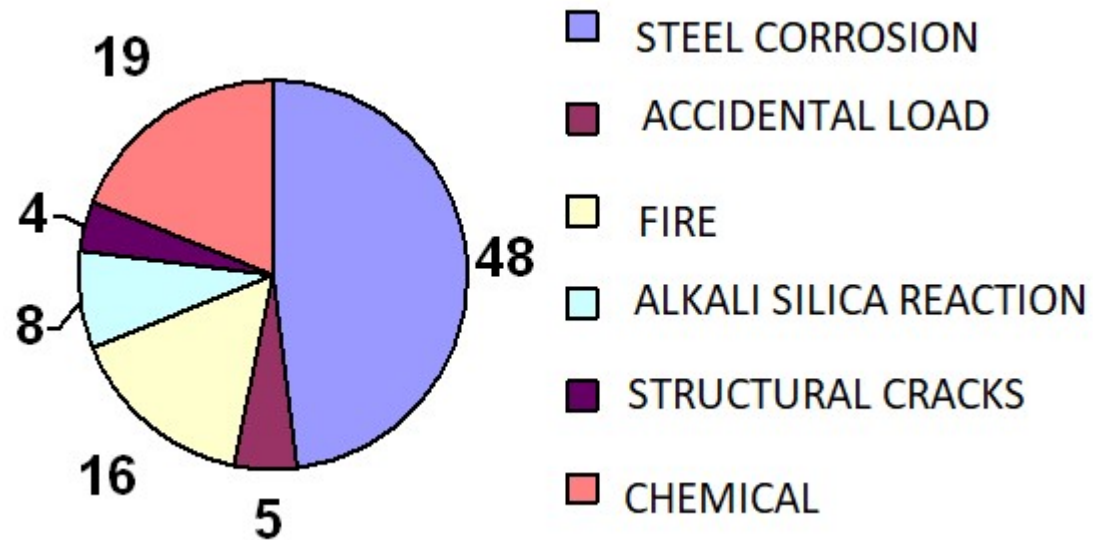


Seamless Construction Systems  
with  
Innovative Confined Shear Wall (CSW)  
using “Novel Build Wall”



## CHALLENGES & NEEDS OF A MODERN DAY TECHNOLOGY

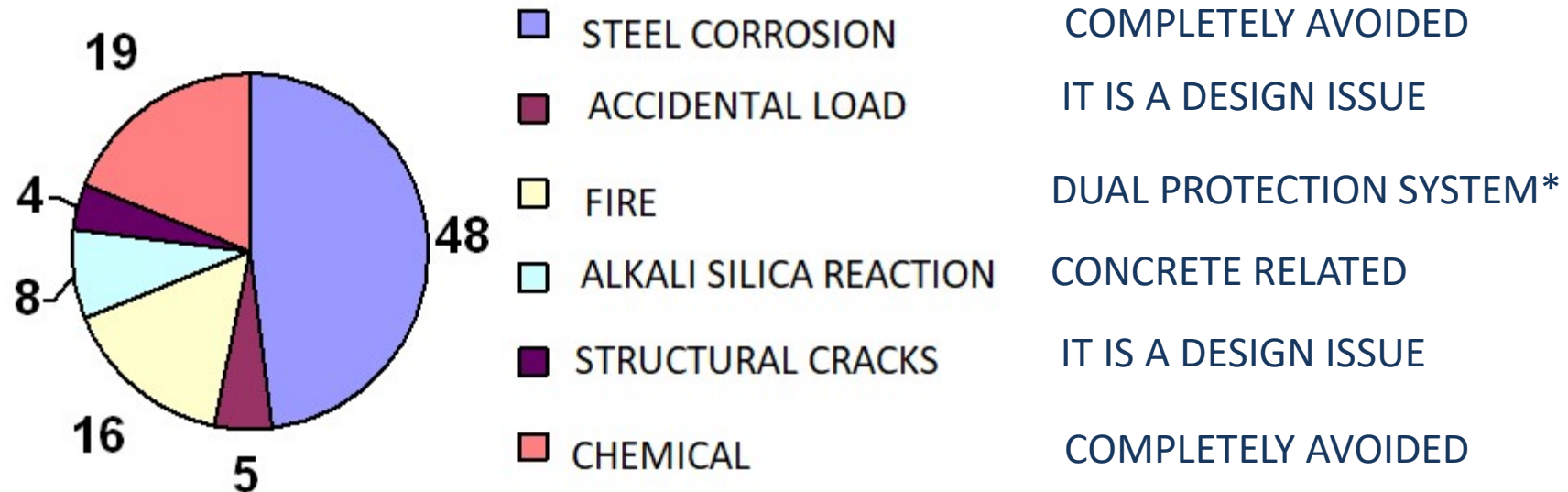


CONCRETE & STEEL ARE PRONE TO DURABILITY ISSUES AND OFTEN COSTS TO REPIAR ARE PROHIBITIVE

AS SHOWN HERE CORROSION IS THE BIGGEST ENEMY

HENCE, IT IS ESSENTIAL FOR THE MODERN TECHNOLOGY TO BE SELF PROTECTIVE & GREEN

# NOVEL WALL TECHNOLOGY



- Fire is first resisted by Polymer and exposure of concrete to fire is delayed.
- 100mm concrete walls showed more than 2hrs fire rating

## Parameters

Polymer stability against UV/ Infra	As/ ASTM & Canada standards
Fire	Approved as per American/ Canada Australia, Japan & other countries
Material has been in use for over 35 years under dramatically different exposure conditions	



## “CSF” WALL SYSTEM

- ✓ Installation and Alignment
- ✓ Rebar placement
- ✓ Concreting
- ✓ No of workers – not more than 3-4 workers/ day

Max 2-3 days time per floor

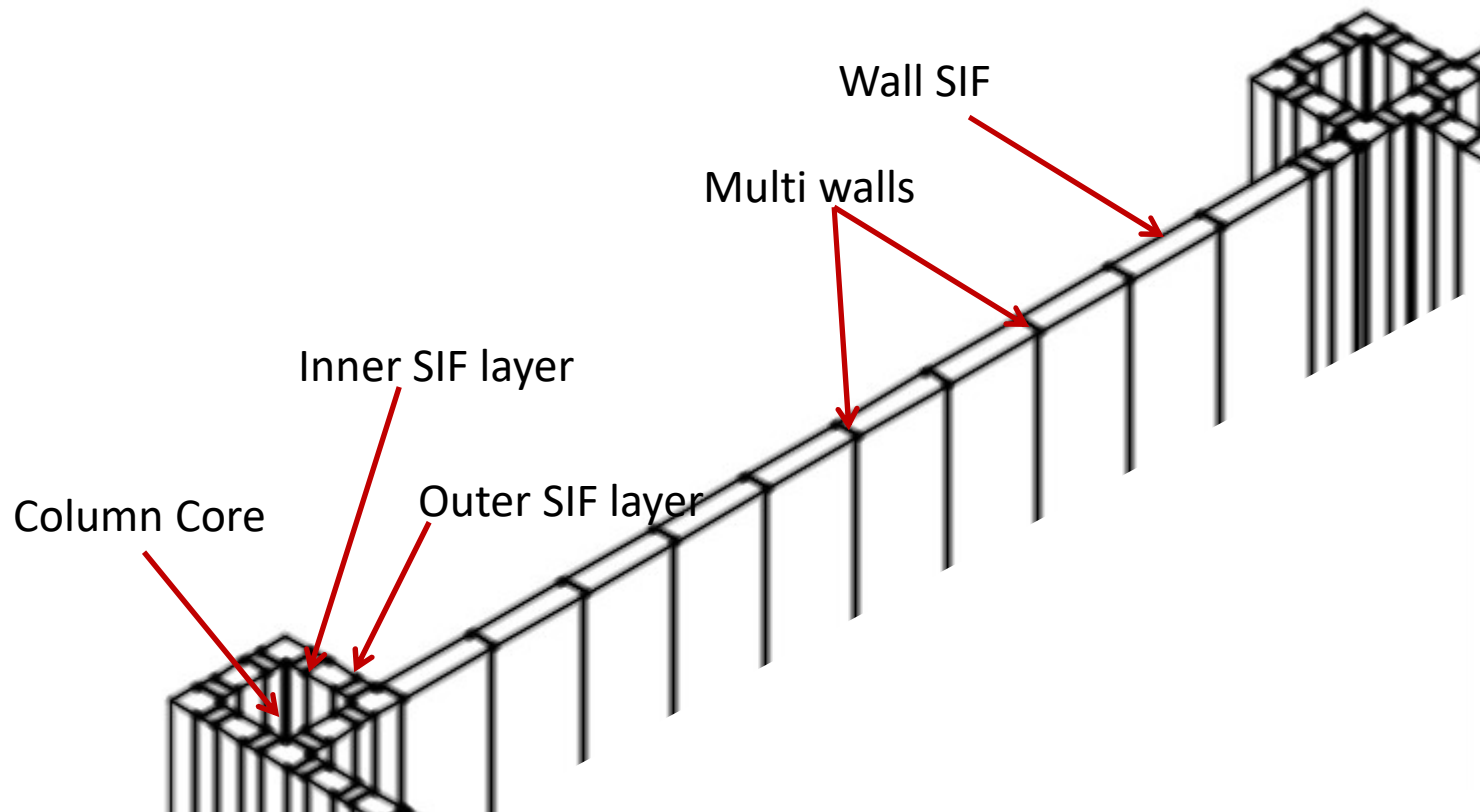
*“No Curing Required as there is no exposed surface”*



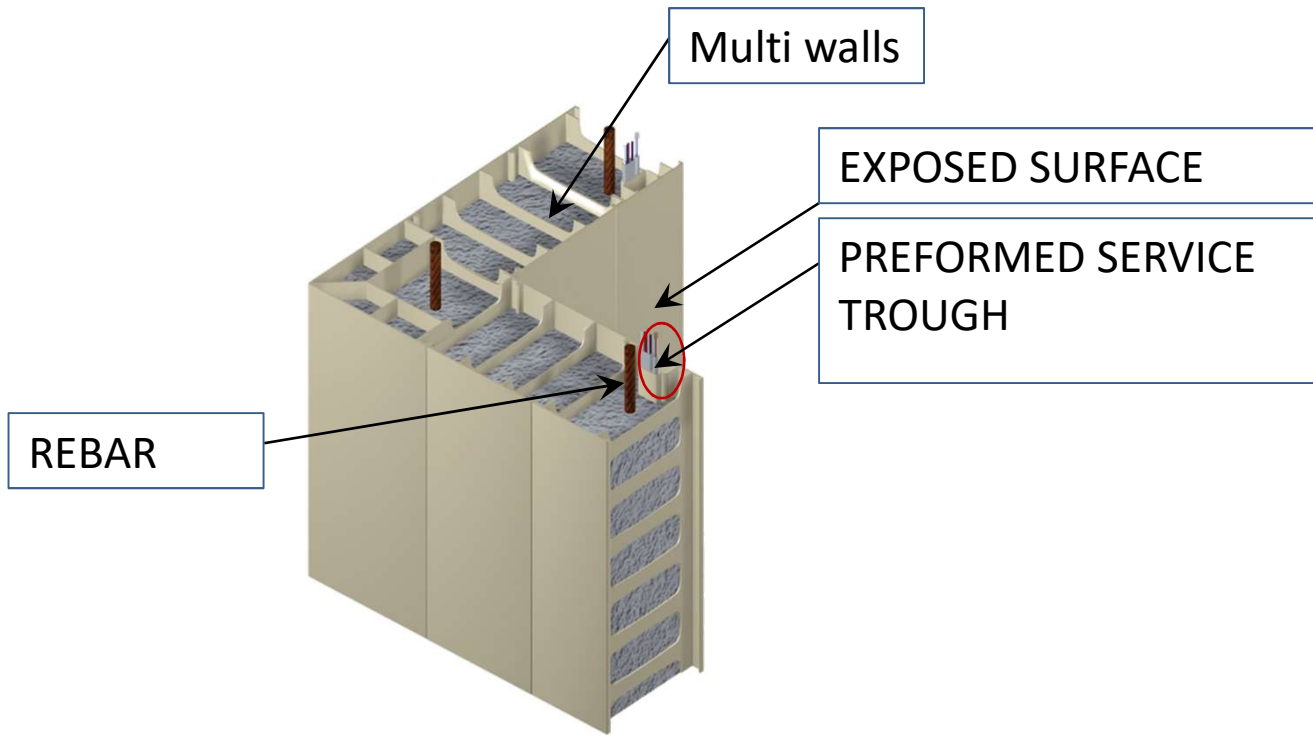
## CONVENTIONAL SHEAR WALL

- ✓ Rebar placement
- ✓ Shuttering Installation & alignment
- ✓ Rebar cleaning
- ✓ Concreting
- ✓ Curing
- ✓ De-erection & shuttering cleaning
- ✓ Surface preparation & Plastering
- ✓ Painting

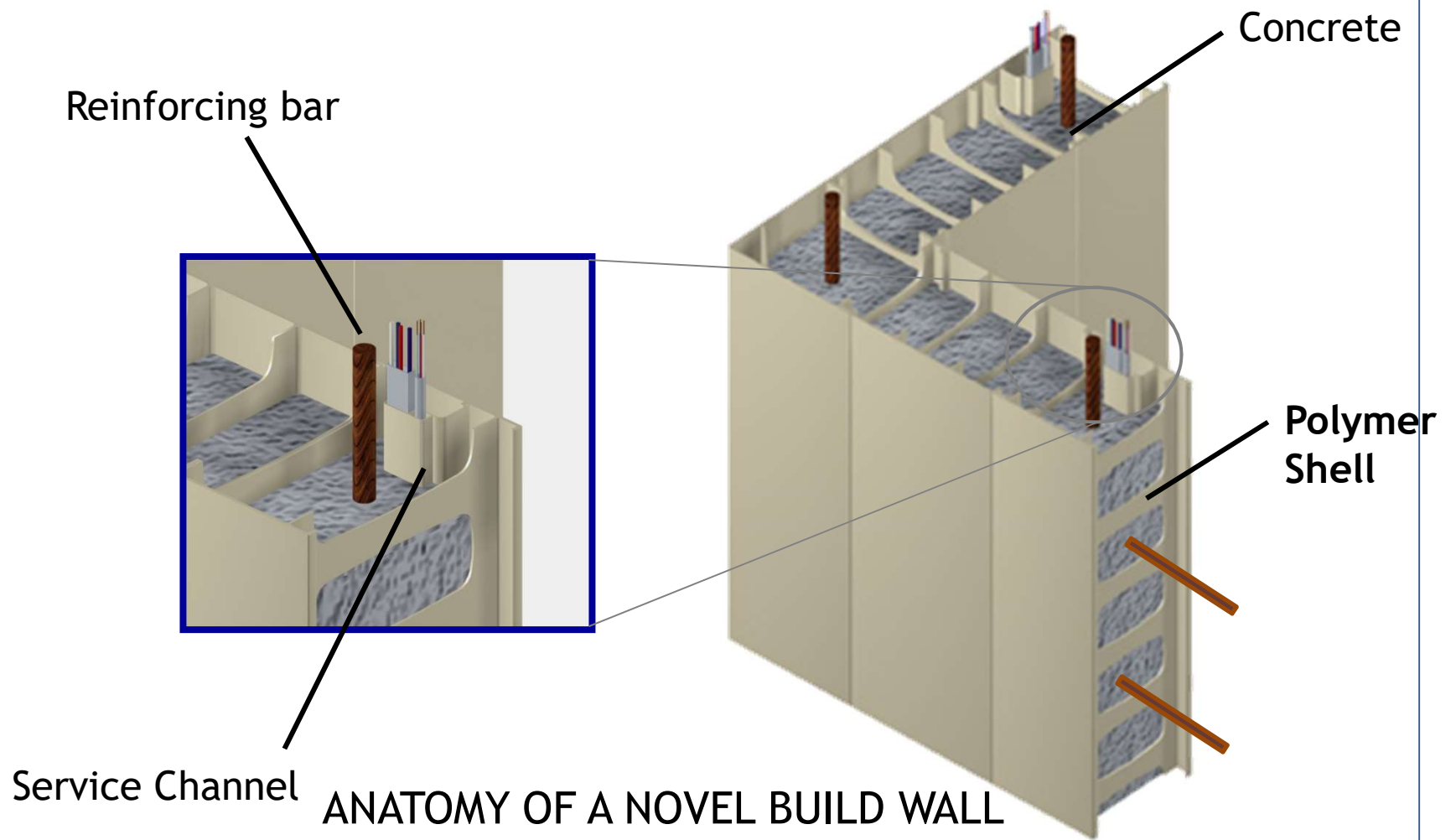
Min 7-10 days for walls & 21 days or more for other operations. Demands large number of skilled work force & tools



**TYPICAL WALL VIEW**

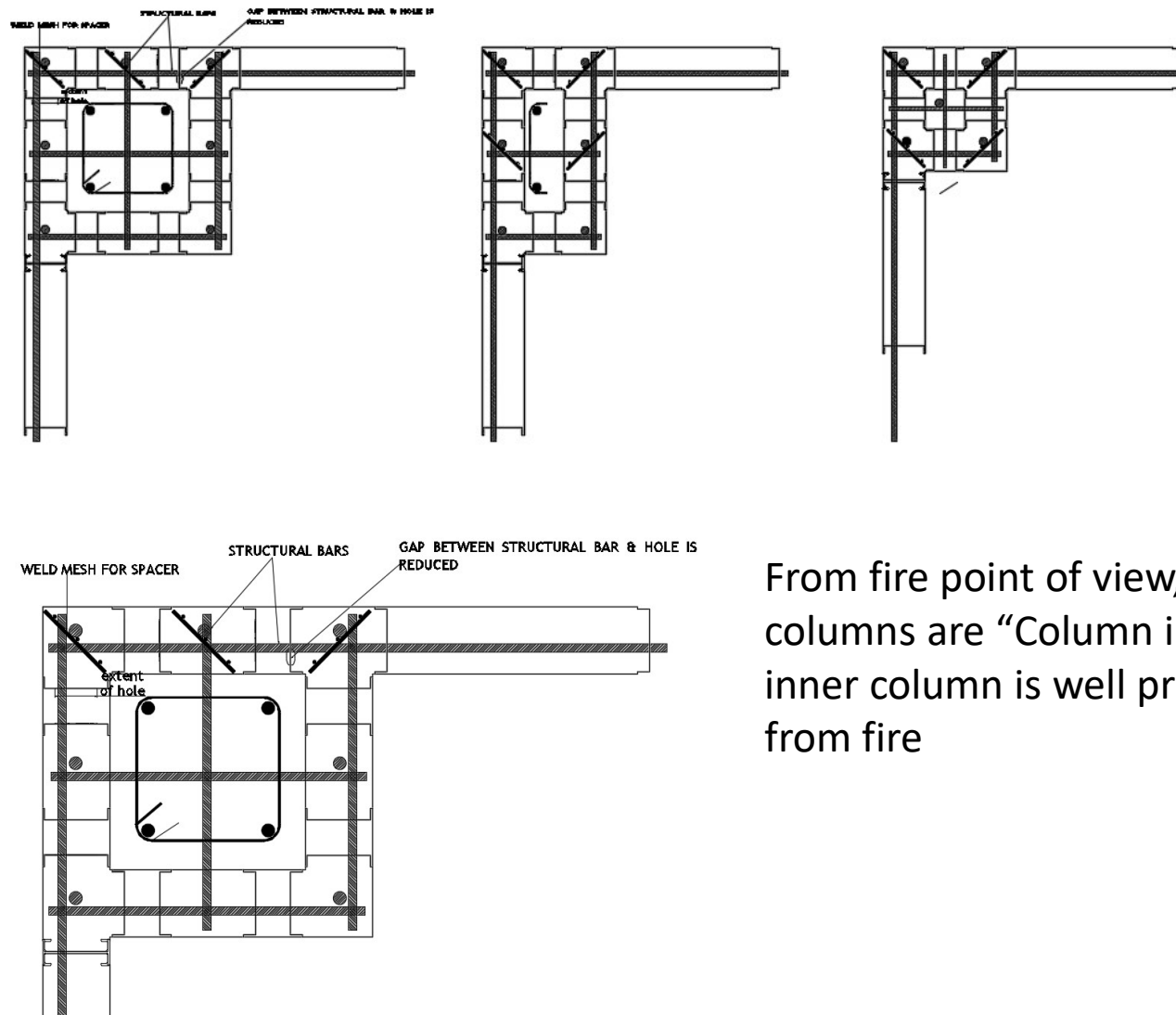


**TYPICAL WALL VIEW**





# OPTIONS OF NOVEL COLUMNS



From fire point of view, as the columns are “Column in Column”, inner column is well protected from fire

## Is SIF Technology Safe Against

- |     |                         |                                   |
|-----|-------------------------|-----------------------------------|
| a). | Gravity Loads           | Tested in many countries          |
| b). | Lateral loads- Seismic  | Tested in many countries*         |
| c). | Lateral Loads – Cyclone | Tested in many countries          |
| d). | Fire                    | Tested in many countries          |
| e). | Blast                   | US Army is one of the major users |
| f). | Nature                  | Time tested for more than 35years |

\* Importantly, Japan Govt approved this for seismic resistant housing.

## **REASONS FOR IMPROVED PERFORMANCE OF POLYMER WALLS**

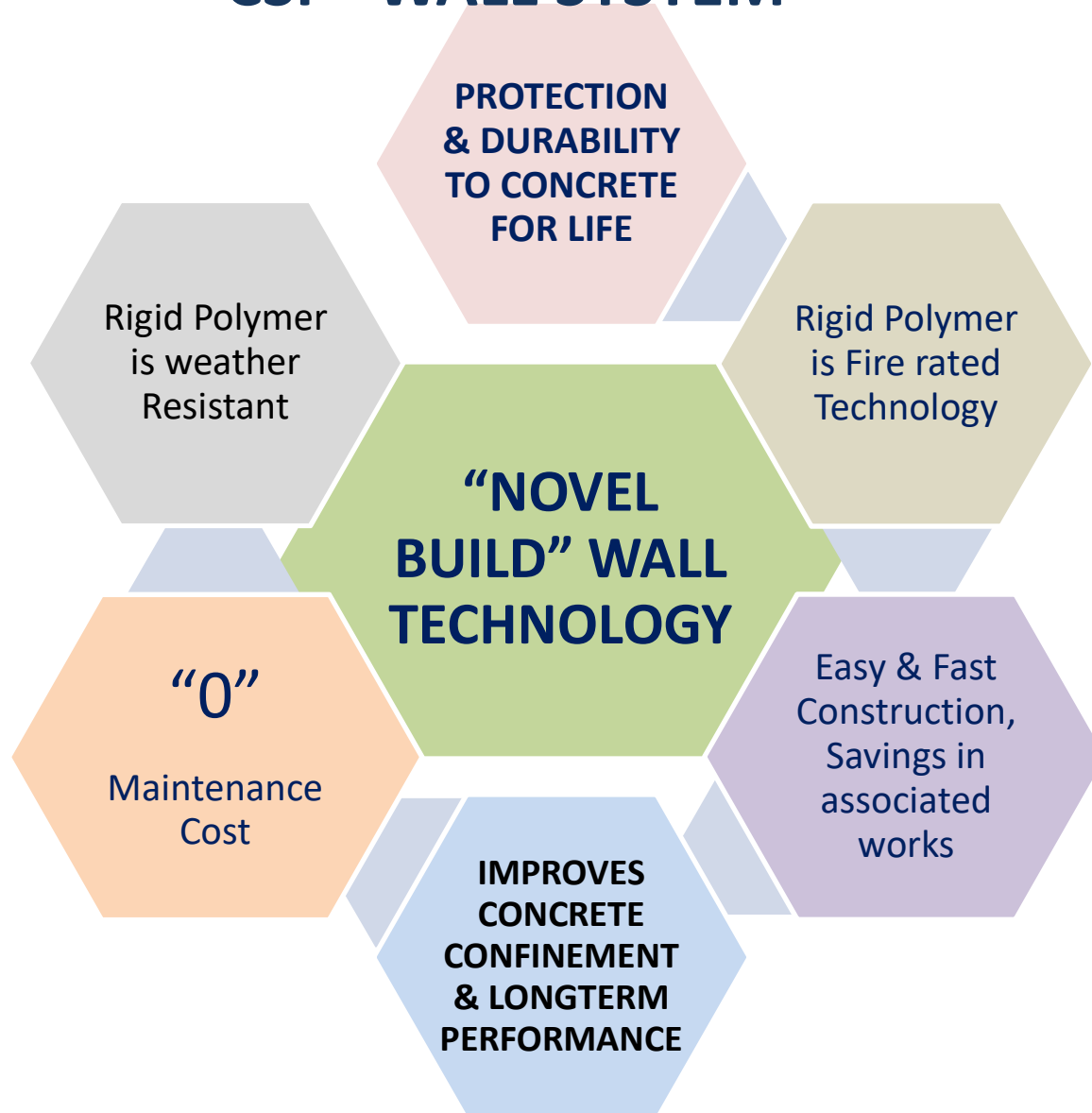
- a). Polymer is an elastic-plastic material and not a plastic response material**
- b). Thickness of the wall is arrived based on confinement needed from concrete (typically, lateral pressure from concrete is 1.5 to 3 Mpa)**
- c). Multiwalls reduce cracks in concrete besides controlling micro cracks unlike conventional shear walls or of ties/ stirrups**
- d). Resilience is imparted by the finer displacement possibility of successive units**

## **WALL DESIGN BASICS**

**As “Stay In Form “ is a overlay and confining material, walls are designed as conventional shear walls. SIF is bound to improve structural performance**

**Hence designs will comply with the principles of respective codes including Indian Codes**

# **“CSF” WALL SYSTEM**



## "CSF" WALL SYSTEM

## CONVENTIONAL SHEAR WALL

### ACCURACY OF CONSTRUCTION SYSTEM

One stage control ensures  
deserving accuracy

Multi step and multi stage  
controls are essential

### CONCRETE SPECIFIC DEMANDS

Self compacting Concrete  
ensures high levels of  
compaction

Normal concrete is used and  
high degree of site controls  
mandatory

### WALL FINISH (Plastering & painting)

No need as it is self finished

Essential and long term  
performance is highly  
dependent on quality controls

### PERIODIC MAINTENANCE

Virtually Zero

Maintenance demands  
increase exponentially with the  
age of the building

## "CSF" WALL SYSTEM

## CONVENTIONAL SHEAR WALL

### TECHNOLOGY

Confined & Protected Shear wall Technology- A Unique & highly desirable Feature

Artificially confined wall system

STRUCTURAL  
PERFORMANCE (Gravity,  
wind and earthquakes)

Confinement improves all round performance

Subjective performance for specific demands

DURABILITY  
(Resistance to weather  
and Environment)

Naturally Resistant against known adversities & unaffected by ground chemicals

Naturally sensitive to control of construction, weather conditions etc. Requires extensive periodic maintenance

FIRE  
(Structural walls require  
2 hr fire rating )

Dual Fire resistance system  
a). SIF system and b). Less exposed Concrete due to SIF

Fire protection is sensitive to quality of construction despite proven fire rating

## **WALL CONSTRUCTION**

### **a). Wall Erection and casting**

1. Double legged scaffolding is erected from inside on all sides. Top of scaffolding will receive precast slab panels
2. From scaffolding, small length adjustable clamps are provided to maintain wall alignment at top. This will ensure verticality of wall. At base, MS angles are provided on either side to maintain position.
3. Wall concreting is done using Funnel arrangement
4. Self compacting concrete to ensure proper flow till bottom – Use 10mm down graded aggregate is required. ¼ bag mechanically operated mixer may also be used. It will be carried on to floors

### **b). Services**

1. Provision for services – such as electrical boxes etc.



## **ADVANTAGES OF INTEGRATING “CSW” WALL WITH “PRECAST FLOORS”**

Precast Slabs (such as stone slab technology etc.) have least on site operations and virtually ready to use

Offers Fastest time cycle between successive floor constructions

Long lasting Performance as stone is aged and naturally durable

Avoids common problems associated with conventional slab and water floor systems

Stone offer highly hygienic surface at highly affordable costs

Cost Effective by min 20% compared conventional systems & associated works

# Time Cycle

	CSF WALL +CSS FLOOR	CONVENTIONAL SHEAR WALL+ CONV SLAB
Each level Wall Erection & Casting	2-3 days	Min 7 days
Floor erection and casting	1-2 days with Composite stone slab system	7-15 Days cycle
Finishes	1 day (optional)	21 days or more