SPECIFICATIONS

Section 2- Concrete

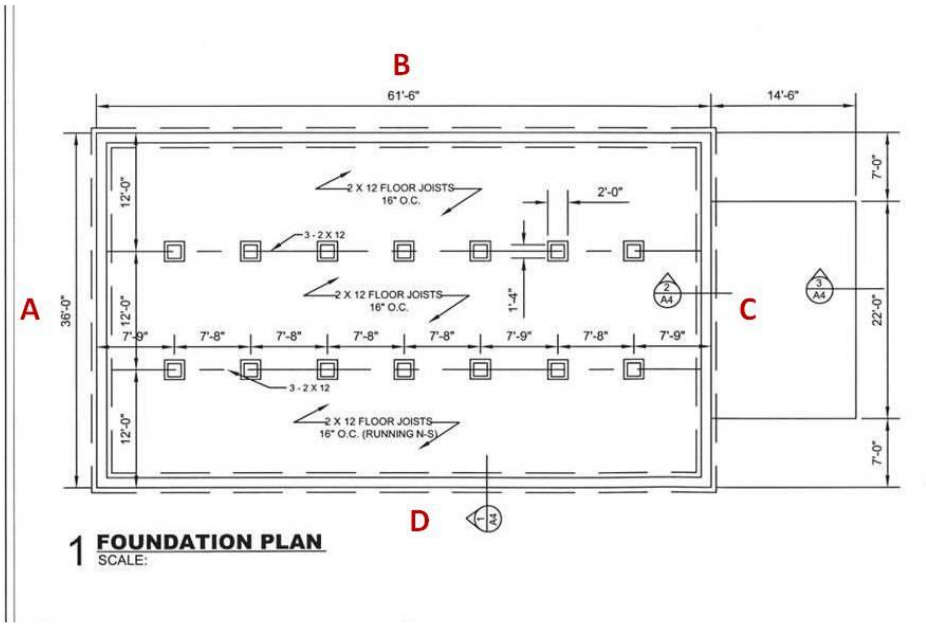
-Concrete footings shall develop a compressive strength of 3,000 PSI in 28 days.
-Reinforcing bars shall be A-15 intermediate grade.

CLARIFICATIONS

-Footings for 4’0” concrete apron and 8’ x 30’ concrete slab will be equal to the garage footings shown on plans.
-Main area slab consists of wood framing, not concrete.
-Reinforcement at foundation walls includes #5 horizontal reinforcing at 18” o.c. and #5 vertical reinforcing at 18” o.c. (alternating bends into footing).
-Provide expansion joints in all areas where the slab meets the wall or where two slabs meet.

CONTINUOUS FOOTINGS

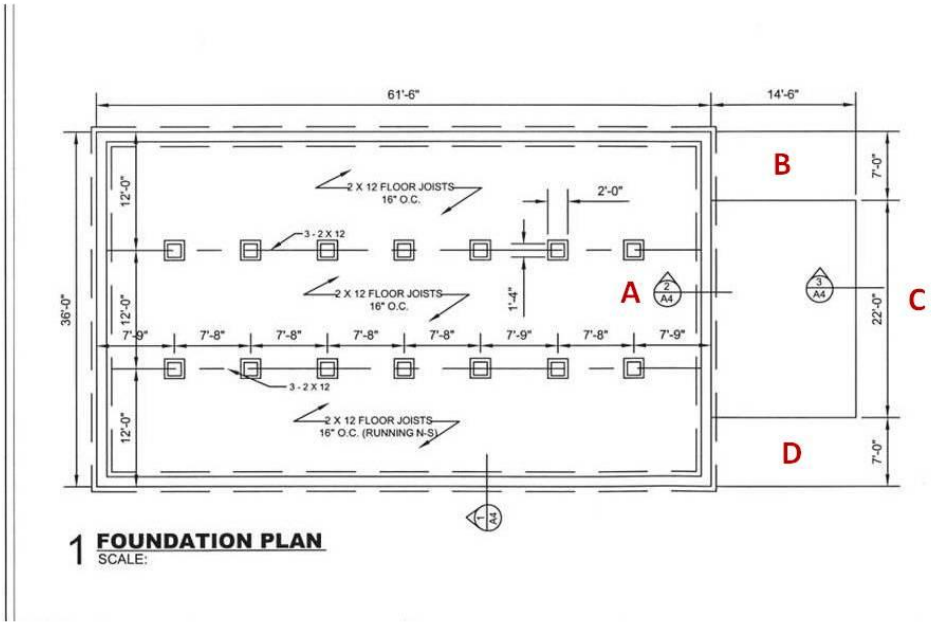
Main Area



SIDE	LENGTH
A	37’0”
B	58’6”
C	37’0”
D	58’6”
TOTAL	191’0”

Cross-sectional area (sf)= 2’0” x 1’0”= 2 sf
Volume of concrete (cf)= cross-sectional area (sf) x length (ft)
Volume of concrete (cf)= 2 sf x 191 ft = 382 cf
Volume of concrete (cy)= cubic feet/27 cf per cy
Volume of concrete (cy)= 382 cf/ 27 cf per cy = 14.2 cy
Add 5% for waste and round off
Volume of concrete (cy)= 14.2 cy x 1.05 = 14.9 cy
Use 15 cy

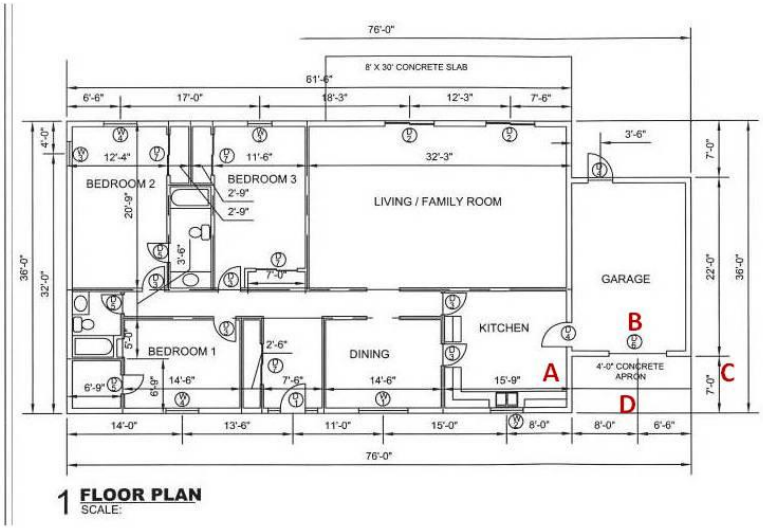
Garage Area (grade beam)



SIDE	LENGTH
A	22’0”
B	13’2”
C	22’0”
D	13’2”
TOTAL	70’4”

Cross-sectional area (sf)= 8” x 8” = 0.44 sf + (6” x 8”)/2= 0.16 sf = 0.6 sf
Volume of concrete (cf)= cross-sectional area (sf) x length (ft)
Volume of concrete (cf)= 0.6 sf x 70.33 ft = 42.4 cf
Volume of concrete (cy)= cubic feet/27 cf per cy
Volume of concrete (cy)= 42.4 cf/27 cf per cy= 1.6 cy
Add 5% for waste and round off
Volume of concrete (cy)= 1.6 cy x 1.05 = 1.68 cy
Use 2 cy

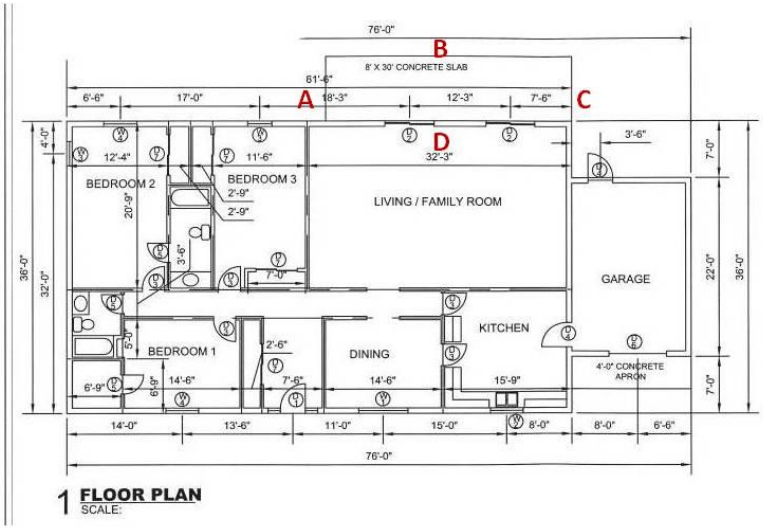
4’ Concrete Apron (grade beam)



SIDE	LENGTH
A	4’0”
B	13’2”
C	4’0”
D	13’2”
TOTAL	34’4”

Cross-sectional area (sf)= 8” x 8” = 0.44 sf + (6” x 8”)/2= 0.16 sf = 0.6 sf
Volume of concrete (cf)= cross-sectional area (sf) x length (ft)
Volume of concrete (cf)= 0.6 sf x 34.3 ft = 20.6 cf
Volume of concrete (cy)= cubic feet/27 cf per cy
Volume of concrete (cy)= 20.6 cf/27 cf per cy = 0.76 cy
Add 5% for waste and round off
Volume of concrete (cy)= 0.76 cy x 1.05 = 0.8 cy
Use 1 cy

8’ x 30’ Concrete Slab (grade beam)

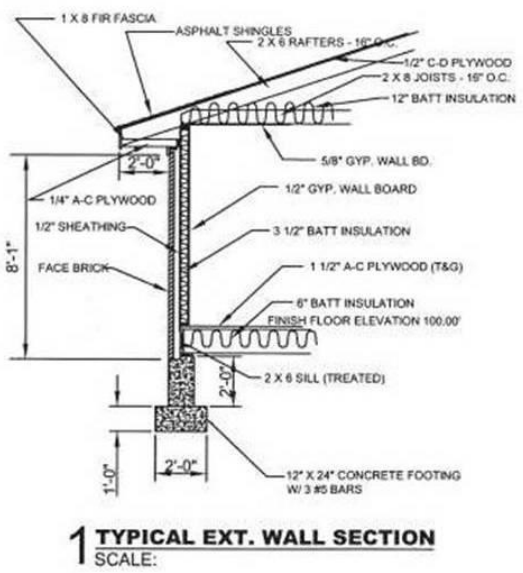


SIDE	LENGTH
A	8’0”
B	28’8”
C	8’0”
D	28’8”
TOTAL	73’4”

Cross-sectional area (sf)= 8” x 8” = 0.44 sf + (6” x 8”)/2= 0.16 sf = 0.6 sf
Volume of concrete (cf)= cross-sectional area (sf) x length (ft)
Volume of concrete (cf)= 0.6 sf x 73.33 ft = 44 cf
Volume of concrete (cy)= cubic feet/27 cf per cy
Volume of concrete (cy)= 44 cf/27 cf per cy = 1.62 cy
Add 5% for waste and round off
Volume of concrete (cy)= 1.62 cy x 1.05 = 1.7 cy
Use 2 cy

SPREAD FOOTINGS

The concrete contained in this footing is found in virtually the same fashion as was the continuous footing for the main area.

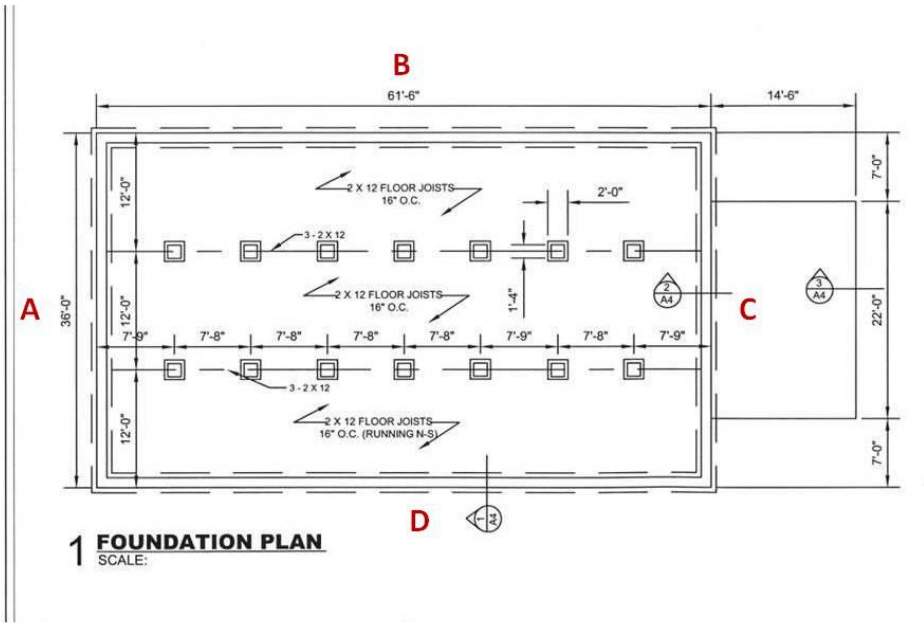


1 **TYPICAL EXT. WALL SECTION**
SCALE:

Volume of concrete (cf)= length (ft) x width (ft) x height (ft)
Volume of concrete (cf)= 2'0" x 2'0" x 1'0" = 4 cf x 14 footings = 56 cf
Volume of concrete (cy)= 56 cf/ 27 cf per cy = 2.07 cy
Add 5% for waste and round off
Volume of concrete (cy)= 2.07 cy x 1.05 = 2.17 cy
Use 3 cy

FOUNDATION WALLS

Main Area



SIDE	LENGTH
A	36’0”
B	59’6”
C	36”0”
D	59’6”
TOTAL	191’0”

2’0” high wall at continuous footings

Foundation wall concrete (cf)= linear feet (ft) x height (ft) x thickness (ft)

Quantity of foundation wall concrete (cf)= 191 ft x 2 ft x 1 ft = 382 cf

2’0” high at spread footings (columns)

Quantity of foundation wall concrete (cf)= 1 ft x 2 ft x 1 ft = 2 cf x 14 footings = 28 cf

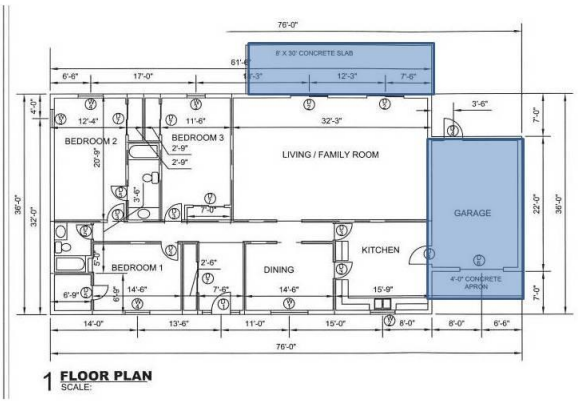
Quantity of concrete in foundation walls = (382 cf + 28 cf)/27 cf per cy= 15.2 cy

Add 5% for waste and round off

Quantity of concrete in foundation walls= 15.2 cy x 1.05= 15.9 cy

Use 16 cy

CONCRETE SLABS



Description	Dimensions	Square Feet
Slab On Grade (Back)	8'0" x 30'0"	240
Concrete Apron	4'0" x 14'6"	58
Garage	22'0" x 14'6"	319

Thickness for all slabs is 4".

Quantity of concrete for slab on grade (back) (cf)= 240 sf x 0.33 ft = 79.2 cf
Quantity of concrete for slab on grade (back) (cy)= 79.2 cf/27 cf per cy = 2.93 cy
Add 5% waste= 2.93 cy x 1.05= 3.07
Use 4 cy

Quantity of concrete for concrete apron (cf)= 58 sf x 0.33 ft = 19.1 cf
Quantity of concrete for slab on grade (back) (cy)= 19.1 cf/27 cf per cy = 0.70 cy
Add 5% waste= 0.70 cy x 1.05= 0.74
Use 1 cy

Quantity of concrete for slab on grade (back) (cf)= 319 sf x 0.33 ft = 105.3 cf
Quantity of concrete for slab on grade (back) (cy)= 105.3 cf/27 cf per cy = 3.9 cy
Add 5% waste= 3.9 cy x 1.05= 4.09
Use 5 cy

Quantity of concrete for all slabs (cy)= 4 cy + 1 cy + 5 cy = 10 cy

REINFORCING

Reinforcing Bars

ESTIMATE WORK SHEET

Project: Residential Building Project
Location El Paso, Texas
Architect
Items Reinforcing Steel

Reinforcing Steel

Estimate No. 1
Sheet No. 1
Date 10/13/2014
By DA Checked

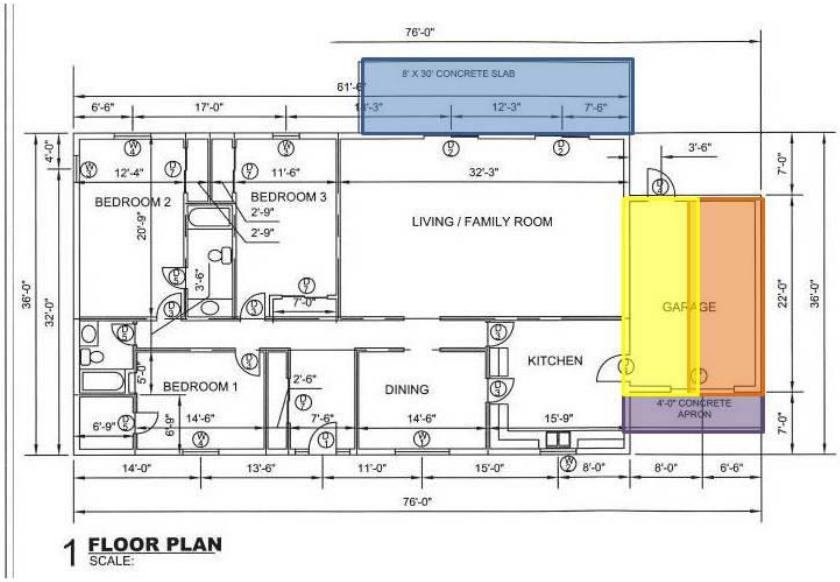
Cost Code	Description	Slab Width Ft	Slab Width In	Bar Spacing In. -O.C.	Pcs	Slab Length Ft.	Slab Length In.	Cover age In.	X in the cooresponding Bar Length Ea	Bar Length Total	Bar Si 5	Bar Weight 5 1.043	Bar Weight 7 2.044	Bar Weight 8 2.67	Quantity	Unit
	Main Area Footings														0	Pound
	3 #5 bars	0	0		3	191	0	0	191.0	573.0	x	598			598	Pound
															0	Pound
	Foundation Walls														0	Pound
	#5 horizontal	2	0	18	3	191	0	0	191.0	573.0	x	598			598	Pound
	#5 vertical	191	0	18	129	2	0	0	2.0	258.0	x	269			269	Pound
															0	Pound
	Garage Slab														0	Pound
	2#5 bars at perimeter	0	0		2	73	0	0	73.0	146.0	x	152			152	Pound
															0	Pound
	8' x 30' Slab														0	Pound
	2#5 bars at perimeter	0	0		2	76	0	0	76.0	152.0	x	159			159	Pound
															0	Pound
	4' Concrete Apron														0	Pound
	2#5 bars at perimeter	0	0		2	37	0	0	37.0	74.0	x	77			77	Pound
															0	Pound
															0	Pound
															0	Pound
															0	Pound
															0	Pound
															0	Pound
															0	Pound

Total pounds of reinforcing steel= 598 + 598 + 269 + 152 + 159 + 77= 1,853 pounds

Wire Mesh

sf of concrete requiring wire mesh= 240 sf + 58 sf + 319 sf= 617 sf
Add 20% for lap and waste= 617 sf x 1.20= 740.4 sf
Rolls of mesh required= 740.4 sf/750 sf per roll= 0.98 rolls
Order 1 roll of mesh

VAPOR RETARDER



8’ X 100’ ROLLS

Slab on grade (back)= 8’0” x 30’0”

Layout: (1) 8´x 30´piece

240 sf

Concrete Apron= 4’0” x 14’6”

Layout: (1) 4’ x 14.5’ piece

58 sf

Garage= 14’6” x 22’0”

Layout: (1) 8´x 22’ piece

(1) 7’ x 22’ piece

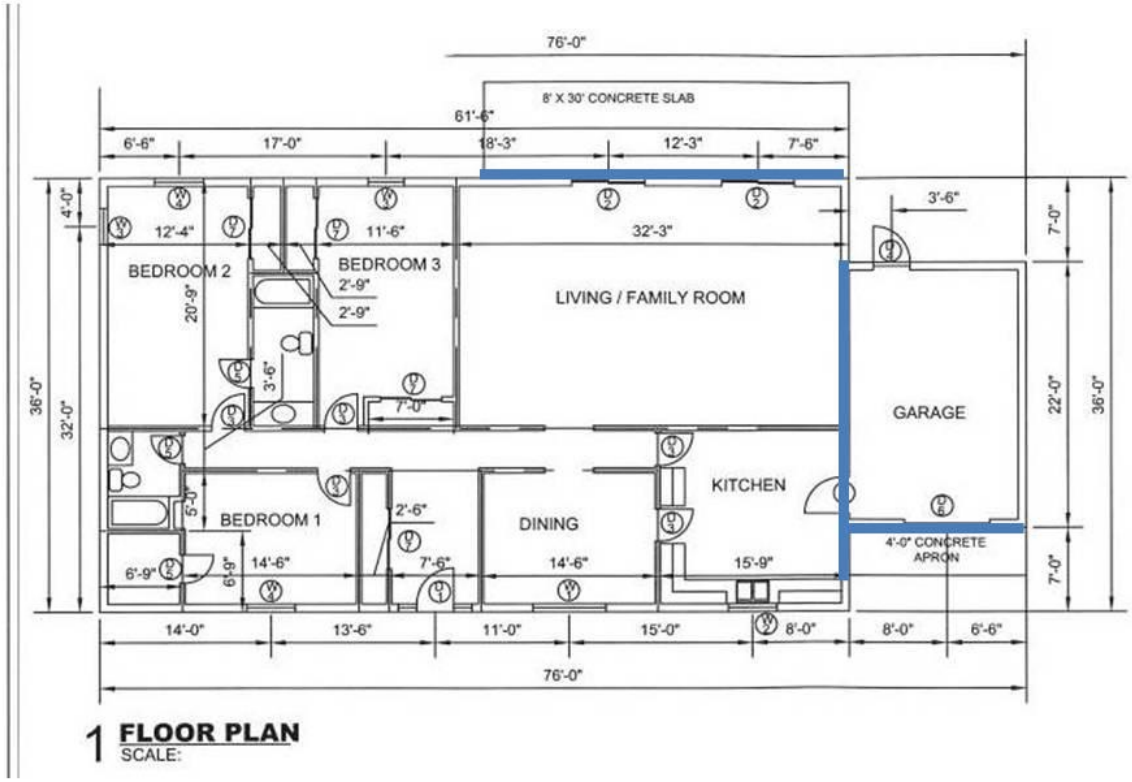
330 sf

Total sf= 628 sf

Use 1 roll 800 sf

ACCESSORIES

Expansion Joints



At 8´x 30’ concrete slab = 30 ft
At garage = 22 ft
At 4’ concrete apron = 4 ft
Between garage and 4’ concrete apron = 14.5 ft
Total= 70.5 ft
Add 5% waste = 70.5 x 1.05= 74 ft

CONCRETE FINISHING

Concrete Finishing Schedule	
8’ x 30’ concrete slab	Bull float, manual float and broom finish
4’ concrete apron	Bull float and manual float Floor hardener (metallic) heavy service Epoxy Based dustproofing (2 coats)
Garage slab	Bull float and manual float Floor hardener (metallic) heavy service

Bull float, manual float, and broom finish

Area of slab = 8 ft x 30 ft = 240 sf

Bull Float and Manual Float & Floor Hardener

Area of slab = (4 ft x 14.5 ft) + (14.5 ft x 22 ft) = 377 sf

Epoxy Based Dustproofing

Area of slab = 14.5 ft x 22 ft = 319 sf

FORMS

Footing Forms (749 SFCA)

1. Main Area Footings
Contact Area (SFCA)= 191 ft x 1 ft = 191 SFCA (outer dimension)
Contact Area (SFCA)= 183 ft x 1 ft = 183 SFCA (inner dimension)
Total SFCA= 372 sf

2. Spread Footings
Contact Area (SFCA)= 8 ft x 1 ft = 8 SFCA
Contact Area (SFCA)= 8 sf x 14 footings
Total SFCA= 112 sf

3. Garage, Concrete Apron & 8’ x 30’ slab (grade beam)
Contact Area (SFCA)= (73 ft + 37 ft + 76 ft) x 0.66 ft = 123 SFCA (outer dimension)
Contact Area (SFCA)= (68 ft + 32 ft + 71 ft) x 0.83 ft = 142 SFCA (inner dimension)
Total SFCA= 265 sf

Foundation Wall Forms (490 SFCA)

1. Main Area
Contact Area (SFCA)= 191 ft x 1 ft = 191 SFCA (outer dimension)
Contact Area (SFCA)= 187 ft x 1 ft = 187 SFCA (inner dimension)
Total SFCA= 378 sf

2. Spread Footings (columns)
Contact Area (SFCA)= 2 ft x 1 ft x 4 sides = 8 SFCA
Contact Area (SFCA)= 8 sf x 14 footings
Total SFCA= 112 sf

Slab Forms (57 SFCA)

1. Garage Slab
Contact Area (SFCA)= 73 ft x 0.33 ft = 24 sf

2. 4’ Concrete Apron
Contact Area (SFCA)= 22.5 ft x 0.33 ft= 8 sf

3. 8’x 30’ Slab
Contact Area (SFCA)= 76 ft x 0.33 ft = 25 sf

LABOR HOURS

ACTIVITY	DAILY OUTPUT	QTY.	LABOR HOURS
Forms in place, columns	180 SFCA	112	5.0
Forms in place, continuous footings	485 SFCA	637	10.5
Forms in place, spread footings	414 SFCA	112	2.2
Forms in place, slab on grade	600 L.F.	172	2.3
Forms in place, walls	505 SFCA	378	6.0
Expansion joints	450 L.F.	74	1.3
Reinforcing in place, footings	4200 LB.	598	1.1
Reinforcing in place, slab on grade	4200LB.	388	0.7
Reinforcing in place, walls	6000 LB.	867	1.2
Plain welded wire fabric	31 C.S.F.	8	2.0
Placing concrete, footings	120 C.Y.	23	1.6
Placing concrete, slab on grade	110 C.Y.	16	1.2
Placing concrete, walls	100 C.Y.	10	0.8
Finishing floors, bull float & manual float	2000 S.F.	377	1.5
Finishing floors, bull float, manual float & broom finish	1850 S.F.	240	1.0
Finishing floors, hardeners	650 S.F.	377	4.6
Finishing floors, dustproofing	1500 S.F.	319	1.7
Polyethylene vapor barrier	37 SQ.	8	1.8
	TOTAL LABOR HOURS		**46.5**