

ANALYZED UNIT COST SCHEDULE

**ANALYZED UNIT COST SCHEDULE
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ANALYZED UNIT COSTS FOR COMMERCIAL & INDUSTRIAL CONSTRUCTION

All costs are “replacement cost in place”, including contractors’ overhead and profit and architectural and engineering services (where applicable). See Grading section for further explanation.

Quality and quantity are the two major factors affecting unit costs in place. A “range” has been given on many items in the following pages to help the appraiser in making adjustments for these factors. The high and low does NOT indicate the highest or lowest possible prices for these items, but only shows a normal variation and price fluctuation.

EXCAVATION

MACHINE BULK EXCAVATION & SITE PREPARATION (C.Y.)

	Price Range		Typical
Ordinary Earth & Clay (Distributed on Site)	\$2.40	- \$3.60	\$3.00
Normal Haul	6.00	- 9.00	7.50
Solid Rock	100.00	- 140.00	120.00
Site Preparation (S.F.)*	0.25	- 0.45	0.35

*Assumes a flat to slightly sloped terrain, light to medium vegetation.

MACHINE TRENCH EXCAVATION (L.F.)

Depth	Width	
	12"	24"
1' to 3'	\$6.20	\$8.60
4' to 6'	7.80	10.20
7' to 10'	19.80	23.50

	Compacted		Not Compacted	
Backfill & Clean-Up (C.Y.) (Assuming material available on site.)	\$6.75	- \$9.75	\$3.50	- \$5.50

WELLS & SEPTIC SYSTEMS

	Price Range		Typical
Wells (150' average depth)	\$6,000	- \$12,000	\$9,000
Depth adjustment	26.00	- 40.00	33.00
*Septic System Leach Field System	\$6,000	- \$9,000	\$7,500
Sand Filter System	11,000	- 15,000	13,000

*Typical cost for a 3 bedroom dwelling or equivalent, add \$1,000 for each additional bedroom.

LANDSCAPING

	Price Range		Typical
Finish Grading (P.S.F.)	\$0.24	- \$0.36	\$0.30
Seeding (P.S.F.)	0.03	- 0.07	0.05
Sodding (P.S.F.)	0.25	- 0.35	0.30
Shrubs (Each)	25.00	- 95.00	60.00
Trees (Each)	100.00	- 300.00	200.00
Retaining Wall (P.S.F.S.A.) Wood	15.00	- 25.00	20.00
Masonry	20.00	- 30.00	25.00
Rock/Stone	25.00	- 40.00	32.50
Decorative Stone	30.00	- 40.00	35.00

LANDSCAPING (Continued)

OUTDOOR LIVING SPACES (S.F.)

	Price Range	Typical
Concrete Patio	\$3.00 - \$6.80	\$4.90
Stamped Concrete Patio	8.00 - 16.00	12.00
Concrete Block (Limited Base)	5.00 - 11.00	8.00
Flagstone Patio (Prepared Base)	8.00 - 16.00	12.00
Paver Patio (Prepared Base)	10.00 - 20.00	15.00
Patio Bench Wall (P.L.F.)	25.00 - 45.00	35.00
Outdoor Fireplace	1,500.00 - 7,500.00	4,500.00
BI Fire Pits	500.00 - 1,500.00	1,000.00
Pergola	15.00 - 40.00	25.00
Accent Lighting	1.00 - 2.00	1.50
Outdoor Masonry Kitchens/Grilling Stations (P.L.F.)	200.00 - 300.00	250.00

The above cost assume projects completed by a landscaping contractor. Do-it-yourself homeowner projects will be at the mid to low range with lower quality projects being below the low range. Kitchen and Grilling station cost do not include plumbing, electrical or appliances.

PILES

Piling costs will vary considerably due to such factors as set-up and dismantling, size of job, soil condition and transportation. Average conditions are considered in the following piling costs. Set-up, transportation and dismantling is figured at \$6,000.

SHEET PILES – WOOD (P.S.F.S.A.)

	Price Range	Typical
Trenches		
Continuous Sheeting	\$7.00 - \$10.00	\$8.50
Braced Only	3.25 - 4.75	4.00
Basement		
Untreated Wood	12.50 - 18.50	15.50
Creosoted Wood	14.50 - 21.50	18.00

SHEET PILES – STEEL (P.S.F.S.A.) (LEFT IN PLACE)

Width	Web	Weight per S.F.	Price Range	Typical	If Pulled for Reuse Deduct
16"	3/8"	23#	\$17.50 - \$26.50	\$22.00	\$1.80
18"	3/8"	27#	20.50 - 31.50	26.00	2.40
16"	31/64"	32#	23.00 - 35.00	29.00	3.80
18"	3/8"	38#	26.50 - 40.50	33.50	8.75

BEARING PILES (P.L.F.)

WOOD

	Price Range	Typical
400 L.F.	\$30.00 - \$46.00	\$38.00
800 L.F.	23.00 - 35.00	29.00
1,500 L.F.	20.00 - 31.00	25.50
3,000 L.F.	18.25 - 27.75	23.00

STEEL

	36#	42#	53#	57#	73#	74#	89#	102#	117#
8" x 8"	\$32.75	—	—	—	—	—	—	—	—
10" x 10"	—	\$36.25	—	\$41.75	—	—	—	—	—
12" x 12"	—	—	\$41.75	—	—	\$50.00	—	—	—
14" x 14"	—	—	—	—	\$50.00	—	\$65.00	\$70.00	\$80.00

PRESTRESSED PRECAST CONCRETE (P.L.F.)

	Typical
14"	\$46.00
16"	55.00
24"	80.00

STEEL PIPES - CONCRETE FILLED (P.L.F.)

	Typical
8"	\$35.00
10"	41.00
12"	46.00

Not concrete filled deduct \$4.00 to \$4.50 P.L.F.

CONCRETE POURED IN DRILLED HOLES (P.L.F.)

	Price Range	Typical
12" through 24"	\$31.00 - \$47.00	\$39.00

PILES (Continued)

GEOPIERS (INTERMEDIATE FOUNDATION SYSTEM) (P.L.F.)

	Price Range	Typical
30" Diameter	\$95.00 - \$145.00	\$120.00

CAISSONS (P.C.F.)

If caissons are pulled for reuse, the cost per cubic foot is \$10.00 to \$22.75. If caissons are not pulled use \$29.00 to \$58.00 per cubic foot. Normal high-rise construction requires caissons to remain in place.

DOLPHINS

	Price Range
Pile Cluster Type (7' to 13' wood piles)	\$26,500 - \$43,000
Steel Pile Cell (topped w/ concrete 17' - 30' diameter)	72,000 - 145,000
Support Piers (3' - 10' diameter)	15,500 - 35,000

FOUNDATIONS

For built-up prices see Commercial and Industrial Short Form Schedule

FOUNDATION FORMS (P.S.F.S.A.)

	Price Range	Typical
Wall Forms (6' High or Less)	\$4.80 - \$5.80	\$5.30
Wall Forms (8' High)	5.25 - 6.25	5.75
Wall Forms (12' High)	5.90 - 6.90	6.40
Wall Forms (20' High)	6.80 - 7.80	7.30

Wall form prices are P.S.F.S.A. (including two sides). Prices may increase as much as 100% for specially designed structures such as radial walls for parking ramps.

FOUNDATION CONCRETE

	Price Range	Typical
Bulk Concrete (C.F.)	\$5.40 - \$6.40	\$5.90
Add For Reinforcing (LB.)	1.00 - 1.30	1.15
Waterproofing	1.00 - 1.30	1.15

Above concrete and reinforcing steel prices do not include forming or hoisting of bulk materials for high structures.

EXTERIOR WALLS (P.S.F.S.A.)

MASONRY

Type	Wall Thickness						
	4"	6"	8"	10"	12"	16"	
Face Brick Veneer (Does not include wood stud back-up)	\$14.25	—	—	—	—	—	
Face Brick (Solid)	14.25	—	\$28.50	—	\$34.50	\$44.30	
Face Brick Veneer (4" brick on 2 x 4 wood stud back-up)	—	—	18.70	—	—	—	
Cement Brick	13.60	—	—	—	—	—	
Concrete Block or Tile	7.00	\$8.40	10.00	\$11.00	13.50	—	
Concrete Block w/ Glazed Face	14.90	19.40	20.50	22.00	25.00	—	
Rock Face Concrete Block	9.50	10.50	11.50	—	14.25	—	
Ground Face Concrete Block	11.70	12.60	13.75	—	16.70	—	
Fluted Face Concrete Block	9.50	10.40	11.30	12.60	13.90	—	
4" Brick on 8" Concrete Block	—	—	—	—	22.80	—	
4" Brick on 12" Concrete Block	—	—	—	—	—	26.30	
4" Face Brick, 3" Air & Insulation Cavity on 8" Conc. Blk	—	—	—	—	25.00	—	
4" Rock Face Conc. Blk, 3" Air & Insulation Cavity on 8" Conc. Blk	—	—	—	—	20.25	—	
Structural Glazed Tile	15.90	—	—	—	—	—	
6" x 6" Glass Block	42.40	—	—	—	—	—	
8" x 8" Glass Block	28.60	—	—	—	—	—	
12" x 12" Glass Block	30.50	—	—	—	—	—	
Tile Coping	—	—	14.30	—	18.70	—	
8" Precast Tile Coping	—	—	22.50	26.20	30.00	—	
4" Cut Stone Coping	—	—	20.50	—	26.00	—	
Aluminum Coping (P.L.F.)	13.50	15.50	17.80	20.10	22.40	24.50	
	6"	8"	10"	12"	16"	20"	24"
Concrete	\$9.60	\$11.30	\$13.00	\$14.65	\$16.90	\$20.05	\$22.75
Reinforced Concrete	11.55	13.30	15.05	16.80	20.35	24.65	27.95

Add \$2.25 P.S.F.S.A. for stay in place insulated forming.

The exterior wall prices above are averages. The appraiser should consider a possible 20% "range" in either direction for quality and quantity adjustments if necessary.

EXTERIOR WALLS (Continued)

TILT-UP CONCRETE PANELS COSTS OR CONCRETE HOLLOW CORE PLANKS (P.S.F.S.A.)

	Price Range		Typical
5 1/2" and 6" Broom Finish	\$13.00	- \$19.00	\$16.00
5 1/2" and 6" Aggregate Finish	15.00	- 22.00	18.50
7 1/2" and 8" Broom Finish	15.00	- 22.00	18.50
7 1/2" and 8" Aggregate Finish	17.00	- 25.00	21.00
11 1/2" and 12" Broom Finish	17.50	- 26.50	21.00
11 1/2" and 12" Aggregate Finish	19.50	- 29.50	23.50

No insulation - deduct \$1.00 S.F.

Add \$1.50 P.S.F.S.A for each additional inch of thickness.

PRECAST DOUBLE "T" PANELS (P.S.F.S.A.)

	Price Range		Typical
Used for Walls 8' wide, 24" deep, insulated	\$13.00	- \$19.00	\$16.00

STUDDING (P.S.F.S.A.)

Stud prices include top and bottom plate and normal openings.

	Center to Center			
	12"	16"	20"	24"
2" x 4" Wood Studs	\$3.10	\$2.60	\$2.40	\$2.20
2" x 6" Wood Studs	4.45	3.80	3.45	3.10
4" Metal Studs (20 - 25 Gauge)	3.45	3.15	3.00	2.80
6" Metal Studs (20 - 25 Gauge)	4.35	3.90	3.65	3.45

Price will vary +/- 20% depending on quality, number of openings, height and design.

SHEATHING (P.S.F.S.A.)

	Price Range		Typical
5/16" Plywood	\$1.15	- \$1.65	\$1.40
1/2" Plywood	1.35	- 2.05	1.70
3/4" Plywood	1.70	- 2.50	2.10
7/16" OSB Board	0.95	- 1.35	1.15
15/32" OSB Board	1.00	- 1.40	1.20
1/2" Fiberboard	1.00	- 1.40	1.20
25/32" Fiberboard	1.20	- 1.70	1.45
Building Wrap	0.40	- 0.50	0.45
Felt Paper 15#	0.20	- 0.30	0.25
Felt Paper 30#	0.35	- 0.45	0.40

INSULATION (P.S.F.S.A.)

		Price Range		Typical
Fiberglass or Rock Wool (In Paper Batts)	3 1/2" (R-11)	\$0.60	- \$0.90	\$0.75
	3 1/2" (R-13)	0.65	- 0.95	0.80
	3 1/2" (R-15)	0.80	- 1.20	1.00
	6" (R-19)	0.80	- 1.20	1.00
	6" (R-21)	1.00	- 1.50	1.25
	9 1/2" (R-30)	1.10	- 1.60	1.35
Fiberglass or Rock Wool (Blown)	11 1/2" to 12" (R-38)	1.30	- 1.90	1.60
Vermiculite, Perlite, Zonolite or Equivalent	3 1/2" (R-7)	0.95	- 1.35	1.15
	6" (R-12)	1.35	- 1.95	1.65
Loose Fill In Block Walls	(R-3)	1.00	- 1.40	1.20
Rigid Board	1" (R-3)	1.00	- 1.50	1.25
	2" (R-6)	1.50	- 2.20	1.85
Spray on Insulation (Urethane, Closed Cell)	1" (R-6.5)	0.70	- 1.10	0.90
	2" (R-13)	1.40	- 2.10	1.75
	3" (R-19.5)	2.10	- 3.20	2.65
	3.5" (R-23)	2.50	- 3.70	3.10
	4" (R-26)	2.80	- 4.20	3.50
	5" (R-32.5)	3.50	- 5.30	4.40
	5.5" (R-36)	3.85	- 5.75	4.80
	6" (R-39)	4.20	- 6.30	5.25

EXTERIOR WALLS (Continued)

VAPOR BARRIER

	Price Range	Typical
	\$0.15 - \$0.23	\$0.19

INSULATED METAL WALL PANELS (P.S.F.S.A.)

Galvanized Steel (22 Gauge)	Price Range	Typical
Sandwich Panels 1" Thick	\$10.50 - \$15.50	\$13.00
2" Thick	12.00 - 17.00	14.50
3" Thick	13.10 - 19.60	16.35
4" Thick	14.00 - 21.00	17.50
5" Thick	15.00 - 22.30	18.65
6" Thick	16.00 - 23.50	19.75
8" Thick	18.00 - 27.00	22.50
10" Thick	20.50 - 30.50	25.50

For 20 gauge - Increase above prices 15%

For 26 gauge - Decrease above prices 20%

For enamel finish & aluminum panels - Add \$0.30 P.S.F.S.A. per side

Porcelain finish - Add \$2.00 per side

STRUCTURAL INSULATED PANELS (SIP) (P.S.F.S.A.)

EPS insulation with 7/16" OSB board on each side	Price Range	Typical
4 1/2" Thick	\$5.30 - \$7.70	\$6.50
6 1/2" Thick	6.00 - 8.50	7.25
8 1/2" Thick	6.70 - 9.50	8.10
10 1/2" Thick	7.80 - 11.00	9.40

STAY IN PLACE STRUCTURAL FORMED REINFORCED CONCRETE WALLS

INSULATED CONCRETE FORM (ICF) WALLS (P.S.F.S.A.)

2" expanded polystyrene (EPS) insulated forms with reinforced concrete.

Thickness of Interior R' Concrete	Price Range	Typical
4" Thick	\$10.15 - \$15.25	\$12.70
6" Thick	11.00 - 16.60	13.80
8" Thick	14.45 - 18.65	15.55

NON-INSULATED POLYMER CONCRETE FORMED WALLS (P.S.F.S.A.)

Non-insulated polymer forms filled with reinforced concrete.

Thickness of Interior R' Concrete	Price Range	Typical
4" Thick	\$10.90 - \$16.40	\$13.65
6" Thick	11.80 - 17.70	14.75
8" Thick	12.80 - 19.20	16.00

INSULATED POLYMER FORMED CONCRETE WALLS (P.S.F.S.A.)

Non-insulated interior form, exterior form has 2" of insulation, filled with reinforced concrete.

Thickness of Interior R' Concrete	Price Range	Typical
4" Thick	\$14.70 - \$22.10	\$18.40
6" Thick	15.60 - 23.40	19.50
8" Thick	16.60 - 24.90	20.75

EXTERIOR WALLS (Continued)

WALL COVERINGS (P.S.F.S.A.) INCLUDES PAINT WHERE APPLICABLE.

		Price Range	Typical
Redwood Bevel Siding	5/8" x 6"	\$5.50 - \$8.40	\$6.95
Redwood Bevel Siding	5/8" x 8"	4.80 - 7.30	6.05
Red Cedar Bevel Siding	1/2" x 4"	5.35 - 8.05	6.70
Red Cedar Bevel Siding	1/2" x 6"	5.00 - 7.50	6.25
Red Cedar Siding	1/2" x 8"	4.85 - 7.15	6.00
Red Cedar Siding	3/4" x 10"	5.20 - 7.80	6.50
Tongue & Groove – Cedar Siding	1" x 6"	4.30 - 6.50	5.40
Rough Cut Vertical Siding	4' x 8'	2.45 - 3.75	3.10
Redwood or Cedar Vertical Siding	4' x 8'	2.90 - 4.30	3.60
Pine Bevel Siding		3.05 - 4.55	3.80
Aluminum Bevel Siding		3.40 - 5.10	4.25
Composition Siding		2.25 - 3.35	2.80
Vinyl Bevel Siding		2.75 - 4.15	3.45
Steel Bevel Siding		3.40 - 5.10	4.25
Log Siding		5.20 - 7.70	6.45
Asbestos Shingle		2.10 - 3.20	2.65
Stucco on Masonry		3.50 - 5.50	4.50
Stucco on Frame		4.50 - 6.50	5.50
Exterior Insulation and Finish System (EIFS)		6.80 - 12.80	9.80
Corrugated Asbestos (Transite)		4.25 - 6.35	5.30
Fiber Cement Lap Siding		3.20 - 4.80	4.00
*24 Gauge Corrugated Painted Metal Panels		3.25 - 4.75	4.00
*24 Gauge Corrugated Painted Metal Panels on Wood Girts		3.80 - 5.70	4.75
*24 Gauge Corrugated Painted Metal Panels on Steel Girts		4.50 - 6.50	5.50
*26 Gauge Corrugated Painted Metal Panels		2.90 - 4.30	3.60
*26 Gauge Corrugated Painted Metal Panels on Wood Girts		3.50 - 5.20	4.35
*26 Gauge Corrugated Painted Metal Panels on Steel Girts		4.10 - 6.10	5.10
*29 Gauge Corrugated Painted Metal Panels		2.00 - 3.00	2.50
*29 Gauge Corrugated Painted Metal Panels on Wood Girts		2.60 - 4.00	3.25
*29 Gauge Corrugated Painted Metal Panels on Steel Girts		3.25 - 4.75	4.00
*0.024" Corrugated Aluminum Panels		2.80 - 4.20	3.50
*0.024" Corrugated Aluminum on Wood Girt		3.40 - 5.10	4.25
*0.024" Corrugated Aluminum on Steel Girts		4.00 - 6.00	5.00
*0.032" Corrugated. Aluminum Panels		3.00 - 4.40	3.70
*0.032" Corrugated Aluminum on Wood Girts		3.60 - 5.30	4.45
*0.032" Corrugated Aluminum on Steel Girts		4.20 - 6.20	5.20
*Deduct \$0.50/S.F. If Galvanized and Unpainted			
Structural Thermo-Glass Walls		50.00 - 130.00	90.00
Structural Thermo-Glass Walls - Tinted		63.00 - 140.00	101.50

PAINTING - EXTERIOR (P.S.F.S.A.)

	Price Range	Typical
Wood Siding - 2 Coat	\$1.20 - \$1.80	\$1.50
Wood Siding - 3 Coat	1.50 - 2.20	1.85
Concrete Block, Brick, Stucco & Concrete	1.45 - 2.15	1.80

Masonry and stucco costs include waterproofing. Deduct 15% if non-waterproofed.
Wood siding costs include waterproofing. Deduct 20% if non-waterproofed.

EXTERIOR WALLS (Continued)

WALL FACINGS (P.S.F.S.A.)

		Price Range		Typical
Stone	Ashler Veneer (Rough)	\$25.25	- \$37.75	\$31.50
	Sawed Bed	31.60	- 45.90	39.50
	Native Rubblestone Veneer	21.80	- 32.70	27.25
	Cobblestone Walls	21.25	- 31.75	26.50
Limestone	Rubblestone	28.00	- 42.00	35.00
	Ashler Veneer (Rough)	24.00	- 36.00	30.00
	Sawed Bed	30.00	- 45.00	37.50
Granite	Rubble Veneer	19.00	- 28.50	23.75
	Ashler Veneer (Rough)	34.80	- 52.20	43.50
	Ashler Veneer (Polished)	38.40	- 57.60	48.00
	Rubble Veneer	29.25	- 43.75	36.50
Slate Panels		40.00	- 60.00	50.00
*Marble		48.00	- 72.00	60.00
Cultured Stone		14.50	- 21.50	18.00

*Marble costs will vary depending on the degree of color variation and structure. Use low prices for local marbles with uniform surfaces requiring no waxing or filling, with little variation in texture and color. Use the typical price for imported marble with flaws, voids and good color variation. Use the high price for imported marbles with maximum variations in texture and color, these are highly colored marbles.

DOORS (P.S.F.S.A.) (Includes trim, hardware, frame and finish)

RESIDENTIAL

Residential doors can also be used for commercial		Price Range		Typical
*Wood Entry Doors		\$23.00	- \$35.00	\$29.00
*Metal Entry Doors		26.00	- 39.00	32.50
*Add 50% to 100% for side lights; add 100% for ornamental doorways				
Hollow Core Interior Doors		15.50	- 23.00	19.25
Six Panel Interior Doors		18.00	- 27.00	22.50
Double Glass Sliding or French Doors		32.00	- 48.00	40.00
Combination Screen/Window Storm Doors		16.00	- 24.00	20.00
Deluxe Glass/Metal Storm Doors		19.00	- 28.50	23.75
Bi-Fold And Sliding Wood Bypass Doors		8.00	- 12.00	10.00
Overhead Doors	Non-Insulated Single	11.50	- 17.00	14.25
	Insulated Single	14.00	- 21.00	17.50
	Non-Insulated Double	9.50	- 14.00	11.75
	Insulated Double	10.75	- 16.25	13.50
Add for Automatic Door Opener (Each)		400.00	- 600.00	500.00

COMMERCIAL AND INDUSTRIAL

		Price Range		Typical
Metal Hollow Core		\$34.00	- \$51.00	\$42.50
Metal Fire Door "B" Label (1.5 hour)		40.00	- 60.00	50.00
Metal Fire Door "A" Label (3 hour)		46.00	- 69.00	57.50
Kalamein - 1 3/4"		34.00	- 51.00	42.50
Kalamein - 2 1/2"		36.50	- 54.50	45.50
Add For Automatic Door Closer		220.00	- 330.00	275.00
Overhead Doors	Up to 10' Wide	15.50	- 23.00	19.25
	12' to 14' Wide	12.00	- 18.00	15.00
	16' Wide and Above	14.25	- 21.25	17.75
Steel Roll Doors	Up to 14' Wide	21.25	- 31.75	26.50
	16' Wide or Above	21.50	- 32.50	27.00
Fire Rated Steel Roll Doors		32.00	- 48.00	40.00
Add to Steel Doors if Insulated		12.50	- 18.50	15.50
Add if Electric Operated (Per Door)	Up to 10" Wide	1,080.00	- 1,620.00	1,350.00
	12' to 20' Wide	1,320.00	- 1,980.00	1,650.00
	Above 20' Wide	1,400.00	- 2,100.00	1,750.00
High Speed Fabric Roll Door		120.00	- 180.00	150.00
High Speed Plastic Roll Door		140.00	- 210.00	175.00
Large Motorized Bi-Fold or Hydraulic Lift Doors	Up to 20' Tall	20.75	- 31.25	26.00
	Over to 20' Tall	30.50	- 45.50	38.00
Plastic Strip Doors (Cooler Drive-Thru Type)		14.50	- 21.50	18.00
Rubber Swinging Traffic Doors		50.00	- 75.00	62.50

Note: See Store Fronts for additional data.

WINDOWS (P.S.F.S.A.) (Includes trim, hardware and installation)

		Price Range	Typical
Wood/Vinyl	Single Hung	\$28.00 - \$42.00	\$35.00
	Double Hung	33.50 - 50.50	42.00
Aluminum	Casement	40.00 - 60.00	50.00
	Single Hung	26.00 - 39.00	32.50
	Double Hung	31.00 - 46.00	38.50
Steel	Casement	38.50 - 57.50	48.00
	Casement	23.00 - 35.00	29.00
	Industrial Fixed	21.50 - 32.50	27.00
	Industrial Vented	26.50 - 39.50	33.00
Basement Utility Windows (Per Window)		140.00 - 210.00	175.00
Bay and Bow Windows		46.50 - 69.50	58.00
Circle Top Windows		115.00 - 175.00	145.00
Skylights (Roof Windows)		105.00 - 155.00	130.00

STORE FRONTS

Based on 12' high wall, ornamentation 4' high.

	Low Cost	Typical Cost	Good Cost	High Cost
Basic Front (P.S.F.S.A.)	\$25.00	\$37.50	\$50.00	\$75.00
Ornamentation (P.L.F.)	7.00	16.00	46.50	66.50
Display Platform & Dropped Ceiling (P.L.F.)	N/A	N/A	112.50	160.00
Lighting (P.L.F.)	10.00	25.00	67.50	115.00
Display Back (P.L.F.)	N/A	72.00	100.00	145.00

ADD FLAT ITEMS

	Low Cost	Typical Cost	Good Cost	High Cost
Entrance Doors				
Wood & Glass	\$750	\$1,000	\$1,350	\$1,600
Aluminum & Glass (Single)	1,300	1,650	2,000	2,300
Aluminum & Glass (Double)	2,350	2,650	2,900	3,150
1/2" Tempered Glass	2,300	2,550	2,800	3,050
Revolving Doors	31,500	44,600	56,500	80,000
Sliding Glass, Automatic Two-Way Entry	14,500	17,500	20,500	24,000
Automatic Swing Door (Include Opener) (Single)	5,750	6,900	8,000	10,250
Automatic Swing Door (Include Opener) (Double)	11,250	13,000	14,800	17,750

INTERIOR FINISH (P.S.F.S.A.)

BASIC PARTITION WALLS (NO FINISH OR FURRING) (P.S.F.S.A.)

	Price Range	Typical
2" x 4" Wood Studs (16" on center)	\$1.75 - \$2.15	\$1.95
2" x 4" Wood Studs (24" on center)	1.35 - 1.65	1.50
2" x 6" Wood Studs (16" on center)	2.40 - 3.00	2.70
2" x 6" Wood Studs (24" on center)	1.90 - 2.30	2.10
4" Metal Studs (16" on center)	1.85 - 2.25	2.05
4" Metal Studs (24" on center)	1.45 - 1.75	1.60
6" Metal Studs (16" on center)	2.25 - 2.75	2.50
6" Metal Studs (24" on center)	1.95 - 2.35	2.15
Clay Tile 4"	6.85 - 8.35	7.60
Clay Tile 6"	7.65 - 9.35	8.50
Clay Tile 8"	8.10 - 9.90	9.00
Concrete Block 4"	6.95 - 8.45	7.70
Concrete Block 6"	7.85 - 9.65	8.75
Concrete Block 8"	8.35 - 10.25	9.30
Glassboard on 4" Concrete Block	12.95 - 17.45	15.20
Glassboard on 6" Concrete Block	13.85 - 18.65	16.25
Glassboard on 8" Concrete Block	14.35 - 19.25	16.80
Gypsum Block 4"	6.85 - 8.35	7.60
Gypsum Block 6"	7.75 - 9.45	8.60

GLAZED PARTITION WALLS (P.S.F.S.A.)

	1 Side	2 Sides
4" Glazed Block	\$18.10	\$24.50
8" Glazed Block	21.50	28.50
4" Glazed Tile	18.25	24.75
8" Glazed Tile	22.00	29.25

INTERIOR FINISH (P.S.F.S.A.) (Continued)

FURRING (P.S.F.S.A.)

	Price Range	Typical
1" x 2" Wood on Masonry	\$1.05 - \$1.55	\$1.30
1" x 2" Wood on Wood	0.80 - 1.20	1.00
1" x 3" Wood on Masonry	1.20 - 1.80	1.50
1" x 3" Wood on Wood	1.05 - 1.55	1.30
Metal	1.30 - 1.90	1.60

LATH & PLASTER (P.S.F.S.A.)

	Price Range	Typical
Plaster Direct on Masonry Walls	\$3.40 - \$5.10	\$4.25
Plaster on Gypsum Lath (2 Coat)	3.70 - 5.50	4.60
(3 Coat)	4.40 - 6.60	5.50
Plaster on Metal Lath (3 Coat)	4.80 - 7.20	6.00

DRYWALL (TAPED AND COMPOUND ONLY) (P.S.F.S.A.)

	Price Range	Typical
3/8"	\$1.10 - \$1.50	\$1.30
1/2"	1.25 - 1.75	1.50
5/8"	1.30 - 1.80	1.55
Texture	0.35 - 0.45	0.40
Add for Thin Coat Plaster Finish Over Blueboard (Calcoat)	0.85 - 1.15	1.00

PANELING (P.S.F.S.A.)

	Price Range	Typical
1/4" Plywood - Softwood	\$2.30 - \$3.50	\$2.90
1/4" Plywood - Hardwood	3.80 - 5.80	4.80
Add 50% for 3/4"		
3/4" Solid - Softwood	4.00 - 6.00	5.00
3/4" Solid - Hardwood	5.25 - 7.95	6.60
Glassboard (FRP Panels)	3.00 - 4.50	3.75

CEILINGS (P.S.F.)

	Price Range	Typical
Drywall	\$1.60 - \$2.00	\$1.85
Add for Texture	0.35 - 0.55	0.45
Add for Thin Coat Plaster Finish Over Blueboard (Calcoat)	0.80 - 1.20	1.00
Plaster	3.75 - 5.25	4.50
Composition Block	2.10 - 3.10	2.60
Glassboard (FRP Panels)	3.00 - 4.50	3.75
Suspended Acoustical Block (Fiber)	2.75 - 3.75	3.25
Suspended Acoustical Block (Mineral)	2.75 - 3.75	3.25
Suspended Acoustical Tile w/ Dropped Edge (Tegular)	4.00 - 5.50	4.75
Suspended Stamped Metal	10.00 - 16.00	13.00

Suspended Ceilings Include Hanger Grid System

PAINT & FINISHES - INTERIOR (P.S.F.S.A.)

	Price Range	Typical
2 Coat Paint	\$0.55 - \$0.95	\$0.75
3 Coat Paint	0.75 - 1.25	1.00
Wallpaper (Including Labor & Material)		
Vinyl, Paper Backed	1.50 - 2.50	2.00
Vinyl, Fabric Backed	1.95 - 3.25	2.60
Grass Clothes w/ Lining Paper	3.20 - 5.30	4.25
Natural Fiber	2.30 - 3.90	3.10
Painted Doors - Metal (Including Trim) (Each)		95.00
Painted Doors - Wood (Including Trim) (Each)		105.00

INTERIOR FINISH (P.S.F.S.A.) (Continued)

PARTITIONS (P.S.F.S.A.) COMMON PARTITIONS COMPLETE EXCEPT DOORS & TRIM

	Finish 1 Side	Finish 2 Sides
Drywall on 2" x 4" Wood Studs	\$4.20	\$6.45
Drywall on 2" x 4" Wood Studs (2 Hour Fire Rating)	—	9.65
Drywall on 2" x 4" Wood Studs (3 Hour Fire Rating)	—	12.75
Drywall on 2" x 4" Wood Studs (4 Hour Fire Rating)	—	15.85
Drywall on 2" x 6" Wood Studs	4.95	7.20
Drywall on 2" x 6" Wood Studs (2 Hour Fire Rating)	—	10.40
Drywall on 2" x 6" Wood Studs (3 Hour Fire Rating)	—	13.50
Drywall on 2" x 6" Wood Studs (4 Hour Fire Rating)	—	16.60
Lath & Plaster on 2" x 4" Wood Studs	7.30	12.65
Lath & Plaster on 2" x 6" Wood Studs	8.05	13.40
Drywall on 4" Metal Studs	4.30	6.55
Drywall on 4" Metal Studs (2 Hour Fire Rating)	—	9.75
Drywall on 4" Metal Studs (3 Hour Fire Rating)	—	12.85
Drywall on 4" Metal Studs (4 Hour Fire Rating)	—	15.95
Lath & Plaster on 4" Metal Studs	7.05	12.05
Plaster on 4" Clay Tile	12.60	17.60
Plaster on 6" Clay Tile	13.50	18.50
Plaster on 4" Concrete Block	12.70	17.70
Plaster on 6" Concrete Block	13.75	18.75
Plaster on 4" Gypsum Block	12.60	17.60
Plaster on 6" Gypsum Block	13.60	18.60
1/4" Softwood Paneling on 2" x 4" Wood Studs	4.85	7.75
1/4" Hardwood Paneling on 2" x 4" Wood Studs	6.75	11.55
Glassboard on Drywall on 2" x 4" Wood Studs	7.95	13.95
Glassboard on Drywall on 2" x 6" Wood Studs	8.70	14.70
Glassboard on Drywall on 4" Metal Studs	8.05	14.05

ADD FOR DOORS (AVERAGE PRICE PER L.F. OF PARTIONING)

	Price Range	Typical
1 Door per 15' Average		
Wood Hollow Core	\$21.55 - \$32.35	\$26.95
Six Panel (Solid Core)	25.20 - 37.80	31.50
Metal Hollow Core	47.60 - 71.40	59.50
1 Door per 20' Average		
Wood Hollow Core	16.20 - 24.20	20.20
Six Panel (Solid Core)	18.95 - 28.35	23.65
Metal Hollow Core	35.75 - 53.55	44.65
1 Door per 30' Average		
Wood Hollow Core	10.80 - 16.20	13.50
Six Panel (Solid Core)	12.60 - 18.90	15.75
Metal Hollow Core	23.80 - 35.70	29.75

ADD FOR TRIM (AVERAGE PRICE PER L.F. OF PARTIONING)

	Price Range	Typical
Softwood		
One Side	\$2.25 - \$3.75	\$3.00
Two Sides	4.50 - 7.50	6.00
Hardwood		
One Side	3.00 - 4.80	3.90
Two Sides	6.00 - 9.60	7.80

INTERIOR FINISH (P.S.F.S.A.) (Continued)

BUILT-IN CABINETS

*Base cabinets (including countertops)

	Price Range	Typical
Metal w/ Laminate	\$220.00 - \$330.00	\$280.00
Metal w/ Granite/Marble	325.00 - 485.00	410.00
Metal w/ Solid Surface	285.00 - 425.00	360.00
Wood w/ Laminate	235.00 - 365.00	300.00
Wood w/ Granite/Marble	340.00 - 520.00	430.00
Wood w/ Solid Surface	300.00 - 460.00	380.00
Laminated Wood w/ Laminate	200.00 - 310.00	255.00
Laminated Wood w/ Granite/Marble	305.00 - 465.00	385.00
Laminated Wood w/ Solid Surface	265.00 - 405.00	335.00

*Wall Cabinets

Metal	120.00 - 190.00	155.00
Wood	135.00 - 205.00	170.00
Laminated	120.00 - 180.00	150.00

*Above cost are averages only. Low quality economy cabinets may cost as much as 50% less, excellent quality custom cabinets could cost 200% more.

*SECURITY SYSTEMS

	Price Range	Typical
Residential Systems (Lump Sum)	\$650.00 - \$1,850.00	\$1,250.00
Commercial Systems (P.S.F.)	0.75 - 1.25	1.00

*Includes smoke detectors, motion detectors, door/window contacts, key pads, control panels and sirens.

*SURVEILLANCE SYSTEMS

	Price Range	Typical
1 or 2 Cameras (per Camera)	\$1,800.00 - \$3,000.00	\$2,400.00
3 or More Cameras (per Camera)	1,200.00 - 2,000.00	1,600.00

*Includes recorders, cameras, monitors, cable and connections.

BUILT-IN VACUUMS

	Price Range	Typical
Basic Package (4 Outlets)	\$1,400.00 - \$2,200.00	\$1,800.00
Additional Outlets	145.00 - 215.00	180.00
Per Square Foot	0.70 - 1.10	0.90

INTERCOMS & BUILT-IN STEREOS

	Price Range	Typical
Intercoms (Residential) (Lump Sum)	\$875.00 - \$1,375.00	\$1,125.00
Intercoms (P.S.F.)	0.75 - 1.15	0.95
Built-In Stereos - Speakers Only (Per Room) (Lump Sum)	150.00 - 650.00	325.00
Built-In Stereos - Speakers Only (P.S.F.)	0.65 - 3.25	1.95

FLOORS AND ROOFS

WOOD JOISTS (P.S.F.S.A.) (OF FLOOR)

	Center to Center			
	12"	16"	20"	24"
2" x 6"	\$3.05	\$2.50	\$2.15	\$1.90
2" x 8"	3.50	2.85	2.45	2.15
2" x 10"	4.10	3.45	2.95	2.60
2" x 12"	4.70	3.75	3.20	2.80
3" x 6"	4.80	3.80	3.25	2.85
3" x 8"	5.70	4.50	3.90	3.35
3" x 12"	6.90	5.45	4.70	4.00

Above figures are average construction. Range is +20% or -20%. The above figures may be used for roof rafters.

WOOD JOISTS (T.J.I.) (P.S.F.S.A) (OF FLOOR OR ROOF)

	Center to Center			
	12"	16"	20"	24"
9 1/2"	\$4.70	\$3.80	\$3.20	\$2.80
11 7/8"	5.50	4.30	3.75	3.20
14"	6.05	4.80	4.10	3.50
16"	6.60	5.40	4.45	3.75

Add 20% to above costs for floor truss system.

STEEL BAR JOISTS (P.L.F.)

Depth	Max Span	Wt./L.F.	Typical
8"	16'	5.1#	\$9.30
10"	20'	5#	9.20
12"	24'	5.0 - 7.1#	9.45
14"	28'	5.2 - 7.7#	9.85
16"	32'	5.5 - 7.7#	11.25
18"	36'	6.6 - 11.7#	13.00
20"	40'	6.7 - 12.2#	13.40
22"	44'	8.0 - 13.8#	14.50

FLAT ARCH FLOORS OR PAN CONSTRUCTED (P.S.F.)

Joist Depth	Price Range	Typical
6"	\$7.60 - \$11.40	\$9.50
9"	9.20 - 13.70	11.45
12"	10.90 - 16.40	13.65

Figures above are based on 2 1/2" topping. Vary prices \$0.35 per 1/2". (Example: 3" topping on 6" joist = 9.85).
The above prices may also be used for roofs.

CONCRETE FLOORS - FLAT SLAB (P.S.F.)

Thickness	Plain On Grade	Wire Reinforced On Grade	Reinforced Self Supporting
3"	\$3.65	\$4.30	—
4"	4.25	4.90	\$13.00
5"	4.70	5.40	14.00
6"	4.90	5.95	15.25
8"	6.05	7.25	17.40
10"	6.95	8.20	19.75
12"	7.75	9.35	22.50

All floors include trowel finish. On grade includes gravel base and grading.

HOLLOW CORE (P.S.F.)

	Price Range	Typical
6"	\$7.80 - \$8.70	\$8.25
8"	8.80 - 9.80	9.30
12"	10.00 - 11.10	10.55
Add for wood sleepers		1.75

PRECAST DOUBLE "T" (P.S.F.)

	Price Range	Typical
8' wide x 24" deep	\$10.80 - \$12.00	\$11.40
10' wide x 100' long x 36" to 48" deep	14.50 - 16.00	15.25
8' wide x variable x 48" deep	16.75 - 18.75	17.75

The above may also be used for roofs.

FLOORS AND ROOFS (Continued)

STEEL FLOORS (P.S.F.)

		Price Range	Typical
Steel Plating	1/8"	\$9.50 - \$10.50	\$10.00
	3/16"	10.70 - 11.90	11.30
	1/4"	13.50 - 15.00	14.25
	3/8"	14.75 - 16.25	15.50
	1/2"	16.10 - 17.90	17.00
Checkered Plating	3/16"	15.50 - 17.50	16.50
	1/4"	19.75 - 21.85	20.80
	1/2"	28.00 - 31.00	29.50
Steel Grating	1"	16.00 - 17.60	16.80
	1 1/4"	18.50 - 20.50	19.50
	1 1/2"	20.50 - 22.50	21.50

Deduct 10% if not galvanized steel.

SUBFLOORS & ROOF DECKING (P.S.F.)

			Price Range	Typical
Wood	1/2"	Plywood	\$1.10 - \$1.70	\$1.40
	5/8"	Plywood	1.30 - 1.90	1.60
	3/4"	Plywood	1.50 - 2.20	1.85
	5/8"	Plywood (T & G)	1.45 - 1.95	1.70
	3/4"	Plywood (T & G)	1.60 - 2.40	2.00
	1 1/8"	Plywood (T & G)	2.30 - 3.50	2.90
	5/8"	OSB (T & G)	1.30 - 1.90	1.60
	3/4"	OSB (T & G)	1.50 - 2.30	1.90
	1"	Wood (Horizontal or Diagonal)	1.90 - 2.90	2.40
	1"	T & G Board	2.00 - 3.00	2.50
	2"	T & G Board	3.20 - 4.80	4.00
Gypsum	2"	Precast Plank	4.25 - 6.35	5.30
	2"	Poured Over Gypsum Board	4.50 - 6.80	5.65
	3"	Poured Over Gypsum Board	2.90 - 4.30	3.60
Fiberboard	3"	Poured Over Gypsum Board	3.50 - 5.30	4.40
	2"	Roof Plank	2.95 - 4.45	3.70
	3"	Roof Plank	4.25 - 6.35	5.30

STEEL - OPEN RIB

		Gauge		
		22	20	18
1 1/2"	Rib Depth	\$2.20	\$2.60	\$3.10
3"	Rib Depth	3.00	3.50	4.25

STEEL - CELLULAR

		Gauge		
		20	18	16
1 1/2"	Rib Depth	\$7.75	\$9.00	\$11.50
3"	Rib Depth	9.00	10.25	12.75
4 1/2"	Rib Depth	12.00	13.50	15.00
		Price Range		Typical
Corruform		\$2.25	\$3.35	\$2.80
Cement Topping - Poured 1 1/2"		1.75	2.65	2.20
Each Additional 1/2"				0.35

See "concrete floors" for hollow core and concrete "T" construction.

WOOD FLOORS (INCLUDING FINISH) (P.S.F.)

		Price Range	Typical
Softwood		\$6.20 - \$9.30	\$7.75
Maple		9.50 - 14.00	11.75
Oak		9.25 - 13.75	11.00
Laminate		6.00 - 9.00	7.50
Engineered Flooring		8.00 - 12.00	10.00
Parquet		10.50 - 15.50	13.00
Wood Block 2" (Treated)		6.50 - 9.50	8.00
Wood Block 3" (Treated)		8.00 - 12.00	10.00
2" Pin Plank - Oak (Walnut Plugs)		9.50 - 14.50	12.00

FLOORS AND ROOFS (Continued)

FLOOR COVERINGS (P.S.F.)

	Price Range	Typical
Hardener/Sealer (Polished Concrete Floors)	\$1.80 - \$2.70	\$2.25
Asphalt Tile & Vinyl Asbestos	2.10 - 3.10	2.60
Vinyl Tile Blocks	4.50 - 6.50	5.50
Vinyl Sheet	4.25 - 6.25	5.25
Rubber Tile	5.50 - 8.50	7.00
Carpeting Residential or Small Job	3.60 - 5.40	4.50
Commercial or Large Job	3.20 - 4.80	4.00
Terrazzo Plain - Epoxy or Latex (Small Job)	11.25 - 16.75	14.00
Terrazzo Plain - Epoxy or Latex (Large Job)	9.00 - 13.00	11.00
Terrazzo - Sanobed and Wire	9.50 - 14.50	12.00
Quarry Tile	10.50 - 15.50	13.00
Ceramic Tile (Residential or Small Job)	11.50 - 17.50	14.50
Ceramic Tile (Commercial or Large Job)	10.50 - 15.50	13.00
Marble	28.00 - 42.00	35.00
Slate	14.00 - 21.00	17.50
Raised Metal Computer Floor	20.00 - 30.00	25.00
Epoxy (Neoprene)	4.50 - 7.00	5.75
Epoxy (Industrial, Terrazzo)	8.00 - 12.00	10.00
Rubber Tile	10.00 - 15.00	12.50

The "typical" prices shown for floor coverings is the most commonly used price, not necessarily the average of the "range". Terrazzo "large job" is approximately 10,000 S.F. or more. "Small job" is 1,000 - 2,000 S.F. For intermediate areas use at least high range of large jobs and no more than low range of small jobs.

ROOF TRUSSES (P.L.F. OF TRUSS)

LIGHT WOOD FRAMING

Span	Light	Heavy	Typical
15' - 25'	\$4.40	\$5.00	\$4.70
26' - 35'	4.55	5.45	5.00
36' - 45'	5.00	6.40	5.70
46' - 55'	5.40	7.30	6.35
56' - 60'	5.80	8.30	7.05

INDUSTRIAL TYPE

Span	Wood			Steel		
	Light	Heavy	Typical	Light	Heavy	Typical
30' - 50'	\$64.95	\$81.15	\$73.05	\$100.35	\$145.25	\$122.80
51' - 80'	87.75	119.65	103.70	101.95	147.05	124.50
81' - 100'	102.85	140.75	121.80	102.40	147.20	124.80

ROOF INSULATION (P.S.F.)

FLAT ROOFS

	Size	Price Range	Typical
Insulating Fiberboard	1/2"	\$0.65 - \$0.95	\$0.80
	1"	0.95 - 1.35	1.15
	2"	1.30 - 1.90	1.60
Gypsum Board (Dens Deck)	1/4"	0.75 - 1.05	0.90
	1/2"	0.80 - 1.20	1.00
Isocyanurate	1"	0.85 - 1.25	1.05
	1 1/2"	0.95 - 1.45	1.20
	2"	1.15 - 1.75	1.45
	3"	1.70 - 2.50	2.10
	4"	2.30 - 3.40	2.85
Polystyrene	5"	2.75 - 4.05	3.40
	1"	0.70 - 1.00	0.85
	2"	1.10 - 1.70	1.40
	3"	1.45 - 2.15	1.80
	4"	1.75 - 2.65	2.20
Fiberglass	6"	1.95 - 2.85	2.40
	3 1/2"	0.75 - 1.05	0.90
	6"	1.00 - 1.40	1.20

FLOORS AND ROOFS (Continued)

ROOF INSULATION (P.S.F.) (Continued)

PITCHED ROOFS	Size	R Value	Price Range	Typical
Fiberglass (Unfaced)	9"	R30	\$1.30 - \$1.90	\$1.60
	12"	R38	1.45 - 2.15	1.80
Loose Fill	9"	R24	2.60 - 3.80	3.20
	12"	R32	3.40 - 5.10	4.25
	15"	R40	4.25 - 6.35	5.30
Blown-In	11.5"	R26	1.30 - 1.90	1.60
	13"	R30	1.40 - 2.10	1.75
	16"	R38	1.50 - 2.30	1.90
	20"	R49	1.70 - 2.50	2.10

ROOF COVERING (P.S.F.S.A.)

FLAT ROOF COVERINGS (Does not include Insulation)

	Price Range	Typical
Built-up Composition 2 Ply	\$1.45 - \$1.95	\$1.70
3 Ply	1.80 - 2.40	2.10
4 Ply	2.00 - 2.70	2.35
Spray Polyurethane Foam (SPF)	4.50 - 7.00	5.75
EPDM (Rubber Membrane)	5.90 - 7.90	6.90
Modified Bitumen	5.80 - 7.80	6.80
Gravel	0.36 - 0.48	0.42

PITCHED ROOF COVERINGS (P.S.F.S.A.)

	Price Range	Typical
Asphalt (Light)	\$1.45 - \$2.15	\$1.80
Asphalt (Heavy)	2.10 - 3.10	2.60
Asbestos	3.95 - 5.85	4.90
Wood Shingles	3.20 - 4.80	4.00
Wood Shakes	3.75 - 5.65	4.70
Clay Tile	7.70 - 11.50	9.60
Cement Tile	4.40 - 6.60	5.50
Slate	7.80 - 11.70	9.75
Aluminum, Light (Corrugated or Interlocking) (0.024 Thick or Less)	2.95 - 4.45	3.75
Aluminum, Heavy (Corrugated or Interlocking) (0.032 Thick or Greater)	4.20 - 6.20	5.20
Aluminum (Flat or Standing Seam)	5.60 - 8.30	6.95
Corrugated Steel, Light (26 to 30 Gauge)	2.40 - 3.60	3.00
Corrugated Steel, Heavy (24 to 22 Gauge)	3.60 - 5.40	4.50
Steel (Flat or Standing Seam)	5.20 - 7.80	6.50
Copper (Flat or Standing Seam)	11.20 - 16.80	14.00
Steel Shingles (Includes Stone Coated Steel Shingles)	5.00 - 7.60	6.30
Composition Roll	0.95 - 1.45	1.20
Metal Tile	3.70 - 5.50	4.60
Fiberglass	4.20 - 6.30	5.25
Felt Paper	0.20 - 0.30	0.25

Roof covering and roof deck prices are per square foot of roof area. To convert building area to roof area use the following multipliers.

Roof Pitch Multiplier	
2/12	1.014
3/12	1.031
4/12	1.054
5/12	1.083
6/12	1.118
7/12	1.158
8/12	1.202
9/12	1.250
10/12	1.302
11/12	1.357
12/12	1.414

FLOORS AND ROOFS (Continued)

ROOF VENTS (VENTILATORS) (EACH)

Diameter	Stationary	
12"	\$225.00	- \$460.00
18"	350.00	- 630.00
24"	460.00	- 840.00
36"	700.00	- 1,125.00
48"	1,050.00	- 1,500.00

Use High for Aluminum.

Use Low for Galvanized and residential installations.

Add 30% for rotary type.

EXHAUST FANS (EACH)

Diameter	Flat Roof or Wall	
12"	\$650.00	- \$840.00
18"	825.00	- 1,100.00
24"	1,250.00	- 1,500.00
36"	2,150.00	- 2,750.00
48"	4,250.00	- 5,100.00
Bathroom Exhaust Fan	75.00	- 225.00

Price range is due to motor size.

Use low for residential attic fans.

SKYLIGHTS (P.S.F.)

	Price Range	
Skylights (Glass)	\$45.00	- \$100.00
Skylights (Plastic)	32.00	- 50.00
Skylights (Fiberglass)	28.50	- 42.50
Roof Hatch (Under 20 S.F.)	95.00	- 125.00
Roof Hatch (21 S.F. or Larger)	60.00	- 100.00

For roof hatches use high for aluminum, middle range for galvanized steel and low for steel.

ROOF GUTTERS AND DOWNSPOUTS (P.L.F.)

	Fiberglass or Vinyl	Galvanized Steel	Aluminum	Stainless Steel or Copper
4"	\$5.60	\$5.60	\$6.00	\$13.00
5"	5.90	6.35	6.75	15.25
6"	8.10	8.45	9.40	17.75

FRAMING

JUNIOR STEEL BEAMS (P.L.F.)

Size	Weight (#)	Typical
6" x 1 7/8"	4.40	\$11.05
8" x 2 1/4"	6.50	16.35
10" x 2 3/4"	9.00	22.65
12" x 3"	11.80	29.70

Note: Junior Beams are lightweight structural beams used as secondary floor and roof beams.

LIGHT STEEL BEAMS (P.L.F.)

Size	Weight Range (#)	Price Range	Typical
6" x 4"	12.00 - 15.00	\$30.20 - \$37.75	\$33.95
8" x 4"	13.00 - 16.00	32.70 - 40.15	36.45
10" x 4"	15.00 - 19.00	37.75 - 47.80	42.75
12" x 4"	19.00 - 22.00	47.80 - 49.00	48.40

AVERAGE STEEL BEAMS

Size	Weight Range (#)	Price Range	Typical
8" x 5 1/4"	18.00 - 21.00	\$37.55 - \$45.35	\$41.45
8" x 6 1/2"	24.00 - 28.00	42.90 - 50.05	46.50
10" x 5 3/4"	22.00 - 30.00	39.35 - 53.65	46.50
10" x 8"	33.00 - 45.00	59.00 - 80.45	69.75
12" x 6 1/2"	26.00 - 35.00	46.50 - 62.60	54.55
12" x 8"	40.00 - 50.00	71.50 - 89.40	80.45
12" x 10"	53.00 - 58.00	88.00 - 96.30	92.15
14" x 6 3/4"	30.00 - 38.00	53.65 - 67.95	60.80
14" x 8"	43.00 - 53.00	76.90 - 88.00	82.45
14" x 10"	61.00 - 74.00	101.25 - 122.85	112.05
14" x 12"	78.00 - 84.00	121.70 - 131.05	126.35
14" x 16"	142.00 - 202.00	221.50 - 315.10	268.30
16" x 7"	36.00 - 50.00	64.35 - 83.00	73.70
16" x 8 1/2"	58.00 - 78.00	96.30 - 121.70	109.00
16" x 11 1/2"	88.00 - 96.00	137.30 - 149.75	143.50
18" x 7 1/2"	50.00 - 60.00	83.00 - 99.60	91.30
18" x 8 3/4"	64.00 - 85.00	106.25 - 132.60	119.40
18" x 11 3/4"	96.00 - 114.00	134.15 - 177.85	156.00
21" x 8 1/4"	62.00 - 73.00	102.90 - 121.20	112.05
21" x 9"	82.00 - 96.00	129.90 - 149.75	139.85
21" x 13"	112.00 - 142.00	194.70 - 221.50	208.10
24" x 9"	76.00 - 94.00	118.55 - 146.65	132.60
24" x 12"	100.00 - 120.00	156.00 - 187.20	171.60
24" x 14"	130.00 - 160.00	202.80 - 249.60	226.20
27" x 10"	94.00 - 114.00	146.65 - 177.80	162.20
27" x 14"	145.00 - 177.00	226.20 - 276.10	251.15
30" x 10 1/2"	108.00 - 132.00	168.50 - 205.90	187.20
30" x 15"	172.00 - 210.00	268.30 - 327.60	297.95
36" x 12"	150.00 - 194.00	234.00 - 302.65	268.30
36" x 16 1/2"	230.00 - 300.00	358.80 - 468.00	413.40

STEEL "H" COLUMNS OR TUBE SECTIONS (P.L.F.)

Size	Weight Range (#)	Price Range	Typical
4" x 4"	13.00 - —	—	\$23.90
5" x 5"	16.00 - 18.50	\$29.45 - \$34.05	31.75
6" x 6"	15.50 - 25.00	28.50 - 38.50	33.50
8" x 8"	31.00 - 67.00	47.75 - 94.45	71.10
10" x 10"	49.00 - 112.00	75.45 - 151.20	113.35
12" x 12"	65.00 - 119.00	91.65 - 160.65	126.15
14" x 14"	87.00 - 136.00	117.45 - 183.60	150.55

Add \$0.60 P.L.F. of each inch in thickness for concrete fill.

FRAMING (Continued)

PIPE COLUMNS (P.L.F.)

Size	Weight (#)	Typical
4"	10.79	\$21.35
6"	18.97	37.55
8"	28.55	46.80
10"	40.48	66.40

Add \$0.60 P.L.F. per inch of diameter for concrete fill.

STEEL CHANNELS

Size	Weight Range (#)	Price Range	Typical
3"	4.10 - 6.00	\$10.30 - \$15.10	\$12.70
4"	5.40 - 7.25	13.60 - 18.25	15.95
5"	6.70 - 9.00	16.85 - 22.65	19.75
6"	8.20 - 13.00	20.65 - 32.70	26.70
7"	9.80 - 14.75	24.65 - 37.10	30.90
8"	11.50 - 18.75	28.95 - 47.15	38.05
10"	15.30 - 30.00	38.50 - 53.65	46.10
12"	20.70 - 40.00	37.00 - 71.55	54.30
18"	42.70 - 58.00	76.35 - 96.30	86.35

STEEL ANGLES

Size	Weight Range (#)	Price Range	Typical
2" x 2 1/2"	2.75 - 5.30	\$6.90 - \$13.35	\$10.15
3" x 2 1/2"	4.50 - 8.50	11.30 - 21.40	16.35
4" x 3 1/2"	6.20 - 14.70	15.60 - 37.00	26.30
5" x 3 1/2"	7.00 - 19.80	17.60 - 49.80	33.70
6" x 4"	10.30 - 27.20	25.90 - 48.65	37.30

REINFORCED CONCRETE BEAMS (P.L.F.)

Size	Typical
4" x 6"	\$19.70
6" x 8"	31.30
8" x 10"	39.40
10" x 12"	47.20
10" x 18"	62.50
12" x 16"	63.05
12" x 20"	73.25
12" x 24"	85.25
12" x 36"	124.70
16" x 24"	98.55
16" x 36"	135.30
16" x 42"	154.35
16" x 48"	173.40

REINFORCED CONCRETE COLUMNS (P.L.F.)

Size	Round	Square
12"	\$42.20	\$56.00
16"	67.70	78.40
18"	80.85	98.80
20"	92.85	118.60
24"	123.00	146.10
30"	175.60	196.85
36"	233.80	244.45

TIMBER FRAMING (P.L.F.)

Size	Price Range	Typical	Size	Price Range	Typical
4" x 4"	\$4.45 - \$4.95	\$4.70	8" x 16"	\$36.60 - \$40.45	\$38.50
6" x 6"	9.30 - 10.30	9.80	10" x 10"	27.05 - 29.85	28.45
6" x 12"	18.10 - 20.00	19.05	10" x 12"	32.60 - 36.00	34.30
8" x 8"	16.40 - 18.10	17.25	12" x 12"	38.00 - 42.00	40.00
8" x 12"	27.05 - 29.85	28.45	14" x 14"	53.70 - 59.35	56.50

Timbers having over 14 B.F. per L.F. use \$3.35 per B.F.

PLUMBING

		Price Range	Typical
Rough Plumbing (Sewer, Water, Drain, etc.)		\$3,750 - \$6,250	\$5,000
Lavatory (Wall Mount or Pedestal)		550 - 950	750
Lavatory (Vanity w/ Cabinet Base)		975 - 1,625	1,300
Water Closet (Residential, Floor Mount)		600 - 1,000	800
Water Closet (Commercial, Wall Mount)		975 - 1,625	1,300
Tub (Use Upper Price w/ Shower Surround)		975 - 1,625	1,300
Whirlpool or Soaker Tub		2,700 - 4,500	3,600
Sink (Kitchen Type)		600 - 1,000	800
Stall Shower (Fiberglass or Equivalent)		900 - 1,500	1,200
Custom Tile Shower Stall (Tile Surround w/ Glass Entry)		1,800 - 3,000	2,400
Urinal (Floor Type)		1,125 - 1,875	1,500
Urinal (Wall Type)		975 - 1,625	1,300
Urinal (4 - 5' Trough Type)		1,200 - 2,000	1,600
Bidet		825 - 1,375	1,100
Hot Water Tanks (Residential & Small Commercial)	20 Gallon	550 - 950	750
	30 Gallon	600 - 1,000	800
	40 Gallon	600 - 1,100	850
	52 Gallon	675 - 1,125	900
	75 Gallon	900 - 1,500	1,200
	(Commercial and Industrial) 100 Gallon	2,400 - 4,000	3,200
	150 Gallon	2,800 - 4,700	3,750
Tankless Water Heaters	Small Capacity (<150,000 BTU or 6.4 GPM)	1,050 - 1,750	1,400
	Large Capacity (>150,001 BTU or 6.5 GPM)	1,350 - 2,250	1,800
3 Fixture Bathroom		2,550 - 4,250	3,400
Stall Shower Bathroom		2,475 - 4,125	3,300
Custom Tile Bathroom or Custom Tile Stall Shower Bathroom		3,375 - 5,625	4,500
3 Fixture Custom Bathroom (Whirlpool or Soaker Tub or equivalent)		4,275 - 7,125	5,700
4 Fixture Custom Bathroom (Includes Shower & Whirlpool or Soaker Tub)		5,250 - 8,750	7,000
5 Fixture Custom Bathroom (Includes Shower, Whirlpool Tub & Double Vanity)		6,225 - 10,375	8,300
Toilet Room (Water Closet & Lavatory)		1,575 - 2,625	2,100
Service Sink – Fiberglass		500 - 850	675
Service Sink – Porcelain		900 - 1,500	1,200
36" Circular Wash Fountain	Terrazzo or Fiberglass	2,550 - 4,250	3,400
	Stainless Steel	2,925 - 4,875	3,900
54" Circular Wash Fountain	Terrazzo or Fiberglass	2,925 - 4,875	3,900
	Stainless Steel	3,375 - 5,625	4,500
36" Semi-Circular Wash Fountain	Terrazzo or Fiberglass	2,250 - 3,750	3,000
	Stainless Steel	2,625 - 4,375	3,500
54" Semi-Circular Wash Fountain	Terrazzo or Fiberglass	2,625 - 4,375	3,500
	Stainless Steel	3,000 - 5,000	4,000
Industrial Wash Sinks	4'	1,500 - 2,500	2,000
	8'	2,700 - 4,500	3,600
5 Person Circular Column Shower		2,250 - 3,750	3,000
3 Person Semi-Circular Column Shower		1,800 - 3,000	2,400
2 Person Column Shower		1,575 - 2,625	2,100
Column Shower (No Partitions) (Per Head)		550 - 950	750
Drinking Fountains (Add 50% if Water Cooled)		675 - 1,125	900
Hot Tubs (Spas)		4,950 - 8,250	6,600
Stainless Steel Sinks (Lounge Type)	2 Tub	900 - 1,500	1,200
	3 Tub	1,350 - 2,250	1,800
Sauna (P.S.F.)	10 – 25 S.F.	210 - 350	280
	26 – 50 S.F.	170 - 280	225
	51 – 75 S.F.	135 - 225	180
	76 – 100 S.F.	115 - 185	150

Average interior rough-ins included in above fixture prices. Sewer and water lines and hook-up are shown separate.

Prices may increase as much as 100% for excellent, handicapped or specially designed fixtures.

Large commercial or industrial properties where plumbing centers are spaced over 25' apart, use upper range or add for additional piping.

Use lower to mid-range for most typical residential fixtures.

PIPING

INTERIOR PIPING (P.L.F.)

	Water & Fire Protection				Drain & Sewer	
	Black	Galvanized	Copper	PVC	Cast Iron	PVC
1/2"	\$9.05	\$9.50	\$9.75	\$7.85	—	—
3/4"	11.00	11.50	11.75	8.15	—	—
1"	12.80	14.15	14.75	8.90	—	—
1 1/2"	18.25	19.40	21.10	11.50	\$14.90	\$9.50
2"	23.25	25.00	29.60	13.00	19.40	10.60
3"	34.50	36.20	51.30	17.60	24.65	14.50
4"	46.60	48.50	83.75	22.40	29.75	18.25
6"	105.25	116.50	163.25	30.60	42.60	25.50
8"	144.50	158.00	239.00	—	69.00	—
10"	206.50	227.00	—	—	103.00	—

Above prices include typical 90° ells, tees, caps, couplings, unions, etc. Prices could vary 25% depending on length, location, number of connectors, etc.

See page 4 – 37 for underground piping.

TILING

Type (P.S.F.S.A.)	Price Range	Typical
Ceramic Walls & Floors	\$10.00 - \$15.50	\$12.75
Quarry Tile	10.50 - 16.00	13.25
Quarry Tile (Glazed)	12.00 - 18.00	15.00
Marble/Granite (Thin Gauge)	17.50 - 26.50	22.00
Natural Stone	12.50 - 19.50	16.00

ELECTRICAL

COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL

CONTROL CENTERS

Amps	Price Range	Typical
100	\$3,700 - \$4,500	\$4,100
200	6,650 - 8,150	7,400
400	16,200 - 19,800	18,000
600	23,400 - 28,600	26,000
800	31,500 - 38,500	35,000
1,200	43,600 - 53,400	48,500

Add 50% to 100% for Heavy Industrial or Institutional Control Centers.

OUTLETS

Average electrical outlet costs include normal wiring, but do not include fixtures.

	Price Range	Typical
Flexible Conduit	\$90.00 - \$140.00	\$115.00
Rigid Conduit	125.00 - 195.00	160.00
Nonmetallic Cable (Romex)	55.00 - 85.00	70.00
Light Switches	75.00 - 115.00	95.00

CONDUIT & WIRE (P.L.F.)

Conduit Size	Wire Size	Price Range	Typical
1/2"	14#	\$6.50 - \$8.00	\$7.25
3/4"	12#	7.75 - 9.75	8.75
1"	8#	10.50 - 12.80	11.65
1 1/2"	2#	17.50 - 21.50	19.50
2"	2/0	22.00 - 27.00	24.50
3"	500 MCM	44.50 - 55.00	49.75

ELECTRICAL FIXTURES (PER FIXTURE)

FLUORESCENT

	Price Range	Typical
2 tube 48"	\$135.00 - \$165.00	\$150.00
2 tube 96"	160.00 - 200.00	180.00
4 tube 48"	175.50 - 214.50	195.00

Recessed - Add 50 – 75% to above prices.

ELECTRICAL (Continued)

ELECTRICAL FIXTURES (PER FIXTURE) (Continued)

INCANDESCENT			Price Range	Typical
150 Watts			\$100.00 - \$130.00	\$115.00
300 Watts			140.00 - 180.00	160.00
500 Watts			200.00 - 260.00	230.00
HIGH PRESSURE SODIUM OR METAL HALIDE			Price Range	Typical
Low Bay	70 Watts		\$380.00 - \$470.00	\$425.00
	150 Watts		400.00 - 490.00	445.00
	250 Watts		435.00 - 535.00	485.00
	400 Watts		455.00 - 565.00	510.00
High Bay	70 Watts		410.00 - 510.00	460.00
	150 Watts		430.00 - 530.00	480.00
	250 Watts		455.00 - 565.00	510.00
	400 Watts		495.00 - 605.00	550.00
Mercury Vapor	175 Watts		405.00 - 495.00	450.00
	250 Watts		455.00 - 565.00	510.00
	400 Watts		485.00 - 595.00	540.00
LED			Price Range	Typical
Low Bay	40 Watts	(1,600 Lumens ±)	\$400.00 - \$490.00	\$445.00
	60 Watts	(3,600 Lumens ±)	435.00 - 535.00	485.00
	100 Watts	(10,000 Lumens ±)	455.00 - 565.00	510.00
High Bay	150 Watts	(22,500 Lumens ±)	630.00 - 770.00	700.00
	250 Watts	(35,000 Lumens ±)	810.00 - 990.00	900.00
	400 Watts	(75,000 Lumens ±)	1,080.00 - 1,320.00	1,200.00

Use 200 - 300% of all above fixture prices for explosion proof fixtures.

OCCUPANCY

	Price Range	Typical
Apartments	\$5.25 - \$8.25	\$6.75
Apartments, Assisted Living	8.00 - 12.50	10.25
Apartments, High Rise	7.75 - 11.75	9.75
Auto Repair	8.00 - 12.00	10.00
Auto Service	6.75 - 10.25	8.50
Auto Showroom	8.00 - 12.50	10.25
Bank	13.00 - 20.00	16.50
Bars/Lounges	10.00 - 15.00	12.50
Bowling Alley	7.75 - 11.75	9.75
Child Day Care	10.50 - 15.50	13.00
Convenience Store	9.00 - 13.50	11.25
Funeral Homes	7.75 - 11.75	9.75
Grocery Store	8.00 - 12.50	10.25
Hotels	7.00 - 10.50	8.75
Hotel Commons	9.75 - 14.75	12.25
Industrial (Heavy)	10.00 - 16.00	13.00
Industrial (Light)	5.00 - 7.50	6.25
Laundromats	8.00 - 12.50	10.25
Nursing Homes	13.50 - 20.00	16.75
Office Buildings (General)	10.00 - 15.00	12.50
Office Buildings (Medical & Dental)	11.25 - 17.25	14.25
Parking Garages	2.50 - 4.00	3.25
Restaurants/Café	10.50 - 15.50	13.00
Restaurant (Fast Food)	15.50 - 23.50	19.50
Retail Stores (Large)	10.50 - 15.50	13.00
Retail Stores (Small)	7.25 - 10.75	9.00
Service Station w/ Bays	8.00 - 12.00	10.00
Shopping Centers (Anchor Stores)	10.50 - 15.50	13.00
Shopping Centers (Neighborhood)	7.25 - 10.75	9.00
Shopping Centers (Regional)	10.50 - 15.50	13.00
Theaters	10.50 - 15.50	13.00
Warehouse (Distribution)	4.50 - 7.00	5.75
Warehouse (Lighting Only)	1.25 - 2.25	1.75
Warehouse (Storage)	2.25 - 3.75	3.00
Warehouse (Transit)	5.00 - 8.00	6.50

ELECTRICAL (Continued)

RESIDENTIAL

SERVICE ENTRANCE

Amps	Price Range	Typical
100 Amp (Single Phase)	\$750.00 - \$1,150.00	\$950.00
200 Amp (Single Phase)	1,300.00 - 2,000.00	1,650.00

BRANCH CIRCUITS

	Price Range	Typical
Outlets and Switches	\$50.00 - \$80.00	\$65.00
Basic Light Fixtures	70.00 - 110.00	90.00
Fire Detectors (w/ Unit)	75.00 - 115.00	95.00
Phone Circuit	40.00 - 60.00	50.00
Cable Circuit	30.00 - 50.00	40.00
Door Chimes (w/ Unit)	80.00 - 120.00	100.00
Dryer Circuit	140.00 - 210.00	175.00
Hood Fan	60.00 - 90.00	75.00
Range Circuit	160.00 - 240.00	200.00
Furnace Circuit	100.00 - 150.00	125.00
Air Conditioning Circuit	160.00 - 240.00	200.00
Bathroom Exhaust	120.00 - 180.00	150.00
Garbage Disposal	80.00 - 120.00	100.00
Dishwasher	70.00 - 110.00	90.00

YARD LIGHTING

METAL POLE WITH ONE LIGHT

	Pole Height								Add for Additional Light Units
	12'	16'	20'	25'	30'	35'	40'	50'	
Incandescent									
500 Watt	\$1,500	\$1,900	\$2,300	\$2,750	\$3,200	\$3,700	\$4,150	\$5,050	\$400
1,500 Watt	1,650	2,050	2,450	2,900	3,350	3,850	4,300	5,200	\$550
Fluorescent or Quartz Iodine									
500 Watt	\$1,950	\$2,350	\$2,750	\$3,200	\$3,650	\$4,150	\$4,600	\$5,500	\$850
1,000 Watt	2,100	2,500	2,900	3,350	3,800	4,300	4,750	5,650	1,000
Mercury Vapor									
400 Watt	\$2,100	\$2,500	\$2,900	\$3,350	\$3,800	\$4,300	\$4,750	\$5,650	\$1,000
1,000 Watt	2,350	2,750	3,150	3,600	4,050	4,550	5,000	5,900	1,250
High Pressure Sodium or Metal Halide									
250 Watt	\$2,150	\$2,550	\$2,950	\$3,400	\$3,850	\$4,350	\$4,800	\$5,700	\$1,050
400 Watt	2,400	2,800	3,200	3,650	4,100	4,600	5,050	5,950	1,300
1,000 Watt	2,700	3,100	3,500	3,950	4,400	4,900	5,350	6,250	1,600
LED									
125 Watt									
17,500 Lumens +/-	\$2,350	\$2,750	\$3,150	\$3,600	\$4,050	\$4,550	\$5,000	\$5,900	\$1,250
200 Watt									
28,000 Lumens +/-	2,500	2,900	3,300	3,750	4,200	4,700	5,150	6,050	1,400
320 Watt									
42,500 Lumens +/-	2,900	3,300	3,700	4,150	4,600	5,100	5,550	6,450	1,800

EV (ELECTRIC VEHICLE) CHARGING STATIONS (COST PER UNIT)

	Single Unit			Multiple Units		
	Price Range	Typical		Price Range	Typical	
Home Charging Stations	\$500 - \$1,200	\$850				
Parking Garage EVSE	4,000 - 7,000	5,500		\$3,000 - \$5,000	\$4,000	
Curbside EVSE	6,500 - 11,500	9,000		4,500 - 7,500	6,000	
Curbside DC Fast Charging EVSE (Electric Vehicle Supply Equipment)	45,000 - 75,000	60,000		40,000 - 60,000	50,000	

Curbside EVSE



Curbside DC Fast Charging EVSE



HVAC

HEATING

BTU Rating	Floor and Wall Furnaces	Forced or Gravity Hot Air-Central	Suspended Unit Heaters	Industrial Space Heaters	Make-Up Air Units
20,000	\$1,350	—	—	—	—
30,000	1,450	—	\$1,350	—	—
40,000	1,550	—	1,400	—	—
50,000	1,650	\$2,000	1,550	—	—
60,000	1,775	2,150	1,600	—	—
75,000	2,025	2,300	1,700	—	—
85,000	—	2,400	1,800	—	—
100,000	—	2,550	1,850	—	—
125,000	—	2,800	2,000	—	—
150,000	—	3,050	2,200	\$5,400 (865 CFM)	—
200,000	—	3,550	2,500	6,750 (1,150 CFM)	—
300,000	—	5,200	3,400	9,100 (1,730 CFM)	—
400,000	—	—	4,750	11,600 (2,300 CFM)	\$13,400 (3,350 CFM)
500,000	—	—	—	14,000 (2,880 CFM)	15,800 (4,190 CFM)
750,000	—	—	—	19,700 (4,320 CFM)	21,400 (6,285 CFM)
1,000,000	—	—	—	25,500 (5,760 CFM)	26,950 (8,380 CFM)
2,000,000	—	—	—	40,500 (11,520 CFM)	45,900 (16,760 CFM)
3,000,000	—	—	—	54,000 (17,280 CFM)	62,000 (25,140 CFM)
4,000,000	—	—	—	—	78,500 (33,510 CFM)

Floor & Wall Furnaces: Prices are single unit type with thermostatic control, simple.

Forced & Gravity: Thermostat controlled units for central heating systems. Ductwork and grills must be added separately. Add \$175 to \$225 per supply air run and \$100 to \$160 per cold air return run for residential applications and \$225 to \$300 per supply air and \$125 to \$200 per cold air return for commercial/industrial applications. Efficiency units will run 40% to 80% higher.

For zone heating add \$1,250 to \$1,900 for simple zones (requiring an additional damper and thermostat) or \$2,750 to \$3,250 for a complex zone (require additional damper, thermostat and duct line) in residential applications. Add 30% to 35% for commercial/industrial applicants.

Suspended Unit Heaters: Cost are for each gas fired unit complete with fans. Add \$225 for electric ignition.

Industrial Space Heaters: Oil fired units complete with fans, controls, stub ducts on floor models, piping, etc.

Make-up Air Units: Gas fired fresh air type. 1,000,000 BTU and less are roof top mounted. 2,000,000 BTU and more are stand alone units, price does not include concrete pad.

Commercial type heating will vary considerably with size of building, the BTU rating, zone controlling, amount of partitions, fenestration, etc. The prices below are for average heating systems per floor (i.e. – double price for 2 story building). Range prices may be utilized to adjust for quality and size. (For small areas or high quality use higher prices, for large areas or low quality use lower prices.)

Type of Heating	Price Per S.F.		
	Price Range		Typical
Hot Water	\$5.75	- \$8.75	\$7.25
Hot Water Radiant	6.00	- 9.00	7.50
Hot Water in Floor	3.00	- 5.00	4.00
Hot Water in Floor (Multiple Zones)	5.75	- 8.75	7.25
Steam (1 Pipe)	4.50	- 7.00	5.75
Steam (2 Pipe)	5.25	- 8.25	6.75
Forced Hot Air	4.00	- 6.50	5.25
Electric Heating	3.00	- 5.00	4.00
Radiant Heating (Vacuum Gas)	2.25	- 3.75	3.00
Suspended Unit Heaters	2.00	- 3.00	2.50
Industrial Space Heaters	2.00	- 3.50	2.75
*Make-up Air Units (Heat)	2.00	- 3.50	2.75
*Make-up Air Units (Heat & Air Cond.)	5.00	- 8.00	6.50

*Prices are for single zone units. Add 200% for multi-zone units.

HVAC (Continued)

HEATING (Continued)

HEAT PUMPS

	Price Per S.F.			Price Per Ton		
	Price Range	Typical		Price Range	Typical	
Air to Air Heat Pumps	\$6.75 - \$8.25	\$7.50		\$4,050 - \$4,950	\$4,500	
Ground Loop Heat Pumps (Geo-Thermal Heating)						
Well System	7.90 - 9.50	8.70		4,700 - 5,700	5,200	
Closed Loop System	9.20 - 10.80	10.00		5,400 - 6,600	6,000	
Horizontal Loop System	10.50 - 12.00	11.25		6,100 - 7,400	6,750	
Vertical Loop System	11.70 - 13.20	12.50		6,750 - 8,250	7,500	

Above prices are for water source to air systems. Add \$2.50/S.F. for water to water systems.

AIR CONDITIONING

PACKAGE TYPE UNITS

Tons	Price Per Ton		
	Price Range	Typical	
2 ton	\$1,600 - \$2,400	\$2,000	
3 - 5 ton	1,450 - 2,150	1,800	
7.5 - 10 ton	1,300 - 2,000	1,650	
15 - 20 ton	1,200 - 1,900	1,550	
25 - 30 ton	1,150 - 1,750	1,450	

Add for each outlet duct \$125 to \$225.

CENTRAL SYSTEMS (PRICE PER TON)

Tons	Air Conditioning Only		Heating and Air Conditioning	
	Price Range	Typical	Price Range	Typical
5 - 10	\$2,750 - \$4,150	\$3,450	\$3,950 - \$5,900	\$4,925
15 - 50	2,500 - 3,800	3,150	3,575 - 5,375	4,475
75 - 100	2,275 - 3,425	2,850	3,250 - 4,850	4,050
150 - 250	2,150 - 3,250	2,700	3,075 - 4,625	3,850
300 and over	2,040 - 3,050	2,550	2,925 - 4,375	3,650

MINI-SPLIT HEATING & COOLING SYSTEMS (DUCTLESS SYSTEMS) (PRICE PER UNIT)

BTU		Heat & Air Conditioning		Air Conditioning Only	
Cooling	Heating	Price Range	Typical	Price Range	Typical
8,000	5,000	\$1,800 - \$2,600	\$2,200	\$1,600 - \$2,400	\$2,000
12,000	10,000	2,000 - 3,000	2,500	1,800 - 2,800	2,300
15,000	13,000	2,250 - 3,350	2,800	2,050 - 3,150	2,600
18,000	16,000	2,550 - 3,850	3,200	2,350 - 3,650	3,000

PACKAGE TERMINAL AIR CONDITIONERS (PTAC UNITS) (PRICE PER UNIT)

BTUH	BTU	Heat & Air Conditioning	
Cooling	Heating	Price Range	Typical
6,000	8,800	\$900 - \$1,300	\$1,100
9,000	13,900	1,300 - 1,900	1,600
12,000	13,900	1,450 - 2,150	1,800
15,000	13,900	1,700 - 2,500	2,100

HVAC REQUIREMENTS BY OCCUPANCY

Where the BTU and/or ton capacity must be estimated, the following table may be used as a guide. Cooling and heating requirements vary with exposure walls, openings, occupancy, etc.

	Heating # BTU per S.F. Range	Air Conditioning # S.F./1 Ton Range
Apartments	20 - 30	300 - 500
Apartments (High Rise), Apartments (Assisted Living)	30 - 40	250 - 400
Banks	50 - 60	150 - 250
Bars/Lounges	75 - 90	100 - 200
Bowling Alley	55 - 75	250 - 400
Hotels	30 - 40	200 - 320
Hotel Commons	30 - 55	200 - 400
Office Buildings (General), Nursing Homes, Child Day Care Centers	40 - 50	200 - 300
Office (Medical)	25 - 40	200 - 300
Restaurants/Cafes	50 - 60	100 - 200
Stores (Convenience), Stores (Small Retail), Shopping Centers (Neighborhood)	40 - 55	200 - 300
Stores (Grocery)	30 - 40	250 - 400
Stores (Large Retail), Shopping Centers (Regional), Stores (Anchor), Laundromats, Funeral Homes, Automobile Showroom & Sales	30 - 40	300 - 400
Theaters	35 - 45	200 - 300

HVAC (Continued)

NORMAL COMBINATION HEATING & AIR CONDITIONING (P.S.F.)

Occupancy	Price Range	Typical
Apartment Buildings	\$6.00 - \$9.50	\$7.75
Apartment Buildings (Assisted Living)	8.00 - 12.00	10.00
Apartment Buildings (High Rise)	8.00 - 12.00	10.00
Automobile Showroom & Sales	8.75 - 13.25	11.00
Banks	12.75 - 19.25	16.00
Bars / Lounges	17.50 - 26.50	22.00
Bowling Alley	10.50 - 16.00	13.25
Child Day Care	10.00 - 15.50	12.75
Funeral Homes	7.50 - 11.50	9.50
Hotels	9.00 - 14.00	11.50
Hotel Commons	10.50 - 16.00	13.25
Laundromats	8.75 - 13.25	11.00
Nursing Homes	12.00 - 18.00	15.00
Office Buildings (General)	10.25 - 15.75	13.00
Office Buildings (Medical & Dental)	13.25 - 20.25	16.75
Restaurants / Café	15.25 - 23.25	19.25
Shopping Centers (Anchor Stores)	8.75 - 13.25	11.00
Shopping Centers (Neighborhood)	10.25 - 15.75	13.00
Shopping Centers (Regional)	8.75 - 13.25	11.00
Stores (Convenience)	10.50 - 16.00	13.25
Stores (Grocery)	9.00 - 14.00	11.50
Stores (Large Retail)	9.00 - 13.50	11.25
Stores (Small Retail)	10.25 - 15.75	13.00
Theaters (Cinemas)	11.25 - 17.25	14.25

SPRINKLER SYSTEMS (P.S.F.)

FIRE SPRINKLER SYSTEMS

Type	Price Range	Typical
Concealed Wet	\$2.00 - \$4.00	\$3.00
Exposed Wet	1.75 - 3.75	2.75
Exposed Dry	2.50 - 4.50	3.50
Chemical (Non Water)	12.50 - 22.50	17.50

Typical square foot cost are based on a 100,000 S.F. building (chemical systems are based on 3,000 S.F.) with one head per 110 S.F. of sprinkler area. Use upper range for small areas and lower range for large areas.

YARD SPRINKLERS (IRRIGATION) (P.S.F.)

Size (S.F.)	Price Range	Typical
5,000 or Less	\$0.38 - \$0.58	\$0.48
5,001 to 10,000	0.30 - 0.50	0.40
10,001 or Above	0.24 - 0.40	0.32

Add up to 100% for very small areas or complex properties (narrow grass areas, irregular shapes, etc.)

STAIRS

Type (Price Per Tread)	Price Range	Typical
Wood Low Cost (Basement)	\$45.00 - \$65.00	\$55.00
Average	95.00 - 145.00	120.00
Oak (Hardwood)	175.00 - 265.00	220.00
Steel Grating	250.00 - 370.00	310.00
Checkered Plating	270.00 - 410.00	340.00
Steel w/ Concrete Treads	240.00 - 360.00	300.00
Reinforced Concrete Stairs	210.00 - 310.00	260.00
Add for Steel Tread on Concrete	30.00 - 50.00	40.00
Add for Terrazzo Tread	50.00 - 80.00	65.00
Add for Marble, Slate or Equivalent	50.00 - 70.00	60.00

ELEVATORS & MOVING STAIRS

FREIGHT ELEVATORS - ELECTRIC

Capacity Pounds	Speed-Feet Per Minute							
	100		200		300		400	
	Manual	Power	Manual	Power	Manual	Power	Manual	Power
2,000	\$81,800	\$101,100	\$89,600	\$109,900	\$98,000	\$119,200	\$102,100	\$122,300
2,500	83,900	103,400	92,500	113,200	101,700	123,300	106,400	127,900
3,000	85,700	105,600	95,400	116,400	105,400	127,400	110,800	132,800
4,000	89,600	110,100	101,100	122,100	112,700	136,400	119,600	143,100
5,000	93,600	114,800	106,300	129,200	121,300	145,900	127,000	151,400
6,000	98,100	120,000	112,200	135,700	127,500	152,400	132,800	157,900
8,000	106,300	129,900	122,500	147,500	137,500	164,200	144,500	169,700
10,000	121,200	147,200	141,500	153,000	158,700	169,700	166,800	175,300
15,000	147,700	177,400	178,300	195,500	199,600	213,400	209,600	216,800

If not self-leveling deduct \$15,500 from above.

Manual Doors (2 Stops = Base)

Add \$8,700 per stop extra.

Power Doors (2 Stop = Base)

Add \$15,000 per stop extra.

FREIGHT ELEVATORS - HYDRAULIC

Capacity Pounds	Speed-Feet Per Minute							
	50		100		125		150	
	Manual	Power	Manual	Power	Manual	Power	Manual	Power
2,000	\$49,200	\$67,900	\$51,700	\$68,800	\$53,200	\$70,000	\$54,900	\$71,800
3,000	54,600	75,000	59,000	76,100	58,900	77,100	61,000	78,900
4,000	58,800	79,900	61,600	80,900	63,200	81,900	65,400	83,800
5,000	64,100	85,600	66,400	86,600	67,900	87,700	69,200	89,500
6,000	65,900	87,600	68,000	88,600	69,200	89,600	71,900	91,500
8,000	75,800	99,400	77,700	100,400	77,700	101,500	81,500	103,300
10,000	81,400	102,200	83,300	103,200	84,700	104,200	86,600	106,100
12,000	87,800	109,000	89,700	110,000	90,200	111,000	92,500	112,900
15,000	97,700	119,100	99,500	120,100	100,100	121,100	102,300	123,000
20,000	108,500	129,500	109,500	131,600	112,700	136,100	121,000	143,300

Manual Doors (2 Stops = Base)

Add \$8,700 per stop extra.

Power Doors (2 Stop = Base)

Add \$15,000 per stop extra.

PASSENGER ELEVATORS - ELECTRIC

Capacity Pounds	Speed-Feet Per Minute					
	Geared				Gearless	
	100	200	300	400	500	600
1,200	\$73,200	—	—	—	—	—
1,500	76,800	\$95,600	\$108,600	\$119,100	—	—
2,000	88,700	108,200	122,600	133,500	\$199,300	\$217,700
2,500	99,000	120,000	134,300	145,700	211,600	232,600
3,000	108,300	130,600	145,500	157,100	224,500	246,700
3,500	116,800	139,500	154,800	166,300	237,500	260,800
4,000	125,300	148,300	164,200	175,600	251,100	276,100
5,000	138,500	162,000	178,000	195,700	279,300	307,000

Add 30 % to geared elevator prices if gearless.

Per Stop (2 Stops = Base)

Add \$11,000 per stop extra.

PASSENGER ELEVATORS - HYDRAULIC

Capacity Pounds	Speed-Feet Per Minute					
	50	75	100	125	150	200
1,500	\$52,500	\$58,500	\$63,600	\$65,400	\$67,000	\$71,600
2,000	55,700	61,300	66,300	67,900	69,600	74,200
2,500	57,500	63,200	69,000	70,700	72,300	76,800
3,000	61,800	67,600	72,400	74,200	75,800	80,400
3,500	64,800	71,200	76,100	77,900	79,500	84,000
4,000	67,300	73,700	78,900	80,700	82,300	85,700
5,000	75,600	82,200	87,900	89,600	91,200	95,900

Per Stop (2 Stops = Base)

Add \$12,000 per stop extra.

ELEVATORS & MOVING STAIRS (Continued)

MOVING STAIRS

Vertical Rise	32" Wide	40" Wide	48" Wide	Add for Stainless Steel Balustrade
10'	\$153,200	\$159,000	\$164,700	\$7,400
12'	158,200	164,200	170,100	8,400
13'	160,600	166,700	172,800	8,800
14'	163,200	169,400	175,500	9,200
15'	165,600	172,000	178,200	9,600
18'	173,200	179,800	186,300	10,900
20'	178,200	185,000	191,700	11,800
22'	187,600	193,700	199,800	12,300
25'	201,800	207,000	212,000	12,800

"Vertical Rise" is floor to floor height.

Each stairway is counted separately even if adjacent. (i.e. – A department store with one "up" and one "down" stair is counted as two stairs.)

DOCK LEVELERS

	Price Range	Typical
Mechanical	\$5,600 - \$8,000	\$6,800
Air Bag	6,000 - 8,400	7,200
Hydraulic	9,200 - 11,800	10,500

Cost will vary based on platform size and weight capacity. Typical weight range is from 20,000# to 45,000#.

Edge of Dock Levelers	Mechanical	Air Bag	Hydraulic
	\$1,300	\$2,000	\$3,000

	Price Range	Typical
Overhead Dock Door Seals	\$1,050 - \$1,550	\$1,300
Vehicle Restraints (Dock Locks)	2,000 - 3,000	2,500

MISCELLANEOUS LIFTS

	Price Range	Typical
Sidewalk Lift	\$37,500 - \$52,500	\$45,000
Dumbwaiters		
Manual	6,000 - 12,000	9,000
Add Per Stop (2 Stops = Base)		3,000
Electric	20,000 - 40,000	30,000
Add Per Stop (2 Stops = Base)		6,000
Residential Elevator	22,000 - 34,000	28,000
Add Per Stop (2 Stops = Base)		4,000
Wheelchair Lift (5' Rise)	11,000 - 17,000	14,000
Add \$2,000 for each additional 1' of Rise		
Chair Lifts (Per Foot of Rise)	400 - 1,000	700
Manlifts (Per Foot of Rise)	450 - 650	550

(Above price is based on one stop every 15')

SCALES

TRUCK

The following truck scale costs include cost of pit (if applicable), lever and indicating mechanism, readout, card printer and normal freight and installation charges.

Weight	Platform Size (Length x Width)	Typical Cost		Add for Additional Width		
		With Pit	Pitless	11'	12'	14'
20 Ton (Single Axle)	12 x 10	\$36,400	\$29,100	\$500	\$700	\$1,500
20 Ton	24 x 10	38,500	30,800	1,100	1,400	3,000
20 Ton	34 x 10	41,100	32,900	1,500	1,900	4,300
30 Ton	24 x 10	40,400	32,300	1,100	1,400	3,000
30 Ton	34 x 10	43,200	34,600	1,500	1,900	4,300
50 Ton	50 x 10	72,700	58,200	2,200	2,800	6,300
50 Ton	60 x 10	79,200	63,400	2,600	3,400	7,500
50 Ton	70 x 10	88,200	70,600	3,100	3,900	8,800
60 Ton	50 x 10	75,300	60,200	2,200	2,800	6,300
60 Ton	60 x 10	81,800	65,400	2,600	3,400	7,500
60 Ton	70 x 10	90,800	72,600	3,100	3,900	8,800
60 Ton	80 x 10	100,500	80,400	3,500	4,500	10,000
80 Ton	60 x 10	84,100	67,300	2,600	3,400	7,500
80 Ton	70 x 10	93,300	74,600	3,100	3,900	8,800
80 Ton	80 x 10	103,400	82,700	3,500	4,500	10,000
100/120 Ton	60 x 10	89,200	71,400	2,600	3,400	7,500
100/120 Ton	70 x 10	98,500	78,800	3,100	3,900	8,800
100/120 Ton	80 x 10	108,800	87,000	3,500	4,500	10,000
100/120 Ton	90 x 10	117,500	94,000	3,900	5,100	11,300
100/120 Ton	100 x 10	128,200	102,600	4,400	5,600	12,500
100/120 Ton	110 x 10	139,100	111,300	4,800	6,200	13,800

RAILROAD (DIGITAL)

Weight	Price Range	Typical
175 Ton	\$211,500 - \$258,500	\$235,000
200 Ton	252,000 - 308,000	280,000
250 Ton	283,500 - 346,500	315,000
300 Ton	306,000 - 374,000	340,000

FLOOR

The following in-floor freight scales include cost of lever and indicating mechanism, read-out and normal freight and installation charges.

Weight	Typical Costs	
	Steel	Stainless Steel
2,500#	\$3,800	\$7,600
4,000#	4,000	8,000
5,000#	4,200	8,400
6,250# and 8,000#	4,400	8,800
10,000#	4,600	9,200
20,000#	7,700	15,400

CHIMNEYS & STACKS

CHIMNEYS (P.L.F.)

Brick Chimneys	Flue	Price Range		Typical
	8" Flue	\$68.00	- \$102.00	\$85.00
	12" Flue	100.00	- 150.00	125.00

For double flues – add flue price plus 60%.

RADIAL STACKS (P.L.F.)

Base Diameter (O.D.)	Brick	Concrete
6'	\$1,880	\$1,500
8'	2,400	1,950
10'	2,900	2,400
12'	3,300	2,800
16'	4,150	3,500
20'	4,950	4,300

Above prices include foundation.
Deduct 50% for no refractory lining.

STEEL STACKS (P.L.F.)

Base Diameter	16 Gauge	12 Gauge	8 Gauge	1/4 Inch
2'	\$195.00	\$220.00	\$295.00	\$385.00
3'	—	305.00	410.00	525.00
4'	—	400.00	525.00	660.00
6'	—	—	730.00	920.00

PAVING

	Per Square Foot			Per Parking Space*		
	Price Range		Typical	Price Range		Typical
Asphalt Parking Lots	\$2.00	- \$3.50	\$2.75	\$600	- \$1,050	\$825
Asphalt Roads	2.50	- 4.50	3.50	—	—	—
Concrete Parking Lots	3.00	- 5.00	4.00	900	- 1,500	1,200
Concrete Roads	3.50	- 6.00	4.75	—	—	—
Gravel Parking Area	0.70	- 1.10	0.90	210	- 330	270
Add For Curbs (P.L.F.)	11.00	- 18.00	14.50	—	—	—
Yard Lighting	0.40	- 1.10	0.75	120	- 330	225
Concrete Car Bumper (Each)	50.00	- 70.00	60.00	—	—	—

*Based on one parking space per 300 S.F.

Small areas and/or heavy concrete and asphalt (service stations, loading dock areas, etc.) use upper range. Large areas use lower range.

Big box retail, restaurant and gas station (convenience store) lighting will be towards the typical to high end.

TRASH ENCLOSURES

	Price Range		Typical
Concrete Block	\$37.75	- \$56.75	\$47.25
Dec. Concrete Block	39.50	- 59.50	49.50
Brick	40.75	- 61.25	51.00
Steel Panel	28.25	- 42.75	35.50
Wood Panel	27.25	- 41.25	34.25

"Typical" price assumes 6' high walls with one wall consisting of swinging gates with pin anchors.

RECREATIONAL / SPORTS VENUES

RACE / RUNNING TRACKS (P.S.F.)

	Price Range	Typical
Dirt/Gravel Surfaces (Race Track - 500,000 +/- S.F.)	\$0.70 - \$1.10	\$0.90
Limestone/Aggregate Surfaces (Race Track - 500,000 +/- S.F.)	0.80 - 1.80	1.30
Asphaltic/Synthetic Surfaces (Race Track - 500,000 +/- S.F.)	6.50 - 9.50	8.00
Limestone/Aggregate Surfaces (Running Track - 40,000 +/- S.F.)	1.35 - 3.35	2.35
Asphaltic/Synthetic Surfaces (Running Track - 40,000 +/- S.F.)	9.00 - 15.00	12.00

Concession Stands	\$40.00 - \$110.00	\$75.00
*Restroom Facilities	100.00 - 180.00	140.00

*125 S.F. structure with his/hers facilities. Use high if designed for year round use. Use low rate for much larger facilities.

BLEACHERS / GRANDSTANDS (PERMANENT)

Bleachers	Per Square Foot		Per Seat	
	Price Range	Typical	Price Range	Typical
Steel Frame	\$33.00 - \$47.00	\$40.00	\$99.00 - \$141.00	\$120.00
Wood Frame	19.00 - 29.00	24.00	57.00 - 87.00	72.00
Add for Powered Telescoping	8.00 - 12.00	10.00	24.00 - 36.00	30.00

Average is based on approximately 6,000 S.F. or 2,000 seats.

Grandstands	Per Square Foot		Per Seat	
	Price Range	Typical	Price Range	Typical
Steel Frame	\$30.00 - \$60.00	\$45.00	\$90.00 - \$180.00	\$135.00
Wood Frame	20.00 - 34.00	27.00	60.00 - 102.00	81.00
Concrete/Steel	80.00 - 100.00	90.00	240.00 - 300.00	270.00
Add for Lockers, Concessions, Etc.				
Below	30.00 - 60.00	45.00	90.00 - 180.00	135.00
Add for Seat Backs	10.00 - 13.00	11.50	30.00 - 39.00	34.50
Add for Roof	8.00 - 12.00	10.00	24.00 - 36.00	30.00

Average is based on approximately 45,000 S.F. or 15,000 seats.

BOAT DOCKS (PERMANENT)

All costs are per slip (or well) unless otherwise noted.

Typical Slip (Well) Size	Simple/Small 10 x 28'	Average 12 x 32'	Large/Good 14 x 38'	Excellent 16 x 44' +
PIPE DOCKS (COST PER SLIP OR WELL)				
Open Dock	\$3,500	\$4,400	\$6,200	\$7,900
Single Well	11,400	15,000	18,500	22,000
Double Well	7,900	10,600	13,200	15,400
Triple Well	6,600	8,800	11,000	13,200
*Commercial	3,000	4,000	5,000	5,800

*Price first three slips from triple well column. Slips 4+ should be priced from commercial column.

PERMANENT DOCKS (COST PER SLIP OR WELL)

Open Dock	\$5,500	\$6,600	\$9,400	\$12,100
Single Well	17,000	22,000	27,500	33,000
Double Well	12,100	16,000	19,800	23,100
Triple Well	9,900	13,200	16,500	19,500
*Commercial	4,400	5,900	7,400	8,800

*Price first three slips from triple well column. Slips 4+ should be priced from commercial column.

CANOPIES/ROOFS (ALL TYPES)

Up to 3 Slips	\$5,000	\$6,300	\$8,200	\$10,100
Commercial	3,000	3,750	4,900	6,100

SMALL DOCK SHEDS (P.S.F. OF SHED)

\$19.00	\$24.00	\$30.00	\$37.50
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DOCK BUILDINGS/HOUSES (P.S.F. OF BUILDING)

\$47.00	\$75.00	\$94.00	\$115.00
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PICNIC SHELTERS (P.S.F.)

Type	Price Range	Typical
Basic Open Shelter	\$17.00 - \$35.00	\$26.00
Shelter w/ Screened Sides	19.00 - 40.00	29.50
Shelter w/ Half Walls	25.00 - 50.00	37.50
Shelter w/ Basic Plumbing	27.00 - 53.00	40.00
Shelter w/ Bathroom Facilities	33.00 - 63.00	48.00

STEEL SIGN POLES

Price P.L.F. of height. Cost includes sign pile and foundation.

Diameter At Base	Height						
	10'	15'	20'	30'	40'	60'	80'
4"	\$69.00	\$63.00	\$56.00	\$50.00	—	—	—
6"	100.00	88.00	81.00	75.00	—	—	—
8"	131.00	113.00	106.00	100.00	\$94.00	—	—
10"	163.00	144.00	131.00	125.00	113.00	\$106.00	—
12"	194.00	175.00	156.00	150.00	138.00	125.00	\$119.00
14"	225.00	200.00	188.00	175.00	163.00	150.00	138.00
16"	—	238.00	219.00	200.00	181.00	169.00	156.00
20"	—	—	250.00	231.00	213.00	194.00	175.00
24"	—	—	288.00	269.00	244.00	225.00	206.00
30"	—	—	—	306.00	281.00	256.00	238.00
36"	—	—	—	—	325.00	300.00	275.00
42"	—	—	—	—	—	344.00	312.00
48"	—	—	—	—	—	394.00	363.00

Use 50% of above prices for wood sign poles.

SIGNS (P.S.F.S.A.)

	Single-Faced			Double-Faced		
	Under 50 S.F.	50 – 100 S.F.	Over 100 S.F.	Under 50 S.F.	50 – 100 S.F.	Over 100 S.F.
Painted Metal	\$47.50	\$42.50	\$36.25	\$60.00	\$52.50	\$46.25
Painted Metal w/ Neon	82.50	73.75	63.75	130.00	115.00	100.00
Porcelain	56.25	51.25	45.00	78.75	70.00	62.50
Porcelain w/ Neon	92.50	82.50	71.25	148.75	132.50	116.25
Plastic	106.25	86.25	68.75	143.75	126.25	100.00
Plastic w/ Illumination	125.00	101.25	80.00	162.50	140.00	111.25
Painted Wood	25.00	22.50	20.00	32.50	28.75	25.00
Rotators (Lump Sum)	1,875.00	3,125.00	3,750.00	1,875.00	3,125.00	3,750.00

		Price Range	Typical
Time & Temperature Signs – Alternating Display	Single Faced	\$10,000 - \$15,000	\$12,500
	Double Faced	15,000 - 22,500	18,750
Time & Temperature Signs – Continuous Display	Single Faced	15,000 - 22,500	18,750
	Double Faced	21,000 - 31,500	26,250

Most signs are custom made and cost vary greatly. It is recommended that actual cost be used if possible. The above costs do not include sign poles.

FENCING

CHAIN LINK (P.L.F.)

	Price Range		Typical
4' High	\$9.00	- \$13.00	\$11.00
5' High	11.00	- 16.00	13.50
6' High	12.75	- 19.25	16.00
7' High	14.75	- 22.25	18.50
8' High	16.75	- 25.25	21.00
10' High	20.75	- 31.25	26.00
12' High	25.00	- 37.00	31.00

CHAIN LINK GATES (P.L.F.)

	Price Range		Typical
4' High	\$55.00	- \$83.00	\$69.00
5' High	57.00	- 85.00	71.00
6' High	58.00	- 88.00	73.00
7' High	65.50	- 98.50	82.00
8' High	72.00	- 108.00	90.00
10' High	77.50	- 116.50	97.00
12' High	88.00	- 132.00	110.00

Above prices are based on 9# wire. Use low end for residential gauge and high end for high security fencing.

Above prices include steel posts 10' on center in concrete.

Add 15% if vinyl coated.

Add \$3.00 P.L.F. for 3 strand barbed wire.

WOOD (P.L.F.)

	Price Range		Typical
6' High	\$18.00	- \$27.00	\$22.50
8' High	24.00	- 36.00	30.00

Above prices include 4" x 4" wood post, set in concrete, 8' center to center. Price does not include painting or staining.

VINYL (P.L.F.)

	Price Range		Typical
4' High	\$20.50	- \$30.50	\$25.50
5' High	21.50	- 32.50	27.00
6' High	22.50	- 33.50	28.00

VINYL GATES (P.L.F.)

	Price Range		Typical
4' High	\$53.00	- \$79.00	\$66.00
5' High	57.00	- 87.00	72.00
6' High	62.00	- 94.00	78.00

METAL-HAND FORGED WROUGHT IRON OR MODULAR (P.L.F.)

	Price Range		Typical
4' High	\$37.00	- \$55.00	\$46.00
5' High	46.00	- 70.00	58.00
6' High	55.00	- 85.00	70.00

METAL-HAND FORGED WROUGHT IRON OR MODULAR GATES (P.L.F.)

	Price Range		Typical
4' High	\$51.00	- \$77.00	\$64.00
5' High	64.00	- 98.00	81.00
6' High	78.00	- 118.00	98.00

METAL-METAL PANEL ON WOOD POSTS (P.L.F.)

	Price Range		Typical
6' High	\$18.00	- \$28.00	\$23.00
8' High	24.00	- 36.00	30.00
10' High	30.00	- 46.00	38.00
12' High	36.00	- 54.00	45.00

SECURITY GATES (EACH)

	Price Range		Typical
Simple (Residential Small Commercial)	\$500	- \$1,500	\$1,000
Industrial/Commercial	2,000	- 5,000	3,500

Price gate separately then add above for controls. Cost will vary depending on level of security.

RAILROAD SPURS

	Price Range		Typical
90# (P.L.F.)	\$122.00	- \$150.00	\$136.00
100# (P.L.F.)	128.00	- 157.00	142.50
115# (P.L.F.)	140.00	- 170.00	155.00
130# (P.L.F.)	144.00	- 176.00	160.00
	Price Range		Typical
90# Turnout	\$35,000	- \$43,000	\$39,000
100# Turnout	38,500	- 47,500	43,000
115# Turnout	40,500	- 49,500	45,000
130# Turnout	44,500	- 54,500	49,500
Bumpers (Each)	4,000	- 5,000	4,500

COMMERCIAL SWIMMING POOLS

Prices are based on square feet of water surface area (S.F.W.S.A.)

	Price Range		Typical
Motel, Apartment (400 S.F.)	\$80.00	- \$140.00	\$110.00
Outdoor Municipal and Community (10,000 S.F.)	95.00	- 165.00	130.00
Indoor Municipal (5,000 S.F.)	100.00	- 180.00	140.00

Prices include concrete formed pool, filter system, ladders, chlorinator and heater.

	Price Range		Typical
Automatic Pool Sweeps	\$1,000	- \$3,000	\$2,000

*3,000 – 4,000 S.F. Concrete Block Municipal Bath & Concession House (P.S.F.)	40.00	- 110.00	75.00
*Shower And Bath House (P.S.F.)	45.00	- 135.00	90.00

*Includes plumbing fixtures.

TANKS

ELEVATED STEEL WATER TANKS (WATER TOWERS)

Gallon Capacity	Height				
	50'	75'	100'	125'	150'
25,000	\$273,000	\$304,500	\$336,000	\$372,000	\$408,000
50,000	352,500	386,500	420,000	456,000	492,000
75,000	432,000	468,000	504,000	540,000	576,000
100,000	495,000	531,000	565,500	600,000	631,500
150,000	633,000	669,000	703,500	738,000	769,500
200,000	722,000	761,000	797,500	834,500	869,500
300,000	900,000	945,000	985,500	1,027,500	1,069,500
400,000	1,104,000	1,148,500	1,189,500	1,231,000	1,272,000
500,000	1,308,000	1,351,500	1,393,500	1,434,000	1,474,500
600,000	1,444,000	1,492,500	1,540,000	1,587,000	1,632,500
700,000	1,580,000	1,633,500	1,686,000	1,739,000	1,790,000
800,000	1,715,500	1,774,500	1,832,000	1,891,000	1,948,000
900,000	1,851,500	1,915,500	1,978,000	2,043,000	2,106,000
1,000,000	1,987,500	2,056,500	2,124,000	2,194,500	2,263,500
1,200,000	2,213,500	2,296,500	2,378,500	2,461,500	2,544,500
1,500,000	2,553,000	2,656,500	2,760,000	2,862,000	2,965,500
2,000,000	3,118,500	3,256,500	3,394,500	3,531,000	3,667,500

TANKS (Continued)

LARGE OIL STORAGE TANKS – WELDED STEEL

Gallon Capacity	Per Gallon		
	Price Range		Typical
40,000	\$2.25	- \$2.75	\$2.50
50,000	2.15	- 2.65	2.40
60,000	2.05	- 2.55	2.30
80,000	1.90	- 2.30	2.10
100,000	1.70	- 2.10	1.90
150,000	1.30	- 1.70	1.50
200,000	1.10	- 1.30	1.20
300,000	0.90	- 1.10	1.00
400,000	0.81	- 0.99	0.90
500,000	0.76	- 0.94	0.85
600,000	0.74	- 0.90	0.82
750,000	0.68	- 0.82	0.75
1,000,000	0.54	- 0.66	0.60
1,500,000	0.50	- 0.60	0.55
2,000,000	0.45	- 0.55	0.50
3,000,000	0.41	- 0.49	0.45
4,000,000	0.37	- 0.45	0.41
5,000,000	0.33	- 0.41	0.37

Diameter, height and capacity is generally found on a plate on each tank. If capacity is unknown, use the following formula:
 $3.1416 \times \text{radius squared} \times \text{height} \times 7.48 = \text{gallon capacity}$
 If capacity is given in barrels, there are 42 gallons per barrel.

Above costs include foundations, paint and vents.

Add 25% for floating roof.

Add 50% for spheroid type tanks. Add 20% for concrete tanks.

Add 5% to 15% for piping, valves, elbows, meters, etc.

SMALL BULK STORAGE TANKS

Gallon Capacity	Price Per Gallon						
	*Vertical Steel		Vertical Fiberglass	*Horizontal Steel		Plastic	Stainless Steel
	Single Wall	Dual Wall	Single Wall	Single Wall	Dual Wall	Single Wall	Single Wall
1,000 - 2,499	\$3.05	\$5.25	\$3.35	\$3.10	\$5.30	\$1.20	\$9.15
2,500 - 5,999	2.25	4.10	2.50	2.30	4.20	1.10	6.75
6,000 - 10,999	1.85	2.95	2.00	1.90	3.00	1.05	5.55
11,000 - 20,999	1.50	2.80	1.65	1.60	2.95	1.00	4.05
21,000 - 30,000	1.40	2.75	1.50	1.50	2.90	0.95	3.90

*Steel tank prices assume mild steel (10 to 12 gauge, commonly used for water and fertilizer storage).

For UL listed tanks (commonly used for diesel, gasoline and fuel oil storage) add 25% to above cost.

Vertical tanks include sand and gravel base (add for concrete).

Horizontal tanks include steel skids (add \$2,500 - \$6,000 for concrete saddles).

Add for Small Bulk Oil Plants:

Loading Rack - \$12,500 to \$17,500

(Note that the loading rack cost for large oil and gas terminals may exceed \$125,000.)

Add per tank for piping, valves, meters and pumps – Single Wall: \$1,850

Dual Wall: \$2,600

TANKS (Continued)

UNDERGROUND STORAGE TANKS

Gallon Capacity	Price Per Gallon							
	Single Compartment						Multi-Compartment	
	Steel (STI-P#3)		Fiber Coated Steel		Fiber Glass		Fiber Glass	
	Single Wall	Double Wall	Single Wall	Double Wall	Single Wall	Double Wall	Single Wall	Double Wall
1,000 - 2,499	\$6.00	\$9.50	\$7.00	\$10.50	\$7.00	\$11.50	—	—
2,500 - 5,999	3.80	6.00	4.75	6.50	4.75	7.00	—	—
6,000 - 10,999	3.00	4.60	3.25	4.90	3.25	6.10	\$4.25	\$6.10
11,000 - 20,999	2.55	3.75	2.75	4.00	2.65	4.00	3.40	4.75
21,000 - 30,000	2.45	3.70	2.60	3.80	2.55	3.80	3.15	4.40

Above costs include excavation, backfill and piping to two pumps.

Add \$1,150 (single wall) or \$1,650 (double wall) per tank compartment for each additional pump. (Example: A service station with 3 computers with a dispenser for premium, unleaded, and ethanol at each computer will require three tanks or tank compartments and \$1,150 or \$1,650 should be added to each tank or tank compartment for the third pump.)

Depreciation 3% per year. (If tank is in use, it is recommended that depreciation not exceed 65%).

Note: Double wall tanks require double wall piping.

PRESSURE TANKS – WELD STEEL

Gallon Capacity	Rate Per Gallon
1,000 - 3,999	\$6.75
4,000 - 6,999	6.00
7,000 - 12,999	5.50
13,000 - 20,999	5.00
21,000 - 29,999	4.25
30,000 - 39,999	3.75
40,000 - 49,999	3.25
50,000 - 59,999	3.10
60,000 - 74,999	3.00
75,000 - +	2.90

Above prices include valves, pumps, fittings, gauges, bulkheads and saddles.

Depreciation: 3% per year.

Liquid Fertilizer Conversion (Tons to gallons)

Ton capacity x 2,000# ÷ 8.5 (8.5 pounds per gallon)

CONTAINMENT AREAS

	Price Range	Typical
Spill Pads	\$12.00 - \$14.50	\$13.25
Reinforced Concrete Containment Floor (P.S.F.)	10.00 - 12.00	11.00
Reinforced Concrete Containment Walls (P.S.F.)	15.00 - 18.00	16.50
Plastic Liner Supported by Wood Frame (P.S.F.S.A)	10.00 - 15.00	12.50
Plastic Liner Supported by Metal Frame (P.S.F.S.A)	12.00 - 18.00	15.00
Earthen Containment Dikes (C.Y.)	6.00 - 9.00	7.50

SEWAGE TREATMENT PLANTS

Includes all cost necessary to develop a treatment plant. Add for offices, shops, and warehouses separately.

Gallons Per Day	Sewage		Water	
	RATE PER GALLON PER DAY CAPACITY			
	Price Range	Typical	Price Range	Typical
2,000 to 19,999	\$16.00 - \$24.00	\$20.00	\$10.00 - \$16.00	\$13.00
20,000 to 99,999	11.00 - 16.00	13.50	7.00 - 11.00	9.00
100,000 to 499,999	8.00 - 11.00	9.50	4.00 - 8.00	6.00
500,000 to 999,999	5.00 - 8.00	6.50	3.00 - 5.00	4.00
Municipal Type	Price Range	Typical	Price Range	Typical
1,000,000 to 1,999,999	\$6.50 - \$12.00	\$9.25	\$1.60 - \$3.00	\$2.30
2,000,000 to 2,999,999	6.10 - 11.00	8.55	1.55 - 2.75	2.15
3,000,000 to 3,999,999	5.55 - 10.25	7.90	1.40 - 2.50	1.95
4,000,000 to 4,999,999	5.00 - 9.40	7.20	1.25 - 2.35	1.80
5,000,000 or Greater	4.55 - 8.45	6.50	1.10 - 2.10	1.60

UNDERGROUND PIPING & EXTERIOR FIRE PROTECTION

UNDERGROUND PIPING (P.L.F.)

Water and Fire Protection				Drain & Sewer				
Size	PVC	Ductile or Cast Iron	Reinforced Concrete	PVC	Corrugated Steel	Reinforced Concrete	Clay	Plain Concrete
4"	\$15.60	—	—	\$8.10	—	—	\$16.25	—
6"	20.60	—	—	11.25	\$19.40	—	24.00	\$19.50
8"	31.90	—	—	18.25	25.90	—	31.00	24.50
10"	36.90	—	—	25.60	35.60	—	54.00	28.00
12"	39.40	—	\$39.50	30.60	40.90	\$39.50	59.50	31.50
14"	42.50	—	48.10	45.00	45.90	41.00	73.40	35.00
16"	53.75	—	53.75	—	50.30	45.00	84.50	38.75
18"	64.70	—	63.10	—	54.70	49.50	95.25	42.25
20"	70.90	\$150.00	77.50	—	63.40	61.25	116.50	53.00
24"	84.70	164.00	92.50	—	72.20	77.75	140.00	56.00
30"	125.00	189.00	132.50	—	91.25	97.25	166.50	—
36"	163.75	239.00	178.75	—	131.00	139.00	220.00	—
42"	221.25	290.00	221.00	—	157.50	175.00	—	—
48"	275.00	331.00	275.00	—	184.00	211.00	—	—
60"	—	—	394.00	—	282.00	342.00	—	—
72"	—	—	528.00	—	358.00	382.00	—	—

See page 4 – 21 for interior piping.

	Price Range	Typical
Manholes (48" Precast – Installed)	\$2,200 - \$3,400	\$2,800
Inlets	1,500 - 2,200	1,850
6" Hydrants - 2 Way	1,800 - 2,700	2,250
3 Way	2,600 - 3,900	3,250
4 Way	3,200 - 4,800	4,000
Indicator Post Valves - 6"	1,500 - 2,100	1,800
8"	1,700 - 2,500	2,100
12"	1,900 - 2,900	2,400

LAGOONS

	Price Range	Typical
Earthen (C.Y.)	\$6.00 - \$9.00	\$7.50
(C.Y. = Water Surface x Depth divided by 27)		
Add for Inlets and/or Outlets		
Small	8,500 - 12,500	10,500
Large	15,000 - 25,000	20,000

COLD STORAGE

DEFINITIONS

Room Type	Temperature Control Range		
Cooler	33	to	50°
Chiller	5	to	32°
Freezer	-19	to	4°
Sharp Freezer	-45	to	-20°

INSULATING MATERIAL (P.S.F.S.A.)

	Polyurethane	Polystyrene	Cork	Fiberglass	Foamglass	Pre-Engineered Insulated Sandwich Panels (metal skin both sides) (use as exterior walls)
2"	\$7.30	\$5.85	\$8.15	\$6.40	\$8.60	—
3"	8.30	6.15	9.30	6.75	9.80	\$16.35
4"	9.25	6.40	10.40	7.05	10.95	17.50
5"	10.35	6.75	11.60	7.30	12.30	18.65
6"	11.40	7.05	12.75	7.50	13.65	19.75
8"	13.40	7.70	14.95	7.95	16.25	22.50
10"	—	8.20	17.40	8.65	18.75	25.50
12"	—	9.00	19.50	9.10	21.45	—

Cost includes vapor barrier, sealants and appropriate finishes.

If insulating material is used on floors, deduct 30%. Add 30% for ceilings.

COLD STORAGE FLOORS (P.S.F.)

Price includes sand base, vapor barrier, insulation and reinforced concrete.

Chiller, freezer and sharp freezer floors include in floor heat elements.

Type	Price Range		Typical
Cooler	\$9.25	- \$13.75	\$11.50
Chiller	12.00	- 18.00	15.00
Freezer	13.00	- 19.50	16.25
Sharp Freezer	14.25	- 21.25	17.75

REFRIGERATION DOORS (HINGED) (P.S.F.S.A.)

S.F.S.A.	Cooler	Chiller	Freezer	Sharp Freezer
6 – 15	\$125.00	\$137.50	\$150.00	\$162.50
16 – 30	112.50	125.00	137.50	150.00
31 – Over	93.75	106.25	118.75	131.25

REFRIGERATION DOORS (SINGLE SLIDING) (P.S.F.S.A.)

S.F.S.A.	Cooler	Chiller	Freezer	Sharp Freezer
25 – 49	\$125.00	\$150.00	\$162.50	\$175.00
50 – 120	69.00	75.00	81.50	87.50
Add For Mech. Operated (Each)	3,900.00	3,950.00	4,000.00	4,375.00

REFRIGERATION DOORS (BI-PARTING, ELECTRIC OPERATED) (P.S.F.S.A.)

	Cooler	Chiller	Freezer	Sharp Freezer
	\$210.00	\$215.00	\$225.00	\$235.00

COLD STORAGE AND FREEZERS (NOT INCLUDING DOORS OR REFRIGERATION EQUIPMENT)

Due to the large variation in use, design, finish, etc., the following prices are averages and may have a range of +/- 30%.

Size	Cooler	Cooler Height Adj.	Chiller	Chiller Height Adj.	Freezer	Freezer Height Adj.	Sharp Freezer	Sharp Freezer Height Adj.
100 S.F.	\$91.00	\$7.00	\$103.00	\$7.90	\$117.00	\$9.00	\$132.50	\$10.20
200 S.F.	77.00	5.25	87.00	5.95	99.00	6.75	112.00	7.65
400 S.F.	63.00	3.50	71.00	3.95	81.00	4.50	92.00	5.10
800 S.F.	56.00	2.65	63.00	3.00	72.00	3.40	82.00	3.85
1,000 S.F.	53.50	2.30	60.00	2.60	68.50	3.00	77.50	3.50
1,500 S.F.	50.00	1.90	56.50	2.25	64.50	2.50	73.00	2.75

Height adjustment is for each foot over or under 8'.

REFRIGERATION EQUIPMENT (P.C.F.)

	Cooler	Chiller	Freezer	Sharp Freezer
5,000 or Less	\$1.50	\$1.80	\$2.10	\$2.54
5,001 – 25,000	1.38	1.68	1.98	2.41
25,001 – 50,000	1.26	1.57	1.87	2.28
50,001 – 100,000	1.16	1.46	1.74	2.16
100,001 – 200,000	1.09	1.37	1.63	2.03
200,001 – 300,000	1.04	1.31	1.57	1.94
300,001 – 500,000	0.98	1.22	1.50	1.87
500,001 or More	0.91	1.15	1.40	1.73

Refrigeration equipment may not be assessable pursuant to Iowa Code Section 427.1(4).

CRANEWAYS (P.L.F.)

Beam Size	Supports 20' o.c.	2' Height Adjustment	Supports 25' o.c.	2' Height Adjustment	Supports 30' o.c.	2' Height Adjustment	Beam Supported By Bldg. Framing
6"	\$170.00	\$7.25	\$145.00	\$5.80	\$125.00	\$5.00	\$100.00
8"	270.00	15.00	225.00	12.30	200.00	10.50	120.00
10"	315.00	15.00	270.00	12.30	240.00	10.50	150.00
12"	355.00	15.00	305.00	12.30	270.00	10.50	165.00
14"	385.00	15.00	330.00	12.30	290.00	10.50	175.00
16"	520.00	24.00	440.00	19.75	390.00	16.75	220.00
18"	565.00	24.00	480.00	19.75	425.00	16.75	255.00
21"	625.00	24.00	535.00	19.75	470.00	16.75	310.00
24"	720.00	27.00	615.00	22.00	545.00	18.50	380.00
27"	885.00	32.00	765.00	26.00	685.00	22.00	410.00
30"	975.00	32.00	850.00	26.00	765.00	22.00	625.00
36"	1,140.00	32.00	1,005.00	26.00	915.00	22.00	805.00

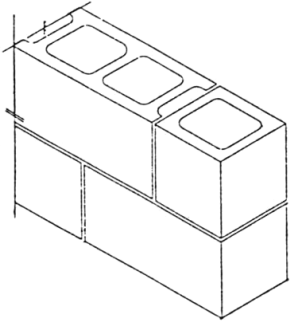
Prices are based on 16' height including crane I beam, H columns supports and concrete foundations (does not include crane "T" rail).

These prices are for the length of crane way (\$355 x 100' length = \$35,000).

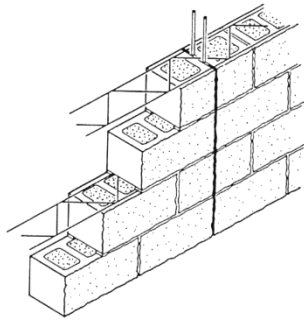
Add or subtract for each 2' difference (16' base) in height as shown.

GLOSSARY

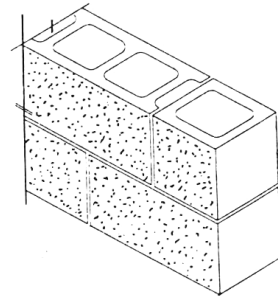
CONCRETE BLOCK WALLS



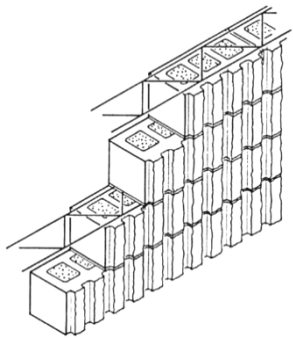
Standard Concrete Block



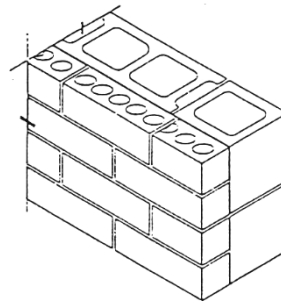
Rock Face Concrete Block



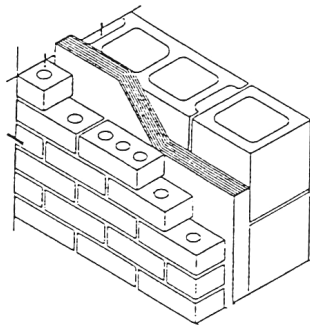
Ground Face Concrete Block



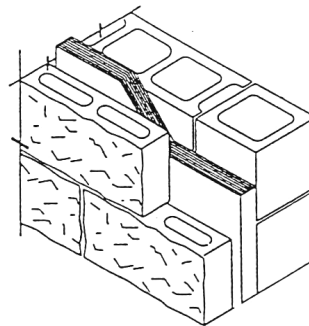
Fluted Face Concrete Block



4" Face Brick on 8" Conc. Block



4" Face Brick, 3" Air and Insulation
Cavity on 8" Concrete Block



4" Rock Face Concrete Block,
3" Air and Insulation Cavity
on 8" Concrete Block

GLOSSARY (Continued)

AGGREGATE - Materials used in the manufacture of concrete or plaster, except water and the bonding agents, e.g., sand, gravel, cinders, rock, slag.

ASHLAR VENEER - Stone squares or rectangles of uniform joint thickness used in masonry.

ASPHALT TILE - A resilient floor covering of asphaltic composition laid in mastic.

BACKFILL - To replace earth removed during excavation. The subsurface material placed against structures, foundations or footings.

BALLOON FRAME - In construction, a type of framing in which the studs extend from the sill to the roof. The second floor is supported by a horizontal ribbon or ledger board and joist that are nailed to the studs.

BTU - British Thermal Unit: A standard unit for measuring heat equal to the amount required to raise the temperature of one pound of water by one degree Fahrenheit. In the United States, the rated capacity of furnaces and boilers is expressed in terms of BTUs emitted per hour.

BUILDING PAPER - A paper usually applied over the sheathing of exterior frame walls. Also used between flooring and subflooring and over roof decks.

BUILT-UP COMPOSITION - A roof covering consisting of successive layer of ply, felt and hot asphalt, topped by a mineral-surfaced layer or by embedded rock or gravel.

CAISSON - A large, strong, watertight box or casing in which work is done below water level; also used as a retaining structure in an open excavation to prevent cave-ins; used as a supporting member of a structure when sunk to a high bearing stratum and filled with concrete.

CASEMENT WINDOW - A type of window with vertical hinges which swings open horizontally.

CATCH BASIN - A small underground structure for surface drainage in which sediment may settle before water reaches the drain lines.

COBBLESTONE VENEER - A naturally rounded stone larger than a pebble and smaller than a boulder.

COPING - The covering course of a wall, chimney, pilaster or parapet which usually slopes downward to permit water runoff.

CRANEWAY - Columns, girders and beams that act as a rail on which a crane travels.

DECKING - Surface material attached to rafters or joist to which the finish material is applied.

DOLPHINS - A post or pile cluster that is used to moor a boat or support a structure; also, a bumper that protects the dock or wharf from vessels or floating objects.

DUMBWAITER - A small hoisting mechanism or elevator used to convey articles only, between floors.

EIFS - (Exterior wall insulation and finish system.) Rigid insulation board, reinforcing mesh covered with a synthetic plaster or stucco coating.

ELASTOMERIC (Roofing) - A single ply of rubber-like, layered membrane consisting of plastics and synthetic rubber stretched into place as a roof cover. A liquid or spray applied to the roof surface to yield elastomeric films for high strength waterproof membranes.

FENESTRATION - The design and arrangement of windows and doors in a building wall.

FLEXIBLE CONDUIT - Conduit made of fabric or spiral metal strips.

FOOTING - The projecting base of a foundation that transmits the building weight load to the ground.

FOUNDATION - The part of a structure on which the superstructure is placed and transmits the weight load to the earth.

GLOSSARY (Continued)

FURRING - Strips of wood or metal applied to a rough wall or other surface to form an air space or to provide a level surface for the application of a finish material.

GAUGE - A measurement of the thickness of metal in sheet form. The smaller the gauge, the heavier the material.

GEOPIERS - A drilled hole compacted with rock used to stabilize unstable soil upon which a footing is to be placed.

GEO-THERMAL HEATING - A heating source which utilizes the heat of the earth's interior.

HVAC - An abbreviation for heating, ventilating and air conditioning.

INSULATED CONCRETE FORM (ICF) WALLS - A system of formwork for reinforced concrete walls usually made with 2" expanded polystyrene (EPS) insulation panels that stay in place as a permanent interior and exterior substrate.

JOIST - Horizontal timbers, beams or bars supporting a floor or roof.

JUNIOR BEAMS - (M shapes) Lightweight, hot rolled structural beams that are used as secondary floor and roof beams in schools, stores, apartments, hospitals, and other types of light occupancy buildings. They are well adapted for purlins in mill buildings.

KALAMEIN DOORS - Solid core wood doors clad with galvanized sheet metal.

LATH - Any material used as a base for plaster.

LINTEL - A horizontal framing member placed across the top of a door or window opening to support the weight load immediately above the opening.

MEMBRANE - A thin sheet or film of waterproof material used to prevent moisture from penetrating a floor, wall or roof.

MILLWORK - All building materials made of finished wood which have been pre-built in a shop and brought to the site for installation (e.g. doors, window frames, cabinets, trim, etc.)

MONOLITHIC SLAB - Monolithic slabs are foundation systems constructed as on single concrete pour that consist of a concrete slab with thickened portions of the slab under load bearing walls and all perimeter edges that take the place of footers. References to monolithic slabs in this manual assume perimeter pours of 12" to 18" thick, sometimes referred to as a rat footing.

NOGGING - Pieces of wood inserted into a masonry wall to receive nails.

PARAPET WALL - The part of a wall which extends above the roofline.

PARQUET FLOOR - Wood blocks laid in decorative patterns.

PILASTER - A rectangular architectural member which serves as a pier, but is architecturally treated as a column. Usually formed of the same material as the wall, but projecting from it.

PILE (PILINGS) - Columns that extend below ground to bear the weight of a structure when the surface soil cannot; may extend down a bearing soil or support the load by skin friction; e.g., sheet piling is used to form bulkheads or retaining walls and to support docks or piers.

PLATE GLASS - A high-quality glass which has been ground and polished on both sides.

POLYMER FORMED CONCRETE WALLS - Polymer form work for reinforced concrete walls made with polymer panels that stay in place as a permanent interior and exterior wall finish. Most common use is in car wash buildings.

PRECAST CONCRETE - Concrete structural components that are not poured in place, but are cast separately on site or at another location.

QUARRY TILE - A hard-burned, unglazed ceramic tile usually used as a finished floor.

RAFTERS - Structural members supporting the roof deck or sheathing and the roof covering.

GLOSSARY (Continued)

REINFORCING - Strengthening. Steel rods or mesh are embedded in concrete to increase its strength under tension.

RIGID CONDUIT - A rigid pipe used as a protective enclosure and raceway for electrical wire.

ROMEX - Nonmetallic sheathed electrical cable.

"R" RATING - A measurement of the ability of insulation material to resist the flow of heat. "R" rating is determined by measuring the BTUs transmitted in one hour through the thickness of insulation. The higher the "R" rating, the more effective the insulation.

RUBBLE VENEER - A local field stone. Masonry constructed from rough, unshaped stone without coursing or regularity.

SAWED BED VENEER - A type of ashlar veneer with a smooth facing and sides.

SHEATHING - The first covering applied to the outside of a building.

SKYLIGHT - A glass or plastic opening in a roof, for light or ventilation.

SLEEPERS - A nonstructural timber, board or metal strip that is laid horizontally on the ground to support something above it; or that is anchored to a concrete floor or is nailed to subflooring and to which the finished floor is nailed. It may also provide spacing for utility runs.

STAY-IN-PLACE FORMING - A wall constructed of poured-in-place concrete, where the forming materials remain in place. Forms used for the wall are usually some type of rigid insulation designed for the application of interior and exterior finish directly onto the forms.

STRUCTURAL FRAME - All the members of a building or structure used to transfer weight loads to the ground.

STRUCTURAL INSULATED PANELS (SIP) - Wall panels consisting of an insulating foam core sandwiched between two structural facings, typically oriented strand board (OSB).

STUD - A vertical framing member of either wood or metal used as a structural member and/or to which wall finished are attached. Usually, only lumber of 2" x 6" or lesser dimensions are considered studs.

SUBFLOOR - A floor that is attached to the floor joist and to which the floor finish is laid.

SUPERSTRUCTURE - That portion of the structural frame above the foundation or ground level.

SUSPENDED CEILING - The grid or track suspension system that supports an acoustical panel or similar type ceiling material.

TERRAZZO - A floor material made of small fragments of colored stone or marble that are embedded in cement and polished to a high glaze.

TILT-UP CONCRETE - A method of construction in which concrete wall sections are cast horizontally and lifted or tilted into position.

TONGUE AND GROOVE JOINT - (T&G), any joint made by one member with a projecting tongue fitting into another member with a matching groove.

TRUSS - A rigid, open-webbed structural member designed to carry roof or floor loads.

VAPOR BARRIER - Material that is used to retard the passage of vapor or moisture into walls, floors and roof and prevent condensation.

VENEER - A layer of material that is applied to another surface for ornamental or protective purposes.

WATERPROOFING - Any material designed to stop the passage of moisture.