EPA RAINWORKS

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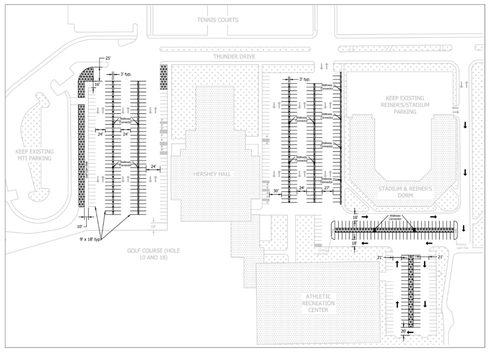
INTRODUCTION

Implementing green infrastructure at Trine University brings environmental, visual, and community benefits. In partnership with university officials, the EES team identified key problem areas and selected sustainable solutions to enhance campus performance and aesthetics.

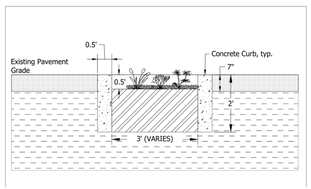
Final BMP designs include infiltration planters, a green roof, and rain gardens. The team conducted a cost analysis and developed a comprehensive design aligned with the EPA RainWorks Challenge guidelines.

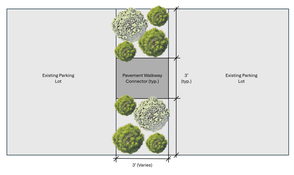
INFILTRATION PLANTER DESIGN

The design retrofitted infiltration planters into existing parking lots on the east and west sides of Hershey Hall.



- Design follows Angola Municipal Code (aisle width & ADA standards)
- 570 total stalls maintained, including all required ADA spaces
- Walkthroughs added: 3-ft pavement paths for easy pedestrian access

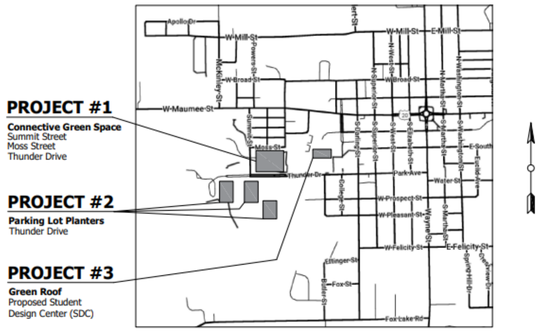




SITE SELECTION

As part of the EPA RainWorks Challenge, our team identified key locations on Trine University's campus for green infrastructure. In coordination with university officials, three primary sites were selected:

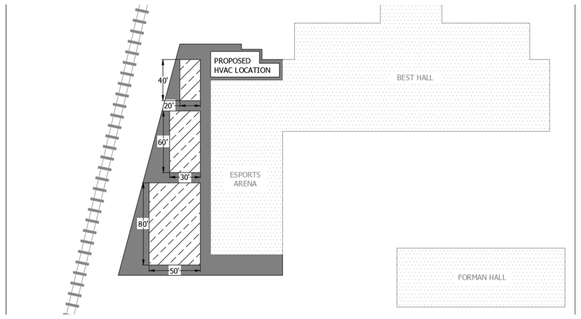
- the green space between new dormitories
- existing parking lots next to Hershy Hall
- new student design center on Best Hall



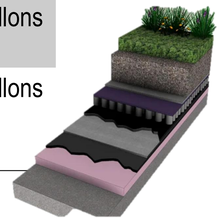
LOCATION MAP

GREEN ROOF DESIGN

We designed an extensive green roof on the newly proposed Student Design Center.



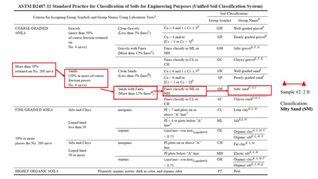
Student Design Center Runoff Volume Totals	
With no implemented green roof	35,786 gallons
With green roof implemented as designed	28,345 gallons



DATA COLLECTION

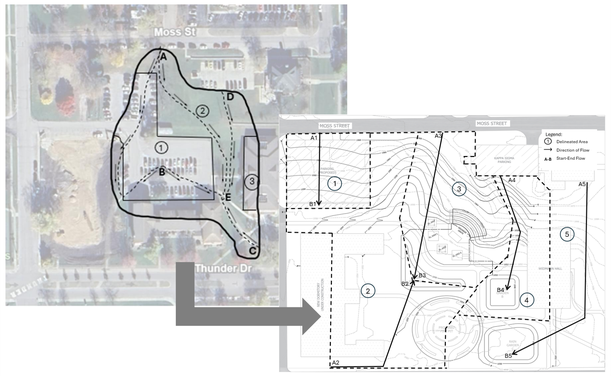
We collected soil samples from a site between Moss St. and Woodward St. at 1, 2, and 3 feet deep. Lab tests confirmed the soil as Miami loam with moderate permeability, ideal for supporting vegetation and managing drainage. A sieve analysis showed well-graded soils with low plasticity, suitable for green infrastructure.

Sieve Number	Cummulative Percent Finer		
	Sample 1: 1 ft	Sample 2: 2ft	Sample 3: 3ft
4	99.60	99.55	99.50
10	99.20	99.29	98.85
20	98.52	98.70	98.21
40	94.89	96.12	95.03
60	66.10	69.93	70.34
140	16.73	23.21	21.63
200	8.53	15.77	13.48
pan	0.00	8.94	4.95



STORMWATER ANALYSIS

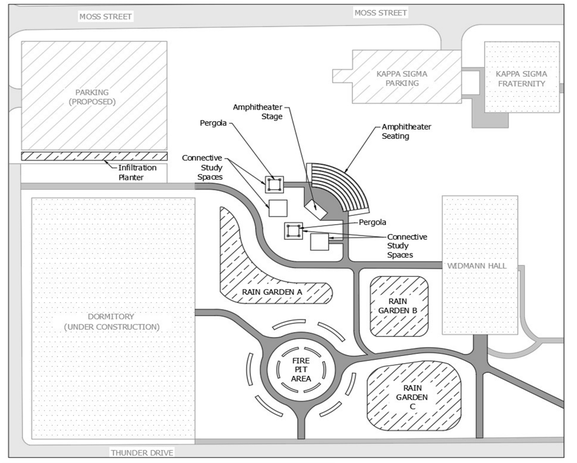
We delineated drainage areas pre- and post-construction to quantify peak flow rates and storage volume requirements for proposed green infrastructure.

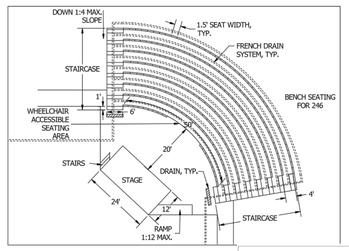


Green Space Runoff Coefficient Reduction		
Land Condition	Runoff Coefficient	Peak Flow
Pre Development	.369	4.33
Post Development	.257	1.95

GREEN SPACE DESIGN

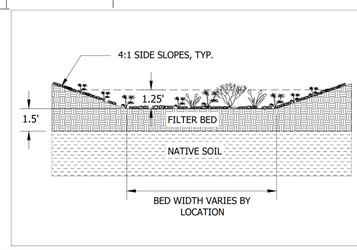
The proposed green space will feature various student gathering places, including pergolas, a fire pit, and an amphitheater. The proposed rain gardens and infiltration planter will capture stormwater runoff.





The proposed amphitheater is ADA compliant and seats almost 250 students.

Rain gardens are designed at a 4:1 slope and can store around 37,000 cubic feet of runoff.



COST ESTIMATE

Item	Cost
Infiltration planters	$178,240.00
Green roof	$264,000.00
Green Space	$211,840.00
Total cost	$654,080.00