APPENDIX A

FIGURES
(a) Building Footprint Larger Than Tunnel Footprint

(b) Building Footprint Matches Tunnel Footprint
The total force per unit length \( P \) and the location of the resultant force, \( \bar{z} \), due to the strip loading only can be expressed as follows.

\[
P = \frac{Q}{90} \left[ H \left( \alpha_2 - \alpha_1 \right) \right]
\]

where \( \alpha_1 = \tan^{-1} \left( \frac{d}{H} \right) \)

\[
\alpha_2 = \tan^{-1} \left( \frac{w + d}{H} \right)
\]

\[
H - \bar{z} = \frac{H^2 \left( \alpha_2 - \alpha_1 \right) - (R - Q) + 57.30 \, wH}{2H(\alpha_2 - \alpha_1)}
\]

where \( R = (w + d)^2 \left( 90 - \alpha_2 \right) \)

\( Q = d^2 \left( 90 - \alpha_1 \right) \)
Building Footings Extend Through the Engineered Fill and Bear on the Ladera Sandstone
(a) Building Footing at the Edge of the Slope

(b) Building Footing at the Bank of the Slope
4-FOOT DIAMETER, 20-FOOT LONG DRILLED PIER
FIXED HEAD CONDITION
4-FOOT DIAMETER, 20-FOOT LONG DRILLED PIER
FIXED HEAD CONDITION
4-FOOT DIAMETER, 20-FOOT LONG DRILLED PIER
FIXED HEAD CONDITION
4-FOOT DIAMETER, 30-FOOT LONG DRILLED PIER
FIXED HEAD CONDITION
4-FOOT DIAMETER, 30-FOOT LONG DRILLED PIER
FIXED HEAD CONDITION

BENDING MOMENT VS. DEPTH
PROPOSED LCLS TUNNEL PROJECT
STANFORD LINEAR ACCELERATOR CENTER
MENLO PARK, CALIFORNIA

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6-FOOT DIAMETER, 20-FOOT LONG DRILLED PIER
FIXED HEAD CONDITION
6-FOOT DIAMETER, 20-FOOT LONG DRILLED PIER
FIXED HEAD CONDITION

BENDING MOMENT VS. DEPTH
PROPOSED LCS TUNNEL PROJECT
STANFORD LINEAR ACCELERATOR CENTER
MENLO PARK, CALIFORNIA

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6-FOOT DIAMETER, 20-FOOT LONG DRILLED PIER
FIXED HEAD CONDITION

SHEAR FORCE VS. DEPTH
PROPOSED LCLS TUNNEL PROJECT
STANFORD LINEAR ACCELERATOR CENTER
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6-FOOT DIAMETER, 30-FOOT LONG DRILLED PIER
FIXED HEAD CONDITION
6-FOOT DIAMETER, 30-FOOT LONG DRILLED PIER
FIXED HEAD CONDITION