

# Permeable Pavement Workshop

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# Q:5 - Materials

## ▶ DEICERS

- ▶ Deicing is a hurdle which is another perception.
- ▶ Last 3 years, 100 cores from number of different locations where people complained deicer damage.
- ▶ Not even one time failure issue was seen due to deicer.
- ▶ Construction issues have been seen.
- ▶ Problem already existed and deicers where blamed.
- ▶ Minnesota has a lot of PP and they apply salt as well but no issue has been reported for so many years now.

## Q:6 - Materials

- ▶ Enough projects proving PP works.
- ▶ Perception issue, not only materials issue.
- ▶ We don't need tons and tons of more mix designs rather awareness and educating, how to use specs and where to use PP materials is necessary.
  - ▶ Example: The requirements of use of permeable concrete were provided at one job but the contractors did exactly what was not supposed to be done.

# Q:7, 16 & 21- Materials & Communications

- ▶ **Publicity.** To start with stay with the “low hanging fruits” who understands what PP is and how will it work. Once that job is done, then publicize and promote.
- ▶ **Industries should start developing short case study documents (Success stories) about**
  - ▶ High quality
  - ▶ Example Specs
  - ▶ Example projects
  - ▶ Here's why it failed or was successful
  - ▶ Following specs has more probability of success
  - ▶ May get EPA stamps
- ▶ **Priorities**
  - ▶ Structurally feasible and durable (it works)
  - ▶ Cost
  - ▶ Environmental benefits

## Q:11 - Education and Training

- ▶ GOOD LUCK! pavement engineering programs are not being accepted by the education institutes today.
- ▶ Engineers are comfortable with business as usual stuff what they have been doing for so long. We are taught and trained to talk numbers and graphs, its difficult to bring into 1 degree comfort understanding as an example.
- ▶ In 2005, at TRB the chair said that PP is not going to happen as no agency is interested and wants to implement. As of today, we have started to accept it and are discussing today which is a good sign and also kind of indicates that futuristic planning is required and should be acknowledged.

## Q:11 - Education and Training (continues)

### ▶ Educating the contractors:

- ▶ Concrete industry certification and training program
- ▶ Unwritten agreement - not to sell the material until or unless trained (though acknowledged should be a written agreement)
- ▶ Qualifications should be checked and verified for PP jobs.
- ▶ Specification (checks): ASTM, ACI, NRMCC, State and others are requirements to be met.
- ▶ Good job of today will help in acceptability tomorrow.

## Q:13 - Education and Training

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## Q:53 - Maintenance (continues)

- ▶ If maintenance is not done, PP will fail-maintenance is very important.
- ▶ ASTM C1701: Infiltration test
- ▶ Easy clean or deep clean
- ▶ Broom, blower, vacuum, water pressure wash @ 45 degree
- ▶ Do have info but its not being communicated properly.
- ▶ Because we cannot maintain, or we don't have info on how to maintain PP, lets not do it (perception issue)



## Q:60 & 57- Maintenance

- ▶ How to handle utility repairs is another thing to be taught.
- ▶ Permeable stuff is difficult to patch.
  - ▶ Every time you do it, it is going to be a problem
- ▶ New development: no utilities in the road rather in parallel on side
- ▶ Designated cut areas for utilities running through
- ▶ Market is so small that R&D to develop new innovative cleaning equipment will not be fruitful

## Q:66 & 67 - TOP Priorities

- ▶ Some states do not allow money to go out of state
- ▶ Pool fund projects (more collaboration) where number of states can participate and impact is going to be bigger as well
- ▶ We are in development area right now.
  - ▶ Needs to be in an adjustable format
  - ▶ And distributed
- ▶ Certain areas within PP needs research and road map is an important outcome

## Q: 73 - Planning and development codes

- ▶ Within states it probably works however, there are bubbles within state
- ▶ Communication is good, even better is to tell the story right



The background features abstract, overlapping geometric shapes in various shades of green, ranging from light lime to dark forest green. These shapes are primarily located on the right side of the page, creating a modern, layered effect. The rest of the page is a plain white background.

NOTES

# Materials and Pavement Performance

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# Education and Training (continues)

- ▶ Educating and awareness is the only way!
  - ▶ Concrete and the asphalt industry has manuals that are provided to the contractors, however training is important as well
  - ▶ Educate engineers first.
  - ▶ Many academic institutes doesn't even teach pavement design.
  - ▶ There is also faculty who has never even taken pavement education are pavement faculty.
  - ▶ Some colleagues learned about concrete more in industry than from university
  - ▶ Industry experts could be invited to institutes to teach such special techniques.

# Communication

- ▶ NSF will not fund research pavement
- ▶ If there is some way through the sustainable pavement working group, which opens the door with FHWA and has PP in their manual.
- ▶ DOT mentality: their state is different from any other in the US. DOTs may need to start looking at other states work and start communicating.
- ▶ Don't know if its laziness or no interest to learn and do anything new.
- ▶ Start thinking about: words we use. Communication methods to be changed and we should learn when talking to city planners, state agencies, DOTs. We like numbers and graphs and trends. Its not always the numbers game.

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# Maintenance (continues)

- ▶ Biggest stress is utility installations
- ▶ Zero research, no adequate guidance, no adequate specifications/methods for utility repairs under PP.
- ▶ Great ideas but no handles to enforce anything
- ▶ More damage in bigger cities than smaller.

# TOP Priorities

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# Planning and development codes

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