ECONOMIC VIABILITY ANALYSIS

	Lost Profit to Keep Building
Floor Plate	2,800
Number of Floors Lost	2
Total SF of Area	5,600
Average Unit Size	843
# of Units Lost	6.64
NOI Per Unit/Year	$13,857
Total NOI	$92,051
Market Capitalization Rate	5.50%
Value of Units Lost	$1,673,659
Added Rennovation Construction Cost	$350,000
Subsurface costs	$250,000
Total Known Cost to Keep Building	$2,273,659

	Lost Profit to Keep Façade
# of Units Affected	4
Base Revenue Per Unit/Year	$26,700
Premium View @ 10%	$29,370
Expense Per Unit/Year	$6,498
NOI Per Unit/Year	$22,872
Discount to Units Affected	50%
Discount Per Unit	$11,436
NOI Lost	$45,744
Market Capitalization Rate	5.50%
Value Loss to Keep Façade	$831,709
Cost and Extra Fees to Stabilize Façade	$200,000
Total Loss to Keep Façade	$1,031,709

EXECUTIVE SUMMARY

A geotechnical study has been performed for the proposed Nulu Apartments project at 700 East Main Street in Louisville, Kentucky. Terracon's geotechnical scope of work included advancing eight (8) soil test borings to depths of 40 feet to 60 feet below existing site grades.

- **Existing Fill:** Existing fill extending to depths as great as 15 feet below the ground surface was encountered on site. Based on boring information and land use history the existing fill appears to have been placed prior to the construction of the existing manufacturing warehouse. Documentation concerning the placement and compaction of this fill was not available for our review.

- **Loose native material:** Very loose to loose native poorly graded sand was encountered at all borings below ground surface to depths ranging from 31 feet to 46 feet below existing grade. Medium dense to dense sand was encountered below the very loose to loose stratum, in the deeper boring, generally below 48 feet.

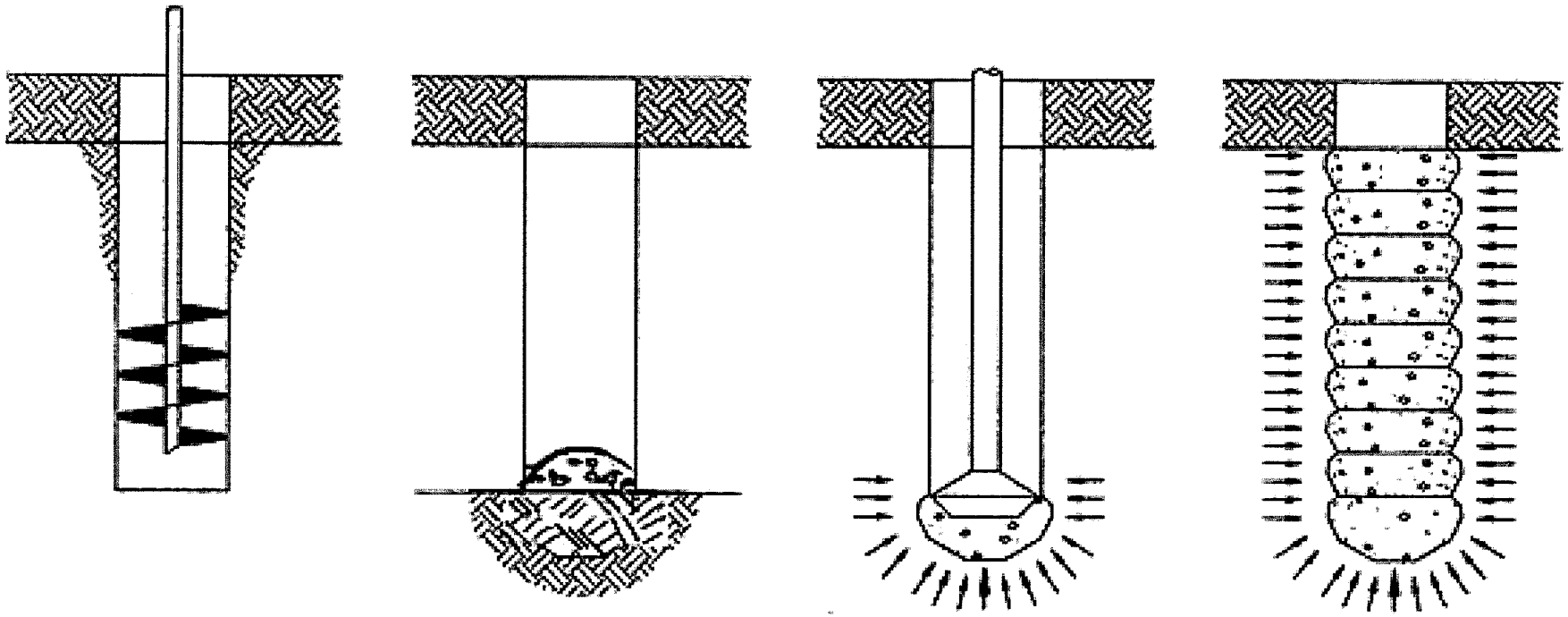
- **Foundations:** We recommend conventional shallow spread footings bearing on a rammed aggregate pier foundation system designed by a specialty contractor for the relatively lightly loaded proposed residential apartment building. For the parking garage and proposed podium we recommend that they be supported on a series of auger cast-in-place piles to reduce settlements to within acceptable limits (See Section **4.3 foundations** for details).

- **Floor Slab:** The slab-on-grade floor for the proposed residential apartment building can be designed to bear on approved existing fill or newly placed engineered fill after being proof-rolled and tested. For the anticipated loading for the parking garage slab, we recommend the fill soils and loose sands be improved to a depth of at least 15 feet below existing grade using rammed aggregate piers designed by the specialty contractor.

- Support of floor slabs and pavements on or above existing fill soils is discussed in this report. However, even with the recommended construction testing oversight, there is an inherent risk for the owner that compressible fill or unsuitable material within or buried within the fill will not be discovered. This risk of unforeseen conditions cannot be eliminated without completely removing the existing fill, but can be reduced by performing additional testing and evaluation during construction.

- **Seismic Site Class:** Site Class 'D'; based on the 2013 Kentucky Building Code (KBC).

Close monitoring of the construction operations discussed herein will be critical in achieving the design subgrade support. We therefore recommend that Terracon be retained to monitor this portion of the work.



A. Make cavity

B. Place stone at bottom of cavity

C. Ram stone to form bottom bulb

D. Place and ram thin lifts to form undulated side shaft

Figure 1—Geopier construction