Cast-In-Drilled-Hole Piles

Cast-In-Drilled-Hole (CIDH) piles are commonly used in the construction of bridge structures, and refer to a construction method in which the reinforced concrete piles are cast in drilled holes to predetermined elevations using a heavy wall steel casing to prevent caving. CIDH methodology varies based on several factors, including soil composition, the presence of groundwater and construction impact considerations.

How will CIDH piles be constructed for the Automated People Mover (APM) project?

In order to mitigate dust, vibration and sound impacts due to construction, LINXS will use the oscillator method for large diameter CIDH pile construction, advancing the casing into the ground (without the use of impact or vibratory hammers) while concurrently excavating the displaced soil and rock. The drilling casing preserves the integrity of the drill hole, even in unstable or wet ground formations.

Once the pile has been excavated to depth, a reinforcement cage is installed and concrete is placed directly into the drilled hole while the casing is simultaneously removed.

For small diameter CIDH pile construction, a helical-shaped boring tool called an auger will be used. As the auger rotates, the soil is displaced and removed from the excavated hole.

Large Diameter CIDH Pile Construction Process

1. The oscillator advances the casing into the ground
2. As the soil is displaced by the casing, it is excavated
3. A reinforcement cage is placed into the hole
4. Concrete is placed into the hole as the casing is removed

Cast-In-Drilled-Hole Piles

LINXS
LAX INTEGRATED EXPRESS SOLUTIONS

215+

Number of CIDH Piles Larger Than 4’ Wide

99’

Deepest CIDH Pile

11’

Largest CIDH Pile (Width)

CIDH Pile Schedule Completion: Fall 2020

The construction of the APM CIDH piles started with investigative potholing to locate utilities and run soil composition tests. Several test piles were also constructed to test the means and methods of pile placement and design, and changes were made as needed.

What is the purpose of APM’s CIDH piles?

CIDH piles form the foundation of the APM project, supporting and interfacing with the columns for the stations and guideway, pedestrian bridges and walkways, and the Upper West Way roadway bridge. As the concrete is placed into the pile, the column reinforcement cage overlaps the CIDH pile reinforcement cage and is further supported with permanent shoring for approximately the top 21 feet of the CIDH pile. Once the CIDH pile is complete, crews can then go to work constructing the formwork around the column’s reinforcement cage and placing the concrete that will become APM support columns. These foundation columns will support a bent cap, the horizontal component of the support structure upon which the APM guideway will be constructed.

About the Automated People Mover

The Automated People Mover (APM) system will bring convenience and time-certainty for guests traveling to or from LAX. During peak hours, driverless trains will arrive at stations every two minutes. The trains will have wide doors for easy access with luggage, large windows for viewing, plenty of hand holds, and seats for those in need. Station platforms are open-air, light-filled and have escalators and elevators for quick, convenient access to the terminals. The APM is the centerpiece of LAX’s Landside Access Modernization Program (LAMP), which also includes a Consolidated Rent-A-Car (ConRAC) facility, Intermodal Transportation Facilities and associated roadway improvements. The APM will reduce vehicle congestion in the Central Terminal Area, provide a connection with L.A. Metro’s regional transportation system, create new locations for passenger pick-up and drop-off, reduce emissions and provide reliable access to the terminals.

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