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Pro's & Con's:

Lightweight Steel-framed Colorbond Clad Structures Vs Masonary Buildings with Stainless+Concrete System

Service Life

- The primary structural elements are cast in situ concrete floors with light galvanised steel panels, supported by steel columns.
- Steel qualities are pre-galvanised steel sections and pre-coloured steel.
- Concrete floor is typically cast in-situ and unless specifically specified, and enforced in the construction phase, control fall is not easily achieved in conventional site construction procedures. This generation of fall is a very skilled procedure, and very easily overlooked in the construction phase. Slight depressions cause puddling in the wet cleaning process, which leads to slip hazards, mould, and a un-desireable damp user experience.
- Poor fall and drainage in slab cannot be rectified easily. A topping of concrete minimum 50mm thick, or tiling, is the only satisfactory rectification procedure. This topping can have unforseen impacts on compliance with AS1428.1(2009), heights of pedestal and grabrails.
- This design is not particularly hardy and not suitable for high volume urban use.
- Typical life is less than 20 years.

- The primary structural elements are concrete and steel. Rugged and durable.
- Steel qualities are: stainless steel, hot dipped galvanised steel and Colorbond steel,
- Concrete components, cast in factory, have extreme durability and strength.
- Precast floor elements have fall cast in to them enhancing cleaning and maintenance requisites.
- All are extremely hardy and fit for purpose for public use toilets.
- Typical life is 30 years.

Vandal Resistance

- Precoloured corrugated steel cladding is not fit for purpose for high use urban public use toilets.
- Generally they are supported by pregal steel thin wall channel members welded in a frame, internally and externally line with a pre-coloured corrugated steel cladding.
- This building system is not hardy. It will not resist vandal "kicking" and other methods to the external face attack. It will get damaged.
- It is totally not suitable for graffiti attacks. Graffiti can be partially removed by solvents, but not without damage to the underlying coloured steel. There will be smear marks after the cleaning process.
- The commercially available coloured steel cladding does not lend itself to over painting. Without extensive surface preparation, overpainting will not bond. In short, graffiti or its remnants are there forever…unless the building is re-clad.

- The Stainless+Concrete Panel was primarily designed for vandal resistance and long service life.
- The panels are 100mm thick reinforced concrete.
- Will resist vandal "kicking" and other methods to the external face attack.
- The external face is power trowled smooth concrete finish, treated with acrylic paint and graffiti management systems. The porosity of the surface is minimised. Spray paint penetration vastly reduced.
- Graffiti can be swiftly removed. This capability is essential to remove the peer gratification component of graffiti perpetuators.
- Graffiti is swiftly removed with proprietary solvents.
- The internal face has stainless steel sheet integrated into the concrete panel. This sheet has a dimple finish, which prevents the ability to scratch or other mechanical marking with sharp tools.

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Maintenance

- Reduced maintenance costs are an essential design component of public toilet facility design. Grossed up costs over a thirty year life of a facility must be considered. If these ongoing costs can be reduced, these gains can be off set against a higher capital entry cost of the facility.
- Design elements that deliver reduced maintenance inputs are:
  - Hardy construction: In a 30 year asset life view, this lightweight construction method is not hardy.
  - Fixtures, pedestals, sinks and support arrangements, tap mounting, grabrail, toilet paper can be well satisfied, but fixing to a lightweight frame cannot be adequately achieved.
  - AS1428.1(2009) mandates that grabrails must be able to with stand a 1.1 Kn load in all directions. In layman terms, this means that a 110 kg person can stand on a component without failure. and is next to impossible to achieve using a lightweight steel structure. It also raises litigation issues for the owner if a person gets injured due to a component failure, or if it is not Standards compliant under Disability Discrimination.

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- Design elements that deliver reduced management inputs are:
  - Hardy construction
  - Fixtures, pedestals, sinks and support arrangements, tap mounting, grabrail, toilet paper well specified and massively fixed.
  - Appropriate finishes to external face
  - Cleaning and servicing inputs

Cleaning

- As addressed prior, poor fall in the concrete floor and consequent puddling contributes massively with the cleaning process. Cleaning may well be achieved by pressure hose, but if puddles remain, these must be mopped. This could realistically double the time taken to achieve the cleaning procedure. Gross this up to a thirty year life, a substantial figure.
- Primary cleaning of internal surfaces: Pre-coloured steel can be pressure washed, but not continuously. Over a short time, the colour will degrade. The pre-coloured steel sheeting is primarily designed for external use with high UV factors it is not designed to withstand wet areas. It is not designed to be continually cleaned with industrial grade cleaning agents. It will degrade.
- Primary cleaning is achieved by pressure washing - no mopping. This is assisted by fall cast in to the floor, with drainage via scuppers manufactured into the side walls.
- The profile of the floor is designed so that there is no puddling in corners or cavities. No post wash mopping. No slip risk hazard.
- Floor finish complies with AS4663 slip testing, but has smooth surface well suited to pressure cleaning, no detergents required.
- Internal surfaces can be pressure washed with no requirements for detergents. No grout damage due to pressure cleaning. Stainless steel is a totally fit for purpose surface for wet areas.
- External surface is smooth and moisture proof. Monthly hose down to remove grime and cobwebs.
- In built snap connectors for connection of the wash down pressure hose included in each booth.
- All functions to expedite the cleaning process. Every minute (and dollar) saved in the cleaning process has a vast impact on the whole of life cost of the facility.

Site Construction

- Lightweight steel framed construction generally follows this format:
  - Subgrade civil construction.
  - Sub floor plumbing placed.
  - Concrete floor is constructed.
  - This generally involves minimum one day boxing and preparation, one day cure.
  - Agitators, cranes, pump trucks must access the site. Generally, this exercise can be achieved in one working week.
  - Steel framing, wall and roof are erected.
  - Cladding and roofing are fixed. The roofing will be fixed after the structure is erected, involving height work.
- The Stainless+Concrete buildings are delivered to site as a kit of parts:
  - Subgrade preparation are made prior to product arriving on site.
  - Interruption to roads, car parks, access roads and parks are reduced dramatically.
  - Pre-fab construction have major quality control advantages as well as use of high-technology tools and processes.
  - Worker safety is far better managed in a factory situation rather compared to site construction. Safety statistics support this.
  - Delivery of a useable facility can generally be achieved in two working weeks. Once commitment is made by facility owner, accelerated delivery is guaranteed. This achieves satisfaction for all stake holders; owners, citizens users, and managers.