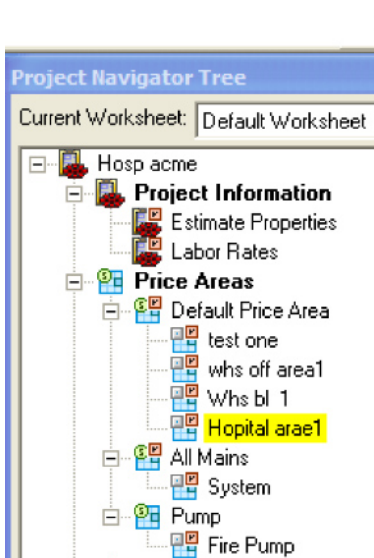


AutoPRICER is the most advanced fire sprinkler estimating program available today. It can perform completely automated “takeoffs” or be used as a standalone program; or, anywhere in between. For the purpose of this presentation we will point out its features one by one to not only show you its incredible power but also to allow you determine what portions of the program you would be most interested in leaning more about. This document will either be sent to you along with a separate check off list so that we may provide a live web demo or if your viewing this on our website you can contact us at our home office to request a live presentation and check off sheet.

## PROGRAM FEATURES

### #1. Price Areas

Price areas can be created manually or added to automatically created price areas establish by automated transfer from any AutoSPRINK program or from AutoPRICER’s own built-in program AutoSPRINK pipe. There is no limit to the number of price areas allowed and each area has its own material and fabrication, design and installation labor applied separately. Pricing can be applied as shown or can be dynamically applied on a cost per head bases.



| Cost/Hd | Selected |              | Total Req'd | Mat'l Total     |
|---------|----------|--------------|-------------|-----------------|
| 0.00    | 0        | Upright      | 0           | 0.00            |
| 13.19   | 0        | Pendant      | 669         | 8,824.24        |
|         | 0        | Sidewall     | 0           |                 |
|         | 0        | Other        | 0           |                 |
| 200.00  | 0        | General      | 0           | 200.00          |
| 13.49   | 32       | <b>Total</b> | <b>669</b>  | <b>9,024.24</b> |

Head Ratios:  
 By sel  
 By Ge

To keep from having to layout an entire project to price it AutoPRICER automatically calculates the cost per sprinkler for upright and pendent sprinklers separately.

| Cost/Hd | Selected |              | Total Req'd | Mat'l Total     |
|---------|----------|--------------|-------------|-----------------|
| 17.39   | 24       | Upright      | 52          | 904.53          |
|         | 24       | Pendant      | 52          |                 |
| 15.89   | 0        | Sidewall     | 0           | 826.32          |
|         | 0        | Other        | 0           |                 |
| 0.00    | 0        | General      | 0           | 0.00            |
| 16.64   | 48       | <b>Total</b> | <b>104</b>  | <b>1,730.85</b> |

Head Ratios:  
 By selection only (1:1)  
 By added heads  
 By General Only  
 By all

This allows smaller typical designs or areas to be priced that can be used to accurately price the entire project. In the two examples shown here notice 32 uprights were selected and 669 were priced. This factoring also applies all areas such as field labor and fabrication

Default Price Area - whs off area1

Component Info | Labor | General Material | Upright Material | Pendant/Plus Material | Hangers | Kits | Other

Description: whs off area1 Application Factor: 2.17

Guideline Component Type: System Quantity: 1

Std Material List: Branch Line

**Labor Method Utilized**

Field Method:  Per Head  Per Piece  Per End Type  Itemized  \$ Factor/Hd

Fab Method:  Per Head  Per Piece  Per End Type  Itemized  \$ Factor/Hd

**Component Labor Hours & Cost**

|            | Field    | Fab    | Design   |
|------------|----------|--------|----------|
| Actual Hrs | 156.00   | 36.40  | 40.00    |
| Act Hrs/Hd | 1.50     | 0.35   | 0.38     |
| Act \$/Hd  | 69.75    | 7.00   | 15.00    |
| Actual \$: | 7,254.00 | 728.00 | 1,560.00 |

**Material Costing By Heads**

| Cost/Hd | Selected        | Total Req'd | Mat'l Total     |
|---------|-----------------|-------------|-----------------|
| 17.39   | 24 Upright      | 52          | 904.53          |
| 15.89   | 24 Pendant      | 52          | 826.32          |
|         | 0 Sidewall      | 0           |                 |
|         | 0 Other         | 0           |                 |
| 0.00    | 0 General       | 0           | 0.00            |
| 16.64   | <b>48 Total</b> | <b>104</b>  | <b>1,730.85</b> |

Head Ratios:  
 By selection only (1:1)  By added heads  
 By General Only  By all

**Field Labor Factors**

| Method    | Hrs/Hd | Units/Hr |
|-----------|--------|----------|
| Per Head  | 1.50   | N/A      |
| Per Piece | 1.55   | 0.50 pph |
| End Type  | 1.49   | 0.53 eph |
| \$ Factor | 0.35   | N/A      |

**Material Summary**

|              | Selected Cost | Material Cost/Hd | Total Cost      |
|--------------|---------------|------------------|-----------------|
| Upright:     | 417.48        | 17.39            | 904.53          |
| Pendant:     | 381.38        | 15.89            | 826.32          |
| General:     | 0.00          | 0.00             | 0.00            |
| <b>Total</b> | <b>798.85</b> | <b>16.64</b>     | <b>1,730.85</b> |

## #2. Material Costs

General Material

Category: (All) Sub Category: (All) Material: (All)

| Size  | Description                               | Qty    | Price | Extended |
|-------|---|--------|-------|----------|
| 2½    | Pipe, Schedule 7                          | 222.67 | 3.45  | 768.21   |
| 3     | Pipe, Schedule 7                          | 221.25 | 4.23  | 935.89   |
| 4     | Pipe, Schedule 7                          | 23.96  | 5.25  | 125.79   |
| 2     | Pipe, Schedule 40                         | 8.43   | 2.80  | 23.60    |
| 4     | Pipe, Schedule 40                         | 18.87  | 7.75  | 146.24   |
| 2½    | Grooved Cap                               | 2      | 1.73  | 3.46     |
| 3     | Grooved Cap with 2" Threaded Drain Outlet | 2      | 3.00  | 6.00     |
| 2     | Square Head Plug                          | 2      | 2.00  | 4.00     |
| 4     | FireLock(TM) 90° Elbow                    | 1      | 5.91  | 5.91     |
| 4     | Grooved 90° Elbow                         | 4      | 12.00 | 48.00    |
| 2     | Threaded 45° Elbow                        | 2      | 2.00  | 4.00     |
| 2     | Threaded 90° Elbow                        | 2      | 2.00  | 4.00     |
| 3     | Grooved Tee                               | 1      | 9.00  | 9.00     |
| 4     | Grooved Tee                               | 2      | 15.00 | 30.00    |
| 4 x 3 | Grooved Reducer Coupling                  | 1      | 16.41 | 16.41    |
| 2½    | Grooved Rigid Coupling                    | 7      | 2.25  | 15.75    |
|       |   |        |       | 23.58    |
|       |   |        |       | 84.24    |
|       |   |        |       | 10.00    |
|       |   |        |       | 350.00   |
|       |   |        |       | 700.00   |
|       |   |        |       | 90.00    |
|       |   |        |       | 110.00   |
|       |   |        |       | 110.00   |
|       |   |        |       | 5.00     |

Upright Material

Category: (All) Sub Category: (All) Material: (All)

| Size        | Description                       | Qty   | Price | Extended |
|-------------|-----------------------------------|-------|-------|----------|
| 1           | Pipe, Schedule 30                 | 8.33  | 1.19  | 9.91     |
| 1½          | Pipe, Schedule 30                 | 2116  | 2.08  | 4,401.28 |
| 2           | Pipe, Schedule 30                 | 80.37 | 2.75  | 221.03   |
| 1           | Threaded Cap                      | 1     | 0.55  | 0.55     |
| 1           | Threaded 90° Elbow                | 2     | 0.52  | 1.04     |
| 1½ x ¾      | Threaded 90° Reducing Elbow       | 24    | 2.61  | 62.64    |
| 1½ x 1½ x ¾ | Threaded Reducing Tee             | 96    | 2.09  | 200.64   |
| 1½ x 1½ x 1 | Threaded Reducing Tee             | 1     | 1.90  | 1.90     |
| 1½ x 1½ x 2 | Threaded Reducing Tee             | 24    | 4.00  | 96.00    |
| 2½ x 2      | Thread-O-Let                      | 15    | 0.00  | 0.00     |
| 3 x 2       | Thread-O-Let                      | 15    | 0.00  | 0.00     |
| ¾           | 17/32" orifice, 165° F, Brass (U) | 152   | 2.41  | 366.32   |
| 1 x 2½      | Nipple                            | 1     | 0.46  | 0.46     |
| 1½ x 4      | Nipple                            | 1     | 0.91  | 0.91     |
| Totals:     |                                   |       |       | 5,362.69 |

Pendant/Plus Material

Category: (All) Sub Category: (All) Material: (All)

| Size        | Description                   | Qty   | Price | Extended |
|-------------|-------------------------------|-------|-------|----------|
| 1           | Pipe, Schedule 30             | 30.67 | 1.19  | 36.50    |
| 1           | Threaded 90° Elbow            | 9     | 0.52  | 4.68     |
| 1½ x 1½ x 1 | Threaded Reducing Tee         | 3     | 1.90  | 5.70     |
| 1 x ½       | Threaded Reducer              | 3     | 0.46  | 1.38     |
| ½           | ½" orifice, 165° F, Brass (P) | 4     | 1.95  | 7.80     |
| 1 x 2½      | Nipple                        | 3     | 0.46  | 1.38     |
| 1 x 4½      | Nipple                        | 3     | 0.71  | 2.13     |
| Totals:     |                               |       |       | 59.58    |

Material is broken down into three main categories, GENERAL, which is usually larger piping including mains, risers and bulk piping. UPRIGHT, material includes all piping from the cross main including the riser nipple and the weld-o-let it's attached to up to and including the upright sprinkler. This allow the weld-o-let to be included in the upright head cost so when doing partial take off the user won't have to be concerned with determining the number of welded outlets needed. The third is PENDENT and SIDEWALL material. This includes all material from the tee on the upright line (or the entire branch line similar to upright pricing when no uprights are present) up to and including all armover and drop material up to and including the pendent and sidewall sprinklers. HANGERS are picked off and priced separately but are still compiled in all cost per head costing. KITS and OTHER are the remaining pricing categories.

### #3. Field Labor

Field Fab Design

| Field Labor - Per Head |          |     |        |  |
|------------------------|----------|-----|--------|--|
| Head Type              | Phase    | Qty | Factor |  |
| General                | Rough-In | 0   | 0.5    |  |
| Upright                | Rough-In | 24  | 1.0    |  |
| Pendent                |          |     |        |  |
| Sidewall               |          |     |        |  |
| Other                  |          |     |        |  |
| Pendent                |          |     |        |  |
| Sidewall               |          |     |        |  |
| Other                  |          |     |        |  |

Field Labor

Per Head  
 Per Piece  
 Per End Type

Field Fab Design

| Field Labor - Per Piece |        |     |        |  |
|-------------------------|--------|-----|--------|--|
| Size                    | Source | Qty | Factor |  |
| 8                       | Lines  | 0.0 | 1.2    |  |
| 1¼                      | Mains  | 0.0 | 0.65   |  |
| 1½                      | Mains  | 0.0 | 0.65   |  |
| 2                       | Mains  | 0.0 | 0.65   |  |
| 2½                      | Mains  | 0.0 | 0.65   |  |
| 3                       | Mains  | 0.0 | 0.85   |  |
| 4                       | Mains  | 0.0 | 0.85   |  |
| 5                       | Mains  | 0.0 | 1.05   |  |
| 6                       | Mains  |     |        |  |
| 8                       | Mains  |     |        |  |
| 10                      | Mains  |     |        |  |
| 12                      | Mains  |     |        |  |
| 1                       | Drops  |     |        |  |
| 1¼                      | Drops  |     |        |  |
| 1½                      | Drops  |     |        |  |

Field Labor

Per Head  
 Per Piece  
 Per End Type  
 Itemized  
 \$/Hd

Use this method

Field & Fab Summary - Actual Per Head Hrs

|                   |            |
|-------------------|------------|
| Field             | 156.00 hrs |
| Fab               | 78.00 hrs  |
| Adj Factor        | 100 %      |
| Field Diff Factor | 0 %        |

Field & Fab Summary - Actual Hours

|                   | Per Head Hrs | Per Piece Hrs | Per End Type Hrs |
|-------------------|--------------|---------------|------------------|
| Field             | 156.00 hrs   | 161.66 hrs    | 155.22 hrs       |
| Fab               | 78.00 hrs    | 58.03 hrs     | 17.71 hrs        |
| Adj Factor        | 100 %        | 90 %          | 180 %            |
| Field Diff Factor | 0 %          | 0 %           | 0 %              |

Labor Can be accomplished and analyzed four separate ways. Hours per head, Pieces per hour, End preps per hour and Itemized. The programs internal intelligence allows instantaneous analysis of the system to determine not only component pricing but it also knows the number of pieces of each type of pipe and the number of each type of end type preparation.

Even if you use only one method to determine labor costing it can be very beneficial to compare it against other methods to assure accuracy and instill confidence.

Labor

Field

| Size | Item     | Qty  | Factor |
|------|----------|------|--------|
| 1    | Threaded | 48.0 | 0.2    |
| 1¼   | Threaded | 0.0  | 0.22   |
| 1½   | Threaded | 12.0 | 0.3    |
| 2    | Threaded | 76.0 | 0.35   |
| 2½   | Threaded | 0.0  | 0.35   |
| 3    | Threaded | 0.0  | 0.4    |
| 4    | Threaded | 0.0  | 0.5    |
| 6    | Threaded | 0.0  | 0.6    |
| 8    | Threaded | 0.0  | 0.6    |
| 10   | Threaded | 0.0  | 0.6    |
| 12   | Threaded | 0.0  | 0.6    |
| 1    | Grooved  | 0.0  | 0.2    |
| 1¼   | Grooved  | 0.0  | 0.22   |
| 1½   | Grooved  | 0.0  | 0.3    |
| 2    | Grooved  | 0.0  | 0.35   |

Field Labor

Per Head  
 Per Piece  
 Per End Type  
 Itemized  
 \$/Hd

Use this method

Grooved  
 Plain End  
 Butt Weld  
 Buff/Polish  
 Braze  
 Bell  
 F-Propex

Field & Fab Summary - Actual Hours

|                   | Per Head Hrs | Per Piece Hrs | Per End Type Hrs | Total Itemized Hrs | \$/Hd (In Hours)           | Currently In Use (Hrs) |
|-------------------|--------------|---------------|------------------|--------------------|----------------------------|------------------------|
| Field             | 156.00 hrs   | 161.66 hrs    | 155.22 hrs       | 1.30 hrs           | 0.00 hrs                   | 156.00 hrs             |
| Fab               | 78.00 hrs    | 58.03 hrs     | 17.71 hrs        | 12.81 hrs          | 36.40 hrs                  | 36.40 hrs              |
| Adj Factor        | 100 %        | 90 %          | 180 %            | 100 %              | (100% indicates no change) |                        |
| Field Diff Factor | 0 %          | 0 %           | 0 %              | 0 %                | (zero indicates no change) |                        |

### #4. Design Labor

Design

| Design Breakdown              |       |          |              |  |
|-------------------------------|-------|----------|--------------|--|
| Description                   | Hours | Quantity | Total        |  |
| Drawing Procurement           | 0.00  | 0.00     | 0.00         |  |
| Field Survey                  | 0.00  | 0.00     | 0.00         |  |
| Hydraulic Calculations        | 0.00  | 0.00     | 0.00         |  |
| Meetings                      | 0.00  | 0.00     | 0.00         |  |
| Miscellaneous                 | 0.00  | 0.00     | 0.00         |  |
| O&M Manuals                   | 0.00  | 0.00     | 0.00         |  |
| Place Structural              | 0.00  | 0.00     | 0.00         |  |
| Product Submittal             | 0.00  | 0.00     | 0.00         |  |
| Project Management            | 0.00  | 0.00     | 0.00         |  |
| Stock List                    | 0.00  | 0.00     | 0.00         |  |
| System Design                 | 40.00 | 1.00     | 40.00        |  |
| Travel                        | 0.00  | 0.00     | 0.00         |  |
| <b>Total Breakdown Hours:</b> |       |          | <b>40.00</b> |  |

Note: Design Labor does not use the application factor (head ratio's or price area quantity)

Field & Fab Summary - Actual Hours

|                   | Per Head Hrs | Per Piece Hrs | Per End Type Hrs | Total Itemized Hrs | \$/Hd (In Hours)           | Currently In Use (Hrs) |
|-------------------|--------------|---------------|------------------|--------------------|----------------------------|------------------------|
| Field             | 156.00 hrs   | 161.66 hrs    | 155.22 hrs       | 1.30 hrs           | 0.00 hrs                   | 156.00 hrs             |
| Fab               | 78.00 hrs    | 58.03 hrs     | 17.71 hrs        | 12.81 hrs          | 36.40 hrs                  | 36.40 hrs              |
| Adj Factor        | 100 %        | 90 %          | 180 %            | 100 %              | (100% indicates no change) |                        |
| Field Diff Factor | 0 %          | 0 %           | 0 %              | 0 %                | (zero indicates no change) |                        |

As shown below, Design Labor can be determined for each price area or determined globally for the entire project. Here engineering can also be calculated on a dollar-per-sprinkler basis or on an hour-per-head basis.

Design Labor Worksheet

Select Breakdown Cost Area: System

| Design Breakdown              |       |          |            |  |
|-------------------------------|-------|----------|------------|--|
| Description                   | Hours | Quantity | Total      |  |
| Drawing Procurement           | 0.00  | 0.00     | 0.00       |  |
| Blockout                      | 0.00  | 0.00     | 0.00       |  |
| Background Cleanup            | 0.00  | 0.00     | 0.00       |  |
| Place Structural              | 0.00  | 0.00     | 0.00       |  |
| Hydraulic Calculations        | 0.00  | 0.00     | 0.00       |  |
| System Design                 | 0.00  | 0.00     | 0.00       |  |
| Field Survey                  | 0.00  | 0.00     | 0.00       |  |
| Stock List                    | 0.00  | 0.00     | 0.00       |  |
| Product Submittal             | 0.00  | 0.00     | 0.00       |  |
| AHJ Submittal                 | 0.00  | 0.00     | 0.00       |  |
| Project Management            | 0.00  | 0.00     | 0.00       |  |
| O&M Manuals                   | 0.00  | 0.00     | 0.00       |  |
| As Bults                      | 0.00  | 0.00     | 0.00       |  |
| Meetings                      | 0.00  | 0.00     | 0.00       |  |
| <b>Total Breakdown Hours:</b> |       |          | <b>0.0</b> |  |

Use a Per Head Factor

Mode:  Override all design  Override all except guideline  Add

Units:  \$/Hd  Hrs/Hd 8 Hrs/Hd

Apply Factor To: System

## #5. Fabrication costs

Fab \$/Hd Factor: 7.00

| Field & Fab Summary - Actual Hours |              |               |                  |                    |                             |                        |
|------------------------------------|--------------|---------------|------------------|--------------------|-----------------------------|------------------------|
|                                    | Per Head Hrs | Per Piece Hrs | Per End Type Hrs | Total Itemized Hrs | \$/Hd (In Hours)            | Currently In Use (Hrs) |
| Field                              | 156.00 hrs   | 161.66 hrs    | 155.22 hrs       | 1.30 hrs           | 0.00 hrs                    | 156.00 hrs             |
| Fab                                | 78.00 hrs    | 58.03 hrs     | 17.71 hrs        | 12.81 hrs          | 36.40 hrs                   | 36.40 hrs              |
| Adj Factor                         | 100 %        | 90 %          | 180 %            | 100 %              | %(100% indicates no change) |                        |
| Field Diff Factor                  | 0 %          | 0 %           | 0 %              | 0 %                | %(zero indicates no change) |                        |

**Fab Labor**

Per Head  
 Per Piece  
 Per End Type  
 Itemized  
 \$/Hd

## SUMMARYS AND ANALYSIS

Project Navigator Tree

Current Worksheet: Default Worksheet

- Hosp acme
  - Project Information
    - Estimate Properties
    - Labor Rates
  - Price Areas
    - Default Price Area
      - test one
      - whs off area1
      - Whs bl 1
      - Hopital arae1
    - All Mains
    - System
  - Pump
    - Fire Pump
  - Worksheet Data
    - Worksheet Properties
    - Worksheet Design Labor
    - Guideline
    - Worksheet Stats
  - Expenses & Subcontracts
    - Travel
    - Equipment/Buyout Material
    - Permits
    - Other Expenses
    - Freight
    - Subcontracts
  - Project Documents
    - Hosp acme

## #6. Work Sheet data

Worksheet

Summary | Material List | Material Summary | Labor Summary | Other Labor

Worksheet Name: Default Worksheet

Heads Selected: 253 Heads Actual: 1,048

Total Sq Feet: 66,000

# Systems: 3

Estimate Price Areas: [Empty]

Work Sheet Price Areas: Default Price Area, All Mains, Pump

Add >> << Remove

| Totals             |            |
|--------------------|------------|
| Labor              | 436,101.27 |
| Material           | 127,003.45 |
| Standard Expenses  | 0.00       |
| Job Cost           | 563,104.71 |
| Overhead: 12.00    | 67,572.57  |
| Profit Total Cost  | 630,677.28 |
| % of Cost          | 20.00      |
| % of Sales         | 16.67      |
| Sub Total          | 126,135.46 |
| Marked Up Expenses | 0.00       |
| Grand Total:       | 756,812.73 |

This section shows total material and labor summaries; and allows both material and labor editing. It is also for field labor override to analysis cost on an hours-per-head basis or a dollar-per-head basis.

Worksheet

Labor Overrides

Field Hrs/Hd: 0.00 Total Amt: 0.00

Fab Hrs/Hd: 0.00 Total Amt: 0.00

Units

Field:  \$/Hd  Hrs/Hd

Fab:  \$/Hd  Hrs/Hd

Other Labor

Shipping Field: 0 Handling Field: 0 Field: 24.00

Shipping Fab: 0 Handling Fab: 0 Fab: 0.00

Field Hrs Per System: 8.00 # Systems: 3 Testing Hours: 24.00

Total Cost

Field: 1,116.00

Fab: 0.00

Worksheet

Material List

Add Material

Material Group: General

| Price Area         | Size       | Description              | Qty   | Cost  | Ext Cost |
|--------------------|------------|--------------------------|-------|-------|----------|
| All Mains - System | 2          | Pipe, Schedule 40        | 9.71  | 1.55  | 15.05    |
| All Mains - System | 4          | Pipe, Schedule 40        | 16.83 | 3.31  | 55.72    |
| All Mains - System | 2½         | Grooved Cap, DI          | 4     | 1.51  | 6.04     |
| All Mains - System | 3          | Grooved Cap, DI          | 3     | 1.83  | 5.49     |
| All Mains - System | 2          | Square Head Plug         | 1     | 0.69  | 0.69     |
| All Mains - System | 1          | Threaded Cap, DI         | 1     | 0.45  | 0.45     |
| All Mains - System | 4          | Grooved Cross            | 1     | 33.60 | 33.60    |
| All Mains - System | 4          | Grooved 90° Elbow        | 5     | 4.32  | 21.60    |
| All Mains - System | 2½         | Grooved 90° Elbow, DI    | 1     | 2.04  | 2.04     |
| All Mains - System | 3          | Grooved 90° Elbow, DI    | 2     | 2.97  | 5.94     |
| All Mains - System | 4          | Grooved 90° Elbow, DI    | 3     | 4.32  | 12.96    |
| All Mains - System | 2          | Threaded 45° Elbow       | 1     | 2.27  | 2.27     |
| All Mains - System | ½          | Threaded 90° Elbow       | 1     | 0.31  | 0.31     |
| All Mains - System | 2          | Threaded 90° Elbow       | 4     | 1.77  | 7.08     |
| All Mains - System | 3 x 3 x 2½ | Grooved Reducing Tee, DI | 1     | 5.58  | 5.58     |
| All Mains - System | 3          | Grooved Tee, DI          | 1     | 4.72  | 4.72     |
| All Mains - System | 2          | Threaded Straight Tee    | 1     | 2.68  | 2.68     |
| All Mains - System | 2          | 150lb Union              | 1     | 6.51  | 6.51     |

Actual Material Total for General: 104,618.79 (includes hangers, kits, and other material)

Extra material can be added at any time.

## #7. Estimate Guideline

| Estimate Guideline         |                   |               |                 |                    |                 |                   |                   |              |       |              |              |
|----------------------------|-------------------|---------------|-----------------|--------------------|-----------------|-------------------|-------------------|--------------|-------|--------------|--------------|
| Inside Work                |                   |               |                 |                    |                 |                   |                   |              |       |              |              |
| Upright                    | 323               | Pendant       | 725             | Sidewall           | 0               | Other             | 0                 | General      | 0     | <b>Total</b> | <b>1,048</b> |
| Estimated Time             |                   |               |                 | Estimated Costs    |                 |                   |                   | System Stats |       |              |              |
| Field                      | Fab               | Design        | Material        | Field              | Fab             | Design            |                   |              |       |              |              |
| 2,158.16                   | 366.80            | 214.97        | 125,690.87      | 100,354.27         | 7,336.00        | 8,384.00          | Total SQ Ft:      | 166,000      |       |              |              |
| Hours Per Sprinkler        |                   |               |                 | Cost Per Sprinkler |                 |                   |                   | Total Heads: | 1,048 |              |              |
| Field                      | Fab               | Design        | Material        | Field              | Fab             | Design            | Cost / Sq. Ft.:   | 1.46         |       |              |              |
| 2.06                       | 0.35              | 0.21          | 119.93          | 95.76              | 7.00            | 8.00              | SQ Ft./Head:      | 158.40       |       |              |              |
| Extra Labor & Material     |                   |               |                 |                    |                 |                   |                   |              |       |              |              |
| Note                       |                   |               |                 | Field Hrs          | Fab Hrs         | Design Hrs        | Material \$       |              |       |              |              |
| Note                       |                   |               |                 | Field Hr           | Fab Hrs         | Design ...        | Material \$       |              |       |              |              |
| Field Hrs                  | Field \$          | Fab Hrs       | Fab \$          | Design Hrs         | Design \$       | Material \$       | <b>Total</b>      |              |       |              |              |
| 0.00                       | 0.00              | 0.00          | 0.00            | 0.00               | 0.00            | 0.00              |                   |              |       |              |              |
| <b>2,158.16</b>            | <b>100,354.27</b> | <b>366.80</b> | <b>7,336.00</b> | <b>214.97</b>      | <b>8,384.00</b> | <b>125,690.87</b> | <b>241,765.14</b> |              |       |              |              |
| Mains                      |                   |               |                 |                    |                 |                   |                   |              |       |              |              |
| Risers                     |                   |               |                 |                    |                 |                   |                   |              |       |              |              |
| Fire Pumps                 |                   |               |                 |                    |                 |                   |                   |              |       |              |              |
| Underground Work           |                   |               |                 |                    |                 |                   |                   |              |       |              |              |
| Standpipes / Hose Stations |                   |               |                 |                    |                 |                   |                   |              |       |              |              |

Guideline statistics are kept in real-time in the background and can be viewed at any time during the estimating process. The user has complete control on where the costs can be applied. Costs can be combined into one system area as above or they can be separated and applied to the various categories depicted below it.

## #8. Summary and Stats

Further breakdowns of percentages for system material components and overall system costs such as material -vs- field labor -vs- design, etc. allows the user to establish trends that can greatly increase confidence or quickly analyze the work of others.

| Summary & Stats               |                                |                            |   |                   |              |
|-------------------------------|--------------------------------|----------------------------|---|-------------------|--------------|
| Cost Review                   |                                | Stats                      |   | Profit Analysis   |              |
| Price Area Material Stats     |                                | Material Costs By Category |   | Cost Review       |              |
| <b>Upright</b>                | Total Heads: 323               | Category                   | Cost  | %                 |              |
|                               | Total Material Cost: 9,430.12  | Pipe                       | 66,024.66   | 57.49             |              |
|                               | Material Cost/Head: 29.20      | Fittings                   | 5,209.04  | 4.54              |              |
| <b>Pendant/Sidewall/Other</b> | Total Heads: 725               | Couplings                  | 6,172.38  | 5.37              |              |
|                               | Total Material Cost: 10,171.82 | Pipe Outlets               | 1,556.51  | 1.36              |              |
|                               | Material Cost/Head: 14.03      | Sprinklers                 | 2,336.14  | 2.03              |              |
| <b>General</b>                | Total Heads: 0                 | Valves                     | 11,463.28   | 9.98              |              |
|                               | Total Material Cost: 97,319.80 | FDCs                       | 110.00  | 0.10              |              |
|                               | Material Cost/Head: N/A        | Flow Devices               | 2,095.28  | 1.82              |              |
|                               |                                | Nipples                    | 326.97  | 0.28              |              |
|                               |                                | Hangers                    | 17,829.25   | 15.53             |              |
|                               |                                | Kits                       | 297.00  | 0.26              |              |
|                               |                                | Other Items                | 200.00  | 0.17              |              |
|                               |                                | Guideline Material         | 1,221.00  | 1.06              |              |
| <b>Totals:</b>                |                                |                            | <b>114,841.51</b>   |                   |              |
| Guideline Cost Summary        |                                |                            |   | Hard Costs        |              |
|                               | Cost                           | %                          | <input type="checkbox"/> Include Overhead <input type="checkbox"/> Include Profit |                   |              |
| System:                       | 241,765.14                     | 98.9                       | Labor   | 117,509.27        |              |
| Mains:                        | 0.00                           | 0.0                        | Material  | 127,003.45        |              |
| Risers:                       | 0.00                           | 0.0                        | Expenses  | 0.00              |              |
| Pumps:                        | 1,631.58                       | 0.7                        | Total   | 244,512.71        |              |
| Underground:                  | 0.00                           | 0.0                        | Total / Sq. Ft.:  | 1.47              |              |
| Standpipe:                    | 0.00                           | 0.0                        | Total / Head:   | 233.31            |              |
| Exp & Misc:                   | 0.00                           | 0.0                        | Material & Labor Summary  |                   |              |
| Other Labor:                  | 1,116.0                        | 0.5                        | Material  | 127,003.45        | 51.9         |
| Field/Fab Override:           | 0.0                            | 0.0                        | Field Labor   | 101,749.27        | 41.6         |
| <b>Total Job Cost:</b>        | <b>244,512.71</b>              | <b>100.0</b>               | Fab Labor   | 7,376.00          | 3.0          |
|                               |                                |                            | Design Labor  | 8,384.00          | 3.4          |
|                               |                                |                            | Expenses:   | 0.00              | 0.0          |
|                               |                                |                            | <b>Job Cost:</b>  | <b>244,512.71</b> | <b>100.0</b> |

## #9. Profit Analysis Tool

**Summary & Stats**

Profit Analysis

Current Job Cost: **244,512.71**

Current Net Profit: **54,770.85**

| Gross Profit ... | Profit    | Subcontracts | Sales Price |
|------------------|-----------|--------------|-------------|
| 20.00            | 61,128.18 | 0.00         | 305,640.89  |
| 20.50            | 63,050.45 | 0.00         | 307,563.16  |
| 21.00            | 64,997.05 | 0.00         | 309,509.76  |
| 21.50            | 66,968.45 | 0.00         | 311,481.16  |
| 22.00            | 68,965.12 | 0.00         | 313,477.84  |
| 22.50            | 70,987.56 | 0.00         | 315,500.27  |
| 23.00            | 73,036.26 | 0.00         | 317,548.98  |
| 23.50            | 75,111.75 | 0.00         | 319,624.46  |
| 24.00            | 77,214.54 | 0.00         | 321,727.25  |
| 24.50            | 79,345.18 | 0.00         | 323,857.90  |
| 25.00            | 81,504.24 | 0.00         | 326,016.95  |
| 25.50            | 83,692.27 | 0.00         | 328,204.98  |

Profit Method

% Cost       % Sales  
 Net Profit       Gross Profit

Starting Profit:  **Go!**

# Points:  **Go!**

Increment:

Current Grand Total: **328,625.09**

Quickly and easily determine final costing on either a percent of cost or percent of sales bases.

## #10. Expenses & Subcontracts

**Equipment/Buyout Material**

| Item                  | Rate | Rate Type | Qty | Markup % | Always Include           | Cost        |
|-----------------------|------|-----------|-----|----------|--------------------------|-------------|
| Air Compressor (Dry)  | 0.00 | \$/day    | 0   | 0        | <input type="checkbox"/> | 0.00        |
| Antifreeze Solution   | 0.00 | Straight  | 0   | 0        | <input type="checkbox"/> | 0.00        |
| Backhoe               | 0.00 | \$/day    | 0   | 0        | <input type="checkbox"/> | 0.00        |
| Boom Lift             | 0.00 | \$/day    | 0   | 0        | <input type="checkbox"/> | 0.00        |
| Compressor            | 0.00 | \$/wk     | 0   | 0        | <input type="checkbox"/> | 0.00        |
| Computer Hardware     | 0.00 | Straight  | 0   | 0        | <input type="checkbox"/> | 0.00        |
| Computer Software     | 0.00 | Straight  | 0   | 0        | <input type="checkbox"/> | 0.00        |
| Cut Off Saw           | 0.00 | \$/wk     | 0   | 0        | <input type="checkbox"/> | 0.00        |
| Ditch Pump            | 0.00 | \$/day    | 0   | 0        | <input type="checkbox"/> | 0.00        |
| Extended Reach        | 0.00 | \$/day    | 0   | 0        | <input type="checkbox"/> | 0.00        |
| Forklift              | 0.00 | \$/day    | 0   | 0        | <input type="checkbox"/> | 0.00        |
| High Reach Lift       | 0.00 | \$/hr     | 0   | 0        | <input type="checkbox"/> | 0.00        |
| <b>Expense Total:</b> |      |           |     |          |                          | <b>0.00</b> |

Zero markup will apply the project markup. Entered values for markup will negate the project markup.

**Subcontracts**

| Item                  | Cost | Qty | Markup % | Always Include                      | Extended    |
|-----------------------|------|-----|----------|-------------------------------------|-------------|
| Alarm                 | 0.00 | 0   | 0        | <input type="checkbox"/>            | 0.00        |
| Auxiliary Tank        | 0.00 | 0   | 0        | <input type="checkbox"/>            | 0.00        |
| Caliche Removal       | 0.00 | 0   | 0        | <input type="checkbox"/>            | 0.00        |
| Compaction            | 0.00 | 0   | 0        | <input type="checkbox"/>            | 0.00        |
| Coring                | 0.00 | 0   | 0        | <input checked="" type="checkbox"/> | 0.00        |
| Ditch & Backfill      | 0.00 | 0   | 0        | <input checked="" type="checkbox"/> | 0.00        |
| Engineering           | 0.00 | 0   | 0        | <input type="checkbox"/>            | 0.00        |
| Fill Material         | 0.00 | 0   | 0        | <input type="checkbox"/>            | 0.00        |
| Fire Saling           | 0.00 | 0   | 0        | <input checked="" type="checkbox"/> | 0.00        |
| Insulation            | 0.00 | 0   | 0        | <input type="checkbox"/>            | 0.00        |
| Material Removal      | 0.00 | 0   | 0        | <input type="checkbox"/>            | 0.00        |
| On Site Storage Tank  | 0.00 | 0   | 0        | <input type="checkbox"/>            | 0.00        |
| Painting              | 0.00 | 0   | 0        | <input type="checkbox"/>            | 0.00        |
| <b>Expense Total:</b> |      |     |          |                                     | <b>0.00</b> |

**Permits**

| Item                  | Rate | Qty | Markup % | Always Include           | Cost |
|-----------------------|------|-----|----------|--------------------------|------|
| BFP                   | 0.00 | 0   | 0        | <input type="checkbox"/> | 0.00 |
| Bonding               | 0.00 | 0   | 0        | <input type="checkbox"/> | 0.00 |
| Building Dept Review  | 0.00 | 0   | 0        | <input type="checkbox"/> | 0.00 |
| City Connection       |      |     |          |                          |      |
| License Fees          |      |     |          |                          |      |
| Other                 |      |     |          |                          |      |
| Permit Fees           |      |     |          |                          |      |
| Plan Check Cost       |      |     |          |                          |      |
| Professional Stamp    |      |     |          |                          |      |
| <b>Expense Total:</b> |      |     |          |                          |      |

**Freight**

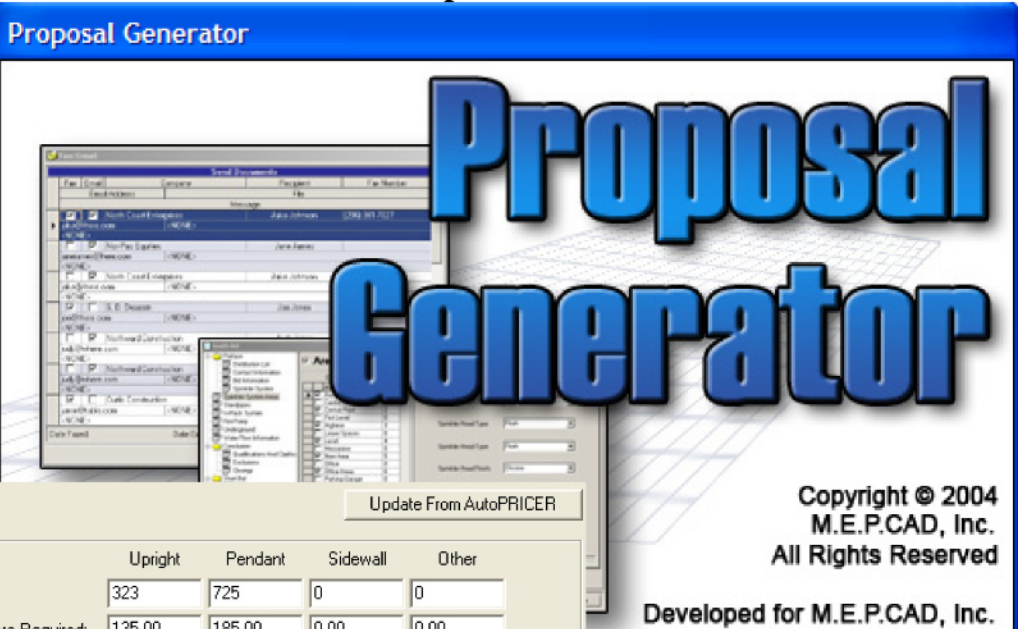
| Item                  | Rate | Qty | Markup % | Always Include           | Cost        |
|-----------------------|------|-----|----------|--------------------------|-------------|
| Misc Freight          | 0.00 | 0   | 0        | <input type="checkbox"/> | 0.00        |
| Other Per Trip        | 0.00 | 0   | 0        | <input type="checkbox"/> | 0.00        |
| Overhead              | 0.00 | 0   | 0        | <input type="checkbox"/> | 0.00        |
| Underground           | 0.00 | 0   | 0        | <input type="checkbox"/> | 0.00        |
| <b>Expense Total:</b> |      |     |          |                          | <b>0.00</b> |

Zero markup will apply the project markup. Entered values for markup will negate the project markup.

**Travel**

| Item                  | Rate | Rate Type | Qty | Markup % | Always Include           | Cost        |
|-----------------------|------|-----------|-----|----------|--------------------------|-------------|
| Car Rental            | 0.00 | \$/trip   | 0   | 0        | <input type="checkbox"/> | 0.00        |
| Hotel                 | 0.00 | \$/trip   | 0   | 0        | <input type="checkbox"/> | 0.00        |
| Meals                 | 0.00 | \$/trip   | 0   | 0        | <input type="checkbox"/> | 0.00        |
| Subsistence           | 0.00 | \$/trip   | 0   | 0        | <input type="checkbox"/> | 0.00        |
| Travel Expenses       | 0.00 | \$/day    | 0   | 0        | <input type="checkbox"/> | 0.00        |
| Travel Per Mile       | 0.00 | \$/head   | 0   | 0        | <input type="checkbox"/> | 0.00        |
| <b>Expense Total:</b> |      |           |     |          |                          | <b>0.00</b> |

# #11. Proposal Generator



### Sprinkler System

Update From AutoPRICER

Sprinkler Head Data

|  | Upright | Pendant | Sidewall | Other |
|--|---------|---------|----------|-------|
| Total Proposed Head Count:                 | 323     | 725     | 0        | 0     |
| Added Cost Per Head If More Are Required:  | 135.00  | 185.00  | 0.00     | 0.00  |
| Deduct Cost Per Head If Less Are Required: | 135.00  | 185.00  | 0.00     | 0.00  |

Payment Terms

Total Cost Of Bid:   Price Includes All Applicable Taxes

Proposed Finished Date:  Payment Plan:

Number Of Days After Project Completion Full Payment Is Due:

Markup Percentage If Finish Date Is Delayed:  %

Payment Frequency:

Retention (Percent Withheld):

Most bid information is transferred from the estimate. The built-in Distribution list of clients can be imported from e-mail or other contact lists such as outlook or built from scratch.

Sprinkler head data carries the committed total price from the Profit and analysis tool and other information to be included in the proposal may be entered here as well.

Area Sprinkler System has a default lead-in statement with easy access to as many user entered default statements as desired. It allows detailed

customization of any area to be quickly defined by answering a few 5 questions regarding size and occupancy requirements and a few regarding heads type and coating on the next tab that are then converted into complete detailed paragraphs in the proposal.

Additional opening and closing default statements can be kept and applied to the defining paragraphs under the statements tab and everything can be pre-viewed in the area section text portion.

### Hosp acme

- Preface
- Bid Information
- Distribution List
- Contact Information
- Sprinkler System
- Sprinkler System Areas**
- Standpipes
- In-Rack System
- Fire Pump
- Underground
- Water Flow Information
- Conclusion
- Short Bid
- Project Folder

#### Area Sprinkler System

Include Lead-In Paragraph

Build Lead-In Base Price | Build Lead-In Firm Price | Build Lead-In GMP | <Custom Lead-Ins>

We are pleased to quote our base price of \$328,625.09 (Three Hundred Twenty Eight Thousand Six Hundred Twenty Five and 09/100 dollars) to furnish and install all necessary pipe, fittings, devices, valves, and supports to provide approved wet pipe automatic sprinkler protection throughout the proposed facility. System design to meet requirements of NFPA and local authorities approval. System design based on NFPA approved equipment and devices and the following detailed criteria:

Check Areas To Include:

| Area Description                             | Order |
|--|-------|
| <input checked="" type="checkbox"/> Basement | 1     |
| <input type="checkbox"/> Casino Level        |       |
| <input type="checkbox"/> Central Plant       |       |
| <input type="checkbox"/> First Level         |       |
| <input type="checkbox"/> Highrise            |       |
| <input type="checkbox"/> Lease Spaces        |       |
| <input type="checkbox"/> Level               |       |
| <input type="checkbox"/> Mezzanine           |       |
| <input type="checkbox"/> Office              |       |
| <input type="checkbox"/> Office Areas        |       |
| <input type="checkbox"/> Parking Garage      |       |
| <input type="checkbox"/> Plaza Level         |       |
| <input type="checkbox"/> Rack Storage        |       |
| <input type="checkbox"/> Registration        |       |
| <input type="checkbox"/> Retail              |       |
| <input type="checkbox"/> Storage             |       |
| <input type="checkbox"/> Storage Areas       |       |
| <input type="checkbox"/> Tower               |       |
| <input type="checkbox"/> Warehouse           |       |

Occupancy | Sprinkler Head | Statements | Area Section Text

Square Footage:

Approximate

Classification:

Hydraulic Density:

Hydraulically Remote Sq. Ft. Area:

Maximum Coverage Per Sprinkler:

80  
90  
100  
130  
225  
400

Current Area: Basement      Approx 10,000 sq ft

Standpipes, In-Rack, Fire Pump and Underground statements and clarifications are easily added to the body of the proposal by point and click entry of default statements for those areas in the order they are to be displayed. The order can be changed by simply clicking on the order # of the statement and changing it. The reminder will alter accordingly. These statements can also be easily edited by typing in a new statement where indicated with an asterisk or editing an existing statement where it is displayed in the editing space below. The user can then delete any existing statement or add the new one to the default list by re-pressing the appropriate button at the top of the lists.

**Standpipes** Load Original Statements Delete From Default List Add To Default List

| Statement List  |                                     |       |   |
|---|-------------------------------------|-------|---|
| Statement   | Include                             | Order | ▲ |
| Hose valves are to be attached directly to standpipe riser at welded outlet by a 2' 2" nipple in stairwells.  | <input checked="" type="checkbox"/> | 2     |   |
| All stairwells where standpipes are located are assumed to be protected from freezing.  | <input type="checkbox"/>            |       |   |
| No penetrations or sleeves are provided in this proposal.   | <input checked="" type="checkbox"/> | 4     |   |
| Price includes providing temporary standpipe as required by code from fire department pumper connection and continually extended during construction. | <input checked="" type="checkbox"/> | 1     |   |
| Add new statement here and a new add statement area is created on the line below  | <input checked="" type="checkbox"/> | 5     |   |
| *   | <input type="checkbox"/>            |       |   |

Add new statement here and a new add statement area is created on the line below

**Qualifications** Load Original Statements Delete From Default List Add To Default List

| Statement List   |                                     |       |   |
|--|-------------------------------------|-------|---|
| Statement  | Include                             | Order | ▲ |
| Design materials and methods to be per code and industry standard. All items to be UL or FM approved for use in sprinkler systems to meet NFPA requirements, but not necessarily as specified. | <input checked="" type="checkbox"/> | 1     |   |
| The design, materials and methods used on this project to be provided in accordance with industry standards and not necessarily as specified.  | <input checked="" type="checkbox"/> | 2     |   |
| All piping to be UL approved Schedule 30, for 1" through 2" and Schedule 7 for piping up to 6" in diameter.  | <input checked="" type="checkbox"/> | 7     |   |
| Schedule 10 to be used for 8" and larger.  | <input checked="" type="checkbox"/> | 4     |   |
| Fittings to be ductile or cast rated at 175 PSI and grooved fittings up to 300 psi.  | <input checked="" type="checkbox"/> | 5     |   |

Qualifications/Clarifications and Exclusions are added to the proposal in the same click and point manner.

**Exclusions** Load Original Statements Delete From Default List Add To Default List

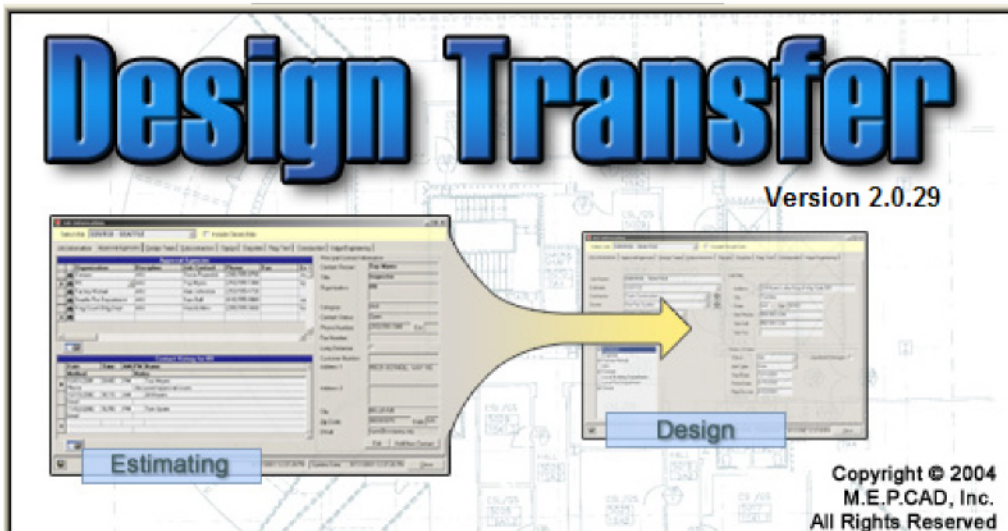
| Statement List   |                                     |       |   |
|--|-------------------------------------|-------|---|
| Statement  | Include                             | Order | ▲ |
| Price includes one (1) million dollars liability, completed projects, errors and omissions | <input checked="" type="checkbox"/> | 3     |   |
| Painting or labeling or pipe preparation for painting or bagging of sprinkler heads.       | <input checked="" type="checkbox"/> | 4     |   |
| Cost of bonding.   | <input checked="" type="checkbox"/> | 2     |   |
| Electrical wiring of any kind or system monitoring.  | <input checked="" type="checkbox"/> | 5     |   |
| Liquidated damages.  | <input checked="" type="checkbox"/> | 1     |   |
| ► Protection above non-combustible ceilings.   | <input checked="" type="checkbox"/> | 6     |   |
| Fire stop caulking for all wall penetrations.  | <input type="checkbox"/>            |       |   |
| In-rack protection.  | <input type="checkbox"/>            |       |   |
| Soffiting of sprinkler piping.   | <input type="checkbox"/>            |       |   |
| Protection under duct work, conveyors or other obstructions over 4'-0" wide.               | <input type="checkbox"/>            |       |   |
| Exterior balcony protection.   | <input type="checkbox"/>            |       |   |
| Anti-freeze systems.   | <input type="checkbox"/>            |       |   |
| Water curtains.  | <input type="checkbox"/>            |       |   |

**Closings** Load Original Statements Delete From Default List Add To Default List

| Statement List   |                                     |       |   |
|--|-------------------------------------|-------|---|
| Statement  | Include                             | Order | ▲ |
| We trust our proposal meets your expectations for a complete, approved, and economical fire protection system.   | <input checked="" type="checkbox"/> | 2     |   |
| Should you require additional detailed information or have any questions, please contact us at your earliest convenience.  | <input checked="" type="checkbox"/> | 3     |   |
| Desert Fire Protection has established a reputation in Nevada over the past decade of providing quality workmanship through cooperation and coordination in a timely and | <input checked="" type="checkbox"/> | 4     |   |
| We truly look forward to again working with your fine organization to successfully complete this fantastic facility.   | <input checked="" type="checkbox"/> | 5     |   |
| Thank you for allowing us the opportunity to submit our proposal for your consideration.   | <input checked="" type="checkbox"/> | 6     |   |

Along with Closings statements, there is also a short form proposal available for smaller projects and "Day Works" that function in the same manner

## #12. Design Transfer



**Greatly increase profitability through organized communication between departments.**

Easily keep track and document all pertinent and important information obtained during the estimate process to be passed on the design department with the same point and click ease.

**Design Transfer**  
File View Tools Help

**Project Navigator Tree**  
Select Job: Sample Job  
Include Closed Jobs

**Job Information**  
Job Name: Sample Job  
Estimate: New bid  
Contractor: Acme Contractors  
Owner: Acme Owners  
Salesperson:  
Project Manager:  
Project Supervisor:  
Approval Checklist:  
 Architects  
 Engineer  
 Factory Mutual  
 ISO  
 Kemper  
 Local Building Department  
 Local Fire Department  
 Owner

**Job Site**  
Address: 234 Martin Luther King Jr Way Suite 501  
City: Tacoma  
State: WA Zip: 98403  
Site Phone: 555-555-1234  
Site Cell: 555-555-1234  
Site Fax:  
Status & Dates  
Status: Bid  
Job Type: New  
Start Date: 04/01/2004  
Finish Date: 06/01/2004  
Pipe On Job: 03/30/2004  
Liquidated Damages:

**Contacts**  
Approval Agencies Contacts

| Organization  | Discipline | Job Contact | Phone | Fax | Email |
|---------------|------------|-------------|-------|-----|-------|
| Acme Approval | AHU        | John Doe    |       |     |       |

Principal Contact Information  
Contact Person: John Doe  
Title:  
Organization: Acme Approval  
Category: AHU  
Contact Status: Closed

**Contact History for Acme Approval**

| Date       | Time  | AM/PM | Name     | Notes   |
|------------|-------|-------|----------|---|
| 09/12/2004 | 08:24 | AM    | John doe |   |
|            |       |       | Phone    | Discussed local code requirements as follows #1. Etc. |

**Design**  
Overhead | Underground | Inclusions | Standpipe | Pump/Tank | System Materials

Spec List:  
General Overhead  
Buyouts  
EQ Calcs  
Structural Calcs  
Wall Post Indicator  
Domestic Materials  
Cores

Assigned Specs:  
General Overhead  
City Connection  
Domestic Materials

**Flow Test**  
Location: Water Main  
Test Date: 2/2/2003  
Organization: Water Stats Inc.  
Observed By: Jimmy Daniels  
Static: 48  
Residual: 25  
Flow: 10

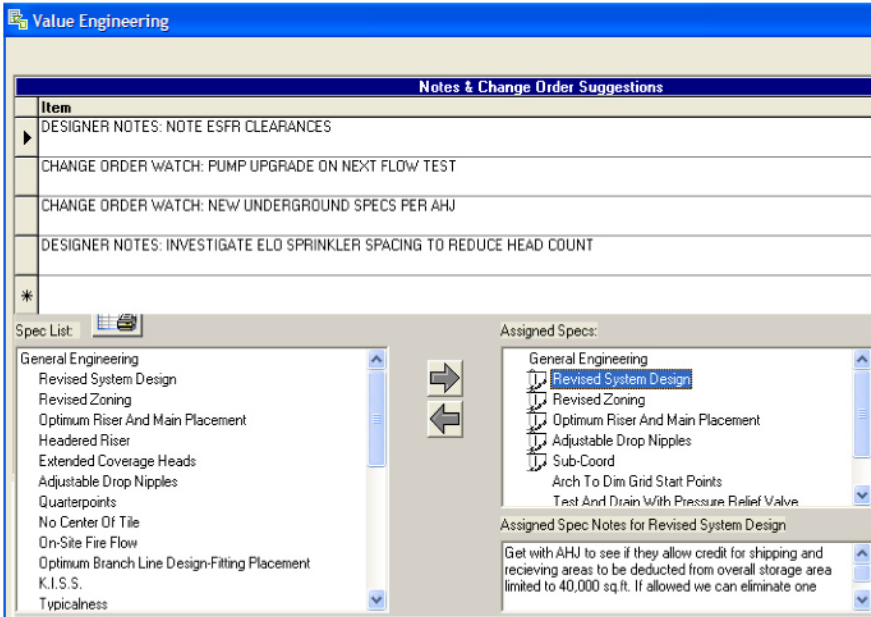
**Job Design Information**  
Upright: 66  
Pendant: 66  
Sidewall: 66  
Other: 66  
Total Heads: 264  
Total Area:  
System Count:  
Stories:

Keep detailed records of meetings or conversations with AHJ's, Design teams and consultants; and confirm them with the handy built-in fax

or email send button. All entered information is stored and ready for transfer to the design department at any time in a clear and concise report.

Along with all other relevant information, specify and clarify all materials used for each portion of the project and make detailed notes to the designer in the design and densities portion of the program.

Value Engineering ideas, notes and possible change orders for the designers to be aware of and process during the design and project management progress is undoubtedly the most valuable and bottom-line profit generating portion of the program.

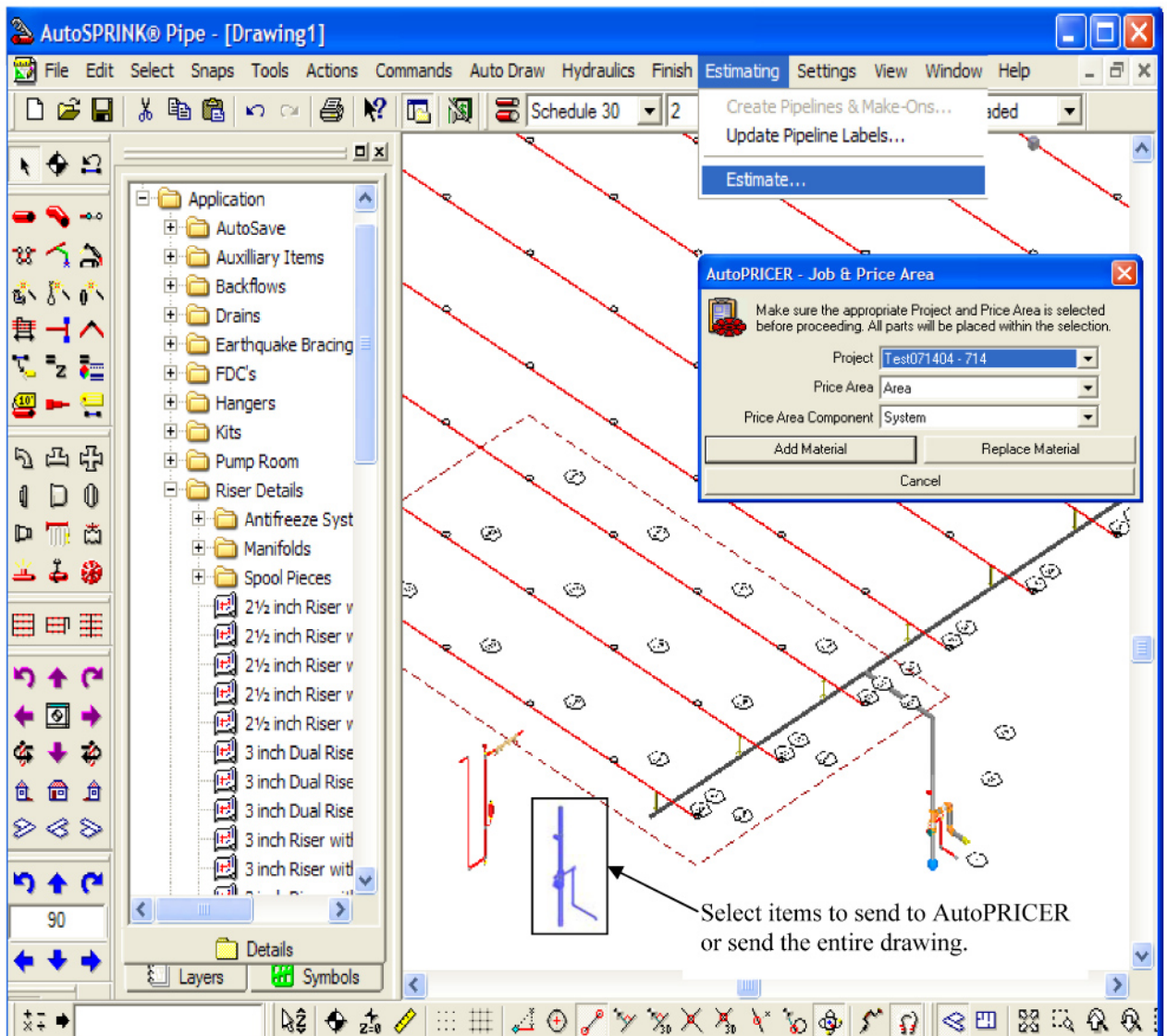


### #13. AutoSPRINK PIPE

AutoPRICER is available with its own simplified design program including completely automated hydraulic calculations.

Its windows based user-friendly platform can be taught in a couple of days with, or without, CAD experience. It already contains hundreds of details and assemblies

in its parts bin that can be placed in the drawing, used “as is” or modified, and automatically priced. You can also easily save your own details in the parts bin for future use.



Select items to send to AutoPRICER or send the entire drawing.