



**Gaps in the Design and Construction
and Performance of Permeable
Pavements**

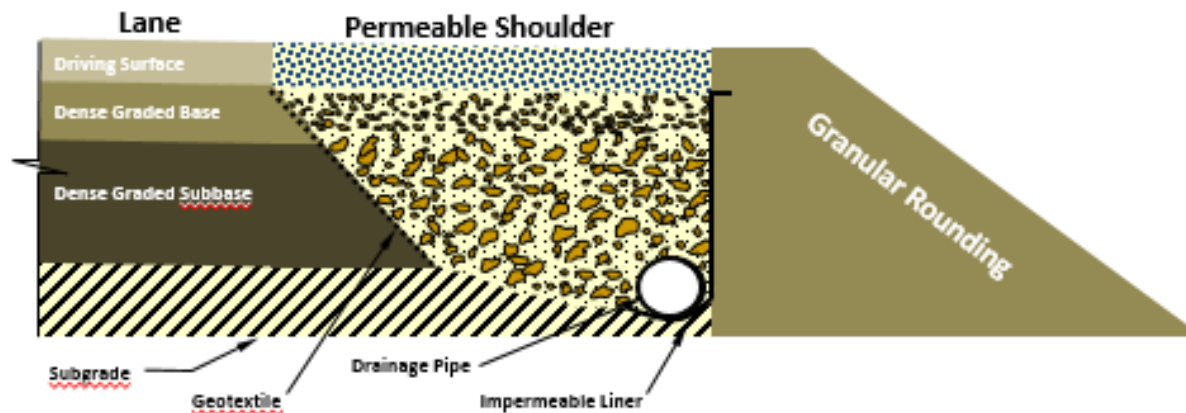
Design - General

- Procedure – Simple (experience, AASHTO?), More comprehensive (mechanistic-empirical), UC Davis PICP, Pavement ME
- What do we need to go M-E?
 - Field performance
 - Accelerated testing
 - Structural deterioration
 - Functional deterioration
 - What distress is critical?
 - Other?
- Design Details
- Specifications

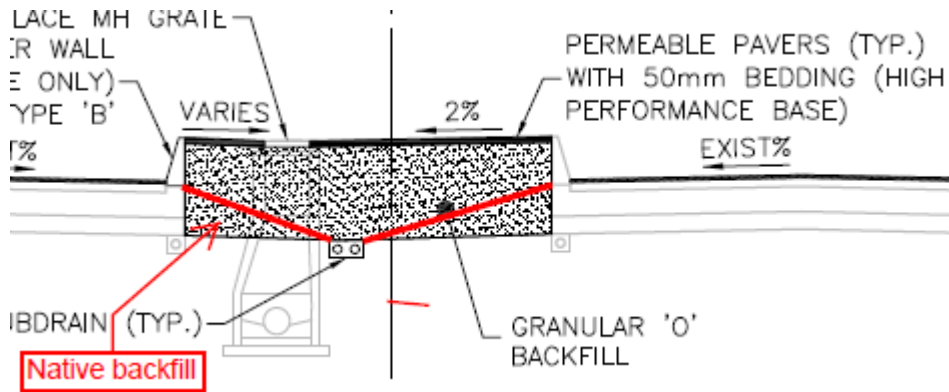


Design - General

- Uses for permeable pavements
 - Road surfaces
 - Parking areas
 - Sidewalk and recreational trails
 - Shoulders (highway, roadway, drainage conveyance for difficult areas)
 - Compensation for non-permeable areas, i.e. granular shoulder surfacing
 - Non-standard applications



Design - General



Design - Specific

- Porous Asphalt
 - Strength of porous asphalt
 - Published data ranges from zero to same as dense grade asphalt concrete
 - Maximum lift thickness, recommendations vary
 - Other?
- Pervious Concrete
 - Acceptance for strength (cylinders, cores, beams?)
 - Testing method, unconfined compressive, flexural?
 - Minimum strength level (varies by agency)
 - Mix design to prevent ravelling



Design - Specific

- Permeable Pavers/Bricks
 - Surface infiltration capacity (varies by paver type/pattern/slope)
 - Structural impact of paver type and laying pattern
 - Suitability of edge restraints
- Grids
 - Little field performance experience?
 - How do they perform under loading?
 - Many types of grids
 - Composite structures



Construction

- Lack of industry wide experience in constructing permeable pavements
- How to solve? Certification, education
- Lack of designer specification experience
- Lack of contractor construction experience
- Lack of owner inspection and testing experience



Performance

- Long term durability and key performance indicators
 - Rutting, cracking, raveling, clogging? How much is too much?
- Maintenance of pavement and permeable system, i.e. clogging
- Awareness of type of pavement by public and maintenance staff
- Localized repairs

