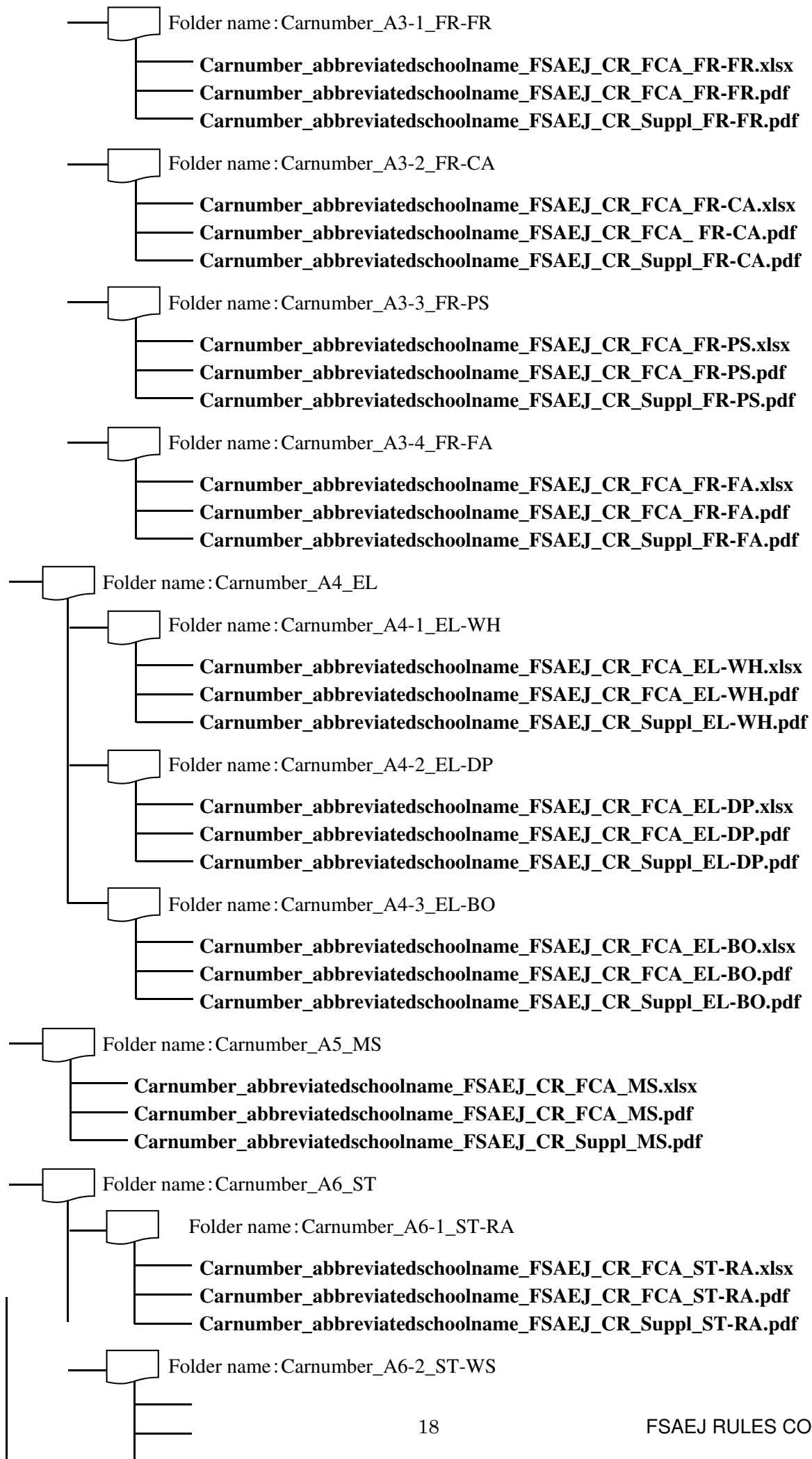
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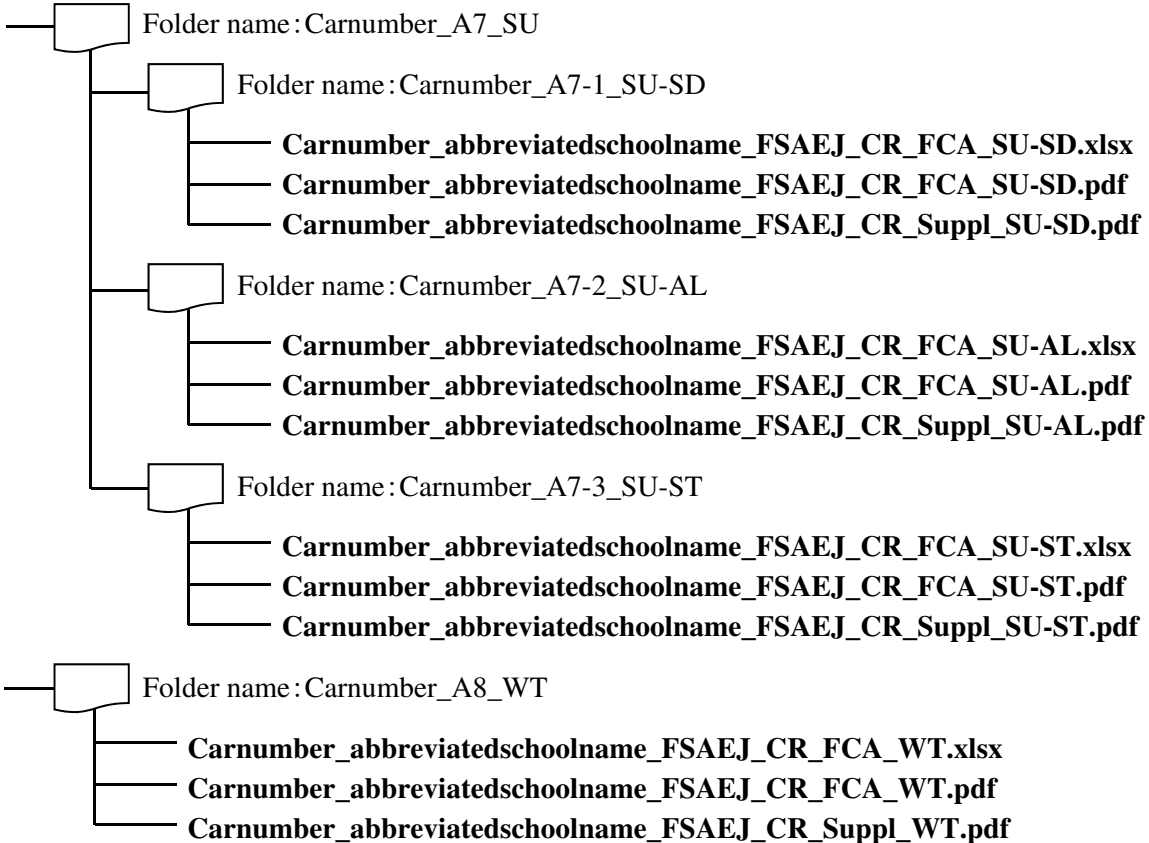
APPENDIX J-5 Structure of Cost Report electric data – EV case

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.





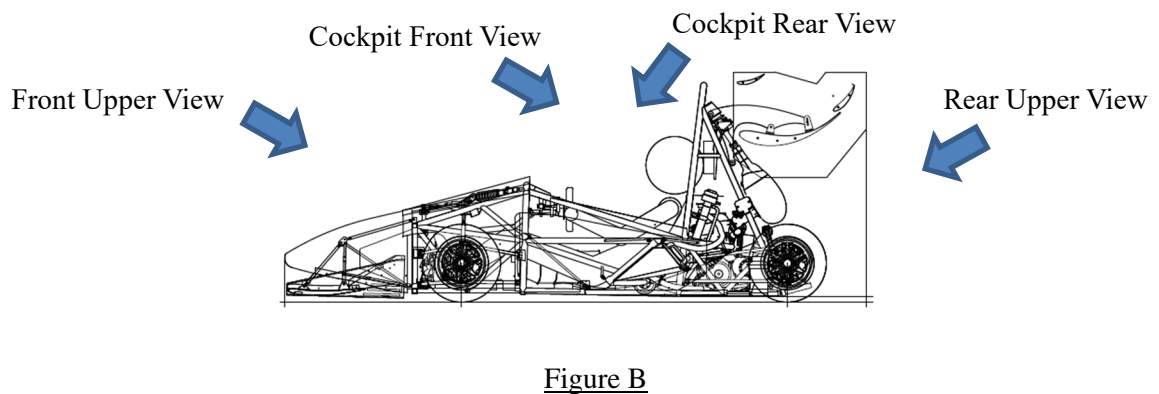
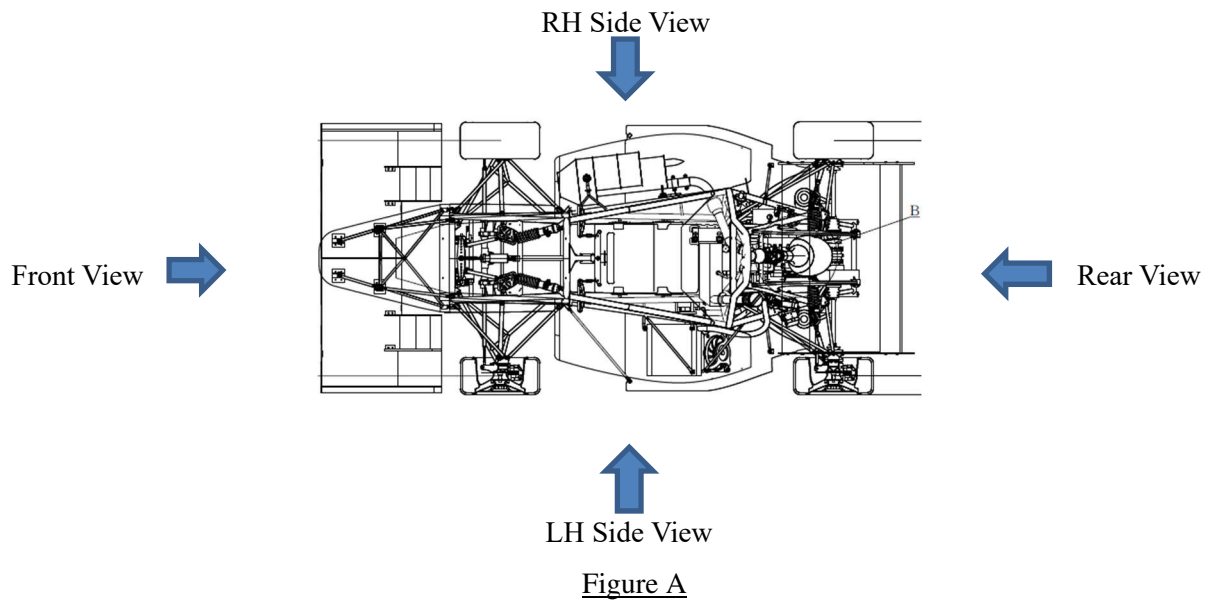
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APPENDIX J-6 Photos of the vehicle

Photos of the completed vehicle taken from the eight directions shown in Figure A and B must be submitted.

1. 8 photos with the cowl.
 2. 8 photos with the cowl removed.
- Total 16 photos.



APPENDIX J-7 PDF file name of the vehicle and the assembly parts

The name of the PDF file of the vehicle and the assembly parts should be as follows.

【ICV case】

- Carnumber_P0_vehicle.pdf
- Carnumber_P1-1_BR-MB.pdf
- Carnumber_P1-2_BR-CD.pdf
- Carnumber_P1-3_BR-LO.pdf
- Carnumber_P2-1_EN-EN.pdf
- Carnumber_P2-2_EN-IE.pdf
- Carnumber_P2-3_EN-FU.pdf
- Carnumber_P2-4_EN-CO.pdf
- Carnumber_P2-5_EN-DT.pdf
- Carnumber_P3-1_FR-FR.pdf
- Carnumber_P3-2_FR-CA.pdf
- Carnumber_P3-3_FR-PS.pdf
- Carnumber_P3-4_FR-FA.pdf
- Carnumber_P4-1_EL-WH.pdf
- Carnumber_P4-2_EL-DP.pdf
- Carnumber_P4-3_EL-BO.pdf
- Carnumber_P5_MS.pdf
- Carnumber_P6-1_ST-RA.pdf
- Carnumber_P6-2_ST-WS.pdf
- Carnumber_P7-1_SU-SD.pdf
- Carnumber_P7-2_SU-AL.pdf
- Carnumber_P7-3_SU-ST.pdf
- Carnumber_P8_WT.pdf

【EV case】

- Carnumber_P0_vehicle.pdf
- Carnumber_P1-1_BR-MB.pdf
- Carnumber_P1-2_BR-CD.pdf
- Carnumber_P1-3_BR-LO.pdf
- Carnumber_P2-1_EN-EV.pdf
- Carnumber_P2-2_EN-AU.pdf
- Carnumber_P2-3_EN-CO.pdf
- Carnumber_P2-4_EN-DT.pdf
- Carnumber_P3-1_FR-FR.pdf
- Carnumber_P3-2_FR-CA.pdf
- Carnumber_P3-3_FR-PS.pdf
- Carnumber_P3-4_FR-FA.pdf
- Carnumber_P4-1_EL-WH.pdf
- Carnumber_P4-2_EL-DP.pdf
- Carnumber_P4-3_EL-BO.pdf
- Carnumber_P5_MS.pdf
- Carnumber_P6-1_ST-RA.pdf
- Carnumber_P6-2_ST-WS.pdf
- Carnumber_P7-1_SU-SD.pdf
- Carnumber_P7-2_SU-AL.pdf
- Carnumber_P7-3_SU-ST.pdf
- Carnumber_P8_WT.pdf

Revision Record:

[Second Edition]

-J2021-2-02 File size of Cost Event Addendum (When there is a design change.)