UMD Golf Course Wash Pad and Storage Facility Design

CEE12: Group 9-1

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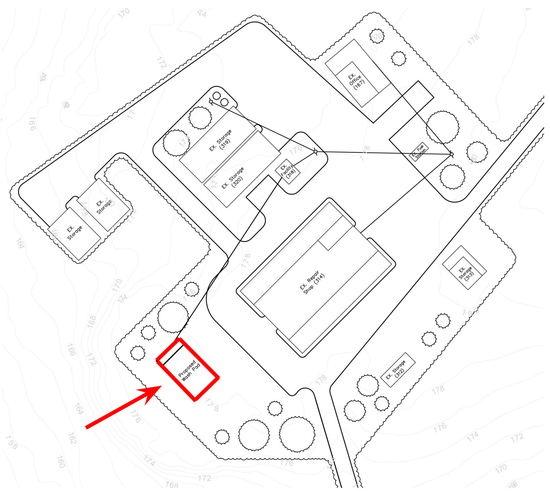
Problem Definition

The University of Maryland Golf Course employs an under resourced Maintenance Staff.

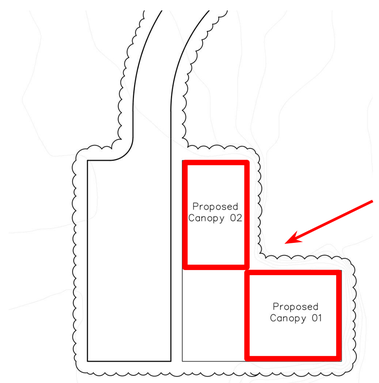
- The current wash pad has no filtration system, creating polluted runoff and discarded grass clippings
- Maintenance vehicles are stored outdoors and their lifespans are being shortened

We look to address these problems in order to maximize the efficiency of the maintenance staff and improve their environmental footprint.

Proposed Site Plans

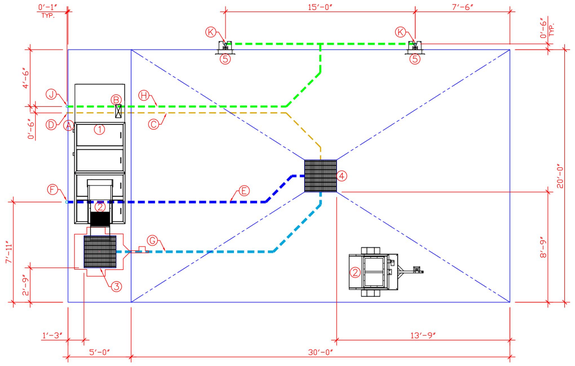


Aerial Map of Maintenance Facilities



Storage Facility Site Plan

Wash Pad Design



PLUMBING PIPE
- Ⓐ FRESH WATER PIPE, 3/4" SCH 40 PVC, REQUIRED LOCATION

ELECTRIC
- Ⓑ ELEC. PWR., 240VAC, 40AMP, SINGLE PHASE, W/NEUTRAL WIRE. REQUIRED LOCATION
- Ⓒ ELEC. CONDUIT, 3/4"ELEC.CONDUIT
- Ⓓ STUB-UP, 3/4"ELEC.CONDUIT

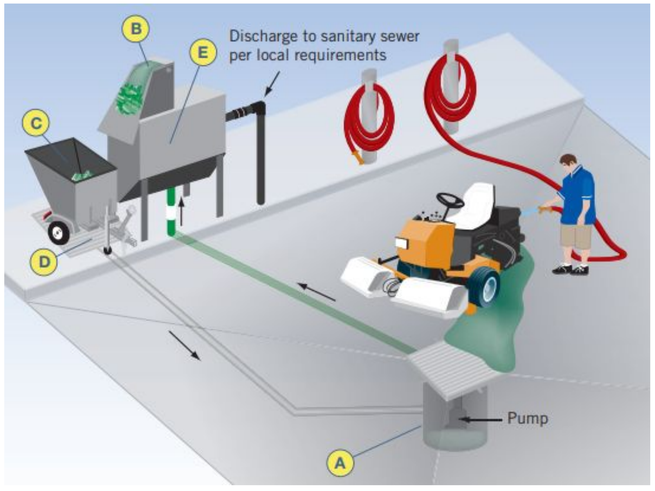
PROCESS PIPE
- Ⓔ FORCED SUPPLY PIPE, 2"SCH 40 PVC
- Ⓕ STUB-UP PIPE, 2" S.S. NIPPLE
- Ⓖ GRAVITY DRAIN, 2"SCH 40 PVC
- Ⓗ RECYCLE SUPPLY PIPE, 1 1/2"SCH 40 PVC
- Ⓙ STUB-UP PIPE, 1 1/2" SCH 40 PVC
- Ⓚ STUB-UP PIPE, 3/4" SCH 40 PVC [02 PLACES]

ESD EQUIPMENT
- ① ESD GSMS 700 GC-0 COMBO SYSTEM
- ② ESD GRASS CLIPPING HEAD, W/CLIPPING CART
- ③ ESD SHALLOW SUMP (1503)
- ④ ESD ROUND SUMP (1500)
- ⑤ ESD REMOTE HOSE STATION W/¾" HOSE & NOZZLE (1901) [02 PLACES]

Dimensions: 35 ft x 20 ft
Area = 600 ft^2
Slab thickness = 7 in

γ_c = 150 lb/ft^3
f'_c = 4000 psi
f_y = 60,000 psi

Grass Clippings



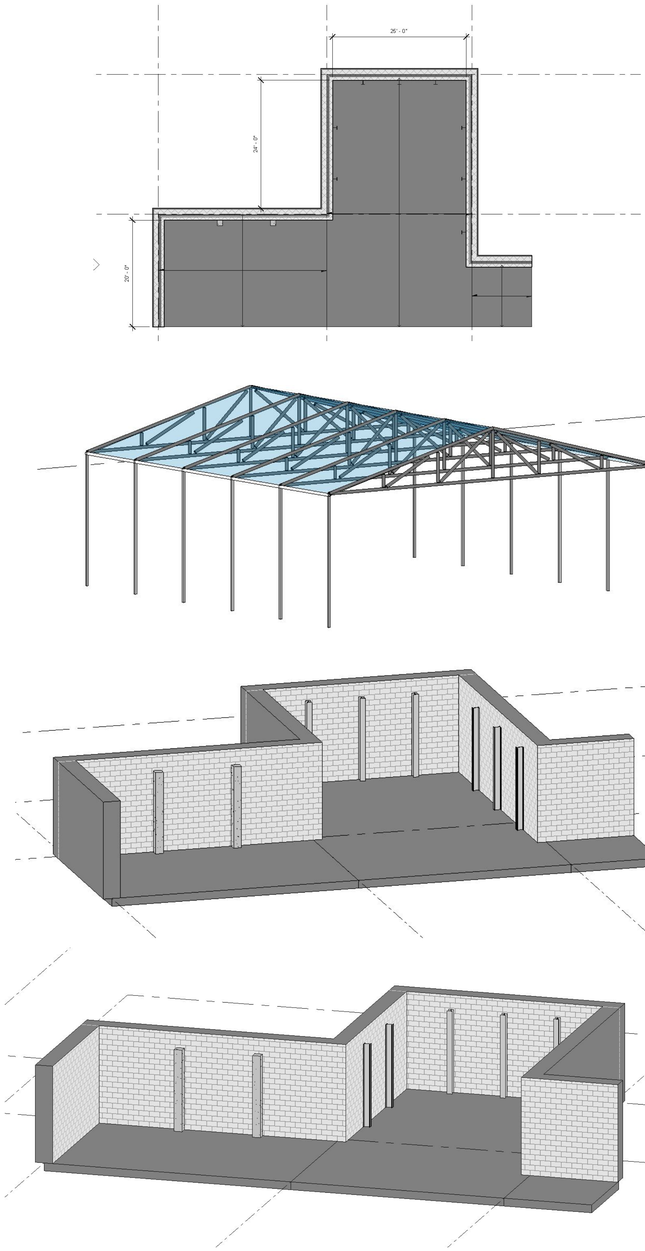
- Ⓐ Round Sump
- Ⓑ Clipping Separator
- Ⓒ Clipping Cart
- Ⓓ Shallow Sump
- Ⓔ Solids Separator

- The University of Maryland operates an extensive composting program
- Grass clippings from the solid separator of the wash pad system will be collected
- These clippings will be disposed of through the university's composting program
- A compost bin will be requested via the UMD Facility Management website
- Collected material will be transported to Western Branch Compost Facility for processing

The Clipping Seprator System

Specifications:	
Flow Range:	0-50 GPM
Daily Throughput:	Unlimited
Clipping Separation:	432 sq. in. Wedge Wire
Power Requirement:	115 Volt 20 AMP
Components Included:	Round Sump Submersible Pump Clipping Separator Clipping Cart Shallow Sump Solids Separator
Approximate Weight:	250 lbs

Storage Facility Design



Cost Estimate

Wash Pad Materials - $45,925.10
Wash Pad Construction - $19,599.70
Storage Facility 01 - $6,862.84
Storage Facility 02 - $6,862.84
Total - $79,250.78