

Mobility Transformation Facility



Project Description

The project will include the site clearing, grading, infrastructure and roadways for a four-lane 1,000-foot straight asphalt road, merge lanes, a network of asphalt and concrete urban streets, roundabout, traffic circle, crushed-gravel road segment, concrete calibration pad, service road connecting to the UMTRI parking lot, storage lot, security fencing around the entire site, covered pavilion, lighting, and electrical and networking infrastructure. This project also includes landscaping and storm water management, with a bridge, culverts, and bank stabilization to minimize wetland impacts adjacent to Millers Creek. The College of Engineering and UMTRI will be responsible for the future installation of site accessories that are not included in this project. Over time, these accessories may include building facades placed onto foundations to simulate urban streets, street signs and trusses for overhead highway signage, roadway and pedestrian lights, railroad crossings, traffic signals, benches, traffic barrels, mock fire hydrants, and other devices necessary to simulate a realistic driving environment. Parking will be provided on site as part of the project.

The Mobility Transformation Facility, although not comprising a building, included several sustainability measures to lessen the impact on the environment. These measures include:

- No heating or cooling load required
- No domestic water or sewage uses
- No landscape irrigation
- Prairie seed mix instead of lawn
- Stormwater quality controls
- Stormwater peak flow controls
- Stabilization of Millers Creek stream banks
- Reduced lighting within security fence
- Construction waste management

No heating or cooling load required

As this project does not comprise a building there will be no heating or cooling required, with its associated energy consumption and maintenance efforts. The entire facility will be located outdoors, allowing for vehicle testing through all weather conditions.

No domestic water or sewage uses

As this project does not comprise a building, there will be not domestic water or sewage use required, with site occupants general using the adjacent UMTRI building as needed. These occupants would otherwise be using facilities in their respective office buildings so there is not additional domestic or sewage load with this project, eliminating the associated energy uses, groundwater drawdowns, and potential leaks of additional piping. A future sporadic use of a rainwater simulator is planned, but will draw from a groundwater well to eliminate the need for treating and long-distance piping of domestic water.

No landscape irrigation

The project is designed with no landscape irrigation planned. Species are selected for their drought tolerance to ensure survival through dry summer periods. This will reduce unnecessary water and energy use.

Prairie seed mix instead of lawn

94% of the disturbed unpaved site area will be seeded with prairie mix instead of lawn, allowing for native or adapted species to thrive with minimal, mowing, fertilization, and pesticides, and provide habitat for wildlife

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while treating and absorbing stormwater.

Stormwater quality controls

All stormwater on the site will flow through a filtration basin, a vegetated swale, or a vegetated filter strip to treat contaminants. Additionally, all water falling on paved surfaces will be treated with swirl concentrator chambers to ensure 80% Total Suspended Solids removal in the 90% exceedance events, through engineered measures that function fully throughout winter. Additionally, UM-OSEH and MDEQ soil erosion and sedimentation controls are being implemented.

Stormwater peak flow controls

Site stormwater is routed through a detention basin to ensure that the peak flow rate from the project entering Millers Creek is reduced below existing conditions for the 1-year, 2-year, 10-year, and 100-year storms.

Stabilization of Millers Creek stream banks

As a part of this project the portion of Millers Creek passing adjacent to the test track is being armored to prevent future erosion and stream migration. Additionally, one area with a blown out culvert is being restored with graded back slopes, and another damaged culvert is being repaired, which will reduce soil migration.

Reduced lighting within security fence

Lighting on the main access drive from UMTRI will be installed to UM minimum access standards, and photocell controlled. While an extensive set of varying commonly-used light and traffic signal fixtures are being installed within the secured MTF perimeter for vehicle testing purposes, they will be turned off when not in use, and the MTF is being metered separately and billed to the users to provide an extra incentive to reduce energy consumption when not required. The only lighting fixtures which will be on during nighttime hours when the experimental fixtures are turned off are four solar-powered security lights installed throughout the secured perimeter.

Construction Waste Management

This project will follow the UM waste management requirements outlined in standard specification 017420, requiring tracking of all recycled, salvaged, and landfilled items.

Project Data

- Budget: \$6.5 M
- Schedule: Completion Scheduled for Fall 2014
- Square Feet: N/A

Status as of July 2014

- Project Status: Construction
- Design Complete: 100%
- Construction Complete: 0%