DO'S & DON'TS

In Building Construction

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INTRODUCTION

This document/booklet is a compilation of several examples of building defects frequently found and guidelines of what should be followed and what should be avoided (Do's and Don'ts).

Contents of this document may need to be further improved, corrected and added from time to time from the observations on the structure of the building. Figures in this document are examples defects that occur on the building structure which requires repair works.

All construction works shall conform in all respects to **JKR Standard Specifications for Building Works 2005.** Materials and workmanship shall be in accordance to the Drawings and Specifications and to the approval of the S.O.

Defects at Building Joint (Expansion Joint)

Commonly happens at joints between staircase/connecting corridor and classroom block where no proper expansion joint is constructed.

DO'S

a) Provide proper expansion joint, e.g. joint filler and sealant between staircase and main block.

b) Design staircase and main block as a monolithic structure.

DON'TS

a) Do not plaster over expansion joint.

Apron Settlement & Cracks

Cracks and settlement in apron occur when there is differential settlement due to insufficient compaction and/or ground movement

DO'S

a) Compact fill material and hardcore properly according to specifications.

b) Provide expansion joint for every 6m on non-suspended apron.

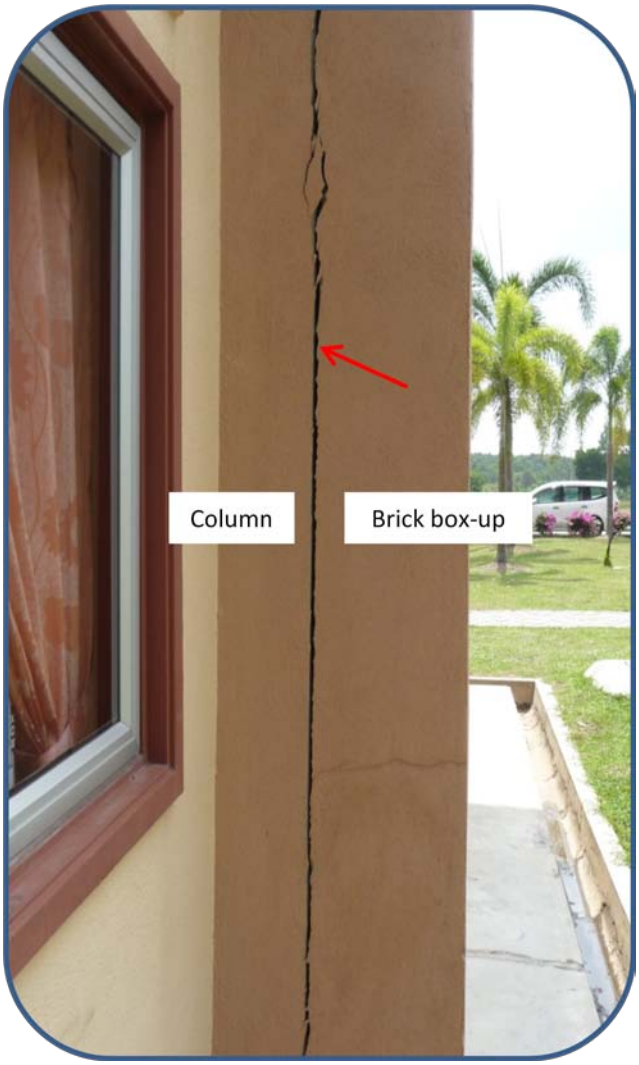
c) Design apron as a suspended slab for weak subgrade.

DON'TS

a) Do not put any structure e.g. brick wall, brick box-up for column on non-suspended apron.

Plaster Cracks at External Column

Where RWDP is concealed in brick boxed up, plaster cracks occur because of different base / foundation types.



DO'S

a) Provide wall ties of dowel or fish tail with exmet at every 4 courses for brick wall.

DON'TS

a) Do not lay brick box-up column on non-suspended apron.

Plaster Cracks on Beam

Plaster cracks on concrete elements due to use of materials or / and applications not according to specifications.

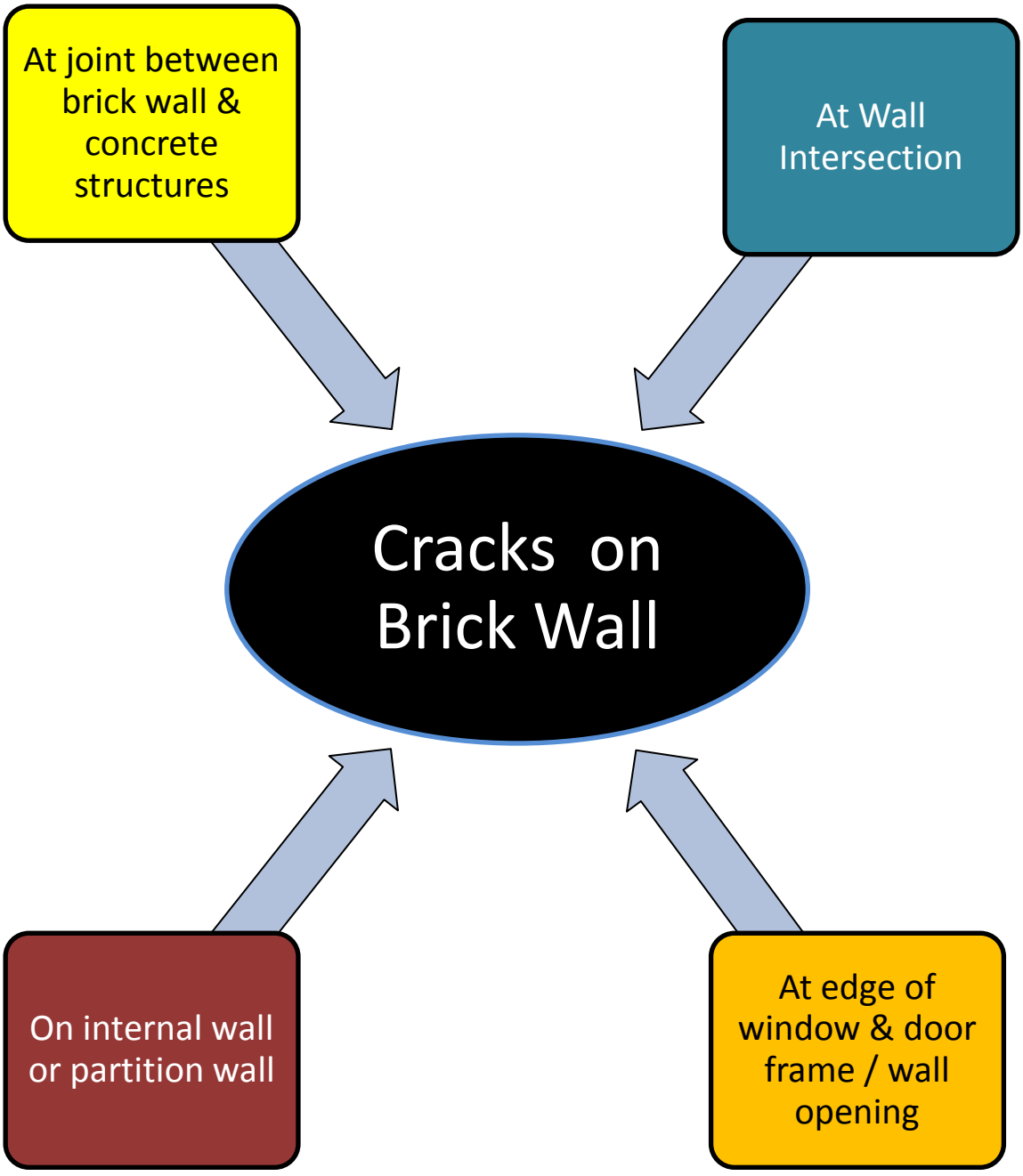
DO'S

a) Warrant materials and workmanship according to specifications

b) Ensure proper site supervision for plastering work.

DON'TS

a) Avoid having plaster thickness of more than 16mm for brick wall and 12mm for smooth surface.


At joint between brick wall & concrete structures
At Wall Intersection
Cracks on Brick Wall
On internal wall or partition wall
At edge of window & door frame / wall opening

Plaster Cracks at Wall Intersection

Plaster cracks at wall intersection is caused by improper bonding.

DO'S

a) Provide proper bond at all intersections of brick walls.

Plaster Cracks at Joint Between Brick Wall & Concrete Structures

Cracks occur due to insufficient or improper position of wall ties / exmet at intersection.

DO'S

a) Provide wall ties of dowel or fish tail with exmet at every 4 courses for brick wall for column-wall connection.

b) Provide exmet for beam-wall connection.

Cracks at Wall Edge of Window & Door Frame / Wall Opening

Cracks occur due to lack or no proper support for brick walls above openings.

DO'S

a) Provide RC lintol for large opening.

DON'TS

a) Do not place bricks on window or door frame for support.

Cracks on Internal Wall or Partition Wall

Improper support for internal / partition walls.

DO'S

a) Provide beam to support line load from the brick wall.

b) Use lightweight material or cemboard wall as internal wall or partition wall.

c) Design for adequate slab capacity to take wall load.

DON'TS

a) Do not construct internal/ partition walls on non-suspended slab.

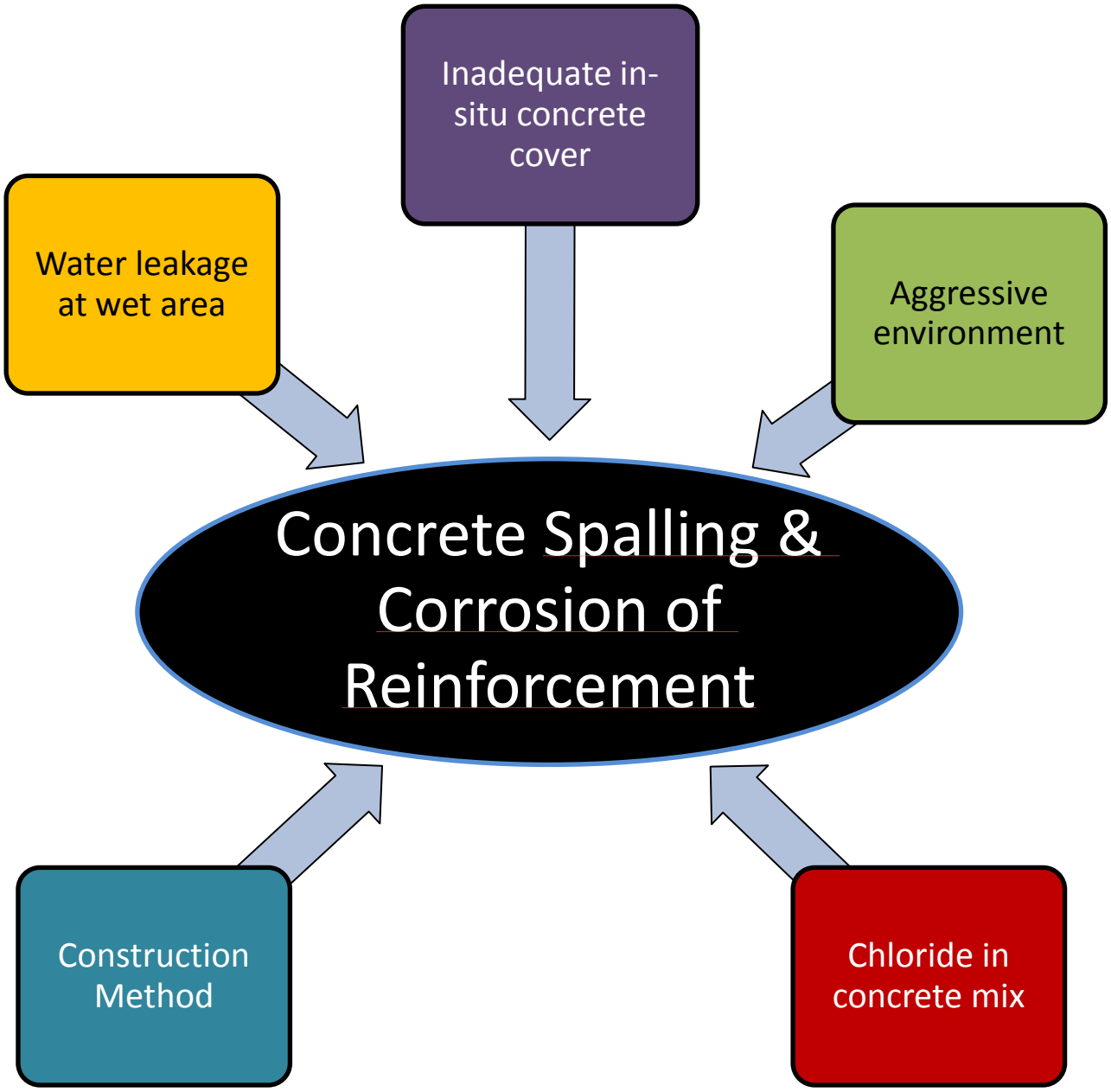
Damage to Cement Screed

Damage to cement screed at floor and staircase due to poor workmanship and / or improper mixture.

DO'S

a) Ensure proper materials and method of applications for screeding according to specifications.

b) Do proper site supervisions for screeding works.


Inadequate in-situ concrete cover
Water leakage at wet area
Aggressive environment
Concrete Spalling & Corrosion of Reinforcement
Construction Method
Chloride in concrete mix

Concrete Spalling at Base of Column

Improper method of concrete construction.

DO'S

a) Practice good concreting with proper method of placing, vibrating and curing.

b) Pour cement slurry before concreting column.

DON'TS

a) Do not drop the fresh concrete from a height exceeding 1.5 metre.

Concrete Spalling & Corrosion of Reinforcement at Slab Soffit

Corrosion of rebar and concrete spalling due to water leakage in toilet areas and flat roof.

DO'S

a) Ensure waterproofing works are supervised according to the specifications.

b) Do water ponding test after waterproofing works have been done.

c) Ensure all tiling works in toilet area do not damage any water proofing layer.

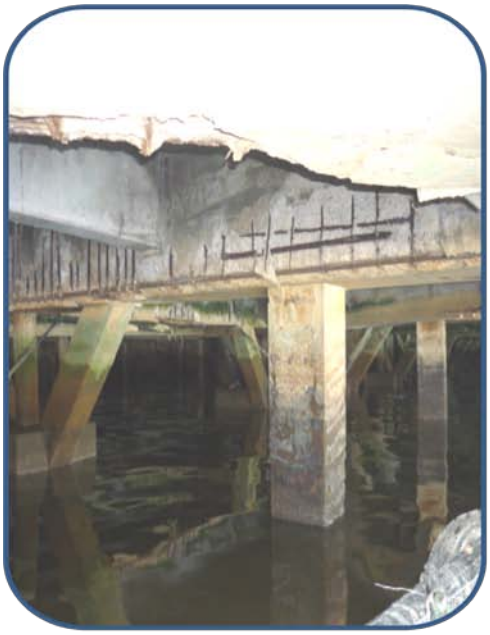
DON'TS

a) Do not make any construction joint or cold joint during concreting at toilet area.

b) Do not punch for piping or M&E purpose any waterproofing system that has already been constructed.

Corrosion of Reinforcement in Aggressive Environment

Corrosion likely to occur in areas exposed to aggressive environment. (For example areas with high chloride ions, ASR attack & exposure to fire)



DO'S

a) Ensure concreting is done according to the design and specifications.

b) Check the cover of concrete elements according to drawings and specifications.

c) Do regular maintenance.

DON'TS

a) Do not use sub-standard quality spacer blocks.

Concrete Spalling & Corrosion of Reinforcement at Slab Soffit

Inadequate cover in concrete structure.

DO'S

a) Ensure cover for slab is adequate according to specifications and drawings.

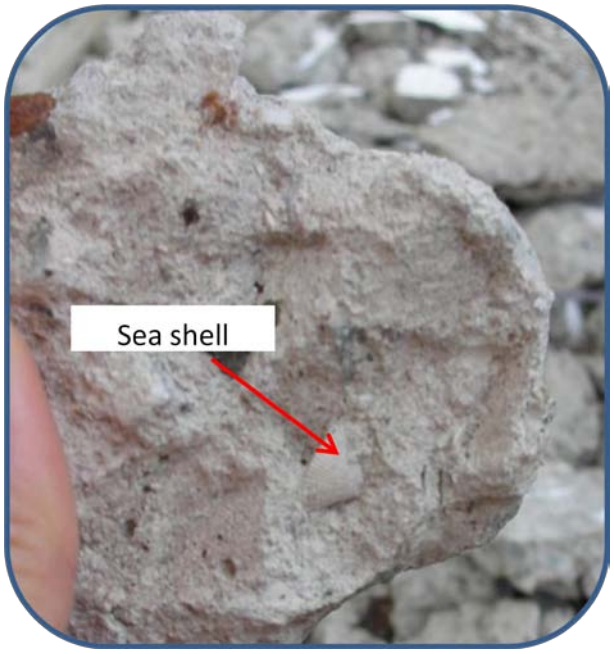
b) Develop and promote the use of performance-based specification for in-situ cover monitoring and control.

DON'TS

a) Do not use sub-standard quality spacer blocks.

Corrosion of Reinforcement Due to Internal Factors

Corrosion due to chloride content in concrete mix.



DO'S

a) Use high grade concrete accordingly, e.g. Grade 30 or higher

b) Do stringent check on quality of fresh concrete during concreting work.

DON'TS

a) Do not use untreated sea sand.

Roof Failure

Roof truss failure due to materials & handling.

DO'S

a) Do stringent check on quality of material as specified in specifications.

b) Warrant materials, system used and workmanship accordingly.

DON'TS

a) Do not construct without approved drawing & specifications.

Differential Settlement Structural Cracks

Cracks occur at connection of different components supported by different types of foundations.

DO'S

a) Design foundations according to code requirements.

b) Construct foundations according to specifications and drawings.

DON'TS

a) Do not change types of foundation on site without proper consultation.