

PARTICULAR SPECIFICATION

APPENDIX AI

**BUILDABILITY SCORE FOR LTA RAPID TRANSIT SYSTEM
PROJECTS**

BUILDABILITY SCORE FOR LTA RAPID TRANSIT SYSTEM PROJECTS (MRT STATIONS)

1. We refer to the various discussions between BCA and LTA on the Buildability of MRT station projects.
2. LTA has proposed a list of productive technologies/initiatives applicable to MRT stations for consideration in the Buildable Design Score (B-Score) framework or the Constructability Score (C-Score) framework (where applicable).
3. We have reviewed the list and are agreeable to the items as shown in the Annex for the B-Score or C-Score points are to be as given in the Code of Practice on Buildability (COP) 2017 Edition. We have explained and clarified the method of computation for each of these items.
4. The points given for the various items are applicable to LTA's North East Line Extension (NELe), RTS Link and future MRT station projects. The Code of Practice on Buildability is reviewed regularly including the points to be given to stay relevant with technological advancement. We would invite LTA for discussion when a review is required. At the same time, we appreciate that LTA is committed to actively adopt new designs and technologies to reduce manpower on sites.
5. We look forward to partnering LTA to raise the productivity of the built environment sector.

ANNEX**1. LIST OF PRODUCTIVE INITIATIVES / TECHNOLOGIES AND B-SCORE OR C-SCORE POINTS GRANTED****(A) B-SCORE POINTS**

LTA INITIATIVES	B-SCORE POINTS	RELEVANT SECTION OF COP 2017 FOR B-SCORE POINTS
1. Liquefied Soil Stabiliser (LSS) Backfill (minimum 10% of backfill volume)	1.0	5. SS "Other Structural Systems not listed in BDAS"
2. Any form of waterproofing concrete e.g. self-compacting concrete (SCC), concrete with silica fume, that replaces membrane (minimum 30% area of base slab where waterproofing is required)	2.0	5. SS "Other Structural Systems not listed in BDAS"
3. Prefabricated and pre-assembled tracks (minimum 80% of total length)	2.0	A5. DfMA "Other systems not listed in BDAS"
4. Creation of incidental space above excavated station (minimum area of excavation and backfilling above station)	65% - 1.0 80% – 2.0	A5. DfMA "Other systems not listed in BDAS"
5. Pre-insulated chilled water pipes (must be specified in tender specifications) (minimum 80% of total length of chilled water pipes)	3.0	A5. DfMA "Other systems not listed in BDAS"
6. Use of 600 MPa strength rebar	LSI 0.05 x percentage of coverage x 45	5. SS "Other Structural Systems not listed in BDAS"
7. Geotechnical instrumentation database management system (TEMS)	2.0	5. SS "Other Structural Systems not listed in BDAS"

(B) C-SCORE POINTS

LTA INITIATIVES	C-SCORE POINTS	RELEVANT SECTION OF COP 2017 FOR C-SCORE POINTS
1. Laser Scanning for Structure Gauge	1.0	"Other Good Industry Practices"

2. CLARIFICATIONS ON B-SCORE COMPUTATION FOR LTA'S MRT STATION PROJECTS

A. Structural system:

- (i) BCA is open to accept if mandatory minimum 65% coverage of welded mesh cannot be met, with reasons/justifications (e.g. low headroom, tight worksite space, etc.).

B. Wall Systems:

- (i) To include in computation railings and glass walls (PSD door, curtain wall, lift glass walls) for wall system with LSI 1.0.
- (ii) In the event of high voids $\geq 9\text{m}$, provide the reasons and importance of the high voids in the design to score full 2.0 points (e.g. high voids is required for visibility and way-finding in station).
- (iii) To meet minimum 70% precast staircases but non-standard riser height is allowed for LTA MRT station projects.

C. DFMA:

- (i) $\geq 80\%$ use of flexible sprinkler droppers is computed based on area with false ceiling only. Area without false ceiling is not counted.
- (ii) $\geq 80\%$ use of flexible water pipes is computed based on areas where the diameter of tap point is within manufacturer's capability to produce flexible pipes. Where used, the flexible water pipes have to be adopted from tap point to the branch out / main pipe.
- (iii) Common M&E bracket (min 3 M&E services) – each different telco service provider (e.g. Singtel, Starhub, M1) and each different power cable (e.g. LV, 6.6kV, 22kV) is considered as 1 service.

$\geq 80\%$ use of common M&E bracket is computed based only on the length of tray supported (exclude ducts, direct ceiling mount).

Tray with only 2 services can also be considered if there are only maximum 2 services within the same bracket support system.