

Metro Manila Subway Project Phase 1 Package CP107: Rolling Stock		
ITEM NO.	REFERENCE CLAUSE/SECTION	ADDENDUM No. 12
<i>Volume II, Part 2 – Employer’s Requirements</i> <i>2. Specifications, A) General Requirements (ERG)</i>		
1.	Clause 8.1 GENERAL	<p>Revise 4th and 5th paragraph with the following:</p> <p>A Taking Over Certificate (TOC) will be issued for each train set in each MMSP and interoperability section. In order to obtain a TOC for the Rolling Stock from the Engineer, it is required that each train set achieves 1,500 km of Fault-Free Running (FFR) during system integration and trial operations in each MMSP and interoperability section.</p> <p>A Performance Certificate will be issued by the Engineer for the total performance of the fleet. This Performance Certificate is required to be achieved by the end of the Defect Notification Period (DNP). Prerequisites to obtain the Performance Certificate includes: each train set shall achieve 10,000 km or 2 months of FFR, the fleet (30 train sets) shall achieve a Mean Distance Between Failures (MDBF) of 50,000 km causing a delay greater than 5 minutes, a fleet in-service Operational Mean Time To Restore (OMTTR) of 15 minutes, and the fleet maintainability of capital components a Corrective Mean Time To Repair (CMTTR) of 4 hours. This requirement shall be achieved in each MMSP and interoperability section.</p>

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2.	<p>Clause 8.2.1 Performance Acceptance Criteria (PAC)</p>	<p>Revise 2nd paragraph with the following:</p> <p>Each train set shall achieve: Trial operations – 1,500 km FFR in each MMSP and interoperability section. In-service Operations - 10,000 km or two (2) months of continuous in-service operational FFR in each MMSP and interoperability section.</p> <p>The train fleet (30 train sets) as a whole shall achieve: MDBF – In service operational faults, MDBF no less than 50,000 km causing a delay greater than 5 minutes. OMTTR – Operational Mean Time To Restore (OMTTR) capital components; the train sets shall be restored to operational order in an OMTTR of 15 minutes. CMTTR – Corrective Mean Time To Repair (CMTTR) capital components shall not be greater than 4 hours.</p>
3.	<p>Clause 8.6 INDEPENDENT ASSESSMENT</p>	<p>Revise 1st and 2nd paragraph with the following:</p> <p>The Employer shall may appoint independent engineers and/or Independent Safety Assessors (ISAs) to assess on compliance with contract requirements on System Assurance. The Contractor, subcontractors and suppliers shall provide assistance to the appointed engineers and assessors, as required.</p> <p>The independent assessor shall may undertake the following:</p>

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4.	<p>Clause 13.4 HIGH VOLTAGE TRAIN LINE</p> <p>13.4.1 Traction Motor</p> <p>13.4.2 Function and requirements Degraded/Emergency Performance</p>	<p>Delete Clauses 13.4, 13.4.1 and 13.4.2</p> <p>13.4 HIGH VOLTAGE TRAIN LINE</p> <p>13.4.1 Traction Motor</p> <p>The rigid overhead conductor shall be used in MMSP. For rigid overhead conductor, since detachment tends to occur easily, high voltage train line shall be equipped to suppress the influence in case of the detachment. The simplified block diagram is shown in Appendix E.</p> <p>13.4.2 Function and requirements</p> <p>Appropriate rate fuse, switch and line breaker shall be incorporated into this line. The circuit breaker shall be openable and closeable by the demand from TMS, Propulsion system. The condition of open and close will be decided considering the condition of stop or running, all pantograph raising and the place in the running, etc.</p>
5.	<p>Clause 12.2 POWER CONVERSION EQUIPMENT (PCE)</p>	<p>Revise 2nd paragraph with the following:</p> <p>The PCE, and the PECE shall consist of all necessary equipment to condition the power supply from the catenary system into a fully useable power supply to drive the traction motors under fully controlled conditions, meeting the requirements with respect to speed, acceleration, torque, and regenerative braking. Such equipment shall include, but not limited to:</p> <ol style="list-style-type: none"> 1) Inverter equipment – Hybrid SiC module; 2) Inverter self-cooling equipment; 3) Inverter controls;

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		4) Inverter protection equipment, except the main circuit breaker; 5) Propulsion system interface with the door control, on-board signaling systems, Running and stopping assistant system, PSD controller, emergency brake circuit and TMS; 6) Propulsion system control interface with the train lines; and 7) High Speed Circuit Breaker (HSCB); and 8) Main Fuse.