DAN CLOAK
ENVIRONMENTAL CONSULTING

# Analyzing a Development Site

for Low Impact Development design

# LID Design Guide



- Analyze your project
  - Select LID options
- Design site and document drainage
  - Show how criteria are met
- Specify preliminary design details
  - Integrate LID with paving and landscaping
- Iterate

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- Analyze your project
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# Strategies, Applicability, Design

1. Optimize the site layout
2. Use pervious surfaces
3. Disperse runoff
4. Store runoff and use it later
5. Use bioretention (or other facilities)

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APPLICABILITY

# Optimize the Site Layout

- Protect Watercourses and Drainage
- Preserve Open Space
- Cluster Buildings
- Minimize Pavement Widths
- Minimize Parking

APPLICABILITY

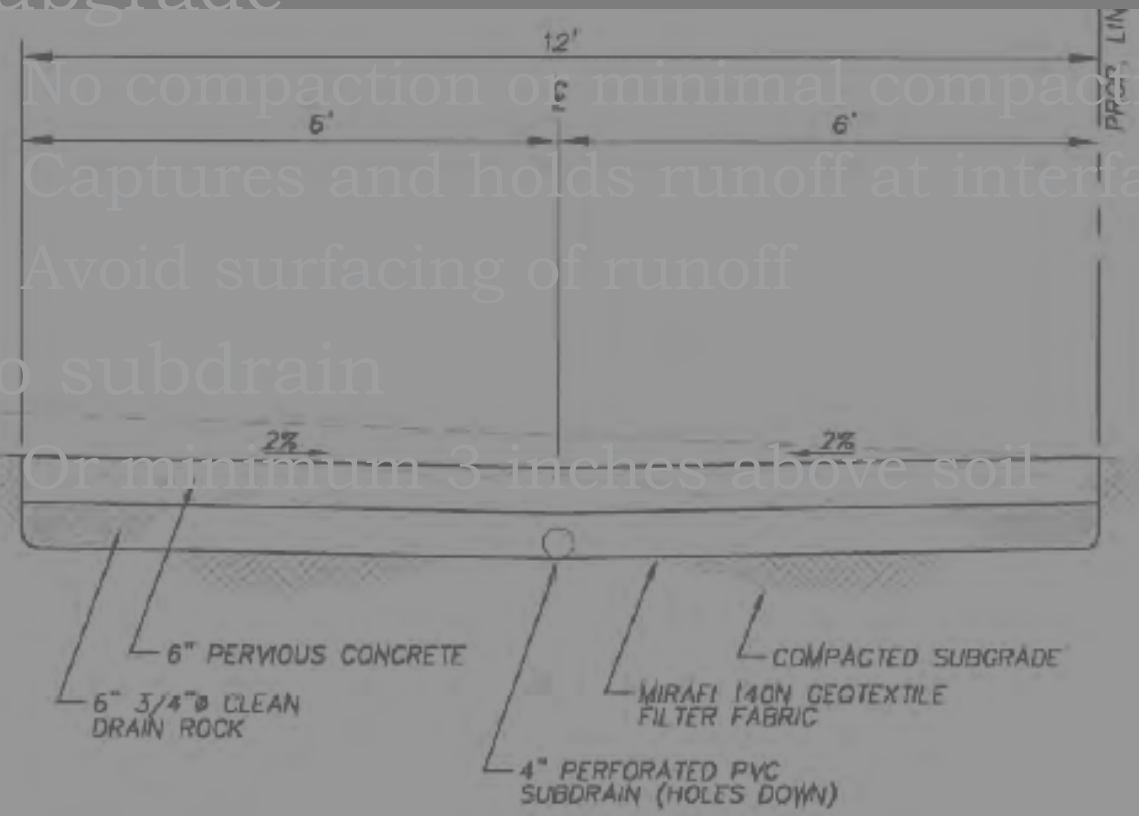
# Pervious Pavement

- Expensive to build
- Durability and maintenance issues
- Best for:
  - Flat sites with limited access to drainage
    - No need for drainage pipes or structures
  - On well-drained, competent soils
  - Where traffic is limited
  - For aesthetic reasons
  - To avoid thresholds

# Pervious Pavement Design Issues

APPLICABILITY

- Subgrade
  - No compaction or minimal compaction
  - Captures and holds runoff at interface
  - Avoid surfacing of runoff
- No subdrain
  - Or minimum 3 inches above soil




YPICAL DRIVEWAY SECTION

1" = 2'

S

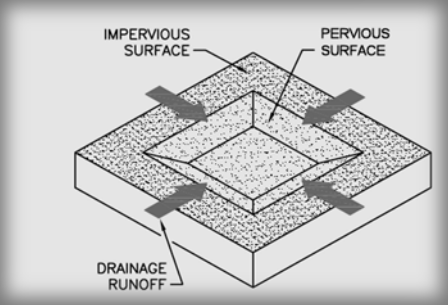
AL

AM, NON-PERMEABLE
(CDF OR EQUAL)

NDARD
HERE

APPLICABILITY

# Disperse Runoff




- Extensive flat, landscaped areas
  - Next to buildings
  - Downgradient from paved areas
- Impervious:Pervious ratios
  - 2:1 if treatment only criteria apply
  - 1:1 if flow-control (hydromodification management) criteria apply

APPLICABILITY

# Harvesting and Reuse

- Where there is an industrial demand for non-potable water
  - Concrete plants
  - Washing
- Projects emphasizing water conservation and sustainability
  - LEED certification
- Where there is intense occupancy and good facility management
  - High rises
  - Public facilities

APPLICABILITY

# Bioretention

- Applicable to nearly any development site
- Can reliably treat and manage runoff in small footprint
- Achieves some infiltration and evapotranspiration
- Flow-through planter can be used if infiltration is infeasible

# Example Development Site

Thanks to:

Signature Properties
dk Consulting
City of Lafayette

# Opportunities and Constraints

DESIGN

# Opportunities and Constraints

DESIGN

1%

# Opportunities and Constraints

- Fill 8.5 to 15 feet deep
- Silty clay to clayey sand (Group “D”)

DESIGN

# Opportunities and Constraints

- Densely developed townhome project

# Opportunities and Constraints

- Landscaped areas around buildings and central plaza/green space

# Applying the Strategies

DESIGN

1. Optimize the site layout
2. Use pervious surfaces
3. Disperse runoff
4. Store runoff and use it later
5. Use bioretention (or other facilities)