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<tr><th colspan="3">North – South Commuter Railway (NSCR) Project (Malolos – Tutuban)
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<tr><th>ITEM NO.</th><th>REFERENCE CLAUSE/ SECTION</th><th>REVISIONS/AMENDMENTS</th></tr>
<tr><td colspan="3">Volume I, Part 1 – Bidding Procedures</td></tr>
<tr><td colspan="3">Bidding Forms</td></tr>
<tr><td>1</td><td>Section IV, Page BF-16, Appendix 6.3, Clause 2.1.9, 2.1.10 and 2.1.11</td><td>2.1.9 Performance showing acceleration at 1350V (catenary voltage), deceleration at 1650V (catenary voltage) and maximum speed on level and straight section with tare loading, W3 loading and 20~~22~~ tons per car loading at wheel diameter of 820mm;

2.1.10 Simulation of energy consumption, main parts temperature rising based on operating curve at tare loading, W3 loading and 20~~22~~ tons per car loading in one round trip;

2.1.11 Simulation of 1 or 2 unit being cutout performance, coupled performance with another failed train-set at tare loading, W3 loading and 20~~22~~ tons per car loading;</td></tr>
<tr><td>2</td><td>Section IV, Page BF-60 to 61, Form SOG: Schedule of Guarantees</td><td>
<table>
<tr><th rowspan="2">Code</th><th colspan="2">Required Performance / Specific Guarantee</th><th>Value of Performance / Specific of Guarantee of the Proposed Plant and Equipment</th></tr>
<tr><th>Description</th><th>Requirement</th><th></th></tr>
<tr><td>23</td><td>Maximum loading condition</td><td>20~~22~~ ton/car</td><td></td></tr>
</table>
</td></tr>
<tr><td>3</td><td>Section VI, Page GS-32, Clause 6.1 Standards, Paragraph 5</td><td>The Contractor shall provide one (1) copy of all relevant manufacturing and testing standards for items under his scope of supply.

In addition to the above, all standards and codes referred to in the Bid Documents to be supplied shall be new, complete and the latest version/issue. The submission shall be within 35 days from Commencement Date of the Works in accordance with the Quality Management Plan (QMP).</td></tr>
<tr><td colspan="3">Technical Specifications</td></tr>
<tr><td>4</td><td>Section VI, Page TS-3, Clause 1.3.1 General Vehicle Configuration Paragraph 2</td><td>The mass (tare weight) of the 8-car train-set shall be 270 tons or less~~, and the mass of any vehicle shall be 38.5 tons or less~~. Weight balance, lower center of gravity, etc., shall be taken into consideration.</td></tr>
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5	Section VI, Page TS-6, Clause 1.7.2 Weight Penalties, Paragraph 1 and item 2)	The maximum weight of the 8-car trainset (tare weight) shall be 270 tons ~~and the individual car shall be 38.5 tons~~. 2) If the mass of the trainset is more than 2,000 kg above the indicated maximumweight, the Contractor shall demonstrate the axle load of the Rolling Stock underall possible conditions such as crush load (2022 t/car), in-balanced load and etc.,will not exceed the 16 tons axle load limit, or else the Engineer has the right torefuse the acceptance of the vehicles, on behalf of the Employer.
6	Section VI, Page TS-7,Clause 1.8.2 Performance Values, 2) and 6)	2) Acceleration: 3.3 km/h/s (0-30 kph – thereafter, in compliance toTable 11-1.~~NSCR-ROL-00-0005Acceleration graph)~~ 6) Severity of service: Shall meet conditions of continuous 1round trip of peak operation at loads of 2022 t/car or higher, without adverse effect to any system
7	Section VI, Page TS-8, Clause 1.8.3 Performance Characteristics	Performance curves for traction and braking shall be established on the basis of kN /metric ton versus speed for the W3 and 2022 t/car loading condition.
8	Section VI, Page TS-8, Clause 1.8.4 Degraded/Emergency Performance	The Contractor shall confirm by calculation and by test that an 8-car train with 2022 t/car loading condition, with the propulsion system on one of the 4 motor car units totally inoperative is capable of completing a continuous trip. The Contractor shall confirm by calculation and by test that an 8-car train with 2022t/car loading condition, with the propulsion system on two of the 4 motor car unitstotally inoperative is capable of operating to the next station, including traversing themaximum gradient of the main line. However, reduction of acceleration andrestriction of regenerative braking force may be accompanied. The Contractor shall confirm by calculation and by test that an 8-car train with 2022t/car loading condition is capable of pushing/towing another 8-car train with 2022 t/carloading condition to the nearest station, including traversing the maximum main linegradient. Similarly, the Contractor shall confirm by calculation and by test that 8-car train inW0 loading condition is capable of pushing/towing another 8-car train also in W0loading condition, with an inoperative propulsion system, from the farthest terminalstation back to the depot, including starting on a maximum main line gradient of 3.5%grade. For the test at 2022 t/car written above, it is also permitted to convert from the resultsof empty tests and certain loaded tests.
9	Section VI, Page TS-8, Clause 1.8.5 Brake	The Contractor shall confirm by calculation and by test that the friction brakes arecapable of holding a 8-car train with 2022 t/car loading condition on a 3.5% grade. Also,the Contractor shall confirm by calculation and by test that the parking brake iscapable of

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<tr><td></td><td>Performance at Parking</td><td>holding an 8-car train coupled to a disabled (i.e. without any brake) 8-cartrain with both trains at W0 load condition on a 3.5% grade.</td></tr>
<tr><td>10</td><td>Section VI, Page TS-8, Clause 1.8.7 Energy Consumption</td><td>The Contractor shall design the train to minimize energy consumption and calculateenergy consumption of the train running on the entire revenue line for both directionsat a loading conditions of W0 and W0 plus a load of 2022 t/car.</td></tr>
<tr><td>11</td><td>Section VI, Page TS-61, Clause 11 Propulsion System, Sub-Clause 11.1 General, Paragraph 4</td><td>Under condition of catenary voltage between 1,350 V dc, load at 20 t per vehicle and velocity from 0 to 30 km/h, the instantaneous acceleration shall not be less than 3.3 km/h/s. For the speed from 30 km/h to 120 km/h, the performance of acceleration shall be constant output in line with the following information:drawing NSCR-ROL-DD-0005.

Table 11-1(For reference only):
<table><tr><th>Speed</th><th>Acceleration Rates (Approximate):</th></tr><tr><td>0 to 30 kph</td><td>3.3 km/hr/sec (0.91 m/s²)</td></tr><tr><td>31 to 50 kph</td><td>2.8 km/hr/sec (0.79 m/s²)</td></tr><tr><td>51 to 97 kph</td><td>2.3 km/hr/sec (0.63 m/s²)</td></tr><tr><td>98 to 115 kph</td><td>1.04 km/hr/sec (0.29 m/s²)</td></tr><tr><td>116 to 120 kph</td><td>0.25 km/hr/sec (0.07 m/s²)</td></tr></table>
In the following conditions, the propulsion system shall have sufficient capacity. The Contractor shall simulate acceleration power consumption, regenerative power amount, RMS current, maximum drawn current during acceleration, maximum return current during regenerative braking to OCS and the temperature rise of each equipment etc. Total powerconsumption of a round trip (Tutuban-Malolos) for the following minimum conditions shall be submittedfor review by the Engineer:

1) Load condition: W3 loading and20 t/car (round trip);
2) Wheel diameter: 820 mm;
3) In case of both 10 stations and 15 stations;
4) Max acceleration current: 3050 A;
5) IGBT 3.3 kV 1200 A or the performance of the more current (2 Level)
46) Self –cooling system;</td></tr>
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		5) The maximum operational speed limit in the main line is 120 km/h; 6) Operational headway is 6-minutes; 7) The dwell time at each station is 30 seconds; 8) The dwell time at end stations is 120 seconds; 9) Indicative journey time for round trip, including 10 station dwells both directions, and end change dwell, is 73 minutesand 10 seconds, a commercial average speed of 62.2 km/h.; 10~~7~~) When 25% loss of the on-board traction motors total power, train can run all day; (with restriction on regenerative brake at a load above a certain load) 11~~8~~) When 50% loss of the on-board traction motors total power, train can run 1 roundtrip; (with restriction on regenerative brake) 12~~9~~) Catenary voltage: 1350 V (acceleration), 1650 V (regenerative); 13~~10~~) Acceleration use by simulation: the maximum performance; 14~~11~~) Deceleration use by simulation: ~~3.0 km/h/s~~the maximum performance; 15~~12~~) Unladen mass: to be calculated by Bidder;~~270 t~~; 16~~13~~) Start resistance: to be calculated by the Bidder; ~~3 kgf/t;~~ 17~~14~~) Inertial mass: 10% of unladed mass (motor car), 5% of unladen mass(trailer car); 18~~15~~) Running resistance: 20.47+0.247 V+0.00373 V2 (N/ton); 19~~16~~) Gear ratio: to be calculated by Bidder , ~~6.53 (98/15)~~; 20~~17~~) It is possible to push a failed train set with the same load; and 21~~18~~) Propulsion~~motor~~capacity (1-hour rating) to be calculated by Bidder.~~ over 170 kW.~~ All other simulation parameters not included in the listed conditions shall comply with the Employer's Requirements. In addition, based on the above, the characteristics of the propulsion system shall be superior to the characteristics shown in the Table 11-1.~~Drawing No. NSCR-ROL-DD-0005~~.
12	Section VI, Page TS-64, Clause 11.4.1Traction Motor	The traction motor shall be a mass produced totally enclosed AC squirrel cage induction machine over 5 years' service proven history with a good reliability service proven record, and shall be reviewed by the Engineer. Traction motor bearings shall be equipped with sufficient and easily accessible standard grease fittings. The attachment of a traction motor cooling fan, if equipped, shall be robust to ~~with stand~~withstand all levels of traction motor operation in any service condition. The traction motor shall be rated and specified to meet all of the performance requirements according to Clause 1.8 of the Technical Specifications.

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		In addition, as a minimum, the traction motor shall have the following characteristics: 1) The efficiency in the rating shall be more than 94%; 2) The 1-hour rating shall be rated to meet the performance requirements; to be calculated by the Bidder~~170 kW or more~~; 3) Three-phase four-pole totally enclosed squirrel cage induction; 4) Rated voltage shall be 1,100 V ac; 5) Insulation performance shall be Class 200 or more; 6) The grease used shall be Unimax-R2 or the equivalent with similar features; 7) There shall be no speed sensor; 8) Bearings shall be lubricated by grease; and 9) The basic design of the bearing shall be refilling without decomposition at 600,000 km and exchange at 1.2 million km
13	Section VI, Page TS-69, Clause 13.6 Battery Paragraph 1	The battery shall have sufficient capacity to supply all low voltage power loads during failure of the low voltage power supply for a minimum period of 90 minutes~~one (1) hour~~ of normal train operation. The Contractor shall submit the battery capacity for the Engineer to review taking into account not only this requirement but also an appropriate allowance rate.
14	Section VI 3) DRAWINGS, DRW-1 Drawings, Page CP03-B1-006 and CP03-B1-007	1. NSCR-ROL-DD-0006 MODEL OF CONTROL TRANSMISSION SYSTEM(Reference) 2. NSCR-ROL-DD-0007 MODEL OF MONITOR TRANSMISSION SYSTEM(Reference)

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