BRIERLEY ASSOCIATES
Creating Space Underground

IN DEPTH
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Supporting Excavations in San Francisco's Building Boom

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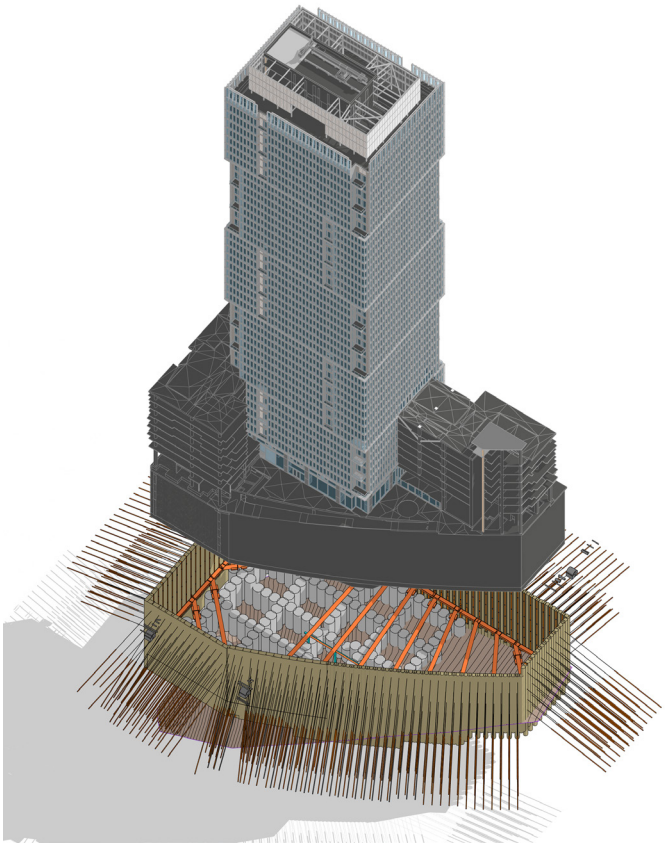
In the midst of one of San Francisco's largest new-housing and office construction booms in history, Brierley Associates has been busy designing deep excavation support systems for many of these new tall and deep structures. One of our most-recent support of excavation design projects is the Transbay Block 9 development. A multi-residential project consisting of a 43-story tower on Folsom Street attached to an 8-story podium building on Folsom and First Street, and a row of two-story townhouses on the south side of Clementina Street. The Transbay 9 Tower shown in the image to the right was designed by the San Francisco office of Skidmore, Owings & Merrill, LLP. Brierley, as the sub-consultant design engineer for Malcolm Drilling, designed the 69-ft deep support of excavation for this new high rise basement. This deep underground space will house six parking levels that will include: bike parking, car share stalls, and charging stations. Challenges with this project included the close proximity to existing structures and utilities, and work within adjacent parcels and right of ways.

We have seen a dramatic increase in contractual requirements to use BIM for this type of work, and Brierley has positioned itself as a leading designer for Deep Excavation Supports using BIM. We often get involved with these projects before the new structure design is complete and we are required to respond quickly to major design changes. The coordination of the temporary support elements and the sequence for construction of these deep basement structures is critical. BIM helps us provide a design that addresses these constructability issues while providing our client and the design team the confidence that there will be no issues in the field. BIM also provides a live materials take-off that can be used to validate the cost effectiveness of these design changes and we are often able to provide valuable insight on how to reduce these costs using a model based approach.



Transbay Block 9 Support of Excavation: Cutter Soil Mix and soldier pile wall with four levels of tiebacks and one lower level of internal bracing. Brierley also performed the modeling of existing bedrock surface, the jet grouted soil improvement scope and also modeled portions of the existing utilities in the tieback areas to ensure a conflict free design.