

SPECIFICATIONS FOR TENDER FOR DESIGN & BUILD (RENOVATION WORKS) TO SATS CARGO NETWORK SOLUTIONS AT AIRFREIGHT TERMINAL 5

1. PROJECT SCOPES OF WORK

1.1 General

- 1.1.1 The specifications explain the detailed scope of works, requirements, and specifications for renovation work for the proposed design & build (renovation works) to SATS Cargo Network Solutions at Airfreight Terminal (AFT) 5. It is a 24-hour operation facilities.
- 1.1.2 Notwithstanding any approval given by the Company, the Contractor shall still be responsible for the adequate completion of the Works.
- 1.1.3 The Contractor shall perform all works as specified in the Specifications, proposal submitted or works which are known to be done base on Contractor's knowledge and experience. All items necessary for the efficient, stable and satisfactory completion of the works shall be included in the Contract Price, including any preliminaries and Qualified Person (QP), Professional Engineers (PE) design, endorsement, calculation, supervision and certifications if deemed necessary.
- 1.1.4 Works mentioned and clarified, but not described in the Specifications, or not shown on the layout shall be included in the Contract Price in the same manner as if these had been described in the Specifications.
- 1.1.5 The term 'Drawings' implied to the related disciplinary works eg. Structural or Architectural or Mechanical Works or Electrical Works.
- 1.1.6 Due to the lack of as-built drawings and details, it shall be the responsibility of the Contractor to ascertain for himself the nature, process and extent of works that is required to complete the installation, integration works and proper operation of the system.
- 1.1.7 The Contractor is to provide all labour, materials, plant, equipment, tools and everything necessary whether of a temporary or permanent nature for all proper execution of the works. All workmanship and materials including reinstatement shall be of the highest quality in accordance with the manufacturer's instructions / details.
- 1.1.8 Generally, each item of work is deemed to include all works that are implied and/or deemed necessary for their satisfactory completion as well as all necessary preparation work, labour, materials, plant, equipment, transportation to site and everything necessary whether of a temporary or permanent nature for all proper execution of the works. All matters omitted from the contract document that may be inferred to be obviously necessary for the efficiency, stability and completion of the works for the successful operation shall be deemed to be included in the Contract Price.
- 1.1.9 In the event of any discrepancy with the Specifications, "SATS House Rules for Contractors" and "SATS Office Fit Out Guide" guidelines shall be deemed as ultimate references, or the more stringent requirement shall be deemed applicable. The Contractor shall bring such discrepancies to the Company's attention and for his decision on the prevailing requirements.
- 1.1.10 All works disturbed are to be reinstated by the Contractor to the complete satisfaction of by the Company.
- 1.1.11 The approved standard criteria in this document shall be in the Singapore Standard. Where this is not possible, British Standard Specifications (BS) or American Standard (ASTM) shall be used in lieu hereof.

- 1.1.12 The Works shall be carried out in the order that shall be directed by the Company so as to cause minimum inconvenience to all users. Permission to enter occupied premises must be arranged and approval to be obtained from the Company by the Contractor where necessary.
- 1.1.13 All submissions to the authorities, and inspection, if necessary, shall be included.
- 1.1.14 The work shall adhere to, but not limited to the specifications state. The Main Contractor shall be fully responsible to coordinate closely with SATS's authorized representatives and other appointed Contractor to ensure that all works are completed in good times and quality and fulfil all the user's requirements for the renovations. All cost for revised perspective drawings is deemed to be included.
- 1.1.15 The Contractor shall ensure all the workers have valid work permits and qualifications to carry out the works. Should there be any stop work order issued by any government authority, the Contractor shall bear the cost of delay in the completion.
- 1.1.16 The words "including", "for example" or "such as" when introducing an example, do not limit the meaning of the words to which the example relates to that example or examples of a similar kind.
- 1.1.17 All supporting technical data and all documentation to be supplied to be written in the English language.
- 1.1.18 The Contractor agrees and understands that the Company reserves the right to delete or award the contract in full or in parts without any due compensation. If some of the items in this renovation are to be done by others, the Contractor will have to co-ordinate the works accordingly at no additional cost. Furthermore, the Company note that the Company reserve the right not to accept the lowest or any quotation without any obligation.
- 1.1.19 The Contractor shall provide fast and timely response within the time frame, to any queries and / or information requested / instructed by Company. Failure to comply may render the Agreement being terminated by the Company.
- 1.1.20 No price increase will be allowed once an award has been made to the successful Contractor covering the entire duration of the award period.
- 1.1.21 The Contractor shall agree to make good at their own cost, any defects, shrinkage or other faults which may appear within the contract period and/or the Defects Liability Period, or which are due to materials or workmanship not being in accordance with the requirements of the contract documents or to the Company's approval.
- 1.1.22 The Contractor is to provide adequate protection for all surrounding areas or premises or safe-keeping or protection for equipment or facilities which are not removed and to be re-used, etc. to be left intact and make good to all affected works.
- 1.1.23 All cable conduits drop down from the suspended false ceiling or exposed to surface shall be laid in G.I. conduit and cable sizing and type to follow SATS' Renovation Guideline. All cables connected to the emergency source distribution panel shall be fire retardant type.
- 1.1.24 All cables trays, trunking and conduits shall be run neatly on the suspended false ceiling and truly vertical, horizontal or parallel to the features of the wall. No free slinging cable or flexible conduit is allowed. Cabling works shall include cables, cable termination glands/lugs, cable support system, testing, commissioning and other associated ancillary accessories.
- 1.1.25 Fire-rated enclosure shall include Declaration of Compliance and Certificate of Completion.
- 1.1.26 The Contractor shall be responsible to clarify the fire safety requirement of the project and supply and install material, equipment, facilities which are fire retardant complying to requirement and all cost shall be inclusive in Contract Price, such as but not limited to engaging Fire Safety Engineer to conduct fire safety analysis, use of fire retardant material,

installation of fire protection equipment to meet SATS requirement, etc.

- 1.1.27 The Contractor shall not carry out the following;
- Load any concrete structure, which has not achieved maximum strength without the Company's authorised representative's approval.
 - Store materials on site in areas other those allocated to the Contractor without prior approval by the Company.
- 1.1.28 The Company shall engage full-time qualified and competent person(s) to oversee and supervise the works. Periodical progress report to be furnished to the Company's representative.
- 1.1.29 Interested Contractors maybe required to attend site show-round and works briefing on the stipulated day. The Contractor shall be held to have visited the site, inspected the existing premises and ascertained the exact nature of the works. No claim for extra payment in this respect will be entertained.
- 1.1.30 Contractors maybe required to attend Proposal Presentation and Evaluation to the Company with design concept and artist's perspective design presentation

1.2 Design Brief And Preliminaries

- 1.2.1 We would like to engage a Design & Build (D&B) Company with the capability to provide integrated services from design to construction. The scope of works include but not limited to interior/architectural, structural and M&E works, construction project management, site coordination with other trades of works as nominated by the Employer, authority submission and approvals to upgrade and refurbish (renovation works) to SATS Cargo Network Solutions at Airfreight Terminal (AFT) 5. Please refer to the drawings for the location plan and existing condition and information of office.
- 1.2.2 The Contractor shall submit proposals which comply with the said requirement and specifications and fully responsible to coordinate closely with the Company's authorised representative to ensure works are done smoothly in accordance with the stipulated Project Schedule as stated in this contract.
- 1.2.3 The Contractor shall propose the overall design of the area to be modern, open and spacious, bright and fulfil the company operational requirements and operation functions. The design should still be in line with the SATS corporate branding guidelines.
- 1.2.4 Material proposed is to be state-of-the-art, durable and practically functional. The material proposed to be in ex-stock with shelf-life of 5 years.
- 1.2.5 All electrical fitting proposed to be energy saving/ LED type to promote greener environment.
- 1.2.6 Supply and installation of M&E equipment shall include supply, delivery, installation, testing and commissioning and other associated ancillary accessories.
- 1.2.7 Contractor may propose for any value-added element that assists to increase the work flow efficiency with be an added advantage.
- 1.2.8 Contractor shall comply with SATS In-house rules and regulation and the scope of works.

1.2.9 Below are the general terms shall be inclusive in Scopes of Work and Contract Price

a. Preliminaries

- Provide the Public Liability Insurance and Workmen Compensation Insurance and any other required insurance for the work
- Provide all necessary protection and safety measurements such as safety/warning signs and barricades before commencement of works
- Provide site management, protection
- Provide hoarding for the renovation area at approved height – Office / Counter Area include supply and lay of approved design in vinyl sticker, if required, including post-renovation reinstatement work.
- Engage Aviation Security or Aviation Police Officer for site security, if required, and including all cost involved.
- Provide connection of temporary electrical supply for work activities with KWh meter and relocation of existing facilities.
- Design, calculation, endorsement, inspection, conduct fire engineering analysis , issuance of letter or report by PE/ QP/ FSE, licensed LEW & Plumber and submission to all authorities prior to the renovation including all required appointment and submission fees.
- Attend all site discussions, meetings, briefings and handover session as required by the project and as directed by the Company
- Coordination with all SATS' appointed suppliers/ contractors/ vendors
- Submission of all perspectives drawings required by the Company, including all amended perspectives during the quotation interview / construction
- Submission of actual sample materials for material verification and confirmation.
- Submission of pre-construction survey report, shop drawings, M&E drawings, documents, work permits, permit to work, as-built drawings, electrical single line drawing, licenses & other documents and all relevant drawings and layouts including on-site measurement of as built lux level, Isolux diagram, Electrical Load Calculation, Heat Load Calculation, air-flow rate measurement and balancing report, fire protection system testing and etc.
- Compile and submission of documents relevant to the project upon completion of project, for example, as-built drawings with endorsement (including AutoCAD file format), certificates, record forms, inspection record, test and commission report, approvals, etc.
- CAAS submission (including drawings, endorsement, plan search, all processing/ application fees)
- URA submission (including drawings, endorsement, plan search, all processing/ application fees)
- FSSB submission (include NOA application, QP endorsement, appointment of RI, RI inspection, FSB Fees and TFP/ FSC submission)

b. Submission to all relevant Authorities, inclusive all fees

- Engage FSE for fire engineering analysis, if required. It is the responsibility of contractor to clarify the requirement.
- Engage PE/ QP/ FSE, licensed LEW & Plumber for design, endorsement and attendance
- Appointment of RI (Arch & M&E)
- Change of Usage to obtained from all relevant Authority such as CAAS, URA, FSSB etc
- FSC to be obtained upon completion.
- Design, calculation, briefing, endorsement and submission to all authority prior to the renovation

- c. General Works
- Reinstatement works including make good disturbed works to reinstate or match existing site conditions upon completion. Any unused opening to be patch up / closed up
 - General demolition work including disposal off-site
 - General cleaning before handing over of site
 - Provision of labour to carry out any setting up or shifting works when necessary.
 - General manpower for mounting of loose decoration/ fitting
 - Supply of labor to re-locate of fitting/ services to facilities the work, if required
 - Proposed of hoarding/ barricade design and soft landscape to enhance the area overview.
- d. Fire Protection
- Relocate and re-routing of existing speakers for PA system to suit the new design, layout and comply with the requirements include provision of additional speaker, if required.
 - Extension/ modification of existing or installation of new fire sprinkler, hose reel, smoke/ heat detector manual call point, fire alarm sub-panel to suit the new design, layout and comply to the requirements, include carry out test
 - Provision of valid and approved fire extinguisher base on design
 - Installation of approved UFO light, emergency flood light and LED type of Exit Lights
- e. M&E System
- Design, propose, supply and install new energy saving and cost effective lighting system or modification to existing lighting system and comply to requirement (lux and heat load requirement)
 - Design, propose, supply and install new aircond system or relocate existing air conditioning system to suit the new layout include balancing upon relocation
 - All power points must be RCD type and anti-tampering cover with lock must be installed for power point for essential services as dictated by owner.
 - Hacking of existing floor slab / wall to conceal of cabling and services
 - Design, propose, supply and install new DB panel with digital KWh meter (both Normal Source and Emergency Source) base on propose electrical circuit or modification of existing DB, include relocation based on your design, if required.
- f. Ceiling, wall and floor finishes
- Design and propose suitable type of finishes (The propose finishes and design will be subjected to acceptance by Company.)
 - Do not have any vertical drop or unexpected variation in levels
 - Anti-slip flooring
 - Propose carpet, wall paper with design and specification to be approved by Company.
- g. Signage and television display
- Design, fabricate, supply and install of signages at the external façade, back wall, glass wall, entrance and counter as dictated by owner and comply to Company's branding guideline.
 - Design, fabricate and install of signages shown that the area is monitored by CCTV with recording, visual and audio recording are in process, if any.
 - Design, fabricate and install of signages for wayfinding, if required
 - Supply and install of television with necessary accessories that accept flash drive or memory card input
 - Contractor shall propose all suitable material and size and subjected to acceptance by Company
- h. Requirement for CCTV, Telephone, Network, Access System and Special Equipment
- Design, fabricate, supply and install of system with cabling works or modification and relocate of existing systems to suit the new layout as clarified and dictated by owner.

1.3 Design And Work Scopes

1.3.1 Authorities Submission

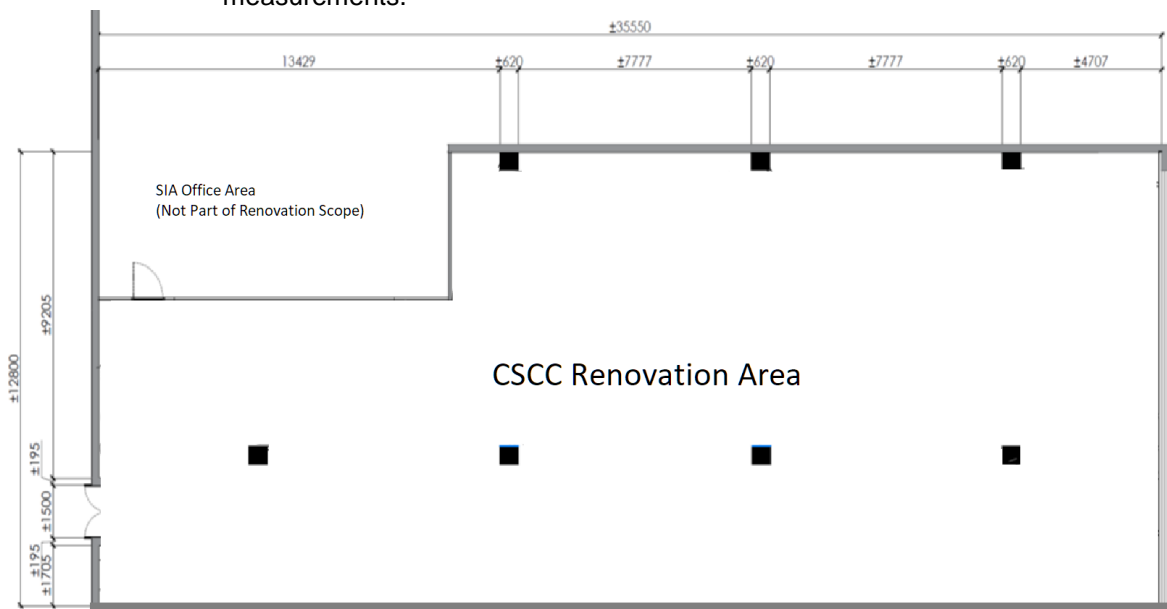
- Engage of QP for authorities submission to CAAS/ URA/ SCDF and obtain TFP/ FSC for the propose A&A works.

1.3.2 Design Concept

- The office design shall be take reference against adjacent offices at Terminal 1 (Ramp Admin Office, Tech Ramp Office, Load Control) and Ramp Office at Terminal 4 (refer to attached Photos)

1.3.3 Layout

- Layout to be comply with FSSD’s requirement.
- The below details the alterations and additions works shall be made (Reference to Annex C)
- The general requirement for the control centre layout is as follows:
 - While co-located, the two control centres shall be equipped with separate access control systems.
 - The vendor shall propose technologies that can be incorporated into the physical renovation phase such as collaborative smart boards, e-curtain glass and Facial Recognition-enabled premise access control system, and to price these technologies as optional items in the pricing table
 - Officers in either control centre shall not have visibility of the video wall in the other. This can be in the form of an automatic blind, an e-curtain or smart film glass separating the two control centres, which will enable us to portray the Control Centre control centre as one unified Control Centre by a switch (frost-defrost) when we need to, to name some examples. Vendors shall propose cost effective solution to this.
- Measurements of Renovation Area
 - Please find below for the existing layout space of the current office, with measurements.



- Cargo Control Centre Requirements:
 - The total number of workstations required is 29. This is inclusive of 5 additional workstations meant for future expansion in operations monitoring.
 - The arrangements of the 29 workstations are as follows:

- 3 workstations in a glass office meant for management usage. This glass office while providing some form of privacy for management, it must also fulfil the open concept of collaborations with the main Operations.
- For the rest of the 26 workstations
 - 3 workstations shall be in a linear seating arrangement, with facing to the video wall, meant for command and control of the Cargo Operations.
 - For the rest of the 23 workstations, they are to be arranged in clusters format, which encourages collaborations between different parties. The size of the cluster preferably to be of small clusters of up to 4-5 seats per cluster.
- The vendor shall include a small walkway for Security officers to walk to their control centre without causing inconvenience to the Cargo officers.
- Security Control Centre Requirements:
 - The total number of workstations required is 11.
 - The arrangements of the workstations shall mimic an actual command centre style, which consist of linear arrangements with main commander seated at the rear, and operations monitoring at the front, all facing the Video Wall; in the formation of 4-3-3-1.
- Common Conference Room
 - A common Conference Room shall be built to serve both Cargo and Security Control Centres.
 - The Conference Room shall be able to sit at least 10 personnel.
 - The Conference Room shall be able to view both control centres at the same time, with the option to be able to hide the view of the Security Control Centre during peacetime operations. The view can be hidden via the means of electronic blinds or any other form. Vendors shall propose cost effective solutions to this.
 - The conference room shall also be equipped with a video projection wall with LED OHP.
 - The vendor shall also propose innovative conference room solutions such as collaborative touchscreen boards, videoconferencing capabilities and writable walls, and to price these innovations as optional in the pricing table.
 - The vendor shall propose the ideal layout to fit the above, which can also enhance collaborations between different parties.
- Common Pantry
 - A common pantry shall be set up for staff from both control centres to utilize.
 - The pantry should not be placed within the operations of the control centres, to prevent any inconvenience caused by movement of the staff to and from the pantry
 - The pantry shall be a dry pantry setting.
 - The vendor shall propose the furnishings in the pantry.
- Common Utility Room
 - Common utility room, which houses key office utilities, such as printers and stationary storage, shall be included in each of the Control Centres.
- Cargo Staff Storage Room
 - A staff storage room, which can house up to 20 small cabinets meant for staff personal use, shall also be included within the premise of the Cargo Control Centre.
- CCTV Viewing Room
 - A separate access-controlled room consists of Three CCTV-viewing workstations shall be included for the purpose of Cargo investigation.
- Server Rooms
 - Server room shall be included to house the servers required for the Video Wall, and other servers required to facilitate the operations of the Control Centres.

- Holding Area / Reception
 - A holding area, which also serve as a reception for guests, shall be included at the entrance of the CSCC.
 - The holding area shall include SATS logo as part of branding requirements and a space to cater for potential placement of additional logo.
- Setting Aside Space for Video Wall Installations
 - As mentioned above, both Control Centres will be completed with video walls. As such, the vendor must allocate space for video wall installations and its necessary cabling during the building works.
 - The dimension of each of the screens for video wall at each control centre is as follows:

DISPLAY	
Screen Size	55 inches
Resolution	1920 x 1080 pixels
Brightness	700 cd/m ²
Contrast Ratio	3500:1
Viewing Angle (Horizontal/Vertical)	178/178
Maximum Display Colours	16.8 million
Colour Calibration	Factory Calibrated for colour uniformity across all displays in video wall
Response Time (Grey-to-Grey)	8ms
Orientation	Landscape and Portrait
Approximate Panel Lifespan	60,000 hours
CONNECTIVITY	
Input – Video	1 x DisplayPort 1 x VGA 1 x HDMI 1 x DVI-D (HDCP compatible)
Input – Control	1 x RS232C 1 x RJ45
Output – Control	1 x RS232C
POWER	
Power Supply	100 – 240 V AC, 50/60Hz
Power Consumption (Typical/Max)	175 W/ 210 W
OPERATING ENVIRONMENT	
Operating Temperature	5°C – 40°C
Operating Humidity	20% - 80%
DIMENSIONS	
Bezel-to-bezel Width	1.7mm
Mounting	VESA compatible (4 points)

- These are the number of screens being allocated for each area:
 - Cargo Control Centre – 8 Screens (2 rows by 4 columns)
 - Security Control Centre – 8 Screens (2 rows by 4 columns)
 - Conference Room – 1 Screen
- Other Requirements
 - The workstations in the Control Centre shall be durable, ergonomically advanced and aesthetically impressive.
 - The vendors shall comply with the latest Safe Distance Management Measures issued by the Singapore Government when designing the layout of the CSCC.
 - The vendor shall install removable Perspex dividers at the all workstations as part of COVID-19 precautionary measures against spreading.
 - The design shall match consoles, chairs, display wall and lighting for a completely functional and visually consistent facility.

1.3.4 Fire Protection System

- Modification or alteration of entire existing fire protection system, including provision of additional fixture and facilities, testing and commissioning, if required, to suit the new design, layout and comply to the requirements.
- Modification or alteration of the fire protection system if ceiling works is involved and affected the existing system.
- Supply and install of valid and approved fire extinguisher base on design.
- Design, supply and installation of fire protection system for raise floor or platform and comply to requirement, if any.

1.3.5 M&E Services

- Modification or alteration of existing ACMV system, including provision of new or additional fixture and facilities, if required, to suit the new design, layout and comply to the requirements.
- Conduct heat load check and calculation base on the new design, layout and comply to the requirements.
- Modification or alteration of existing electrical distribution system, including re-routing, upgrade and provision of power points, to suit the new design, layout and comply to the requirements. Upon completion, all main electrical panel (new installation or existing) to be equipped with digital KWh meter.
- For critical service equipment, each desk requires minimum 2 X E-source power points (contractor to verify the distribution of N/E power points before work commencement)
- All cabling from E-source panel to be of fire retardant type.

1.3.6 Wall and Floor Finishing

- To propose new floor finishing for all areas. Modification or alteration of existing floor, if any and if required to suit the new design, layout and comply to the requirements.
- To propose feature wall and supply and install of sign board at main entrance
- The use of laminate, wall paper or carpet must meet fire safety requirement and approved by the Company.

1.3.7 Ceiling Finishing

- Contractor may propose new ceiling base on the design requirement

1.3.8 CCTV, Access Control, Telephone, Network, and Special Equipment

- Contractor to propose, supply and install CCTV system for the entire areas with minimum 30days recording.
- Contractor to propose, supply and install access control system for entire areas.
- Telephone and network related work shall be under Company's scope but site activities to be facilitated by Contractor.

1.3.9 Miscellaneous Fixtures And Accessories

- Loose Furniture – Contractor to propose and supply new suitable, ergonomic, appropriate quantity of furniture as an optional items in quotation
- Built-in Furniture – Contractor to propose and install built-in furniture base on the propose design and to be approved by the Company.
- All amenities listed 1.3.3 to be quoted as optional items in quotation.

2. TRADE NAMES

- 2.1 All trade names mentioned in the Tender Documents shall also be deemed to mean the "other Approved Equivalent".

3. SUBMISSION OF TENDERS

- 3.1 The following documents (hardcopy) to be filled up completely and signed by Contractor :

- (a) Breakdown of Prices, Price Summary, Payment and Technical Schedule (inclusive the pricing for all the proposal)
- (b) A brief written proposal of your Company's capabilities
- (c) Contractor's Proposal –
 - a. Special conditions or limitations in its use (if any). Brief write up of the overall theme of the proposed design and ways to fit the surroundings
 - b. Proposed layout plan
 - c. 3D rendering & sketches to illustrate the proposed concept
 - d. Material board, schedule, and specification

e. Long lead procurement items

1 set of thumb drive with your company name label that contains the softcopy of the proposal in high resolution

(d) Programme

Provide a detail master programme, indicating all activities, areas and sequence of works within the Contract Period.

The programme shall include all key activities, including shop drawings preparation/ approval, submission to the relevant government authorities, ordering of materials, shipping/ airfreight for long-lead items, off-site tests, factory production start, fabrication, delivery, installation periods, factory and necessary site testing and commissioning.

The Contractor should prepare its master programme based on the milestones as mentioned in this RFP.

- (i) Any additional items, documents or information required to be furnished with the quotation, shall be sealed in an envelope.
- (j) The Contractor shall print the envelope label, complete the relevant portions in full, and paste it on its sealed envelope.
- (k) Failure to submit the above may lead to the Quotation being rejected by the Company.

3.2 In submitting its quotation, the Contractor shall not make or propose any variations, modifications or amendments to any of the terms and conditions contained in the Quotation Documents, and any such variation, modification or amendment may be result in the quotation being disqualified by the Company, unless otherwise determined by the Company.

4. VISIT SITE

4.1. The Contractor is deemed to have visited the sites before quoting and fully acquainted himself with the access, the nature of works allowed in this contract and all matters affecting the works. The Contractor shall also be fully acquainted himself with the nature of the site conditions, levels, services, surroundings and all matters affecting the works.

4.2. The Contractor shall allow for all works necessary and no claim for extra payment will be allowed on grounds of lack of or insufficient information or ignorance of the conditions under which the work will be executed.

4.3. The Contractor must make necessary provisions in his quotation sum to cater for additions arising from the difference in dimensions found on sites and that shown in the Specifications/Drawings as we will not entertain any claims from him.

5. ITEM REMOVED

6. CONDITIONS OF CONTRACT

6.1. The Form of Contract shall be executed in accordance with SATS Service Agreement (Appendix B) and "REDAS Design and Build Conditions of Contract, 3rd Edition", published by the Real Estate Developers' Association of Singapore.

- 6.2. The REDAS Design and Build Conditions of Contract (as stipulated above) are not included in this tender set. For more information, please contact REDAS Secretariat at Tel: 6336 6655 or email enquiry@redas.com. The Contractor is deemed to have examined the full contents of the REDAS Design and Build Conditions of Contract thereto and have taken into account the provisions contained therein in the pricing of this tender.

7. DEFECTS LIABILITY PERIOD

The defects liability period shall be Twelve (12) calendar months from the date the works are certified completed and handed over to the Company. The Contractor shall be required to carry out all rectification works such as repairs or replacement of defective works as the Company may instruct in writing during this period.

- 7.1 Should any part thereof fails to operate satisfactorily and needs alternation and /or additional works and is attributed to poor workmanship , defective material, the Contractor shall replace all necessary material and accessories and make good to the completed satisfaction by the Company.
- 7.2 The Contractor shall submit details inspection schedule to the Company during the time of testing of commissioning.
- 7.3 Should the Contractor fail to comply within seven days to the notice, the Company reserve the right to engage others to rectify the works without prior notice to the Contractor and all costs shall be borne by the Contractor.
- 7.4 The Contractor shall maintain a pool workers with their name list clear at all time to be activating to clear the defects immediately once the defects list is given.

8. WARRANTY

- 8.1 The Contractor warrants that the Works shall be free of defects for a period of **not less than 12 months upon commissioning or as specified in the technical data specification, whichever is higher.**
- 8.2 The Contractor shall arrange with the respective manufacturer or specialist to jointly warrant the products / services in favour of the Company.
- 8.3 Any fault due to design, materials, workmanship or structural faults which may be observed during the warranty period shall be made good by the Contractor at its own expense, which shall include the cost of labour and replacement of parts.
- 8.4 The Contractor shall warrant that the Works comply with all relevant statutory provisions including approved building codes, fire prevention codes, safety codes of Singapore Laws and CAAS, and all pertinent statutory provisions issued by the government authorities of Singapore.
- 8.5 The Contractor shall be contactable requiring urgent and emergency attendance at site to any defect and/ or fault encountered during operation for any rectification works during Warranty Period.
- 8.6 The Warranty period shall commence from the date of certified completion of the whole Contract. During the Warranty period, the Contractor shall rectify and make good within the period or duration as specified in the Company's written notice calling upon the Contractor to attend to the said defects. The rectification shall be carried out to the satisfaction of the Company at the Contractor's own cost and expense.
- 8.7. Should the Contractor fail to rectify the said defects, the Company shall have the right to employ other party or parties to make good the defects without in any way relieving the

Contractor from his contractual obligations. All costs and expenses incurred thereof plus charges including an administrative charge of 20% of the works to be determined by the Company shall be recovered from the Contractor.

8.8. The Company shall determine the necessity and extent of making good and rectification of the defects and the decision of the Company thereon shall be final and conclusive.

8.9. Notwithstanding the above, the Contractor shall deliver to the Company the following Deeds of Joint Warranty and Indemnity for a period of one (1), five (5) or ten (10) years from the date of Completion of the latest Phase of the Works in a form exactly similar to the Specimen appended to Tender Documents: -

a) Carpet tiles / Roll (5 Years Warranty)

To indemnify against any defects in the design, workmanship, quality of materials, and other faults in carpet tiles. Contractor shall produce relevant certifications of the carpet tiles used under the fire safety act 2015. For further details, please refer to renovation guidelines.

b) Paint Works (5 Years Warranty)

To indemnify against any defects in the workmanship, quality of materials and water tightness, and/or leakage, deterioration and other faults in the waterproofing works to wet areas including and not limited to blistering, peeling, flaking, chalking, fungus growth, algae growth, carbonation and discolouration.

c) Waterproofing Works for Wet Areas (10 Years Warranty)

To indemnify against any defects in the design, workmanship, quality of materials and water tightness, and/or leakage, deterioration and other faults in the waterproofing works to wet areas.

d) Tile adhesives (5 Years Warranty)

To indemnify against any defects in the design, workmanship, quality of Materials and other faults in tile adhesives

e) Vinyl Flooring (5 Years Warranty)

To indemnify against any defects in the design, workmanship, quality of materials and other faults in flooring adhesives

f) Laminated Flooring (5 Years Warranty)

To indemnify against any defects in the design, workmanship, quality of materials, and other faults in flooring adhesives including and not limited to peeling, flaking, chalking, fungus growth, algae growth and discolouration.

g) Epoxy Flooring (5 Years Warranty)

To indemnify against any defects in the design, workmanship, quality of materials, and other faults in vinyl flooring adhesives including and not limited to peeling, flaking, chalking, fungus growth, algae growth and discolouration.

h) Acrylic Polymer Cementitious coating (APCC) / Self-levelling screed Flooring (5 Years Warranty)

To indemnify against any defects in the design, workmanship, quality of materials, and other faults including and not limited to peeling, flaking, chalking, fungus growth, algae growth and discolouration.

i) Plastic Coated Furniture (5 Years Warranty)

To indemnify against any defects in the design, workmanship, quality of materials, and other faults including and not limited to peeling, check, rot or wrap and discolouration.

j) Aluminium Grid Ceiling (5 Years Warranty)

To indemnify against any defects in the design, workmanship, quality of materials, and other faults including and not limited to peeling, check, rot or wrap and discolouration.

k) Glazing works (10 years Warranty)

To indemnify against any defects, weakness, staining, defective materials & workmanship and defective design of glazing works.

l) Light Fittings (1 Years Warranty)

To indemnify against any defects in the design, workmanship, quality of materials, and other faults in light fitting.

m) Vinyl Stickers (1 Year Warranty)

To indemnify against any defects in the design, workmanship, quality of materials, and other faults in vinyl stickers adhesives including and not limited to peeling, flaking, chalking, fungus growth, algae growth and discolouration.

9. ITEM REMOVED

9. CONFINEMENT OF CONTRACT WORKS BOUNDARY

9.1 The Contractor shall confine all his contract activities within the Site and Contract boundary. He shall not encroach into any existing vacant space unless otherwise approved by the Company. The Contractor shall ensure at all times that no hindrance or nuisance shall occur at all stages of the works to the residents.

10. CARE OF WORK

10.1 All works are to be carried out in a safe and proper manner and in the order that may be directed by the Company so as to cause minimum inconvenience and nuisance to the others. The Contractor is required to provide extra safety measures at his own cost as and when directed by the Company.

11. SITE MEETING

11.1 Site meeting shall be held as directed by the Company. Contractor shall attend all site meetings and must make available by the Project Manager or representative with authority to accept instruction / directions and / or make decisions and act on behalf of the Contractor.

12. SITE REPORT

12.1 The Contractor is required to submit monthly report with attached photographs showing the progress of works at different stages. The report shall include the test results, materials certifications and daily works activities or any related records for proper monitoring of the Contractor's works.

13. DIMENSIONS

13.1 The dimensions given in the Specifications and Drawings are only approximate figures and shall only be used as a guide for costing purpose and shall not be binding on the client. No variation shall be given should these dimensions differ with the eventual works on site. All dimensions are to be verified on site.

13.2 The Contractor is advised to check the actual site conditions and the Company shall not be responsible for any inaccurate information provided in this Contract.

13.3 In case of any discrepancy between the Specifications / Drawings and the actual site conditions, the Contractor shall refer to the Company for decision. The decision made by the Company shall be final and binding.

14. WORKMEN LIVING ON SITE

14.1 Workmen will not be allowed to live on the site.

15. NOTIFICATION TO EXPEDITE

15.1 The rate of progress of the Works or any phase or part of the Works is at any time, in the opinion of the Company, too slow to achieve completion by the Time for Completion of the Works, the Company shall notify in writing the Contractor accordingly. The Contractor shall thereupon take such steps as are necessary to expedite progress and to complete the Works. Such steps shall include, if required by the Company, the preparation of a revised or modified programme for acceptance. The Contractor shall not be entitled to any additional payment whatsoever for taking any of the steps referred to herein.

16. MANNER IN CARRYING OUT WORK

16.1 The Contractor shall ensure that all works are carried out in a safe and proper manner to cause minimum inconvenience and nuisance to the Public. The Contractor shall pay compensation for undue nuisance and inconvenience caused resulting from carelessness or negligence on his part. The Company shall have the rights to impose nuisance and irregularities charges.

16.2 If the Contractor is found to have committed any of the following irregularities: -

- a) Omitting building materials or labour, reducing the sizes of the materials, using inferior materials; or materials constructed not according to the Specifications or Drawings;
- b) Creating nuisance at the Site thereby causing inconvenience to the Company or the public or committing similar acts (such as not complying with site safety requirements, etc.) which are likely to bring the Company into disrepute;
- c) Non-compliance with any part of the Specifications or Drawings or non-fulfilment of any contractual obligations.

16.3 The Company reserves the right to impose on the Contractor and the Contractor hereby fully accepts and agrees to pay without dispute or question the following charges as specified below for the inconvenience cause, investigation and administration expenses incurred by the Company and for damage to the Company's reputation and standing generally. Furthermore, the Contractor may be debarred from tendering for a specified period.

FREQUENCY OF IRREGULARITIES	CHARGES PER IRREGULARITIES
First Irregularities	\$2,000.00
Second Irregularities	\$3,000.00
Third Irregularities	\$5,000.00
Forth and Subsequent Irregularities	\$5,000 up to a maximum of \$10,000.00 per occasion or the termination of the Contract

16.4 In addition to the above charges, the Company is empowered either: -

- a) To order any irregular work to be removed and made good to the satisfaction of the Company at the Contractor's expense,

Or

- b) In lieu of correcting work not done in accordance with the Contract, the Company may allow such work to remain and shall recover any cost differences between the specified requirements and the non-compliance.

For nuisance committed on Site, the Contractor must take immediate action to cease the nuisance committed upon instruction given by the Company.

17. SITE SUPERVISOR & ORGANISATION CHART

- 17.1 The Contractor shall engage a Project Manager, suitably qualified and fully experienced in the types of works to be carried out under the Contract. The Project Manager shall organize, coordinate and supervise all the works, be fully familiar with the Works, fully informed of the progress of Works, attend all site meetings and all other meetings as and when required.
- 17.2 The Project Manager shall be responsible for all site management, supervision and coordination work and be supported by sufficient experienced full time site engineers and supervisors.
- 17.3 The Project Manager shall not be replaced without prior agreement of the Company. The name and qualifications of this Project manager whom the Contractor proposes to appoint shall be submitted to Company prior to appointment. The Company shall have the right to accept or reject the proposal without any reasons given.
- 17.4 The service of Licensed Electrical Engineer/ Authorized Switching Engineer and Professional Engineers where appropriate, shall be engaged by the Contractor to assume full responsibilities for all engineering matters including engineering design, installation, switching and these personnel shall be available to attend meetings, discussions, inspections, etc as requested and required for any 'turn-on' of any electrical equipment and switchboards, upon completion of the contract works, the Professional Engineer shall furnish Completion and Inspection certificates for the respective parts of the Works to the Company to certify that all the works are in full compliance with the Specification and Specification Drawings.
- 17.5 The Contractor shall provide an organization chart indicating all the proposed site staff (full time and part time) for the project for the review of the Company. The chart shall include details of each staff e.g. position, duties and etc. Curriculum Vitae's indicating details of qualifications and experience of all key personnel shall be submitted to the Company for review. This chart and Company's clearance thereof shall not limit the Contractor's responsibility and obligation of adequate staffing at the site and the Contractor shall provide additional qualified staff is considered necessary. The key site staff shall not be changed without prior consent of the Company.
- 17.6 The Contractor shall use or employ in and about the execution of the Works only such persons as are careful, skilled and experienced in their respective vocations, trades and callings and the Company shall be at liberty to object to and require the Contractor to remove immediately from the Works any such person employed by the Contractor in or about the execution of the Works who in the opinion of the Company misconducts himself or is incompetent or negligent in the proper performance of his duties and whose continued presence is undesirable or unacceptable. Such persons shall not be again used or employed upon the Works without the prior written permission of the Company.

18. CONTRACTOR'S AUTHORISED AGENT

- 18.1 The Contractor shall provide for all on and off-site management costs including costs of an authorised and competent site agent. The appointed S.O. Representative shall deem to have been made known to the Contractor.

19. PRECAUTIONARY MEASURES

19.1 The works shall be carried out in the order that may be directed by the Company so as to cause minimum inconvenience to the occupants and the public. The Contractor shall provide adequate barricades and warning signs and take such safety measures as may be required to comply with the requirements of the relevant authorities. As the existing buildings are occupied, the Contractor shall take every precaution to prevent injury to person, damage to property, excessive noise or vibration and dust nuisance by appropriate means. Permission to enter occupied premises must be arranged and obtained by the Contractor. In the event of any dispute, the Contractor shall indemnify the Company from claims arising thereof.

20. PROTECTION OF EXISTING SERVICES

20.1 The Contractor shall be responsible to take all necessary precautionary measures to prevent damages to the existing electrical installation, lightning protection system, water distribution system and other services on sites.

20.2 Should these be already damaged before the Contractor commences work, he should inform the Company and arrange for a joint inspection to have the nature of the damages recorded.

20.3 Should the damages be the result of the Contractor's work, the Company will arrange to have these made good and the cost plus charges to be imposed on the Contractor, shall be recovered from the Contractor.

20.4 The Contractor shall notify the Company promptly of any cable pipes, water mains, manholes, poles, valves, etc, met with during the progress of the works and shall immediately provide adequate support and protection for the same to the satisfaction of the Company.

20.5 The Contractor shall be held responsible for any damage done thereto during the progress of the work and shall bear all costs for repair and reinstatement. In the event where the cables, pipes, etc have to be lowered, relocated or removed, the Contractor shall co-operate with the appropriate Authority concerned and the costs due to this must be allowed for by the Contractor in his pricing.

21. GOVERNING LAW

22.1 This Agreement shall be governed by and construed in accordance with the laws of Singapore.

22.2 The Parties submit unconditionally to the exclusive jurisdiction of the courts of Singapore.

23. ENGAGE THE SERVICES OF PROFESSIONAL ENGINEERS

23.1 The Contractor shall allow in the costing for engaging the services of Professional Engineers who shall visit the site, propose work methods, endorse drawings, inspect and certify the works including liaison with the relevant authorities on the related structural works required under the scope of contract throughout the entire contract period.

24. PUBLICITY

24.1 All media releases, public announcements and public disclosures by the Contractor relating to this Agreement, or the subject matter thereof, including but not limited to promotional marketing material, shall be approved by the Company prior to release.

25. ASSIGNMENT/NOVATION

- 25.1 This Agreement is personal to the Contractor and shall not be assigned or novated either as to the whole or any part thereof, without the prior written consent of the Company. The Company may, by notification to the Contractor, assign or novate the whole or any part of this Agreement to any party. The Contractor shall be deemed to have consented to such assignment or novation.

26 EMPLOYMENT OF WORKMEN/WORKMANSHIP

- 26.1 The Contractor shall employ, in and about the execution of the Works, only such persons as are careful, skilled and experienced in their various trades. No workman, except on official duty approved by the Company, is allowed to stay within the site boundary after working hours.
- 26.2 The Company shall be at liberty to object the employment of workmen who, in the opinion of the S.O. Representative, misconduct himself or is incompetent or negligent in the proper performance of his duties and such persons should not be again employed without permission of the Company. The Works shall be carried out with the best of workmanship.

27 WORKMANSHIP/ MATERIAL

- 27.1 The works shall be carried out in accordance with the best engineering practices by qualified and experienced personnel of appropriate skills and qualifications.
- 27.2 All materials and goods used including its accompanying attachments and fixtures shall be new and of the best quality, correct dimensions, sizes and gauges as approved by the Company and free from any defect or damage on completion of the works.
- 27.3 If any of the materials used is found to be defective or below the acceptable standard, the Company may instruct the Contractor to cease all works and replace those materials with proper and suitable materials of acceptable standard to the Company or in accordance with the Specifications or conform to British Standards or equivalent "PSB" Standards.

28 INSPECTION AND REPLACEMENT OF DEFECTIVE WORK

- 28.1 At any time during or after the execution of the works, the Contractor shall, at the request of the Company and within such time as the Company shall name, open for inspection any Works that are covered up. If the Contractor fails to do so, the Company can employ other contractors to do so. The expense shall be borne by the Contractor. If works done are inadequate, of poor workmanship or inferior materials, or in any way substandard, the Contractor shall rectify the works at no cost to the Company.

29. PAINTING WORKMANSHIP

- 29.1 The Contractor shall provide good quality enamel or emulsion paint and other appropriate type of paint and treatment of all surface, in good manner and using appropriate material as the Company may reasonably and properly required.
- 29.2 Equally attentive effort shall be made for applying each coat of paint to cover all areas of the surface for painting.
- 29.3 Notwithstanding the number of coats specified herein, the Contractor shall be responsible for applying additional coats of paint, at no extra cost to the company, if hiding of the paintwork is inadequate or other aspects of the workmanship is not acceptable.

30. SECURITY PASS

- 30.1 The Contractor shall pay all expenses in connection with the application and issue of security passes for all persons employed by in pursuance of the works.
- 30.2 The Contractor shall ensure that all workers (whether foreign or local) are screened to ensure that workers are not unsafe workers (an “unsafe worker” means any worker who may pose a security threat, including but not limited to committing terrorism acts, to SATS or any other parties.) SATS shall have the right but not the obligation to audit any screening conducted by the Contractor. Such screenings to be conducted by the Contractor shall include not be limited to criminal record / background checks of the workers with the respective local or foreign police force or government security agencies.
- 30.3 The Contractor shall in addition ensure the following;
- That the workers are suitable for employment
 - That the workers will agree to further security checks by SATS if deemed necessary
 - That the workers will adhere to all regulations and procedures posed by CASS/ SATS
- 30.4 If any unsafe worker is found to be employed by the Contractor, SATS shall without prejudice to its rights to its rights, be entitled to withhold any payment due to the Contractor for a period of two (2) months and SATS shall not be liable for any loss or damage suffered by the Contractor as result of any payment so withheld.
- 30.5 The Contractor shall indemnify SATS against any costs and / or expenses, including legal issues, which SATS may incur as a result of the Contractor’s employment of unsafe workers. SATS may reserves the right to impose such other measures, including but not limited to debarring the Contractor.

31. WORKING HOUR

- 31.1 There is no restriction to the working hours for this project. Contractor must schedule noisy works outside working hours so as not to disrupt the neighbouring offices, unless the Contractor is able to find a way to cordon the work area to prevent the noise from affecting neighbouring offices.

32. IDENTIFICATION OF CONTRACTOR’S WORKMEN

- 32.1 The Contractor shall provide his workmen with approved working uniforms, which shall be worn, for identification purposes at all times during the progress of the works.

33. SCAFFOLDING

- 33.1 Where scaffolding is required to be erected, the Contractor shall prepare scaffolding layout and plans to be endorsed by his own Professional Engineer and submit to the relevant authorities for approval before commencement of work. Further to the Site Safety Measures as provided for under the General Specifications, the use of timber scaffolds as working platform and the site access shall be subject to the Ministry of Manpower’s latest provisions and legislation on such case. However, the use of single-row timber scaffold is strictly prohibited.

34. HACKING AND MAKING GOOD

- 34.1 All necessary protection against damages or loss to equipment (whether installed or brought on Site) shall be carried out by the Contractor.
- 34.2 The Contractor shall take due care when drilling, hacking or cutting away existing facilities, and ensure that no adjacent facilities are unnecessarily damaged in any way. Any work damaged will be made good entirely at the expense of the Contractor.
- 34.3 The work shall be carried out in such manner so as not to cause any inconvenience and danger to adjoining owners or the public. Safety precautions and protections shall, at all times, be provided in respect of the above and shall be deemed to be included.
- 34.4 The Contractor will be held responsible for any claim that may arise from disregard of the above work.
- 34.5 When hacking up / removal of existing works, the Contractor shall ensure that the work shall be carried out in such a manner as to minimize inconvenience to adjoining owners, by reducing the amount of noise and confining it to reasonable hours. He shall also reduce the amount of dust by suitable timing of his operations or by keeping the site well watered as and when necessary.
- 34.6 All works shall be carried out without damage to the other structures or adjoining properties and if such damage shall occur in the carrying out of the demolition, the Contractor shall reinstate and make good at his own expense.
- 34.7 The Contractor must refer to the Company for final instruction prior to the commencement of demolition / hacking works. The Company shall decide the sequence of demolition / hacking works and no work shall be executed without their approval. The Contractor shall be responsible for all damages, expenses and losses incurred by Company for the non-compliance of this Clause.

35. TEMPORARY HOARDING, SAFETY NETTING ETC

- 35.1 Provide and maintain all necessary fencing, hoarding, gates, fans, planked footways, guard rails, gantries, safety netting, warning lights and notices for the proper executions of the works, the security of the sites, the protection of the public and occupants of any adjoining premises and for the meeting the requirement of any Government or Public Authority. Alter, shift and adapt from time to time as necessary away on completion.
- 35.2 Cargo lift shall be protected with polythene lined plywood.
- 35.3 All works carried out must be confined to the boundary of the perimeter of the premise or within the hoarding area. The surrounding area and the route used for the transportation of the material must be protected by means of plywood (at least 6mm thick and lay on a 4mm thick underlay) covered with 4mm grey felt carpet. All protection is not laid in accordance with the specifications; the Contractor is not allowed to commence work.
- 35.4 Upon completion of works, the temporary hoarding shall be removed off site and all works disturbed shall be made good to the satisfaction of the S.O. Representative.

36. FIRE PROTECTION WORKS

- 36.1 All Fire Protection Works shall be carried out in accordance with the best trade practise. Fire Sprinkler System installed re-positioned and / or modified shall comply with the Singapore Standard CP 52: 2004 or any latest code of Practise that need the requirement of fire Safety Bureau.
- 36.2 The Contractor shall provide all cost and charges incurred by complying with all safety regulation as prescribed from time to time by guideline appertaining to fire prevention and fighting measures to construction sites.
- 36.3 The Contractor shall comply fully with all fire safety requirements (for example, hot work permit, fire watchers etc.)

37. ELECTRICAL WORKS

- 37.1 Final testing shall be conducted on all existing and new cabling before handing over.

38. WATERPROOFING SYSTEM

- 38.1 Whenever indicated in the Drawings and specifications, the Contractor shall supply and apply approved waterproofing system to the approval of the Company. The method of application shall be in accordance with the manufacturer's instructions.

39. AIR CONDITIONING WORKS

- 39.1 After the equipment has been installed, the Contractor shall carry out testing and commissioning of the equipment to ensure that its performance meet the requirement.

40. APPROVAL OF SAMPLES AND TRADE NAMES

- 40.1 Where trade names or catalogue numbers are specified herein and/or indicated in the Drawings, they are intended only to serve as a guide to the respective type and quality of material required.
- 40.2 Other material proposed by the Contractor may be used subject to the prior approval of the Company. In this respect, the Contractor shall submit sample or samples of the proposed material to the S.O. Representative for approval.
- 40.3 The Contractor shall point out to the Company all items in the approval sample, which do not comply with the Specifications and Drawings.

41. SUBMISSION AND TESTING OF MATERIAL SAMPLES

- 41.1 After award of the Contract, the Company shall be at liberty to call for the submission of samples of materials or the execution of samples of workmanship for approval and for any further samples as and when required, until the samples submitted or executed are, in his opinion, satisfactory. Samples, after approval, shall indicate the standard of materials and workmanship to be maintained in the execution of the Works.
- 41.2 The Contractor shall arrange for testing of any materials to be used in accordance with the relevant clauses of the Specifications and as and when the Company may direct all as described. The Contractor shall pay all costs and charges in connection therewith.

- 41.3 The Contractor shall submit details of components used for the fabrication and fixing/jointing details of the various components and parts of the structures to the Company for approval before the commencement of work. All fixing/jointing details of the structures must be in accordance with the Manufacturer's specifications.
- 41.4 All workmanship shall be the best of its kind and to the complete satisfaction of the S.O. Representative.
- 41.5 No approval or any acceptance by the Company shall relieve the Contractor of his responsibility under the Contract for quality of workmanship in the works.
- 41.6 Failure to comply with the above with sufficient time for the Company's approval will not constitute valid reasons for the Contractor to claim extra variations and/or extension of time.
- 41.7 The Contractor shall indemnify the Company against all loss, injury or cost charges and expenses arising out of or in consequence of any breach of statutory regulations as a result of inferior materials or defective goods or workmanship.

42. DRAWINGS TO BE KEPT ON SITE

- 42.1 One copy of the Drawings, provided to or supplied by the Contractor as aforesaid, shall be kept on the site by the Contractor and the same shall at all reasonable times be available for inspection and use by the Company and by other person authorized by the Company.

43. RISK MANAGEMENT

- 43.1 The Contractor shall prepare the risk assessment plan in compliance with the latest Workplace Safety and Health (Risk Management) Regulations. The plan shall be submitted to the Company before the Contractor is allowed to proceed with the works. The risk assessment plan shall be prepared by the competent persons who have attended the MOM's training course on risk management system. The Contractor shall submit the risk assessment plan according to the prescribe form (Appendix I).
- 43.2 The Contractor shall engage a Workplace Safety and Health Supervisor to carry out but not limited to the following:
- To control and monitor the risk during the progress of works
 - To inspect and rectify any unsafe place of works
 - To ensure the workmen comply with the safety regulations including personal protective equipment
 - To conduct toolbox meeting at work site
 - To maintain safety & housekeeping inspection records, toolbox meeting record and other safety record in compliance with the Workplace Safety and Health Act.

44. STANDARDS AND REGULATIONS

- 44.1 The whole Works covered by these Specifications shall be carried out strictly in compliance with the requirements of the Building Control Act and other relevant authorities, and to the prevailing requirements of the various codes and standards.
- 44.2 All electrical works, material and equipment shall comply with the following latest code / regulations :
- a) Singapore Standard: CP5
 - b) Wiring of Electrical Equipment of Buildings
 - c) All relevant Singapore Standards
 - d) The Electrical Regulations (Public Utilities Act)
 - e) Changi Airport Group & CAAS Regulations
 - f) Any other Rules and Regulations in operation
- 44.3 All materials supplied shall conform to applicable British Standards and comply with Singapore standards.

45. REINSTATEMENT WORKS

- 45.1 The Contractor is deemed to have allowed in his tender pricing any reinstatement works. Generally, the reinstatement works required shall be the making good of things being disturbed during the course of work to match the existing condition.
- 45.2 The Contractor shall not be entitled to claim for any extra costs that may arise. Should the Contractor fail to make good any works damaged, etc., the Company shall arrange for other Contractors to carry out the work and recover the costs incurred from the Contractor.
- 45.3 All reinstatement work must be done to the satisfaction of the Company.

46. COMPLETION OF WORK

- 46.1 The Contractor shall leave every part of the Works included in this contract in a clean, sound and perfect condition, free of all flaws, cracks settlement whatsoever upon completion.
- 46.2 All sites and working areas shall be swept and tidied, and all construction equipment and materials and discarded materials shall be removed from the site.

47. INSPECTION OF THE WORKS PRIOR TO CERTIFIED COMPLETION

- 47.1 The Contractor shall conduct detailed checks on the Works and rectify all defects before arranging for the Company to inspect the Works for the purpose of certifying completion of the Works. The Contractor shall ensure that all items to be incorporated into the Works have been so incorporated before arranging for inspection by the Company. The Company may not inspect the Works if any of the aforesaid items are not incorporated into the Works. The Contractor shall not be entitled to any claims and to any extension of time on account of such failure to ensure that all items are incorporated into the Works.

48 ATTENDANCE FOR EMPLOYER'S DIRECT CONTRACT AND SPECIALIST WORKS

- 48.1 The Company reserves the right to engage their own contractor or Specialists in their opinion that such works deemed to be suitable for their operation or maintenance and of special nature.
- 48.2 The Contractor shall provide access to the site and render all necessary attendance and co-ordination for works to be carried out by Company's other Consultants, Direct Contractor and Specialist Contractor.
- 48.3 The costs, profits and expenses incurred for the attending and coordinating with the Company's other Consultants, Direct Contract and Specialist Works shall be deemed to be included in the Contract Sum by the Contractor.
- 48.4 No claim for loss of expense or extension of time is allowed in connection therewith.

49 STRUCTURAL STEELWORK

- 49.1 All structural steelwork shall be hot dipped galvanized with 2 coats of paint to be applied to the galvanized steelwork. The Contractor shall ensure that the paint is suitable when applied to galvanized steelwork.

50 INSPECTION AND REPLACEMENT OF DEFECTIVE WORK

- 50.1 At any time during or after the execution of the works, the Contractor shall, at the request of the Company and within such time as the Company shall name, open for inspection any Works that are covered up. If the Contractor fails to do so, the Company can employ other Contractors to do so. The expense shall be borne by the Contractor.
- 50.2 If works done are inadequate, of poor workmanship or inferior materials, or in any way substandard, the Contractor shall rectify the works at no cost to the Company.

TENDER FOR DESIGN & BUILD (RENOVATION WORKS) TO SATS CARGO NETWORK SOLUTIONS AT AIRFREIGHT TERMINAL 5

EXECUTIVE SUMMARY

1.1 SATS Ltd (hereinafter referred to as ‘SATS’) – Cargo Services & Security Services – is seeking for a vendor to design and build its new control centre, named Cargo & Security Control Centre (CSCC).

1.1.1 Address: Core M, Level 5, SATS Airfreight Terminal 5, Changi Airfreight Centre, S(819830)

1.2 The main objective of this project is to create a state-of-the-art / futuristic centralised control centre for one-stop monitoring of Cargo Services & Security Services.

1.3 This project’s start and end dates are summarised in the table below:

Deliverable	Target Start Date	Target End Date
CSCC Design & Build	November 2020	mid-January 2021

1.4 This project requires all interested entities to attend a compulsory tender briefing on-site before they participate in the tender exercise.

1.5 This project also requires all interested entities to work closely with other vendors who are involved in the other phases such as:

- CSCC Video Wall & Video Wall Management System

2. SCOPE OF WORK

2.1 The general requirement for the control centre layout is as follows:

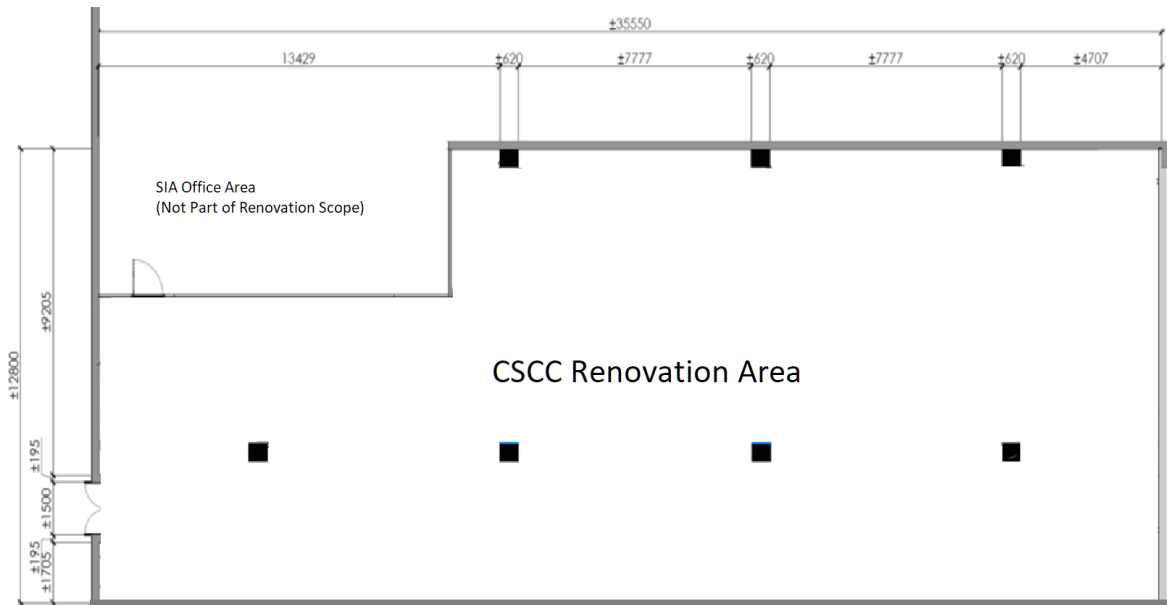
2.1.1 While co-located, the two control centres shall be equipped with separate access control systems.

2.1.2 The vendor shall propose technologies that can be incorporated into the physical renovation phase such as collaborative smart boards, e-curtain glass and Facial Recognition-enabled premise access control system, and to price these technologies as optional items in the pricing table.

2.1.3 Officers in either control centre shall not have visibility of the video wall in the other. This can be in the form of an automatic blind, an e-curtain or smart film glass separating the two control centres, which will enable us to portray the Control Centre control centre as one unified Control Centre by a switch (frost-defrost) when we need to, to name some examples. Vendors shall propose cost effective solution to this.

2.2 Measurements of Renovation Area

2.2.1 Please find below for the existing layout space of the current office, with measurements.



2.3 Cargo Control Centre Requirements:

- 2.3.1 The total number of workstations required is 29. This is inclusive of 5 additional workstations meant for future expansion in operations monitoring.
- 2.3.2 The arrangements of the 29 workstations are as follows:
 - 2.3.2.1 3 workstations in a glass office meant for management usage. This glass office while providing some form of privacy for management, it must also fulfil the open concept of collaborations with the main Operations.
 - 2.3.2.2 For the rest of the 26 workstations.
 - 2.3.2.2.1 3 workstations shall be in a linear seating arrangement, with facing to the video wall, meant for command and control of the Cargo Operations.
 - 2.3.2.2.2 For the rest of the 23 workstations, they are to be arranged in clusters format, which encourages collaborations between different parties. The size of the cluster preferably to be of small clusters of up to 4-5 seats per cluster.
- 2.3.3 The vendor shall include a small walkway for Security officers to walk to their control centre without causing inconvenience to the Cargo officers.

2.4 Security Control Centre Requirements:

- 2.4.1 The total number of workstations required is 11.
- 2.4.2 The arrangements of the workstations shall mimic an actual command centre style, which consist of linear arrangements with main commander seated at the rear, and operations monitoring at the front, all facing the Video Wall; in the formation of 4-3-3-1.

2.5 Common Conference Room

- 2.5.1 A common Conference Room shall be built to serve both Cargo and Security Control Centres.
- 2.5.2 The Conference Room shall be able to sit at least 10 personnel.
- 2.5.3 The Conference Room shall be able to view both control centres at the same time, with the option to be able to hide the view of the Security Control Centre during peacetime operations. The view can be hidden via the means of electronic blinds or any other form. Vendors shall propose cost effective solutions to this.
- 2.5.4 The conference room shall also be equipped with a video projection wall with LED OHP.

- 2.5.5 The vendor shall also propose innovative conference room solutions such as collaborative touchscreen boards, videoconferencing capabilities and writable walls, and to price these innovations as optional in the pricing table.
- 2.5.6 The vendor shall propose the ideal layout to fit the above, which can also enhance collaborations between different parties.

- 2.6 Common Pantry
 - 2.6.1 A common pantry shall be set up for staff from both control centres to utilize.
 - 2.6.2 The pantry should not be placed within the operations of the control centres, to prevent any inconvenience caused by movement of the staff to and from the pantry
 - 2.6.2 The pantry shall be a dry pantry setting.
 - 2.6.3 The vendor shall propose the furnishings in the pantry.

- 2.7 Common Utility Room
 - 2.7.1 Common utility room, which houses key office utilities, such as printers and stationary storage, shall be included in each of the Control Centres.

- 2.8 Cargo Staff Storage Room
 - 2.8.1 A staff storage room, which can house up to 20 small cabinets meant for staff personal use, shall also be included within the premise of the Cargo Control Centre.

- 2.9 CCTV Viewing Room
 - 2.9.1 A separate access-controlled room consists of Three CCTV-viewing workstations shall be included for the purpose of Cargo investigation.

- 2.10 Server Rooms
 - 2.10.1 Server room shall be included to house the servers required for the Video Wall, and other servers required to facilitate the operations of the Control Centres.

- 2.11 Holding Area / Reception
 - 2.11.1 A holding area, which also serve as a reception for guests, shall be included at the entrance of the CSCC.
 - 2.11.2 The holding area shall include SATS logo as part of branding requirements and a space to cater for potential placement of additional logo.

2.12 Setting Aside Space for Video Wall Installations

2.12.1 As mentioned above, both Control Centres will be completed with video walls. As such, the vendor must allocate space for video wall installations and its necessary cabling during the building works.

2.12.2 The dimension of each of the screens for video wall at each control centre is as follows:

DISPLAY	
Screen Size	55 inches
Resolution	1920 x 1080 pixels
Brightness	700 cd/m ²
Contrast Ratio	3500:1
Viewing Angle (Horizontal/Vertical)	178/178
Maximum Display Colours	16.8 million
Colour Calibration	Factory Calibrated for colour uniformity across all displays in video wall
Response Time (Grey-to-Grey)	8ms
Orientation	Landscape and Portrait
Approximate Panel Lifespan	60,000 hours
CONNECTIVITY	
Input – Video	1 x DisplayPort 1 x VGA 1 x HDMI 1 x DVI-D (HDCP compatible)
Input – Control	1 x RS232C 1 x RJ45
Output – Control	1 x RS232C
POWER	
Power Supply	100 – 240 V AC, 50/60Hz
Power Consumption (Typical/Max)	175 W/ 210 W
OPERATING ENVIRONMENT	
Operating Temperature	5°C – 40°C
Operating Humidity	20% - 80%
DIMENSIONS	
Bezel-to-bezel Width	1.7mm
Mounting	VESA compatible (4 points)

2.12.3 These are the number of screens being allocated for each area:

2.12.3.1 Cargo Control Centre – 8 Screens (2 rows by 4 columns)

2.12.3.2 Security Control Centre – 8 Screens (2 rows by 4 columns)

2.12.3.3 Conference Room – 1 Screen

2.13 Other Requirements

2.13.1 The workstations in the Control Centre shall be durable, ergonomically advanced, and aesthetically impressive.

2.13.2 The vendors shall comply with the latest Safe Distance Management Measures issued by the Singapore Government when designing the layout of the CSCC.

2.13.3 The vendor shall install removable Perspex dividers at the all workstations as part of COVID-19 precautionary measures against spreading.

2.13.4 The design shall match consoles, chairs, display wall and lighting for a completely functional and visually consistent facility.

PROJECT SCHEDULE

- 1.1 The Contractor shall submit a list of personnel who will be performing the Works before commencement of work.
- 1.2 Where overtime work is required due to the exigencies of circumstances, the Contractor is deemed to have allowed for such contingencies in his tender and no claim for any extra costs arising from this shall be entertained by the Company.
- 1.3 The Contractor is required to complete the whole Works in phases without impacting the operation within duration of **Six (6) weeks from date of site handing-over, if not earlier, including materials lead-time.**
- 1.4 The actual construction schedule on site is subjected changes due to stakeholder's requirement.
- 1.5 Contractor to propose detailed schedule including submission to authorities.
- 1.4 The Maintenance Period shall commence upon the Date of Completion and shall expire 12 months from the Date of Completion of stage 7.
- 1.5 The Deeds of Joint Warranty and Indemnity provided by the Contractor for the Works shall commence from the Date of Completion of stage 7.