



Catherine and Isiah Leggett Math and Science Building
Concrete Fact Sheet
February 2022

Foundation Concrete Placement Phase Complete

Concrete and concrete materials have been utilized throughout the construction of the Catherine and Isiah Leggett Math and Science Building to support the construction of a strong foundation. As steel placement nears completion, the next phase of construction will involve placing concrete within the steel building structure, which requires the use of different techniques from the current concrete operations. As a result, concrete operations will look different than in previous phases of the project.

Concrete Basics

Concrete is a rock-like material made by mixing together three main components: water, cement, and aggregate (stone). A chemical reaction involving water called hydration glues the aggregate together, hardening the mixture and gaining the strength to form concrete. Despite the fact that concrete appears to be drying, hydration is not evaporation, and the water must remain in the concrete as it cures or sets.

Next Phase Concrete Placement Timing

Unlike concrete used in the building foundations, concrete placement and finishing within the steel structure frame is a process that can take up to 12 hours or more to complete each day. The process is affected by temperature, humidity, and wind. During the finishing process, the team will use power trowels or finishers on the concrete surface once the surface water is absorbed into concrete. Once started, it is essential to continue the process until the concrete is finished completely, or risk having to remove the damaged concrete with jackhammers. The surface water on the concrete must be absorbed back into the concrete (hydration) to allow the finishing process to proceed to its conclusion. However, the timeframe for the hydration process is unpredictable given that it is dependent on a variety of factors outside of our control.

Mitigation and Management Strategies

Efficiency is central to successful concrete placement and can assist with mitigating the impacts of this phase of the project. There are several ways to increase efficiency throughout this process. A key mitigation strategy is to prepare early to start placing concrete at 7 a.m. In order to do this, the concrete pump truck will need to arrive earlier in the day.

Currently, any trucks and deliveries do not enter the site before 7 a.m. To reduce the likelihood that the concrete finishing process will run into the late evening, we propose to bring the concrete pump truck on site at 6 a.m. More details on the mitigation and management strategies are as follows:

- The City/County will be contacted and engaged regarding the pump truck entering the site at 6 a.m. This will be a single truck with a crew of four workers. The truck will be positioned and prepared for the concrete trucks which will not be allowed to enter the site until 7 a.m.
- The sound levels will be monitored. The only noise that will be generated by bringing the pump truck on site early will be the sound of the diesel truck idling on the work site. The truck will idle as it maneuvers into the correct position and makes the necessary preparations for beginning the work; however, the truck will not need to idle for the full hour between 6 and 7 a.m. As a result, it is unlikely this setup will violate the noise ordinance or be disruptive. All trucks will be using the established trucking routes to maneuver materials onto the site.
- Backup alarms will be disabled during the amended work hours to eliminate disruptions and noise. Flaggers and alternate methods will be used in place of the alarms to ensure the safety of workers during that time.
- During the finishing process, blankets will be draped over the edge of the steel structure closest to the neighborhoods to minimize any sound or light pollution generated by the process. This process may continue into the late evening depending on the concrete cure times encountered. The drapes will be placed on the floor below where (if necessary) heating will take place to help expedite the hydration process.
- The equipment used for the finishing process typically produces sound equivalent to that created by a lawn mower. About four pieces of equipment will be in use at one time during the finishing process. Again, blankets will be utilized to help stay within the parameters of the noise ordinance.
- The estimated time of completion for this phase of the concrete work is around a month.

Starting the concrete placement process early is a way to ensure concrete work is completed in a timely manner and in a timeframe that is not an inconvenience to the community. This is a typical practice utilized on construction sites to complete the concrete slab placement process in an effective and timely manner which assures quality work and creates a solid building structure.

It is imperative that once this process commences, there are no interruptions or delays. This would create the risk of having to remove the concrete (using jackhammers, etc.)

and start over again—which would result in much more time-consuming and intrusive work.

The weekly project update will provide information on this phase of the project. The Montgomery County Department of the Environment as well as the City of Takoma Park will be notified and engaged throughout this next phase of the project.

Questions related to concrete work may be submitted to community@montgomerycollege.edu or for immediate concerns, call the project hotline at 800-879-9879.



Concrete Delivery Truck

Concrete Pump Truck



Examples of the Concrete Process

