

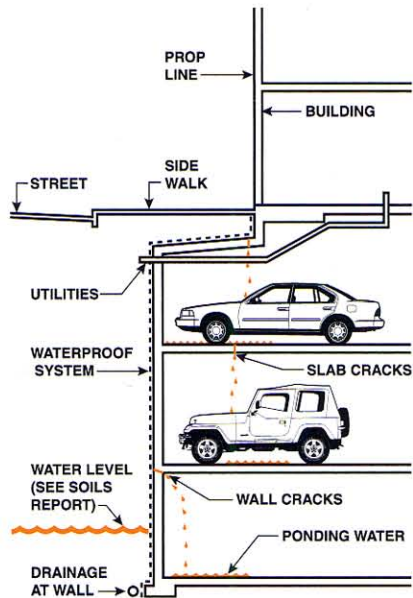


# BUILDING ANALYSTS



"I never understood those little propellers on the bumper before..."

# SUBGRADE GARAGES



## COMMON PROBLEMS

- Leaks may occur:
  - Through the wall, floor, deck & planter systems
  - Through penetrations and construction joints
  - From upper level floors to levels below, damaging car finishes
- Inadequate garage slope for drainage
  - Ponded water safety hazard for pedestrians
- Insufficient Construction Provisions
  - Concrete admixture alone cannot adequately waterproof the sub-grade retaining wall
  - Excessive concrete cracking
  - Potential water damage to exposed reinforcing bars
  - Inadequate foundation drain and/or sump pumps
- Access needed to repair failed waterproofing may be prohibitively expensive.

## SOLUTIONS

### Design Considerations

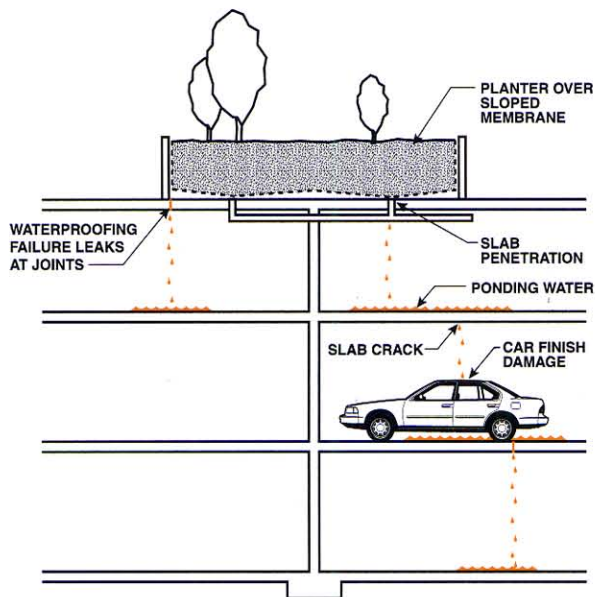
- Specify best waterproofing products with proper drainage and protection systems
- Take special precaution in areas below the surrounding water table, which may vary with the seasons
- Slope horizontal surfaces to drain
- Use root barriers in planters along with suitable waterproofing membrane and drains
- Specify richer concrete mix to obtain denser concrete
- Carefully consider the design and placement of foundation drainage systems to remove water away from walls and floor slabs

### Pre- Construction Considerations

- Avoid poorly considered substitutions of lower quality waterproof membrane systems – The cost of repair can be 10 times the original cost
- Conduct pre- installation meeting(s) with the waterproofing contractor, designer and other trades affecting the work
- Coordinate design and manufacturer's requirements (especially when substitutions are made)

### Construction Cautions

- Strictly adhere to manufacturer's and design requirements
- Ensure all penetrations and construction joints are sealed
- Conduct water test at the completed horizontal waterproofing membrane installations at decks and planters
- Require special inspections of the below- grade waterproofing system installation



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