**Jo Ann Goddard**
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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

December 17, 1993

**EX PARTE**

William F. Caton
Acting Secretary
Federal Communications Commission
Mail Stop 1170
1919 M Street, N.W., Room 222
Washington, D.C. 20554

Dear Mr. Caton:

Re: *CC Docket No. 93-162*

On behalf of Pacific Bell, the attached information is being provided in response to a request for information from Chris Frentrup of the Tariff Division, Common Carrier Bureau. Please associate this material with the above-referenced proceeding.

Two copies of this notice were submitted to the Secretary of the FCC in accordance with Section 1.1206(a)(1) of the Commission's Rules.

Please stamp and return the provided copy to confirm your receipt. Please contact me should you have any questions or require additional information concerning this matter.

Sincerely,

Jo Ann Goddard

Attachment

cc: Chris Frentrup

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OFFICE OF THE SECRETARY

**Response to FCC Request for Information on EIS Space Costs**

As requested, attached is additional data used in the development of the base $240/square foot construction cost used in Pacific's EIS floor space computations.

The Standard Project Cost Format - New Central Office Buildings table mirrors the cost format from the previously submitted information and provides base construction cost information from R.S. Means references (column A), a cost adjustment factor to reflect an average variability of costs for California (column B), the derived costs from multiplying the R.S. Means unit cost by the averaged adjustment factor (column C), Inclusion of costs not projected in R.S. Means (i.e., site work, testing and inspections, building permits, and project financing) and adjustments to R. S. Means adjusted cost based on recent project costs and Project Management experience (column D), and the final estimated cost used in developing Pacific's $240/square foot construction rate.

The Standard Project Cost Calculations backup pages identify the R.S. Means source document (which are included in attachments 1-3) and steps through any required calculations to reach a per square foot unit cost.

All attachments are from the references published by the R.S. Means Company, INC., a construction consulting and publishing company.

1) Means Construction Cost Data, 48th Annual Edition, 1990*
2) Means Square Foot Costs, 14th Annual Edition, 1993
3) Means Assemblies Cost Data, 18th Annual Edition, 1993

(Cost values in this publication were inflated by 4% per year to bring them to 1993 dollars.)

In addition to the R.S. Means supported costs, Pacific has included other necessary building costs which commonly occur in California. These include:

- Site work: In California, it is common for local municipalities to require, in addition to the normal site development, such as sewer and water tie-ins, landscaping of both the premise and associated public streets and access ways, and contributions to the infrastructure, such as fire hydrants, street widening, over passes, and municipal utility expansion.

- Building permits and Testing/Inspections: Required for all construction projects

## STANDARD PROJECT COST FORMAT
## NEW CENTRAL OFFICE BUILDINGS

The following costs are for a single story, new Central Office Building of approximately 10,000 gross square feet, 15' high, with steel frame and exterior walls of concrete panels on an approximately six acre parcel.

| HARD COSTS Per S.F. | (A) R.S. Means $ Amount | (B) R.S. Means CA Factor | (C) First Adj. (A)*(B) | (D) Recent Proj. Ref. ($) | Estimated Cost/SF (C) or (D) or (C)+(D) |
|---|---|---|---|---|---|
| 1. SITE WORK | | | | | |
| Site Development | | | | 6.00 | 6.00 |
| Landscaping | | | | 2.00 | 2.00 |
| Off-site improvements# | | | | 5.00 | 5.00 |
| 2. CORE & SHELL | | | | | |
| Foundations | 5.31 | 1.24 | 6.58 | * | 6.00 |
| Structural Frame | 9.35 | 1.24 | 11.59 | * | 12.00 |
| Vertical Transportation | 2.30 | 1.24 | 2.82 | * | 2.50 |
| Exterior Skin | 22.99 | 1.24 | 28.51 | * | 30.00 |
| Roof & Moisture Protection | 5.44 | 1.24 | 6.75 | * | 7.00 |
| Fire Protection | 4.32 | 1.24 | 5.36 | * | 5.50 |
| Electrical | 24.93 | 1.24 | 32.15 | * | 30.00 |
| Plumbing | 7.99 | 1.24 | 9.90 | * | 10.00 |
| HVAC | 21.88 | 1.24 | 27.13 | * | 27.00 |
| Common Area Finishes | 3.64 | 1.24 | 4.51 | * | 3.50 |
| Subtotal | | | | | 133.50 |
| 3. OFFICE & STORAGE | 5.46 | 1.24 | 6.77 | * | 5.50 |
| 4. GENERAL CONDITIONS | Inc. | | | | |
| 5. G.C. OVERHEAD & PROFIT | 29.37 | 1.24 | 36.42 | | 37.00 |
| R.S. MEANS + RECENT PROJECT HARD COSTS | | | 178.49 | 13.00 | |
| ESTIMATED HARD COSTS | | | | | 188.50 |

## STANDARD PROJECT COST FORMAT
## NEW CENTRAL OFFICE BUILDINGS

The following costs are for a single story, new Central Office Building of approximately 10,000 gross square feet, 15' high, with steel frame and exterior walls of concrete panels on an approximately six acre parcel.

| SOFT COSTS Per S.F. | (A) R.S. Means % of H.C. | (C) Unit Cost $ Amount | (D) Recent Proj. Ref. ($) | Estimated Cost/SF (C) or (D) or (C)+(D) |
|---|---|---|---|---|
| 6. A/E CONSULTANT FEES | 9.5% | 17.91 | * | 19.00 |
| 7. BUILDING PERMIT FEES | | | 1.5% | 2.82 |
| 8. CONST. MGMT FEES | 4.5% | 8.48 | * | 9.42 |
| 9. TESTING, INSPECTION, ETC. | | | 1.60 | 1.60 |
| 10. FINANCING COSTS (IDC) | | | 9% at 16 mos. | 24.00 |
| 11. CONTINGENCY | 0.00 | | | |
| R.S. MEANS AND RECENT PROJECT SOFT COSTS | | 26.39 | 28.42 | |
| ESTIMATED SOFT COSTS | | | | 56.84 |
| TOTAL R.S. MEANS AND RECENT PROJECT PROJECT COSTS | | 204.88 | 41.42 | |
| TOTAL ESTIMATE PROJECT COSTS | | | | 245.34 |

* R.S. MEANS Values (C) where adjusted up or down is based on recent project costs and Engineering Project Management experience.

#Off Site Improvements (Fire Hydrants, etc.) $5.00 per sq. ft.

# STANDARD PROJECT COST CALCULATIONS

References: (1) Building Construction Cost Data 1990
(2) Means Square Foot Costs 1993
(3) Means Assembly Cost Data 1993
Location Factor for CA - MSFC p.399 = 1.24
ADJ from 1990 to 1993 = 1.04/yr = 1.125

1. SITEWORK

Site Development: $6.00 Based on recent project data.
Landscaping: $2.00 Based on recent project data.
Off-site improvements: $5.00 Based on recent project data.

2. CORE & SHELL

Foundations: (2) p.205 1.0
$4.32 + $0.99 = $5.31 x 1.24 = $6.58

Structural Frame: Columns (2) p.233 3.1-114.0720
$38.85 x 15' height x 36 columns
= $20979 /10,000 S.F
= $2.10
Steel Joists, Beams & Slab on columns
(2) p.252 3.5-460.3400
= $7.25
Total $2.10 + $7.25 = $9.35 x 1.24 = $11.59

Vertical Transportation: Elevator (2) p.326 7.1-200.6300
$113,900/5 FL = $22780 /10,000
= $2.28 per floor x 1.24 = $2.82

(Load cost into building cost for multiple story buildings to reflect cost of multi-story C.O., which are typical in Pacific Bell)

Exterior Skin:
Walls (2) p.205 4.1
Exterior surface of sample = 2(100 + 50) x 12' height
= 3,600
Exterior surface of Standard Project
= 2(100 + 100) x 15' height = 6,000

$9.61 x 6000/3600 = $16.02

## STANDARD PROJECT COST CALCULATIONS

Doors (2) p.292 4.6-100.4050
3 - 4' x 8' doors at $1203 ea. = $3609
(2) P. 293 4.6-100.4300
2 - 8' x 8' doors at $2190 ea. = $4380
$3609 + $4380 = $7,989 /10,000 = $0.80

Windows = 20% of wall - doors
= 1200 - 96 -128 = 976 S.F.
(2) p. 296 4.7-110.5950
4'1" x 5'5" = 22'
976 /22' = 45 x $1101
= $49,545 /10,000 = $4.95

Add Flooring ( no other appropriate subsection)

Floor Finishes (2) p. 321 6.6-100.1580 = $1.22

Total Exterior Skin = $16.02 +$0.80 + $4.95 + $1.22
= $22.99 x 1.24 = $28.50

Roofing & Moisture Protection

Built-up (2) p. 299 5.1-103.4300 = $1.72
Flashing (2) p. 302 5.1-620.0050 = $3.06
Insulation (2) p. 303 5.1-101.0150 = $ 0.66
Total = $1.72 + $3.06 + $0.66 = $5.44 x 1.24 = $6.75

Fire Protection

Fire Proofing Columns (3) p. 44 3.1-190.3300
$35.4/VLF x 15' height x 36 columns
= $35.4/VLF x 540 VLF = $19,116 /10,000 = $1.91

Fire Proofing Beams (3) p. 54 3.1-290.0550
2 beams per interior building bay x length of building
8 x 100 = 800 LF
$23.02/LF x 800 LF = $18,416 /10,000 = $1.84

## STANDARD PROJECT COST CALCULATIONS

Fire Detectors
(2) p. 204 Common Additive, Unit Cost
2 per bay x 25 bays = 50 x $113 = $5,650
$5,650 /10,000 = $0.57

Total Fire Protection = $1.91 + $1.84 +$0.57 = $4.32
$4.32 x 1.24 = $5.36

Electrical (1) p. 368 171000 870.2900
$23.05 x 1.125 ('90 to '93 adj.)= $25.93 x 1.24 = $32.15

Plumbing (1) P. 368 171000 870.2720
$7.10 X 1.125 ('90 to '93 adj.) = $7.99 x 1.24 = $9.90

HVAC (1) p. 368 171000 870.2770
$19.45 x 1.125 ('90 to '93 adj.) = $21.88 x 1.24 = $27.13

Common Area Finishes
40% of 10% of total area

Partitions (2) p. 312 6.1-610.1100
12' height x 1000 SF (10% of total SF) = 12,000 /10,000
= 1.20 x $6.43 = $7.72

Painting (2) p. 318 6.5-100.0120
1.2 x $0.29 =$0.35

Interior Doors (2) p. 317 6.4-100.2700
8 doors x $534 = $4272 /10,000 = $0.43

Ceiling (2) P. 323 6.7-810.2640
$1.46 X 1000 SF = $1460 /10,000 = $0.15

Fixtures (2) p. 377 9.2-213.0280
$4.53 x 1000 SF = $4530 /10,000 = $0.45

Total = $7.72 + $0.35 + $0.43 + $0.15 + $0.45 = $9.10

## STANDARD PROJECT COST CALCULATIONS

Common Area Finishes = 40% x $9.10 = $3.64
$3.64 x 1.24 = $4.51

3. OFFICE & STORAGE
60 % of 10% of total area
Use prior computation for Common Area Finishes

60% x $9.10 = $5.46 x 1.24 = $6.77

4. GENERAL CONDITIONS
Inc.

5. G.C. OVERHEAD & PROFIT
(1) p. 3 010000 062.0200 15%
(1) p. 2 010000 042.various 7%
15% + 7% = 22%
22% x $133.50 = $29.37 x 1.24 = $36.42

6. A/E CONSULTANT FEES
(1) p.1 010000 004.0090 7.0%
(1) p. 1 010000 028.0100 2.5%
7% + 2.5% = 9.5%
9.5% x $188.50 = $17.91

7. BUILDING PERMIT FEES
1.5% x $188.50 = $2.83

8. CONST. MGMT FEES
(1) p. 1 010000 016.0010
4.5% X $188.50 = $8.48

9. TESTING, INSPECTION, ETC.
$1.60

10. FINANCING COSTS (IDC)
16 MONTHS AT 9% = $24.00 (FV188.5, 16 MO., 9%)

11. CONTINGENCY
0.00

# 010 | Overhead

| | 010 000 \| Overhead | | CREW | DAILY OUTPUT | MAN-HOURS | UNIT | BARE COSTS MAT. | LABOR | EQUIP. | TOTAL | TOTAL INCL O&P | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 004 | 0011 | **ARCHITECTURAL FEES** | | | | | | | | | | 004 |
| | 0020 | For work to $10,000 | | | | Project | | | | | 15% | |
| | 0060 | To $100,000 | | | | | | | | | 10% | |
| | 0090 | To $1,000,000 | | | | | | | | | 7% | |
| | 0100 | For alteration work, to $500,000, add to fee (10) | | | | | | | | | 50% | |
| | 0150 | Over $500,000, add to fee | | | | | | | | | 25% | |
| 012 | 0010 | **CONSTRUCTION COST INDEX** (Appendix) for 162 major U.S. and | | | | | | | | | | 012 |
| | 0020 | Canadian cities, total cost, min. (Greensboro, NC) | | | | % | | | | | 79.2% | |
| | 0050 | Average | | | | | | | | | 100% | |
| | 0100 | Maximum (Anchorage, AK) | | | | | | | | | 127.9% | |
| 014 | 0010 | **CONSTRUCTION ECONOMIES** For bricklaying (60) | | | | | | | | | | 014 |
| 016 | 0010 | **CONSTRUCTION MANAGEMENT FEES** $1,000,000 job, minimum | | | | Project | | | | | 4.50% | 016 |
| | 0050 | Maximum | | | | | | | | | 7.50% | |
| | 0300 | $5,000,000 job, minimum | | | | | | | | | 2.50% | |
| | 0350 | Maximum | | | | | | | | | 4% | |
| 018 | 0010 | **CONSTRUCTION TIME** Requirements (9) | | | | | | | | | | 018 |
| 020 | 0010 | **CONTINGENCIES** Allowance to add at conceptual stage | | | | Project | | | | | 15% | 020 |
| | 0050 | Schematic stage | | | | | | | | | 10% | |
| | 0100 | Preliminary working drawing stage | | | | | | | | | 7% | |
| | 0150 | Final working drawing stage | | | | | | | | | 2% | |
| 022 | 0010 | **CONTRACTOR EQUIPMENT** See division 016 (13) (17) | | | | | | | | | | 022 |
| 024 | 0010 | **CREWS** For building construction, see How To Use This Book | | | | | | | | | | 024 |
| 028 | 0010 | **ENGINEERING FEES** Educational planning consultant, minimum | | | | Project | | | | | .50% | 028 |
| | 0100 | Maximum | | | | " | | | | | 2.50% | |
| | 0200 | Electrical, minimum (11) | | | | Contrct | | | | | 4.10% | |
| | 0300 | Maximum | | | | | | | | | 10.10% | |
| | 0400 | Elevator & conveying systems, minimum | | | | | | | | | 2.50% | |
| | 0500 | Maximum | | | | | | | | | 5% | |
| | 0600 | Food service & kitchen equipment, minimum | | | | | | | | | 8% | |
| | 0700 | Maximum | | | | | | | | | 12% | |
| | 0800 | Landscaping & site development, minimum | | | | | | | | | 2.50% | |
| | 0900 | Maximum | | | | | | | | | 6% | |
| | 1000 | Mechanical (plumbing & HVAC), minimum | | | | | | | | | 4.10% | |
| | 1100 | Maximum | | | | | | | | | 10.10% | |
| | 1200 | Structural, minimum | | | | Project | | | | | 1% | |
| | 1300 | Maximum | | | | " | | | | | 2.50% | |
| 034 | 0010 | **FIELD OFFICE EXPENSE** | | | | | | | | | | 034 |
| | 0100 | Office equipment rental, average | | | | Month | 130 | | | | 143 | |
| | 0120 | Office supplies, average | | | | " | 240 | | | | 264 | |
| | 0125 | Office trailer rental, see division 015-904 | | | | | | | | | | |
| | 0140 | Telephone bill; avg. bill/month incl. long dist. | | | | Month | 215 | | | | 236.50 | |
| | 0160 | Field office lights & HVAC | | | | " | 74 | | | | 81.40 | |
| 036 | 0010 | **FIELD PERSONNEL** Clerk average | | | | Week | | 212 | | 212 | 325 | 036 |
| | 0100 | Field engineer, minimum | | | | | | 490 | | 490 | 745 | |
| | 0120 | Average | | | | | | 655 | | 655 | 995 | |
| | 0140 | Maximum | | | | | | 735 | | 735 | 1,125 | |
| | 0160 | General purpose laborer, average | | | | | | 680 | | 680 | 1,025 | |
| | 0180 | Project manager, minimum | | | | | | 935 | | 935 | 1,425 | |
| | 0200 | Average | | | | | | 1,040 | | 1,040 | 1,575 | |
| | 0220 | Maximum | | | | | | 1,180 | | 1,180 | 1,800 | |
| | 0240 | Superintendent, minimum | | | | | | 885 | | 885 | 1,350 | |
| | 0260 | Average | | | | | | 985 | | 985 | 1,500 | |
| | 0280 | Maximum | | | | | | 1,105 | | 1,105 | 1,675 | |
| | 0290 | Timekeeper, average | | | | | | 535 | | 535 | 815 | |

ATTACHMENT 1
MEANS BUILDING
CONSTRUCT COSTS

## 010 000 | Overhead

| | | | CREW | DAILY OUTPUT | MAN-HOURS | UNIT | BARE COSTS MAT. | LABOR | EQUIP. | TOTAL | TOTAL INCL O&P | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 038 | 0010 | **HISTORICAL COST INDEXES** (Appendix) Back to 1946 | | | | | | | | | | 038 |
| 040 | 0010 | **INSURANCE** Builders risk, standard, minimum (2) | | | | Job | | | | | .22% | 040 |
| | 0050 | Maximum | | | | | | | | | .59% | |
| | 0200 | All-risk type, minimum | | | | | | | | | .25% | |
| | 0250 | Maximum | | | | | | | | | .62% | |
| | 0400 | Contractor's equipment floater, minimum (2) | | | | Value | | | | | .50% | |
| | 0450 | Maximum | | | | " | | | | | 1.50% | |
| | 0600 | Public liability, average (4) | | | | Job | | | | | 1.55% | |
| | 0800 | Workers' compensation & employer's liability, average | | | | | | | | | | |
| | 0850 | by trade, carpentry, general (7) | | | | Payroll | | 15.09% | | | | |
| | 0900 | Clerical | | | | | | .49% | | | | |
| | 0950 | Concrete | | | | | | 13.86% | | | | |
| | 1000 | Electrical | | | | | | 5.53% | | | | |
| | 1050 | Excavation | | | | | | 9.71% | | | | |
| | 1100 | Glazing | | | | | | 11.06% | | | | |
| | 1150 | Insulation | | | | | | 12.38% | | | | |
| | 1200 | Lathing | | | | | | 9.19% | | | | |
| | 1250 | Masonry | | | | | | 12.65% | | | | |
| | 1300 | Painting & decorating | | | | | | 11.28% | | | | |
| | 1350 | Pile driving | | | | | | 23.67% | | | | |
| | 1400 | Plastering | | | | | | 12.18% | | | | |
| | 1450 | Plumbing | | | | | | 6.74% | | | | |
| | 1500 | Roofing | | | | | | 27.64% | | | | |
| | 1550 | Sheet metal work (HVAC) | | | | | | 9.44% | | | | |
| | 1600 | Steel erection, structural | | | | | | 30.18% | | | | |
| | 1650 | Tile work, interior ceramic | | | | | | 7.62% | | | | |
| | 1700 | Waterproofing, brush or hand caulking | | | | | | 6.54% | | | | |
| | 1800 | Wrecking | | | | | | 31.44% | | | | |
| | 2000 | Range of 35 trades in 50 states, excl. wrecking, minimum | | | | | | 2.10% | | | | |
| | 2100 | Average | | | | | | 13.70% | | | | |
| | 2200 | Maximum | | | | | | 118% | | | | |
| 042 | 0010 | **JOB CONDITIONS** Modifications to total | | | | | | | | | | 042 |
| | 0020 | project cost summaries | | | | | | | | | | |
| | 0100 | Economic conditions, favorable, deduct | | | | Project | | | | | 2% | |
| | 0200 | Unfavorable, add | | | | | | | | | 5% | |
| | 0300 | Hoisting conditions, favorable, deduct | | | | | | | | | 2% | |
| | 0400 | Unfavorable, add | | | | | | | | | 5% | |
| | 0500 | General Contractor management, experienced, deduct | | | | | | | | | 2% | |
| | 0600 | Inexperienced, add | | | | | | | | | 10% | |
| | 0700 | Labor availability, surplus, deduct | | | | | | | | | 1% | |
| | 0800 | Shortage, add | | | | | | | | | 10% | |
| | 0900 | Material storage area, available, deduct | | | | | | | | | 1% | |
| | 1000 | Not available, add | | | | | | | | | 2% | |
| | 1100 | Subcontractor availability, surplus, deduct | | | | | | | | | 5% | |
| | 1200 | Shortage, add | | | | | | | | | 12% | |
| | 1300 | Work space, available, deduct | | | | | | | | | 2% | |
| | 1400 | Not available, add | | | | | | | | | 5% | |
| 046 | 0010 | **LABOR INDEX** (Appendix) For 162 major U.S. and Canadian cities | | | | | | | | | | 046 |
| | 0020 | Minimum (Charleston, SC) | | | | % | | 62.8% | | | | |
| | 0050 | Average | | | | | | 100% | | | | |
| | 0100 | Maximum (San Francisco, CA) | | | | | | 144.8% | | | | |
| 048 | 0010 | **MAIN OFFICE EXPENSE** Average for General Contractors (4) | | | | | | | | | | 048 |
| | 0020 | As a percentage of their annual volume | | | | | | | | | | |
| | 0050 | Annual volume under 1 million dollars | | | | % Vol. | | | | 13.60% | | |
| | 0100 | Up to 2.5 million dollars | | | | | | | | 8% | | |
| | 0150 | Up to 4.0 million dollars | | | | | | | | 6.80% | | |
| | 0200 | Up to 7.0 million dollars | | | | | | | | 5.60% | | |

## 010 000 | Overhead

| | | | CREW | DAILY OUTPUT | MAN-HOURS | UNIT | BARE COSTS MAT. | LABOR | EQUIP. | TOTAL | TOTAL INCL O&P | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 048 | 0250 | Up to 10 million dollars | | | | % Vol. | | | | 5.10% | | 048 |
| | 0300 | Over 10 million dollars | | | | " | | | | 3.90% | | |
| 052 | 0010 | **MARK-UP** For General Contractors for change | | | | | | | | | | 052 |
| | 0100 | of scope of job as bid | | | | | | | | | | |
| | 0200 | Extra work, by subcontractors, add | | | | % | | | | | 10% | |
| | 0250 | By General Contractor, add | | | | | | | | | 15% | |
| | 0400 | Omitted work, by subcontractors, deduct | | | | | | | | | 5% | |
| | 0450 | By General Contractor, deduct | | | | | | | | | 7.50% | |
| | 0600 | Overtime work, by subcontractors, add | | | | | | | | | 15% | |
| | 0650 | By General Contractor, add | | | | | | | | | 10% | |
| | 1000 | Installing contractors, on their own labor, minimum (6) | | | | | | 43% | | | | |
| | 1100 | Maximum | | | | | | 68% | | | | |
| 054 | 0010 | **MATERIAL INDEX** (Appendix) For 162 major U.S. and Canadian cities | | | | | | | | | | 054 |
| | 0020 | Minimum (San Antonio, TX) | | | | % | 94.3% | | | | | |
| | 0040 | Average | | | | | 100% | | | | | |
| | 0060 | Maximum (Anchorage, AK) | | | | | 125.7% | | | | | |
| 058 | 0010 | **OVERHEAD** As percent of direct costs, minimum (4) | | | | | | | | 5% | | 058 |
| | 0050 | Average | | | | | | | | 12% | | |
| | 0100 | Maximum (6) | | | | | | | | 22% | | |
| 062 | 0010 | **OVERHEAD & PROFIT** Allowance to add to items in this | | | | | | | | | | 062 |
| | 0020 | book that do not include Subs O&P, average | | | | % | | | | 25% | | |
| | 0100 | Allowance to add to items in this book that | | | | | | | | | | |
| | 0110 | do include Subs O&P, minimum | | | | % | | | | | 5% | |
| | 0150 | Average | | | | | | | | | 10% | |
| | 0200 | Maximum | | | | | | | | | 15% | |
| | 0300 | Typical, by size of project, under $100,000 | | | | | | | | 30% | | |
| | 0350 | $500,000 project | | | | | | | | 25% | | |
| | 0400 | $2,000,000 project | | | | | | | | 20% | | |
| | 0450 | Over $10,000,000 project | | | | | | | | 15% | | |
| 064 | 0010 | **OVERTIME** For early completion of projects or where (3) | | | | | | | | | | 064 |
| | 0020 | labor shortages exist, add to usual labor, up to | | | | Costs | | 100% | | | | |
| 068 | 0010 | **PERFORMANCE BOND** For buildings, minimum (1) | | | | Job | | | | | .60% | 068 |
| | 0100 | Maximum | | | | | | | | | 2.50% | |
| 070 | 0010 | **PERMITS** Rule of thumb, most cities, minimum | | | | | | | | | .50% | 070 |
| | 0100 | Maximum | | | | | | | | | 2% | |
| 082 | 0010 | **SMALL TOOLS** As % of contractor's work, minimum (4) | | | | Total | | | | | .50% | 082 |
| | 0100 | Maximum | | | | " | | | | | 2% | |
| 086 | 0010 | **TAXES** Sales tax, State, County & City, average (8) | | | | % | 4.41% | | | | | 086 |
| | 0050 | Maximum | | | | | 7.50% | | | | | |
| | 0200 | Social Security, on first $48,000 of wages | | | | | | 7.56% | | | | |
| | 0210 | | | | | | | | | | | |
| | 0300 | Unemployment, MA, combined Federal and State, minimum (5) | | | | % | | 2.20% | | | | |
| | 0350 | Average | | | | | | 6.20% | | | | |
| | 0400 | Maximum | | | | | | 6.40% | | | | |
| | 0410 | | | | | | | | | | | |
| 092 | 0010 | **WEATHER STATION** Remote recording, minimum | | | | Ea. | 2,750 | | | | 3,025 | 092 |
| | 0100 | Maximum | | | | " | 6,425 | | | | 7,067 | |
| 094 | 0010 | **WINTER PROTECTION** Reinforced plastic on wood | | | | | | | | | | 094 |
| | 0100 | framing to close openings | 2 Clab | 750 | .021 | S.F. | .27 | .37 | | .37 | .85 | |
| | 0200 | Tarpaulins hung over scaffolding, 8 uses, not incl. scaffolding | | 1,500 | .010 | | .14 | .18 | | .18 | .40 | |
| | 0300 | Prefab, fiberglass panels, steel frame, 8 uses | | 1,200 | .013 | | .52 | .23 | | .23 | .90 | |

# 013 | Submittals

| | | 013 100 \| Progress Schedules | CREW | DAILY OUTPUT | MAN-HOURS | UNIT | BARE COSTS MAT. | LABOR | EQUIP. | TOTAL | TOTAL INCL O&P | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 104 | 0010 | **SCHEDULING** Critical path, as % of architectural fee, minimum | | | | % | | | | | 2% | 104 |
| | 0100 | Maximum | | | | " | | | | | 4% | |
| | 0300 | Computer-update, micro, no plots, minimum | | | | Ea. | | | | | 200 | |
| | 0400 | Including plots, maximum | | | | " | | | | | 2,100 | |
| | 0600 | Rule of thumb, CPM scheduling, small job | | | | Job | | | | | .10% | |
| | 0650 | Large job | | | | | | | | | .05% | |
| | 0700 | Cost control, small job | | | | | | | | | .15% | |
| | 0750 | Large job | | | | | | | | | .04% | |
| | | **013 300 \| Survey Data** | | | | | | | | | | |
| 306 | 0010 | **SURVEYING** Conventional, topographical, minimum | A-7 | 3.30 | 7.270 | Acre | 12.75 | 135 | | 147.75 | 220 | 306 |
| | 0100 | Maximum | A-8 | .60 | 53.330 | | 39 | 980 | | 1,019 | 1,525 | |
| | 0300 | Lot location and lines, minimum, for large quantities | A-7 | 2 | 12 | | 21 | 225 | | 246 | 365 | |
| | 0320 | Average | " | 1.25 | 19.200 | | 39 | 365 | | 404 | 590 | |
| | 0400 | Maximum, for small quantities | A-8 | 1 | 32 | | 63 | 585 | | 648 | 960 | |
| | 0600 | Monuments, 3' long | A-7 | 10 | 2.400 | Ea. | 9.05 | 45 | | 54.05 | 78 | |
| | 0800 | Property lines, perimeter, cleared land | " | 1,000 | .024 | L.F. | .03 | .45 | | .48 | .71 | |
| | 0900 | Wooded land | A-8 | 875 | .036 | " | .03 | .67 | | .70 | 1.05 | |
| | 1100 | Crew for building layout, 2 man crew | A-6 | 1 | 16 | Day | | 320 | | 320 | 475 | |
| | 1200 | 3 man crew | A-7 | 1 | 24 | | | 455 | | 455 | 685 | |
| | 1300 | 4 man crew | A-8 | 1 | 32 | | | 585 | | 585 | 890 | |
| | 1500 | Aerial surveying, including ground control, minimum fee, 10 acres | | | | Total | | | | | 4,250 | |
| | 1510 | 100 acres | | | | | | | | | 4,575 | |
| | 1550 | From existing photography, deduct | | | | | | | | | 700 | |
| | 1600 | 2' contours, 10 acres | | | | Acre | | | | | 355 | |
| | 1650 | 20 acres | | | | | | | | | 235 | |
| | 1800 | 50 acres | | | | | | | | | 77 | |
| | 1850 | 100 acres | | | | | | | | | 65 | |
| | 2000 | 1000 acres | | | | | | | | | 14.75 | |
| | 2050 | 10,000 acres | | | | | | | | | 9.45 | |
| | 2150 | For 1' contours and | | | | | | | | | | |
| | 2160 | dense urban areas, add to above | | | | Acre | | | | | 40% | |
| | 3000 | Inertial guidance system for | | | | | | | | | | |
| | 3010 | locating coordinates, rent per day | | | | Ea. | | | | | 3,450 | |
| | | **013 400 \| Shop Drawings** | | | | | | | | | | |
| 406 | 0010 | **MODELS** Cardboard & paper, 1 building, minimum | | | | Ea. | 370 | | | 370 | 405 | 406 |
| | 0050 | Maximum | | | | | 900 | | | 900 | 990 | |
| | 0100 | 2 buildings, minimum | | | | | 505 | | | 505 | 555 | |
| | 0150 | Maximum | | | | | 1,275 | | | 1,275 | 1,400 | |
| | 0200 | Plexiglass and metal, basic layout | | | | SF Flr. | .05 | | | .05 | .06 | |
| | 0210 | Including equipment and personnel | | | | " | .16 | | | .16 | .18 | |
| | 0300 | Site plan layout, minimum | | | | Ea. | 570 | | | 570 | 625 | |
| | 0350 | Maximum | | | | " | 1,375 | | | 1,375 | 1,525 | |
| 408 | 0010 | **RENDERINGS** Water color, matted, 20" x 30", eye level, | | | | | | | | | | 408 |
| | 0020 | 1 building, minimum | | | | Ea. | 385 | | | 385 | 425 | |
| | 0050 | Average | | | | | 890 | | | 890 | 980 | |
| | 0100 | Maximum | | | | | 1,400 | | | 1,400 | 1,550 | |
| | 1000 | 5 buildings, minimum | | | | | 625 | | | 625 | 690 | |
| | 1100 | Maximum | | | | | 1,750 | | | 1,750 | 1,925 | |
| | 2000 | Aerial perspective, 1 building, minimum | | | | | 390 | | | 390 | 430 | |
| | 2100 | Maximum | | | | | 1,425 | | | 1,425 | 1,575 | |
| | 3000 | 5 buildings, minimum | | | | | 765 | | | 765 | 840 | |
| | 3100 | Maximum | | | | | 1,750 | | | 1,750 | 1,925 | |
| | | **013 800 \| Construction Photos** | | | | | | | | | | |
| 804 | 0010 | **PHOTOGRAPHS** 8" x 10", 4 shots, 2 prints ea., std. mounting | | | | Set | 92 | | | 92 | 100 | 804 |
| | 0100 | Hinged linen mounts | | | | " | 105 | | | 105 | 115 | |

# 013 | Submittals

## 013 800 | Construction Photos

| | | | CREW | DAILY OUTPUT | MAN-HOURS | UNIT | BARE COSTS MAT. | LABOR | EQUIP. | TOTAL | TOTAL INCL O&P | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 804 | 0200 | 8" x 10", 4 shots, 2 prints each, in color | | | | Set | 185 | | | 185 | 205 | 804 |
| | 0300 | For I.D. slugs, add to all above | | | | | 2.55 | | | 2.55 | 2.81 | |
| | 0500 | Aerial photos, initial fly-over, 6 shots, 1 print ea., 8" x 10" | | | | | 700 | | | 700 | 770 | |
| | 0550 | 11" x 14" prints | | | | | 730 | | | 730 | 805 | |
| | 0600 | 16" x 20" prints | | | | | 875 | | | 875 | 965 | |
| | 0700 | For full color prints, add | | | | | 40% | | | | | |
| | 0750 | Add for traffic control area | | | | | 245 | | | 245 | 270 | |
| | 0900 | For over 30 miles from airport, add per | | | | Mile | 4.25 | | | 4.25 | 4.68 | |
| | 1000 | Vertical photography, 4 to 6 shots with | | | | | | | | | | |
| | 1010 | different scales, 1 print each | | | | Set | 910 | | | 910 | 1,000 | |
| | 1500 | Time lapse equipment, camera and projector, buy | | | | | 3,500 | | | 3,500 | 3,850 | |
| | 1550 | Rent per month | | | | | 495 | | | 495 | 545 | |
| | 1700 | Cameraman and film, including processing, B.&W. | | | | Day | 510 | | | 510 | 560 | |
| | 1720 | Color | | | | " | 575 | | | 575 | 635 | |

# 014 | Quality Control

## 014 100 | Testing Services

| | | | CREW | DAILY OUTPUT | MAN-HOURS | UNIT | BARE COSTS MAT. | LABOR | EQUIP. | TOTAL | TOTAL INCL O&P | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 108 | 0010 | TESTING For concrete building costing $1,000,000, minimum | | | | Project | | | | | 5,000 | 108 |
| | 0020 | Maximum | | | | | | | | | 50,000 | |
| | 0050 | Steel building, minimum | | | | | | | | | 5,000 | |
| | 0070 | Maximum | | | | | | | | | 10,000 | |
| | 0100 | For building costing, $10,000,000, minimum | | | | | | | | | 35,000 | |
| | 0150 | Maximum | | | | | | | | | 50,000 | |
| | 0200 | Asphalt testing, compressive strength Marshall stability, set of 3 | | | | Ea. | | | | | 105 | |
| | 0220 | Density, set of 3 | | | | | | | | | 42 | |
| | 0250 | Extraction, individual tests on sample | | | | | | | | | 89 | |
| | 0300 | Penetration | | | | | | | | | 32 | |
| | 0350 | Mix design, 5 specimens | | | | | | | | | 670 | |
| | 0360 | Additional specimen | | | | | | | | | 83 | |
| | 0400 | Specific gravity | | | | | | | | | 38 | |
| | 0420 | Swell test | | | | | | | | | 65 | |
| | 0450 | Water effect and cohesion, set of 6 | | | | | | | | | 165 | |
| | 0470 | Water effect and plastic flow | | | | | | | | | 65 | |
| | 0600 | Concrete testing, aggregates, abrasion | | | | | | | | | 74 | |
| | 0650 | Absorption | | | | | | | | | 37 | |
| | 0800 | Petrographic analysis | | | | | | | | | 475 | |
| | 0900 | Specific gravity | | | | | | | | | 37 | |
| | 1000 | Sieve analysis, washed | | | | | | | | | 70 | |
| | 1050 | Unwashed | | | | | | | | | 38 | |
| | 1200 | Sulfate soundness | | | | | | | | | 79 | |
| | 1300 | Weight per cubic foot | | | | | | | | | 21 | |
| | 1500 | Cement, physical tests | | | | | | | | | 265 | |
| | 1600 | Chemical tests | | | | | | | | | 325 | |
| | 1800 | Compressive strength, cylinders, delivered to lab | | | | | | | | | 10 | |
| | 1900 | Picked up by lab, minimum | | | | | | | | | 8.40 | |
| | 1950 | Average | | | | | | | | | 12.60 | |
| | 2000 | Maximum | | | | | | | | | 21 | |
| | 2200 | Compressive strength, cores (not incl. drilling) | | | | | | | | | 38 | |
| | 2250 | Core drilling, 4" diameter (plus technician) | | | | Inch | | | | | 16 | |
| | 2260 | Technician for core drilling | | | | Hr. | | | | | 35 | |
| | 2300 | Patching core holes | | | | Ea. | | | | | 22 | |

## 014 100 | Testing Services

| | | CREW | DAILY OUTPUT | MAN-HOURS | UNIT | BARE COSTS MAT. | LABOR | EQUIP. | TOTAL | TOTAL INCL O&P | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 108 2400 | Drying shrinkage at 28 days | | | | Ea. | | | | | 265 | 108 |
| 2500 | Flexural test beams | | | | | | | | | 53 | |
| 2600 | Mix design, one batch mix | | | | | | | | | 265 | |
| 2650 | Added trial batches | | | | | | | | | 110 | |
| 2800 | Modulus of elasticity | | | | | | | | | 130 | |
| 2900 | Tensile test, cylinders | | | | | | | | | 58 | |
| 3000 | Water-Cement ratio curve, 3 batches | | | | | | | | | 485 | |
| 3100 | 4 batches | | | | | | | | | 645 | |
| 3300 | Masonry testing, absorption, per 5 brick | | | | | | | | | 54 | |
| 3350 | Chemical resistance, per 2 brick | | | | | | | | | 54 | |
| 3400 | Compressive strength, per 5 brick | | | | | | | | | 53 | |
| 3420 | Efflorescence, per 5 brick | | | | | | | | | 53 | |
| 3440 | Imperviousness, per 5 brick | | | | | | | | | 53 | |
| 3470 | Modulus of rupture, per 5 brick | | | | | | | | | 53 | |
| 3500 | Moisture, block only | | | | | | | | | 26 | |
| 3550 | Mortar, compressive strength, set of 3 | | | | | | | | | 32 | |
| 4100 | Reinforcing steel, bend test | | | | | | | | | 21 | |
| 4200 | Tensile test, up to #8 bar | | | | | | | | | 27 | |
| 4220 | #9 to #11 bar | | | | | | | | | 33 | |
| 4240 | #14 bar and larger | | | | | | | | | 64 | |
| 4400 | Soil testing, Atterberg limits, liquid and plastic limits (18) | | | | | | | | | 42 | |
| 4510 | Hydrometer analysis | | | | | | | | | 47 | |
| 4530 | Specific gravity | | | | | | | | | 47 | |
| 4600 | Sieve analysis, washed | | | | | | | | | 37 | |
| 4700 | Unwashed | | | | | | | | | 37 | |
| 4710 | Consolidation test, minimum | | | | | | | | | 315 | |
| 4715 | Maximum | | | | | | | | | 460 | |
| 4720 | Density and classification of undisturbed sample | | | | | | | | | 47 | |
| 4750 | Moisture content | | | | | | | | | 7.90 | |
| 4800 | Permeability, variable or constant head, undisturbed | | | | | | | | | 195 | |
| 4850 | Recompacted | | | | | | | | | 265 | |
| 4900 | Proctor compaction, 4" standard mold | | | | | | | | | 125 | |
| 4950 | 6" modified mold | | | | | | | | | 145 | |
| 5100 | Shear tests, triaxial, minimum | | | | | | | | | 145 | |
| 5150 | Maximum | | | | | | | | | 475 | |
| 5300 | Direct shear, minimum | | | | | | | | | 125 | |
| 5350 | Maximum | | | | | | | | | 265 | |
| 5550 | Technician for inspection, per day, earthwork | | | | | | | | | 210 | |
| 5650 | Bolting | | | | | | | | | 255 | |
| 5750 | Roofing | | | | | | | | | 210 | |
| 5790 | Welding | | | | | | | | | 255 | |
| 5820 | Non-destructive testing, dye penetrant | | | | Day | | | | | 300 | |
| 5840 | Magnetic particle | | | | | | | | | 300 | |
| 5860 | Radiography | | | | | | | | | 465 | |
| 5880 | Ultrasonic | | | | | | | | | 320 | |
| 6000 | Welding certification, minimum | | | | Ea. | | | | | 85 | |
| 6100 | Maximum | | | | | | | | | 260 | |

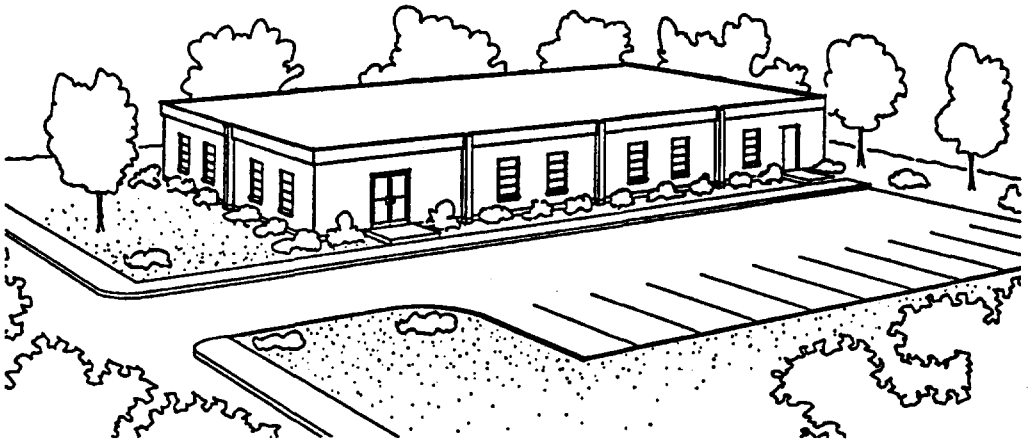
## 171 000 | S.F. & C.F. Costs

| | | | UNIT | UNIT COSTS ¼ | UNIT COSTS MEDIAN | UNIT COSTS ¾ | % OF TOTAL ¼ | % OF TOTAL MEDIAN | % OF TOTAL ¾ | |
|---|---|---|---|---|---|---|---|---|---|---|
| 760 | 2720 | Plumbing | S.F. | 3.22 | 3.89 | 5.05 | 5.40% | 6.90% | 8.10% | 760 |
| | 2770 | Heating, ventilating, air conditioning | | 3.96 | 7.55 | 10.65 | 8.70% | 11.50% | 17.40% | |
| | 2900 | Electrical | | 5.30 | 6.35 | 7.35 | 8% | 9.50% | 10.60% | |
| | 3100 | Total: Mechanical & Electrical | | 11.65 | 16 | 23.50 | 19.30% | 27.10% | 32.50% | |
| | 9000 | Per pupil, total cost | Ea. | 5,525 | 7,350 | 9,650 | | | | |
| 780 | 0010 | SCHOOLS Senior High | S.F. | 54.65 | 64.55 | 86.75 | | | | 780 |
| | 0020 | Total project costs | C.F. | 3.48 | 4.25 | 5.50 | | | | |
| | 1800 | Equipment | S.F. | 1.48 | 3.60 | 5.15 | 2.30% | 3.90% | 5.40% | |
| | 2720 | Plumbing | | 2.88 | 4.84 | 7.75 | 5% | 6.50% | 8% | |
| | 2770 | Heating, ventilating, air conditioning | | 6.60 | 7.40 | 10.65 | 8.90% | 11.50% | 14.20% | |
| | 2900 | Electrical | | 5.55 | 7.25 | 10.95 | 8.30% | 10% | 12.30% | |
| | 3100 | Total: Mechanical & Electrical | | 11.65 | 18.50 | 23.90 | 16.90% | 25.60% | 29.70% | |
| | 9000 | Per pupil, total cost | Ea. | 5,625 | 9,050 | 11,800 | | | | |
| 800 | 0010 | SCHOOLS Vocational | S.F. | 45.50 | 61.35 | 82.10 | | | | 800 |
| | 0020 | Total project costs | C.F. | 2.83 | 3.90 | 5.35 | | | | |
| | 0500 | Masonry | S.F. | 2.67 | 6.60 | 10.20 | 4.60% | 8% | 10.90% | |
| | 1140 | Roofing | | .78 | 1.33 | 2.54 | .80% | 1.20% | 2.20% | |
| | 1800 | Equipment | | 1.14 | 1.97 | 3.87 | 1.90% | 3.20% | 4.60% | |
| | 2720 | Plumbing | | 3.05 | 4.48 | 6.45 | 5.40% | 7% | 8.50% | |
| | 2770 | Heating, ventilating, air conditioning | | 5.75 | 7.95 | 13.25 | 9.30% | 12.50% | 17% | |
| | 2900 | Electrical | | 4.89 | 6.60 | 9.95 | 9.50% | 11.80% | 13.90% | |
| | 3100 | Total: Mechanical & Electrical | | 11.35 | 16.45 | 24.95 | 21.10% | 29.70% | 36% | |
| | 9000 | Per pupil, total cost | Ea. | 2,800 | 16,800 | 24,800 | | | | |
| | 9500 | Total: Mechanical & Electrical | " | 1,125 | 2,275 | 5,825 | | | | |
| 830 | 0010 | SPORTS ARENAS | S.F. | 39.85 | 50.20 | 64.05 | | | | 830 |
| | 0020 | Total project costs | C.F. | 2.16 | 3.95 | 5 | | | | |
| | 2720 | Plumbing | S.F. | 2.04 | 3.50 | 6.25 | 4.30% | 6.30% | 8.50% | |
| | 2770 | Heating, ventilating, air conditioning | | 4.25 | 5.90 | 7.65 | 5.80% | 10.20% | 13.50% | |
| | 2900 | Electrical | | 3.29 | 5.50 | 6.75 | 7.10% | 9.70% | 12.20% | |
| | 3100 | Total: Mechanical & Electrical | | 7.30 | 12.95 | 16.65 | 13.40% | 22.50% | 30.80% | |
| 850 | 0010 | SUPERMARKETS | | 36.70 | 42.35 | 49.05 | | | | 850 |
| | 0020 | Total project costs | C.F. | 2.02 | 2.39 | 3.10 | | | | |
| | 2720 | Plumbing | S.F. | 1.97 | 2.59 | 3.04 | 5% | 6% | 6.90% | |
| | 2770 | Heating, ventilating, air conditioning | | 3.03 | 3.61 | 4.41 | 8.50% | 8.50% | 9.50% | |
| | 2900 | Electrical | | 4.29 | 5.25 | 6.40 | 10.40% | 12.40% | 13.60% | |
| | 3100 | Total: Mechanical & Electrical | | 7.10 | 10.30 | 12.65 | 18.40% | 22.40% | 27.70% | |
| 860 | 0010 | SWIMMING POOLS | | 56 | 72.45 | 102 | | | | 860 |
| | 0020 | Total project costs | C.F. | 4.88 | 5.70 | 6.65 | | | | |
| | 2720 | Plumbing | S.F. | 3.92 | 6.45 | 9 | 4.60% | 9.60% | 12.40% | |
| | 2900 | Electrical | | 4.25 | 6 | 9.10 | 6.50% | 7.60% | 7.90% | |
| | 3100 | Total: Mechanical & Electrical | | 9.85 | 17.75 | 34.80 | 17.50% | 24.90% | 31% | |
| 870 | 0010 | TELEPHONE EXCHANGES | S.F. | 80.95 | 111 | 147 | | | | 870 |
| | 0020 | Total project costs | C.F. | 4.90 | 7.35 | 10.50 | | | | |
| | 2720 | Plumbing | S.F. | 2.80 | 4.82 | 7.10 | 3.50% | 5.70% | 6.60% | |
| | 2770 | Heating, ventilating, air conditioning | | 6.80 | 15.65 | 19.45 | 11.70% | 16% | 18.40% | |
| | 2900 | Electrical | | 7.40 | 12.70 | 23.05 | 10.70% | 13.90% | 17.80% | |
| | 3100 | Total: Mechanical & Electrical | | 16.45 | 23.10 | 44.50 | 19.80% | 30.80% | 34.70% | |
| 890 | 0010 | TERMINALS Bus | | 36.85 | 55.90 | 66.95 | | | | 890 |
| | 0020 | Total project costs | C.F. | 1.82 | 3.15 | 4.04 | | | | |
| | 2720 | Plumbing | S.F. | 1.22 | 2.75 | 4.25 | 2.30% | 7.20% | 8.80% | |
| | 2900 | Electrical | | 1.90 | 2.54 | 7.25 | 3.90% | 7.50% | 11.80% | |
| | 3100 | Total: Mechanical & Electrical | | 1.93 | 5.90 | 9.40 | 8.30% | 16.90% | 19.50% | |
| 910 | 0010 | THEATERS | S.F. | 45.85 | 59.95 | 90.65 | | | | 910 |
| | 0020 | Total project costs | C.F. | 2.43 | 3.60 | 5.05 | | | | |



BUILDING CONST. COST DATA 1990

For expanded coverage of these items see *Means Square Foot Cost Data 1990*



## Costs per square foot of floor area

| EXTERIOR WALL | S.F. Area | 2000 | 3000 | 4000 | 5000 | 6000 | 7000 | 8000 | 9000 | 10000 |
|---|---|---|---|---|---|---|---|---|---|---|
| | *L.F. Perimeter* | *180* | *220* | *260* | *286* | *320* | *353* | *368* | *397* | *425* |
| Face Brick with Concrete Block Back-up | Steel Frame | 101.00 | 90.40 | 85.10 | 80.60 | 78.25 | 76.45 | 74.10 | 72.95 | 72.00 |
| | Bearing Walls | 99.70 | 89.15 | 83.85 | 79.30 | 77.00 | 75.20 | 72.85 | 71.65 | 70.75 |
| Limestone with Concrete Block Back-up | Steel Frame | 113.45 | 100.55 | 94.10 | 88.50 | 85.65 | 83.45 | 80.45 | 79.05 | 77.90 |
| | Bearing Walls | 112.20 | 99.30 | 92.85 | 87.25 | 84.35 | 82.15 | 79.20 | 77.80 | 76.60 |
| Decorative Concrete Block | Steel Frame | 94.10 | 84.80 | 80.10 | 76.20 | 74.15 | 72.60 | 70.55 | 69.55 | 68.75 |
| | Bearing Walls | 92.85 | 83.50 | 78.85 | 74.95 | 72.90 | 71.35 | 69.30 | 68.30 | 67.50 |
| Perimeter Adj., Add or Deduct | Per 100 L.F. | 23.60 | 15.70 | 11.80 | 9.45 | 7.85 | 6.75 | 5.85 | 5.25 | 4.75 |
| Story Hgt. Adj., Add or Deduct | Per 1 Ft. | 2.70 | 2.20 | 1.95 | 1.70 | 1.60 | 1.50 | 1.35 | 1.35 | 1.30 |
| *For Basement*, add $18.25 per square foot of basement area | | | | | | | | | | |

*The above costs were calculated using the basic specifications shown on the facing page. These costs should be adjusted where necessary for design alternatives and owner's requirements. Reported completed project costs, for this type of structure, range from $ 47.55 to $ 177.25 per S.F.*

## Common additives

| Description | Unit | $ Cost |
|---|---|---|
| EMERGENCY LIGHTING, 25 watt, battery operated | | |
| Lead battery | Each | 355 |
| Nickel cadmium | Each | 550 |
| SMOKE DETECTORS | | |
| Ceiling type | Each | 113 |
| Duct type | Each | 340 |
| EMERGENCY GENERATORS, complete system, gas | | |
| 15 kw | Each | 11,200 |
| 85 kw | Each | 29,800 |
| 170 kw | Each | 88,500 |
| Diesel, 50 kw | Each | 20,600 |
| 150 kw | Each | 36,600 |
| 350 kw | Each | 54,500 |

Use ***Location Factors*** in Reference Section





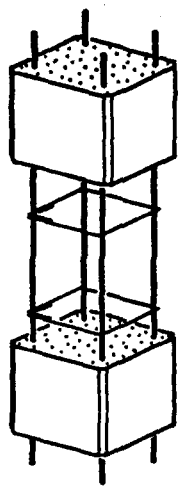
ATTACHMENT 2
Means Square Foot Cost

# M.660 Telephone Exchange

**Model costs calculated for a 1 story building with 12' story height and 5,000 square feet of floor area.**

| NO. | SYSTEM/COMPONENT | SPECIFICATIONS | | UNIT | UNIT COST | COST PER S.F. | % OF SUB-TOT |
|---|---|---|---|---|---|---|---|
| **1.0 FOUNDATIONS** | | | | | | | |
| .1 | Footings & Foundations | Poured concrete; strip and spread footings and 4' foundation wall | | S.F. Ground | 4.32 | 4.32 | 8.4% |
| .4 | Piles & Caissons | N/A | | – | – | – | |
| .9 | Excavation & Backfill | Site preparation for slab and trench for foundation wall and footing | | S.F. Ground | .99 | .99 | |
| **2.0 SUBSTRUCTURE** | | | | | | | |
| .1 | Slab on Grade | 4" reinforced concrete with vapor barrier and granular base | | S.F. Slab | 2.73 | 2.73 | 4.3% |
| .2 | Special Substructures | N/A | | – | – | – | |
| **3.0 SUPERSTRUCTURE** | | | | | | | |
| .1 | Columns & Beams | Steel columns included in 3.7 | | – | – | – | 5.8% |
| .4 | Structural Walls | N/A | | – | – | – | |
| .5 | Elevated Floors | N/A | | – | – | – | |
| .7 | Roof | Metal deck, open web steel joists, beams, columns | | S.F. Roof | 3.69 | 3.69 | |
| .9 | Stairs | N/A | | – | – | – | |
| **4.0 EXTERIOR CLOSURE** | | | | | | | |
| .1 | Walls | Face brick with concrete block backup | 80% of wall | S.F. Wall | 17.50 | 9.61 | 26.0% |
| .5 | Exterior Wall Finishes | N/A | | – | – | – | |
| .6 | Doors | Single aluminum glass with transom | | Each | 2330 | .94 | |
| .7 | Windows & Glazed Walls | Outward projecting steel | 20% of wall | Each | 858 | 5.89 | |
| **5.0 ROOFING** | | | | | | | |
| .1 | Roof Coverings | Built-up tar and gravel with flashing | | S.F. Roof | 2.01 | 2.01 | 5.7% |
| .7 | Insulation | Perlite/urethane composite | | S.F. Roof | 1.34 | 1.34 | |
| .8 | Openings & Specialties | Gravel stop and hatches | | S.F. Roof | .26 | .26 | |
| **6.0 INTERIOR CONSTRUCTION** | | | | | | | |
| .1 | Partitions | Double layer gypsum board on metal studs, toilet partitions | 15 S.F. Floor/L.F. Partition | S.F. Partition | 4.76 | 3.17 | 22.8% |
| .4 | Interior Doors | Single leaf hollow metal | 150 S.F. Floor/Door | Each | 506 | 3.37 | |
| .5 | Wall Finishes | Paint | | S.F. Surface | .43 | .57 | |
| .6 | Floor Finishes | 90% carpet, 10% terrazzo | | S.F. Floor | 4.85 | 4.85 | |
| .7 | Ceiling Finishes | Fiberglass board on exposed grid system, suspended | | S.F. Ceiling | 1.78 | 1.78 | |
| .9 | Interior Surface/Exterior Wall | Paint | 80% of wall | S.F. Floor | 1.15 | .63 | |
| **7.0 CONVEYING** | | | | | | | |
| .1 | Elevators | N/A | | – | – | – | 0.0% |
| .2 | Special Conveyors | N/A | | – | – | – | |
| **8.0 MECHANICAL** | | | | | | | |
| .1 | Plumbing | Kitchen, toilet and service fixtures, supply and drainage | 1 Fixture/715 S.F. Floor | Each | 2452 | 3.43 | 18.9% |
| .2 | Fire Protection | Wet pipe sprinkler system | | S.F. Floor | 1.92 | 1.92 | |
| .3 | Heating | Included in 8.4 | | – | – | – | |
| .4 | Cooling | Single zone unit, gas heating, electric cooling | | S.F. Floor | 6.50 | 6.50 | |
| .5 | Special Systems | N/A | | – | – | – | |
| **9.0 ELECTRICAL** | | | | | | | |
| .1 | Service & Distribution | 200 ampere service, panel board and feeders | | S.F. Floor | .95 | .95 | 8.1% |
| .2 | Lighting & Power | Fluorescent fixtures, receptacles, switches and misc. power | | S.F. Floor | 3.29 | 3.29 | |
| .4 | Special Electrical | Alarm systems and emergency lighting | | S.F. Floor | .89 | .89 | |
| **11.0 SPECIAL CONSTRUCTION** | | | | | | | |
| .1 | Specialties | N/A | | – | – | – | 0.0% |
| **12.0 SITE WORK** | | | | | | | |
| .1 | Earthwork | N/A | | – | – | – | 0.0% |
| .3 | Utilities | N/A | | – | – | – | |
| .5 | Roads & Parking | N/A | | – | – | – | |
| .7 | Site Improvements | N/A | | – | – | – | |
| | | | **SUB-TOTAL** | | | 63.13 | 100% |

| | | | |
|---|---|---|---|
| GENERAL CONDITIONS (Overhead & Profit) | 15% | 9.47 | |
| ARCHITECT FEES | 11% | 8.00 | |
| | **TOTAL BUILDING COST** | 80.60 | |

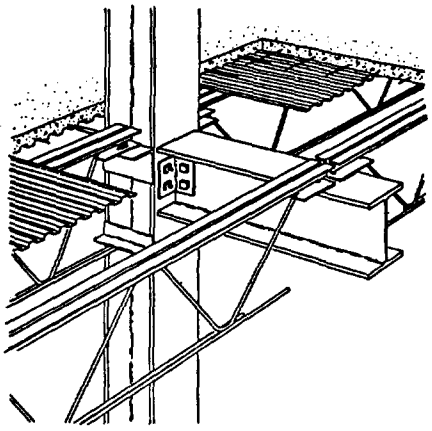


**General:** It is desirable for purposes of consistency and simplicity to maintain constant column sizes throughout building height. To do this, concrete strength may be varied (higher strength concrete at lower stories and lower strength concrete at upper stories), as well as varying the amount of reinforcing.

The table provides probably minimum column sizes with related costs and weight per lineal foot of story height.

## 3.1-114 C.I.P. Column, Square Tied

| | LOAD (KIPS) | STORY HEIGHT (FT.) | COLUMN SIZE (IN.) | COLUMN WEIGHT (P.L.F.) | CONCRETE STRENGTH (PSI) | COST PER V.L.F. | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | MAT. | INST. | TOTAL |
| 0640 | 100 | 10 | 10 | 96 | 4000 | 6.15 | 26 | 32.15 |
| 0680 | | 12 | 10 | 97 | 4000 | 6 | 25.50 | 31.50 |
| 0720 | | 14 | 12 | 142 | 4000 | 7.85 | 31 | 38.85 |
| 0840 | 200 | 10 | 12 | 140 | 4000 | 7.95 | 31 | 38.95 |
| 0860 | | 12 | 12 | 142 | 4000 | 7.90 | 31 | 38.90 |
| 0900 | | 14 | 14 | 196 | 4000 | 9.85 | 36 | 45.85 |
| 0920 | 300 | 10 | 14 | 192 | 4000 | 10.10 | 36.50 | 46.60 |
| 0960 | | 12 | 14 | 194 | 4000 | 10 | 36.50 | 46.50 |
| 0980 | | 14 | 16 | 253 | 4000 | 11.25 | 40 | 51.25 |
| 1020 | 400 | 10 | 16 | 248 | 4000 | 12.30 | 41.50 | 53.80 |
| 1060 | | 12 | 16 | 251 | 4000 | 12.20 | 41.50 | 53.70 |
| 1080 | | 14 | 16 | 253 | 4000 | 12.10 | 41 | 53.10 |
| 1200 | 500 | 10 | 18 | 315 | 4000 | 16.40 | 49.50 | 65.90 |
| 1250 | | 12 | 20 | 394 | 4000 | 16.65 | 52 | 68.65 |
| 1300 | | 14 | 20 | 397 | 4000 | 16.55 | 51.50 | 68.05 |
| 1350 | 600 | 10 | 20 | 388 | 4000 | 19.50 | 57 | 76.50 |
| 1400 | | 12 | 20 | 394 | 4000 | 19.25 | 56.50 | 75.75 |
| 1600 | | 14 | 20 | 397 | 4000 | 19.05 | 56 | 75.05 |
| 3400 | 900 | 10 | 24 | 560 | 4000 | 27.50 | 71.50 | 99 |
| 3800 | | 12 | 24 | 567 | 4000 | 27.50 | 71 | 98.50 |
| 4000 | | 14 | 24 | 571 | 4000 | 27 | 70.50 | 97.50 |
| 7300 | 300 | 10 | 14 | 192 | 6000 | 9.95 | 36.50 | 46.45 |
| 7500 | | 12 | 14 | 194 | 6000 | 9.90 | 36.50 | 46.40 |
| 7600 | | 14 | 14 | 196 | 6000 | 9.85 | 36 | 45.85 |
| 8000 | 500 | 10 | 16 | 248 | 6000 | 12.30 | 41.50 | 53.80 |
| 8050 | | 12 | 16 | 251 | 6000 | 12.20 | 41.50 | 53.70 |
| 8100 | | 14 | 16 | 253 | 6000 | 12.10 | 41 | 53.10 |
| 8200 | 600 | 10 | 18 | 315 | 6000 | 14.85 | 47.50 | 62.35 |
| 8300 | | 12 | 18 | 319 | 6000 | 14.65 | 47.50 | 62.15 |
| 8400 | | 14 | 18 | 321 | 6000 | 14.55 | 47 | 61.55 |
| 8800 | 800 | 10 | 20 | 388 | 6000 | 16.80 | 52 | 68.80 |
| 8900 | | 12 | 20 | 394 | 6000 | 16.65 | 52 | 68.65 |
| 9000 | | 14 | 20 | 397 | 6000 | 16.55 | 51.50 | 68.05 |
| 9100 | 900 | 10 | 20 | 388 | 6000 | 24 | 64.50 | 88.50 |
| 9300 | | 12 | 20 | 394 | 6000 | 23.50 | 64 | 87.50 |
| 9600 | | 14 | 20 | 397 | 6000 | 23.50 | 63.50 | 87 |



Steel Joists and Concrete Slab on Steel Columns and Beams

The table below lists costs per S.F. for a floor system on steel columns and beams using open web steel joists, galvanized steel slab form, 2-1/2" concrete slab reinforced with welded wire fabric.

Columns are sized to accommodate one floor plus roof loading but costs for columns are from floor to grade only.

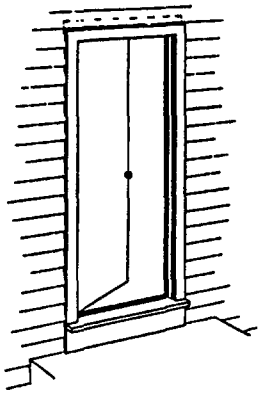
## 3.5-460 Steel Joists, Beams & Slab on Columns

| | BAY SIZE (FT.) | SUPERIMPOSED LOAD (P.S.F.) | DEPTH (IN.) | TOTAL LOAD (P.S.F.) | COLUMN ADD | COST PER S.F. | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | MAT. | INST. | TOTAL |
| 2350 | 15x20 | 40 | 17 | 83 | | 3.36 | 2.43 | 5.79 |
| 2400 | | | | | column | .51 | .23 | .74 |
| 2450 | 15x20 | 65 | 19 | 108 | | 3.69 | 2.57 | 6.26 |
| 2500 | | | | | column | .51 | .23 | .74 |
| 2550 | 15x20 | 75 | 19 | 119 | | 3.87 | 2.65 | 6.52 |
| 2600 | | | | | column | .56 | .25 | .81 |
| 2650 | 15x20 | 100 | 19 | 144 | | 4.12 | 2.77 | 6.89 |
| 2700 | | | | | column | .56 | .25 | .81 |
| 2750 | 15x20 | 125 | 19 | 170 | | 4.34 | 3.12 | 7.46 |
| 2800 | | | | | column | .74 | .33 | 1.07 |
| 2850 | 20x20 | 40 | 19 | 83 | | 3.62 | 2.53 | 6.15 |
| 2900 | | | | | column | .42 | .19 | .61 |
| 2950 | 20x20 | 65 | 23 | 109 | | 4 | 2.71 | 6.71 |
| 3000 | | | | | column | .56 | .25 | .81 |
| 3100 | 20x20 | 75 | 26 | 119 | | 4.22 | 2.81 | 7.03 |
| 3200 | | | | | column | .56 | .25 | .81 |
| 3400 | 20x20 | 100 | 23 | 144 | | 4.37 | 2.88 | 7.25 |
| 3450 | | | | | column | .56 | .25 | .81 |
| 3500 | 20x20 | 125 | 23 | 170 | | 4.88 | 3.12 | 8 |
| 3600 | | | | | column | .67 | .29 | .96 |
| 3700 | 20x25 | 40 | 44 | 83 | | 3.93 | 2.91 | 6.84 |
| 3800 | | | | | column | .45 | .20 | .65 |
| 3900 | 20x25 | 65 | 26 | 110 | | 4.30 | 3.08 | 7.38 |
| 4000 | | | | | column | .45 | .20 | .65 |
| 4100 | 20x25 | 75 | 26 | 120 | | 4.48 | 2.94 | 7.42 |
| 4200 | | | | | column | .53 | .24 | .77 |
| 4300 | 20x25 | 100 | 26 | 145 | | 4.74 | 3.06 | 7.80 |
| 4400 | | | | | column | .53 | .24 | .77 |
| 4500 | 20x25 | 125 | 29 | 170 | | 5.30 | 3.33 | 8.63 |
| 4600 | | | | | column | .62 | .28 | .90 |
| 4700 | 25x25 | 40 | 23 | 84 | | 4.23 | 3.02 | 7.25 |
| 4800 | | | | | column | .43 | .19 | .62 |
| 4900 | 25x25 | 65 | 29 | 110 | | 4.48 | 3.16 | 7.64 |
| 5000 | | | | | column | .43 | .19 | .62 |
| 5100 | 25x25 | 75 | 26 | 120 | | 4.94 | 3.15 | 8.09 |
| 5200 | | | | | column | .50 | .23 | .73 |
| 5300 | 25x25 | 100 | 29 | 145 | | 5.55 | 3.41 | 8.96 |
| 5400 | | | | | column | .50 | .23 | .73 |





See the Reference Section for Location Factors and Historical Cost Indexes.



Exterior Door System

The table below lists exterior door systems by material, type and size. Prices between sizes listed can be interpolated with reasonable accuracy. Prices are per opening for a complete door system including frame and required hardware.

Wood doors in this table are designed with wood frames and metal doors with hollow metal frames. Depending upon quality the total material and installation cost of a wood door frame is about the same as a hollow metal frame.

## 4.6-100 Wood, Steel & Aluminum

| | MATERIAL | TYPE | DOORS | SPECIFICATION | OPENING | COST PER OPNG. | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | MAT. | INST. | TOTAL |
| 2350 | Birch | solid core | single door | hinged | 2'-6" x 6'-8" | 605 | 163 | 768 |
| 2400 | Birch | solid core | single door | hinged | 2'-6" x 7'-0" | 610 | 164 | 774 |
| 2450 | Birch | solid core | single door | hinged | 2'-8" x 7'-0" | 610 | 164 | 774 |
| 2500 | Birch | solid core | single door | hinged | 3'-0" x 7'-0" | 615 | 167 | 782 |
| 2550 | Birch | solid core | double door | hinged | 2'-6" x 6'-8" | 1,150 | 296 | 1,446 |
| 2600 | Birch | solid core | double door | hinged | 2'-6" x 7'-0" | 1,150 | 300 | 1,450 |
| 2650 | Birch | solid core | double door | hinged | 2'-8" x 7'-0" | 1,150 | 300 | 1,450 |
| 2700 | Birch | solid core | double door | hinged | 3'-0" x 7'-0" | 1,175 | 305 | 1,480 |
| 2750 | Wood | combination | storm & screen | hinged | 3'-0" x 6'-8" | 310 | 40 | 350 |
| 2800 | Wood | combination | storm & screen | hinged | 3'-0" x 7'-0" | 340 | 44.50 | 384.50 |
| 2850 | Wood | overhead | panels, H.D. | manual oper. | 8'-0" x 8'-0" | 380 | 293 | 673 |
| 2900 | Wood | overhead | panels, H.D. | manual oper. | 10'-0" x 10'-0" | 570 | 325 | 895 |
| 2950 | Wood | overhead | panels, H.D. | manual oper. | 12'-0" x 12'-0" | 785 | 390 | 1,175 |
| 3000 | Wood | overhead | panels, H.D. | manual oper. | 14'-0" x 14'-0" | 1,425 | 450 | 1,875 |
| 3050 | Wood | overhead | panels, H.D. | manual oper. | 20'-0" x 16'-0" | 2,800 | 975 | 3,775 |
| 3100 | Wood | overhead | panels, H.D. | electric oper. | 8'-0" x 8'-0" | 775 | 440 | 1,215 |
| 3150 | Wood | overhead | panels, H.D. | electric oper. | 10'-0" x 10'-0" | 965 | 470 | 1,435 |
| 3200 | Wood | overhead | panels, H.D. | electric oper. | 12'-0" x 12'-0" | 1,175 | 535 | 1,710 |
| 3250 | Wood | overhead | panels, H.D. | electric oper. | 14'-0" x 14'-0" | 1,825 | 595 | 2,420 |
| 3300 | Wood | overhead | panels, H.D. | electric oper. | 20'-0" x 16'-0" | 3,175 | 1,275 | 4,450 |
| 3350 | Steel 18 Ga. | hollow metal | 1 door w/frame | no label | 2'-6" x 7'-0" | 755 | 180 | 935 |
| 3400 | Steel 18 Ga. | hollow metal | 1 door w/frame | no label | 2'-8" x 7'-0" | 755 | 180 | 935 |
| 3450 | Steel 18 Ga. | hollow metal | 1 door w/frame | no label | 3'-0" x 7'-0" | 755 | 180 | 935 |
| 3500 | Steel 18 Ga. | hollow metal | 1 door w/frame | no label | 3'-6" x 7'-0" | 805 | 188 | 993 |
| 3550 | Steel 18 Ga. | hollow metal | 1 door w/frame | no label | 4'-0" x 8'-0" | 925 | 190 | 1,115 |
| 3600 | Steel 18 Ga. | hollow metal | 2 doors w/frame | no label | 5'-0" x 7'-0" | 1,475 | 335 | 1,810 |
| 3650 | Steel 18 Ga. | hollow metal | 2 doors w/frame | no label | 5'-4" x 7'-0" | 1,475 | 335 | 1,810 |
| 3700 | Steel 18 Ga. | hollow metal | 2 doors w/frame | no label | 6'-0" x 7'-0" | 1,475 | 335 | 1,810 |
| 3750 | Steel 18 Ga. | hollow metal | 2 doors w/frame | no label | 7'-0" x 7'-0" | 1,575 | 355 | 1,930 |
| 3800 | Steel 18 Ga. | hollow metal | 2 doors w/frame | no label | 8'-0" x 8'-0" | 1,800 | 355 | 2,155 |
| 3850 | Steel 18 Ga. | hollow metal | 1 door w/frame | "A" label | 2'-6" x 7'-0" | 810 | 212 | 1,022 |
| 3900 | Steel 18 Ga. | hollow metal | 1 door w/frame | "A" label | 2'-8" x 7'-0" | 845 | 214 | 1,059 |
| 3950 | Steel 18 Ga. | hollow metal | 1 door w/frame | "A" label | 3'-0" x 7'-0" | 845 | 214 | 1,059 |
| 4000 | Steel 18 Ga. | hollow metal | 1 door w/frame | "A" label | 3'-6" x 7'-0" | 900 | 221 | 1,121 |
| 4050 | Steel 18 Ga. | hollow metal | 1 door w/frame | "A" label | 4'-0" x 8'-0" | 970 | 233 | 1,203 |
| 4100 | Steel 18 Ga. | hollow metal | 2 doors w/frame | "A" label | 5'-0" x 7'-0" | 1,550 | 395 | 1,945 |
| 4150 | Steel 18 Ga. | hollow metal | 2 doors w/frame | "A" label | 5'-4" x 7'-0" | 1,675 | 400 | 2,075 |
| 4200 | Steel 18 Ga. | hollow metal | 2 doors w/frame | "A" label | 6'-0" x 7'-0" | 1,675 | 400 | 2,075 |





See the Reference Section for Location Factors and Historical Cost Indexes.

## 4.6-100 Wood, Steel & Aluminum

| | MATERIAL | TYPE | DOORS | SPECIFICATION | OPENING | COST PER OPNG. | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | MAT. | INST. | TOTAL |
| 4250 | Steel 18 Ga. | hollow metal | 2 doors w/frame | "A" label | 7'-0" x 7'-0" | 1,775 | 410 | 2,185 |
| 4300 | Steel 18 Ga. | hollow metal | 2 doors w/frame | "A" label | 8'-0" x 8'-0" | 1,775 | 415 | 2,190 |
| 4350 | Steel 24 Ga. | overhead | sectional | manual oper. | 8'-0" x 8'-0" | 277 | 293 | 570 |
| 4400 | Steel 24 Ga. | overhead | sectional | manual oper. | 10'-0" x 10'-0" | 425 | 325 | 750 |
| 4450 | Steel 24 Ga. | overhead | sectional | manual oper. | 12'-0" x 12'-0" | 585 | 390 | 975 |
| 4500 | Steel 24 Ga. | overhead | sectional | manual oper. | 20'-0" x 14'-0" | 1,675 | 840 | 2,515 |
| 4550 | Steel 24 Ga. | overhead | sectional | electric oper. | 8'-0" x 8'-0" | 670 | 440 | 1,110 |
| 4600 | Steel 24 Ga. | overhead | sectional | electric oper. | 10'-0" x 10'-0" | 820 | 470 | 1,290 |
| 4650 | Steel 24 Ga. | overhead | sectional | electric oper. | 12'-0" x 12'-0" | 980 | 535 | 1,515 |
| 4700 | Steel 24 Ga. | overhead | sectional | electric oper. | 20'-0" x 14'-0" | 2,050 | 1,125 | 3,175 |
| 4750 | Steel | overhead | rolling | manual oper. | 8'-0" x 8'-0" | 610 | 470 | 1,080 |
| 4800 | Steel | overhead | rolling | manual oper. | 10'-0" x 10'-0" | 735 | 540 | 1,275 |
| 4850 | Steel | overhead | rolling | manual oper. | 12'-0" x 12'-0" | 925 | 625 | 1,550 |
| 4900 | Steel | overhead | rolling | manual oper. | 14'-0" x 14'-0" | 1,300 | 940 | 2,240 |
| 4950 | Steel | overhead | rolling | manual oper. | 20'-0" x 12'-0" | 1,625 | 835 | 2,460 |
| 5000 | Steel | overhead | rolling | manual oper. | 20'-0" x 16'-0" | 2,150 | 1,250 | 3,400 |
| 5050 | Steel | overhead | rolling | electric oper. | 8'-0" x 8'-0" | 1,550 | 620 | 2,170 |
| 5100 | Steel | overhead | rolling | electric oper. | 10'-0" x 10'-0" | 1,675 | 690 | 2,365 |
| 5150 | Steel | overhead | rolling | electric oper. | 12'-0" x 12'-0" | 1,850 | 775 | 2,625 |
| 5200 | Steel | overhead | rolling | electric oper. | 14'-0" x 14'-0" | 2,225 | 1,100 | 3,325 |
| 5250 | Steel | overhead | rolling | electric oper. | 20'-0" x 12'-0" | 2,550 | 985 | 3,535 |
| 5300 | Steel | overhead | rolling | electric oper. | 20'-0" x 16'-0" | 3,075 | 1,400 | 4,475 |
| 5350 | Steel | overhead | rolling | fire rated | 10'-0" x 10'-0" | 1,250 | 685 | 1,935 |
| 5400 | Steel | overhead | rolling grill | manual oper. | 10'-0" x 10'-0" | 1,100 | 755 | 1,855 |
| 5450 | Steel | overhead | rolling grill | manual oper. | 15'-0" x 8'-0" | 1,475 | 940 | 2,415 |
| 5500 | Steel | vertical lift | door w/frame | motor operator | 16'-0" x 16'-0" | 16,300 | 2,625 | 18,925 |
| 5550 | Steel | vertical lift | 1 door w/frame | motor operator | 32'-0" x 24'-0" | 29,700 | 4,725 | 34,425 |
| 5600 | St. Stl. & glass | revolving | stock unit | manual oper. | 6'-0" x 7'-0" | 25,300 | 5,025 | 30,325 |
| 5650 | St. Stl. & glass | revolving | stock unit | auto Cntrls. | 6'-10" x 7'-0" | 30,800 | 5,350 | 36,150 |
| 5700 | Bronze | revolving | stock unit | manual oper. | 6'-10" x 7'-0" | 27,000 | 10,000 | 37,000 |
| 5750 | Bronze | revolving | stock unit | auto Cntrls. | 6'-10" x 7'-0" | 32,500 | 10,300 | 42,800 |
| 5800 | St. Stl. & glass | balanced | standard | economy | 3'-0" x 7'-0" | 5,525 | 850 | 6,375 |
| 5850 | St. Stl. & glass | balanced | standard | premium | 3'-0" x 7'-0" | 9,625 | 1,100 | 10,725 |
| 6000 | Aluminum | combination | storm & screen | hinged | 3'-0" x 6'-8" | 242 | 43.50 | 285.50 |
| 6050 | Aluminum | combination | storm & screen | hinged | 3'-0" x 7'-0" | 266 | 47.50 | 313.50 |
| 6100 | Aluminum | overhead | rolling grill | manual oper. | 12'-0" x 12'-0" | 2,200 | 1,325 | 3,525 |
| 6150 | Aluminum | overhead | rolling grill | motor oper. | 12'-0" x 12'-0" | 3,025 | 1,475 | 4,500 |
| 6200 | Alum. & Fbrgls. | overhead | heavy duty | manual oper. | 12'-0" x 12'-0" | 1,150 | 390 | 1,540 |
| 6250 | Alum. & Fbrgls. | overhead | heavy duty | electric oper. | 12'-0" x 12'-0" | 1,550 | 535 | 2,085 |
| 6300 | Alum. & glass | w/o transom | narrow stile | w/panic Hrdwre. | 3'-0" x 7'-0" | 1,125 | 560 | 1,685 |
| 6350 | Alum. & glass | w/o transom | narrow stile | dbl. door, Hrdwre. | 6'-0" x 7'-0" | 1,950 | 925 | 2,875 |
| 6400 | Alum. & glass | w/o transom | wide stile | hdwre. | 3'-0" x 7'-0" | 1,275 | 550 | 1,825 |
| 6450 | Alum. & glass | w/o transom | wide stile | dbl. door, Hdwre. | 6'-0" x 7'-0" | 2,475 | 1,100 | 3,575 |
| 6500 | Alum. & glass | w/o transom | full vision | hdwre. | 3'-0" x 7'-0" | 1,825 | 870 | 2,695 |
| 6550 | Alum. & glass | w/o transom | full vision | dbl. door, Hdwre. | 6'-0" x 7'-0" | 2,475 | 1,250 | 3,725 |
| 6600 | Alum. & glass | w/o transom | non-standard | hdwre. | 3'-0" x 7'-0" | 1,425 | 550 | 1,975 |
| 6650 | Alum. & glass | w/o transom | non-standard | dbl. door, Hdwre. | 6'-0" x 7'-0" | 2,850 | 1,100 | 3,950 |
| 6700 | Alum. & glass | w/o transom | bronze fin. | hdwre. | 3'-0" x 7'-0" | 1,450 | 550 | 2,000 |
| 6750 | Alum. & glass | w/o transom | bronze fin. | dbl. door, Hrdwre. | 6'-0" x 7'-0" | 2,900 | 1,100 | 4,000 |
| 6800 | Alum. & glass | w/o transom | black fin. | hdwre. | 3'-0" x 7'-0" | 1,500 | 550 | 2,050 |
| 6850 | Alum. & glass | w/o transom | black fin. | dbl. door, Hdwre. | 6'-0" x 7'-0" | 3,000 | 1,100 | 4,100 |
| 6900 | Alum. & glass | w/transom | narrow stile | hdwre. | 3'-0" x 10'-0" | 1,275 | 635 | 1,910 |
| 6950 | Alum. & glass | w/transom | narrow stile | dbl. door, Hdwre. | 6'-0" x 10'-0" | 2,175 | 1,125 | 3,300 |
| 7000 | Alum. & glass | w/transom | wide stile | hdwre. | 3'-0" x 10'-0" | 1,450 | 760 | 2,210 |
| 7050 | Alum. & glass | w/transom | wide stile | dbl. door, Hdwre. | 6'-0" x 10'-0" | 2,450 | 1,325 | 3,775 |
| 7100 | Alum. & glass | w/transom | full vision | hdwre. | 3'-0" x 10'-0" | 1,600 | 845 | 2,445 |

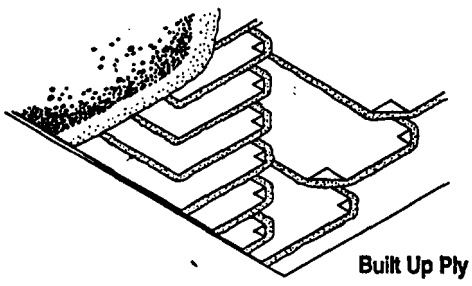
## 4.7-110 Wood, Steel & Aluminum

| | MATERIAL | TYPE | GLAZING | SIZE | DETAIL | COST PER UNIT MAT. | INST. | TOTAL |
|---|---|---|---|---|---|---|---|---|
| 5100 | Steel | | insul. glass | 2'-8" x 4'-6" | | 460 | 117 | 577 |
| 5150 | | | | 3'-4" x 5'-6" | | 705 | 179 | 884 |
| 5202 | | horiz. pivoted | std. glass | 2' x 2' | | 109 | 34 | 143 |
| 5250 | | | | 3' x 3' | | 245 | 76.50 | 321.50 |
| 5300 | | | | 4' x 4' | | 435 | 136 | 571 |
| 5350 | | | | 6' x 4' | | 655 | 204 | 859 |
| 5400 | | | insul. glass | 2' x 2' | | 114 | 39 | 153 |
| 5450 | | | | 3' x 3' | | 257 | 88 | 345 |
| 5500 | | | | 4' x 4' | | 455 | 156 | 611 |
| 5550 | | | | 6' x 4' | | 685 | 234 | 919 |
| 5600 | | picture window | std. glass | 3' x 3' | | 153 | 76.50 | 229.50 |
| 5650 | | | | 6' x 4' | | 410 | 204 | 614 |
| 5700 | | | insul. glass | 3' x 3' | | 165 | 88 | 253 |
| 5750 | | | | 6' x 4' | | 440 | 234 | 674 |
| 5800 | | industrial security | std. glass | 2'-9" x 4'-1" | | 435 | 95.50 | 530.50 |
| 5850 | | | | 4'-1" x 5'-5" | | 855 | 188 | 1,043 |
| 5900 | | | insul. glass | 2'-9" x 4'-1" | | 450 | 110 | 560 |
| 5950 | | | | 4'-1" x 5'-5" | | 885 | 216 | 1,101 |
| 6000 | | comm. projected | std. glass | 3'-9" x 5'-5" | | 635 | 173 | 808 |
| 6050 | | | | 6'-9" x 4'-1" | | 860 | 234 | 1,094 |
| 6100 | | | insul. glass | 3'-9" x 5'-5" | | 660 | 198 | 858 |
| 6150 | | | | 6'-9" x 4'-1" | | 895 | 269 | 1,164 |
| 6200 | | casement | std. glass | 4'-2" x 4'-2" | 2 lite | 525 | 148 | 673 |
| 6250 | | | insul. glass | 4'-2" x 4'-2" | | 545 | 169 | 714 |
| 6300 | | | std. glass | 5'-11" x 5'-2" | 3 lite | 1,050 | 260 | 1,310 |
| 6350 | | | insul. glass | 5'-11" x 5'-2" | | 1,100 | 298 | 1,398 |
| 6400 | Aluminum | projecting | std. glass | 3'-1" x 3'-2" | | 152 | 75.50 | 227.50 |
| 6450 | | | | 4'-5" x 5'-3" | | 216 | 94 | 310 |
| 6500 | | | insul. glass | 3'-1" x 3'-2" | | 182 | 90.50 | 272.50 |
| 6550 | | | | 4'-5" x 5'-3" | | 259 | 113 | 372 |
| 6600 | | sliding | std. glass | 3' x 2' | | 102 | 75.50 | 177.50 |
| 6650 | | | | 5' x 3' | | 130 | 83.50 | 213.50 |
| 6700 | | | | 8' x 4' | | 187 | 125 | 312 |
| 6750 | | | | 9' x 5' | | 283 | 188 | 471 |
| 6800 | | | insul. glass | 3' x 2' | | 113 | 75.50 | 188.50 |
| 6850 | | | | 5' x 3' | | 182 | 83.50 | 265.50 |
| 6900 | | | | 8' x 4' | | 300 | 125 | 425 |
| 6950 | | | | 9' x 5' | | 455 | 188 | 643 |
| 7000 | | single hung | std. glass | 2' x 3' | | 103 | 75.50 | 178.50 |
| 7050 | | | | 2'-8" x 6'-8" | | 219 | 94 | 313 |
| 7100 | | | | 3'-4" x 5'0" | | 141 | 83.50 | 224.50 |
| 7150 | | | insul. glass | 2' x 3' | | 124 | 75.50 | 199.50 |
| 7200 | | | | 2'-8" x 6'-8" | | 281 | 94 | 375 |
| 7250 | | | | 3'-4" x 5' | | 198 | 83.50 | 281.50 |
| 7300 | | double hung | std. glass | 2' x 3' | | 157 | 51 | 208 |
| 7350 | | | | 2'-8" x 6'-8" | | 465 | 151 | 616 |
| 7400 | | | | 3'-4" x 5' | | 435 | 142 | 577 |
| 7450 | | | insul. glass | 2' x 3' | | 165 | 58.50 | 223.50 |
| 7500 | | | | 2'-8" x 6'-8" | | 490 | 174 | 664 |
| 7550 | | | | 3'-4" x 5'-0" | | 460 | 163 | 623 |
| 7600 | | casements | std. glass | 3'-1" x 3'-2" | | 130 | 83 | 213 |
| 7650 | | | | 4'-5" x 5'-3" | | 315 | 201 | 516 |
| 7700 | | | insul. glass | 3'-1" x 3'-2" | | 142 | 95 | 237 |
| 7750 | | | | 4'-5" x 5'-3" | | 345 | 231 | 576 |
| 7800 | | hinged swing | std. glass | 3' x 4' | | 284 | 102 | 386 |
| 7850 | | | | 4' x 5' | | 475 | 170 | 645 |





See the Reference Section for Location Factors and Historical Cost Indexes.




Multiple ply roofing is the most popular covering for minimum pitch roofs.

| 5.1-103 | Built-Up | COST PER S.F. MAT. | INST. | TOTAL |
|---|---|---|---|---|
| 1200 | Asphalt flood coat w/gravel; not incl. insul, flash., nailers | | | |
| 1300 | | | | |
| 1400 | Asphalt base sheets & 3 plies #15 asphalt felt, mopped | .37 | .93 | 1.30 |
| 1500 | On nailable deck | .34 | .98 | 1.32 |
| 1600 | 4 plies #15 asphalt felt, mopped | .42 | 1.03 | 1.45 |
| 1700 | On nailable deck | .40 | 1.09 | 1.49 |
| 1800 | Coated glass base sheet, 2 plies glass (type IV), mopped | .31 | .93 | 1.24 |
| 1900 | For 3 plies | .40 | 1.03 | 1.43 |
| 2000 | On nailable deck | .38 | 1.09 | 1.47 |
| 2100 | 3 plies glass fiber felt (type IV), mopped | .39 | .93 | 1.32 |
| 2200 | On nailable deck | .37 | .98 | 1.35 |
| 2300 | 4 plies glass fiber felt (type IV), mopped | .45 | 1.03 | 1.48 |
| 2400 | On nailable deck | .43 | 1.09 | 1.52 |
| 2500 | Organic base sheet & 3 plies #15 organic felt, mopped | .47 | 1.05 | 1.52 |
| 2600 | On nailable deck | .38 | 1.09 | 1.47 |
| 2700 | 4 plies #15 organic felt, mopped | .50 | .93 | 1.43 |
| 2750 | | | | |
| 2800 | Asphalt flood coat, smooth surface | | | |
| 2900 | Asphalt base sheet & 3 plies #15 asphalt felt, mopped | .33 | .86 | 1.19 |
| 3000 | On nailable deck | .30 | .89 | 1.19 |
| 3100 | Coated glass fiber base sheet & 2 plies glass fiber felt, mopped | .28 | .83 | 1.11 |
| 3200 | On nailable deck | .26 | .86 | 1.12 |
| 3300 | For 3 plies, mopped | .38 | .89 | 1.27 |
| 3400 | On nailable deck | .35 | .93 | 1.28 |
| 3500 | 3 plies glass fiber felt (type IV), mopped | .37 | .83 | 1.20 |
| 3600 | On nailable decks | .34 | .86 | 1.20 |
| 3700 | 4 plies glass fiber felt (type IV), mopped | .43 | .89 | 1.32 |
| 3800 | On nailable deck | .41 | .93 | 1.34 |
| 3900 | Organic base sheet & 3 plies #15 organic felt, mopped | .38 | .86 | 1.24 |
| 4000 | On nailable decks | .36 | .89 | 1.25 |
| 4100 | 4 plies #15 organic felt, mopped | .48 | .93 | 1.41 |
| 4200 | Coal tar pitch with gravel surfacing | | | |
| 4300 | 4 plies #15 tarred felt, mopped | .74 | .98 | 1.72 |
| 4400 | 3 plies glass fiber felt (type IV), mopped | .60 | 1.09 | 1.69 |
| 4500 | Coated glass fiber base sheets 2 plies glass fiber felt, mopped | .56 | 1.09 | 1.65 |
| 4600 | On nailable decks | .51 | 1.14 | 1.65 |
| 4700 | On wood decks | .51 | 1.14 | 1.65 |
| 4800 | 3 plies glass fiber felt (type IV), mopped | .66 | .98 | 1.64 |
| 4900 | On nailable decks | .62 | 1.03 | 1.65 |
| 5000 | On wood decks | .62 | 1.03 | 1.65 |

## 5.1-620 Flashing

| | MATERIAL | BACKING | SIDES | SPECIFICATION | QUANTITY | COST PER S.F. | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | MAT. | INST. | TOTAL |
| 0040 | Aluminum | none | | .019" | | .66 | 2.28 | 2.94 |
| 0050 | | | | .032" | | .78 | 2.28 | 3.06 |
| 0300 | | fabric | 2 | .004" | | .39 | 1 | 1.39 |
| 0400 | | mastic | | .004" | | .44 | 1 | 1.44 |
| 0700 | Copper | none | | 16 oz. | <500 lbs. | 2.86 | 2.88 | 5.74 |
| 0800 | | | | 24 oz. | <500 lbs. | 4.29 | 3.15 | 7.44 |
| 2000 | Copper lead | fabric | 1 | 2 oz. | | 1.38 | 1 | 2.38 |
| 3500 | PVC black | none | | .010" | | .11 | 1.02 | 1.13 |
| 3700 | | | | .030" | | .28 | 1.02 | 1.30 |
| 4200 | Neoprene | | | 1/16" | | 1.60 | 1.02 | 2.62 |
| 4500 | Stainless steel | none | | .015" | <500 lbs. | 3.19 | 2.88 | 6.07 |
| 4600 | Copper clad | | | | >2000 lbs. | 3.03 | 2.13 | 5.16 |
| 5000 | Plain | | | 32 Ga. | | 2.04 | 2.13 | 4.17 |





See the Reference Section for Location Factors and Historical Cost Indexes.

| 5.7-101 | Roof Deck Rigid Insulation | COST PER S.F. MAT. | INST. | TOTAL |
|---|---|---|---|---|
| 0100 | | | | |
| 0150 | Fiberboard, mineral, 1" thick, R 2.78 | .30 | .36 | .66 |
| 0300 | 1-1/2" thick, R 4 | .50 | .36 | .86 |
| 0350 | 2 thick, R 5.26 | .66 | .36 | 1.02 |
| 0400 | Fiberglass, in 3' x 4' or 4' x 8' sheets | | | |
| 0450 | 15/16" thick, R 3.3 | .43 | .29 | .72 |
| 0550 | 1-5/16" thick, R 5.3 | .68 | .29 | .97 |
| 0650 | 1-7/8" thick, R 7.7 | .84 | .29 | 1.13 |
| 0750 | Fiberglass and urethane composite, 3' x 4' sheets | | | |
| 0800 | 1-11/16" thick, R 11.1 | .88 | .29 | 1.17 |
| 0850 | 2" thick, R 14.3 | .94 | .36 | 1.30 |
| 0900 | 2-5/8" thick, R 18.2 | 1.11 | .36 | 1.47 |
| 1500 | Perlite/urethane composite | | | |
| 1550 | 1-1/4" thick, R 5.88 | .84 | .29 | 1.13 |
| 1600 | 1-1/2" thick, R 7.2 | .89 | .29 | 1.18 |
| 1650 | 1-3/4" thick, R 10 | .95 | .29 | 1.24 |
| 1700 | 2" thick, R 12.5 | .98 | .36 | 1.34 |
| 1750 | 2-1/2" thick, R 14.3 | 1.07 | .39 | 1.46 |
| 1800 | 3" thick, R 20 | 1.23 | .41 | 1.64 |
| 2200 | Polystyrene | | | |
| 2250 | Extruded, 2.3 #/C.F., 1" thick, R 5.26 | .57 | .19 | .76 |
| 2300 | 2" thick, R 10 | .98 | .23 | 1.21 |
| 2350 | 3" thick, R 15 | 1.51 | .29 | 1.80 |
| 2400 | Expanded bead board, 1" thick, R 3.57 | .26 | .19 | .45 |
| 2450 | 2" thick, R 7.14 | .43 | .23 | .66 |
| 2500 | Urethane, felt both sides | | | |
| 2550 | 1" thick, R 6.7 | .44 | .29 | .73 |
| 2600 | 1-1/2" thick, R 11.11 | .51 | .29 | .80 |
| 2650 | 2" thick, R 14.3 | .66 | .36 | 1.02 |
| 2700 | 2-1/2" thick, R 20 | .77 | .36 | 1.13 |
| 2750 | 3" thick, R 25 | .99 | .36 | 1.35 |
| 2800 | Urethane and gypsum board composite | | | |
| 2850 | 1-5/8" thick, R 7.7 | .96 | .29 | 1.25 |
| 2900 | 2" thick, R 10 | 1.25 | .36 | 1.61 |
| 2950 | 2-1/2" thick, R 14.3 | 1.31 | .36 | 1.67 |
| 3000 | 3" thick, R 18.2 | 1.49 | .36 | 1.85 |