Singapore Healthcare Management 2019

Improving users' experience and sustainability by using Design for Manufacture and Assembly (DFMA) wall systems in healthcare renovation

Analyn Azores Saba, Phang Chiew Li **Singapore National Eye Centre**



Background

Conventional construction using dry wall partitions in interior renovations requires altering, demolishing and disposing a lot of construction debris that can generate much noise, dust & fumes, which disrupts patient and staff operations.

To address the above-mentioned issues, using Design for Manufacture and Assembly (DFMA) wall systems in renovations was considered in order to achieve the following:

1) To reduce the site installation time during renovation so as to improve experience of users in the existing facility.

2) Have better quality control over the type of wall system used and how the M&E services are run within the wall.

3) Using a more sustainable way to build than conventional construction as currently all the existing dry walls are demolished and disposed at the start of a new renovation.

Methodology



Typical installation sequence of DFMA

Laying of pre-engineered frames



Integration of M&E services

Wall panel fitting



Implemented project is at SNEC Level 7

administration office (live environment) with

clinical space – Singapore Eye Bank & SERI Clinic.

The project was awarded to a local contractor

with a DFMA wall system specialist. All

mechanical, electrical, plumbing conduits,

cutouts, faceplates & plumbing chases were

integrated & fitted in factory.

Mounting of fixtures

Contractor was awarded a grant under the Productivity **Innovation Project** Scheme from BCA



Onsite assembly was completed with minimal dust & noise.

Results

Faster and more efficient construction schedules with offsite DFMA construction with factory fitted M&E for quicker onsite assembly time hence there is less disruption to user's operation.



2 Less wastage and more flexibility as 70-80% of the modular wall panels

3 Higher productivity with reduced



Construction Time (Man hours)



Conventional DFMA

can be reconfigured and reused if there is a change in space requirement, thus reducing construction waste.



Original installation onsite



Adhoc modification done





- Better quality installation as parts are manufactured in a factory.

Cleaner and quieter construction with Δ significantly less noise, dust and construction waste at project site. There is lesser housekeeping works and disruptions to users.



Typical conventional site



DFMA site installation

Learning points:

- Entire project timeline had to take into considerations of Contractor's grant application with BCA as grant approval took longer than expected due to queries and staff turnover.

- DFMA specialist should factor in adequate resources such that their design, drafting and technical services can meet the quick turnaround time of an interior renovation.
- It is challenging to fit pre-fabricated systems into a 20 year old existing building, hence more time was needed for site adjustments during the installation period.
- DFMA specialist should have knowledge of local Singapore construction norms and practices for ease of project coordination.

Conclusion

SNEC users did enjoy a better experience because of the cleaner site installation and shorter work period on site with minimal disruption to their operations. With DFMA, healthcare facilities can be built and renovated in a more sustainable and cost efficient way with future-proof capabilities to cater for long term changes in future healthcare needs.



