

Colorado Earth

White Paper:

Foundation Solutions Suitable for Compressed Earth Block (CEB) Construction

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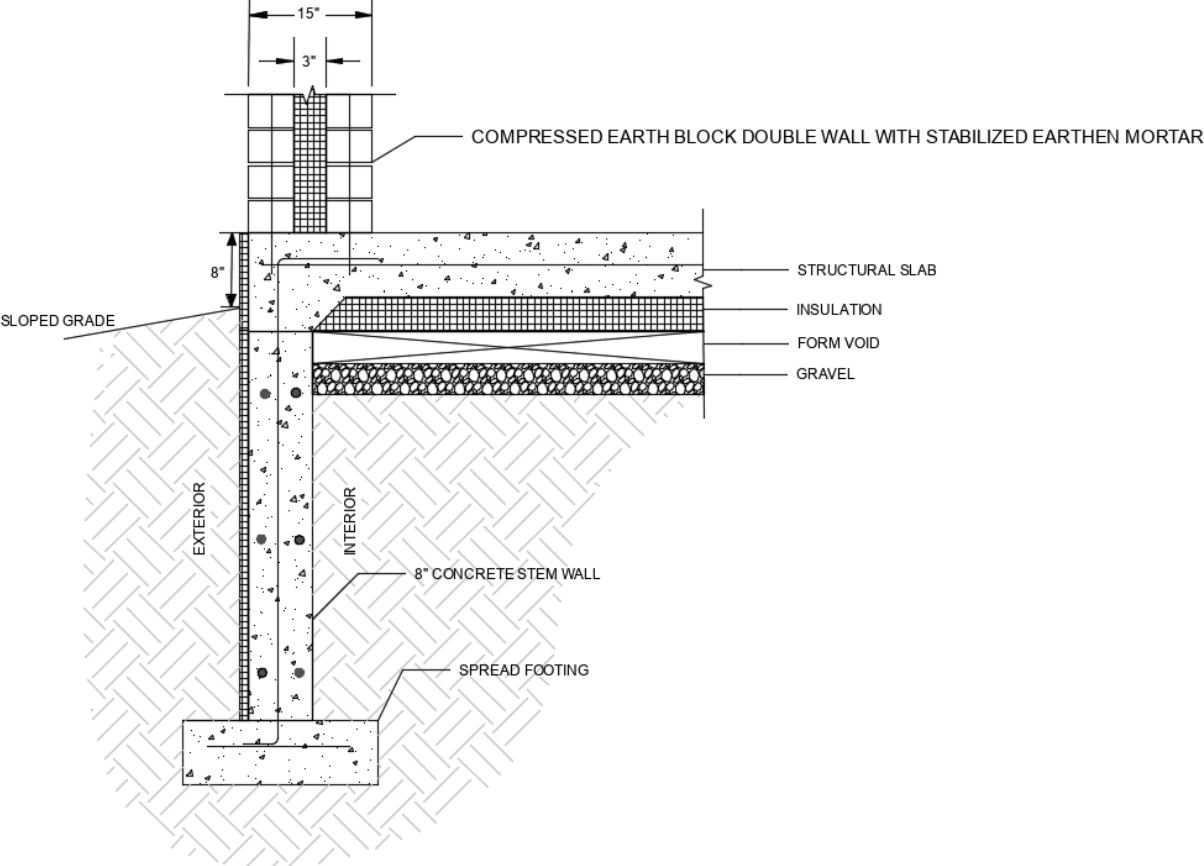
Background

Before building a Compressed Earth Block (CEB) structure an adequate foundation is required. The foundation design that is best suited for a specific buildsite will largely depend on the soils report provided by the project's geotechnical engineer. With the ideal soil conditions of shallow bearing soils, the structural engineer may determine that a spread footing with a concrete stem wall, pre-fabricated by Nudura, can sufficiently support the structure. While in some cases, the dead load of a CEB structure will need to be transferred to deeper bearing soils using helical piers or drilled caissons. A rubble trench can reduce the use of concrete and provide a foundation with a built-in drainage system.

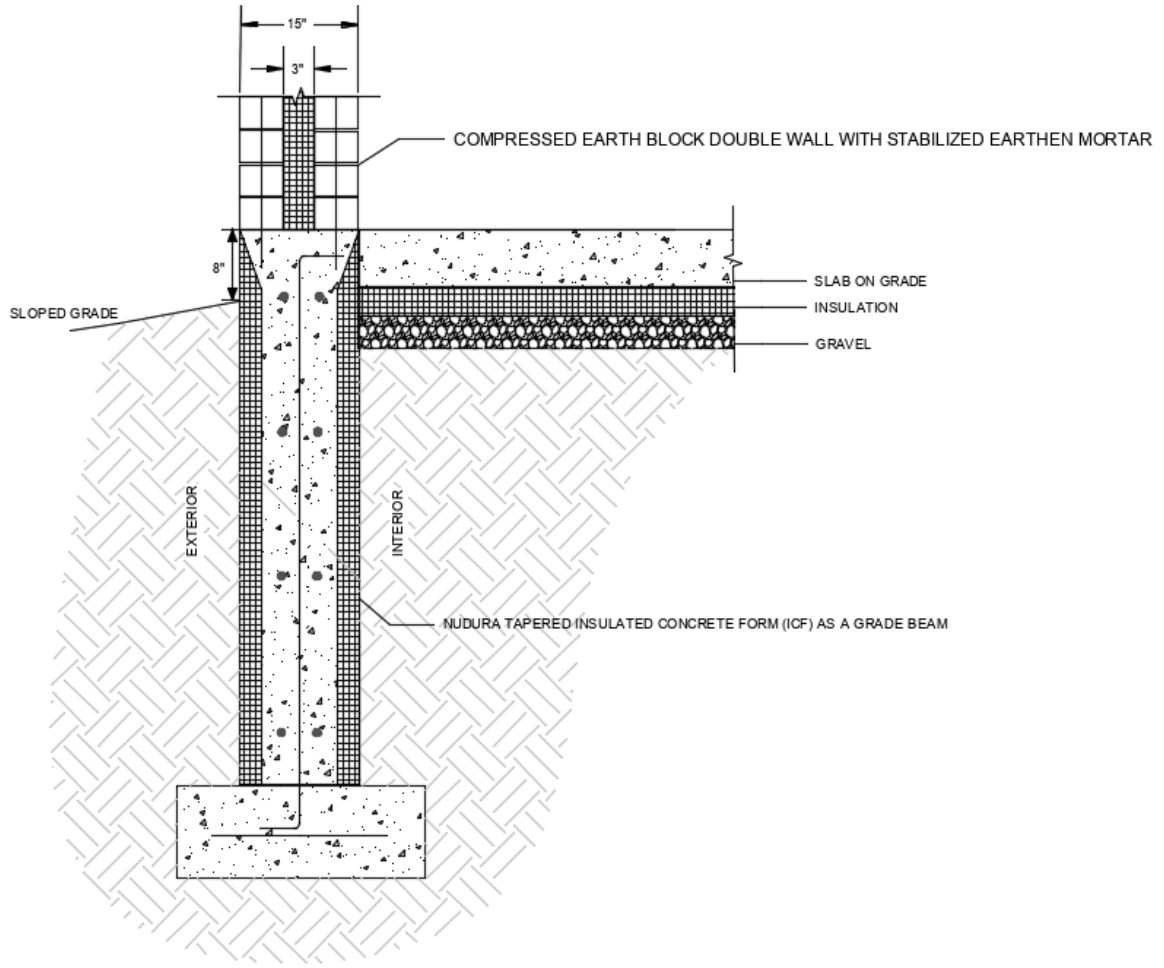
In the process of deciding the foundation design best suited for a specific build site, the specifications of CEB's must be taken into account for the unique structure. CEB's are 6"x12"x3½". They are typically laid with a ½" mortar joint. Each block weighs approximately 16 lbs. The composition of the blocks is a sandy-clay soil that is stabilized with about 6.5% cement by weight. The project's structural engineer will need to consider all of these characteristics in order to design an appropriate foundation. The options shown below can help serve as a guide in selecting the most structurally sound and economically viable option.

Foundation Designs

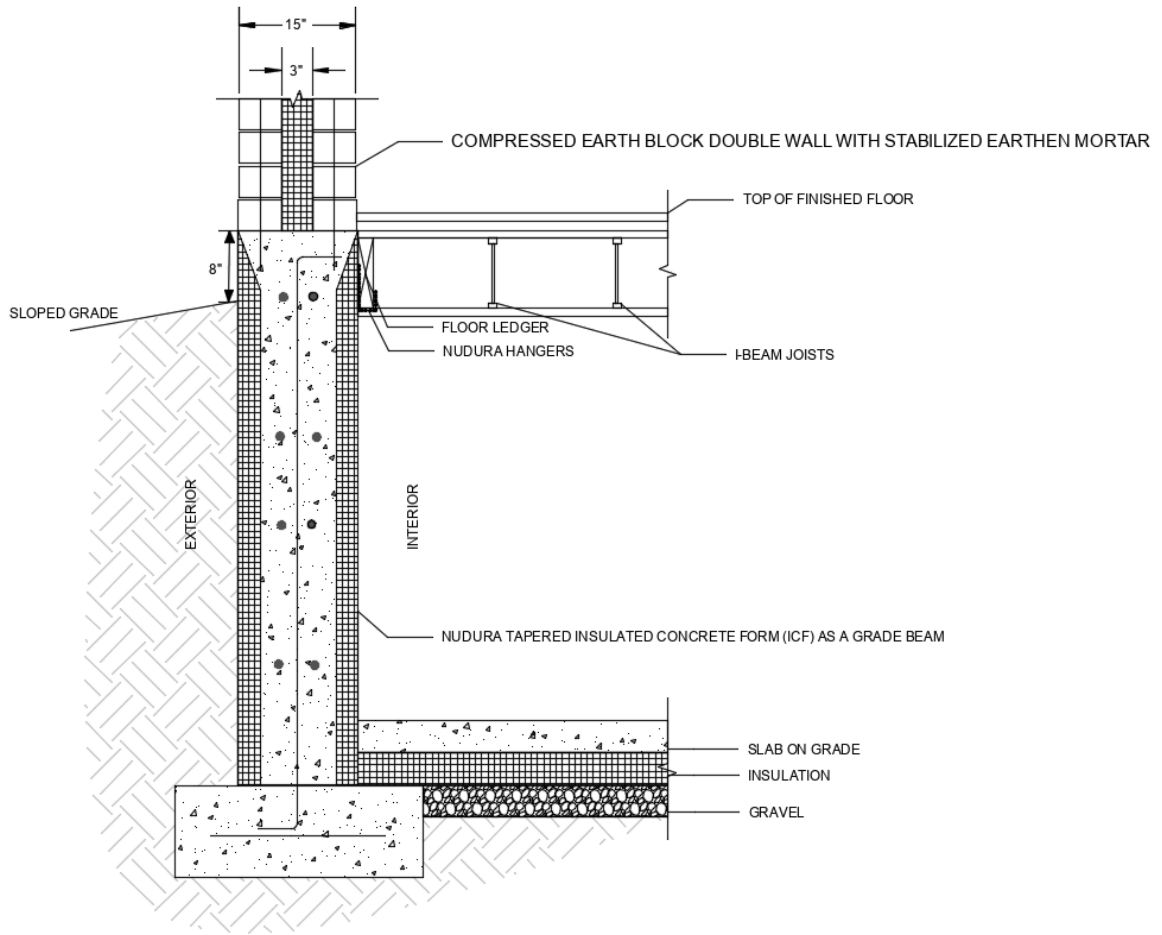
- 1. Spread footing with an 8" concrete stem wall and a structural slab.



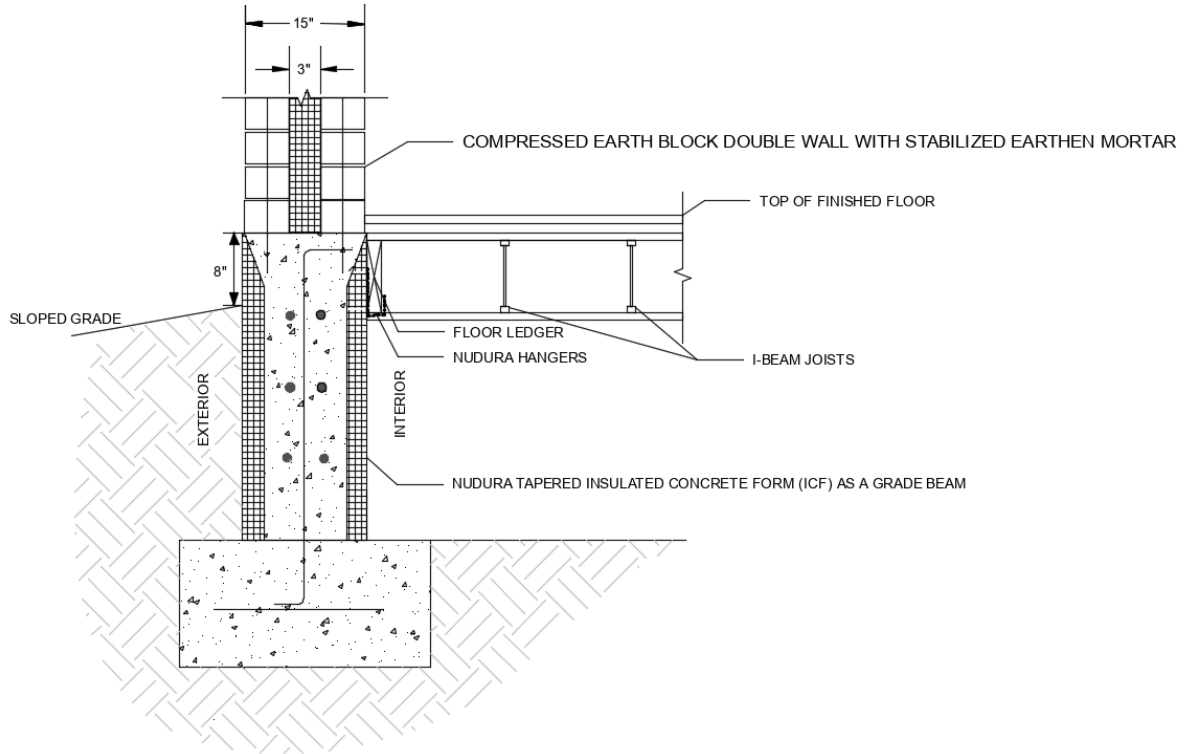
2. Spread footing with a tapered insulated concrete form and slab on grade.



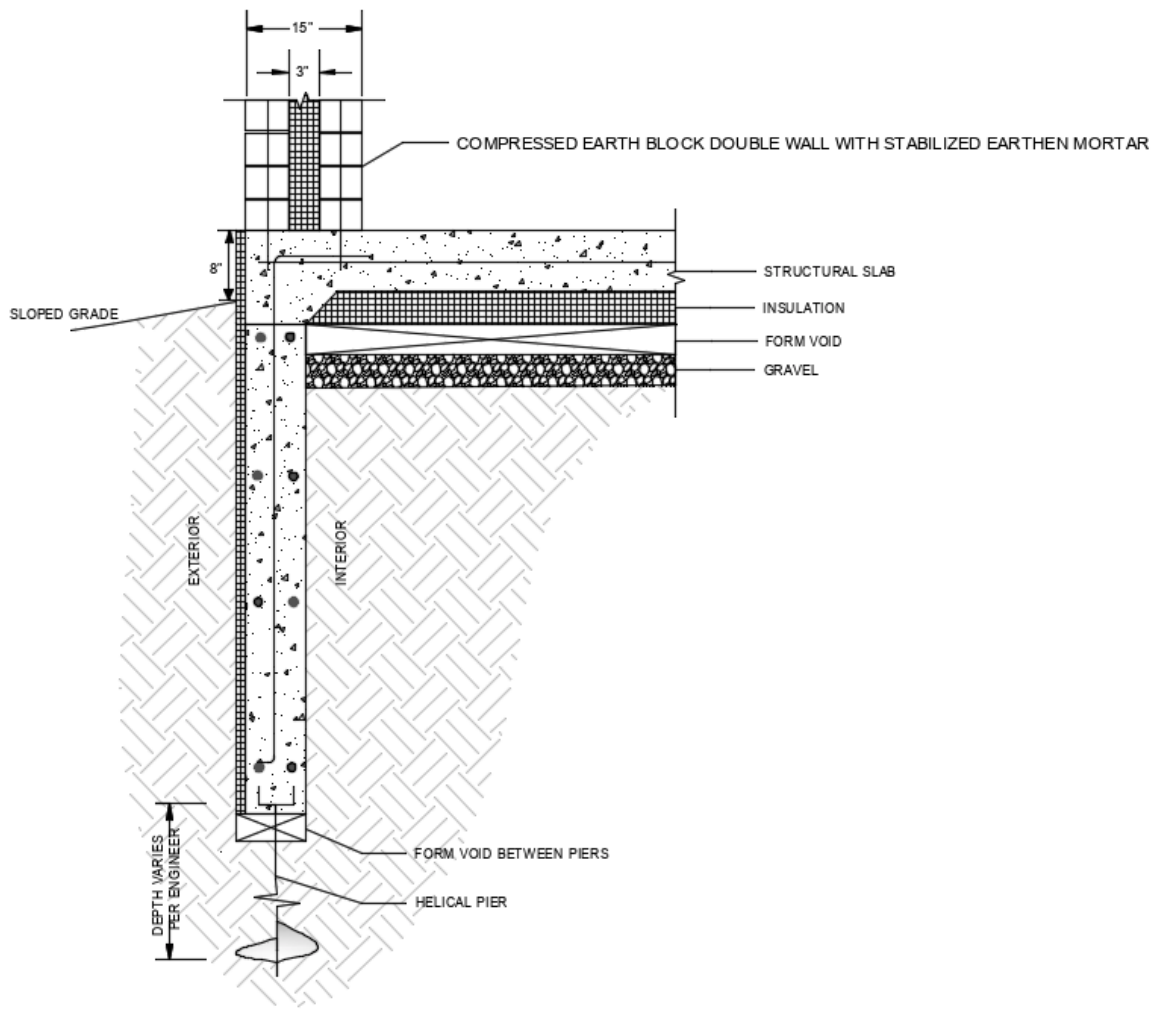
3. Spread footing with a tapered insulated concrete form and basement slab on grade.



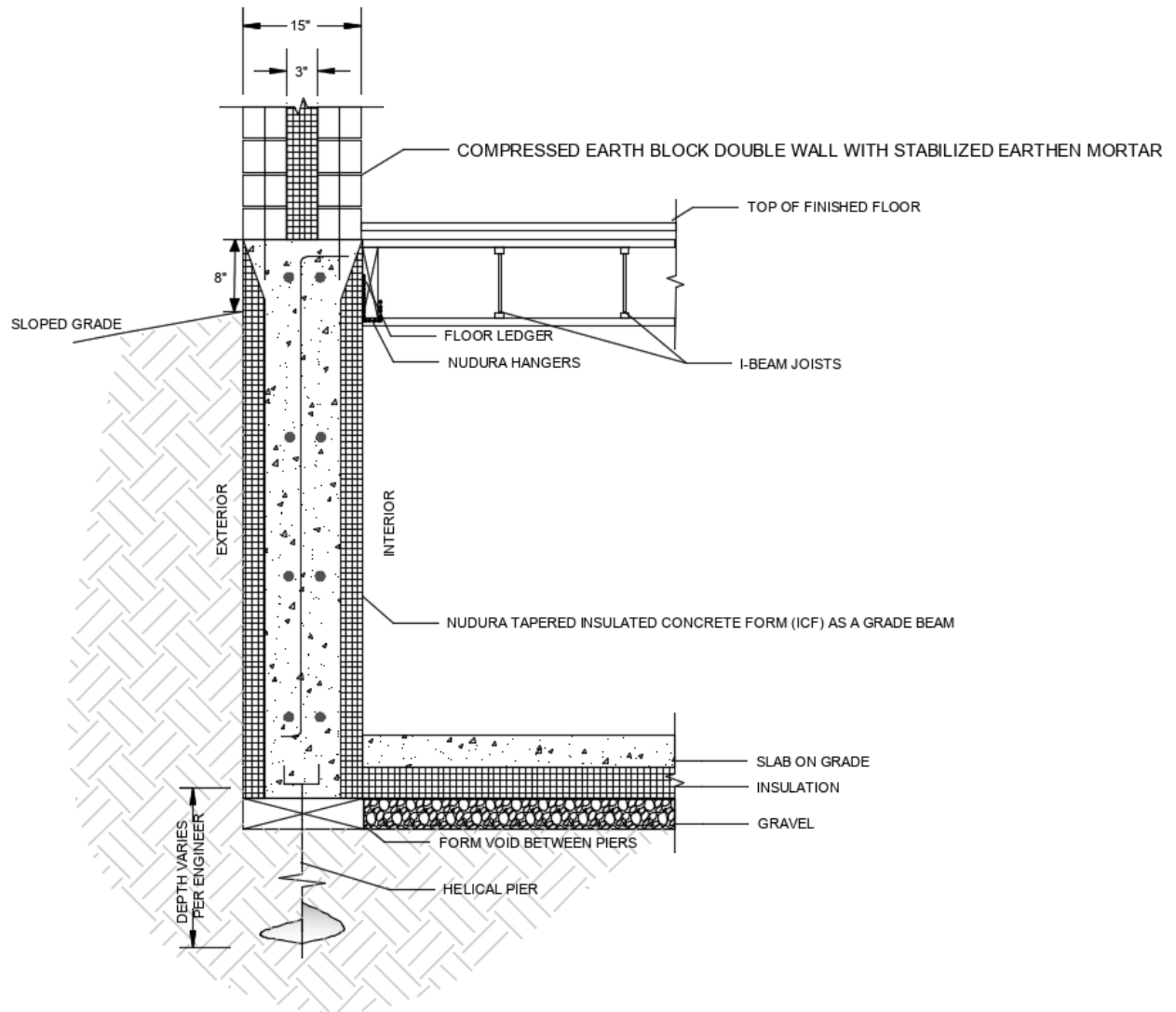
4. Spread footing with a tapered insulated concrete form and crawlspace.



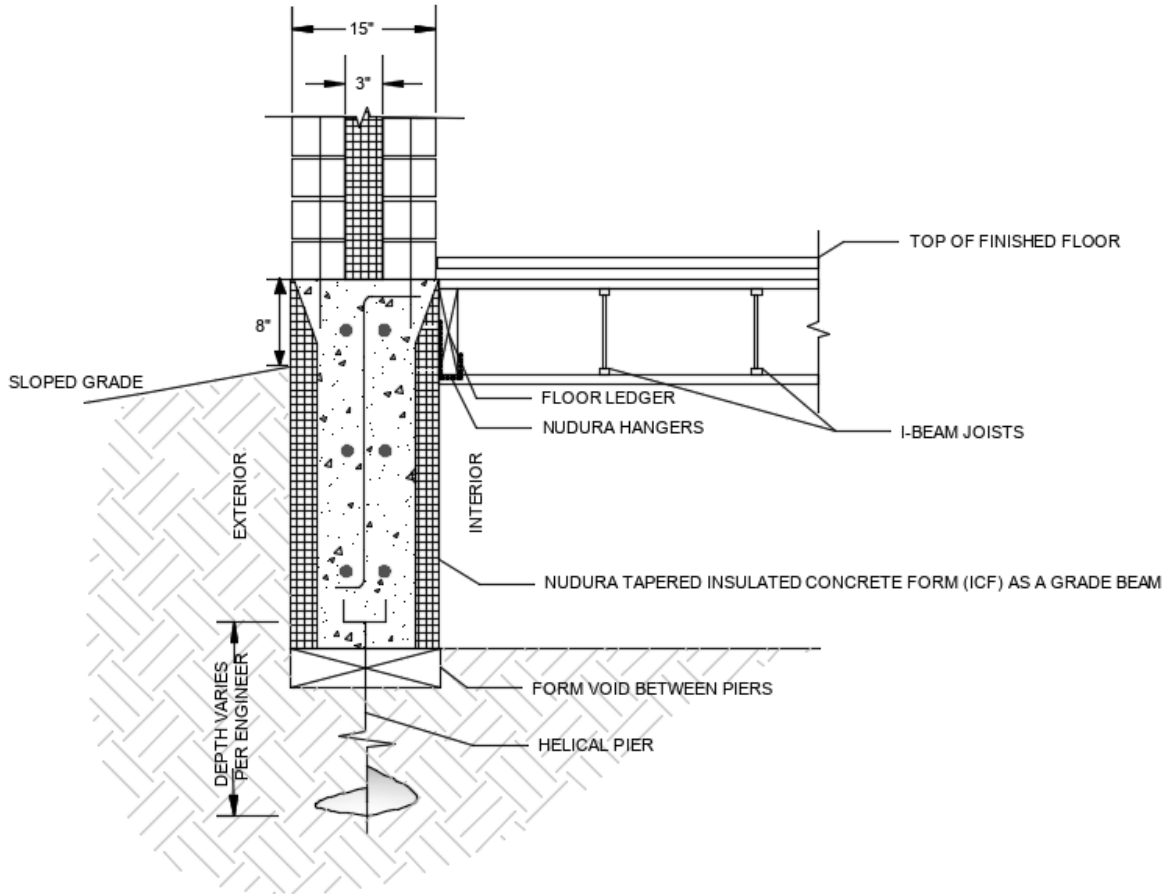
5. Helical piers with a grade beam and structural slab.



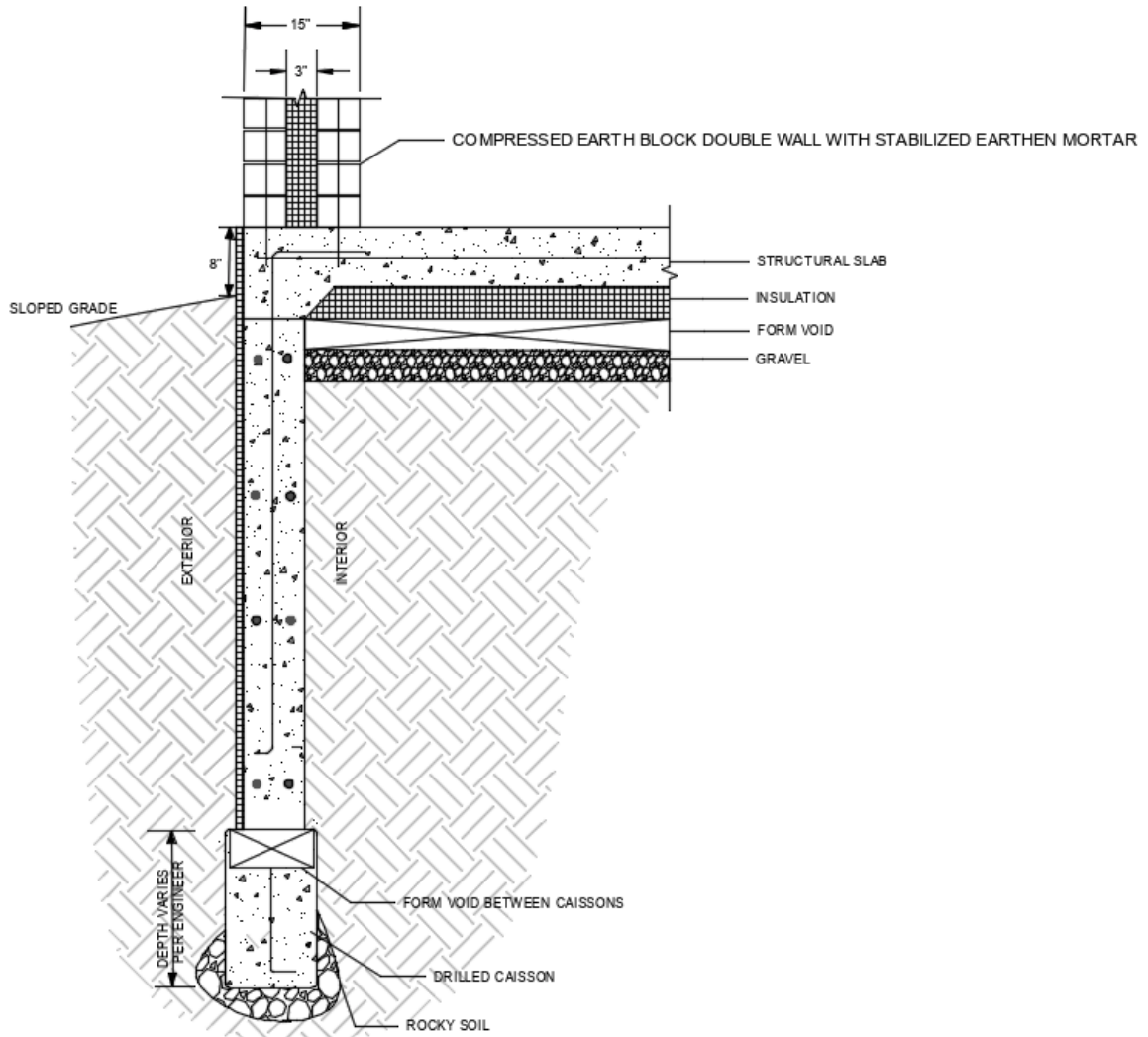
6. Helical piers with a grade beam and basement slab on grade.



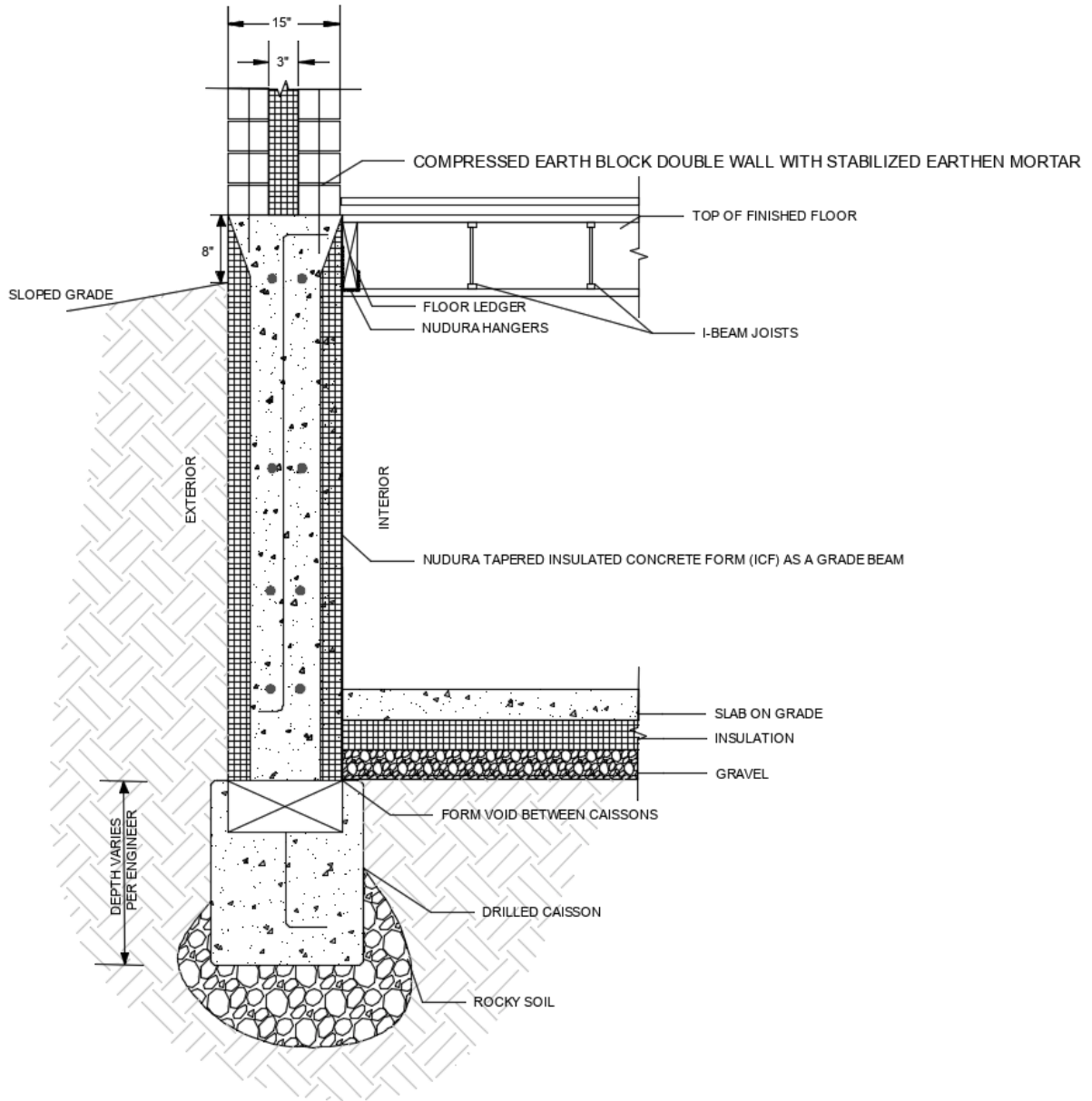
7. Helical piers with a grade beam and crawl space.



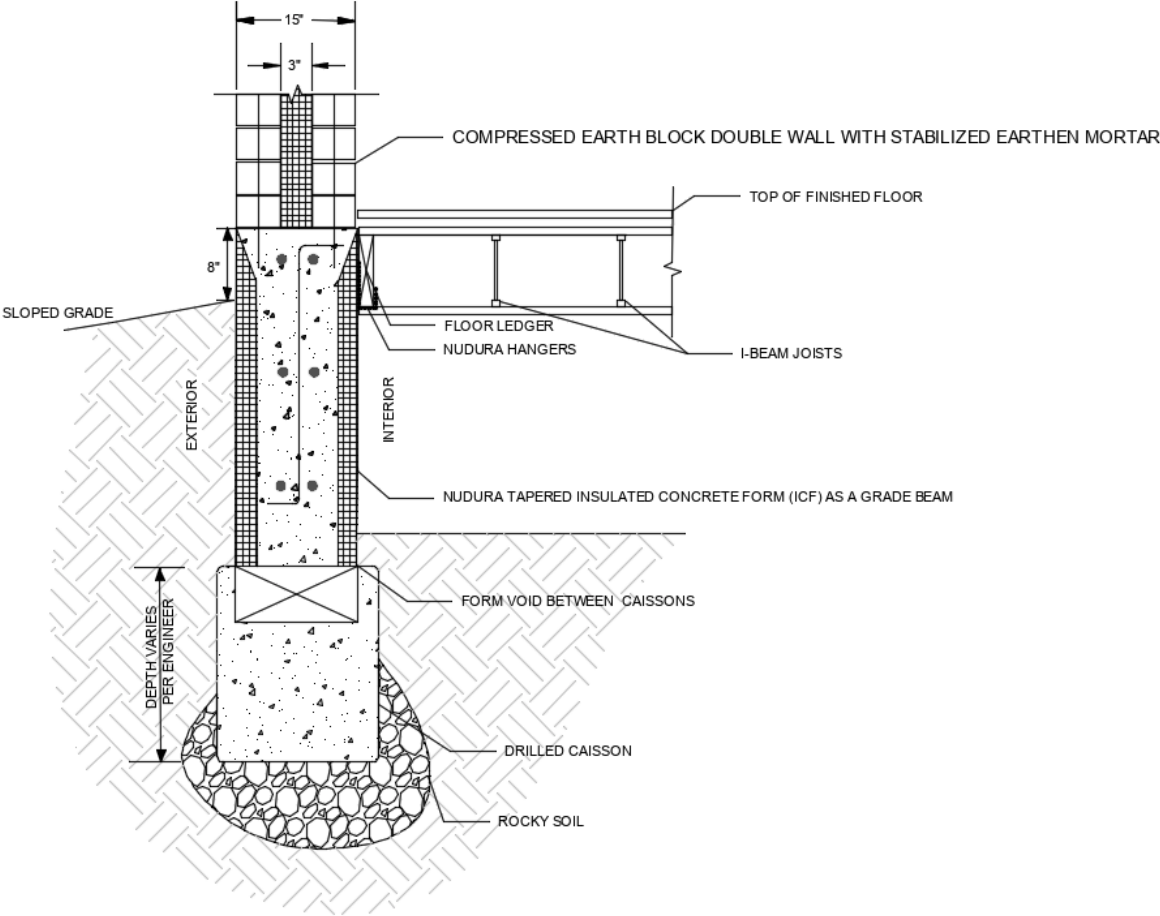
8. Drilled caissons with a grade beam and structural slab.



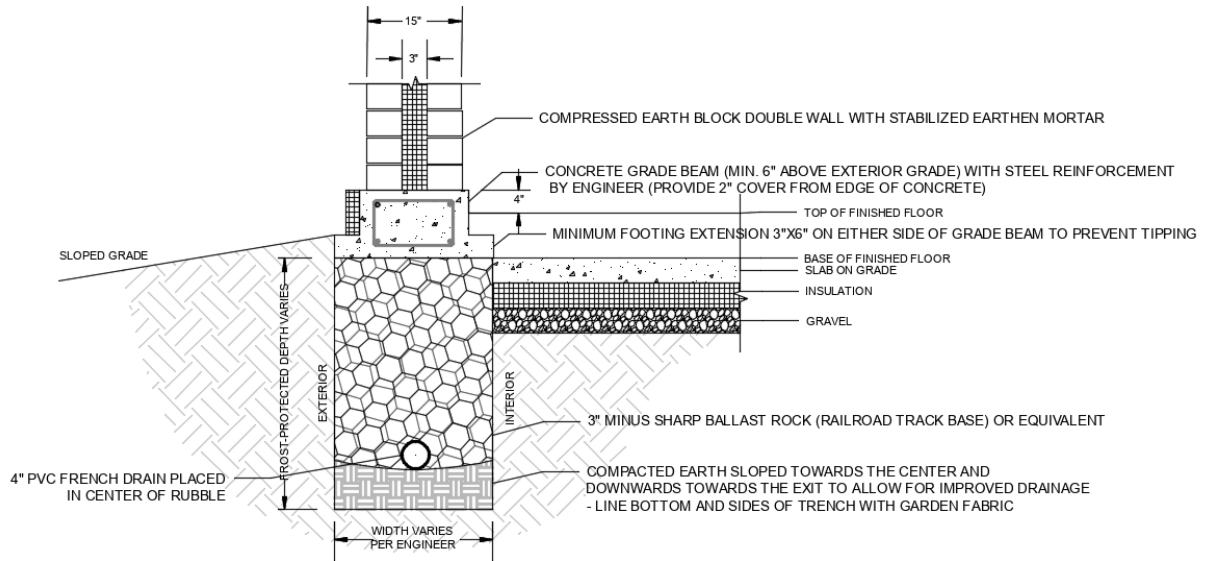
9. Drilled caissons with a grade beam and basement slab on grade.



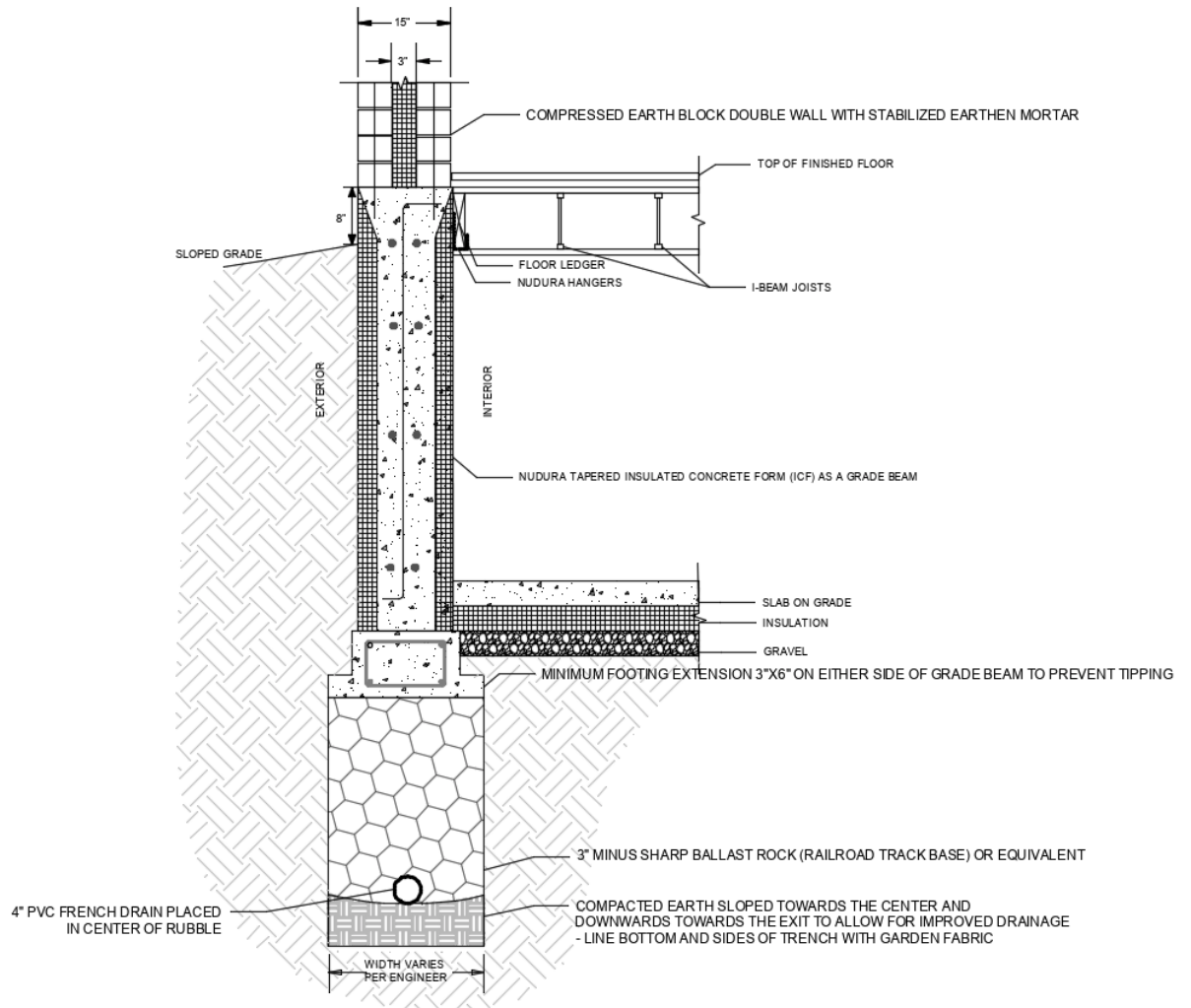
10. Drilled caissons with a grade beam and crawl space.



11. Rubble trench with a slab on grade.



12. Rubble trench with a basement slab.



13. Rubble trench with a crawlspace.

