Drainage Designs and their affect on Septic System Designs

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Town of Weston

MEHA Title 5 Seminar
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Overview

- Walk through general drainage design concepts
- Discuss State Stormwater Regulations (MA Stormwater Handbook), State Septic System Regulations (Title 5) and local Town Stormwater Regulations for Residential Application only.
- Walk through Site Development and how drainage designs affect septic system siting
- Potential hazards for a septic system when reviewing or designing a Site Plan with new septic and drainage infrastructure.

Regulations

- 310 CMR 2.11
  - Foundation Drain – 10 ft to septic tank and 20 ft to soil absorption system
  - Open, Surface or Subsurface drains – discharge to water supply – 50 ft to septic tank and 100 ft to soil absorption system
  - Open, Surface or Subsurface drains– which intercepts groundwater - - 25 ft to septic tank and 50 ft to soil absorption system
  - Other Open, Surface or Subsurface drains – 5 ft to septic tank and 10 feet to soil absorption system
  - Leaching Catch Basins & Dry Wells – 10 ft to septic tank and 25 ft to a soil absorption system
- Massachusetts Stormwater Handbook
  - "The Stormwater Management Standards shall not apply to (1) A single family home or (2) Housing development or redevelopment projects comprised of detached single dwellings on four or fewer lots provided there are no stormwater discharges that may potentially affect a critical area.
- Town regulations
  - Weston and a few other Towns adopted the Massachusetts Stormwater Handbook for their regulations and for Weston, we have to caveat some of the regulations. Walk through Site Development and how drainage designs affect septic system siting

Drainage Design Basics

Key Words and Phrases

Watershed
Sub-area
BMP (dry well, recharge basin, etc)
Conveyance
Modeling
Peak Rate of Runoff
Volume of Runoff
Design Point
Overflow
Redoximorphic Features
Relic Mottles
ESHGW

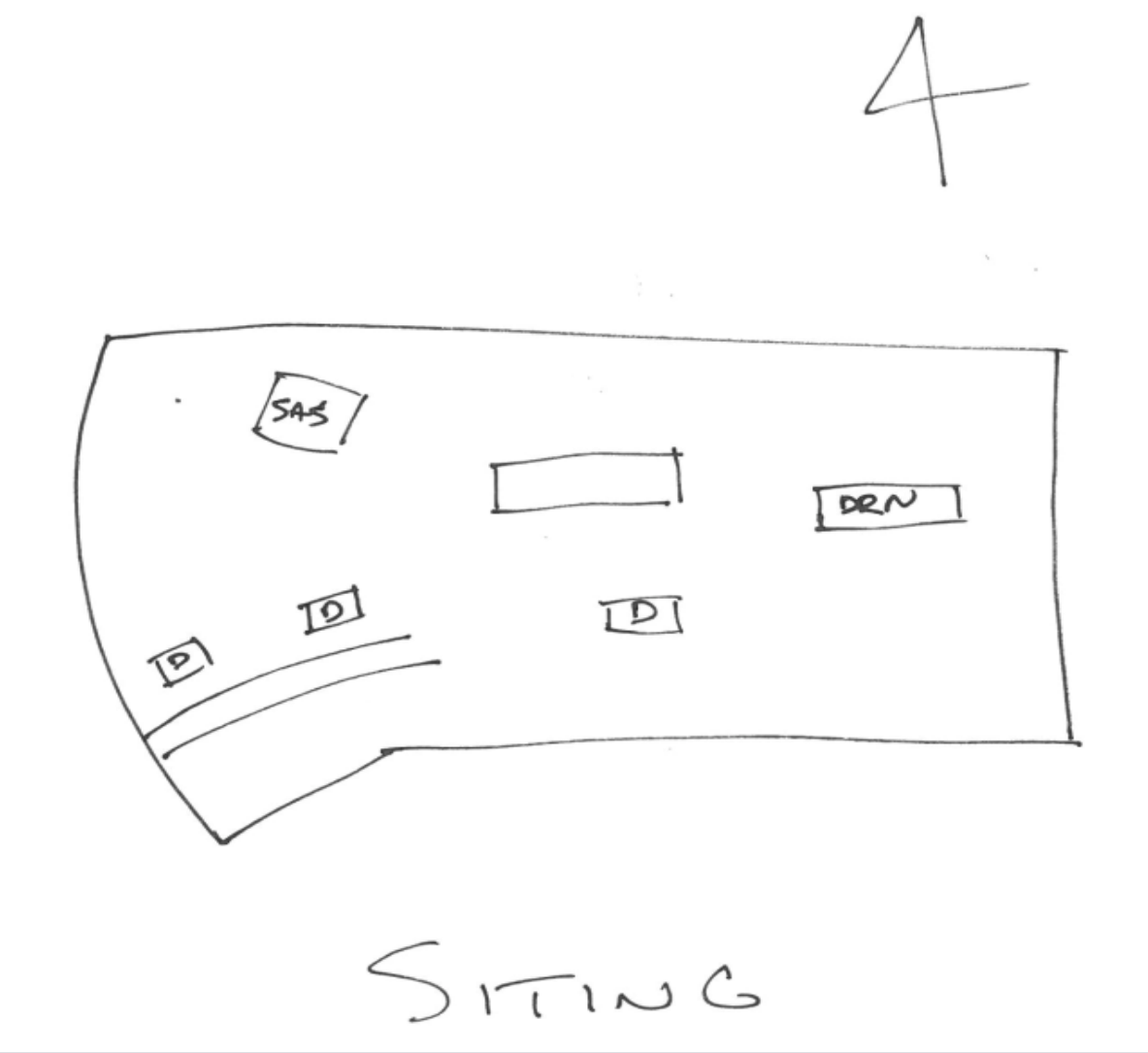
Drainage Design Basics

- Existing Conditions vs Proposed Conditions Analysis
- Design Points for the two Analysis match and based on how the numbers compare, you may or may not have to add a drainage system.
- The project site is studied from 2 year storm event to the 100 year storm event.
- If the project shows an increase in peak rate of runoff or volume, to the design points, then BMPs will be used to offset that difference.

How drainage designs affect Septic System Designs

- Siting
- Costs
- Can and have caused premature failures

Siting Examples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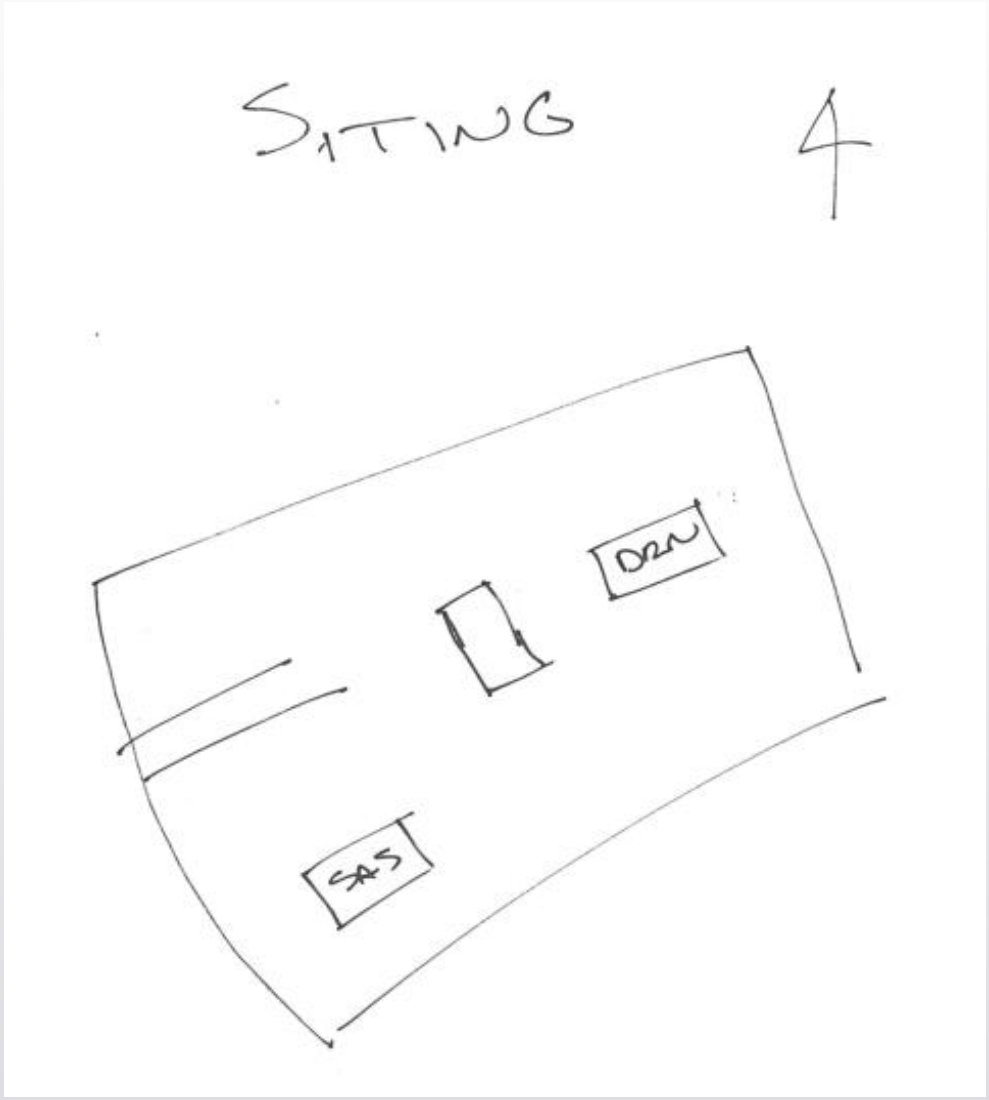
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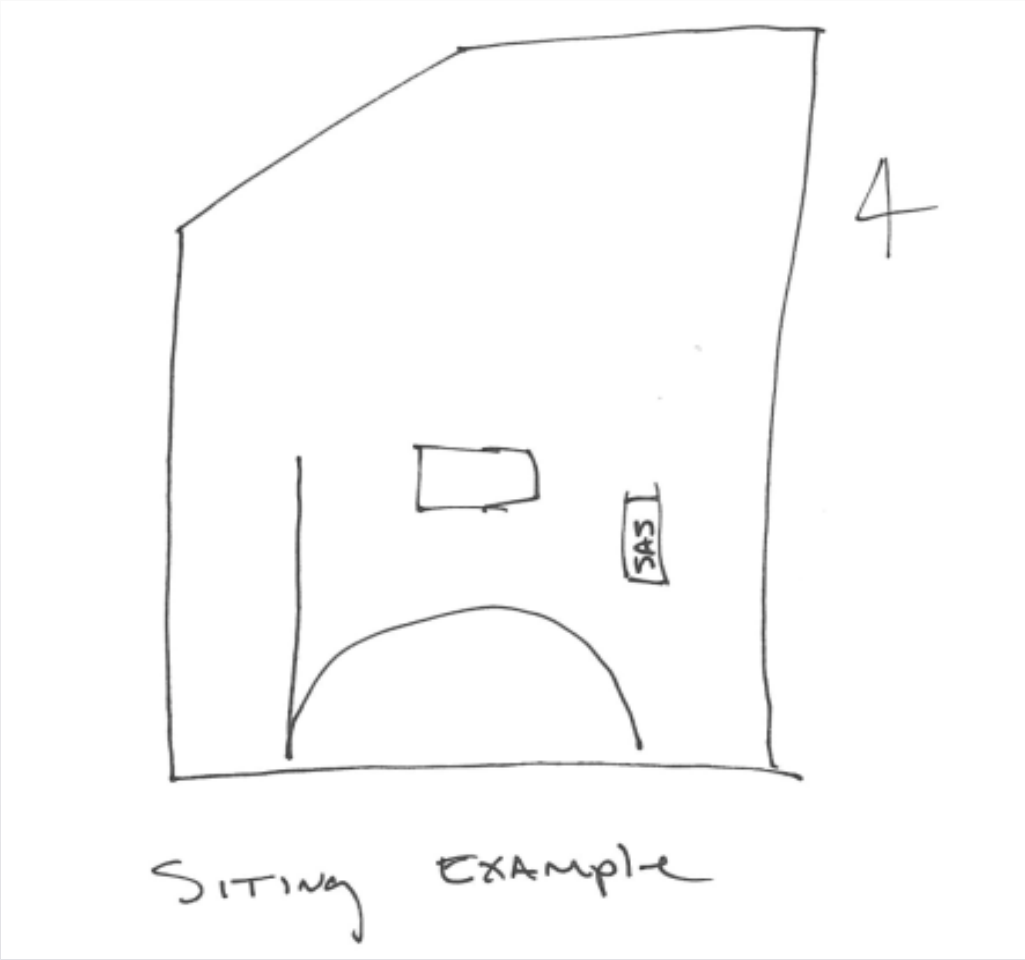
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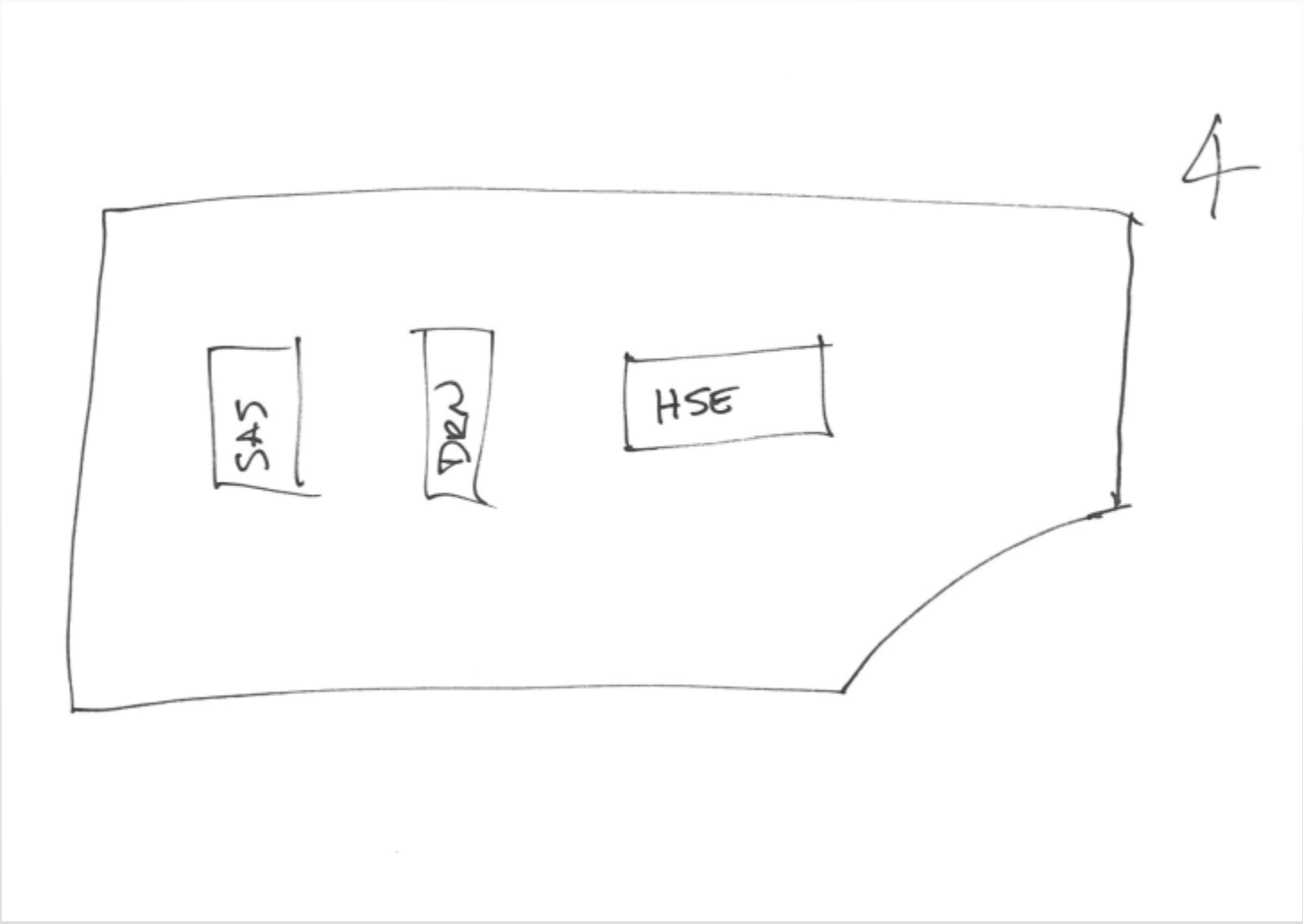
SITING EXAMPLE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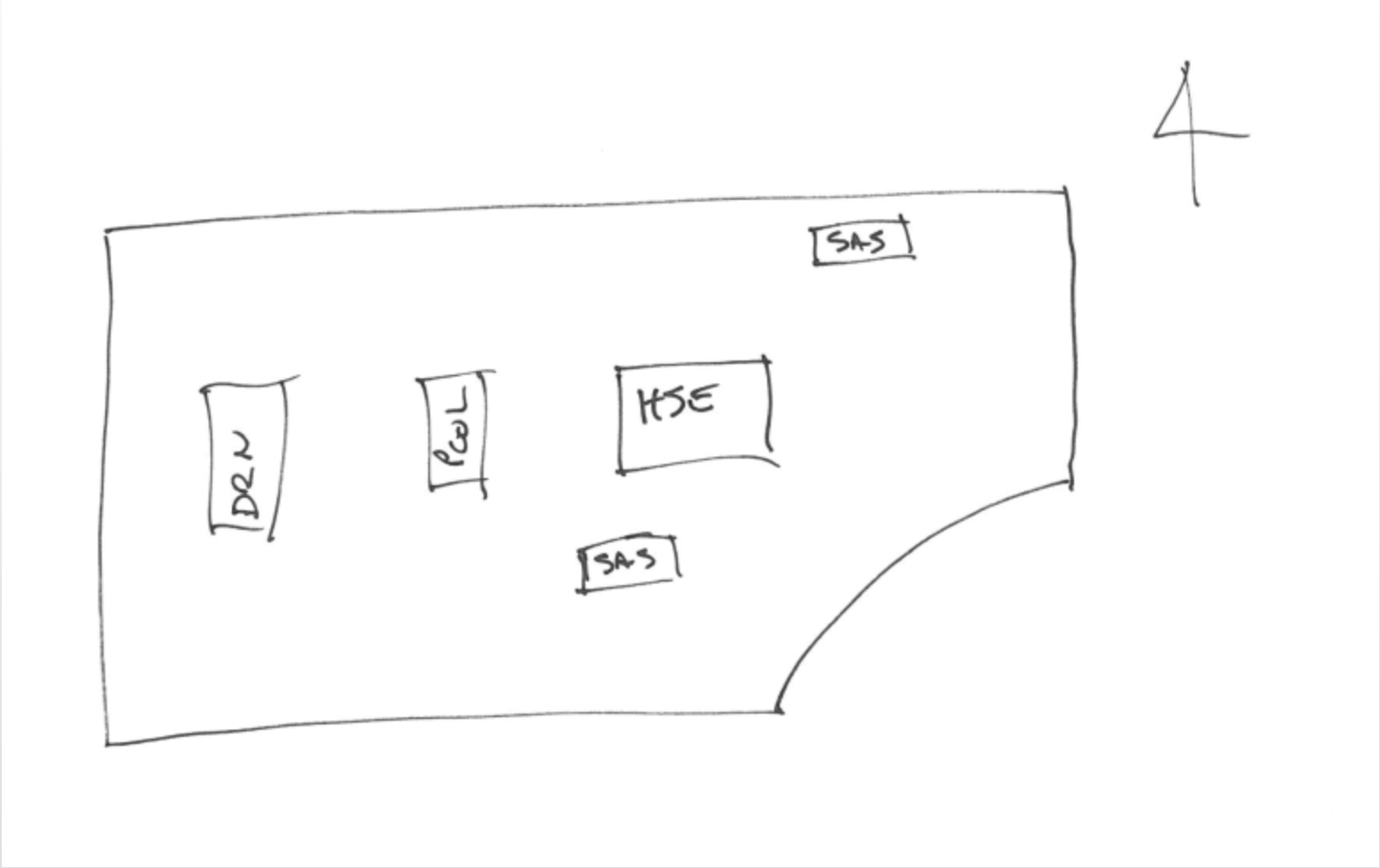
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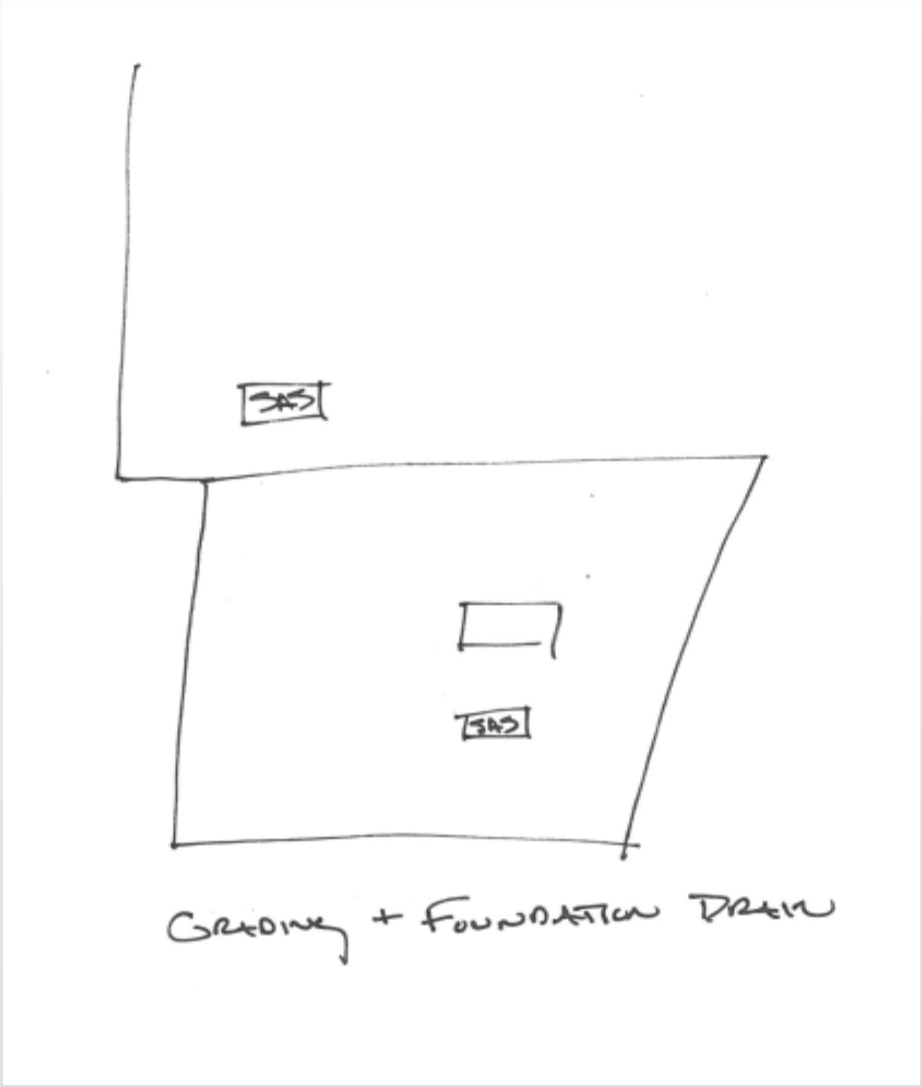
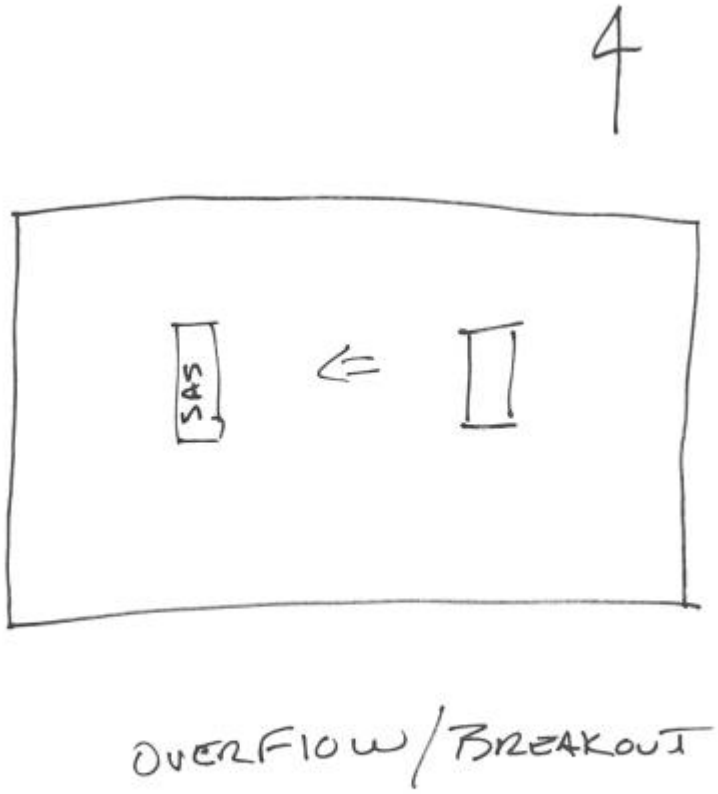
Failures come in all colors

- Drainage interceptor trenches
- Drainage conveyances
- Drainage recharge basins
- Siting
- Foundation Drainage


GRADING + FOUNDATION DRAIN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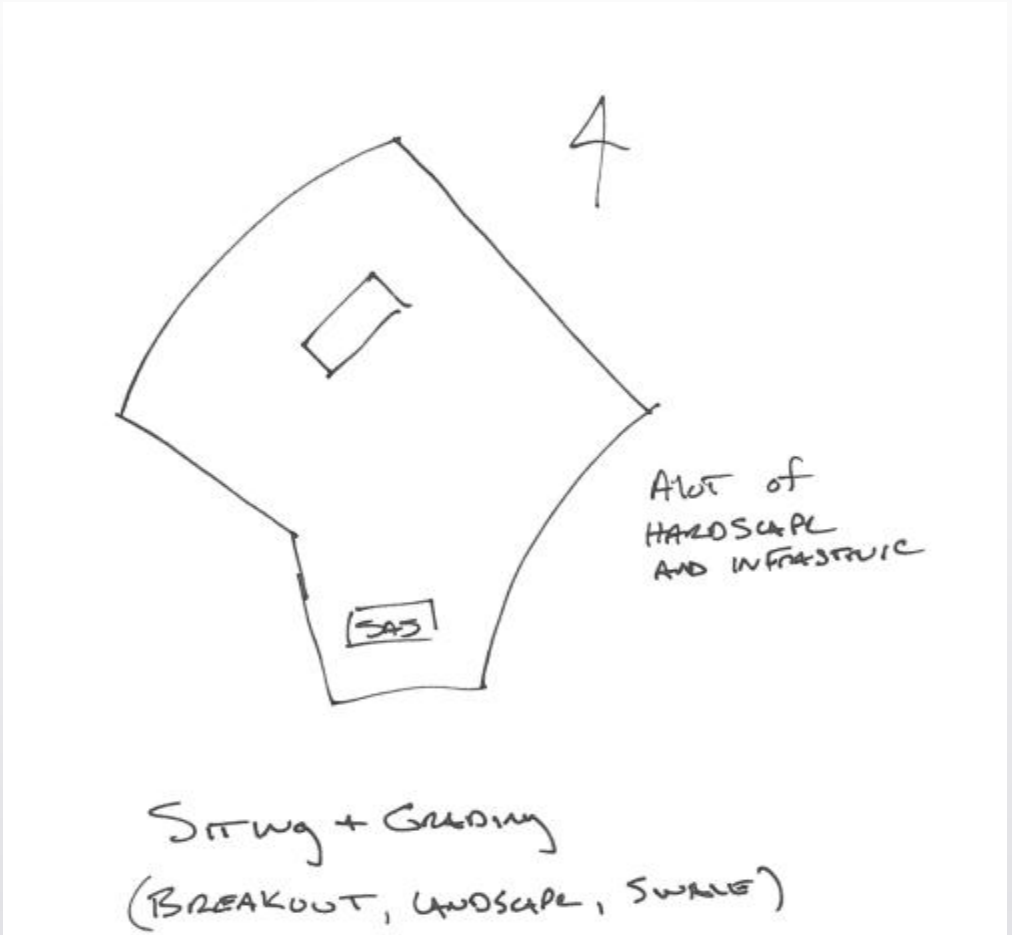
OVERFLOW/BREAKOUT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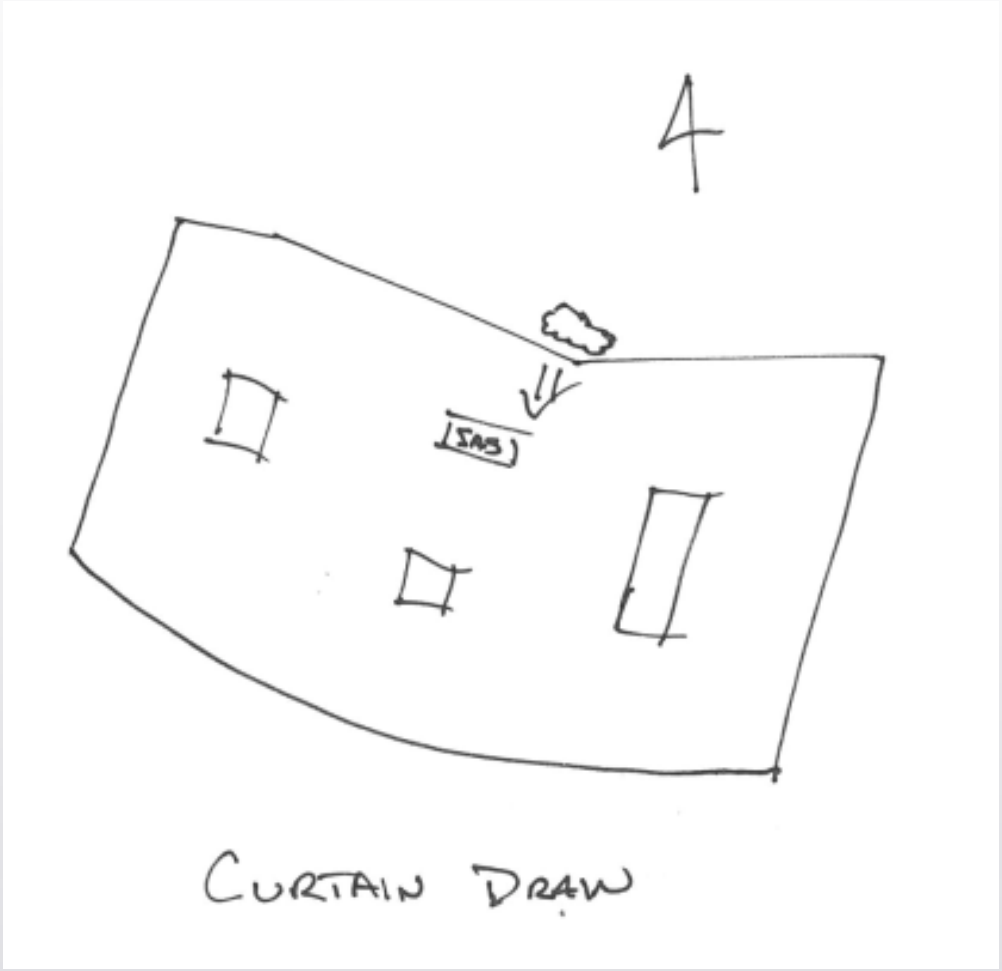
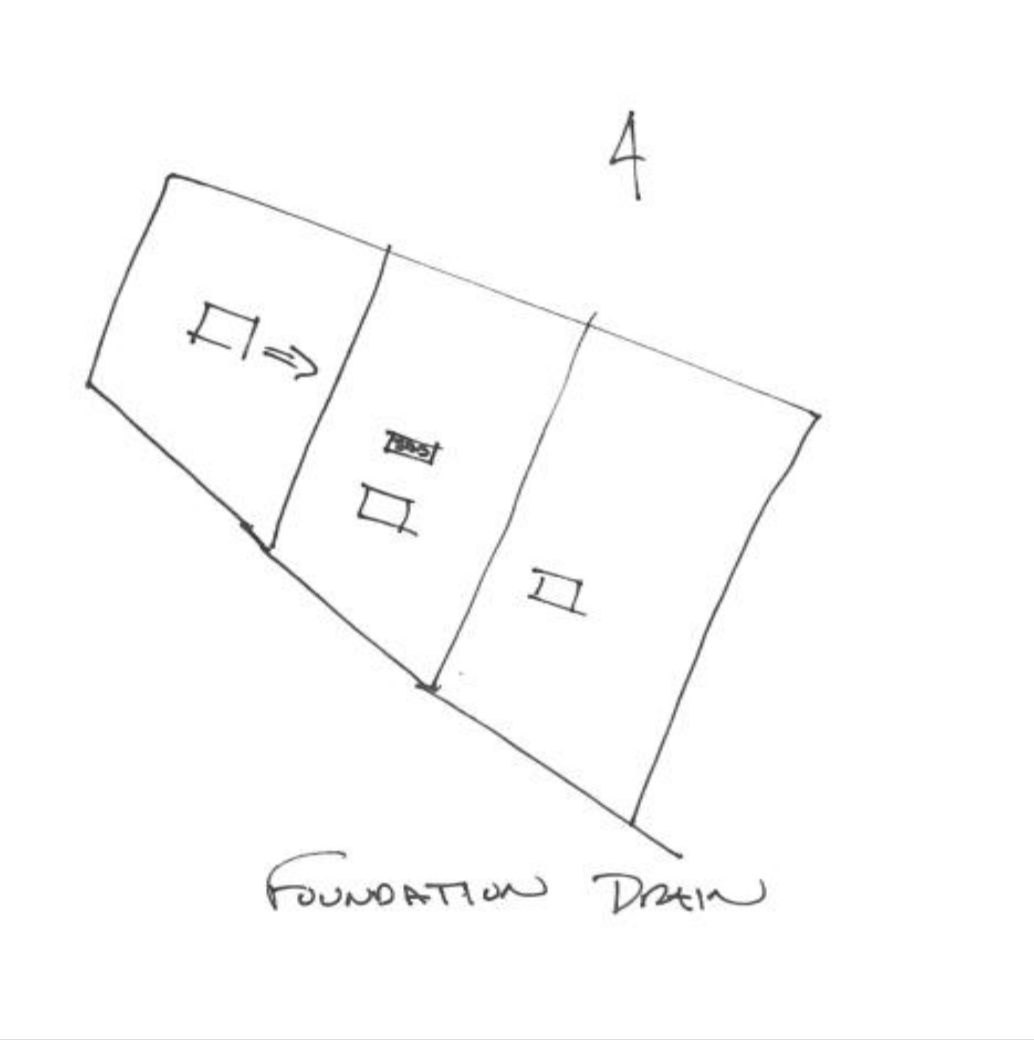
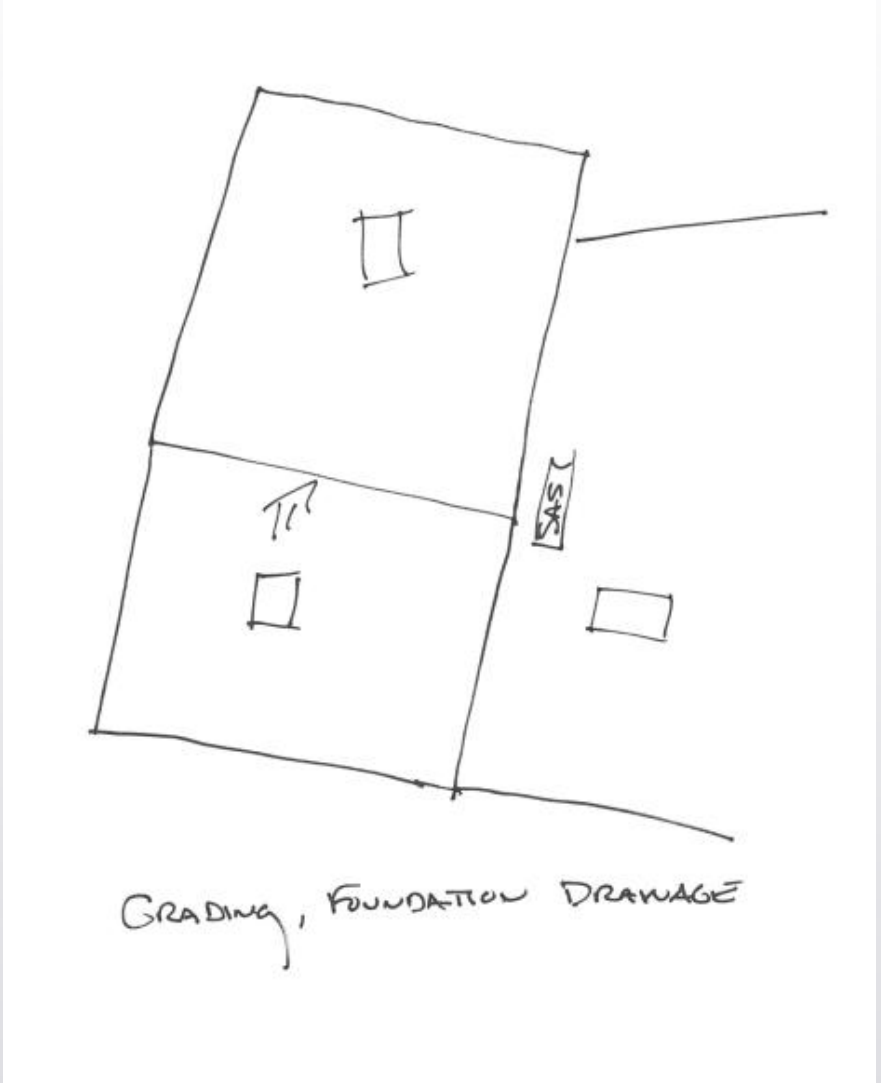
Alot of
HARDSCAPE
AND INFRASTRUC
SITING + GRADING
(BREAKOUT, LANDSCAPE, SWALE)


4
SAB
CURTAIN DRAW


FOUNDATION DRAIN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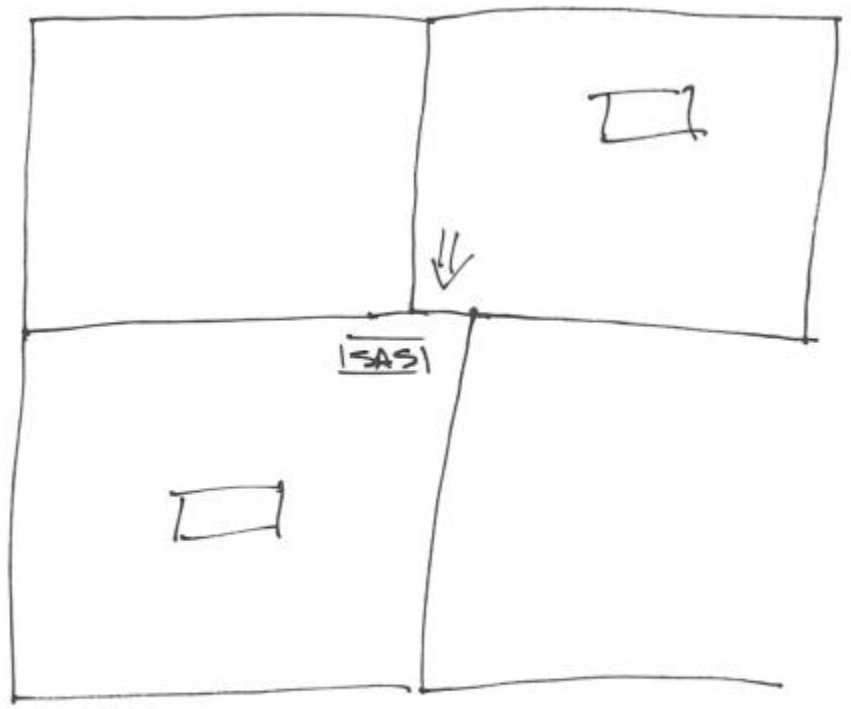
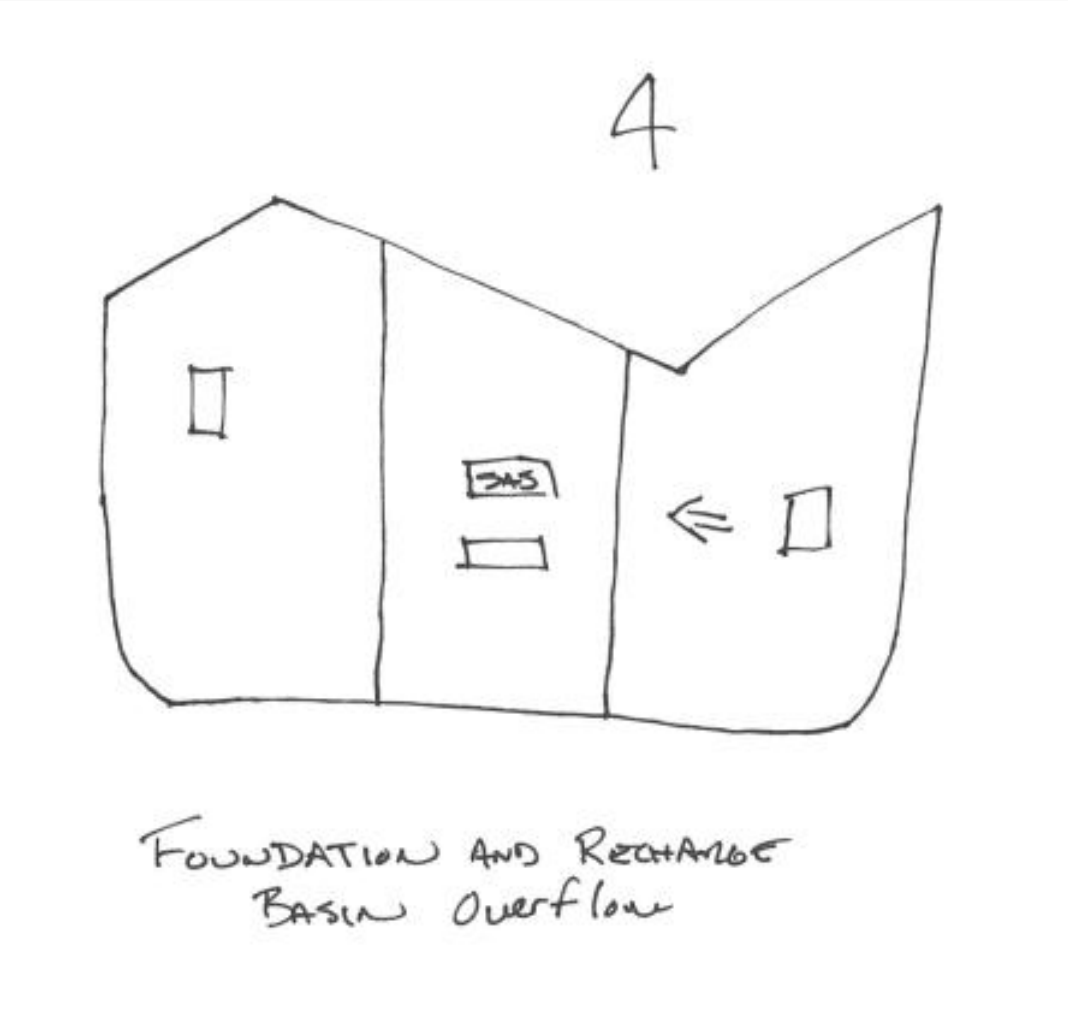
GRADING, FOUNDATION DRAINAGE



CONVEYANCE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FOUNDATION AND RECHARGE
BASIN Overflow

Summary
and
Thank you