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(g) The Contractor shall work with the relevant authorities/agencies for all entrances and ancillary at-grade structures such as fire escape staircases, ventilation shafts, cooling towers to mitigate the impact to existing and future surrounding developments in the vicinity. This shall include but not limited to the following:

(i) Compacting the entrances and at-grade structures;

(ii) Position all station entrances and at-grade structures to minimise land-take with sufficient setback to provide a maximum of 2m apron all round;

(iii) Consolidate all the ancillary at-grade structures to be stacked above the entrance structures to reduce land-take;

(iv) Comply with URA and other relevant authorities/agencies' requirements for the location of the ventilation shafts, cooling towers and exit staircases, as well as the arrangement of ventilation openings to face adjacent roads to minimise impact on future adjacent residential developments;

(v) Work with the relevant authorities/agencies to configure the entrances, at-grade structures, covered pedestrian connections and associated structures/facilities (including any bicycle parking, escape staircases and all ventilation shafts);

(vi) Adopting soft-scape and greenery into the design of the entrances and the at-grade structures, such as green roof and roof-edge planting;

(vii) Entrances with bicycle parking shall be provided with greenery and shading elements to soften the hardscape.

(h) The Contractor shall work with the Authority and all relevant authorities/agencies to provide for the installation of Solar Photovoltaic (PV) panels on the roof of the entrances and at-grade structures.

(i) All at-grade structures shall not cause noise, smell, fumes, vapour and heat nuisance to the surrounding developments, with abatement measures to be provided to mitigate the impact of noise, smell, fumes, vapour and heat from mechanical and electrical equipment.

(j) For entrances and at-grade structures with future development integration:

(i) The Contractor shall work with all relevant agencies/authorities, stakeholders and the Authority to carry out integration simulation studies, as well as to confirm and provide the necessary provisions for integration with the future development to confirm the entrance design and ensure that there is no adverse impact between the future development and the station operations and functions;

(ii) The Contractor shall design the entrance and at-grade structure façades and finishes, such that it has the flexibility to be replaced by the future developer to integrate with the façade of the future development.

10.2.3.2 Entrance 1

(a) Entrance 1 is located at the fringe of Clementi Forest and is expected to interface/ integrate with a future development.

(b) Entrance 1 is designed to integrate and connect seamlessly with a bus shelter, pick-up/drop-Off (PUDO) and taxi stand via covered linkways. An integrated covered walkway shall be provided for connection to the adjacent future development.

(c) The architectural treatment and design for Entrance 1 shall include a green roof as well as a landscaped space around the entrance to blend in more seamlessly with the natural surroundings.

(d) Entrance 1 shall be integrated with the proposed bicycle park along with greenery and shading elements to soften the hardscape. The Contractor shall consult the relevant authorities/agencies and the Authority to finalise the design and provision.

10.2.3.3 Entrance 2

(a) Entrance 2 is located adjacent to SIM’s main entrance.

(b) A new PUDO shall be provided along Clementi Road as shown in the tender drawings. The PUDO shall be designed to provide direct and sheltered barrier-free access to SIM/ SUSS.

(c) Entrance 2 shall be designed to connect seamlessly to the existing bus shelter and the new PUDO via covered linkways. It shall also allow for direct and sheltered barrier-free access to SIM Blk A at the driveway/ fire engine access level.

(d) Entrance 2 shall connect seamlessly to the high covered linkway across SIM main vehicular access along Clementi Road.

10.2.3.4 Entrance 3

(a) Entrance 3 is located in front of Maju Camp, near the junction of Clementi Road and Brookvale Drive.

(b) Entrance 3 is designed to integrate with covered linkways extending to Brookvale Drive and Maju Drive. The covered linkways shall also connect to the covered linkway provided by Maju Camp. The Contractor shall work with the Authority and relevant agencies to confirm the location/ interface of the covered linkway connection.

(c) Entrance 3 shall be integrated with the proposed bicycle park along with greenery and shading elements to soften the hardscape. The Contractor shall consult the relevant authorities/agencies and the Authority to finalise the design and provision.

10.2.3.5 At-Grade Structures

(a) An ancillary structure consisting of a set of cooling towers, ventilation shafts, exit staircases and M&E rooms is located along the fringe of Clementi Forest.

(b) The at-grade structures shall be designed to provide an integrated covered walkway for connection to the adjacent future development.

10.2.4 Main Station Box

10.2.4.1 The station box is mainly located under Clementi Road and partially within a future development site. A future development is expected to be constructed above the station within the development plot. The Contractor shall take this into consideration and make the necessary provision in his station underground roof design to meet the Authority's requirements. He shall also liaise with URA and all other relevant authorities/agencies to finalise the design to comply with the requirements stated in **Appendix BH** and **Clause 7** of the Particular Specifications.

10.2.4.2 The columns and struts in the public area are exposed and are to be designed with fair-faced concrete finish. A recessed profile shall be provided on the structure surface to allow for surface mounting of services and ceiling mounted components/fixtures. The Contractor shall construct the concrete elements according to the intended features in **Appendix BL** of the Particular Specifications.

10.2.4.3 All materials and workmanship for the finishes of the exposed structural elements shall be in strict accordance with BS8110: Part 1: 1997, Section 6 or the latest Eurocode equivalent and LTA Civil and Architectural M&W Specifications. The standards on the type and quality of finishes for these concrete elements shall be “Type C” in “Special Class” finish in accordance to 6.2.7.2 and 6.2.7.2 of BS8110: Part 1: 1997 or the latest Eurocode equivalent to the Engineer’s acceptance.

10.2.4.4 NOT IN USE

KNOCK-OUT PANEL (KOP)

10.2.4.5 B1 Subway Level

(a) B1 Subway Level shall provide an underground link between Entrances and to the B2 non-ticketed concourse area. The subway link between Entrances 1 and 2 shall be designed to provide 24-hour underground pedestrian connection across Clementi Road. Security shutters shall be provided to define the boundary and enable the non-accessible areas to be locked shut after operating hours.

(b) For the opening year 6-car train operations, demountable partitions shall be provided to cordon off the unused spaces in platform area without affecting the pedestrian circulation and emergency evacuation requirements.

(c) The platform shall be column free along the platform edge as well as the passenger circulation areas.

(d) Over-Track Exhaust Duct (OTED), Saccardo Nozzle at the station trackway and Under Platform Air Supply (UPAS) duct at underplatform level shall be provided for Tunnel Ventilation System. The Contractor shall co-ordinate the details of the provisions with Authority's In-house designer for Tunnel Ventilation System.

(e) The Contractor shall ensure that the structural gauge requirements including vehicle throw and construction tolerance are incorporated at the station platform level. The drawing requirements will be provided to the Contractor after award.

(f) The Contractor shall coordinate the station interior design with the Authority's In-house Designers to incorporate and make provisions for installation of air circulation fans/cooling system to achieve the internal thermal comfort requirements.

10.2.5 Civil Defence (CD) Shelter

10.2.5.1 This station shall be designed as a CD shelter station. The Contractor shall refer to Clause 19 and Appendix AL of the Particular Specification

10.3 <u>BCA Green Mark (GM) Certification</u>

10.3.1 <u>The Contractor shall comply with the requirements of the BCA Green Mark for Transit Stations (GMTS) criteria and obtain BCA Green Mark Platinum certification for the Station under the GMTS.</u>

10.11.4 Green Roof Provision and Civil / Structure Provisions for Solar Photovoltaic (PV) System

10.11.4.1 The Contractor shall design and provide the required civil provision for the solar photovoltaic (PV) system at the roofs of station entrances (unless specified otherwise) and at-grade structures including RC and metal roofs. The Consultant shall coordinate with the Authority's M&E Consultant and SWC on the PV system requirements. The Contractor shall ensure that the station's design arising from the PV system complies with the latest prevailing fire code requirements.

10.11.4.2 The Contractor shall make all necessary building works, civil and structural provision for installation of solar PV system such as inverter panels, closets, cable risers, wall opening, structural loading of roofs, maintenance access to roof, fall arrest system etc. to meet the Authority's as well as technical and statutory requirements. Please refer to **Appendix AM** of the Particular Specification.

10.11.4.3 The Contractor shall study the incorporation of green roof / roof-edge planting together with solar photovoltaic (PV) panels for the station entrances and at-grade structures. The Contractor shall coordinate and liaise with all relevant agencies and Authorities for the percentage of roof space to be used for greenery and PV panels. The Contractor shall maximise the space for PV panels and allow for all civil and fire safety provisions at those locations.

10.11.4.4 The Contractor shall carry out sun-path analysis for the incorporation of solar photovoltaic (PV) panels.

10.11.5 Passenger and Commuter Flow

10.11.5.1 The Contractor shall engage his own relevant qualified consultant with minimum 5 years of relevant experience in pedestrian movement analysis for transit projects, acceptable to the Engineer to carry out the required pedestrian modelling simulation for each station using locally calibrated and recognised software as approved by the Authority.

10.11.5.2 The scope shall include all public areas of the station and any links to neighbouring developments and this station. For interchange stations, it shall include the existing station and all new transfer routes.

10.20.9 The Contractor shall be subject to the Official Secrets Act. The Contractor shall not disclose or release to any person, entity or otherwise deal with the same in any manner whatsoever without the written consent of the Authority, as all information relating to this project shall vest in and be the absolute property of the Authority. The Contractor shall safeguard any information collected and return and/or delete all information collected/processed at the end of the contract in accordance with the Authority's instructions.

10.20.10 Any security measures that have potential impact to commuter flow (such as Transit Security Booth, security screening, etc.) shall be included in the Contractor's pedestrian modelling analysis. The Contractor shall make reference to the Passenger and Commuter Flow as stated in **Clause 10.11.5** of the Particular Specification. The Contractor shall take into consideration security requirements as imposed by the Authority in the design. The Contractor shall address the requirements and propose various protection and mitigation measures for the Authority's acceptance. A list of these security requirements is listed in **Appendix AE** of the Particular Specification. The Contractor shall prepare the Security Design Plan in consultation with the Authority, taking into account the security requirements. Any variations from the Contractor shall be endorsed by a Qualified Persons (QP)/ Security & Blast (S&B) Consultant Contractor and submitted for acceptance by the Authority with costs arising from the submission borne by the Contractor.

10.21 Ancillary Facilities

10.21.1 The Contractor shall coordinate and provide all facilities required for the installation by others for Automated Teller Machines (ATMs), shops, vending machines, SAM, public phone booths, commercial signage, etc. within the boundary of the station. The Contractor shall incorporate into the design structural lintels for the future installation of security shutters at shop fronts. The Engineer shall advise prior to handover any required temporary hoarding or other installation at shop areas. The Contractor's QP shall ensure that authority compliance can be achieved based on the Engineer's handover requirements.

10.21.2 The Contractor's design for letter boxes at the station and shall make allowance for the future integration of all retail unit letter boxes. Unless otherwise directed by the Engineer the Contractor shall obtain postal addresses from IRAS for the station and shops, and to obtain SingPost approval for the station letterbox assembly including letter boxes for station, shops and returned mail.

X36 Fire Stops.

X37 Trees felling and transplanting, treatment to existing trees affected by the Works such as propping, supporting, pruning of the roots etc.

X38 Ironmongery, temporary cylinders (for locking during construction), hinges, hasp and staples to gates, airtight sealing gasket, mechanical seals around doors, painting and all necessary hardware to all clad and non-clad permanent doors, wall and floor access hatches and glass doors.

X39 All statutory and operational signages.

X40 Painting to all structural steelwork.

X41 Maintenance access equipment (including fall arrest / restraint systems), ceiling gantry rail and maintenance gantries over voids.

X42 Equipotential bonding for all items.

X43 Green roof, landscape and irrigation system.

X44 Security Grilles/shutter.

X45 Fair-faced concrete.