Supplemental Engineering Notes for Retaining Wall and 18-Inch Piers

The following specifications and recommendations clarify the design and optional scope of work for the **18-inch diameter reinforced concrete piers** associated with the retaining wall.

While the geotechnical engineer and special inspector recommended these piers to enhance long-term slope stability, it is important to note that the structural calculations and design for both the prior and current permit submittals do not rely on underpinning to bedrock. These piers are **optional at the discretion of the owner** and are not a mandatory component for structural integrity. Should approval be granted, the owner intends to proceed with the work, contingent upon budget and the availability of a specialized contractor. However, the project can move forward without these piers if necessary, without compromising the structural soundness of the design.

1. Pier Specifications

Diameter: **18 inches**
Embedment: **15 feet into bedrock**
Reinforced with rebar per structural requirements

2. Dowel Count and Placement

4 dowels per pier, arranged in a **square pattern** for balanced load distribution.
Spacing: **8 inches apart**, with approximately **4–5 inches from the pier edge** to ensure adequate concrete cover and optimal load transfer.

3. Dowel Embedment

Into Retaining Wall Footing: Drill dowel holes to a depth of **6–8 inches**.
Into Pier Concrete: Dowels shall extend **10–12 inches** into the pier concrete to ensure proper anchorage.

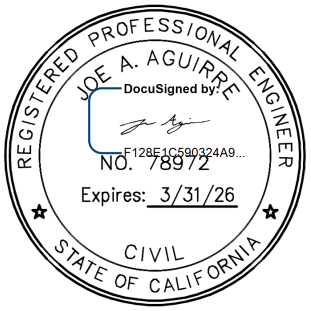
4. Dowel Material and Anchoring

Dowel Size: **#5 rebar (5/8-inch diameter)**
Anchoring: Secure dowels into the retaining wall footing with **high-strength structural epoxy**, applied per manufacturer instructions to ensure maximum bond strength.

5. Concrete Requirements

Minimum **3 inches of cover** around all sides of rebar.
Minimum **4 inches of cover** over the pier head.
Maintain **6 inches average encapsulation** for dowels.
Concrete Mix: **4,000 psi or greater**

6. Pier-to-Footing Overlap



Ensure a minimum **6-inch overlap** between the pier and the retaining wall footing for effective load transfer and stability.
Piers must be aligned beneath the retaining wall in accordance with the approved plans.

Construction Sequence

1. **Drill Dowel Holes**: Drill **3/4-inch diameter holes** into the retaining wall footing in a square pattern at the specified locations.
2. **Install Dowels**: Insert **#5 rebar dowels** into the drilled holes using structural epoxy, ensuring proper embedment.
3. **Excavate Pier Holes**: Excavate pier holes to a depth of **15 feet**, ensuring contact with bedrock.
4. **Position Rebar Cages**: Place rebar cages into the pier holes, ensuring alignment with embedded dowels.
5. **Pour Concrete**: Pour **4,000 psi concrete** into the pier holes, vibrating the concrete to eliminate voids and ensure proper encapsulation.
6. **Curing**: Allow a minimum of **7 days** for concrete curing before applying structural loads.