
# E. Cost Estimating

| Breakdown of Foundation Costs | | | |
|---|---|---|---|
| Foundation Type | Average Foundation Costs ($) | Elevation Above Grade | Unit Costs per Square Foot (sf) |
| Open | | | |
| Case A: Timber Pile | 13,536 | 0 to 5 | 11 |
| | 17,554 | 5 to 10 | 15 |
| | 22,720 | 10 to 15 | 19 |
| | Not Evaluated | Above 15 | |
| Case B: Steel Pipe Pile with Concrete Column and Grade Beam | 32,500 | 0 to 5 | 27 |
| | 36,024 | 5 to 10 | 30 |
| | 37,500 | 10 to 15 | 31 |
| | Not Evaluated | Above 15 | |
| Case C: Timber Pile with Concrete Column and Grade Beam | 31,700 | 0 to 5 | 26 |
| | 36,288 | 5 to 10 | 30 |
| | 37,900 | 10 to 15 | 32 |
| | Not Evaluated | Above 15 | |
| Case D: Concrete Column and Grade Beam | 13,500 | 0 to 5 | 11 |
| | 16,860 | 5 to 10 | 14 |
| | 18,500 | 10 to 15 | 15 |
| | Not Evaluated | Above 15 | |
| Case G: Concrete Column and Grade Beam with Slabs | 18,000 | 0 to 5 | 15 |
| | 21,847 | 5 to 10 | 18 |
| | 24,000 | 10 to 15 | 20 |
| | Not Evaluated | Above 15 | |
| Closed | | | |
| Case E: Reinforced Masonry - Crawlspace | 12,254 | 0 to 4 | 10 |
| | 14,000 | 4 to 8 | 12 |
| Case F: Reinforced Masonry - Stem Wall | 12,458 | 0 to 4 | 10 |

NOTES

1. This rough order of magnitude (ROM) cost estimate is based upon May 2006 figures for concrete, labor, equipment, and materials. Variations due to labor/equipment/materials shortages are anticipated and should be taken into account when using these costs.
2. Costs presented herein should not be construed to represent actual costs to the homebuilder, but should be utilized as an order of magnitude estimate only.
3. Pile driving mobilization/demobilization can be reduced if several homes are constructed at the same time in the same area, thereby realizing an economy of scale.

4. Costs presented are based upon the general designs in this document. A 1,200 sf footprint for a single-story home at an assumed 130-mph wind speed, elevated to the average height for that foundation, is the basis for the estimates. When differences in elements of construction occur, such as number of piles or amount of concrete, an alternate cost is presented. The cost estimate presented represents the conservative approach to the designs in this document. If value engineering, different materials, or a more cost-effective design are implemented, these costs may be reduced.
5. Costs presented herein include applicable taxes, contractor general and home office overhead, profit, and other sub-tier contract costs.
6. Concrete costs, unless otherwise noted, include bracing, reinforcing, formwork, finishing (if necessary), and mobilization and demobilization of the contractor. Due to the anticipated shortage of skilled labor for concrete, variability in this area should be anticipated.
7. Costs experienced by the builder or contractor will be dependent upon contract agreements, local price variations in labor, material, equipment, and availability.
8. Costs for steel are highly variable and dependent upon supply. Variability in costs for steel should be anticipated. Costs for steel include materials and labor for installation.
9. Costs for block in closed foundations is based upon standard natural gray medium weight masonry block walls, including blocks, mortar, typical reinforcing, normal waste, and walls constructed with 8” x 8” x 16” blocks laid in running bond. Add for grouting cores poured by hand to 4 foot heights.

| Case A: Timber Pile | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Unit of Measure | Material | Labor | Equip. | Subtotal | Number of Piles | Length of Piles Driven | Total lf to drive | Subtotal |
| Site Prep | ls | | | | 500.00 | — | — | — | $500 |
| Minimum job charge for Driving | ls | — | — | — | 5,000.00 | — | — | — | $5,000 |
| **Number of Piles: 60** | | | | | | | | | |
| Over 30' to 40' (800 lf per day) | lf | 3.3 | 1.7 | 0.9 | 5.90 | 60 | 30 | 1,800 | $10,620 |
| Bolts and Miscellaneous | Per Column | | | | 15.00 | 60 | | | $900 |
| Wood Pile Connection to House | Per Pile | | | | 55.00 | 60 | | | $3,300 |
| Galvanized Bracing Rod and Turnbuckles | Per Pile | | | | 40.00 | 60 | | | $2,400 |
| **Total for Piles** | | | | | | | | | **$22,720** |
| **Number of Piles: 42** | | | | | | | | | |
| Over 30' to 40' (800 lf per day) | lf | 3.3 | 1.7 | 0.9 | 5.90 | 42 | 30 | 1260 | $7,434 |
| Bolts and Miscellaneous | Per Column | | | | 15.00 | 42 | | | $630 |
| Wood Pile Connection to House | Per Pile | | | | 55.00 | 42 | | | $2,310 |
| Galvanized Bracing Rod and Turnbuckles | Per Pile | | | | 40.00 | 42 | | | $1,680 |
| **Total for Piles** | | | | | | | | | **$17,554** |
| **Number of Piles: 28** | | | | | | | | | |
| Over 30' to 40' (800 lf per day) | lf | 3.3 | 1.7 | 0.9 | 5.90 | 28 | 30 | 840 | $4,956 |
| Bolts and Miscellaneous | Per Column | | | | 15.00 | 28 | | | $420 |
| Wood Pile Connection to House | Per Pile | | | | 55.00 | 28 | | | $1,540 |
| Galvanized Bracing Rod and Turnbuckles | Per Pile | | | | 40.00 | 28 | | | $1,120 |
| **Total for Piles** | | | | | | | | | **$13,536** |

ls = lump sum lf = linear foot

| Case B: Steel Pipe Pile/Concrete Column/Grade Beam | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Prep | ls | | | | 500.00 | — | — | — | $500 |
| Minimum job charge for Driving | ls | — | — | — | 5,000.00 | — | — | — | $5,000 |
| **Steel Piles Driven** | | | | | | | | | |
| | **Unit of Measure** | **Material** | **Labor** | **Equip.** | **Subtotal** | **Number of Piles** | **Length of Piles** | **Total lf to drive** | **Subtotal** |
| Steel Piles Driven | lf | 11 | 3.1 | 0.9 | 15.00 | 28 | 30 | 840 | $12,600 |
| Bolts and Miscellaneous | Per Column | | | | 25.00 | 28 | | | $700 |
| **Total for Piles** | | | | | | | | | **$13,300** |
| **Concrete Grade Beam** | | | | | | | | | |
| | **Unit of Measure** | **Material** | **Labor** | **Equip.** | **Subtotal** | **Number of cy** | **Equip-ment Charge** | | **Subtotal** |
| Soil Excavation, Medium material, 75 cy per hour (57 m3/hr) | cy | -- | 0.54 | 1.29 | 1.83 | 55 | 500 | | $601 |
| Grade beams | cy | 225 | 22 | 7.5 | 254.50 | 32 | | | $8,144 |
| Steel | ea | | | | 100.00 | 32 | | | $3,200 |
| **Total for Grade Beams** | | | | | | | | | $11,945 |
| **Concrete Columns @ 10 feet** | | | | | | | | | |
| | **Unit of Measure** | **Material** | **Labor** | **Equip.** | **Subtotal** | **Number of cy/ Columns** | **Number of Columns** | | **Subtotal** |
| 18” (46 cm) square or round columns | cy | 225 | 35 | 7.5 | 267.50 | 0.74 | 12 | | $2,375 |
| Steel | Column | | | | 150.00 | | 12 | | $1,800 |
| Anchors | Column | | | | 49.55 | | 12 | | $595 |
| Angles | Column | | | | 42.45 | | 12 | | $509 |
| **Subtotal for Concrete Columns** | | | | | | | | | **$5,279** |
| **Total for Case B** | | | | | | | | | **$36,024** |

ls = lump sum  lf = linear foot  cy = cubic yard  ea = each

| Case C: Timber Pile/Concrete Column/Grade Beam | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Unit of Measure | Material | Labor | Equip. | Subtotal | Number of Piles | Length of Piles | Total lf to Drive |
| Site Prep | ls | | | | 500.00 | — | — | — |
| Minimum job charge for Driving | ls | — | — | — | 5,000.00 | — | — | — |
| Timber Piles Driven | | | | | | | | |
| Number of Wooden Piles: 42 | | | | | | | | |
| Over 30' to 40' (800 lf per day) | lf | 3.3 | 1.7 | 0.9 | 5.90 | 42 | 30 | 1,260 |
| Bolts and Miscellaneous | Per Column | | | | 15.00 | 42 | | |
| Total for Piles | | | | | | | | |
| Concrete Grade Beam | | | | | | | | |
| | Unit of Measure | Material | Labor | Equip. | Subtotal | Number of cy | Equipment Charge | |
| Soil Excavation, Medium material, 75 cy per hour (57 m3/hr) | cy | -- | 0.54 | 1.29 | 1.83 | 55 | 500 | |
| Grade beams | cy | 225 | 22 | 7.5 | 254.50 | 32 | | |
| Steel | ea | | | | 100.00 | 32 | | |
| Total for Grade Beams | | | | | | | | |
| Concrete Columns including Pile Caps @ 10 feet | | | | | | | | |
| | Unit of Measure | Material | Labor | Equip. | Subtotal | Number of cy/ Columns | Number of Columns | |
| 18" (46 cm) square or round columns | cy | 225 | 35 | 7.5 | 267.50 | 0.74 | 12 | |
| Steel | Column | | | | 150.00 | | 12 | |
| Anchors | Column | | | | 49.55 | | 12 | |
| Angles | Column | | | | 42.45 | | | |
| Subtotal for Concrete Columns | | | | | | | | |
| Grand Total for Foundation Shown | | | | | | | | |

ls = lump sum lf = linear foot cy = cubic yard ea = each

| Case D: Concrete Column/Grade Beam | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Unit of Measure | Material | Labor | Equip. | Subtotal | Number of cy | Equipment Charge | Subtotal |
| Soil Excavation, Medium material, 75 cy per hour (57 m3/hr) | cy | -- | 0.54 | 1.29 | 1.83 | 50 | 500 | $592 |
| Grade beams | cy | 225 | 22 | 7.5 | 254.50 | 31 | | $7,890 |
| Steel | ea | | | | 100 | 31 | | $3,100 |
| **Total for Grade Beams** | | | | | | | | **$11,582** |
| **Concrete Columns @ 10 feet Elevation** | | | | | | | | |
| | Unit of Measure | Material | Labor | Equip. | Subtotal | Number of cy per Column | Number of Columns | Subtotal |
| 18” (46 cm) square or round columns | cy | 225 | 35 | 7.5 | 267.50 | 0.74 | 12 | $2,375 |
| Steel | Column | | | | 150.00 | | 12 | $1,800 |
| Anchors | Column | | | | 49.55 | | 12 | $595 |
| Angles | Column | | | | 42.45 | | 12 | $509 |
| **Subtotal for Concrete Columns** | | | | | | | | **$5,279** |
| **Grand Total for Foundation Shown** | | | | | | | | **$16,861** |

cy = cubic yard

| Case G: Concrete Column/Grade Beam with Slab | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Unit of Measure | Material | Labor | Equip. | Subtotal | Number of cy | Equipment Charge | Subtotal |
| Soil Excavation, Medium material, 75 cy per hour (57 m3/hr) | cy | -- | 0.54 | 1.29 | 1.83 | 75 | 500 | $637 |
| Interior Concrete | cy | 225 | 35 | 7.50 | 267.50 | 15 | | $4,013 |
| Grade Beams | cy | 225 | 35 | 7.50 | 267.50 | 31 | | $8,293 |
| Steel | ea | | | | 100.00 | 31 | | $3,100 |
| WWF | ea | | | | 35.00 | 15 | | $525 |
| Total for Grade Beams | | | | | | | | $16,568 |
| Concrete Columns @ 10 feet Elevation | | | | | | | | |
| | Unit of Measure | Material | Labor | Equip. | Subtotal | Number of cy per Column | Number of Columns | Subtotal |
| 18" (46 cm) square or round columns | cy | 225 | 35 | 7.50 | 267.50 | 0.74 | 12 | $2,375 |
| Steel | Column | | | | 150 | | 12 | $1,800 |
| Anchors | Column | | | | 49.55 | | 12 | $595 |
| Angles | Column | | | | 42.45 | | 12 | $509 |
| Subtotal for Concrete Columns | | | | | | | | $5,279 |
| Grand Total for Foundation Shown | | | | | | | | $21,847 |

cy = cubic yard ea = each

| Case E: Reinforced Masonry | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Crawlspace** | | | | | | | | |
| | **Unit of Measure** | **Material** | **Labor** | **Equip.** | **Subtotal** | **Number of cy** | **Equipment Charge** | **Subtotal** |
| Soil Excavation, Medium material, 75 cy per hour (57 m3/hr) | cy | -- | 0.68 | 1.43 | 2.11 | 24 | 500 | $551 |
| Footings | cy | 225 | 22 | 7.5 | 254.50 | 20 | | $5,090 |
| Steel | cy | | | | 100.00 | 20 | | $2,000 |
| **Total for Footings (not including steel)** | | | | | | | | **$5,641** |
| **Concrete Columns @ 4 feet** | | | | | | | | |
| | **Unit of Measure** | **Material** | **Labor** | **Equip.** | **Subtotal** | **Number of cy per Column** | **Number of Columns** | **Subtotal** |
| 16” (46 cm) square or round columns piers | cy | 225 | 35 | 7.5 | 267.50 | 0.40 | 6 | $642 |
| Steel | Column | | | | 150.00 | | 6 | $900 |
| Anchors | Column | | | | 49.55 | | 6 | $297 |
| Angles | Column | | | | 42.45 | | 6 | $255 |
| **Subtotal for Concrete Columns** | | | | | | | | $2,094 |
| **Concrete Walls** | | | | | | | | |
| | **Unit of Measure** | **Material** | **Labor** | **Equip.** | **Subtotal** | **Number of sf** | | **Subtotal** |
| Concrete Block Walls | sf | 5.23 | 4.53 | 1 | 10.76 | 420 | | $4,519 |
| **Grand Total for Foundation Shown (Footings + Concrete Columns + Concrete Walls)** | | | | | | | | **$12,254** |

cy = cubic yard sf = square foot

| Case F: Reinforced Masonry Stem Wall | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Unit of Measure | Material | Labor | Equip. | Subtotal | Number of cy | Equipment Charge | Subtotal |
| Soil Excavation, Medium material, 75 cy per hour (57 m3/hr) | cy | -- | 0.54 | 1.29 | 1.83 | 34 | 500 | $562 |
| Footings | cy | 225 | 22 | 7.5 | 254.50 | 20 | | $5,090 |
| Steel | cy | | | | 100.00 | 20 | | $2,000 |
| Bracing | ls | | | | | | | $1,500 |
| Backfill | cy | 4 | 0.6 | 1.45 | 6.05 | 130 | | $787 |
| **Total for Stem Wall Footings** | | | | | | | | **$9,152** |
| **Concrete Walls** | | | | | | | | |
| | Unit of Measure | Material | Labor | Equip. | Subtotal | Number of sf | | Subtotal |
| Concrete Block Walls | sf | 5.23 | 4.53 | 1 | 10.76 | 420 | | $4,519 |
| **Grand Total for Foundation Shown** | | | | | | | | **$13,671** |

cy = cubic yard ls = lump sum sf = square foot