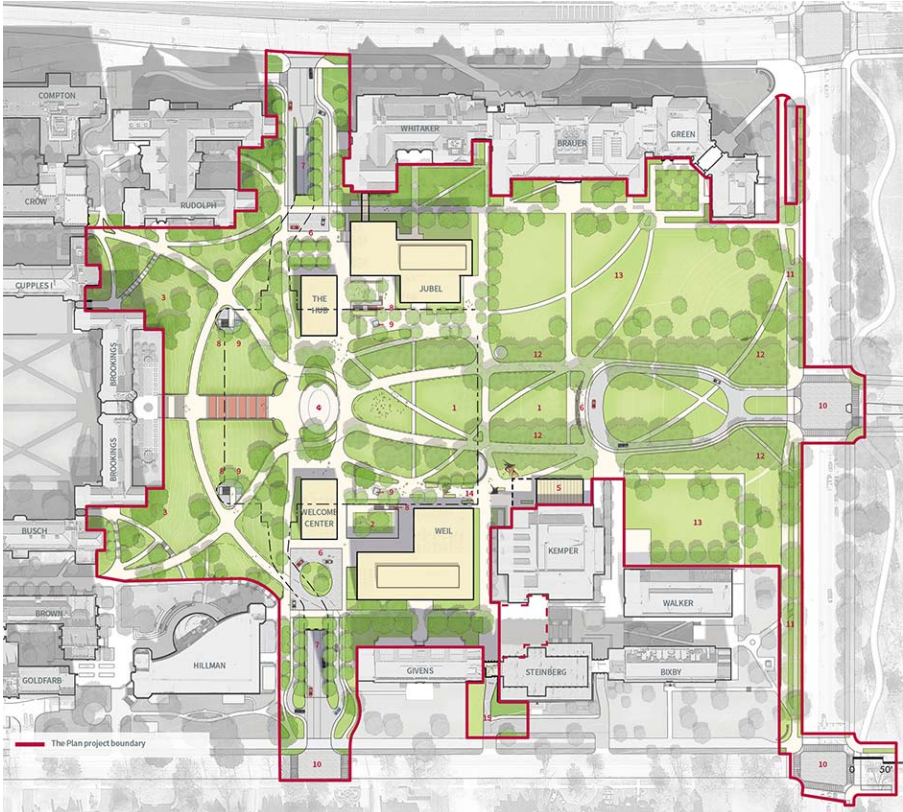


# WASHINGTON UNIVERSITY EAST CAMPUS



Project boundary



SOURCE: MICHAEL VERGASON LANDSCAPE ARCHITECTS



# WASHINGTON UNIVERSITY EAST CAMPUS



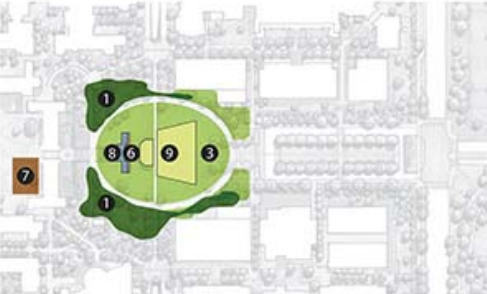
Proposed improvements above parking garage.

SOURCE: MICHAEL VERGASON LANDSCAPE ARCHITECTS

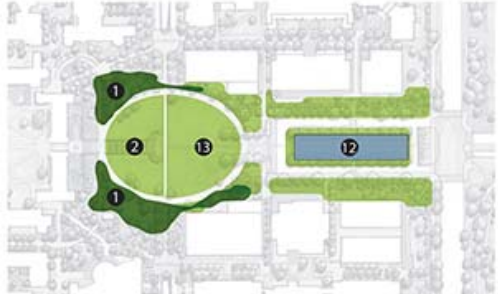
# WASHINGTON UNIVERSITY EAST CAMPUS



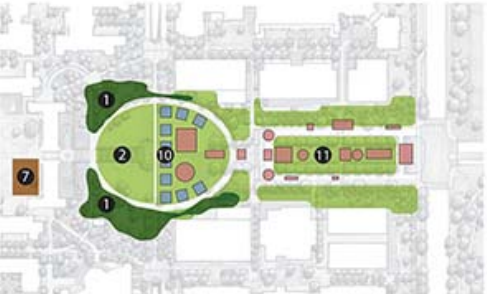
## OUTDOOR EVENT CONFIGURATIONS



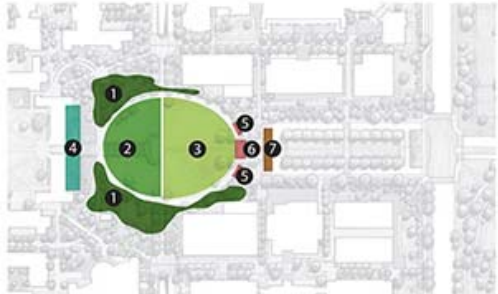
UNIVERSITY-WIDE COMMENCEMENT



BAUHAUS AND COLLEGE OF ARCHITECTURE COMMENCEMENT



THURTENE



CONCERTS

High intensity program use of the site which drove the research needs.

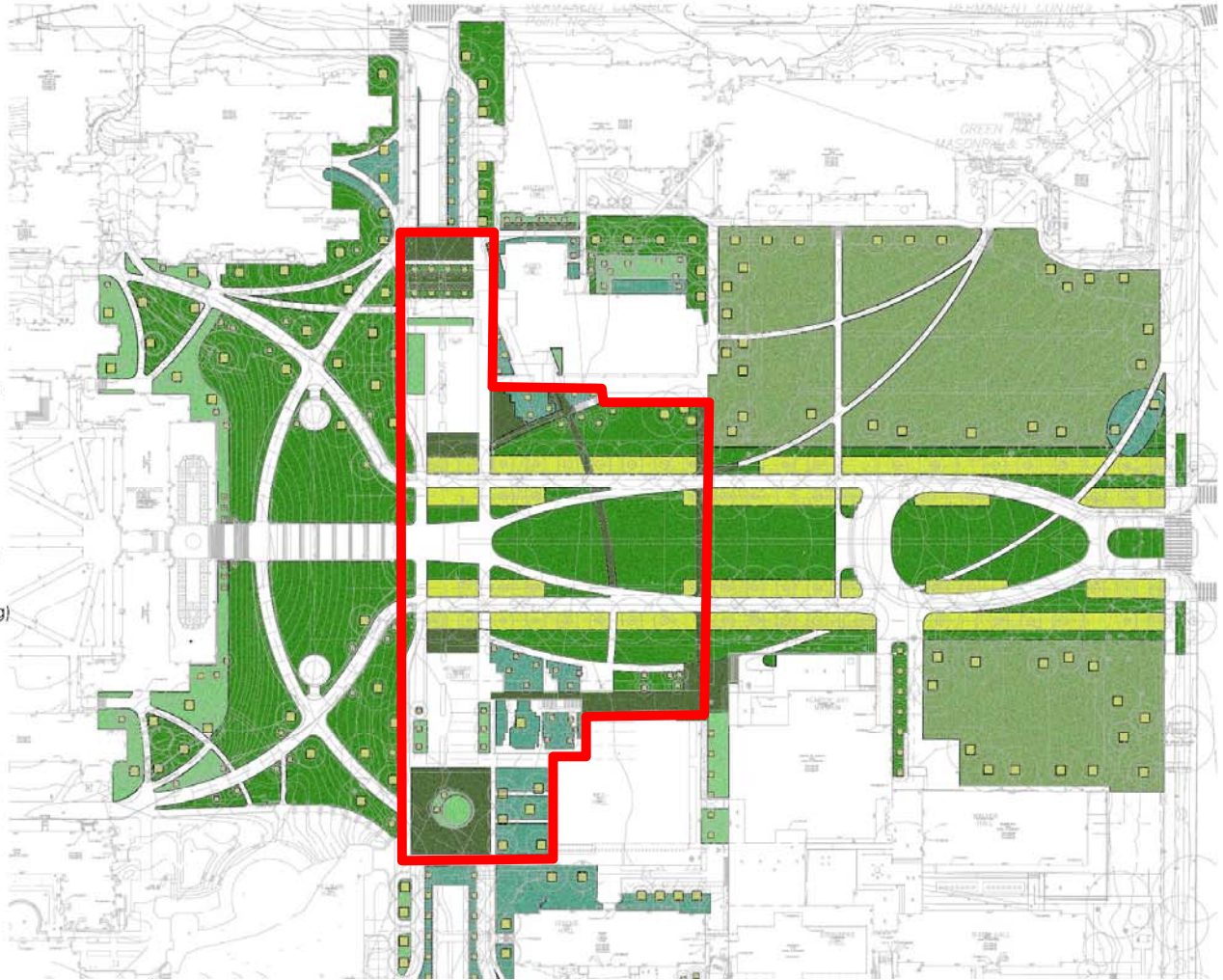
- 1. Tree Canopy
- 2. Picnic Seating
- 3. Folding Chair Seating
- 4. Upper Deck
- 5. Speakers/Equipment
- 6. Stage
- 7. Support Area/Backstage
- 8. Faculty Seating
- 9. Graduate Seating
- 10. Facades
- 11. Carnival Rides
- 12. School of Architecture Commencement
- 13. Bauhaus

SOURCE: SASAKI ASSOCIATES



## SOILS LEGEND :

-  Type 1 : Lawn - Turf  
Fiber Reinforcement - 4" Min. Depth  
12" Min. Soil Depth
-  Type 2 : Planting Bed Soil  
Shrub Planting - 24" Min. Depth  
Perennials - 18" Min. Depth
-  Type 2 : Tree Pit Soil  
42" Max. Depth  
Allee Tree Pit - Continuous per plan  
Overstory Tree Pit - 15'x15'  
Understory / Flowering Tree Pit - 10'x10'
-  Type 3: Riparian Planting Soil  
24" Min. Depth
-  Type 4: Sand-Based Structural Soils  
Fiber Reinforcement at Varying Depths
-  Type 5: Sandy Loam Native Soil  
Passive Program Space (Future Building)  
12" Min. Depth



Soil profiles with red area on top of parking structure.

# SOIL PROFILES



Low to Medium Programmed Use Turf Soil Profile



High Programmed Use Turf Soil Profile (fiber reinforced)



Shrub Soil Profile



Bio-Retention Planting Soil Profile



Structural Soil Profile



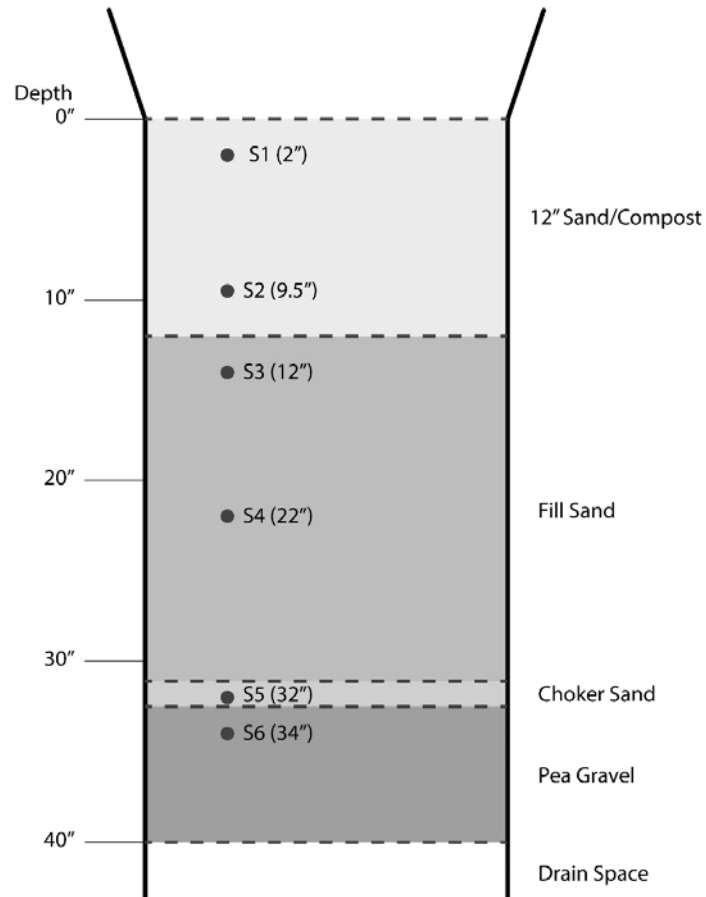
Tree Planting Soil Profile

Soil profiles with bulking requirements in red.

# PROFILE MOCK-UP



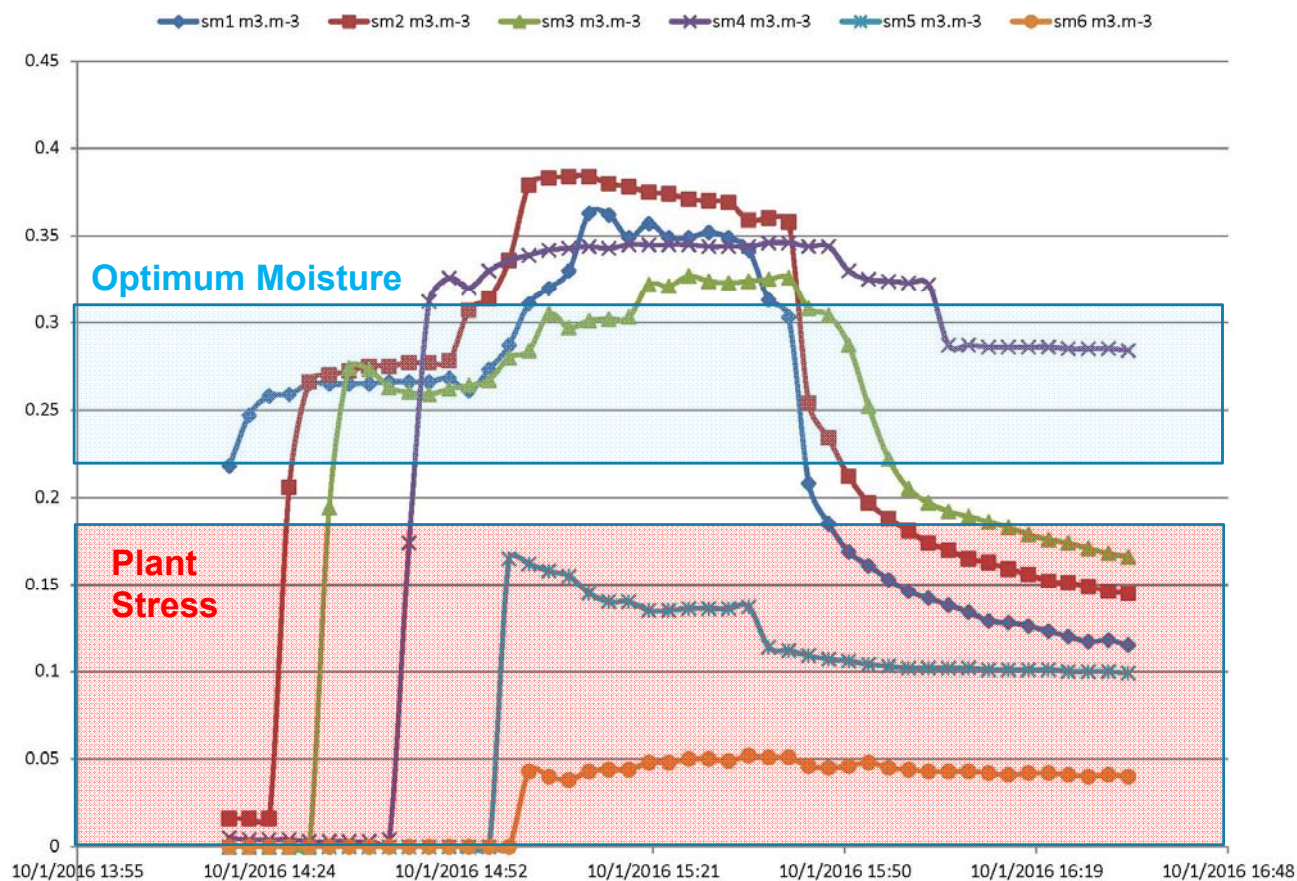
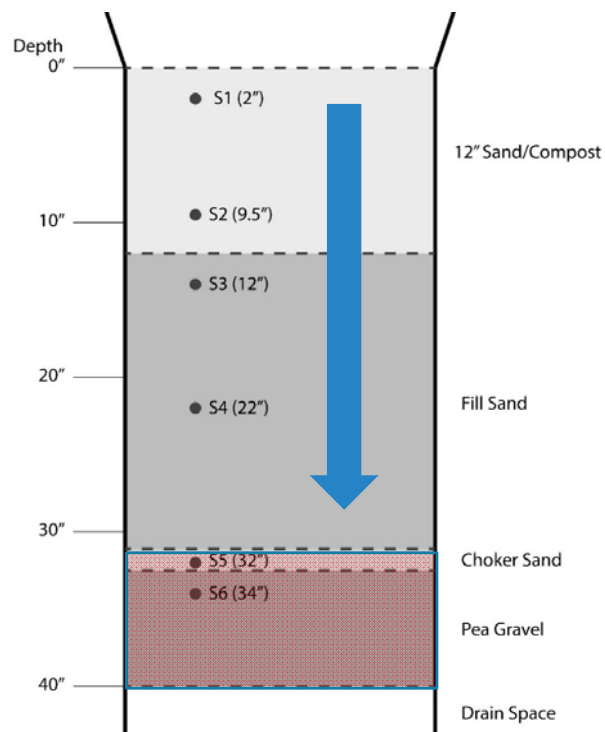
High Programmed Use Turf Soil Profile (fiber reinforced)



Testing mock-up of initial profile concept.

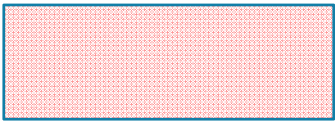


# PROFILE 1 3 Hour Simulation



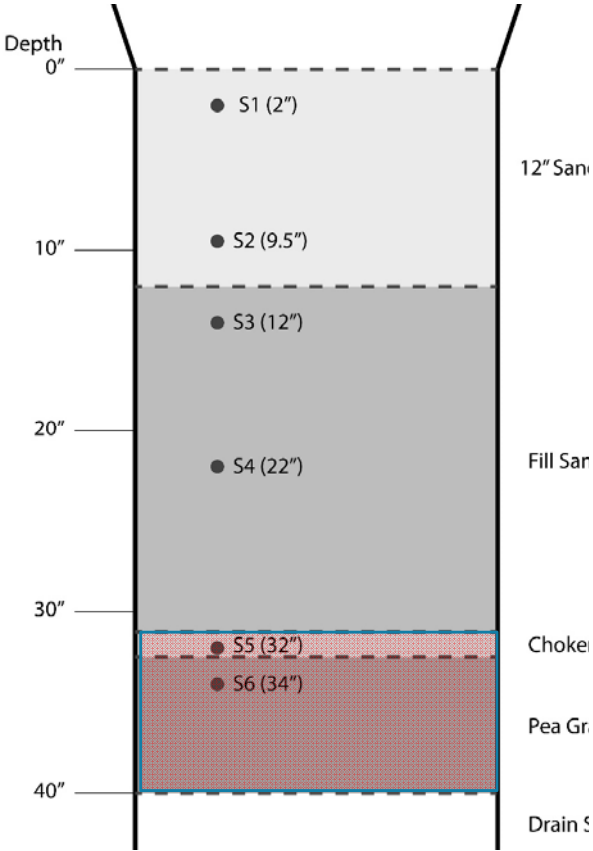
Simulation demonstrated excessive capillary pull during irrigation loading cycles

# PROFILE REDESIGN

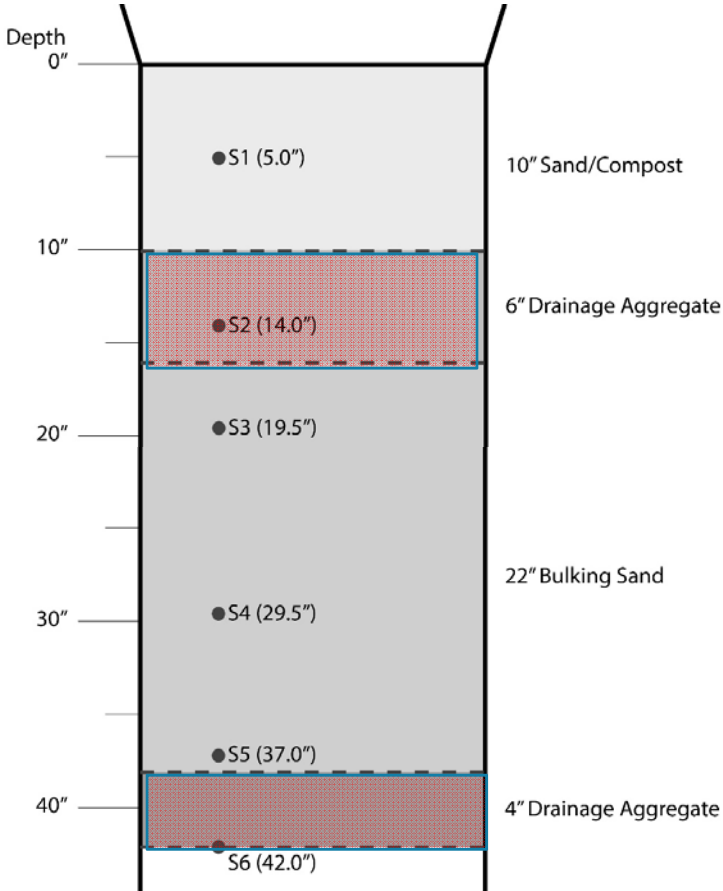


**Capillary  
Break**

Soil profile redesign to improve soil moisture efficiency and management.



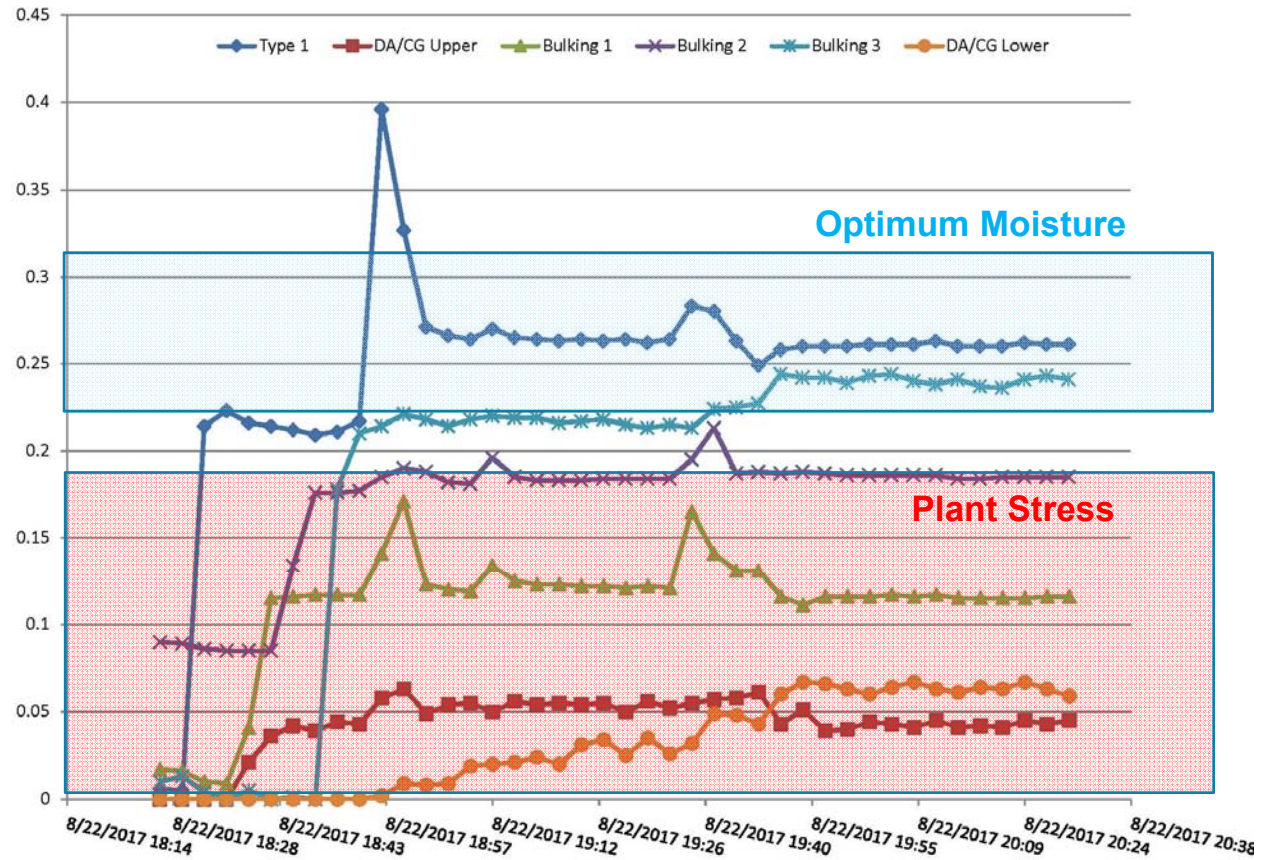
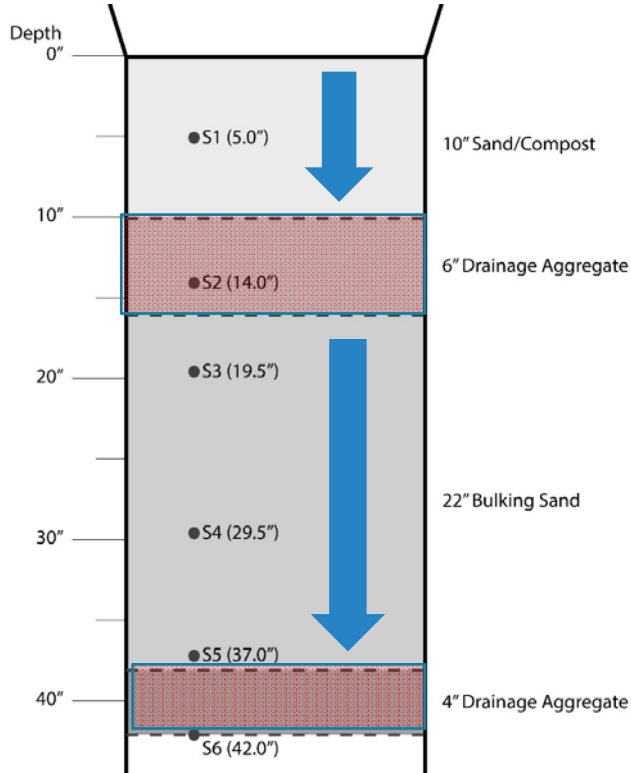
**Profile #1**



**Profile #2**

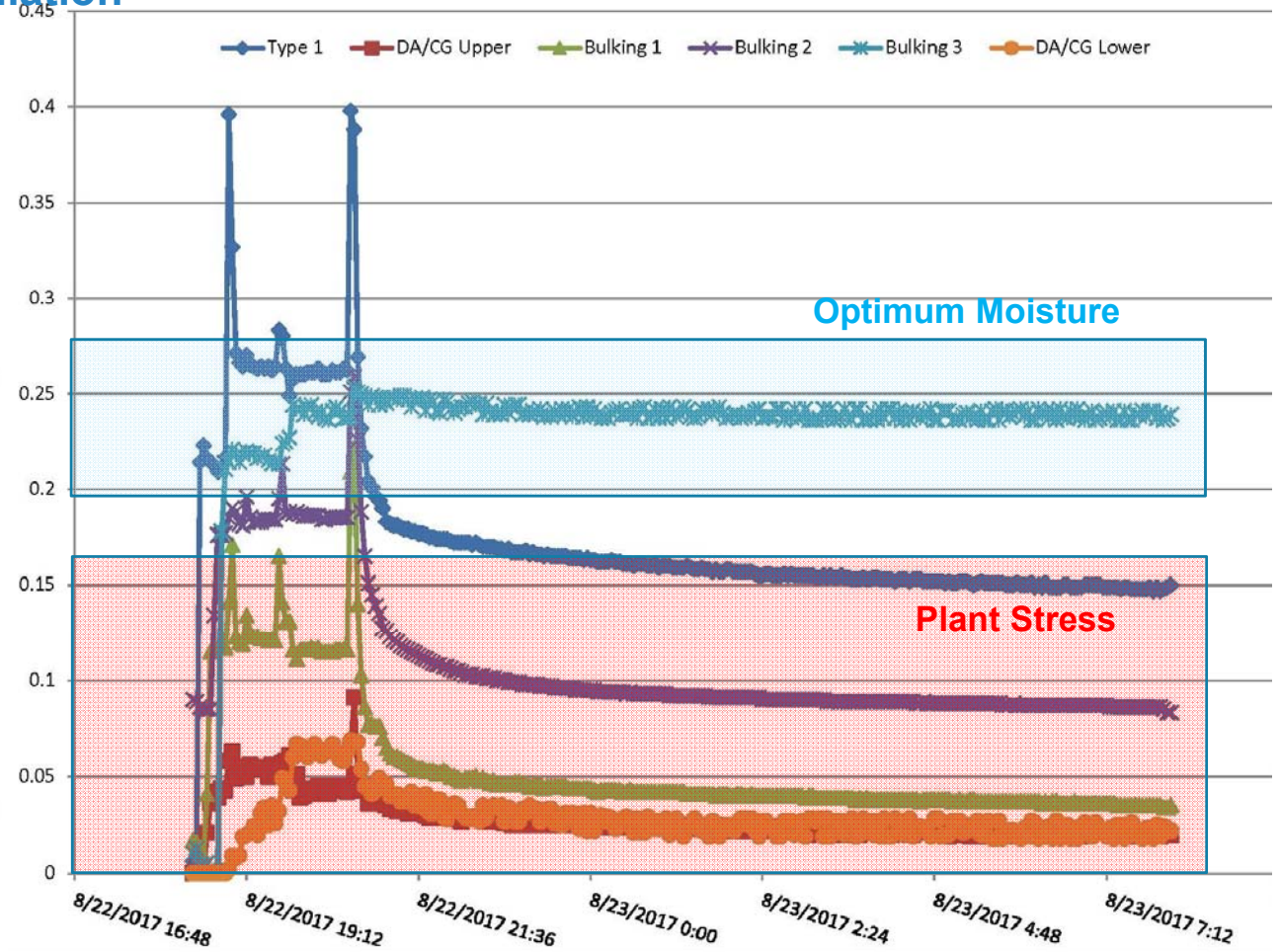
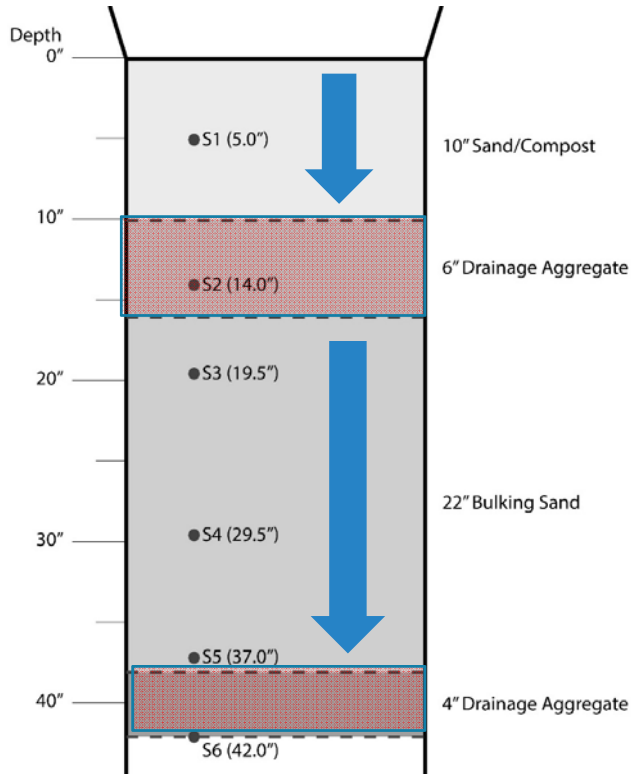


# PROFILE 2 3 Hour Simulation



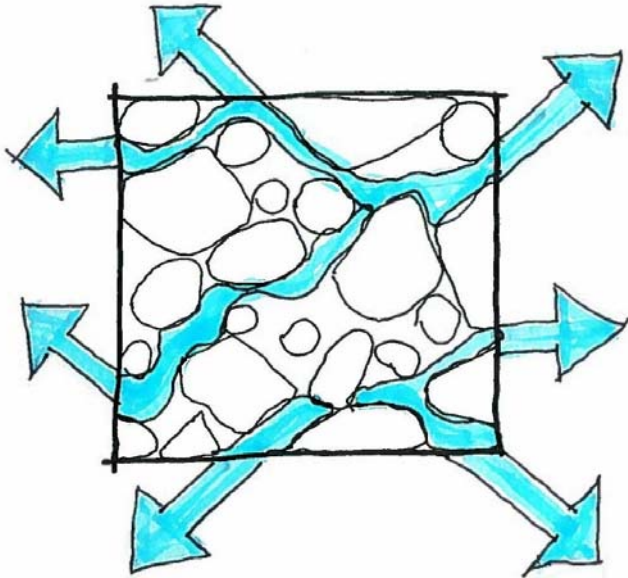
Optimized water management performance  
validating proof of concept

# PROFILE 2 24 Hour Simulation

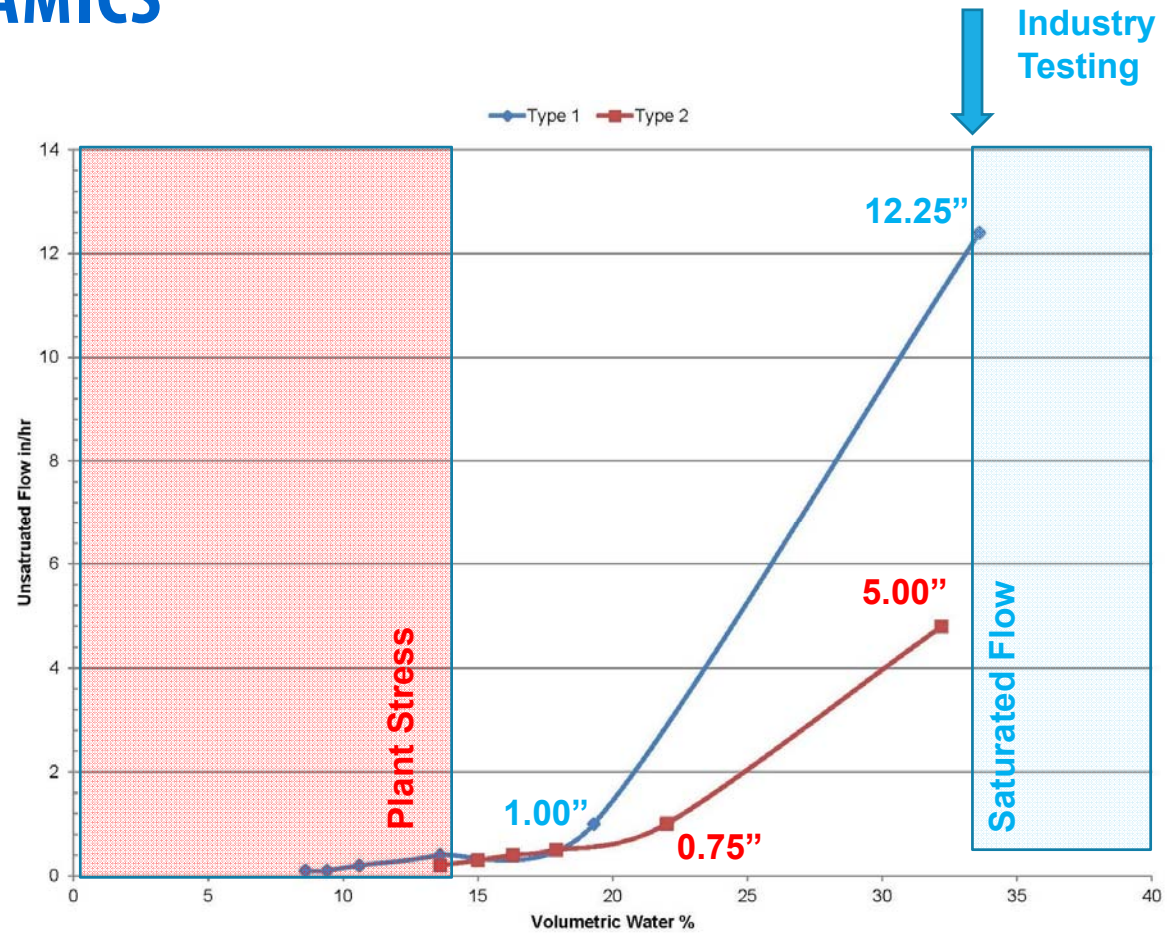




# UNSATURATED FLOW DYNAMICS



The research provided a better understanding of unsaturated flow dynamics in deep soil profiles which are only evaluated in saturated flow conditions



# STORMWATER FUNCTION

-  Type 1: Irrigation Rotor Heads  
Stainless Steel Sleeves
-  Type 2: Irrigation Spray Heads
-  Type 3: Deep Root Watering Tubes  
Typ. 2 Per Tree

175,000 SF

525,000 CF soil volume

This equates to 1,570,905 gallons or 4.83 acre-feet, or 58 acre-inches of storage over the parking facility.

