

**Energy Savings Opportunity Survey  
Energy Engineering Analysis Program (EEAP)  
Fort Campbell, Kentucky**

***Final Report - Phase I***

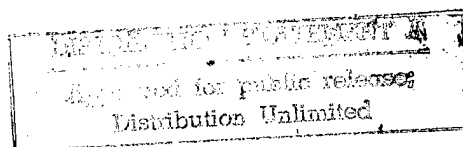
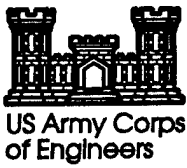
***Volume 2  
Section 4 (continued)***

CONTRACT # DACA27-93-C-0096  
SYSTEMS/CORP PROJECT # 93006  
NOVEMBER 12, 1993

**SYSTEMS***corp*

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SYSTEMS ENGINEERING AND MANAGEMENT CORPORATION



# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

PAGE 1 OF 2

31 AUGUST 1993

## BUILDING WIDE FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 8204

BUILDING USE:

HOURS/DAY 9

DAYS/WEEK 5

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

### EXISTING FIXTURE DATA

4 FOOT

0.1 LAMP @ 48 W/FXT = 0 WATTS  
 0.1 LAMP @ 37.5 W/FXT = 0 WATTS  
 0.2 LAMP @ 96 W/FXT = 0 WATTS  
 0.2 LAMP @ 75.6 W/FXT = 0 WATTS  
 0.3 LAMP @ 144 W/FXT = 0 WATTS  
 0.3 LAMP @ 113.4 W/FXT = 0 WATTS  
 0.4 LAMP @ 192 W/FXT = 0 WATTS  
 22.4 LAMP @ 151.2 W/FXT = 3326.4 WATTS

2 FOOT

0.1 LAMP @ 31 W/FXT = 0 WATTS  
 0.4 LAMP @ 88 W/FXT = 0 WATTS  
 0.2 LAMP U @ 96 W/FXT = 0 WATTS  
 0.2 LAMP U @ 75.6 W/FXT = 0 WATTS

8 FOOT

0.2 LAMP @ 180 W/FXT = 0 WATTS  
 0.2 LAMP @ 168 W/FXT = 0 WATTS

TOTAL EXISTING KW

3.3

### REPLACEMENT FIXTURE DATA

4 FOOT

0.1 LAMP @ 37 W/FXT = 0 WATTS  
 0.1 LAMP W/ REFLECTORS 37 W/FXT = 0 WATTS  
 0.2 LAMP W/ REFLECTORS 58 W/FXT = 0 WATTS  
 22.2 LAMP W/ REFLECTORS 58 W/FXT = 1276 WATTS

2 FOOT

0.1 LAMP @ 24 W/FXT = 0 WATTS  
 0.2 LAMP W/ REFLECTORS 41 W/FXT = 0 WATTS  
 0.2 LAMP U @ 58 W/FXT = 0 WATTS

8 FOOT

0.1 LAMP W/ REFLECTORS 58 W/FXT = 0 WATTS

TOTAL REPLACEMENT KW

1.9

NET ENERGY SAVINGS

16.4 MBTU/YR

NET DOLLAR SAVINGS

\$391.27

19971017 174

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

PAGE 2 OF 2

31 AUGUST 1993

## BUILDING WIDE INCANDESCENT LAMP REPLACEMENT

BUILDING #: 3204

LAMP USE:

HOURS/DAY 3

DAYS/WEEK 5

PEAK USE

2 (1-YES, 2-NO)

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$0.00 PER KW

### EXISTING INCANDESCENTS

|                       |           |
|-----------------------|-----------|
| 0 LAMPS @ 25 WATTS =  | 0 WATTS   |
| 0 LAMPS @ 40 WATTS =  | 0 WATTS   |
| 0 LAMPS @ 52 WATTS =  | 0 WATTS   |
| 2 LAMPS @ 60 WATTS =  | 120 WATTS |
| 0 LAMPS @ 75 WATTS =  | 0 WATTS   |
| 0 LAMPS @ 90 WATTS =  | 0 WATTS   |
| 0 LAMPS @ 100 WATTS = | 0 WATTS   |

TOTAL EXISTING WATTS 120

### COMPACT FLUORESCENT REPLACEMENT

|                      |          |
|----------------------|----------|
| 0 LAMPS @ 7 WATTS =  | 0 WATTS  |
| 0 LAMPS @ 9 WATTS =  | 0 WATTS  |
| 2 LAMPS @ 13 WATTS = | 26 WATTS |
| 0 LAMPS @ 18 WATTS = | 0 WATTS  |
| 0 LAMPS @ 26 WATTS = | 0 WATTS  |

TOTAL REPLACEMENT WATTS 26

NET ENERGY SAVINGS 0.25 MBTU/YR

NET DOLLAR SAVINGS \$1.55

Mon 30 Aug 1993

TITLE PAGE

U.S. ARMY CORPS of ENGINEERS M-CACES

ENERGY SAVINGS OPPORTUNITY SURVY  
FT CAMPBELL, KY  
ECO-5: BUILDING 3204

Contract No: 27-93-C-0096

Prepared By: Systems Corp  
Estimator: Keith A. Derrington  
Estimate Prep. Date: 08/31/93

Current UPB/CSI ID: ORL290

DTIC QUALITY INSPECTED 2

M - C A C E S E D I T I O N  
COMPOSER Plus Copyright (C) 1985, 1988  
by Building Systems Design, Inc.  
Release 4.20

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID:  
4-106



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3204

TIME 12:06:06

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Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
 ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
 ECO-5: BUILDING 3204  
 1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 12:06:06

DETAILED ESTIMATE

DETAIL PAGE 1

BASE BID

| DIVISION 16 ELECTRICAL                                           | QUANTITY | UOM | CREW | MANHR | LABOR | EQUIPMENT | MATERIAL | SALESTX | DIRECT \$ |
|------------------------------------------------------------------|----------|-----|------|-------|-------|-----------|----------|---------|-----------|
| 16500 LIGHTING                                                   |          |     |      |       |       |           |          |         |           |
| 16512 6100 SMALL FL FIXTURES (LESS THAN 40 WATT LAMPS)           |          |     |      |       |       |           |          |         |           |
| CD=3 EL 6105 SURF SQ W/1 13W BIAxIAL FL LAMP *** UNIT COSTS: *** |          |     |      | 1.25  | 41.26 | 0.00      | 27.80    | 1.39    | 70.45     |
| WC=1100 WHITE ACRYLIC LENS 2.00 EA EELEA                         |          |     |      | 3     | 83    | 0         | 56       | 3       | 141       |
| 16512 7000 FLUORESCENT - RECESSED T8 ELECTRONIC BALLAST          |          |     |      |       |       |           |          |         |           |
| CD=3 EL 7003 4 FT 2 LAMP PARABOLIC LOUVRE W/ *** UNIT COSTS: *** |          |     |      | 0.59  | 19.42 | 0.08      | 136.00   | 6.80    | 162.29    |
| WC=1100 REFLECTOR 22.00 EA EELEB                                 |          |     |      | 13    | 427   | 2         | 2,992    | 150     | 3,570     |
| TOTAL DIVISION 16 ELECTRICAL                                     |          |     |      | 15    | 510   | 2         | 3,048    | 152     | 3,711     |
| TOTAL FACILITY AA. ELECTRICAL                                    |          |     |      | 15    | 510   | 2         | 3,048    | 152     | 3,711     |
| TOTAL BID ITEM 1. BUILDING TO THE 5 FOOT LINE                    |          |     |      | 15    | 510   | 2         | 3,048    | 152     | 3,711     |
| TOTAL BASE BID                                                   |          |     |      | 15    | 510   | 2         | 3,048    | 152     | 3,711     |
| TOTAL ADDITIVE                                                   |          |     |      | 0     | 0     | 0         | 0        | 0       | 0         |
| TOTAL INCL ADD ENERGY SAVINGS OPPORTUNITY SURVY                  |          |     |      | 15    | 510   | 2         | 3,048    | 152     | 3,711     |

\*\*\* END OF DETAIL REPORT \*\*\*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3204E5

4-108

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3204

TIME 12:06:06

PROJECT NOTES

SUMMARY PAGE 1

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PROJECT NOTES

ECO-5: INTERIOR LIGHTING

SCOPE OF WORK: EVALUATE USE OF HIGHER EFFICIENCY INTERIOR LIGHTING IN  
SELECTED FACILITIES AT FT CAMPBELL.

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
 ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
 ECO-5: BUILDING 3204

TIME 12:06:00

BID ITEM AND FACILITY SUMMARY

SUMMARY PAGE 1

BID ITEM 1 BUILDING TO THE 5 FOOT LINE

BASE BID

| ID             | FACILITY   | COST TO PRM | OVERHEAD | HOME OFC     | PROFIT    | BOND        | OTHER FCTR  | TOTAL COST | UNIT COS      |
|----------------|------------|-------------|----------|--------------|-----------|-------------|-------------|------------|---------------|
| AA             | ELECTRICAL | 1.00 EA     | 3,711    | 10.0%<br>371 | 0.0%<br>0 | 7.5%<br>306 | 2.5%<br>110 | 0.0%<br>0  | 4,498 4498.42 |
| BID ITEM TOTAL | 1.00 EA    | 3,711       | 371      | 0            | 306       | 110         | 0           | 4,498      | 4498.42       |
| TOTAL BASE BID |            | 3,711       | 371      | 0            | 306       | 110         | 0           | 4,498      |               |
| TOTAL ADDITIVE |            | 0           | 0        | 0            | 0         | 0           | 0           | 0          |               |
| TOTAL INCL ADD |            | 3,711       | 371      | 0            | 306       | 110         | 0           | 4,498      |               |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3204

TIME 12:06:04

PROJECT CWE SUMMARY

SUMMARY PAGE 1

| ID | BID ITEM                                                   | QUANTITY | UOM  | BASE BID | ADDITIVE | TOTAL COST | UNIT COST |
|----|------------------------------------------------------------|----------|------|----------|----------|------------|-----------|
| 1. | BUILDING TO THE 5 FOOT LINE                                | 1.00     | EA   | 4,498    |          | 4,498      | 4498.40   |
|    | TOTAL CURRENT CONTRACT COST                                |          |      | 4,498    | 0        | 4,498      |           |
|    | Cost Growth from 08/93 to 08/94<br>Index Values: 0000 0000 | 0.0%     |      | 0        | 0        | 0          |           |
|    | ESCALATED CONTRACT COST                                    |          |      | 4,498    | 0        | 4,498      |           |
|    | Government-Furnished Property                              |          |      | 0        |          | 0          |           |
|    | SUBTOTAL                                                   |          |      | 4,498    | 0        | 4,498      |           |
|    | Contingencies                                              | 10.0%    |      | 450      | 0        | 450        |           |
|    | SUBTOTAL                                                   |          |      | 4,948    | 0        | 4,948      |           |
|    | SIOH (S&A)                                                 | 5.0%     |      | 247      | 0        | 247        |           |
|    | CURRENT WORKING ESTIMATE                                   |          |      | 5,196    | 0        | 5,196      |           |
|    | Estimated Construction Time                                | 365      | Days |          |          |            |           |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3204

TIME 12:06:06

CONTRACTOR DIRECT SUMMARY

SUMMARY PAGE 4

| ID | CONTRACTOR    | PM | QUANTITY | UOM | MANHRS | LABOR | EQUIPMENT | MAT   | W/TX | AMOUNT | PCT    | W/OH&P | SUBTOTAL |
|----|---------------|----|----------|-----|--------|-------|-----------|-------|------|--------|--------|--------|----------|
| AA | GENERAL/PRIME |    | 1.00     | EA  | 15     | 510   | 2         | 3,200 |      | 3,711  | 100.0% | 0      | 3,711    |
|    | TOTAL DIRECT  |    |          |     | 15     | 510   | 2         | 3,200 |      | 3,711  | 100.0% |        |          |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3204E5

4-112

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3204

TIME 12:06:06

CONTRACTOR INDIRECT SUMMARY

SUMMARY PAGE 5

| ID | CONTRACTOR              | PM | SUBTOTAL | *** OVERHEAD *** | AMOUNT | PCT | HOFC% | **** PROFIT **** | AMOUNT | PCT  | BOND% | OTHER% | ***** TOTAL CONTRACT ***** | AMOUNT | PCT | UNIT COST |
|----|-------------------------|----|----------|------------------|--------|-----|-------|------------------|--------|------|-------|--------|----------------------------|--------|-----|-----------|
| AA | GENERAL/PRIME           |    | 3,711    | 371              | 10.0%  | 0.0 |       | 306              | 7.5%   | 2.5% | 0.0%  |        | 4,498                      | 100.0% |     | 4498.40   |
|    | TOTAL OVERHEAD & PROFIT |    |          | 371              | 10.0%  |     |       | 306              | 7.5%   |      |       |        |                            |        |     |           |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3204

TIME 12:06:06

CSI DIVISION SUMMARY

SUMMARY PAGE 6

| ID CSI DIVISION | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|-----------------|----------|-------|-----------|----------|-----------|-------------------------|
| 16 ELECTRICAL   | 15       | 510   | 2         | 3,048    | 152       | 3,711                   |
| TOTAL DIRECT    | 15       | 510   | 2         | 3,048    | 152       | 3,711                   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3204E5  
4-114



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3204

TIME 12:06:00

STEMS SUMMARY

SUMMARY PAGE

| ID SYSTEM              | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|------------------------|----------|-------|-----------|----------|-----------|-------------------------|
| 11 INTERIOR ELECTRICAL | 15       | 510   | 2         | 3,048    | 152       | 3,711                   |
| TOTAL DIRECT           | 15       | 510   | 2         | 3,048    | 152       | 3,711                   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3204E5  
4-115

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3204

TIME 12:06:06

EQUIPMENT SUMMARY

SUMMARY PAGE 8

| EQUIP DESCRIPTION             | LIFE HRS | TL | HRLY | OWNRSH | OWNS | OVTM | OWNRSH | EXPENSE | HRLY | UPB  | ***** TOTAL ***** |      |
|-------------------------------|----------|----|------|--------|------|------|--------|---------|------|------|-------------------|------|
|                               |          |    |      |        |      |      |        |         | RATE | RATE | HOURS             | COST |
| EMI20 SMALL TOOLS             |          |    |      |        |      |      |        |         | 1.40 | 1.40 | 1                 | 2    |
| TOTAL PROJECT EQUIPMENT HOURS |          |    |      |        |      |      |        |         |      |      | 1                 | 2    |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3204

TIME 12:06:06

LABOR SUMMARY

SUMMARY PAGE 9

| CRAFT DESCRIPTION      | BASE  | OVERTH | TXS/INS | FRNG | TRVL | HRLY<br>RATE | UPB<br>RATE | ****<br>HOURS | TOTAL<br>COST |
|------------------------|-------|--------|---------|------|------|--------------|-------------|---------------|---------------|
| LELEC ELECTRICIANS     | 20.50 | 0.0%   | 24.0%   | 7.49 | 0.00 | 32.91        | 25.79       | 16            | 510           |
| TOTAL PROJECT MANHOURS |       |        |         |      |      |              |             | 16            | 510           |

\* \* \* END OF SUMMARY REPORT \* \* \*

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

31 AUGUST 1993

PAGE 1 OF 2

## BUILDING WIDE FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 3206

BUILDING USE:

HOURS/DAY 14

DAYS/WEEK 7

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

### EXISTING FIXTURE DATA

4 FOOT

|            |               |             |
|------------|---------------|-------------|
| 0 1 LAMP @ | 48 W/FXT =    | 0 WATTS     |
| 0 1 LAMP @ | 37.8 W/FXT =  | 0 WATTS     |
| 4 2 LAMP @ | 96 W/FXT =    | 384 WATTS   |
| 0 2 LAMP @ | 75.6 W/FXT =  | 0 WATTS     |
| 0 3 LAMP @ | 144 W/FXT =   | 0 WATTS     |
| 0 3 LAMP @ | 113.4 W/FXT = | 0 WATTS     |
| 2 4 LAMP @ | 192 W/FXT =   | 384 WATTS   |
| 1 4 LAMP @ | 151.2 W/FXT = | 151.2 WATTS |

2 FOOT

|              |              |         |
|--------------|--------------|---------|
| 0 1 LAMP @   | 31 W/FXT =   | 0 WATTS |
| 0 4 LAMP @   | 88 W/FXT =   | 0 WATTS |
| 0 2 LAMP U @ | 96 W/FXT =   | 0 WATTS |
| 0 2 LAMP U @ | 75.6 W/FXT = | 0 WATTS |

8 FOOT

|            |             |         |
|------------|-------------|---------|
| 0 2 LAMP @ | 180 W/FXT = | 0 WATTS |
| 0 2 LAMP @ | 168 W/FXT = | 0 WATTS |

TOTAL EXISTING KW

0.9

### REPLACEMENT FIXTURE DATA

4 FOOT

|                        |            |           |
|------------------------|------------|-----------|
| 0 1 LAMP @             | 37 W/FXT = | 0 WATTS   |
| 4 1 LAMP W/ REFLECTORS | 37 W/FXT = | 148 WATTS |
| 0 2 LAMP W/ REFLECTORS | 58 W/FXT = | 0 WATTS   |
| 3 2 LAMP W/ REFLECTORS | 58 W/FXT = | 174 WATTS |

2 FOOT

|                        |            |         |
|------------------------|------------|---------|
| 0 1 LAMP @             | 24 W/FXT = | 0 WATTS |
| 0 2 LAMP W/ REFLECTORS | 41 W/FXT = | 0 WATTS |
| 0 2 LAMP U @           | 58 W/FXT = | 0 WATTS |

8 FOOT

|                        |            |         |
|------------------------|------------|---------|
| 0 1 LAMP W/ REFLECTORS | 58 W/FXT = | 0 WATTS |
|------------------------|------------|---------|

TOTAL REPLACEMENT KW

0.3

NET ENERGY SAVINGS 10.4 MBTU/YR

NET DOLLAR SAVINGS

\$148.76

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

31 AUGUST 1993

PAGE 2 OF 2

## BUILDING WIDE INCANDESCENT LAMP REPLACEMENT

BUILDING #: 3206

LAMP USE:

HOURS/DAY

DAYS/WEEK

PEAK USE

6

7

1 (1 - YES, 2 - NO)

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

### EXISTING INCANDESCENTS

|                             |             |           |
|-----------------------------|-------------|-----------|
| 0 LAMPS @                   | 25 WATTS =  | 0 WATTS   |
| 0 LAMPS @                   | 40 WATTS =  | 0 WATTS   |
| 0 LAMPS @                   | 52 WATTS =  | 0 WATTS   |
| 0 LAMPS @                   | 60 WATTS =  | 0 WATTS   |
| 0 LAMPS @                   | 75 WATTS =  | 0 WATTS   |
| 1 LAMPS @                   | 90 WATTS =  | 90 WATTS  |
| 0 LAMPS @                   | 100 WATTS = | 0 WATTS   |
| <b>TOTAL EXISTING WATTS</b> |             | <b>90</b> |

### COMPACT FLUORESCENT REPLACEMENT

|                                |            |           |
|--------------------------------|------------|-----------|
| 0 LAMPS @                      | 7 WATTS =  | 0 WATTS   |
| 0 LAMPS @                      | 9 WATTS =  | 0 WATTS   |
| 0 LAMPS @                      | 13 WATTS = | 0 WATTS   |
| 0 LAMPS @                      | 18 WATTS = | 0 WATTS   |
| 1 LAMPS @                      | 26 WATTS = | 26 WATTS  |
| <b>TOTAL REPLACEMENT WATTS</b> |            | <b>26</b> |

NET ENERGY SAVINGS 0.47 MBTU/YR

NET DOLLAR SAVINGS \$12.00

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES

TIME 12:12:59

TITLE PAGE

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ENERGY SAVINGS OPPORTUNITY SURVY  
FT CAMPBELL, KY  
ECO-5: BUILDING 3206

Contract No: 27-93-C-0096

Prepared By: Systems Corp  
Estimator: Keith A. Derrington  
Estimate Prep. Date: 08/31/93  
Current UPB/CSI ID: ORL290

M - C A C E S E D I T I O N  
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by Building Systems Design, Inc.  
Release 4.20

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3206E5  
4-120

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3206

TIME 12:12:59

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| DETAILED ESTIMATE              | DETAIL PAGE |
|--------------------------------|-------------|
| 1. BUILDING TO THE 5 FOOT LINE |             |
| AA. ELECTRICAL.....            | 1           |

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Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3206  
1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 12:12:59

DETAILED ESTIMATE

DETAIL PAGE 1

BASE BID

| DIVISION 16 ELECTRICAL                                  |                                                     | QUANTITY | UOM | CREW | MANHR | LABOR | EQUIPMENT | MATERIAL | SALESTY | DIRECT |
|---------------------------------------------------------|-----------------------------------------------------|----------|-----|------|-------|-------|-----------|----------|---------|--------|
| 16500 LIGHTING                                          |                                                     |          |     |      |       |       |           |          |         |        |
| 16512 6100 SMALL FL FIXTURES (LESS THAN 40 WATT LAMPS)  |                                                     |          |     |      |       |       |           |          |         |        |
| CD=3 EL 6107                                            | SURF SQ W/1 26W BIAXIAL FL LAMP *** UNIT COSTS: *** | 1.25     |     |      |       | 41.26 | 0.00      | 31.00    | 1.55    | 73.81  |
| WC=1100                                                 | WHITE ACRYLIC LENS 1.00 EA EELEA                    | 1        |     |      |       | 41    | 0         | 31       | 2       | 74     |
| 16512 7000 FLUORESCENT - RECESSED T8 ELECTRONIC BALLAST |                                                     |          |     |      |       |       |           |          |         |        |
| CD=3 EL 7002                                            | 4 FT 1 LAMP PARABOLIC LOUVRE W/ *** UNIT COSTS: *** | 0.54     |     |      |       | 17.84 | 0.07      | 122.00   | 6.10    | 146.01 |
| WC=1100                                                 | REFLECTOR 4.00 EA EELEB                             | 2        |     |      |       | 71    | 0         | 488      | 24      | 584    |
| CD=3 EL 7003                                            | 4 FT 2 LAMP PARABOLIC LOUVRE W/ *** UNIT COSTS: *** | 0.59     |     |      |       | 19.42 | 0.08      | 136.00   | 6.80    | 162.29 |
| WC=1100                                                 | REFLECTOR 3.00 EA EELEB                             | 2        |     |      |       | 58    | 0         | 408      | 20      | 487    |
| TOTAL DIVISION 16 ELECTRICAL                            |                                                     | 5        |     |      |       | 171   | 1         | 927      | 46      | 1,145  |
| TOTAL FACILITY AA. ELECTRICAL                           |                                                     | 5        |     |      |       | 171   | 1         | 927      | 46      | 1,145  |
| TOTAL BID ITEM 1. BUILDING TO THE 5 FOOT LINE           |                                                     | 5        |     |      |       | 171   | 1         | 927      | 46      | 1,145  |
| TOTAL BASE BID                                          |                                                     | 5        |     |      |       | 171   | 1         | 927      | 46      | 1,145  |
| TOTAL ADDITIVE                                          |                                                     | 0        |     |      |       | 0     | 0         | 0        | 0       | 0      |
| TOTAL INCL ADD ENERGY SAVINGS OPPORTUNITY SURVY         |                                                     | 5        |     |      |       | 171   | 1         | 927      | 46      | 1,145  |

\*\*\* END OF DETAIL REPORT \*\*\*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3206E5

4-122



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3206

TIME 12:12:5

PROJECT NOTES

SUMMARY PAGE

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PROJECT NOTES

ECO-5: INTERIOR LIGHTING

SCOPE OF WORK: EVALUATE USE OF HIGHER EFFICIENCY INTERIOR LIGHTING IN  
SELECTED FACILITIES AT FT CAMPBELL.

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3206

TIME 12:12:56

BID ITEM AND FACILITY SUMMARY

SUMMARY PAGE 1

BID ITEM 1 BUILDING TO THE 5 FOOT LINE

BASE BID

| ID             | FACILITY   | COST TO PRM | OVERHEAD | HOME OFC     | PROFIT    | BOND       | OTHR FCTR  | TOTAL COST | UNIT COST     |
|----------------|------------|-------------|----------|--------------|-----------|------------|------------|------------|---------------|
| AA             | ELECTRICAL | 1.00 EA     | 1,145    | 10.0%<br>114 | 0.0%<br>0 | 7.5%<br>94 | 2.5%<br>34 | 0.0%<br>0  | 1,387 1387.50 |
| BID ITEM TOTAL | 1.00 EA    | 1,145       | 114      | 0            | 94        | 34         | 0          | 1,387      | 1387.50       |
| TOTAL BASE BID |            | 1,145       | 114      | 0            | 94        | 34         | 0          | 1,387      |               |
| TOTAL ADDITIVE |            | 0           | 0        | 0            | 0         | 0          | 0          | 0          |               |
| TOTAL INCL ADD |            | 1,145       | 114      | 0            | 94        | 34         | 0          | 1,387      |               |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3206

TIME 12:12:59

PROJECT CWE SUMMARY

SUMMARY PAGE 3

| ID                                                         | BID ITEM                    | QUANTITY | UOM | BASE BID | ADDITIVE | TOTAL COST | UNIT COST |
|------------------------------------------------------------|-----------------------------|----------|-----|----------|----------|------------|-----------|
| 1.                                                         | BUILDING TO THE 5 FOOT LINE | 1.00     | EA  | 1,388    |          | 1,388      | 1387.50   |
| TOTAL CURRENT CONTRACT COST                                |                             |          |     | 1,388    | 0        | 1,388      |           |
| Cost Growth from 08/93 to 08/94<br>Index Values: 0000 0000 |                             | 0.0%     |     | 0        | 0        | 0          |           |
| ESCALATED CONTRACT COST                                    |                             |          |     | 1,388    | 0        | 1,388      |           |
| Government-Furnished Property                              |                             |          |     | 0        |          | 0          |           |
| SUBTOTAL                                                   |                             |          |     | 1,388    | 0        | 1,388      |           |
| Contingencies                                              |                             | 10.0%    |     | 139      | 0        | 139        |           |
| SUBTOTAL                                                   |                             |          |     | 1,526    | 0        | 1,526      |           |
| SIOH (S&A)                                                 |                             | 5.0%     |     | 76       | 0        | 76         |           |
| CURRENT WORKING ESTIMATE                                   |                             |          |     | 1,603    | 0        | 1,603      |           |

Estimated Construction Time 365 Days

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3206

TIME 12:12:59

CONTRACTOR DIRECT SUMMARY

SUMMARY PAGE 4

| ID | CONTRACTOR    | PH | QUANTITY | UOM | MANHRS | LABOR | EQUIPMENT | MAT | W/TX | ** TOTAL DIRECT * | ** SUBCON * | W/OH&P | SUBTOTAL |
|----|---------------|----|----------|-----|--------|-------|-----------|-----|------|-------------------|-------------|--------|----------|
|    |               |    |          |     |        |       |           |     |      | AMOUNT            | PCT         |        |          |
| AA | GENERAL/PRIME |    | 1.00     | EA  | 5      | 171   | 1         | 973 |      | 1,145             | 100.0%      | 0      | 1,145    |
|    | TOTAL DIRECT  |    |          |     | 5      | 171   | 1         | 973 |      | 1,145             | 100.0%      |        |          |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3206E5

4-126

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3206

TIME 12:12:56

CONTRACTOR INDIRECT SUMMARY

SUMMARY PAGE 5

| ID | CONTRACTOR              | PM | SUBTOTAL | *** OVERHEAD *** | AMOUNT | PCT | HOFC% | **** PROFIT **** | AMOUNT | PCT  | BOND% | OTHER% | ***** TOTAL CONTRACT ***** | AMOUNT | PCT | UNIT COST |
|----|-------------------------|----|----------|------------------|--------|-----|-------|------------------|--------|------|-------|--------|----------------------------|--------|-----|-----------|
| AA | GENERAL/PRIME           |    | 1,145    | 114              | 10.0%  | 0.0 |       | 94               | 7.5%   | 2.5% | 0.0%  |        | 1,388                      | 100.0% |     | 1387.50   |
|    | TOTAL OVERHEAD & PROFIT |    |          | 114              | 10.0%  |     |       | 94               | 7.5%   |      |       |        |                            |        |     |           |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3206E5

4-127

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3206

TIME 12:12:59

DI DIVISION SUMMARY

SUMMARY PAGE 6

| ID CSI DIVISION | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|-----------------|----------|-------|-----------|----------|-----------|-------------------------|
| 16 ELECTRICAL   | 5        | 171   | 1         | 927      | 46        | 1,145                   |
| TOTAL DIRECT    | 5        | 171   | 1         | 927      | 46        | 1,145                   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3206E5  
4-128

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3206

TIME 12:12:59

SYSTEMS SUMMARY

SUMMARY PAGE 7

| ID SYSTEM              | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|------------------------|----------|-------|-----------|----------|-----------|-------------------------|
| 11 INTERIOR ELECTRICAL | 5        | 171   | 1         | 927      | 46        | 1,145                   |
| TOTAL DIRECT           | 5        | 171   | 1         | 927      | 46        | 1,145                   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3206E5  
4-129

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3206

TIME 12:12:59

EQUIPMENT SUMMARY

SUMMARY PAGE 8

| EQUIP DESCRIPTION             | LIFE HRS | TL HRLY | OWNRSH | OWNS | OVTM | OWNRSH | EXPENSE | RATE | UPB  | HOURS | TOTAL | COST |
|-------------------------------|----------|---------|--------|------|------|--------|---------|------|------|-------|-------|------|
| EMI20 SMALL TOOLS             |          |         |        |      |      |        |         | 1.40 | 1.40 | 0     |       | 1    |
| TOTAL PROJECT EQUIPMENT HOURS |          |         |        |      |      |        |         |      |      | 0     |       | 1    |



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3206

TIME 12:12:59

LABOR SUMMARY

SUMMARY PAGE 9

| CRAFT DESCRIPTION      | BASE  | OVERTH | TXS/INS | FRNG | TRVL | HRLY<br>RATE | UPB<br>RATE | ****<br>HOURS | TOTAL<br>COST |
|------------------------|-------|--------|---------|------|------|--------------|-------------|---------------|---------------|
| LELEC ELECTRICIANS     | 20.50 | 0.0%   | 24.0%   | 7.49 | 0.00 | 32.91        | 25.79       | 5             | 171           |
| TOTAL PROJECT MANHOURS |       |        |         |      |      |              |             | 5             | 171           |

\* \* \* END OF SUMMARY REPORT \* \* \*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3206E5

4-131

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 6: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

31 AUGUST 1993

PAGE 1 OF 2

## BUILDING WIDE FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 3207

BUILDING USE:

HOURS/DAY 11

DAYS/WEEK 5

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

### EXISTING FIXTURE DATA

#### 4 FOOT

0.1 LAMP @ 48 W/FIXT = 0 WATTS  
 0.1 LAMP @ 37.8 W/FIXT = 0 WATTS  
 0.2 LAMP @ 96 W/FIXT = 0 WATTS  
 0.2 LAMP @ 75.6 W/FIXT = 0 WATTS  
 0.3 LAMP @ 144 W/FIXT = 0 WATTS  
 0.3 LAMP @ 113.4 W/FIXT = 0 WATTS  
 27.4 LAMP @ 192 W/FIXT = 5184 WATTS  
 0.4 LAMP @ 151.2 W/FIXT = 0 WATTS

#### 2 FOOT

0.1 LAMP @ 31 W/FIXT = 0 WATTS  
 0.4 LAMP @ 88 W/FIXT = 0 WATTS  
 0.2 LAMP U @ 96 W/FIXT = 0 WATTS  
 0.2 LAMP U @ 75.6 W/FIXT = 0 WATTS

#### 8 FOOT

0.2 LAMP @ 180 W/FIXT = 0 WATTS  
 0.2 LAMP @ 168 W/FIXT = 0 WATTS

TOTAL EXISTING KW 5.2

NET ENERGY SAVINGS 35.3 MBTU/YR

### REPLACEMENT FIXTURE DATA

#### 4 FOOT

0.1 LAMP @ 37 W/FIXT = 0 WATTS  
 0.1 LAMP W/ REFLECTORS 37 W/FIXT = 0 WATTS  
 0.2 LAMP W/ REFLECTORS 58 W/FIXT = 0 WATTS  
 27.2 LAMP W/ REFLECTORS 58 W/FIXT = 1566 WATTS

#### 2 FOOT

0.1 LAMP @ 24 W/FIXT = 0 WATTS  
 0.2 LAMP W/ REFLECTORS 41 W/FIXT = 0 WATTS  
 0.2 LAMP U @ 58 W/FIXT = 0 WATTS

#### 8 FOOT

0.1 LAMP W/ REFLECTORS 58 W/FIXT = 0 WATTS

TOTAL REPLACEMENT KW 1.6

NET DOLLAR SAVINGS \$730.19

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

31 AUGUST 1993

PAGE 2 OF 2

## BUILDING WIDE INCANDESCENT LAMP REPLACEMENT

BUILDING #: 3207

LAMP USE:

HOURS/DAY 3

DAYS/WEEK 5

PEAK USE 2 (1 - YES, 2 - NO)

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$0.00 PER KW

### EXISTING INCANDESCENTS

|                       |           |
|-----------------------|-----------|
| 0 LAMPS @ 25 WATTS =  | 0 WATTS   |
| 0 LAMPS @ 40 WATTS =  | 0 WATTS   |
| 5 LAMPS @ 52 WATTS =  | 260 WATTS |
| 0 LAMPS @ 60 WATTS =  | 0 WATTS   |
| 0 LAMPS @ 75 WATTS =  | 0 WATTS   |
| 0 LAMPS @ 90 WATTS =  | 0 WATTS   |
| 0 LAMPS @ 100 WATTS = | 0 WATTS   |

TOTAL EXISTING WATTS 260

### COMPACT FLUORESCENT REPLACEMENT

|                      |          |
|----------------------|----------|
| 0 LAMPS @ 7 WATTS =  | 0 WATTS  |
| 0 LAMPS @ 9 WATTS =  | 0 WATTS  |
| 5 LAMPS @ 13 WATTS = | 65 WATTS |
| 0 LAMPS @ 18 WATTS = | 0 WATTS  |
| 0 LAMPS @ 26 WATTS = | 0 WATTS  |

TOTAL REPLACEMENT WATTS 65

NET ENERGY SAVINGS 0.51 MBTU/YR

NET DOLLAR SAVINGS \$3.22

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES

TIME 12:19:47

FILE PAGE

---

ENERGY SAVINGS OPPORTUNITY SURVY  
FT CAMPBELL, KY  
ECO-5: BUILDING 3207

Contract No: 27-93-C-0096

Prepared By: Systems Corp  
Estimator: Keith A. Derrington  
Estimate Prep. Date: 08/31/93  
Current UPB/CSI ID: ORL290

M - C A C E S E D I T I O N  
COMPOSER Plus Copyright (C) 1985, 1988  
by Building Systems Design, Inc.  
Release 4.20

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3207E5  
4-134

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3207

TIME 12:19:41

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|                                |   |
|--------------------------------|---|
| 1. BUILDING TO THE 5 FOOT LINE |   |
| AA. ELECTRICAL.....            | 1 |

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Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
 ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
 ECO-5: BUILDING 3207  
 1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 12:19:47

DETAILED ESTIMATE

DETAIL PAGE 1

BASE BID

| DIVISION 16 ELECTRICAL                                           | QUANTITY | UOM | CREW | MANHR | LABOR | EQUIPMENT | MATERIAL | SALESTX | DIRECT \$ |
|------------------------------------------------------------------|----------|-----|------|-------|-------|-----------|----------|---------|-----------|
| 16500 LIGHTING                                                   |          |     |      |       |       |           |          |         |           |
| 16512 6100 SMALL FL FIXTURES (LESS THAN 40 WATT LAMPS)           |          |     |      |       |       |           |          |         |           |
| CD=3 EL 6105 SURF SQ W/1 13W BIAXIAL FL LAMP *** UNIT COSTS: *** | 1.25     |     |      |       | 41.26 | 0.00      | 27.80    | 1.39    | 70.45     |
| WC=1100 WHITE ACRYLIC LENS 5.00 EA EELEA                         | 6        |     |      |       | 206   | 0         | 139      | 7       | 352       |
| 16512 7000 FLUORESCENT - RECESSED T8 ELECTRONIC BALLAST          |          |     |      |       |       |           |          |         |           |
| CD=3 EL 7003 4 FT 2 LAMP PARABOLIC LOUVRE W/ *** UNIT COSTS: *** | 0.59     |     |      |       | 19.42 | 0.08      | 136.00   | 6.80    | 162.29    |
| WC=1100 REFLECTOR 27.00 EA EELEB                                 | 16       |     |      |       | 524   | 2         | 3,672    | 184     | 4,382     |
| TOTAL DIVISION 16 ELECTRICAL                                     | 22       |     |      |       | 731   | 2         | 3,811    | 191     | 4,734     |
| TOTAL FACILITY AA. ELECTRICAL                                    | 22       |     |      |       | 731   | 2         | 3,811    | 191     | 4,734     |
| TOTAL BID ITEM 1. BUILDING TO THE 5 FOOT LINE                    | 22       |     |      |       | 731   | 2         | 3,811    | 191     | 4,734     |
| TOTAL BASE BID                                                   | 22       |     |      |       | 731   | 2         | 3,811    | 191     | 4,734     |
| TOTAL ADDITIVE                                                   | 0        |     |      |       | 0     | 0         | 0        | 0       | 0         |
| TOTAL INCL ADD ENERGY SAVINGS OPPORTUNITY SURVY                  | 22       |     |      |       | 731   | 2         | 3,811    | 191     | 4,734     |

\*\*\* END OF DETAIL REPORT \*\*\*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3207E5

4-136

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3207

TIME 12:19:47

PROJECT NOTES

SUMMARY PAGE 1

---

PROJECT NOTES

ECO-5: INTERIOR LIGHTING

SCOPE OF WORK: EVALUATE USE OF HIGHER EFFICIENCY INTERIOR LIGHTING IN  
SELECTED FACILITIES AT FT CAMPBELL.

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3207

TIME 12:19:47

BID ITEM AND FACILITY SUMMARY

SUMMARY PAGE 2

BID ITEM 1 BUILDING TO THE 5 FOOT LINE

BASE BID

| ID             | FACILITY   | COST TO PRM | OVERHEAD | HOME OFC     | PROFIT    | BOND        | OTHR FCTR   | TOTAL COST | UNIT COST        |
|----------------|------------|-------------|----------|--------------|-----------|-------------|-------------|------------|------------------|
| AA             | ELECTRICAL | 1.00 EA     | 4,734    | 10.0%<br>473 | 0.0%<br>0 | 7.5%<br>391 | 2.5%<br>140 | 0.0%<br>0  | 5,738<br>5738.13 |
| BID ITEM TOTAL |            | 1.00 EA     | 4,734    | 473          | 0         | 391         | 140         | 0          | 5,738<br>5738.13 |
| TOTAL BASE BID |            |             | 4,734    | 473          | 0         | 391         | 140         | 0          | 5,738            |
| TOTAL ADDITIVE |            |             | 0        | 0            | 0         | 0           | 0           | 0          | 0                |
| TOTAL INCL ADD |            |             | 4,734    | 473          | 0         | 391         | 140         | 0          | 5,738            |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3207E5

4-138



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3207

TIME 12:19:47

PROJECT CWE SUMMARY

SUMMARY PAGE 3

| ID BID ITEM                                                | QUANTITY UOM | BASE BID | ADDITIVE | TOTAL COST | UNIT COST |
|------------------------------------------------------------|--------------|----------|----------|------------|-----------|
| 1. BUILDING TO THE 5 FOOT LINE                             | 1.00 EA      | 5,738    |          | 5,738      | 5738.10   |
| TOTAL CURRENT CONTRACT COST                                |              | 5,738    | 0        | 5,738      |           |
| Cost Growth from 08/93 to 08/94<br>Index Values: 0000 0000 | 0.0%         | 0        | 0        | 0          |           |
| ESCALATED CONTRACT COST                                    |              | 5,738    | 0        | 5,738      |           |
| Government-Furnished Property                              |              | 0        |          | 0          |           |
| SUBTOTAL                                                   |              | 5,738    | 0        | 5,738      |           |
| Contingencies                                              | 10.0%        | 574      | 0        | 574        |           |
| SUBTOTAL                                                   |              | 6,312    | 0        | 6,312      |           |
| SIOH (S&A)                                                 | 5.0%         | 316      | 0        | 316        |           |
| CURRENT WORKING ESTIMATE                                   |              | 6,628    | 0        | 6,628      |           |

Estimated Construction Time 365 Days

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3207

TIME 12:19:47

CONTRACTOR DIRECT SUMMARY

SUMMARY PAGE 4

| ID | CONTRACTOR    | PM | QUANTITY | UOM | MANHRS | LABOR | EQUIPMENT | MAT W/TX | ** TOTAL DIRECT *<br>AMOUNT PCT | * SUBCON *<br>W/OH&P | SUBTOTAL |
|----|---------------|----|----------|-----|--------|-------|-----------|----------|---------------------------------|----------------------|----------|
| AA | GENERAL/PRIME |    | 1.00     | EA  | 22     | 731   | 2         | 4,002    | 4,734 100.0%                    | 0                    | 4,734    |
|    | TOTAL DIRECT  |    |          |     | 22     | 731   | 2         | 4,002    | 4,734 100.0%                    |                      |          |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3207

TIME 12:19:47

CONTRACTOR INDIRECT SUMMARY

SUMMARY PAGE 1

| ID | CONTRACTOR              | PM | SUBTOTAL | *** OVERHEAD *** | AMOUNT | PCT | HOFCT | **** PROFIT **** | AMOUNT | PCT  | BOND | OTHER | ***** TOTAL CONTRACT ***** | AMOUNT | PCT | UNIT COST |
|----|-------------------------|----|----------|------------------|--------|-----|-------|------------------|--------|------|------|-------|----------------------------|--------|-----|-----------|
| AA | GENERAL/PRIME           |    | 4,734    | 473              | 10.0%  | 0.0 |       | 391              | 7.5%   | 2.5% | 0.0% |       | 5,738                      | 100.0% |     | 5738.10   |
|    | TOTAL OVERHEAD & PROFIT |    |          | 473              | 10.0%  |     |       | 391              | 7.5%   |      |      |       |                            |        |     |           |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3207E5  
4-141

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3207

TIME 12:19:47

SI DIVISION SUMMARY

SUMMARY PAGE 6

| ID CSI DIVISION | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|-----------------|----------|-------|-----------|----------|-----------|-------------------------|
| 16 ELECTRICAL   | 22       | 731   | 2         | 3,811    | 191       | 4,734                   |
| TOTAL DIRECT    | 22       | 731   | 2         | 3,811    | 191       | 4,734                   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3207E5  
4-142

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3207

TIME 12:19:47

SYSTEMS SUMMARY

SUMMARY PAGE 7

| ID SYSTEM              | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|------------------------|----------|-------|-----------|----------|-----------|-------------------------|
| 11 INTERIOR ELECTRICAL | 22       | 731   | 2         | 3,811    | 191       | 4,734                   |
| TOTAL DIRECT           | 22       | 731   | 2         | 3,811    | 191       | 4,734                   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3207E5  
4-143

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3207

TIME 12:19:47

EQUIPMENT SUMMARY

SUMMARY PAGE 8

| EQUIP DESCRIPTION             | LIFE HRS | TL HRLY | OWNRSH | OWNS | OVTH | OWNRSH | EXPENSE | HRLY RATE | UPB RATE | HOURS | TOTAL COST |
|-------------------------------|----------|---------|--------|------|------|--------|---------|-----------|----------|-------|------------|
| EMI20 SMALL TOOLS             |          |         |        |      |      |        |         | 1.40      | 1.40     | 2     | 2          |
| TOTAL PROJECT EQUIPMENT HOURS |          |         |        |      |      |        |         |           |          | 2     | 2          |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3207

TIME 12:19:41

LABOR SUMMARY

SUMMARY PAGE 1

| CRAFT DESCRIPTION      | BASE  | OVERTH | TXS/INS | FRNG | TRVL | HRLY --<br>RATE | UPB<br>RATE | ****<br>HOURS | TOTAL<br>COST |
|------------------------|-------|--------|---------|------|------|-----------------|-------------|---------------|---------------|
| LELEC ELECTRICIANS     | 20.50 | 0.00   | 24.00   | 7.49 | 0.00 | 32.91           | 25.79       | 22            | 730           |
| TOTAL PROJECT MANHOURS |       |        |         |      |      |                 |             | 22            | 730           |

\* \* \* END OF SUMMARY REPORT \* \* \*

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

31 AUGUST 1993

PAGE 1 OF 2

## BUILDING WIDE FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 3209

BUILDING USE:

HOURS/DAY 3  
DAYS/WEEK 5

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH  
DEMAND CHARGE \$11.76 PER KW

### EXISTING FIXTURE DATA

4 FOOT

0.1 LAMP @ 48 W/FIXT = 0 WATTS  
0.1 LAMP @ 37.8 W/FIXT = 0 WATTS  
0.2 LAMP @ 96 W/FIXT = 0 WATTS  
4.2 LAMP @ 75.6 W/FIXT = 302.4 WATTS  
0.3 LAMP @ 144 W/FIXT = 0 WATTS  
0.3 LAMP @ 113.4 W/FIXT = 0 WATTS  
0.4 LAMP @ 192 W/FIXT = 0 WATTS  
2.2 LAMP @ 151.2 W/FIXT = 332.6 WATTS

2 FOOT

0.1 LAMP @ 31 W/FIXT = 0 WATTS  
0.4 LAMP @ 88 W/FIXT = 0 WATTS  
0.2 LAMP U @ 96 W/FIXT = 0 WATTS  
0.2 LAMP U @ 75.6 W/FIXT = 0 WATTS

8 FOOT

0.2 LAMP @ 180 W/FIXT = 0 WATTS  
0.2 LAMP @ 168 W/FIXT = 0 WATTS

TOTAL EXISTING KW 3.6

NET ENERGY SAVINGS 5.9 MBTU/YR

### REPLACEMENT FIXTURE DATA

4 FOOT

0.1 LAMP @ 37 W/FIXT = 0 WATTS  
4.1 LAMP W/ REFLECTORS 37 W/FIXT = 148 WATTS  
0.2 LAMP W/ REFLECTORS 58 W/FIXT = 0 WATTS  
2.2 LAMP W/ REFLECTORS 58 W/FIXT = 1276 WATTS

2 FOOT

0.1 LAMP @ 24 W/FIXT = 0 WATTS  
0.2 LAMP W/ REFLECTORS 41 W/FIXT = 0 WATTS  
0.2 LAMP U @ 58 W/FIXT = 0 WATTS

8 FOOT

0.1 LAMP W/ REFLECTORS 58 W/FIXT = 0 WATTS

TOTAL REPLACEMENT KW 1.4

NET DOLLAR SAVINGS \$348.03



# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

31 AUGUST 1993

PAGE 2 OF 2

## BUILDING WIDE INCANDESCENT LAMP REPLACEMENT

BUILDING #: 3209

LAMP USE:

HOURS/DAY 3

DAYS/WEEK 5

PEAK USE 2 (1 - YES, 2 - NO)

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$0.00 PER KW

### EXISTING INCANDESCENTS

|                      |             |           |
|----------------------|-------------|-----------|
| 0 LAMPS @            | 25 WATTS =  | 0 WATTS   |
| 0 LAMPS @            | 40 WATTS =  | 0 WATTS   |
| 0 LAMPS @            | 52 WATTS =  | 0 WATTS   |
| 3 LAMPS @            | 60 WATTS =  | 180 WATTS |
| 0 LAMPS @            | 75 WATTS =  | 0 WATTS   |
| 0 LAMPS @            | 90 WATTS =  | 0 WATTS   |
| 0 LAMPS @            | 100 WATTS = | 0 WATTS   |
| TOTAL EXISTING WATTS |             | 180       |

### COMPACT FLUORESCENT REPLACEMENT

|                         |            |          |
|-------------------------|------------|----------|
| 0 LAMPS @               | 7 WATTS =  | 0 WATTS  |
| 0 LAMPS @               | 9 WATTS =  | 0 WATTS  |
| 3 LAMPS @               | 13 WATTS = | 39 WATTS |
| 0 LAMPS @               | 18 WATTS = | 0 WATTS  |
| 0 LAMPS @               | 26 WATTS = | 0 WATTS  |
| TOTAL REPLACEMENT WATTS |            | 39       |

NET ENERGY SAVINGS 0.37 MBTU/YR

NET DOLLAR SAVINGS \$2.32

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES

TIME 12:26:43

LE PAGE

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ENERGY SAVINGS OPPORTUNITY SURVY  
FT CAMPBELL, KY  
ECO-5: BUILDING 3209

Contract No: 27-93-C-0096

Prepared By: Systems Corp  
Estimator: Keith A. Derrington  
Estimate Prep. Date: 08/31/93  
Current UPB/CSI ID: ORL290

M - C A C E S E D I T I O N  
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Release 4.20

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3209E5  
4-148

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3209

TIME 12:26:43

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Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
 ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
 ECO-5: BUILDING 3209  
 1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 12:26:43

MAILED ESTIMATE

DETAIL PAGE 1

BASE BID

| DIVISION 16 ELECTRICAL                                  |                                 | QUANTITY | UOM             | CREW | MANHR | LABOR | EQUIPMENT | MATERIAL | SALESTX | DIRECT \$ |
|---------------------------------------------------------|---------------------------------|----------|-----------------|------|-------|-------|-----------|----------|---------|-----------|
| 16500 LIGHTING                                          |                                 |          |                 |      |       |       |           |          |         |           |
| 16512 6100 SMALL FL FIXTURES (LESS THAN 40 WATT LAMPS)  |                                 |          |                 |      |       |       |           |          |         |           |
| CD=3 EL 6105                                            | SURF SQ W/1 13W BIAxIAL FL LAMP | ***      | UNIT COSTS: *** | 1.25 | 41.26 | 0.00  | 27.80     | 1.39     | 70.45   |           |
| WC=1100                                                 | WHITE ACRYLIC LENS              | 3.00     | EA EELEA        | 4    | 124   | 0     | 83        | 4        | 211     |           |
| 16512 7000 FLUORESCENT - RECESSED T8 ELECTRONIC BALLAST |                                 |          |                 |      |       |       |           |          |         |           |
| CD=3 EL 7002                                            | 4 FT 1 LAMP PARABOLIC LOUVRE W/ | ***      | UNIT COSTS: *** | 0.54 | 17.84 | 0.07  | 122.00    | 6.10     | 146.01  |           |
| WC=1100                                                 | REFLECTOR                       | 4.00     | EA EELEB        | 2    | 71    | 0     | 488       | 24       | 584     |           |
| CD=3 EL 7003                                            | 4 FT 2 LAMP PARABOLIC LOUVRE W/ | ***      | UNIT COSTS: *** | 0.59 | 19.42 | 0.08  | 136.00    | 6.80     | 162.29  |           |
| WC=1100                                                 | REFLECTOR                       | 22.00    | EA EELEB        | 13   | 427   | 2     | 2,992     | 150      | 3,570   |           |
| TOTAL DIVISION 16 ELECTRICAL                            |                                 |          |                 |      | 19    | 622   | 2         | 3,563    | 178     | 4,366     |
| TOTAL FACILITY AA. ELECTRICAL                           |                                 |          |                 |      | 19    | 622   | 2         | 3,563    | 178     | 4,366     |
| TOTAL BID ITEM 1. BUILDING TO THE 5 FOOT LINE           |                                 |          |                 |      | 19    | 622   | 2         | 3,563    | 178     | 4,366     |
| TOTAL BASE BID                                          |                                 |          |                 |      | 19    | 622   | 2         | 3,563    | 178     | 4,366     |
| TOTAL ADDITIVE                                          |                                 |          |                 |      | 0     | 0     | 0         | 0        | 0       | 0         |
| TOTAL INCL ADD ENERGY SAVINGS OPPORTUNITY SURVY         |                                 |          |                 |      | 19    | 622   | 2         | 3,563    | 178     | 4,366     |

\* \* \* END OF DETAIL REPORT \* \* \*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3209E5  
 4-150

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3209

TIME 12:26:43

PROJECT NOTES

SUMMARY PAGE 1

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PROJECT NOTES

ECO-5: INTERIOR LIGHTING

SCOPE OF WORK: EVALUATE USE OF HIGHER EFFICIENCY INTERIOR LIGHTING IN  
SELECTED FACILITIES AT FT CAMPBELL.

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
 ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
 ECO-5: BUILDING 3209

TIME 12:26:43

BID ITEM AND FACILITY SUMMARY

SUMMARY PAGE 2

BID ITEM 1 BUILDING TO THE 5 FOOT LINE

BASE BID

| ID             | FACILITY   | COST TO PRM | OVERHEAD | HOME OFC     | PROFIT    | BOND        | OTHER FCTR  | TOTAL COST | UNIT COST     |
|----------------|------------|-------------|----------|--------------|-----------|-------------|-------------|------------|---------------|
| AA             | ELECTRICAL | 1.00 EA     | 4,366    | 10.0%<br>437 | 0.0%<br>0 | 7.5%<br>360 | 2.5%<br>129 | 0.0%<br>0  | 5,292 5291.71 |
| BID ITEM TOTAL |            | 1.00 EA     | 4,366    | 437          | 0         | 360         | 129         | 0          | 5,292 5291.71 |
| TOTAL BASE BID |            |             | 4,366    | 437          | 0         | 360         | 129         | 0          | 5,292         |
| TOTAL ADDITIVE |            |             | 0        | 0            | 0         | 0           | 0           | 0          | 0             |
| TOTAL INCL ADD |            |             | 4,366    | 437          | 0         | 360         | 129         | 0          | 5,292         |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3209E5  
 4-152

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3209

TIME 12:26:41

PROJECT CWE SUMMARY

SUMMARY PAGE 1

| ID                                                         | BID ITEM                    | QUANTITY | UOM | BASE BID | ADDITIVE | TOTAL COST | UNIT COST |
|------------------------------------------------------------|-----------------------------|----------|-----|----------|----------|------------|-----------|
| 1.                                                         | BUILDING TO THE 5 FOOT LINE | 1.00     | EA  | 5,292    |          | 5,292      | 5291.70   |
| TOTAL CURRENT CONTRACT COST                                |                             |          |     | 5,292    | 0        | 5,292      |           |
| Cost Growth from 08/93 to 08/94<br>Index Values: 0000 0000 |                             | 0.0%     |     | 0        | 0        | 0          |           |
| ESCALATED CONTRACT COST                                    |                             |          |     | 5,292    | 0        | 5,292      |           |
| Government-Furnished Property                              |                             |          |     | 0        |          | 0          |           |
| SUBTOTAL                                                   |                             |          |     | 5,292    | 0        | 5,292      |           |
| Contingencies                                              |                             | 10.0%    |     | 529      | 0        | 529        |           |
| SUBTOTAL                                                   |                             |          |     | 5,821    | 0        | 5,821      |           |
| SIOH (S&A)                                                 |                             | 5.0%     |     | 291      | 0        | 291        |           |
| CURRENT WORKING ESTIMATE                                   |                             |          |     | 6,112    | 0        | 6,112      |           |

Estimated Construction Time 365 Days

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3209E5  
4-153

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3209

TIME 12:26:40

CONTRACTOR DIRECT SUMMARY

SUMMARY PAGE 4

| ID | CONTRACTOR    | PM | QUANTITY | UOM | MANHRS | LABOR | EQUIPMENT | MAT   | W/TX | ** TOTAL DIRECT ** | SUBCON | W/O&P | SUBTOTAL |
|----|---------------|----|----------|-----|--------|-------|-----------|-------|------|--------------------|--------|-------|----------|
|    |               |    |          |     |        |       |           |       |      | AMOUNT PCT         |        |       |          |
| AA | GENERAL/PRIME |    | 1.00     | EA  | 19     | 622   | 2         | 3,742 |      | 4,366 100.0%       | 0      |       | 4,366    |
|    | TOTAL DIRECT  |    |          |     | 19     | 622   | 2         | 3,742 |      | 4,366 100.0%       |        |       |          |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3209E5  
4-154



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3209

TIME 12:26:43

CONTRACTOR INDIRECT SUMMARY

SUMMARY PAGE 5

| ID | CONTRACTOR              | PM | SUBTOTAL | *** OVERHEAD *** | AMOUNT | PCT | HOPC% | **** PROFIT **** | AMOUNT | PCT  | BOND% | OTHER% | ***** TOTAL CONTRACT ***** | AMOUNT | PCT | UNIT COST |
|----|-------------------------|----|----------|------------------|--------|-----|-------|------------------|--------|------|-------|--------|----------------------------|--------|-----|-----------|
| AA | GENERAL/PRIME           |    | 4,366    | 437              | 10.0%  | 0.0 |       | 360              | 7.5%   | 2.5% | 0.0%  |        | 5,292                      | 100.0% |     | 5291.70   |
|    | TOTAL OVERHEAD & PROFIT |    |          | 437              | 10.0%  |     |       | 360              | 7.5%   |      |       |        |                            |        |     |           |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3209E5  
4-155

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3209

TIME 12:26:43

CSI DIVISION SUMMARY

SUMMARY PAGE 6

| ID CSI DIVISION | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|-----------------|----------|-------|-----------|----------|-----------|-------------------------|
| 16 ELECTRICAL   | 19       | 622   | 2         | 3,563    | 178       | 4,366                   |
| TOTAL DIRECT    | 19       | 622   | 2         | 3,563    | 178       | 4,366                   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3209E5  
4-156

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3209

TIME 12:26:43

SYSTEMS SUMMARY

SUMMARY PAGE 7

| ID SYSTEM              | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|------------------------|----------|-------|-----------|----------|-----------|-------------------------|
| 11 INTERIOR ELECTRICAL | 19       | 622   | 2         | 3,563    | 178       | 4,366                   |
| TOTAL DIRECT           | 19       | 622   | 2         | 3,563    | 178       | 4,366                   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3209E5  
4-157

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3209

TIME 12:26:43

EQUIPMENT SUMMARY

SUMMARY PAGE 8

| EQUIP DESCRIPTION             | LIFE HRS | TL | HRLY | OWNRSH | OWNS | OVTM | OWNRSH | EXPENSE | HRLY | UPB | HOURS | TOTAL | COST |
|-------------------------------|----------|----|------|--------|------|------|--------|---------|------|-----|-------|-------|------|
| ENI20 SMALL TOOLS             |          |    |      |        |      |      |        | 1.40    | 1.40 |     | 1     | 2     |      |
| TOTAL PROJECT EQUIPMENT HOURS |          |    |      |        |      |      |        |         |      |     | 1     | 2     |      |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3209

TIME 12:26:43

LABOR SUMMARY

SUMMARY PAGE 9

| CRAFT DESCRIPTION      | BASE  | OVERTM | TYS/INS | FRNG | TRVL | HRLY --<br>RATE | UPB<br>RATE | ****<br>HOURS | TOTAL<br>COST |
|------------------------|-------|--------|---------|------|------|-----------------|-------------|---------------|---------------|
| LELEC ELECTRICIANS     | 20.50 | 0.0%   | 24.0%   | 7.49 | 0.00 | 32.91           | 25.79       | 19            | 622           |
| TOTAL PROJECT MANHOURS |       |        |         |      |      |                 |             | 19            | 622           |

\*\*\* END OF SUMMARY REPORT \*\*\*

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

PAGE 1 OF 1

31 AUGUST 1993

## BUILDING WIDE FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 3307

BUILDING USE:

HOURS/DAY 14

DAYS/WEEK 5

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.76 PER KW

### EXISTING FIXTURE DATA

4 FOOT

0.1 LAMP @ 48 W/FXT = 0 WATTS  
 0.1 LAMP @ 37.8 W/FXT = 0 WATTS  
 0.2 LAMP @ 96 W/FXT = 0 WATTS  
 0.2 LAMP @ 75.6 W/FXT = 0 WATTS  
 0.3 LAMP @ 144 W/FXT = 0 WATTS  
 0.3 LAMP @ 113.4 W/FXT = 0 WATTS  
 0.4 LAMP @ 192 W/FXT = 0 WATTS  
 26.4 LAMP @ 151.2 W/FXT = 3931.2 WATTS

2 FOOT

0.1 LAMP @ 31 W/FXT = 0 WATTS  
 0.4 LAMP @ 88 W/FXT = 0 WATTS  
 0.2 LAMP U @ 86 W/FXT = 0 WATTS  
 0.2 LAMP U @ 75.6 W/FXT = 0 WATTS

8 FOOT

0.2 LAMP @ 180 W/FXT = 0 WATTS  
 0.2 LAMP @ 168 W/FXT = 0 WATTS

TOTAL EXISTING KW 3.9

NET ENERGY SAVINGS 30.1 MBTU/YR

### REPLACEMENT FIXTURE DATA

4 FOOT

0.1 LAMP @ 37 W/FXT = 0 WATTS  
 0.1 LAMP W/ REFLECTORS 37 W/FXT = 0 WATTS  
 0.2 LAMP W/ REFLECTORS 58 W/FXT = 0 WATTS  
 26.2 LAMP W/ REFLECTORS 58 W/FXT = 1508 WATTS

2 FOOT

0.1 LAMP @ 24 W/FXT = 0 WATTS  
 0.2 LAMP W/ REFLECTORS 41 W/FXT = 0 WATTS  
 0.2 LAMP U @ 58 W/FXT = 0 WATTS

8 FOOT

0.1 LAMP W/ REFLECTORS 58 W/FXT = 0 WATTS

TOTAL REPLACEMENT KW 1.5

NET DOLLAR SAVINGS \$529.01

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES

TIME 12:42:28

FILE PAGE

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ENERGY SAVINGS OPPORTUNITY SURVY  
FT CAMPBELL, KY  
ECO-5: BUILDING 3307

Contract No: 27-93-C-0096

Prepared By: Systems Corp  
Estimator: Keith A. Derrington  
Estimate Prep. Date: 08/31/93  
Current UPB/CSI ID: ORL290

M - C A C E S E D I T I O N  
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by Building Systems Design, Inc.  
Release 4.20

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3307E5  
4-161

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3307

TIME 12:42:23

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DETAILED ESTIMATE

DETAIL PAGE

|                                |   |
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| 1. BUILDING TO THE 5 FOOT LINE |   |
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Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
 ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
 ECO-5: BUILDING 3307  
 1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 12:42:28

MAILED ESTIMATE

DETAIL PAGE 1

BASE BID

| DIVISION 16 ELECTRICAL                                           | QUANTITY | UOM | CREW | MANHR | LABOR | EQUIPMENT | MATERIAL | SALESTX | DIRECT \$ |
|------------------------------------------------------------------|----------|-----|------|-------|-------|-----------|----------|---------|-----------|
| 16500 LIGHTING                                                   |          |     |      |       |       |           |          |         |           |
| 16512 7000 FLUORESCENT - RECESSED T8 ELECTRONIC BALLAST          |          |     |      |       |       |           |          |         |           |
| CD=3 EL 7003 4 FT 2 LAMP PARABOLIC LOUVRE W/ *** UNIT COSTS: *** | 0.59     |     |      | 19.42 | 0.08  | 136.00    | 6.80     | 162.29  |           |
| WC=1100 REFLECTOR 26.00 EA EELEB                                 | 15       |     |      | 505   | 2     | 3,536     | 177      | 4,220   |           |
| TOTAL DIVISION 16 ELECTRICAL                                     | 15       |     |      | 505   | 2     | 3,536     | 177      | 4,220   |           |
| TOTAL FACILITY AA. ELECTRICAL                                    | 15       |     |      | 505   | 2     | 3,536     | 177      | 4,220   |           |
| TOTAL BID ITEM 1. BUILDING TO THE 5 FOOT LINE                    | 15       |     |      | 505   | 2     | 3,536     | 177      | 4,220   |           |
| TOTAL BASE BID                                                   | 15       |     |      | 505   | 2     | 3,536     | 177      | 4,220   |           |
| TOTAL ADDITIVE                                                   | 0        |     |      | 0     | 0     | 0         | 0        | 0       | 0         |
| TOTAL INCL ADD ENERGY SAVINGS OPPORTUNITY SURVY                  | 15       |     |      | 505   | 2     | 3,536     | 177      | 4,220   |           |

\* \* \* END OF DETAIL REPORT \* \* \*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3307E5

4-163

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3307

TIME 12:42:28

PROJECT NOTES

SUMMARY PAGE 1

---

PROJECT NOTES

ECO-5: INTERIOR LIGHTING

SCOPE OF WORK: EVALUATE USE OF HIGHER EFFICIENCY INTERIOR LIGHTING IN  
SELECTED FACILITIES AT FT CAMPBELL.

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3307

TIME 12:42:28

BID ITEM AND FACILITY SUMMARY

SUMMARY PAGE 2

BID ITEM 1 BUILDING TO THE 5 FOOT LINE

BASE BID

| ID             | FACILITY   |         | COST TO PRM | OVERHEAD     | HOME OFC  | PROFIT      | BOND        | OTHER FCTR | TOTAL COST | UNIT COST |
|----------------|------------|---------|-------------|--------------|-----------|-------------|-------------|------------|------------|-----------|
| AA             | ELECTRICAL | 1.00 EA | 4,220       | 10.0%<br>422 | 0.0%<br>0 | 7.5%<br>348 | 2.5%<br>125 | 0.0%<br>0  | 5,114      | 5114.46   |
| <hr/>          |            |         |             |              |           |             |             |            |            |           |
| BID ITEM TOTAL |            | 1.00 EA | 4,220       | 422          | 0         | 348         | 125         | 0          | 5,114      | 5114.46   |
| <hr/>          |            |         |             |              |           |             |             |            |            |           |
| TOTAL BASE BID |            |         | 4,220       | 422          | 0         | 348         | 125         | 0          | 5,114      |           |
| TOTAL ADDITIVE |            |         | 0           | 0            | 0         | 0           | 0           | 0          | 0          |           |
| <hr/>          |            |         |             |              |           |             |             |            |            |           |
| TOTAL INCL ADD |            |         | 4,220       | 422          | 0         | 348         | 125         | 0          | 5,114      |           |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3307

TIME 12:42:28

PROJECT CWE SUMMARY

SUMMARY PAGE 3

| ID | BID ITEM                                                   | QUANTITY | UOM | BASE BID | ADDITIVE | TOTAL COST | UNIT COST |
|----|------------------------------------------------------------|----------|-----|----------|----------|------------|-----------|
| 1. | BUILDING TO THE 5 FOOT LINE                                | 1.00     | EA  | 5,115    |          | 5,115      | 5114.50   |
|    | TOTAL CURRENT CONTRACT COST                                |          |     | 5,115    | 0        | 5,115      |           |
|    | Cost Growth from 08/93 to 08/94<br>Index Values: 0000 0000 | 0.0%     |     | 0        | 0        | 0          |           |
|    | ESCALATED CONTRACT COST                                    |          |     | 5,115    | 0        | 5,115      |           |
|    | Government-Furnished Property                              |          |     | 0        |          | 0          |           |
|    | SUBTOTAL                                                   |          |     | 5,115    | 0        | 5,115      |           |
|    | Contingencies                                              | 10.0%    |     | 511      | 0        | 511        |           |
|    | SUBTOTAL                                                   |          |     | 5,626    | 0        | 5,626      |           |
|    | SIOH (S&A)                                                 | 5.0%     |     | 281      | 0        | 281        |           |
|    | CURRENT WORKING ESTIMATE                                   |          |     | 5,907    | 0        | 5,907      |           |

Estimated Construction Time 365 Days

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3307

TIME 12:42:28

TRACTOR DIRECT SUMMARY

SUMMARY PAGE 4

| ID | CONTRACTOR    | PM | QUANTITY | UOM | MANHRS | LABOR | EQUIPMENT | MAT   | W/TX | AMOUNT | PCT    | W/OH&P | SUBTOTAL |
|----|---------------|----|----------|-----|--------|-------|-----------|-------|------|--------|--------|--------|----------|
| AA | GENERAL/PRIME |    | 1.00     | EA  | 15     | 505   | 2         | 3,713 |      | 4,220  | 100.0% | 0      | 4,220    |
|    | TOTAL DIRECT  |    |          |     | 15     | 505   | 2         | 3,713 |      | 4,220  | 100.0% |        |          |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3307E5  
4-167

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3307

TIME 12:42:28

CONTRACTOR INDIRECT SUMMARY

SUMMARY PAGE 5

| ID | CONTRACTOR              | PM | SUBTOTAL | *** OVERHEAD ***<br>AMOUNT | PCT   | HOPC% | **** PROFIT ****<br>AMOUNT | PCT  | BOND% | OTHER% | ***** TOTAL CONTRACT *****<br>AMOUNT | PCT    | UNIT COST |
|----|-------------------------|----|----------|----------------------------|-------|-------|----------------------------|------|-------|--------|--------------------------------------|--------|-----------|
| AA | GENERAL/PRIME           |    | 4,220    | 422                        | 10.0% | 0.0   | 348                        | 7.5% | 2.5%  | 0.0%   | 5,114                                | 100.0% | 5114.46   |
|    | TOTAL OVERHEAD & PROFIT |    |          | 422                        | 10.0% |       | 348                        | 7.5% |       |        |                                      |        |           |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3307

TIME 12:42:2

CSI DIVISION SUMMARY

SUMMARY PAGE

| ID CSI DIVISION | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|-----------------|----------|-------|-----------|----------|-----------|-------------------------|
| 16 ELECTRICAL   | 15       | 505   | 2         | 3,536    | 177       | 4,220                   |
| TOTAL DIRECT    | 15       | 505   | 2         | 3,536    | 177       | 4,220                   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3307E5  
4-169

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3307

TIME 12:42:28

SYSTEMS SUMMARY

SUMMARY PAGE 7

| ID SYSTEM              | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|------------------------|----------|-------|-----------|----------|-----------|-------------------------|
| 11 INTERIOR ELECTRICAL | 15       | 505   | 2         | 3,536    | 177       | 4,220                   |
| TOTAL DIRECT           | 15       | 505   | 2         | 3,536    | 177       | 4,220                   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3307E5  
4-170



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3307

TIME 12:42:23

EQUIPMENT SUMMARY

SUMMARY PAGE 8

| EQUIP DESCRIPTION             | LIFE HRS | TL | ERLY | OWNRSH | OWNS | OVTM | OWNRSH | EXPENSE | RATE | RATE | HOURS | COST |
|-------------------------------|----------|----|------|--------|------|------|--------|---------|------|------|-------|------|
| EMI20 SMALL TOOLS             |          |    |      |        |      |      |        |         | 1.40 | 1.40 | 1     | 1    |
| TOTAL PROJECT EQUIPMENT HOURS |          |    |      |        |      |      |        |         |      |      | 1     | 1    |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3307

TIME 12:42:28

LABOR SUMMARY

SUMMARY PAGE 9

| CRAFT DESCRIPTION      | BASE  | OVERTH | TXS/INS | FRNG | TRVL | HRLY<br>RATE | UPB<br>RATE | ****<br>HOURS | TOTAL<br>COST |
|------------------------|-------|--------|---------|------|------|--------------|-------------|---------------|---------------|
| LELEC ELECTRICIANS     | 20.50 | 0.0%   | 24.0%   | 7.49 | 0.00 | 32.91        | 25.79       | 15            | 505           |
| TOTAL PROJECT MANHOURS |       |        |         |      |      |              |             | 15            | 505           |

\* \* \* END OF SUMMARY REPORT \* \* \*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3307E5  
4-172

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

31 AUGUST 1993

PAGE 1 OF 2

## BUILDING WIDE FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 9308

BUILDING USE:

HOURS/DAY 10

DAYS/WEEK 5

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

### EXISTING FIXTURE DATA

4 FOOT

0.1 LAMP @ 48 W/FXT = 0 WATTS  
 0.1 LAMP @ 37.8 W/FXT = 0 WATTS  
 0.2 LAMP @ 96 W/FXT = 0 WATTS  
 0.2 LAMP @ 75.6 W/FXT = 0 WATTS  
 0.3 LAMP @ 144 W/FXT = 0 WATTS  
 0.3 LAMP @ 113.4 W/FXT = 0 WATTS  
 0.4 LAMP @ 192 W/FXT = 0 WATTS  
 19.4 LAMP @ 151.2 W/FXT = 2872.8 WATTS

2 FOOT

0.1 LAMP @ 31 W/FXT = 0 WATTS  
 0.4 LAMP @ 88 W/FXT = 0 WATTS  
 0.2 LAMP U @ 96 W/FXT = 0 WATTS  
 0.2 LAMP U @ 75.6 W/FXT = 0 WATTS

8 FOOT

0.2 LAMP @ 180 W/FXT = 0 WATTS  
 0.2 LAMP @ 168 W/FXT = 0 WATTS

TOTAL EXISTING KW

2.9

### REPLACEMENT FIXTURE DATA

4 FOOT

0.1 LAMP @ 37 W/FXT = 0 WATTS  
 0.1 LAMP W/ REFLECTORS 37 W/FXT = 0 WATTS  
 0.2 LAMP W/ REFLECTORS 58 W/FXT = 0 WATTS  
 19.2 LAMP W/ REFLECTORS 58 W/FXT = 1102 WATTS

2 FOOT

0.1 LAMP @ 24 W/FXT = 0 WATTS  
 0.2 LAMP W/ REFLECTORS 41 W/FXT = 0 WATTS  
 0.2 LAMP U @ 58 W/FXT = 0 WATTS

8 FOOT

0.1 LAMP W/ REFLECTORS 58 W/FXT = 0 WATTS

TOTAL REPLACEMENT KW

1.1

NET ENERGY SAVINGS

15.7 MBTU/YR

NET DOLLAR SAVINGS

\$347.65

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

PAGE 2 OF 2

31 AUGUST 1993

## OVERLIT AREA FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 3308  
AREA: RESTROOM

AREA USE: \_\_\_\_\_  
HOURS/DAY: 3  
DAYS/WEEK: 5

ELECTRIC COSTS:  
ENERGY CHARGE \$0.0211 PER KWH  
DEMAND CHARGE \$11.78 PER KW

### EXISTING FIXTURE DATA

#### 4 FOOT

|            |                |             |            |             |          |
|------------|----------------|-------------|------------|-------------|----------|
| 0.1 LAMP @ | 48 W/FIXT =    | 0 WATTS     | 0.1 LAMP @ | 37 W/FIXT = | 0 WATTS  |
| 0.1 LAMP @ | 37.8 W/FIXT =  | 0 WATTS     | 0.1 LAMP @ | 37 W/FIXT = | 0 WATTS  |
| 0.2 LAMP @ | 96 W/FIXT =    | 0 WATTS     |            |             |          |
| 0.2 LAMP @ | 75.6 W/FIXT =  | 0 WATTS     |            |             |          |
| 0.3 LAMP @ | 144 W/FIXT =   | 0 WATTS     | 0.2 LAMP @ | 58 W/FIXT = | 0 WATTS  |
| 0.3 LAMP @ | 113.4 W/FIXT = | 0 WATTS     |            |             |          |
| 0.4 LAMP @ | 192 W/FIXT =   | 0 WATTS     | 1.2 LAMP @ | 58 W/FIXT = | 58 WATTS |
| 1.4 LAMP @ | 151.2 W/FIXT = | 151.2 WATTS |            |             |          |

#### 2 FOOT

|              |               |         |              |             |         |
|--------------|---------------|---------|--------------|-------------|---------|
| 0.1 LAMP @   | 31 W/FIXT =   | 0 WATTS | 0.1 LAMP @   | 24 W/FIXT = | 0 WATTS |
| 0.4 LAMP @   | 88 W/FIXT =   | 0 WATTS | 0.2 LAMP @   | 41 W/FIXT = | 0 WATTS |
| 0.2 LAMP U @ | 96 W/FIXT =   | 0 WATTS | 0.2 LAMP U @ | 58 W/FIXT = | 0 WATTS |
| 0.2 LAMP U @ | 75.6 W/FIXT = | 0 WATTS |              |             |         |

#### 8 FOOT

|            |              |         |            |             |         |
|------------|--------------|---------|------------|-------------|---------|
| 0.2 LAMP @ | 180 W/FIXT = | 0 WATTS | 0.1 LAMP @ | 58 W/FIXT = | 0 WATTS |
| 0.2 LAMP @ | 168 W/FIXT = | 0 WATTS |            |             |         |

TOTAL EXISTING KW 0.151

TOTAL REPLACEMENT KW 0.058

NET ENERGY SAVINGS 0.24 MBTU/YR

NET DOLLAR SAVINGS \$14.71

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES

TIME 12:49:06

LE PAGE

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ENERGY SAVINGS OPPORTUNITY SURVY  
FT CAMPBELL, KY  
ECO-5: BUILDING 3308

Contract No: 27-93-C-0096

Prepared By: Systems Corp  
Estimator: Keith A. Derrington  
Estimate Prep. Date: 08/31/93  
Current UPB/CSI ID: ORL290

M - C A C E S E D I T I O N  
COMPOSER Plus Copyright (C) 1985, 1988  
by Building Systems Design, Inc.  
Release 4.20

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3308E5  
4-175

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3308

TIME 12:49:04

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| DETAILED ESTIMATE              | DETAIL PAGE |
|--------------------------------|-------------|
| 1. BUILDING TO THE 5 FOOT LINE |             |
| AA. ELECTRICAL.....            | 1           |

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Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3308  
1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 12:49:04

DETAILED ESTIMATE

DETAIL PAGE 1

BASE BID

| DIVISION 16 ELECTRICAL                                           | QUANTITY | UOM | CREW | MANHR | LABOR | EQUIPMENT | MATERIAL | SALESTX | DIRECT \$ |
|------------------------------------------------------------------|----------|-----|------|-------|-------|-----------|----------|---------|-----------|
| 16500 LIGHTING                                                   |          |     |      |       |       |           |          |         |           |
| 16512 7000 FLUORESCENT - RECESSED T8 ELECTRONIC BALLAST          |          |     |      |       |       |           |          |         |           |
| CD=3 EL 7003 4 PT 2 LAMP PARABOLIC LOUVRE W/ *** UNIT COSTS: *** | 0.59     |     |      | 19.42 | 0.08  | 136.00    | 6.80     | 162.29  |           |
| WC=1100 REFLECTOR 19.00 EA EELEB                                 | 11       |     |      | 369   | 1     | 2,584     | 129      | 3,084   |           |
| TOTAL DIVISION 16 ELECTRICAL                                     | 11       |     |      | 369   | 1     | 2,584     | 129      | 3,084   |           |
| TOTAL FACILITY AA. ELECTRICAL                                    | 11       |     |      | 369   | 1     | 2,584     | 129      | 3,084   |           |
| TOTAL BID ITEM 1. BUILDING TO THE 5 FOOT LINE                    | 11       |     |      | 369   | 1     | 2,584     | 129      | 3,084   |           |
| TOTAL BASE BID                                                   | 11       |     |      | 369   | 1     | 2,584     | 129      | 3,084   |           |
| TOTAL ADDITIVE                                                   | 0        |     |      | 0     | 0     | 0         | 0        | 0       | 0         |
| TOTAL INCL ADD ENERGY SAVINGS OPPORTUNITY SURVY                  | 11       |     |      | 369   | 1     | 2,584     | 129      | 3,084   |           |

\* \* \* END OF DETAIL REPORT \* \* \*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3308E5  
4-177

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3308

TIME 12:49:06

PROJECT NOTES

SUMMARY PAGE 1

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PROJECT NOTES

ECO-5: INTERIOR LIGHTING

SCOPE OF WORK: EVALUATE USE OF HIGHER EFFICIENCY INTERIOR LIGHTING IN  
SELECTED FACILITIES AT FT CAMPBELL.



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3308

TIME 12:49:06

BID ITEM AND FACILITY SUMMARY

SUMMARY PAGE 2

BID ITEM 1 BUILDING TO THE 5 FOOT LINE

BASE BID

| ID             | FACILITY   |         | COST TO PRM | OVERHEAD     | HOME OFC  | PROFIT      | BOND       | OTHER FCTR | TOTAL COST | UNIT COST |
|----------------|------------|---------|-------------|--------------|-----------|-------------|------------|------------|------------|-----------|
| AA             | ELECTRICAL | 1.00 EA | 3,084       | 10.0%<br>308 | 0.0%<br>0 | 7.5%<br>254 | 2.5%<br>91 | 0.0%<br>0  | 3,737      | 3737.49   |
| <hr/>          |            |         |             |              |           |             |            |            |            |           |
| BID ITEM TOTAL |            | 1.00 EA | 3,084       | 308          | 0         | 254         | 91         | 0          | 3,737      | 3737.49   |
| <hr/>          |            |         |             |              |           |             |            |            |            |           |
| TOTAL BASE BID |            |         | 3,084       | 308          | 0         | 254         | 91         | 0          | 3,737      |           |
| TOTAL ADDITIVE |            |         | 0           | 0            | 0         | 0           | 0          | 0          | 0          |           |
| <hr/>          |            |         |             |              |           |             |            |            |            |           |
| TOTAL INCL ADD |            |         | 3,084       | 308          | 0         | 254         | 91         | 0          | 3,737      |           |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3308E5  
4-179

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3308

TIME 12:49:06

ECT CWE SUMMARY

SUMMARY PAGE 3

| ID | BID ITEM                                                   | QUANTITY | UOM | BASE BID | ADDITIVE | TOTAL COST | UNIT COST |
|----|------------------------------------------------------------|----------|-----|----------|----------|------------|-----------|
|    | 1. BUILDING TO THE 5 FOOT LINE                             | 1.00     | EA  | 3,738    |          | 3,738      | 3737.50   |
|    | TOTAL CURRENT CONTRACT COST                                |          |     | 3,738    | 0        | 3,738      |           |
|    | Cost Growth from 08/93 to 08/94<br>Index Values: 0000 0000 | 0.0%     |     | 0        | 0        | 0          |           |
|    | ESCALATED CONTRACT COST                                    |          |     | 3,738    | 0        | 3,738      |           |
|    | Government-Furnished Property                              |          |     | 0        |          | 0          |           |
|    | SUBTOTAL                                                   |          |     | 3,738    | 0        | 3,738      |           |
|    | Contingencies                                              | 10.0%    |     | 374      | 0        | 374        |           |
|    | SUBTOTAL                                                   |          |     | 4,111    | 0        | 4,111      |           |
|    | SIOH (S&A)                                                 | 5.0%     |     | 206      | 0        | 206        |           |
|    | CURRENT WORKING ESTIMATE                                   |          |     | 4,317    | 0        | 4,317      |           |

Estimated Construction Time

365 Days

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3308E5  
4-180

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3308

TIME 12:49:06

CONTRACTOR INDIRECT SUMMARY

SUMMARY PAGE 5

| ----- |               | *** OVERHEAD *** | -----    |        | **** PROFIT **** | ----- |        | ***** TOTAL CONTRACT ***** |       |        |        |        |           |
|-------|---------------|------------------|----------|--------|------------------|-------|--------|----------------------------|-------|--------|--------|--------|-----------|
| ID    | CONTRACTOR    | PM               | SUBTOTAL | AMOUNT | PCT              | HOFC% | AMOUNT | PCT                        | BOND% | OTHER% | AMOUNT | PCT    | UNIT COST |
| AA    | GENERAL/PRIME |                  | 3,084    | 308    | 10.0%            | 0.0   | 254    | 7.5%                       | 2.5%  | 0.0%   | 3,737  | 100.0% | 3737.49   |
|       |               |                  |          | -----  |                  |       | -----  |                            |       |        |        |        |           |
|       |               |                  |          | 308    | 10.0%            |       | 254    | 7.5%                       |       |        |        |        |           |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3308E5  
4-181

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3308

TIME 12:49:06

CONTRACTOR DIRECT SUMMARY

SUMMARY PAGE

| ID | CONTRACTOR    | PH | QUANTITY | UOM | MANHRS | LABOR | EQUIPMENT | MAT   | W/TX | AMOUNT | PCT    | W/OB&P | SUBTOTAL |
|----|---------------|----|----------|-----|--------|-------|-----------|-------|------|--------|--------|--------|----------|
| AA | GENERAL/PRIME |    | 1.00     | EA  | 11     | 369   | 1         | 2,713 |      | 3,084  | 100.0% | 0      | 3,084    |
|    | TOTAL DIRECT  |    |          |     | 11     | 369   | 1         | 2,713 |      | 3,084  | 100.0% |        |          |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3308E5  
4-182

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3308

TIME 12:49:06

I DIVISION SUMMARY

SUMMARY PAGE 6

| ID CSI DIVISION | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|-----------------|----------|-------|-----------|----------|-----------|-------------------------|
| 16 ELECTRICAL   | 11       | 369   | 1         | 2,584    | 129       | 3,084                   |
| TOTAL DIRECT    | 11       | 369   | 1         | 2,584    | 129       | 3,084                   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3308E5

4-183

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3308

TIME 12:49:06

ITEMS SUMMARY

SUMMARY PAGE 7

| ID SYSTEM              | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|------------------------|----------|-------|-----------|----------|-----------|-------------------------|
| 11 INTERIOR ELECTRICAL | 11       | 369   | 1         | 2,584    | 129       | 3,084                   |
| TOTAL DIRECT           | 11       | 369   | 1         | 2,584    | 129       | 3,084                   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 3308E5  
4-184

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3308

TIME 12:49:06

EQUIPMENT SUMMARY

SUMMARY PAGE 8

| EQUIP DESCRIPTION             | LIFE HRS | TL HRLY | OWNRSH | OWNS | OVTM | OWNRSH | EXPENSE | RATE | RATE | HOURS | COST |
|-------------------------------|----------|---------|--------|------|------|--------|---------|------|------|-------|------|
| EMI20 SMALL TOOLS             |          |         |        |      |      |        |         | 1.40 | 1.40 | 1     | 1    |
| TOTAL PROJECT EQUIPMENT HOURS |          |         |        |      |      |        |         |      |      | 1     | 1    |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 3308

TIME 12:49:04

LABOR SUMMARY

SUMMARY PAGE

| CRAFT DESCRIPTION      | BASE  | OVERTM | TXS/INS | FRNG | TRVL | HRLY<br>RATE | UPB<br>RATE | ****<br>HOURS | TOTAL<br>COST |
|------------------------|-------|--------|---------|------|------|--------------|-------------|---------------|---------------|
| LELEC ELECTRICIANS     | 20.50 | 0.0%   | 24.0%   | 7.49 | 0.00 | 32.91        | 25.79       | 11            | 369           |
| TOTAL PROJECT MANHOURS |       |        |         |      |      |              |             | 11            | 369           |

\* \* \* END OF SUMMARY REPORT \* \* \*



# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

PAGE 1 OF 1

31 AUGUST 1993

## BUILDING WIDE FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 5212

BUILDING USE:

HOURS/DAY 8  
DAYS/WEEK 5

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH  
DEMAND CHARGE \$11.78 PER KW

### EXISTING FIXTURE DATA

4 FOOT  
0 1 LAMP @ 48 W/FIXT = 0 WATTS  
0 1 LAMP @ 37.8 W/FIXT = 0 WATTS  
7 2 LAMP @ 96 W/FIXT = 672 WATTS  
1 2 LAMP @ 75.6 W/FIXT = 75.6 WATTS  
0 3 LAMP @ 144 W/FIXT = 0 WATTS  
0 3 LAMP @ 113.4 W/FIXT = 0 WATTS  
2 4 LAMP @ 192 W/FIXT = 4608 WATTS  
4 4 LAMP @ 151.2 W/FIXT = 604.8 WATTS

### REPLACEMENT FIXTURE DATA

4 FOOT  
0 1 LAMP @ 37 W/FIXT = 0 WATTS  
8 1 LAMP W/ REFLECTORS 37 W/FIXT = 296 WATTS  
0 2 LAMP W/ REFLECTORS 58 W/FIXT = 0 WATTS  
28 2 LAMP W/ REFLECTORS 58 W/FIXT = 1624 WATTS

2 FOOT  
0 1 LAMP @ 31 W/FIXT = 0 WATTS  
0 4 LAMP @ 88 W/FIXT = 0 WATTS  
0 2 LAMP U @ 96 W/FIXT = 0 WATTS  
0 2 LAMP U @ 75.6 W/FIXT = 0 WATTS

2 FOOT  
0 1 LAMP @ 24 W/FIXT = 0 WATTS  
0 2 LAMP W/ REFLECTORS 41 W/FIXT = 0 WATTS  
0 2 LAMP U @ 58 W/FIXT = 0 WATTS

8 FOOT  
0 2 LAMP @ 180 W/FIXT = 0 WATTS  
10 2 LAMP @ 168 W/FIXT = 1680 WATTS

8 FOOT  
10 1 LAMP W/ REFLECTORS 58 W/FIXT = 590 WATTS

TOTAL EXISTING KW 7.6

TOTAL REPLACEMENT KW 2.5

NET ENERGY SAVINGS 36.5 MBTU/YR

NET DOLLAR SAVINGS \$952.68

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES

TIME 13:09:42

TITLE PAGE

---

ENERGY SAVINGS OPPORTUNITY SURVY  
FT CAMPBELL, KY  
ECO-5: BUILDING 5212

Contract No: 27-93-C-0096

Prepared By: Systems Corp  
Estimator: Keith A. Derrington  
Estimate Prep. Date: 08/31/93  
Current UPB/CSI ID: ORL290

M - C A C E S E D I T I O N  
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Release 4.20

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5212E5  
4-188

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5212

TIME 13:09:41

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Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS H-CACES  
 ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
 ECO-5: BUILDING 5212  
 1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 13:09:42

DETAILED ESTIMATE

DETAIL PAGE 1

BASE BID

| DIVISION 16 ELECTRICAL                                          |                                           | QUANTITY            | UOM | CREW | MANHR | LABOR | EQUIPMENT | MATERIAL | SALESTY | DIRECT \$ |
|-----------------------------------------------------------------|-------------------------------------------|---------------------|-----|------|-------|-------|-----------|----------|---------|-----------|
| 16500 LIGHTING                                                  |                                           |                     |     |      |       |       |           |          |         |           |
| 16512 7000 FLUORESCENT - RECESSED T8 ELECTRONIC BALLAST         |                                           |                     |     |      |       |       |           |          |         |           |
| CD=3 EL 7002                                                    | 4 FT 1 LAMP PARABOLIC LOUVRE W/ REFLECTOR | *** UNIT COSTS: *** |     |      | 0.54  | 17.84 | 0.07      | 122.00   | 6.10    | 146.01    |
| WC=1100                                                         |                                           | 8.00 EA EELEB       |     | 4    | 143   | 1     | 976       | 49       | 1,168   |           |
| CD=3 EL 7003                                                    | 4 FT 2 LAMP PARABOLIC LOUVRE W/ REFLECTOR | *** UNIT COSTS: *** |     |      | 0.59  | 19.42 | 0.08      | 136.00   | 6.80    | 162.29    |
| WC=1100                                                         |                                           | 28.00 EA EELEB      |     | 16   | 544   | 2     | 3,808     | 190      | 4,544   |           |
| 16512 8000 FLUORESCENT - SURFACE MOUNTED T8 ELECTRONIC BALLASTS |                                           |                     |     |      |       |       |           |          |         |           |
| CD=3 EL 8003                                                    | 8 FT 1 LAMP W/ REFLECTOR                  | *** UNIT COSTS: *** |     |      | 0.98  | 29.58 | 0.13      | 109.00   | 5.45    | 144.17    |
| WC=1100                                                         |                                           | 10.00 EA EELEF      |     | 10   | 296   | 1     | 1,090     | 55       | 1,442   |           |
| TOTAL DIVISION 16 ELECTRICAL                                    |                                           |                     |     |      | 31    | 982   | 4         | 5,874    | 294     | 7,154     |
| TOTAL FACILITY AA. ELECTRICAL                                   |                                           |                     |     |      | 31    | 982   | 4         | 5,874    | 294     | 7,154     |
| TOTAL BID ITEM 1. BUILDING TO THE 5 FOOT LINE                   |                                           |                     |     |      | 31    | 982   | 4         | 5,874    | 294     | 7,154     |
| TOTAL BASE BID                                                  |                                           |                     |     |      | 31    | 982   | 4         | 5,874    | 294     | 7,154     |
| TOTAL ADDITIVE                                                  |                                           |                     |     |      | 0     | 0     | 0         | 0        | 0       | 0         |
| TOTAL INCL ADD ENERGY SAVINGS OPPORTUNITY SURVY                 |                                           |                     |     |      | 31    | 982   | 4         | 5,874    | 294     | 7,154     |

\* \* \* END OF DETAIL REPORT \* \* \*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5212E5  
 4-190

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5212

TIME 13:09:42

PROJECT NOTES

SUMMARY PAGE 1

---

PROJECT NOTES

ECO-5: INTERIOR LIGHTING

SCOPE OF WORK: EVALUATE USE OF HIGHER EFFICIENCY INTERIOR LIGHTING IN  
SELECTED FACILITIES AT FT CAMPBELL.

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5212E5  
4-191

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5212

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BID ITEM AND FACILITY SUMMARY

SUMMARY PAGE 2

BID ITEM 1 BUILDING TO THE 5 FOOT LINE

BASE BID

| ID             | FACILITY   |         | COST TO PRM | OVERHEAD | HOME OFC | PROFIT | BOND | OTHER FCTR | TOTAL COST | UNIT COST |
|----------------|------------|---------|-------------|----------|----------|--------|------|------------|------------|-----------|
| AA             | ELECTRICAL |         |             | 10.0%    | 0.0%     | 7.5%   | 2.5% | 0.0%       |            |           |
|                |            | 1.00 EA | 7,154       | 715      | 0        | 590    | 211  | 0          | 8,671      | 8671.08   |
| BID ITEM TOTAL |            | 1.00 EA | 7,154       | 715      | 0        | 590    | 211  | 0          | 8,671      | 8671.08   |
| TOTAL BASE BID |            |         | 7,154       | 715      | 0        | 590    | 211  | 0          | 8,671      |           |
| TOTAL ADDITIVE |            |         | 0           | 0        | 0        | 0      | 0    | 0          | 0          |           |
| TOTAL INCL ADD |            |         | 7,154       | 715      | 0        | 590    | 211  | 0          | 8,671      |           |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5212E5  
4-192

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5212

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PROJECT CWE SUMMARY

SUMMARY PAGE 3

| ID | BID ITEM                                                   | QUANTITY | UOM  | BASE BID | ADDITIVE | TOTAL COST | UNIT COST |
|----|------------------------------------------------------------|----------|------|----------|----------|------------|-----------|
|    | 1. BUILDING TO THE 5 FOOT LINE                             | 1.00     | EA   | 8,671    |          | 8,671      | 8671.10   |
|    | TOTAL CURRENT CONTRACT COST                                |          |      | 8,671    | 0        | 8,671      |           |
|    | Cost Growth from 08/93 to 08/94<br>Index Values: 0000 0000 | 0.0%     |      | 0        | 0        | 0          |           |
|    | ESCALATED CONTRACT COST                                    |          |      | 8,671    | 0        | 8,671      |           |
|    | Government-Furnished Property                              |          |      | 0        |          | 0          |           |
|    | SUBTOTAL                                                   |          |      | 8,671    | 0        | 8,671      |           |
|    | Contingencies                                              | 10.0%    |      | 867      | 0        | 867        |           |
|    | SUBTOTAL                                                   |          |      | 9,538    | 0        | 9,538      |           |
|    | SIOH (S&A)                                                 | 5.0%     |      | 477      | 0        | 477        |           |
|    | CURRENT WORKING ESTIMATE                                   |          |      | 10,015   | 0        | 10,015     |           |
|    | Estimated Construction Time                                | 365      | Days |          |          |            |           |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5212E5

4-193

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5212

TIME 13:09:41

CONTRACTOR DIRECT SUMMARY

SUMMARY PAGE

| ID | CONTRACTOR    | PM | QUANTITY | UOM | MANHRS | LABOR | EQUIPMENT | MAT   | W/TX | ** TOTAL DIRECT ** | * SUBCON * | W/OH&P | SUBTOTAL |
|----|---------------|----|----------|-----|--------|-------|-----------|-------|------|--------------------|------------|--------|----------|
|    |               |    |          |     |        |       |           |       |      | AMOUNT             | PCT        |        |          |
| AA | GENERAL/PRIME |    | 1.00     | EA  | 31     | 982   | 4         | 6,168 |      | 7,154              | 100.0%     | 0      | 7,154    |
|    | TOTAL DIRECT  |    |          |     | 31     | 982   | 4         | 6,168 |      | 7,154              | 100.0%     |        |          |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5212E5

4-194



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
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CONTRACTOR INDIRECT SUMMARY

SUMMARY PAGE 5

| ID | CONTRACTOR              | PM | SUBTOTAL | *** OVERHEAD ***<br>AMOUNT | PCT   | HOFC% | **** PROFIT ****<br>AMOUNT | PCT  | BOND% | OTHER% | ***** TOTAL CONTRACT *****<br>AMOUNT | PCT    | UNIT COST |
|----|-------------------------|----|----------|----------------------------|-------|-------|----------------------------|------|-------|--------|--------------------------------------|--------|-----------|
| AA | GENERAL/PRIME           |    | 7,154    | 715                        | 10.0% | 0.0   | 590                        | 7.5% | 2.5%  | 0.0%   | 8,671                                | 100.0% | 8671.09   |
|    | TOTAL OVERHEAD & PROFIT |    |          | 715                        | 10.0% |       | 590                        | 7.5% |       |        |                                      |        |           |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5212

TIME 13:09:40

I DIVISION SUMMARY

SUMMARY PAGE 6

| ID CSI DIVISION | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|-----------------|----------|-------|-----------|----------|-----------|-------------------------|
| 16 ELECTRICAL   | 31       | 982   | 4         | 5,874    | 294       | 7,154                   |
| TOTAL DIRECT    | 31       | 982   | 4         | 5,874    | 294       | 7,154                   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5212E5  
4-196

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
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TIME 13:09:42

SYSTEMS SUMMARY

SUMMARY PAGE 7

| ID SYSTEM              | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|------------------------|----------|-------|-----------|----------|-----------|-------------------------|
| 11 INTERIOR ELECTRICAL | 31       | 982   | 4         | 5,874    | 294       | 7,154                   |
| TOTAL DIRECT           | 31       | 982   | 4         | 5,874    | 294       | 7,154                   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5212E5  
4-197

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
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EQUIPMENT SUMMARY

SUMMARY PAGE 8

| EQUIP DESCRIPTION             | LIFE HRS | TL | HRLY | OWNRSEP | OWNS | OVTH | OWNRSH | EXPENSE | HRLY | UPB  | HOURS | TOTAL | COST |
|-------------------------------|----------|----|------|---------|------|------|--------|---------|------|------|-------|-------|------|
| EMI20 SMALL TOOLS             |          |    |      |         |      |      |        |         | 1.40 | 1.40 | 3     |       | 4    |
| TOTAL PROJECT EQUIPMENT HOURS |          |    |      |         |      |      |        |         |      |      | 3     |       | 4    |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
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TIME 13:09:42

LABOR SUMMARY

SUMMARY PAGE 9

| CRAFT DESCRIPTION      | BASE  | OVERTM | TXS/INS | FRNG | TRVL | HRLY<br>RATE | UPB<br>RATE | ****<br>HOURS | TOTAL<br>COST |
|------------------------|-------|--------|---------|------|------|--------------|-------------|---------------|---------------|
| LELEC ELECTRICIANS     | 20.50 | 0.0%   | 24.0%   | 7.49 | 0.00 | 32.91        | 25.79       | 31            | 983           |
| TOTAL PROJECT MANHOURS |       |        |         |      |      |              |             | 31            | 983           |

\* \* \* END OF SUMMARY REPORT \* \* \*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5212E5  
4-199

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

PAGE 1 OF 3

31 AUGUST 1993

## BUILDING WIDE FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 5661

BUILDING USE:

HOURS/DAY 10

DAYS/WEEK 5

### ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.76 PER KW

### EXISTING FIXTURE DATA

#### 4 FOOT

0.1 LAMP @ 48 W/FXT = 0 WATTS  
 0.1 LAMP @ 37.8 W/FXT = 0 WATTS  
 207 2 LAMP @ 96 W/FXT = 19872 WATTS  
 0.2 LAMP @ 75.6 W/FXT = 0 WATTS  
 0.3 LAMP @ 144 W/FXT = 0 WATTS  
 0.3 LAMP @ 113.4 W/FXT = 0 WATTS  
 64 4 LAMP @ 192 W/FXT = 12288 WATTS  
 24 4 LAMP @ 151.2 W/FXT = 3628.8 WATTS

#### 2 FOOT

0.1 LAMP @ 31 W/FXT = 0 WATTS  
 22 4 LAMP @ 88 W/FXT = 1936 WATTS  
 0.2 LAMP U @ 96 W/FXT = 0 WATTS  
 0.2 LAMP U @ 75.6 W/FXT = 0 WATTS

#### 8 FOOT

0.2 LAMP @ 180 W/FXT = 0 WATTS  
 0.2 LAMP @ 168 W/FXT = 0 WATTS

TOTAL EXISTING KW 37.7

### REPLACEMENT FIXTURE DATA

#### 4 FOOT

0.1 LAMP @ 37 W/FXT = 0 WATTS  
 207 1 LAMP W/ REFLECTORS 37 W/FXT = 7659 WATTS  
 0.2 LAMP W/ REFLECTORS 58 W/FXT = 0 WATTS  
 88 2 LAMP W/ REFLECTORS 58 W/FXT = 5104 WATTS

#### 2 FOOT

0.1 LAMP @ 24 W/FXT = 0 WATTS  
 22 2 LAMP W/ REFLECTORS 41 W/FXT = 902 WATTS  
 0.2 LAMP U @ 58 W/FXT = 0 WATTS

#### 8 FOOT

0.1 LAMP W/ REFLECTORS 58 W/FXT = 0 WATTS

TOTAL REPLACEMENT KW 13.7

NET ENERGY SAVINGS 213.4 MBTU/YR

NET DOLLAR SAVINGS \$4,723.52

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

31 AUGUST 1993

PAGE 2 OF 3

## BUILDING WIDE INCANDESCENT LAMP REPLACEMENT

BUILDING #: 5661

LAMP USE:

HOURS/DAY 5

DAYS/WEEK 5

PEAK USE 2 (1-YES, 2-NO)

### ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$0.00 PER KW

### EXISTING INCANDESCENTS

|                       |            |
|-----------------------|------------|
| 0 LAMPS @ 25 WATTS =  | 0 WATTS    |
| 0 LAMPS @ 40 WATTS =  | 0 WATTS    |
| 0 LAMPS @ 52 WATTS =  | 0 WATTS    |
| 34 LAMPS @ 60 WATTS = | 2040 WATTS |
| 0 LAMPS @ 75 WATTS =  | 0 WATTS    |
| 0 LAMPS @ 90 WATTS =  | 0 WATTS    |
| 0 LAMPS @ 100 WATTS = | 0 WATTS    |

TOTAL EXISTING WATTS 2040

### COMPACT FLUORESCENT REPLACEMENT

|                       |           |
|-----------------------|-----------|
| 0 LAMPS @ 7 WATTS =   | 0 WATTS   |
| 0 LAMPS @ 9 WATTS =   | 0 WATTS   |
| 34 LAMPS @ 13 WATTS = | 442 WATTS |
| 0 LAMPS @ 18 WATTS =  | 0 WATTS   |
| 0 LAMPS @ 26 WATTS =  | 0 WATTS   |

TOTAL REPLACEMENT WATTS 442

NET ENERGY SAVINGS 7.08 MBTU/YR

NET DOLLAR SAVINGS \$43.92

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

31 AUGUST 1993

PAGE 3 OF 3

EXIT SIGN REPLACEMENT - INCANDESCENT TO LED

BUILDING #: 5661

# EXIT SIGNS 7

CURRENT WATTAGE 40

REPLACEMENT WATTAGE 3

HOURS/YEAR 8760

ELECTRIC COSTS:  
ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

NET ENERGY SAVINGS

7.74 MBTU/YR

NET DOLLAR SAVINGS

\$84.58



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES

TIME 13:16:10

FILE PAGE

---

ENERGY SAVINGS OPPORTUNITY SURVY  
FT CAMPBELL, KY  
ECO-5: BUILDING 5661

Contract No: 27-93-C-0096

Prepared By: Systems Corp  
Estimator: Keith A. Derrington  
Estimate Prep. Date: 08/31/93  
Current UPB/CSI ID: ORL290

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Release 4.20

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5661E5  
4-203

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5661

TIME 13:16:10

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DETAILED ESTIMATE DETAIL PAGE

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| 1. BUILDING TO THE 5 FOOT LINE |   |
| AA. ELECTRICAL.....            | 1 |

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Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
 ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
 ECO-5: BUILDING 5661  
 1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 13:16:10

TAILED ESTIMATE

DETAIL PAGE 1

BASE BID

| DIVISION 16 ELECTRICAL                                  |                                 | QUANTITY | UOM             | CREW | MANHR | LABOR | EQUIPMENT | MATERIAL | SALESTX | DIRECT \$    |
|---------------------------------------------------------|---------------------------------|----------|-----------------|------|-------|-------|-----------|----------|---------|--------------|
| 16500 LIGHTING                                          |                                 |          |                 |      |       |       |           |          |         |              |
| 16512 6100 SMALL FL FIXTURES (LESS THAN 40 WATT LAMPS)  |                                 |          |                 |      |       |       |           |          |         |              |
| CD=3 EL 6105                                            | SURF SQ W/1 13W BIAxIAL FL LAMP | ***      | UNIT COSTS: *** | 1.25 | 41.26 | 0.00  | 27.80     | 1.39     | 70.45   |              |
| WC=1100                                                 | WHITE ACRYLIC LENS              | 34.00    | EA EELEA        | 43   | 1,403 | 0     | 945       | 47       | 2,395   |              |
| 16512 7000 FLUORESCENT - RECESSED T8 ELECTRONIC BALLAST |                                 |          |                 |      |       |       |           |          |         |              |
| CD=3 EL 7002                                            | 4 FT 1 LAMP PARABOLIC LOUVRE W/ | ***      | UNIT COSTS: *** | 0.54 | 17.84 | 0.07  | 122.00    | 6.10     | 146.01  |              |
| WC=1100                                                 | REFLECTOR                       | 207.00   | EA EELEB        | 112  | 3,694 | 14    | 25,254    | 1,263    | 30,225  |              |
| CD=3 EL 7003                                            | 4 FT 2 LAMP PARABOLIC LOUVRE W/ | ***      | UNIT COSTS: *** | 0.59 | 19.42 | 0.08  | 136.00    | 6.80     | 162.29  |              |
| WC=1100                                                 | REFLECTOR                       | 88.00    | EA EELEB        | 52   | 1,709 | 7     | 11,968    | 598      | 14,282  |              |
| CD=3 EL 7005                                            | 2 FT 2 LAMP PARABOLIC LOUVRE W/ | ***      | UNIT COSTS: *** | 0.52 | 17.19 | 0.07  | 138.00    | 6.90     | 162.16  |              |
| WC=1100                                                 | REFLECTOR                       | 22.00    | EA EELEB        | 11   | 378   | 1     | 3,036     | 152      | 3,568   |              |
| 16530 1100 SURFACE OR PENDANT MOUNTED                   |                                 |          |                 |      |       |       |           |          |         |              |
| CD=3 EL 1118                                            | LED EXIT SIGN W/ BATTERY        | ***      | UNIT COSTS: *** | 1.25 | 41.26 | 0.00  | 121.45    | 6.07     | 168.79  |              |
| WC=1100                                                 |                                 | 7.00     | EA EELEA        | 9    | 289   | 0     | 850       | 43       | 1,181   |              |
| TOTAL DIVISION 16 ELECTRICAL                            |                                 |          |                 |      |       | 226   | 7,472     | 23       | 42,053  | 2,103 51,651 |
| TOTAL FACILITY AA. ELECTRICAL                           |                                 |          |                 |      |       | 226   | 7,472     | 23       | 42,053  | 2,103 51,651 |
| TOTAL BID ITEM 1. BUILDING TO THE 5 FOOT LINE           |                                 |          |                 |      |       | 226   | 7,472     | 23       | 42,053  | 2,103 51,651 |
| TOTAL BASE BID                                          |                                 |          |                 |      |       | 226   | 7,472     | 23       | 42,053  | 2,103 51,651 |
| TOTAL ADDITIVE                                          |                                 |          |                 |      |       | 0     | 0         | 0        | 0       | 0            |
| TOTAL INCL ADD ENERGY SAVINGS OPPORTUNITY SURVY         |                                 |          |                 |      |       | 226   | 7,472     | 23       | 42,053  | 2,103 51,651 |

\* \* \* END OF DETAIL REPORT \* \* \*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5661E5  
4-205

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5661

TIME 13:16:10

PROJECT NOTES

SUMMARY PAGE 1

---

PROJECT NOTES

ECO-5: INTERIOR LIGHTING

SCOPE OF WORK: EVALUATE USE OF HIGHER EFFICIENCY INTERIOR LIGHTING IN  
SELECTED FACILITIES AT FT CAMPBELL.

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5661

TIME 13:16:10

BID ITEM AND FACILITY SUMMARY

SUMMARY PAGE 2

BID ITEM 1 BUILDING TO THE 5 FOOT LINE

BASE BID

| ID             | FACILITY   |         | COST TO PRM | OVERHEAD       | HOME OFC  | PROFIT        | BOND          | OTHR FCTR | TOTAL COST | UNIT COST |
|----------------|------------|---------|-------------|----------------|-----------|---------------|---------------|-----------|------------|-----------|
| AA             | ELECTRICAL | 1.00 EA | 51,651      | 10.0%<br>5,165 | 0.0%<br>0 | 7.5%<br>4,261 | 2.5%<br>1,527 | 0.0%<br>0 | 62,604     | 62604.16  |
| BID ITEM TOTAL |            | 1.00 EA | 51,651      | 5,165          | 0         | 4,261         | 1,527         | 0         | 62,604     | 62604.16  |
| TOTAL BASE BID |            |         | 51,651      | 5,165          | 0         | 4,261         | 1,527         | 0         | 62,604     |           |
| TOTAL ADDITIVE |            |         | 0           | 0              | 0         | 0             | 0             | 0         | 0          |           |
| TOTAL INCL ADD |            |         | 51,651      | 5,165          | 0         | 4,261         | 1,527         | 0         | 62,604     |           |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5661EE  
4-207

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5661

TIME 13:16:10

PROJECT CWE SUMMARY

SUMMARY PAGE 3

| ID                                                         | BID ITEM                    | QUANTITY | UOM | BASE BID | ADDITIVE | TOTAL COST | UNIT COST |
|------------------------------------------------------------|-----------------------------|----------|-----|----------|----------|------------|-----------|
| 1.                                                         | BUILDING TO THE 5 FOOT LINE | 1.00     | EA  | 62,604   |          | 62,604     | 62604.20  |
| TOTAL CURRENT CONTRACT COST                                |                             |          |     | 62,604   | 0        | 62,604     |           |
| Cost Growth from 08/93 to 08/94<br>Index Values: 0000 0000 |                             | 0.0%     |     | 0        | 0        | 0          |           |
| ESCALATED CONTRACT COST                                    |                             |          |     | 62,604   | 0        | 62,604     |           |
| Government-Furnished Property                              |                             |          |     | 0        |          | 0          |           |
| SUBTOTAL                                                   |                             |          |     | 62,604   | 0        | 62,604     |           |
| Contingencies                                              |                             | 10.0%    |     | 6,260    | 0        | 6,260      |           |
| SUBTOTAL                                                   |                             |          |     | 68,865   | 0        | 68,865     |           |
| SIOH (S&A)                                                 |                             | 5.0%     |     | 3,443    | 0        | 3,443      |           |
| CURRENT WORKING ESTIMATE                                   |                             |          |     | 72,308   | 0        | 72,308     |           |

Estimated Construction Time

365 Days

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5661

TIME 13:16:10

CONTRACTOR DIRECT SUMMARY

SUMMARY PAGE 4

| ID | CONTRACTOR    | PH | QUANTITY | UOM | MANHRS | LABOR | EQUIPMENT | MAT W/TX | AMOUNT | PCT    | W/OH&P | SUBTOTAL |
|----|---------------|----|----------|-----|--------|-------|-----------|----------|--------|--------|--------|----------|
| AA | GENERAL/PRIME |    | 1.00     | EA  | 226    | 7,472 | 23        | 44,156   | 51,651 | 100.0% | 0      | 51,651   |
|    | TOTAL DIRECT  |    |          |     | 226    | 7,472 | 23        | 44,156   | 51,651 | 100.0% |        |          |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5661E5  
4-209

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5661

TIME 13:16:10

CONTRACTOR INDIRECT SUMMARY

SUMMARY PAGE 5

| ID | CONTRACTOR              | PM | SUBTOTAL | *** OVERHEAD *** | AMOUNT | PCT | HOPC% | **** PROFIT **** | AMOUNT | PCT  | BOND% | OTHER% | ***** TOTAL CONTRACT ***** | AMOUNT | PCT | UNIT COST |
|----|-------------------------|----|----------|------------------|--------|-----|-------|------------------|--------|------|-------|--------|----------------------------|--------|-----|-----------|
| AA | GENERAL/PRIME           |    | 51,651   | 5,165            | 10.0%  | 0.0 |       | 4,261            | 7.5%   | 2.5% | 0.0%  |        | 62,604                     | 100.0% |     | 62604.14  |
|    | TOTAL OVERHEAD & PROFIT |    |          | 5,165            | 10.0%  |     |       | 4,261            | 7.5%   |      |       |        |                            |        |     |           |



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5661

TIME 13:16:1

CSI DIVISION SUMMARY

SUMMARY PAGE

| ID CSI DIVISION | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|-----------------|----------|-------|-----------|----------|-----------|-------------------------|
| 16 ELECTRICAL   | 226      | 7,472 | 23        | 42,053   | 2,103     | 51,651                  |
| TOTAL DIRECT    | 226      | 7,472 | 23        | 42,053   | 2,103     | 51,651                  |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5661E5

4-211

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5661

TIME 13:16:10

SYSTEMS SUMMARY

SUMMARY PAGE 7

| ID SYSTEM              | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|------------------------|----------|-------|-----------|----------|-----------|-------------------------|
| 11 INTERIOR ELECTRICAL | 226      | 7,472 | 23        | 42,053   | 2,103     | 51,651                  |
| TOTAL DIRECT           | 226      | 7,472 | 23        | 42,053   | 2,103     | 51,651                  |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5661E5  
4-212

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5661

TIME 13:16:10

EQUIPMENT SUMMARY

SUMMARY PAGE 8

| EQUIP DESCRIPTION             | LIFE HRS | TL HRLY | OWNRSH | OWNS | OVTM | OWNRSH | EXPENSE | RATE | UPB  | HOURS | TOTAL | COST |
|-------------------------------|----------|---------|--------|------|------|--------|---------|------|------|-------|-------|------|
| EMI20 SMALL TOOLS             |          |         |        |      |      |        |         | 1.40 | 1.40 | 16    |       | 23   |
| TOTAL PROJECT EQUIPMENT HOURS |          |         |        |      |      |        |         |      |      | 16    |       | 23   |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5661

TIME 13:16:10

BOR SUMMARY

SUMMARY PAGE 9

| CRAFT DESCRIPTION      | BASE  | OVERTH | TXS/INS | FRNG | TRVL | HRLY<br>RATE | UPB<br>RATE | ****<br>HOURS | TOTAL<br>COST |
|------------------------|-------|--------|---------|------|------|--------------|-------------|---------------|---------------|
| LELEC ELECTRICIANS     | 20.50 | 0.0%   | 24.0%   | 7.49 | 0.00 | 32.91        | 25.79       | 226           | 7,473         |
| TOTAL PROJECT MANHOURS |       |        |         |      |      |              |             | 226           | 7,473         |

\* \* \* END OF SUMMARY REPORT \* \* \*

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

PAGE 1 OF 4

31 AUGUST 1993

## BUILDING WIDE FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 5702

BUILDING USE:

HOURS/DAY 9

DAYS/WEEK 7

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

### EXISTING FIXTURE DATA

### REPLACEMENT FIXTURE DATA

#### 4 FOOT

|             |                |              |              |             |            |
|-------------|----------------|--------------|--------------|-------------|------------|
| 2 1 LAMP @  | 48 W/FIXT =    | 96 WATTS     | 2 1 LAMP @   | 37 W/FIXT = | 74 WATTS   |
| 0 1 LAMP @  | 37.8 W/FIXT =  | 0 WATTS      |              |             |            |
| 2 2 LAMP @  | 96 W/FIXT =    | 192 WATTS    | 2 1 LAMP W/  | 37 W/FIXT = | 74 WATTS   |
| 0 2 LAMP @  | 75.6 W/FIXT =  | 0 WATTS      | REFLECTORS   |             |            |
| 0 3 LAMP @  | 144 W/FIXT =   | 0 WATTS      | 0 2 LAMP W/  | 58 W/FIXT = | 0 WATTS    |
| 0 3 LAMP @  | 113.4 W/FIXT = | 0 WATTS      | REFLECTORS   |             |            |
| 0 4 LAMP @  | 192 W/FIXT =   | 0 WATTS      | 28 2 LAMP W/ | 58 W/FIXT = | 1624 WATTS |
| 28 4 LAMP @ | 151.2 W/FIXT = | 4233.6 WATTS | REFLECTORS   |             |            |

#### 2 FOOT

|              |               |         |              |             |         |
|--------------|---------------|---------|--------------|-------------|---------|
| 0 1 LAMP @   | 31 W/FIXT =   | 0 WATTS | 0 1 LAMP @   | 24 W/FIXT = | 0 WATTS |
| 0 4 LAMP @   | 88 W/FIXT =   | 0 WATTS | 0 2 LAMP W/  | 41 W/FIXT = | 0 WATTS |
|              |               |         | REFLECTORS   |             |         |
| 0 2 LAMP U @ | 96 W/FIXT =   | 0 WATTS | 0 2 LAMP U @ | 58 W/FIXT = | 0 WATTS |
| 0 2 LAMP U @ | 75.6 W/FIXT = | 0 WATTS |              |             |         |

#### 8 FOOT

|            |              |         |             |             |         |
|------------|--------------|---------|-------------|-------------|---------|
| 0 2 LAMP @ | 160 W/FIXT = | 0 WATTS | 0 1 LAMP W/ | 58 W/FIXT = | 0 WATTS |
| 0 2 LAMP @ | 168 W/FIXT = | 0 WATTS | REFLECTORS  |             |         |

TOTAL EXISTING KW 4.5

TOTAL REPLACEMENT KW 1.8

NET ENERGY SAVINGS 30.7 MBTU/YR

NET DOLLAR SAVINGS \$579.11

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

PAGE 2 OF 4

31 AUGUST 1993

## OCCUPANCY SENSOR UTILIZATION AFTER LIGHTING RETROFIT

BUILDING #: 5702  
 AREA: RESTROOMS  
 # OF SENSORS: 2  
 HR/DAY 9  
 DAY/WEEK 7  
 EST HR IN USE/DAY 4.5  
 WATTS 189  
 ENERGY SAVINGS 310 KWH

ELECTRIC COSTS:  
 ENERGY CHARGE \$0.0211 PER KWH  
 DEMAND CHARGE \$11.78 PER KW

NET ENERGY SAVINGS 1.06 MBTU/YR NET DOLLAR SAVINGS \$6.54

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

PAGE 3 OF 4

31 AUGUST 1993

## BUILDING WIDE INCANDESCENT LAMP REPLACEMENT

BUILDING #: 5702

LAMP USE:

HOURS/DAY 9

DAYS/WEEK 7

PEAK USE 1 (1-YES, 2-NO)

### ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

### EXISTING INCANDESCENTS

|                      |             |           |
|----------------------|-------------|-----------|
| 2 LAMPS @            | 25 WATTS =  | 50 WATTS  |
| 0 LAMPS @            | 40 WATTS =  | 0 WATTS   |
| 0 LAMPS @            | 52 WATTS =  | 0 WATTS   |
| 6 LAMPS @            | 60 WATTS =  | 360 WATTS |
| 8 LAMPS @            | 75 WATTS =  | 600 WATTS |
| 0 LAMPS @            | 90 WATTS =  | 0 WATTS   |
| 9 LAMPS @            | 100 WATTS = | 900 WATTS |
| TOTAL EXISTING WATTS |             | 1910      |

### COMPACT FLUORESCENT REPLACEMENT

|                         |            |           |
|-------------------------|------------|-----------|
| 2 LAMPS @               | 7 WATTS =  | 14 WATTS  |
| 0 LAMPS @               | 9 WATTS =  | 0 WATTS   |
| 6 LAMPS @               | 19 WATTS = | 78 WATTS  |
| 8 LAMPS @               | 18 WATTS = | 144 WATTS |
| 9 LAMPS @               | 28 WATTS = | 234 WATTS |
| TOTAL REPLACEMENT WATTS |            | 470       |

NET ENERGY SAVINGS 16.0 MBTU/YR

NET DOLLAR SAVINGS \$303.29

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

31 AUGUST 1993

PAGE 4 OF 4

EXIT SIGN REPLACEMENT -- INCANDESCENT TO LED

BUILDING #: 5702

# EXIT SIGNS

1

CURRENT WATTAGE

40

REPLACEMENT WATTAGE

3

HOURS/YEAR

8760

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

NET ENERGY SAVINGS

1.10 MBTU/YR

NET DOLLAR SAVINGS

\$12.08



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES

TIME 13:26:35

TITLE PAGE

---

ENERGY SAVINGS OPPORTUNITY SURVY  
FT CAMPBELL, KY  
ECO-5: BUILDING 5702

Contract No: 27-93-C-0096

Prepared By: Systems Corp  
Estimator: Keith A. Derrington  
Estimate Prep. Date: 08/31/93  
Current UPB/CSI ID: ORL290

M - C A C E S   E D I T I O N  
COMPOSER Plus Copyright (C) 1985, 1988  
by Building Systems Design, Inc..  
Release 4.20

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5702E5  
4-219

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5702

TIME 13:26:35

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DETAILED ESTIMATE

DETAIL PAGE

|                                |   |
|--------------------------------|---|
| 1. BUILDING TO THE 5 FOOT LINE |   |
| AA. ELECTRICAL.....            | 1 |

\* \* \* END TABLE OF CONTENTS \* \* \*

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
 ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
 ECO-5: BUILDING 5702  
 1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 13:26:35

TAILED ESTIMATE

DETAIL PAGE 1

BASE BID

| DIVISION 16 ELECTRICAL                                  |                                 | QUANTITY | UOM             | CREW | MANHR | LABOR | EQUIPMENT | MATERIAL | SALESTY | DIRECT \$ |
|---------------------------------------------------------|---------------------------------|----------|-----------------|------|-------|-------|-----------|----------|---------|-----------|
| 16500 LIGHTING                                          |                                 |          |                 |      |       |       |           |          |         |           |
| 16512 6100 SMALL FL FIXTURES (LESS THAN 40 WATT LAMPS)  |                                 |          |                 |      |       |       |           |          |         |           |
| CD=3 EL 6103                                            | SURF SQ W/ 1 7W BIAXIAL FL LAMP | ***      | UNIT COSTS: *** | 1.25 | 41.26 | 0.00  | 27.30     | 1.37     | 69.93   |           |
| WC=1100                                                 | WHITE ACRYLIC LENS              | 2.00     | EA EELEA        | 3    | 83    | 0     | 55        | 3        | 140     |           |
| CD=3 EL 6105                                            | SURF SQ W/1 13W BIAXIAL FL LAMP | ***      | UNIT COSTS: *** | 1.25 | 41.26 | 0.00  | 27.80     | 1.39     | 70.45   |           |
| WC=1100                                                 | WHITE ACRYLIC LENS              | 6.00     | EA EELEA        | 8    | 248   | 0     | 167       | 8        | 423     |           |
| CD=3 EL 6106                                            | SURF SQ W/1 18W BIAXIAL FL LAMP | ***      | UNIT COSTS: *** | 1.25 | 41.26 | 0.00  | 31.00     | 1.55     | 73.81   |           |
| WC=1100                                                 | WHITE ACRYLIC LENS              | 8.00     | EA EELEA        | 10   | 330   | 0     | 248       | 12       | 591     |           |
| CD=3 EL 6107                                            | SURF SQ W/1 26W BIAXIAL FL LAMP | ***      | UNIT COSTS: *** | 1.25 | 41.26 | 0.00  | 31.00     | 1.55     | 73.81   |           |
| WC=1100                                                 | WHITE ACRYLIC LENS              | 9.00     | EA EELEA        | 11   | 371   | 0     | 279       | 14       | 664     |           |
| 16512 7000 FLUORESCENT - RECESSED T8 ELECTRONIC BALLAST |                                 |          |                 |      |       |       |           |          |         |           |
| CD=3 EL 7002                                            | 4 FT 1 LAMP PARABOLIC LOUVRE W/ | ***      | UNIT COSTS: *** | 0.54 | 17.84 | 0.07  | 122.00    | 6.10     | 146.01  |           |
| WC=1100                                                 | REFLECTOR                       | 2.00     | EA EELEB        | 1    | 36    | 0     | 244       | 12       | 292     |           |
| CD=3 EL 7003                                            | 4 FT 2 LAMP PARABOLIC LOUVRE W/ | ***      | UNIT COSTS: *** | 0.59 | 19.42 | 0.08  | 136.00    | 6.80     | 162.29  |           |
| WC=1100                                                 | REFLECTOR                       | 28.00    | EA EELEB        | 16   | 544   | 2     | 3,808     | 190      | 4,544   |           |
| 16530 1100 SURFACE OR PENDANT MOUNTED                   |                                 |          |                 |      |       |       |           |          |         |           |
| CD=3 EL 1118                                            | LED EXIT SIGN W/ BATTERY        | ***      | UNIT COSTS: *** | 1.25 | 41.26 | 0.00  | 121.45    | 6.07     | 168.79  |           |
| WC=1100                                                 |                                 | 1.00     | EA EELEA        | 1    | 41    | 0     | 121       | 6        | 169     |           |
| 16900 CONTROLS AND INSTRUMENTATION                      |                                 |          |                 |      |       |       |           |          |         |           |
| 16930 3000 OCCUPANCY SENSORS                            |                                 |          |                 |      |       |       |           |          |         |           |
| CD=3 EL 3001                                            | OCCUPANCY SENSOR, 1800 W MAX    | ***      | UNIT COSTS: *** | 0.50 | 16.51 | 0.06  | 48.00     | 2.40     | 66.97   |           |
| WC=1100                                                 |                                 | 2.00     | EA EELEB        | 1    | 33    | 0     | 96        | 5        | 134     |           |
| TOTAL DIVISION 16 ELECTRICAL                            |                                 |          |                 |      |       | 51    | 1,685     | 2        | 5,018   | 251 6,956 |
| TOTAL FACILITY AA. ELECTRICAL                           |                                 |          |                 |      |       | 51    | 1,685     | 2        | 5,018   | 251 6,956 |
| TOTAL BID ITEM 1. BUILDING TO THE 5 FOOT LINE           |                                 |          |                 |      |       | 51    | 1,685     | 2        | 5,018   | 251 6,956 |
| TOTAL BASE BID                                          |                                 |          |                 |      |       | 51    | 1,685     | 2        | 5,018   | 251 6,956 |
| TOTAL ADDITIVE                                          |                                 |          |                 |      |       | 0     | 0         | 0        | 0       | 0         |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5702E5  
4-221

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5702  
1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 13:26:35

TAILED ESTIMATE

DETAIL PAGE 2

BASE BID

| DIVISION 16 ELECTRICAL                          | QUANTITY | UOM | CREW | MANHR | LABOR | EQUIPMENT | MATERIAL | SALESTX | DIRECT \$ |
|-------------------------------------------------|----------|-----|------|-------|-------|-----------|----------|---------|-----------|
| TOTAL INCL ADD ENERGY SAVINGS OPPORTUNITY SURVY |          |     |      | 51    | 1,685 | 2         | 5,018    | 251     | 6,956     |

\* \* \* END OF DETAIL REPORT \* \* \*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5702E5  
4-222

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5702

TIME 13:26:35

JECT NOTES

SUMMARY PAGE 1

---

PROJECT NOTES

ECO-5: INTERIOR LIGHTING

SCOPE OF WORK: EVALUATE USE OF HIGHER EFFICIENCY INTERIOR LIGHTING IN  
SELECTED FACILITIES AT FT CAMPBELL.

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5702E5  
4-223

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5702

TIME 13:26:35

BID ITEM AND FACILITY SUMMARY

SUMMARY PAGE 1

BID ITEM 1 BUILDING TO THE 5 FOOT LINE

BASE BID

| ID             | FACILITY   | COST TO PRM | OVERHEAD | HOME OFC | PROFIT | BOND | OTHR FCTR | TOTAL COST | UNIT COST |
|----------------|------------|-------------|----------|----------|--------|------|-----------|------------|-----------|
| AA             | ELECTRICAL |             | 10.0%    | 0.0%     | 7.5%   | 2.5% | 0.0%      |            |           |
|                | 1.00 EA    | 6,956       | 696      | 0        | 574    | 206  | 0         | 8,432      | 8431.56   |
| BID ITEM TOTAL | 1.00 EA    | 6,956       | 696      | 0        | 574    | 206  | 0         | 8,432      | 8431.56   |
| TOTAL BASE BID |            | 6,956       | 696      | 0        | 574    | 206  | 0         | 8,432      |           |
| TOTAL ADDITIVE |            | 0           | 0        | 0        | 0      | 0    | 0         | 0          |           |
| TOTAL INCL ADD |            | 6,956       | 696      | 0        | 574    | 206  | 0         | 8,432      |           |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5702EE  
4-224

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5702

TIME 13:26:35

PROJECT CWE SUMMARY

SUMMARY PAGE 3

| ID                                                         | BID ITEM                    | QUANTITY | UOM | BASE BID | ADDITIVE | TOTAL COST | UNIT COST |
|------------------------------------------------------------|-----------------------------|----------|-----|----------|----------|------------|-----------|
| 1.                                                         | BUILDING TO THE 5 FOOT LINE | 1.00     | EA  | 8,432    |          | 8,432      | 8431.60   |
| TOTAL CURRENT CONTRACT COST                                |                             |          |     | 8,432    | 0        | 8,432      |           |
| Cost Growth from 08/93 to 08/94<br>Index Values: 0000 0000 |                             | 0.0%     |     | 0        | 0        | 0          |           |
| ESCALATED CONTRACT COST                                    |                             |          |     | 8,432    | 0        | 8,432      |           |
| Government-Furnished Property                              |                             |          |     | 0        |          | 0          |           |
| SUBTOTAL                                                   |                             |          |     | 8,432    | 0        | 8,432      |           |
| Contingencies                                              |                             | 10.0%    |     | 843      | 0        | 843        |           |
| SUBTOTAL                                                   |                             |          |     | 9,275    | 0        | 9,275      |           |
| SIOH (S&A)                                                 |                             | 5.0%     |     | 464      | 0        | 464        |           |
| CURRENT WORKING ESTIMATE                                   |                             |          |     | 9,738    | 0        | 9,738      |           |

Estimated Construction Time

365 Days

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5702E5  
4-225

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5702

TIME 13:26:35

CONTRACTOR DIRECT SUMMARY

SUMMARY PAGE 4

| ID | CONTRACTOR    | PH | QUANTITY | UOM | MANHRS | LABOR | EQUIPMENT | MAT   | W/TX | ** TOTAL DIRECT *<br>AMOUNT PCT | * SUBCON *<br>W/OH&P | SUBTOTAL |
|----|---------------|----|----------|-----|--------|-------|-----------|-------|------|---------------------------------|----------------------|----------|
| AA | GENERAL/PRIME |    | 1.00     | EA  | 51     | 1,685 | 2         | 5,269 |      | 6,956 100.0%                    | 0                    | 6,956    |
|    | TOTAL DIRECT  |    |          |     | 51     | 1,685 | 2         | 5,269 |      | 6,956 100.0%                    |                      |          |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5702E5  
4-226



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5702

TIME 13:26:39

CONTRACTOR INDIRECT SUMMARY

SUMMARY PAGE 1

| ID | CONTRACTOR              | PM | SUBTOTAL | *** OVERHEAD *** | AMOUNT | PCT | HOFC% | **** PROFIT **** | AMOUNT | PCT  | BOND% | OTHER% | ***** TOTAL CONTRACT ***** | AMOUNT | PCT | UNIT COST |
|----|-------------------------|----|----------|------------------|--------|-----|-------|------------------|--------|------|-------|--------|----------------------------|--------|-----|-----------|
| AA | GENERAL/PRIME           |    | 6,956    | 696              | 10.0%  | 0.0 |       | 574              | 7.5%   | 2.5% | 0.0%  |        | 8,432                      | 100.0% |     | 8431.53   |
|    | TOTAL OVERHEAD & PROFIT |    |          | 696              | 10.0%  |     |       | 574              | 7.5%   |      |       |        |                            |        |     |           |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5702E  
4-227

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5702

TIME 13:26:35

DIVISION SUMMARY

SUMMARY PAGE 6

| ID CSI DIVISION | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|-----------------|----------|-------|-----------|----------|-----------|-------------------------|
| 16 ELECTRICAL   | 51       | 1,685 | 2         | 5,018    | 251       | 6,956                   |
| TOTAL DIRECT    | 51       | 1,685 | 2         | 5,018    | 251       | 6,956                   |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5702

TIME 13:26:35

SYSTEMS SUMMARY

SUMMARY PAGE 7

| ID SYSTEM              | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|------------------------|----------|-------|-----------|----------|-----------|-------------------------|
| 11 INTERIOR ELECTRICAL | 51       | 1,685 | 2         | 5,018    | 251       | 6,956                   |
| TOTAL DIRECT           | 51       | 1,685 | 2         | 5,018    | 251       | 6,956                   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5702E5

4-229

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5702

TIME 13:26:35

EQUIPMENT SUMMARY

SUMMARY PAGE 8

| EQUIP DESCRIPTION             | LIFE HRS | TL | HRLY | OWNRSH | OWNS | OVTM | OWNRSH | EXPENSE | HRLY RATE | UPB RATE | HOURS | TOTAL COST |
|-------------------------------|----------|----|------|--------|------|------|--------|---------|-----------|----------|-------|------------|
| EMI20 SMALL TOOLS             |          |    |      |        |      |      |        |         | 1.40      | 1.40     | 2     | 2          |
| TOTAL PROJECT EQUIPMENT HOURS |          |    |      |        |      |      |        |         |           |          | 2     | 2          |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5702

TIME 13:26:35

BOR SUMMARY

SUMMARY PAGE 9

| CRAFT DESCRIPTION      | BASE  | OVERTM | TXS/INS | FRNG | TRVL | HRLY<br>RATE | UPB<br>RATE | ****<br>HOURS | TOTAL<br>COST |
|------------------------|-------|--------|---------|------|------|--------------|-------------|---------------|---------------|
| LELEC ELECTRICIANS     | 20.50 | 0.0%   | 24.0%   | 7.49 | 0.00 | 32.91        | 25.79       | 51            | 1,685         |
| TOTAL PROJECT MANHOURS |       |        |         |      |      |              |             | 51            | 1,685         |

\* \* \* END OF SUMMARY REPORT \* \* \*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5702E5  
4-231

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

31 AUGUST 1993

PAGE 1 OF 2

## BUILDING WIDE LIGHTING REPLACEMENT

BUILDING #: 5207

BUILDING USE: \_\_\_\_\_

HOURS/DAY: 10

DAYS/WEEK: 6

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

### EXISTING FIXTURE DATA

#### 4 FOOT FLUORESCENT

59 2 LAMP @ 96 W/FIXT = 5664 WATTS

15 2 LAMP @ 75.6 W/FIXT = 1134 WATTS

48 4 LAMP @ 192 W/FIXT = 9216 WATTS

141 4 LAMP @ 151.2 W/FIXT = 21319.2 WATTS

### REPLACEMENT FIXTURE DATA

#### 4 FOOT FLUORESCENT

74 1 LAMP W/ 37 W/FIXT = 2738 WATTS

REFLECTORS

189 2 LAMP W/ 58 W/FIXT = 10962 WATTS

REFLECTORS

#### 8 FOOT FLUORESCENT

67 2 LAMP @ 168 W/FIXT = 11256 WATTS

REFLECTORS

3896 WATTS

#### 8 FOOT FLUORESCENT

67 1 LAMP W/ 58 W/FIXT = 3896 WATTS

REFLECTORS

#### INCANDESCENT

391 LAMPS @ 300 WATTS = 117300 WATTS

HIGH PRESSURE SODIUM

391 HPS LAMP @ 130 W/FIXT = 50830 WATTS

#### MERCURY VAPOR

25 LAMPS @ 210 W/FIXT = 5250 WATTS

HIGH PRESSURE SODIUM

25 HPS LAMP @ 130 W/FIXT = 3250 WATTS

TOTAL EXISTING KW 171.1

TOTAL REPLACEMENT KW 71.7

NET ENERGY SAVINGS 1058.9 MBTU/YR

NET DOLLAR SAVINGS \$20,622.47

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

PAGE 2 OF 2

31 AUGUST 1993

## INCANDESCENT LAMP REPLACEMENT

BUILDING #: 5207  
AREA: HALLWAY

LAMP USE:

HOURS/DAY 10  
DAYS/WEEK 6  
PEAK USE 1 (1-YES, 2-NO)

ELECTRIC COSTS:  
ENERGY CHARGE \$0.0211 PER KWH  
DEMAND CHARGE \$11.78 PER KW

### EXISTING INCANDESCENTS

|           |     |         |     |       |
|-----------|-----|---------|-----|-------|
| LAMPS @   | 25  | WATTS = | 0   | WATTS |
| LAMPS @   | 40  | WATTS = | 0   | WATTS |
| 9 LAMPS @ | 52  | WATTS = | 468 | WATTS |
| LAMPS @   | 60  | WATTS = | 0   | WATTS |
| LAMPS @   | 75  | WATTS = | 0   | WATTS |
| LAMPS @   | 90  | WATTS = | 0   | WATTS |
| LAMPS @   | 100 | WATTS = | 0   | WATTS |

TOTAL EXISTING WATTS 468

### COMPACT FLUORESCENT REPLACEMENT

|           |    |         |     |       |
|-----------|----|---------|-----|-------|
| 0 LAMPS @ | 7  | WATTS = | 0   | WATTS |
| 0 LAMPS @ | 9  | WATTS = | 0   | WATTS |
| 9 LAMPS @ | 13 | WATTS = | 117 | WATTS |
| 0 LAMPS @ | 18 | WATTS = | 0   | WATTS |
| 0 LAMPS @ | 26 | WATTS = | 0   | WATTS |

TOTAL REPLACEMENT WATTS 117

NET ENERGY SAVINGS 3.7 MBTU/YR

NET DOLLAR SAVINGS \$72.77

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES

TIME 13:02:25

TITLE PAGE

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ENERGY SAVINGS OPPORTUNITY SURVY  
FT CAMPBELL, KY  
ECO-5: BUILDING 5207

Contract No: 27-93-C-0096

Prepared By: Systems Corp  
Estimator: Keith A. Derrington  
Estimate Prep. Date: 08/31/93

Current UPB/CSI ID: ORL290

M - C A C E S E D I T I O N  
COMPOSER Plus Copyright (C) 1985, 1988  
by Building Systems Design, Inc.  
Release 4.20

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5207E5

4-234



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5207

TIME 13:02:25

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| DETAILED ESTIMATE              | DETAIL PAGE |
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| 1. BUILDING TO THE 5 FOOT LINE |             |
| AA. ELECTRICAL.....            | 1           |

\* \* \* END TABLE OF CONTENTS \* \* \*

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
 ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
 ECO-5: BUILDING 5207  
 1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 13:02:25

FILED ESTIMATE

DETAIL PAGE 1

BASE BID

| DIVISION 16 ELECTRICAL                                                       |                                           | QUANTITY            | DOM CREW | MANHR  | LABOR  | EQUIPMENT | MATERIAL | SALESTX | DIRECT \$ |
|------------------------------------------------------------------------------|-------------------------------------------|---------------------|----------|--------|--------|-----------|----------|---------|-----------|
| 16050 BASIC MATERIALS AND METHODS                                            |                                           |                     |          |        |        |           |          |         |           |
| 16111 1100 RIGID GALVANIZED STEEL CONDUIT                                    |                                           |                     |          |        |        |           |          |         |           |
| CD=4 EL 1121                                                                 | 1 IN CONDUIT W/COUPLING                   | *** UNIT COSTS: *** |          | 0.08   | 2.34   | 0.01      | 0.90     | 0.05    | 3.30      |
| WC=1100                                                                      | 1500.00 LF EELEF                          |                     | 117      | 3,513  | 16     | 1,350     | 68       |         | 4,946     |
| CD=4 EL 1125                                                                 | 1 IN THREE HUB CONDUIT BODIES             | *** UNIT COSTS: *** |          | 1.19   | 36.03  | 0.16      | 9.14     | 0.46    | 45.79     |
| WC=1100                                                                      | 50.00 EA EELEF                            |                     | 60       | 1,802  | 8      | 457       | 23       |         | 2,290     |
| 16120 1700 600 VOLT FEEDER WIRE, SINGLE STR COPPER CONDUCTOR, PULLED IN COND |                                           |                     |          |        |        |           |          |         |           |
| CD=4 EL 1701                                                                 | NO 14-TYPE THWN                           | *** UNIT COSTS: *** |          | 4.01   | 120.88 | 0.54      | 37.20    | 1.86    | 160.48    |
| WC=1100                                                                      | 16.50 MLP EELEF                           |                     | 66       | 1,995  | 9      | 614       | 31       |         | 2,648     |
| 16500 LIGHTING                                                               |                                           |                     |          |        |        |           |          |         |           |
| 16512 6100 SMALL FL FIXTURES (LESS THAN 40 WATT LAMPS)                       |                                           |                     |          |        |        |           |          |         |           |
| CD=3 EL 6105                                                                 | SURF SQ W/1 13W BIAXIAL FL LAMP           | *** UNIT COSTS: *** |          | 1.25   | 41.26  | 0.00      | 27.80    | 1.39    | 70.45     |
| WC=1100                                                                      | WHITE ACRYLIC LENS                        |                     | 11       | 371    | 0      | 250       | 13       |         | 634       |
| 16512 7000 FLUORESCENT - RECESSED T8 ELECTRONIC BALLAST                      |                                           |                     |          |        |        |           |          |         |           |
| CD=3 EL 7003                                                                 | 4 FT 2 LAMP PARABOLIC LOUVRE W/ REFLECTOR | *** UNIT COSTS: *** |          | 0.59   | 19.42  | 0.08      | 136.00   | 6.80    | 162.29    |
| WC=1100                                                                      | 189.00 EA EELEB                           |                     | 111      | 3,670  | 14     | 25,704    | 1,285    |         | 30,673    |
| 16512 8000 FLUORESCENT - SURFACE MOUNTED T8 ELECTRONIC BALLASTS              |                                           |                     |          |        |        |           |          |         |           |
| CD=3 EL 8001                                                                 | 4 FT 1 LAMP W/ REFLECTOR                  | *** UNIT COSTS: *** |          | 0.91   | 27.42  | 0.12      | 78.25    | 3.91    | 109.71    |
| WC=1100                                                                      | 74.00 EA EELEF                            |                     | 67       | 2,029  | 9      | 5,791     | 290      |         | 8,118     |
| CD=3 EL 8003                                                                 | 8 FT 1 LAMP W/ REFLECTOR                  | *** UNIT COSTS: *** |          | 0.98   | 29.58  | 0.13      | 109.00   | 5.45    | 144.17    |
| WC=1100                                                                      | 67.00 EA EELEF                            |                     | 66       | 1,982  | 9      | 7,303     | 365      |         | 9,659     |
| 16512 9000 HIGH INTENSITY DISCHARGE                                          |                                           |                     |          |        |        |           |          |         |           |
| CD=3 EL 9001                                                                 | 100 W HPS FIXTURE AND LAMP                | *** UNIT COSTS: *** |          | 0.93   | 28.11  | 0.13      | 178.00   | 8.90    | 215.13    |
| WC=1100                                                                      | 416.00 EA EELEF                           |                     | 388      | 11,692 | 52     | 74,048    | 3,702    |         | 89,495    |
| TOTAL DIVISION 16 ELECTRICAL                                                 |                                           |                     |          | 886    | 27,054 | 118       | 115,517  | 5,776   | 148,463   |
| TOTAL FACILITY AA. ELECTRICAL                                                |                                           |                     |          | 886    | 27,054 | 118       | 115,517  | 5,776   | 148,463   |
| TOTAL BID ITEM 1. BUILDING TO THE 5 FOOT LINE                                |                                           |                     |          | 886    | 27,054 | 118       | 115,517  | 5,776   | 148,463   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5207E5

4-236

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5207  
1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 13:02:25

TAILED ESTIMATE

DETAIL PAGE 2

BASE BID

| DIVISION 16 ELECTRICAL                          | QUANTITY | UOM | CREW | MANHR | LABOR  | EQUIPMENT | MATERIAL | SALESTX | DIRECT \$ |
|-------------------------------------------------|----------|-----|------|-------|--------|-----------|----------|---------|-----------|
| TOTAL BASE BID                                  |          |     |      | 886   | 27,054 | 118       | 115,517  | 5,776   | 148,463   |
| TOTAL ADDITIVE                                  |          |     |      | 0     | 0      | 0         | 0        | 0       | 0         |
| TOTAL INCL ADD ENERGY SAVINGS OPPORTUNITY SURVY |          |     |      | 886   | 27,054 | 118       | 115,517  | 5,776   | 148,463   |

\* \* \* END OF DETAIL REPORT \* \* \*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5207E5

4-237

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5207

TIME 13:02:25

PROJECT NOTES

SUMMARY PAGE 1

---

PROJECT NOTES

ECO-5: INTERIOR LIGHTING

SCOPE OF WORK: EVALUATE USE OF HIGHER EFFICIENCY INTERIOR LIGHTING IN  
SELECTED FACILITIES AT FT CAMPBELL.

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5207E5  
4-238

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
 ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
 ECO-5: BUILDING 5207

TIME 13:02:21

BID ITEM AND FACILITY SUMMARY

SUMMARY PAGE 1

BID ITEM 1 BUILDING TO THE 5 FOOT LINE

BASE BID

| ID             | FACILITY   |         | COST TO PRM | OVERHEAD | HOME OFC | PROFIT | BOND  | OTHR FCTR | TOTAL COST | UNIT COS  |
|----------------|------------|---------|-------------|----------|----------|--------|-------|-----------|------------|-----------|
| AA             | ELECTRICAL | 1.00 EA | 148,463     | 14,846   | 0        | 12,248 | 4,389 | 0         | 179,947    | 179947.03 |
| BID ITEM TOTAL |            | 1.00 EA | 148,463     | 14,846   | 0        | 12,248 | 4,389 | 0         | 179,947    | 179947.03 |
| TOTAL BASE BID |            |         | 148,463     | 14,846   | 0        | 12,248 | 4,389 | 0         | 179,947    |           |
| TOTAL ADDITIVE |            |         | 0           | 0        | 0        | 0      | 0     | 0         | 0          |           |
| TOTAL INCL ADD |            |         | 148,463     | 14,846   | 0        | 12,248 | 4,389 | 0         | 179,947    |           |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5207E5  
 4-239

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5207

TIME 13:02:25

PROJECT CWE SUMMARY

SUMMARY PAGE 3

| ID BID ITEM                                                | QUANTITY UOM | BASE BID | ADDITIVE | TOTAL COST | UNIT COST |
|------------------------------------------------------------|--------------|----------|----------|------------|-----------|
| 1. BUILDING TO THE 5 FOOT LINE                             | 1.00 EA      | 179,947  |          | 179,947    | 179947.00 |
| TOTAL CURRENT CONTRACT COST                                |              | 179,947  | 0        | 179,947    |           |
| Cost Growth from 08/93 to 08/94<br>Index Values: 0000 0000 | 0.0%         | 0        | 0        | 0          |           |
| ESCALATED CONTRACT COST                                    |              | 179,947  | 0        | 179,947    |           |
| Government-Furnished Property                              |              | 0        |          | 0          |           |
| SUBTOTAL                                                   |              | 179,947  | 0        | 179,947    |           |
| Contingencies                                              | 10.0%        | 17,995   | 0        | 17,995     |           |
| SUBTOTAL                                                   |              | 197,942  | 0        | 197,942    |           |
| SIOH (S&A)                                                 | 5.0%         | 9,897    | 0        | 9,897      |           |
| CURRENT WORKING ESTIMATE                                   |              | 207,839  | 0        | 207,839    |           |

Estimated Construction Time 365 Days

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5207E5

4-240

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5207

TIME 13:02:25

CONTRACTOR DIRECT SUMMARY

SUMMARY PAGE 4

| ID | CONTRACTOR    | PM | QUANTITY | UOM | MANHRS | LABOR  | EQUIPMENT | MAT | W/TX    | ** TOTAL DIRECT * | ** SUBCON * | W/OH&P | SUBTOTAL |
|----|---------------|----|----------|-----|--------|--------|-----------|-----|---------|-------------------|-------------|--------|----------|
|    |               |    |          |     |        | AMOUNT | PCT       |     |         |                   |             |        |          |
| AA | GENERAL/PRIME |    | 1.00     | EA  | 886    | 27,054 |           | 118 | 121,292 | 148,463           | 100.0%      | 0      | 148,463  |
|    | TOTAL DIRECT  |    |          |     | 886    | 27,054 |           | 118 | 121,292 | 148,463           | 100.0%      |        |          |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5207E5  
4-241

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5207

TIME 13:02:21

CONTRACTOR INDIRECT SUMMARY

SUMMARY PAGE 1

| ID | CONTRACTOR              | PK | SUBTOTAL | AMOUNT | PCT   | HOFC% | AMOUNT | PCT  | BOND% | OTHR% | AMOUNT  | PCT    | UNIT COST |
|----|-------------------------|----|----------|--------|-------|-------|--------|------|-------|-------|---------|--------|-----------|
| AA | GENERAL/PRIME           |    | 148,463  | 14,846 | 10.0% | 0.0   | 12,248 | 7.5% | 2.5%  | 0.0%  | 179,947 | 100.0% | 179947.01 |
|    | TOTAL OVERHEAD & PROFIT |    |          | 14,846 | 10.0% |       | 12,248 | 7.5% |       |       |         |        |           |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5207E5  
4-242



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5207

TIME 13:02:25

CSI DIVISION SUMMARY

SUMMARY PAGE 6

| ID CSI DIVISION | MANHOURS | LABOR  | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|-----------------|----------|--------|-----------|----------|-----------|-------------------------|
| 16 ELECTRICAL   | 886      | 27,054 | 118       | 115,517  | 5,776     | 148,463                 |
| TOTAL DIRECT    | 886      | 27,054 | 118       | 115,517  | 5,776     | 148,463                 |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5207E5  
4-243

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5207

TIME 13:02:25

SYSTEMS SUMMARY

SUMMARY PAGE 7

| ID SYSTEM              | MANHOURS | LABOR  | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|------------------------|----------|--------|-----------|----------|-----------|-------------------------|
| 11 INTERIOR ELECTRICAL | 886      | 27,054 | 118       | 115,517  | 5,776     | 148,463                 |
| TOTAL DIRECT           | 886      | 27,054 | 118       | 115,517  | 5,776     | 148,463                 |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5207E5  
4-244

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5207

TIME 13:02:25

EQUIPMENT SUMMARY

SUMMARY PAGE 8

| ----- *** BOOK VALUE *** ADJ FACTOR ADJUSTD BOOK OP -- HRLY --- UPB **** TOTAL **** |             |          |    |      |        |      |      |        |         |      |      |       |       |
|-------------------------------------------------------------------------------------|-------------|----------|----|------|--------|------|------|--------|---------|------|------|-------|-------|
| EQUIP                                                                               | DESCRIPTION | LIFE HRS | TL | HRLY | OWNRSH | OWNS | OVTH | OWNRSH | EXPENSE | RATE | RATE | HOURS | COST  |
| -----                                                                               |             |          |    |      |        |      |      |        |         |      |      |       |       |
| EMI20                                                                               | SMALL TOOLS |          |    |      |        |      |      |        |         | 1.40 | 1.40 | 84    | 117   |
|                                                                                     |             |          |    |      |        |      |      |        |         |      |      | ----- | ----- |
| TOTAL PROJECT EQUIPMENT HOURS                                                       |             |          |    |      |        |      |      |        |         |      |      | 84    | 117   |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5207

TIME 13:02:25

LABOR SUMMARY

SUMMARY PAGE 9

| CRAFT DESCRIPTION      | BASE  | OVERTM | TXS/INS | FRNG | TRVL | HRLY<br>RATE | UPB<br>RATE | ****<br>HOURS | TOTAL<br>COST |
|------------------------|-------|--------|---------|------|------|--------------|-------------|---------------|---------------|
| LELEC ELECTRICIANS     | 20.50 | 0.0%   | 24.0%   | 7.49 | 0.00 | 32.91        | 25.79       | 886           | 27,054        |
| TOTAL PROJECT MANHOURS |       |        |         |      |      |              |             | 886           | 27,054        |

\* \* \* END OF SUMMARY REPORT \* \* \*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5207E5  
4-246

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

31 AUGUST 1993

PAGE 1 OF 3

## OVERLIT AREA FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 5740  
 AREA: COMP/PROJECTION ROOM

AREA USE:  
 HOURS/DAY 10  
 DAYS/WEEK 5

ELECTRIC COSTS:  
 ENERGY CHARGE \$0.0211 PER KWH  
 DEMAND CHARGE \$11.78 PER KW

### EXISTING FIXTURE DATA

#### 4 FOOT

1 LAMP @ 48 W/FIXT = 0 WATTS  
 1 LAMP @ 37.8 W/FIXT = 0 WATTS  
 2 LAMP @ 96 W/FIXT = 0 WATTS  
 2 LAMP @ 75.6 W/FIXT = 0 WATTS  
 3 LAMP @ 144 W/FIXT = 0 WATTS  
 3 LAMP @ 113.4 W/FIXT = 0 WATTS  
 4 LAMP @ 192 W/FIXT = 0 WATTS  
 4 LAMP @ 146.4 W/FIXT = 585.6 WATTS

#### 2 FOOT

1 LAMP @ 31 W/FIXT = 0 WATTS  
 4 LAMP @ 88 W/FIXT = 0 WATTS  
 2 LAMP U @ 96 W/FIXT = 0 WATTS  
 2 LAMP U @ 75.6 W/FIXT = 0 WATTS

#### 8 FOOT

2 LAMP @ 180 W/FIXT = 0 WATTS  
 2 LAMP @ 168 W/FIXT = 0 WATTS

TOTAL EXISTING KW 0.585

### REPLACEMENT FIXTURE DATA

#### 4 FOOT

0 1 LAMP @ 37 W/FIXT = 0 WATTS  
 0 1 LAMP @ 37 W/FIXT = 0 WATTS  
 0 2 LAMP @ 56 W/FIXT = 0 WATTS  
 4 2 LAMP @ 58 W/FIXT = 232 WATTS

#### 2 FOOT

0 1 LAMP @ 24 W/FIXT = 0 WATTS  
 0 2 LAMP @ 41 W/FIXT = 0 WATTS

0 2 LAMP U @ 58 W/FIXT = 0 WATTS

#### 8 FOOT

0 1 LAMP @ 58 W/FIXT = 0 WATTS

TOTAL REPLACEMENT KW 0.232

NET ENERGY SAVINGS 3.13 MBTU/YR

NET DOLLAR SAVINGS \$69.42

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

31 AUGUST 1993

PAGE 2 OF 3

## OVERLIT AREA FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 5740  
AREA: OFFICE

AREA USE:  
HOURS/DAY 10  
DAYS/WEEK 5

ELECTRIC COSTS:  
ENERGY CHARGE \$0.0211 PER KWH  
DEMAND CHARGE \$11.78 PER KW

### EXISTING FIXTURE DATA

#### 4 FOOT

1 LAMP @ 48 W/FIXT = 0 WATTS  
1 LAMP @ 37.8 W/FIXT = 0 WATTS  
2 LAMP @ 96 W/FIXT = 0 WATTS  
2 LAMP @ 75.6 W/FIXT = 0 WATTS  
3 LAMP @ 144 W/FIXT = 0 WATTS  
3 LAMP @ 113.4 W/FIXT = 0 WATTS  
4 LAMP @ 192 W/FIXT = 0 WATTS  
4 LAMP @ 146.4 W/FIXT = 585.6 WATTS

#### 2 FOOT

1 LAMP @ 31 W/FIXT = 0 WATTS  
4 LAMP @ 88 W/FIXT = 0 WATTS  
2 LAMP U @ 96 W/FIXT = 0 WATTS  
2 LAMP U @ 75.6 W/FIXT = 0 WATTS

#### 8 FOOT

2 LAMP @ 180 W/FIXT = 0 WATTS  
2 LAMP @ 168 W/FIXT = 0 WATTS

TOTAL EXISTING KW 0.585

NET ENERGY SAVINGS 3.13 MBTU/YR

### REPLACEMENT FIXTURE DATA

#### 4 FOOT

0.1 LAMP @ 37 W/FIXT = 0 WATTS  
0.1 LAMP @ 37 W/FIXT = 0 WATTS  
0.2 LAMP @ 58 W/FIXT = 0 WATTS  
4.2 LAMP @ 58 W/FIXT = 232 WATTS

#### 2 FOOT

0.1 LAMP @ 24 W/FIXT = 0 WATTS  
0.2 LAMP @ 41 W/FIXT = 0 WATTS

#### 8 FOOT

0.1 LAMP @ 58 W/FIXT = 0 WATTS

TOTAL REPLACEMENT KW 0.232

NET DOLLAR SAVINGS \$69.42

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

PAGE 3 OF 3

31 AUGUST 1993

## OVERLIT AREA FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 5740  
AREA: WORKSTATIONS (4 SEPARATE ROOMS)

AREA USE: \_\_\_\_\_  
HOURS/DAY 10  
DAYS/WEEK 5  
ELECTRIC COSTS:  
ENERGY CHARGE \$0.0211 PER KWH  
DEMAND CHARGE \$11.78 PER KW

### EXISTING FIXTURE DATA

4 FOOT  
1 LAMP @ 48 W/FIXT = 0 WATTS  
1 LAMP @ 37.8 W/FIXT = 0 WATTS  
2 LAMP @ 96 W/FIXT = 0 WATTS  
2 LAMP @ 75.6 W/FIXT = 0 WATTS  
3 LAMP @ 144 W/FIXT = 0 WATTS  
3 LAMP @ 113.4 W/FIXT = 0 WATTS  
4 LAMP @ 192 W/FIXT = 0 WATTS  
12 4 LAMP @ 146.4 W/FIXT = 1756 WATTS

2 FOOT  
1 LAMP @ 31 W/FIXT = 0 WATTS  
4 LAMP @ 88 W/FIXT = 0 WATTS  
2 LAMP U @ 96 W/FIXT = 0 WATTS  
2 LAMP U @ 75.6 W/FIXT = 0 WATTS

8 FOOT  
2 LAMP @ 180 W/FIXT = 0 WATTS  
2 LAMP @ 168 W/FIXT = 0 WATTS

TOTAL EXISTING KW 1.76

NET ENERGY SAVINGS 9.41 MBTU/YR

### REPLACEMENT FIXTURE DATA

4 FOOT  
0 1 LAMP @ 37 W/FIXT = 0 WATTS  
0 1 LAMP @ 37 W/FIXT = 0 WATTS  
0 2 LAMP @ 58 W/FIXT = 0 WATTS  
12 2 LAMP @ 58 W/FIXT = 696 WATTS

2 FOOT  
0 1 LAMP @ 24 W/FIXT = 0 WATTS  
0 2 LAMP @ 41 W/FIXT = 0 WATTS  
0 2 LAMP U @ 58 W/FIXT = 0 WATTS

8 FOOT  
0 1 LAMP @ 58 W/FIXT = 0 WATTS

TOTAL REPLACEMENT KW 0.70

NET DOLLAR SAVINGS \$208.26

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES

TIME 13:33:39

TITLE PAGE

---

ENERGY SAVINGS OPPORTUNITY SURVY  
FT CAMPBELL, KY  
ECO-5: BUILDING 5740

Contract No: 27-93-C-0096

Prepared By: Systems Corp  
Estimator: Keith A. Derrington  
Estimate Prep. Date: 08/31/93  
Current UPB/CSI ID: ORL290

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CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5740E5  
4-250



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5740

TIME 13:33:3

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| CONTRACTOR INDIRECT SUMMARY.....   | 5            |
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| DETAILED ESTIMATE              | DETAIL PAGE |
|--------------------------------|-------------|
| 1. BUILDING TO THE 5 FOOT LINE |             |
| AA. ELECTRICAL.....            | 1           |

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Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5740  
1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 13:33:39

DETAILED ESTIMATE

DETAIL PAGE 1

BASE BID

| DIVISION 16 ELECTRICAL                                  | QUANTITY            | UOM | CREW | MANHR | LABOR | EQUIPMENT | MATERIAL | SALESTX | DIRECT \$ |
|---------------------------------------------------------|---------------------|-----|------|-------|-------|-----------|----------|---------|-----------|
| 16500 LIGHTING                                          |                     |     |      |       |       |           |          |         |           |
| 16512 7000 FLUORESCENT - RECESSED T8 ELECTRONIC BALLAST |                     |     |      |       |       |           |          |         |           |
| CD=3 EL 7008 4 FT 2 LAMP PARABOLIC LOUVRE               | *** UNIT COSTS: *** |     |      | 0.50  | 16.51 | 0.06      | 120.00   | 6.00    | 142.57    |
| WC=1100                                                 | 20.00 EA EELEB      |     |      | 10    | 330   | 1         | 2,400    | 120     | 2,851     |
| TOTAL DIVISION 16 ELECTRICAL                            |                     |     |      | 10    | 330   | 1         | 2,400    | 120     | 2,851     |
| TOTAL FACILITY AA. ELECTRICAL                           |                     |     |      | 10    | 330   | 1         | 2,400    | 120     | 2,851     |
| TOTAL BID ITEM 1. BUILDING TO THE 5 FOOT LINE           |                     |     |      | 10    | 330   | 1         | 2,400    | 120     | 2,851     |
| TOTAL BASE BID                                          |                     |     |      | 10    | 330   | 1         | 2,400    | 120     | 2,851     |
| TOTAL ADDITIVE                                          |                     |     |      | 0     | 0     | 0         | 0        | 0       | 0         |
| TOTAL INCL ADD ENERGY SAVINGS OPPORTUNITY SURVY         |                     |     |      | 10    | 330   | 1         | 2,400    | 120     | 2,851     |

\* \* \* END OF DETAIL REPORT \* \* \*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5740E5  
4-252

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5740

TIME 13:33:39

PROJECT NOTES

SUMMARY PAGE 1

---

PROJECT NOTES

ECO-5: INTERIOR LIGHTING

SCOPE OF WORK: EVALUATE USE OF HIGHER EFFICIENCY INTERIOR LIGHTING IN  
SELECTED FACILITIES AT FT CAMPBELL.

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5740

TIME 13:33:39

BID ITEM AND FACILITY SUMMARY

SUMMARY PAGE 2

BID ITEM 1 BUILDING TO THE 5 FOOT LINE

BASE BID

| ID             | FACILITY   | COST TO PRM | OVERHEAD | HOME OFC | PROFIT | BOND | OTHER FCTR | TOTAL COST | UNIT COST |
|----------------|------------|-------------|----------|----------|--------|------|------------|------------|-----------|
| AA             | ELECTRICAL |             | 10.0%    | 0.0%     | 7.5%   | 2.5% | 0.0%       |            |           |
|                | 1.00 EA    | 2,851       | 285      | 0        | 235    | 84   | 0          | 3,456      | 3456.06   |
| BID ITEM TOTAL | 1.00 EA    | 2,851       | 285      | 0        | 235    | 84   | 0          | 3,456      | 3456.06   |
| TOTAL BASE BID |            | 2,851       | 285      | 0        | 235    | 84   | 0          | 3,456      |           |
| TOTAL ADDITIVE |            | 0           | 0        | 0        | 0      | 0    | 0          | 0          |           |
| TOTAL INCL ADD |            | 2,851       | 285      | 0        | 235    | 84   | 0          | 3,456      |           |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5740

TIME 13:33:39

PROJECT CWE SUMMARY

SUMMARY PAGE 3

| ID                                                         | BID ITEM                    | QUANTITY | UOM | BASE BID | ADDITIVE | TOTAL COST | UNIT COST |
|------------------------------------------------------------|-----------------------------|----------|-----|----------|----------|------------|-----------|
| 1.                                                         | BUILDING TO THE 5 FOOT LINE | 1.00     | EA  | 3,456    |          | 3,456      | 3456.10   |
| TOTAL CURRENT CONTRACT COST                                |                             |          |     | 3,456    | 0        | 3,456      |           |
| Cost Growth from 08/93 to 08/94<br>Index Values: 0000 0000 |                             | 0.0%     |     | 0        | 0        | 0          |           |
| ESCALATED CONTRACT COST                                    |                             |          |     | 3,456    | 0        | 3,456      |           |
| Government-Furnished Property                              |                             |          |     | 0        |          | 0          |           |
| SUBTOTAL                                                   |                             |          |     | 3,456    | 0        | 3,456      |           |
| Contingencies                                              |                             | 10.0%    |     | 346      | 0        | 346        |           |
| SUBTOTAL                                                   |                             |          |     | 3,802    | 0        | 3,802      |           |
| SIOH (S&A)                                                 |                             | 5.0%     |     | 190      | 0        | 190        |           |
| CURRENT WORKING ESTIMATE                                   |                             |          |     | 3,992    | 0        | 3,992      |           |

Estimated Construction Time 365 Days

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5740

TIME 13:33:39

CONTRACTOR DIRECT SUMMARY

SUMMARY PAGE 4

| ID | CONTRACTOR    | PH | QUANTITY | UOM | MANHRS | LABOR | EQUIPMENT | MAT W/TX | AMOUNT | PCT    | W/OH&P | SUBTOTAL |
|----|---------------|----|----------|-----|--------|-------|-----------|----------|--------|--------|--------|----------|
| AA | GENERAL/PRIME |    | 1.00     | EA  | 10     | 330   | 1         | 2,520    | 2,851  | 100.0% | 0      | 2,851    |
|    | TOTAL DIRECT  |    |          |     | 10     | 330   | 1         | 2,520    | 2,851  | 100.0% |        |          |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5740

TIME 13:33:3

CONTRACTOR INDIRECT SUMMARY

SUMMARY PAGE

| ID | CONTRACTOR              | PM | SUBTOTAL | *** OVERHEAD *** | AMOUNT | PCT | HOFC | **** PROFIT **** | AMOUNT | PCT  | BOND | OTHER | ***** TOTAL CONTRACT ***** | AMOUNT | PCT | UNIT | COST   |
|----|-------------------------|----|----------|------------------|--------|-----|------|------------------|--------|------|------|-------|----------------------------|--------|-----|------|--------|
| AA | GENERAL/PRIME           |    | 2,851    | 285              | 10.0%  | 0.0 |      | 235              | 7.5%   | 2.5% | 0.0% |       | 3,456                      | 100.0% |     |      | 3456.0 |
|    | TOTAL OVERHEAD & PROFIT |    |          | 285              | 10.0%  |     |      | 235              | 7.5%   |      |      |       |                            |        |     |      |        |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5740

TIME 13:33:30

CSI DIVISION SUMMARY

SUMMARY PAGE 1

| ID CSI DIVISION | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|-----------------|----------|-------|-----------|----------|-----------|-------------------------|
| 16 ELECTRICAL   | 10       | 330   | 1         | 2,400    | 120       | 2,851                   |
| TOTAL DIRECT    | 10       | 330   | 1         | 2,400    | 120       | 2,851                   |



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5740

TIME 13:33:39

SYSTEMS SUMMARY

SUMMARY PAGE 7

| ID SYSTEM              | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|------------------------|----------|-------|-----------|----------|-----------|-------------------------|
| 11 INTERIOR ELECTRICAL | 10       | 330   | 1         | 2,400    | 120       | 2,851                   |
| TOTAL DIRECT           | 10       | 330   | 1         | 2,400    | 120       | 2,851                   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5740E5

4-259

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5740

TIME 13:33:3

EQUIPMENT SUMMARY

SUMMARY PAGE

| EQUIP DESCRIPTION             | LIFE HRS | TL HRLY | OWNRSH | OWNS | OVTM | OWNRSH | EXPENSE | HRLY RATE | UPB RATE | **** TOTAL HOURS | **** COST |
|-------------------------------|----------|---------|--------|------|------|--------|---------|-----------|----------|------------------|-----------|
| EMI20 SMALL TOOLS             |          |         |        |      |      |        |         | 1.40      | 1.40     | 1                |           |
| TOTAL PROJECT EQUIPMENT HOURS |          |         |        |      |      |        |         |           |          | 1                |           |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 5740

TIME 13:33:36

LABOR SUMMARY

SUMMARY PAGE 9

| CRAFT DESCRIPTION      | BASE  | OVERTM | TXS/INS | FRNG | TRVL | HRLY<br>RATE | UPB<br>RATE | ****<br>HOURS | TOTAL<br>COST |
|------------------------|-------|--------|---------|------|------|--------------|-------------|---------------|---------------|
| LELEC ELECTRICIANS     | 20.50 | 0.0%   | 24.0%   | 7.49 | 0.00 | 32.91        | 25.79       | 10            | 330           |
| TOTAL PROJECT MANHOURS |       |        |         |      |      |              |             | 10            | 330           |

\* \* \* END OF SUMMARY REPORT \* \* \*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 5740E5  
4-261

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

PAGE 1 OF 1

31 AUGUST 1993

## BUILDING WIDE FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6087

BUILDING USE:

HOURS/DAY 24

DAYS/WEEK 7

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

### EXISTING FIXTURE DATA

#### 4 FOOT

1 1 LAMP @ 48 W/FIXT = 48 WATTS  
 0 1 LAMP @ 37.8 W/FIXT = 0 WATTS  
 52 2 LAMP @ 96 W/FIXT = 4992 WATTS  
 0 2 LAMP @ 75.6 W/FIXT = 0 WATTS  
 0 3 LAMP @ 144 W/FIXT = 0 WATTS  
 0 3 LAMP @ 113.4 W/FIXT = 0 WATTS  
 84 4 LAMP @ 192 W/FIXT = 16128 WATTS  
 0 4 LAMP @ 151.2 W/FIXT = 0 WATTS

#### 2 FOOT

0 1 LAMP @ 31 W/FIXT = 0 WATTS  
 0 4 LAMP @ 88 W/FIXT = 0 WATTS  
 0 2 LAMP U @ 96 W/FIXT = 0 WATTS  
 0 2 LAMP U @ 75.6 W/FIXT = 0 WATTS

#### 8 FOOT

0 2 LAMP @ 180 W/FIXT = 0 WATTS  
 22 2 LAMP @ 168 W/FIXT = 3696 WATTS

TOTAL EXISTING KW 24.9

### REPLACEMENT FIXTURE DATA

#### 4 FOOT

1 1 LAMP @ 37 W/FIXT = 37 WATTS  
 52 1 LAMP W/ REFLECTORS 37 W/FIXT = 1924 WATTS  
 0 2 LAMP W/ REFLECTORS 58 W/FIXT = 0 WATTS  
 84 2 LAMP W/ REFLECTORS 58 W/FIXT = 4872 WATTS

#### 2 FOOT

0 1 LAMP @ 24 W/FIXT = 0 WATTS  
 0 2 LAMP W/ REFLECTORS 41 W/FIXT = 0 WATTS  
 0 2 LAMP U @ 58 W/FIXT = 0 WATTS

#### 8 FOOT

22 1 LAMP W/ REFLECTORS 58 W/FIXT = 1276 WATTS

TOTAL REPLACEMENT KW 8.1

NET ENERGY SAVINGS 499.4 MBTU/YR

NET DOLLAR SAVINGS \$5,462.78

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES

TIME 13:40:1

TITLE PAGE

---

ENERGY SAVINGS OPPORTUNITY SURVY  
FT CAMPBELL, KY  
ECO-5: BUILDING 6087

Contract No: 27-93-C-0096

Prepared By: Systems Corp  
Estimator: Keith A. Derrington  
Estimate Prep. Date: 08/31/93  
Current UPB/CSI ID: ORL290

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CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6087E5  
4-263

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6087

TIME 13:40:10

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| DETAILED ESTIMATE              | DETAIL PAGE |
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| 1. BUILDING TO THE 5 FOOT LINE |             |
| AA. ELECTRICAL.....            | 1           |

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Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
 ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
 ECO-5: BUILDING 6087  
 1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 13:40:10

DETAILED ESTIMATE

DETAIL PAGE 1

BASE BID

| DIVISION 16 ELECTRICAL                                  | QUANTITY | DOM             | CREW | MANHR | LABOR | EQUIPMENT | MATERIAL | SALESTX | DIRECT \$ |
|---------------------------------------------------------|----------|-----------------|------|-------|-------|-----------|----------|---------|-----------|
| 16500 LIGHTING                                          |          |                 |      |       |       |           |          |         |           |
| 16512 7000 FLUORESCENT - RECESSED T8 ELECTRONIC BALLAST |          |                 |      |       |       |           |          |         |           |
| CD=3 EL 7001 4 FT 1 LAMP PARABOLIC LOUVRE               | ***      | UNIT COSTS: *** | 0.57 | 18.86 | 0.07  | 105.25    | 5.26     | 129.45  |           |
| WC=1100                                                 | 1.00     | EA EELEB        | 1    | 19    | 0     | 105       | 5        | 129     |           |
| CD=3 EL 7002 4 FT 1 LAMP PARABOLIC LOUVRE W/ REFLECTOR  | ***      | UNIT COSTS: *** | 0.54 | 17.84 | 0.07  | 122.00    | 6.10     | 146.01  |           |
| WC=1100                                                 | 52.00    | EA EELEB        | 28   | 928   | 4     | 6,344     | 317      | 7,593   |           |
| CD=3 EL 7003 4 FT 2 LAMP PARABOLIC LOUVRE W/ REFLECTOR  | ***      | UNIT COSTS: *** | 0.59 | 19.42 | 0.08  | 136.00    | 6.80     | 162.29  |           |
| WC=1100                                                 | 84.00    | EA EELEB        | 49   | 1,631 | 6     | 11,424    | 571      | 13,633  |           |
| CD=3 EL 7007 8 FT 1 LAMP W/ REFLECTOR                   | ***      | UNIT COSTS: *** | 0.54 | 17.84 | 0.07  | 109.00    | 5.45     | 132.36  |           |
| WC=1100                                                 | 22.00    | EA EELEB        | 12   | 393   | 2     | 2,398     | 120      | 2,912   |           |
| TOTAL DIVISION 16 ELECTRICAL                            | 90       |                 |      | 2,970 | 12    | 20,271    | 1,014    | 24,267  |           |
| TOTAL FACILITY AA. ELECTRICAL                           | 90       |                 |      | 2,970 | 12    | 20,271    | 1,014    | 24,267  |           |
| TOTAL BID ITEM 1. BUILDING TO THE 5 FOOT LINE           | 90       |                 |      | 2,970 | 12    | 20,271    | 1,014    | 24,267  |           |
| TOTAL BASE BID                                          | 90       |                 |      | 2,970 | 12    | 20,271    | 1,014    | 24,267  |           |
| TOTAL ADDITIVE                                          | 0        |                 |      | 0     | 0     | 0         | 0        | 0       | 0         |
| TOTAL INCL ADD ENERGY SAVINGS OPPORTUNITY SURVY         | 90       |                 |      | 2,970 | 12    | 20,271    | 1,014    | 24,267  |           |

\* \* \* END OF DETAIL REPORT \* \* \*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6087E5  
 4-265

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6087

TIME 13:40:10

PROJECT NOTES

SUMMARY PAGE 1

---

PROJECT NOTES

ECO-5: INTERIOR LIGHTING

SCOPE OF WORK: EVALUATE USE OF HIGHER EFFICIENCY INTERIOR LIGHTING IN  
SELECTED FACILITIES AT FT CAMPBELL.



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6087

TIME 13:40:10

BID ITEM AND FACILITY SUMMARY

SUMMARY PAGE 2

BID ITEM 1 BUILDING TO THE 5 FOOT LINE

BASE BID

| ID             | FACILITY   |         | COST TO PRM | OVERHEAD       | HOME OFC  | PROFIT        | BOND        | OTHER FCTR | TOTAL COST | UNIT COST |
|----------------|------------|---------|-------------|----------------|-----------|---------------|-------------|------------|------------|-----------|
| AA             | ELECTRICAL | 1.00 EA | 24,267      | 10.0%<br>2,427 | 0.0%<br>0 | 7.5%<br>2,002 | 2.5%<br>717 | 0.0%<br>0  | 29,413     | 29412.84  |
| BID ITEM TOTAL |            | 1.00 EA | 24,267      | 2,427          | 0         | 2,002         | 717         | 0          | 29,413     | 29412.84  |
| TOTAL BASE BID |            |         | 24,267      | 2,427          | 0         | 2,002         | 717         | 0          | 29,413     |           |
| TOTAL ADDITIVE |            |         | 0           | 0              | 0         | 0             | 0           | 0          | 0          |           |
| TOTAL INCL ADD |            |         | 24,267      | 2,427          | 0         | 2,002         | 717         | 0          | 29,413     |           |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6087

TIME 13:40:10

PROJECT CWE SUMMARY

SUMMARY PAGE 3

| ID | BID ITEM                                                   | QUANTITY | UOM  | BASE BID | ADDITIVE | TOTAL COST | UNIT COST |
|----|------------------------------------------------------------|----------|------|----------|----------|------------|-----------|
| 1. | BUILDING TO THE 5 FOOT LINE                                | 1.00     | EA   | 29,413   |          | 29,413     | 29412.80  |
|    | TOTAL CURRENT CONTRACT COST                                |          |      | 29,413   | 0        | 29,413     |           |
|    | Cost Growth from 08/93 to 08/94<br>Index Values: 0000 0000 | 0.0%     |      | 0        | 0        | 0          |           |
|    | ESCALATED CONTRACT COST                                    |          |      | 29,413   | 0        | 29,413     |           |
|    | Government-Furnished Property                              |          |      | 0        |          | 0          |           |
|    | SUBTOTAL                                                   |          |      | 29,413   | 0        | 29,413     |           |
|    | Contingencies                                              | 10.0%    |      | 2,941    | 0        | 2,941      |           |
|    | SUBTOTAL                                                   |          |      | 32,354   | 0        | 32,354     |           |
|    | SIOH (S&A)                                                 | 5.0%     |      | 1,618    | 0        | 1,618      |           |
|    | CURRENT WORKING ESTIMATE                                   |          |      | 33,972   | 0        | 33,972     |           |
|    | Estimated Construction Time                                | 365      | Days |          |          |            |           |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6087E5  
4-268

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6087

TIME 13:40:10

CONTRACTOR DIRECT SUMMARY

SUMMARY PAGE 4

| ID | CONTRACTOR    | PM | QUANTITY | UOM | MANHRS | LABOR | EQUIPMENT | MAT    | W/TX | ** TOTAL DIRECT *<br>AMOUNT PCT | ** SUBCON *<br>W/OH&P | SUBTOTAL |
|----|---------------|----|----------|-----|--------|-------|-----------|--------|------|---------------------------------|-----------------------|----------|
| AA | GENERAL/PRIME |    | 1.00     | EA  | 90     | 2,970 | 12        | 21,285 |      | 24,267 100.0%                   | 0                     | 24,267   |
|    | TOTAL DIRECT  |    |          |     | 90     | 2,970 | 12        | 21,285 |      | 24,267 100.0%                   |                       |          |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6087

TIME 13:40:10

CONTRACTOR INDIRECT SUMMARY

SUMMARY PAGE 5

| ID | CONTRACTOR              | PH | SUBTOTAL | *** OVERHEAD *** | AMOUNT | PCT | BOFC% | **** PROFIT **** | AMOUNT | PCT  | BOND% | OTHER% | ***** TOTAL CONTRACT ***** | AMOUNT | PCT | UNIT COST |
|----|-------------------------|----|----------|------------------|--------|-----|-------|------------------|--------|------|-------|--------|----------------------------|--------|-----|-----------|
| AA | GENERAL/PRIME           |    | 24,267   | 2,427            | 10.0%  | 0.0 |       | 2,002            | 7.5%   | 2.5% | 0.0%  |        | 29,413                     | 100.0% |     | 29412.84  |
|    | TOTAL OVERHEAD & PROFIT |    |          | 2,427            | 10.0%  |     |       | 2,002            | 7.5%   |      |       |        |                            |        |     |           |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6087E5

4-270

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6087

TIME 13:40:10

CSI DIVISION SUMMARY

SUMMARY PAGE 6

| ID CSI DIVISION | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|-----------------|----------|-------|-----------|----------|-----------|-------------------------|
| 16 ELECTRICAL   | 90       | 2,970 | 12        | 20,271   | 1,014     | 24,267                  |
| TOTAL DIRECT    | 90       | 2,970 | 12        | 20,271   | 1,014     | 24,267                  |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6087E5  
4-271

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6087

TIME 13:40:10

SYSTEMS SUMMARY

SUMMARY PAGE 7

| ID SYSTEM              | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|------------------------|----------|-------|-----------|----------|-----------|-------------------------|
| 11 INTERIOR ELECTRICAL | 90       | 2,970 | 12        | 20,271   | 1,014     | 24,267                  |
| TOTAL DIRECT           | 90       | 2,970 | 12        | 20,271   | 1,014     | 24,267                  |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6087E5

4-272

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6087

TIME 13:40:1

EQUIPMENT SUMMARY

SUMMARY PAGE

| EQUIP DESCRIPTION             | LIFE HRS | TL HRLY | OWNRSH | OWNS | OVTH | OWNRSH | EXPENSE | RATE | RATE | HOURS | COS |
|-------------------------------|----------|---------|--------|------|------|--------|---------|------|------|-------|-----|
| EMI20 SMALL TOOLS             |          |         |        |      |      |        |         | 1.40 | 1.40 | 8     | 1   |
| TOTAL PROJECT EQUIPMENT HOURS |          |         |        |      |      |        |         |      |      | 8     | 1   |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6087

TIME 13:40:10

LABOR SUMMARY

SUMMARY PAGE 9

| CRAFT DESCRIPTION      | BASE  | OVERTM | TXS/INS | FRNG | TRVL | HRLY<br>RATE | UPB<br>RATE | ****<br>HOURS | ****<br>TOTAL<br>COST |
|------------------------|-------|--------|---------|------|------|--------------|-------------|---------------|-----------------------|
| LELEC ELECTRICIANS     | 20.50 | 0.0%   | 24.0%   | 7.49 | 0.00 | 32.91        | 25.79       | 90            | 2,970                 |
| TOTAL PROJECT MANHOURS |       |        |         |      |      |              |             | 90            | 2,970                 |

\* \* \* END OF SUMMARY REPORT \* \* \*



# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

PAGE 1 OF 2

31 AUGUST 1993

## BUILDING WIDE FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6088

BUILDING USE:

HOURS/DAY 8

DAYS/WEEK 5

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

### EXISTING FIXTURE DATA

#### 4 FOOT

2 1 LAMP @ 48 W/FXT = 96 WATTS  
 30 1 LAMP @ 84 W/FXT = 2520 WATTS  
 6 2 LAMP @ 96 W/FXT = 576 WATTS  
 0 2 LAMP @ 75.6 W/FXT = 0 WATTS  
 0 3 LAMP @ 144 W/FXT = 0 WATTS  
 0 3 LAMP @ 113.4 W/FXT = 0 WATTS  
 84 4 LAMP @ 192 W/FXT = 16128 WATTS  
 1 4 LAMP @ 151.2 W/FXT = 151.2 WATTS

#### 2 FOOT

0 1 LAMP @ 31 W/FXT = 0 WATTS  
 0 4 LAMP @ 88 W/FXT = 0 WATTS  
 0 2 LAMP U @ 96 W/FXT = 0 WATTS  
 0 2 LAMP U @ 75.6 W/FXT = 0 WATTS

#### 8 FOOT

0 2 LAMP @ 180 W/FXT = 0 WATTS  
 22 2 LAMP @ 168 W/FXT = 3696 WATTS

TOTAL EXISTING KW

23.2

### REPLACEMENT FIXTURE DATA

#### 4 FOOT

32 1 LAMP @ 37 W/FXT = 1184 WATTS  
 6 1 LAMP W/ REFLECTORS 37 W/FXT = 222 WATTS  
 0 2 LAMP W/ REFLECTORS 58 W/FXT = 0 WATTS  
 85 2 LAMP W/ REFLECTORS 58 W/FXT = 4930 WATTS

#### 2 FOOT

0 1 LAMP @ 24 W/FXT = 0 WATTS  
 0 2 LAMP W/ REFLECTORS 41 W/FXT = 0 WATTS  
 0 2 LAMP U @ 58 W/FXT = 0 WATTS

#### 8 FOOT

22 1 LAMP W/ REFLECTORS 58 W/FXT = 1276 WATTS

TOTAL REPLACEMENT KW

7.6

NET ENERGY SAVINGS

110.4 MBTU/YR

NET DOLLAR SAVINGS

\$2,882.86

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

PAGE 2 OF 2

31 AUGUST 1993

EXIT SIGN REPLACEMENT - INCANDESCENT TO LED

BUILDING #: 6088

# EXIT SIGNS 4

CURRENT WATTAGE 40

REPLACEMENT WATTAGE 3

HOURS/YEAR 8760

ELECTRIC COSTS:  
ENERGY CHARGE \$0.0211 PER KWH  
DEMAND CHARGE \$11.78 PER KW

NET ENERGY SAVINGS 4.42 MBTU/YR NET DOLLAR SAVINGS \$48.33

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES

TIME 13:46:45

TITLE PAGE

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ENERGY SAVINGS OPPORTUNITY SURVY  
FT CAMPBELL, KY  
ECO-5: BUILDING 6088

Contract No: 27-93-C-0096

Prepared By: Systems Corp  
Estimator: Keith A. Derrington  
Estimate Prep. Date: 08/31/93

Current UPB/CSI ID: ORL290

M - C A C E S E D I T I O N  
COMPOSER Plus Copyright (C) 1985, 1988  
by Building Systems Design, Inc.  
Release 4.20

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6088E5

4-277

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6088

TIME 13:46:45

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| DETAILED ESTIMATE              | DETAIL PAGE |
|--------------------------------|-------------|
| 1. BUILDING TO THE 5 FOOT LINE |             |
| AA. ELECTRICAL.....            | 1           |

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Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
 ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
 ECO-5: BUILDING 6088  
 1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 13:46:45

DETAILED ESTIMATE

DETAIL PAGE 2

BASE BID

| DIVISION 16 ELECTRICAL                                  |                                           |                     |      | QUANTITY | UOM  | CREW   | MANHR | LABOR  | EQUIPMENT | MATERIAL | SALESTX | DIRECT |
|---------------------------------------------------------|-------------------------------------------|---------------------|------|----------|------|--------|-------|--------|-----------|----------|---------|--------|
| 16500 LIGHTING                                          |                                           |                     |      |          |      |        |       |        |           |          |         |        |
| 16512 7000 FLUORESCENT - RECESSED T8 ELECTRONIC BALLAST |                                           |                     |      |          |      |        |       |        |           |          |         |        |
| CD=3 EL 7001                                            | 4 FT 1 LAMP PARABOLIC LOUVRE              | *** UNIT COSTS: *** | 0.57 | 18.86    | 0.07 | 105.25 | 5.26  | 129.45 |           |          |         |        |
| WC=1100                                                 |                                           | 32.00 EA EELEB      | 18   | 604      | 2    | 3,368  | 168   | 4,140  |           |          |         |        |
| CD=3 EL 7002                                            | 4 FT 1 LAMP PARABOLIC LOUVRE W/ REFLECTOR | *** UNIT COSTS: *** | 0.54 | 17.84    | 0.07 | 122.00 | 6.10  | 146.01 |           |          |         |        |
| WC=1100                                                 |                                           | 6.00 EA EELEB       | 3    | 107      | 0    | 732    | 37    | 876    |           |          |         |        |
| CD=3 EL 7003                                            | 4 FT 2 LAMP PARABOLIC LOUVRE W/ REFLECTOR | *** UNIT COSTS: *** | 0.59 | 19.42    | 0.08 | 136.00 | 6.80  | 162.29 |           |          |         |        |
| WC=1100                                                 |                                           | 85.00 EA EELEB      | 50   | 1,651    | 6    | 11,560 | 578   | 13,795 |           |          |         |        |
| CD=3 EL 7007                                            | 8 FT 1 LAMP W/ REFLECTOR                  | *** UNIT COSTS: *** | 0.54 | 17.84    | 0.07 | 109.00 | 5.45  | 132.36 |           |          |         |        |
| WC=1100                                                 |                                           | 22.00 EA EELEB      | 12   | 393      | 2    | 2,398  | 120   | 2,912  |           |          |         |        |
| 16530 1100 SURFACE OR PENDANT MOUNTED                   |                                           |                     |      |          |      |        |       |        |           |          |         |        |
| CD=3 EL 1118                                            | LED EXIT SIGN W/ BATTERY                  | *** UNIT COSTS: *** | 1.25 | 41.26    | 0.00 | 121.45 | 6.07  | 168.79 |           |          |         |        |
| WC=1100                                                 |                                           | 4.00 EA EELEA       | 5    | 165      | 0    | 486    | 24    | 675    |           |          |         |        |
| TOTAL DIVISION 16 ELECTRICAL                            |                                           |                     |      |          |      |        | 88    | 2,919  | 11        | 18,544   | 927     | 22,401 |
| TOTAL FACILITY AA. ELECTRICAL                           |                                           |                     |      |          |      |        | 88    | 2,919  | 11        | 18,544   | 927     | 22,401 |
| TOTAL BID ITEM 1. BUILDING TO THE 5 FOOT LINE           |                                           |                     |      |          |      |        | 88    | 2,919  | 11        | 18,544   | 927     | 22,401 |
| TOTAL BASE BID                                          |                                           |                     |      |          |      |        | 88    | 2,919  | 11        | 18,544   | 927     | 22,401 |
| TOTAL ADDITIVE                                          |                                           |                     |      |          |      |        | 0     | 0      | 0         | 0        | 0       | 0      |
| TOTAL INCL ADD ENERGY SAVINGS OPPORTUNITY SURVY         |                                           |                     |      |          |      |        | 88    | 2,919  | 11        | 18,544   | 927     | 22,401 |

\*\*\* END OF DETAIL REPORT \*\*\*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6088E5

4-279

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6088

TIME 13:46:45

PROJECT NOTES

SUMMARY PAGE 1

---

PROJECT NOTES

ECO-5: INTERIOR LIGHTING

SCOPE OF WORK: EVALUATE USE OF HIGHER EFFICIENCY INTERIOR LIGHTING IN  
SELECTED FACILITIES AT FT CAMPBELL.

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6088

TIME 13:46:4

BID ITEM AND FACILITY SUMMARY

SUMMARY PAGE

BID ITEM 1 BUILDING TO THE 5 FOOT LINE

BASE BI

| ID             | FACILITY   |         | COST TO PRM | OVERHEAD       | HOME OFC  | PROFIT        | BOND        | OTHR FCTR | TOTAL COST | UNIT COS |
|----------------|------------|---------|-------------|----------------|-----------|---------------|-------------|-----------|------------|----------|
| AA             | ELECTRICAL | 1.00 EA | 22,401      | 10.0%<br>2,240 | 0.0%<br>0 | 7.5%<br>1,848 | 2.5%<br>662 | 0.0%<br>0 | 27,151     | 27150.8  |
| <hr/>          |            |         |             |                |           |               |             |           |            |          |
| BID ITEM TOTAL |            | 1.00 EA | 22,401      | 2,240          | 0         | 1,848         | 662         | 0         | 27,151     | 27150.8  |
| <hr/>          |            |         |             |                |           |               |             |           |            |          |
| TOTAL BASE BID |            |         | 22,401      | 2,240          | 0         | 1,848         | 662         | 0         | 27,151     |          |
| TOTAL ADDITIVE |            |         | 0           | 0              | 0         | 0             | 0           | 0         | 0          |          |
| <hr/>          |            |         |             |                |           |               |             |           |            |          |
| TOTAL INCL ADD |            |         | 22,401      | 2,240          | 0         | 1,848         | 662         | 0         | 27,151     |          |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6088

TIME 13:46:45

PROJECT CWE SUMMARY

SUMMARY PAGE 3

| ID | BID ITEM                                                   | QUANTITY | UOM | BASE BID | ADDITIVE | TOTAL COST | UNIT COST |
|----|------------------------------------------------------------|----------|-----|----------|----------|------------|-----------|
| 1. | BUILDING TO THE 5 FOOT LINE                                | 1.00     | EA  | 27,151   |          | 27,151     | 27150.80  |
|    | TOTAL CURRENT CONTRACT COST                                |          |     | 27,151   | 0        | 27,151     |           |
|    | Cost Growth from 08/93 to 08/94<br>Index Values: 0000 0000 | 0.0%     |     | 0        | 0        | 0          |           |
|    | ESCALATED CONTRACT COST                                    |          |     | 27,151   | 0        | 27,151     |           |
|    | Government-Furnished Property                              |          |     | 0        |          | 0          |           |
|    | SUBTOTAL                                                   |          |     | 27,151   | 0        | 27,151     |           |
|    | Contingencies                                              | 10.0%    |     | 2,715    | 0        | 2,715      |           |
|    | SUBTOTAL                                                   |          |     | 29,866   | 0        | 29,866     |           |
|    | SIOH (S&A)                                                 | 5.0%     |     | 1,493    | 0        | 1,493      |           |
|    | CURRENT WORKING ESTIMATE                                   |          |     | 31,359   | 0        | 31,359     |           |

Estimated Construction Time 365 Days



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6088

TIME 13:46:45

CONTRACTOR DIRECT SUMMARY

SUMMARY PAGE 4

| ID | CONTRACTOR    | PK | QUANTITY | UOM | MANHRS | LABOR | EQUIPMENT | MAT    | W/TX | AMOUNT | PCT    | SUBCON<br>W/OH&P | SUBTOTAL |
|----|---------------|----|----------|-----|--------|-------|-----------|--------|------|--------|--------|------------------|----------|
| AA | GENERAL/PRIME |    | 1.00     | EA  | 88     | 2,919 | 11        | 19,471 |      | 22,401 | 100.0% | 0                | 22,401   |
|    | TOTAL DIRECT  |    |          |     | 88     | 2,919 | 11        | 19,471 |      | 22,401 | 100.0% |                  |          |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6088E5  
4-283

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6088

TIME 13:46:45

CONTRACTOR INDIRECT SUMMARY

SUMMARY PAGE 5

| ID | CONTRACTOR              | PH | SUBTOTAL | *** OVERHEAD *** | AMOUNT | PCT | HOFC% | **** PROFIT **** | AMOUNT | PCT  | BOND% | OTHER% | ***** TOTAL CONTRACT ***** | AMOUNT | PCT | UNIT COST |
|----|-------------------------|----|----------|------------------|--------|-----|-------|------------------|--------|------|-------|--------|----------------------------|--------|-----|-----------|
| AA | GENERAL/PRIME           |    | 22,401   | 2,240            | 10.0%  | 0.0 |       | 1,848            | 7.5%   | 2.5% | 0.0%  |        | 27,151                     | 100.0% |     | 27150.83  |
|    | TOTAL OVERHEAD & PROFIT |    |          | 2,240            | 10.0%  |     |       | 1,848            | 7.5%   |      |       |        |                            |        |     |           |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6088E5  
4-284

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6088

TIME 13:46:45

SI DIVISION SUMMARY

SUMMARY PAGE 6

| ID CSI DIVISION | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|-----------------|----------|-------|-----------|----------|-----------|-------------------------|
| 16 ELECTRICAL   | 88       | 2,919 | 11        | 18,544   | 927       | 22,401                  |
| TOTAL DIRECT    | 88       | 2,919 | 11        | 18,544   | 927       | 22,401                  |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6088E5  
4-285

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6088

TIME 13:46:45

SYSTEMS SUMMARY

SUMMARY PAGE 7

| ID SYSTEM              | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|------------------------|----------|-------|-----------|----------|-----------|-------------------------|
| 11 INTERIOR ELECTRICAL | 88       | 2,919 | 11        | 18,544   | 927       | 22,401                  |
| TOTAL DIRECT           | 88       | 2,919 | 11        | 18,544   | 927       | 22,401                  |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6088E5  
4-286

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6088

TIME 13:46:45

EQUIPMENT SUMMARY

SUMMARY PAGE 8

| EQUIP DESCRIPTION             | LIFE HRS | TL | HRLY | OWNRSH | OWNS | OVTM | OWNRSH | EXPENSE | HRLY RATE | UPB RATE | HOURS | TOTAL COST |
|-------------------------------|----------|----|------|--------|------|------|--------|---------|-----------|----------|-------|------------|
| EMI20 SMALL TOOLS             |          |    |      |        |      |      |        |         | 1.40      | 1.40     | 8     | 11         |
| TOTAL PROJECT EQUIPMENT HOURS |          |    |      |        |      |      |        |         |           |          | 8     | 11         |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6088

TIME 13:46:41

LABOR SUMMARY

SUMMARY PAGE 9

| CRAFT DESCRIPTION      | BASE  | OVERTM | TXS/INS | FRNG | TRVL | HRLY<br>RATE | UPB<br>RATE | ****<br>HOURS | TOTAL<br>COST |
|------------------------|-------|--------|---------|------|------|--------------|-------------|---------------|---------------|
| LELEC ELECTRICIANS     | 20.50 | 0.0%   | 24.0%   | 7.49 | 0.00 | 32.91        | 25.79       | 88            | 2,919         |
| TOTAL PROJECT MANHOURS |       |        |         |      |      |              |             | 88            | 2,919         |

\* \* \* END OF SUMMARY REPORT \* \* \*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6088E5  
4-288

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 6: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

31 AUGUST 1993

PAGE 1 OF 2

## BUILDING WIDE FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6254

BUILDING USE:

HOURS/DAY 12

DAYS/WEEK 7

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.76 PER KW

### EXISTING FIXTURE DATA

4 FOOT

0 1 LAMP @ 48 W/FXT = 0 WATTS  
 0 1 LAMP @ 37.8 W/FXT = 0 WATTS  
 0 2 LAMP @ 96 W/FXT = 0 WATTS  
 8 2 LAMP @ 86.4 W/FXT = 691.2 WATTS  
 0 3 LAMP @ 144 W/FXT = 0 WATTS  
 0 3 LAMP @ 113.4 W/FXT = 0 WATTS  
 0 4 LAMP @ 192 W/FXT = 0 WATTS  
 55 4 LAMP @ 172.8 W/FXT = 9504 WATTS

### REPLACEMENT FIXTURE DATA

4 FOOT

0 1 LAMP @ 37 W/FXT = 0 WATTS  
 8 1 LAMP W/ REFLECTORS 37 W/FXT = 296 WATTS  
 0 2 LAMP W/ REFLECTORS 58 W/FXT = 0 WATTS  
 55 2 LAMP W/ REFLECTORS 58 W/FXT = 3190 WATTS

2 FOOT

0 1 LAMP @ 31 W/FXT = 0 WATTS  
 0 4 LAMP @ 88 W/FXT = 0 WATTS  
 0 2 LAMP U @ 96 W/FXT = 0 WATTS  
 30 2 LAMP U @ 86.4 W/FXT = 2592 WATTS

2 FOOT

0 1 LAMP @ 24 W/FXT = 0 WATTS  
 0 2 LAMP W/ REFLECTORS 41 W/FXT = 0 WATTS  
 30 2 LAMP U @ 58 W/FXT = 1740 WATTS

8 FOOT

0 2 LAMP @ 180 W/FXT = 0 WATTS  
 0 2 LAMP @ 165 W/FXT = 0 WATTS

8 FOOT

0 1 LAMP W/ REFLECTORS 58 W/FXT = 0 WATTS

TOTAL EXISTING KW 12.8

TOTAL REPLACEMENT KW 5.2

NET ENERGY SAVINGS 112.7 MBTU/YR

NET DOLLAR SAVINGS \$1,767.05

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

31 AUGUST 1993

PAGE 2 OF 2

## BUILDING WIDE INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6254

LAMP USE:

HOURS/DAY 3

DAYS/WEEK 5

PEAK USE 2 (1-YES, 2-NO)

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$0.00 PER KW

### EXISTING INCANDESCENTS

|           |             |           |
|-----------|-------------|-----------|
| 0 LAMPS @ | 25 WATTS =  | 0 WATTS   |
| 0 LAMPS @ | 40 WATTS =  | 0 WATTS   |
| 5 LAMPS @ | 52 WATTS =  | 260 WATTS |
| 0 LAMPS @ | 60 WATTS =  | 0 WATTS   |
| 0 LAMPS @ | 75 WATTS =  | 0 WATTS   |
| 0 LAMPS @ | 90 WATTS =  | 0 WATTS   |
| 0 LAMPS @ | 100 WATTS = | 0 WATTS   |

TOTAL EXISTING WATTS 260

### COMPACT FLUORESCENT REPLACEMENT

|           |            |          |
|-----------|------------|----------|
| 0 LAMPS @ | 7 WATTS =  | 0 WATTS  |
| 0 LAMPS @ | 9 WATTS =  | 0 WATTS  |
| 5 LAMPS @ | 13 WATTS = | 65 WATTS |
| 0 LAMPS @ | 18 WATTS = | 0 WATTS  |
| 0 LAMPS @ | 26 WATTS = | 0 WATTS  |

TOTAL REPLACEMENT WATTS 65

NET ENERGY SAVINGS 0.51 MBTU/YR

NET DOLLAR SAVINGS \$3.22



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES

TIME 14:00:02

TITLE PAGE

---

ENERGY SAVINGS OPPORTUNITY SURVY  
FT CAMPBELL, KY  
ECO-5: BUILDING 6254

Contract No: 27-93-C-0096

Prepared By: Systems Corp  
Estimator: Keith A. Derrington  
Estimate Prep. Date: 08/31/93  
Current UPB/CSI ID: ORL290

M - C A C E S E D I T I O N  
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by Building Systems Design, Inc.  
Release 4.20

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6254E5  
4-291

\ Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6254

TIME 14:00:0

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| 1. BUILDING TO THE 5 FOOT LINE |             |
| AA. ELECTRICAL.....            | 1           |

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Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
 ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
 ECO-5: BUILDING 6254  
 1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 14:00:03

TAILED ESTIMATE

DETAIL PAGE 1

BASE BID

| DIVISION 16 ELECTRICAL                                           | QUANTITY | UOM | CREW  | MANHR | LABOR | EQUIPMENT | MATERIAL | SALESTY | DIRECT \$ |
|------------------------------------------------------------------|----------|-----|-------|-------|-------|-----------|----------|---------|-----------|
| 16500 LIGHTING                                                   |          |     |       |       |       |           |          |         |           |
| 16512 6100 SMALL FL FIXTURES (LESS THAN 40 WATT LAMPS)           |          |     |       |       |       |           |          |         |           |
| CD=3 EL 6105 SURF SQ W/1 13W BIAXIAL FL LAMP *** UNIT COSTS: *** |          |     |       | 1.25  | 41.26 | 0.00      | 27.80    | 1.39    | 70.45     |
| WC=1100 WHITE ACRYLIC LENS                                       | 5.00     | EA  | EELEA | 6     | 206   | 0         | 139      | 7       | 352       |
| 16512 7000 FLUORESCENT - RECESSED T8 ELECTRONIC BALLAST          |          |     |       |       |       |           |          |         |           |
| CD=3 EL 7002 4 FT 1 LAMP PARABOLIC LOUVRE W/ *** UNIT COSTS: *** |          |     |       | 0.54  | 17.84 | 0.07      | 122.00   | 6.10    | 146.01    |
| WC=1100 REFLECTOR                                                | 8.00     | EA  | EELEB | 4     | 143   | 1         | 976      | 49      | 1,168     |
| CD=3 EL 7003 4 FT 2 LAMP PARABOLIC LOUVRE W/ *** UNIT COSTS: *** |          |     |       | 0.59  | 19.42 | 0.08      | 136.00   | 6.80    | 162.29    |
| WC=1100 REFLECTOR                                                | 55.00    | EA  | EELEB | 32    | 1,068 | 4         | 7,480    | 374     | 8,926     |
| CD=3 EL 7006 2 FT 2 LAMP U PARABOLIC LOUVRE *** UNIT COSTS: ***  |          |     |       | 0.52  | 17.19 | 0.07      | 119.00   | 5.95    | 142.21    |
| WC=1100                                                          | 30.00    | EA  | EELEB | 16    | 516   | 2         | 3,570    | 179     | 4,266     |
| TOTAL DIVISION 16 ELECTRICAL                                     |          |     |       | 59    | 1,933 | 7         | 12,165   | 608     | 14,713    |
| TOTAL FACILITY AA. ELECTRICAL                                    |          |     |       | 59    | 1,933 | 7         | 12,165   | 608     | 14,713    |
| TOTAL BID ITEM 1. BUILDING TO THE 5 FOOT LINE                    |          |     |       | 59    | 1,933 | 7         | 12,165   | 608     | 14,713    |
| TOTAL BASE BID                                                   |          |     |       | 59    | 1,933 | 7         | 12,165   | 608     | 14,713    |
| TOTAL ADDITIVE                                                   |          |     |       | 0     | 0     | 0         | 0        | 0       | 0         |
| TOTAL INCL ADD ENERGY SAVINGS OPPORTUNITY SURVY                  |          |     |       | 59    | 1,933 | 7         | 12,165   | 608     | 14,713    |

\* \* \* END OF DETAIL REPORT \* \* \*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6254E5  
 4-293

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6254

TIME 14:00:03

PROJECT NOTES

SUMMARY PAGE 1

---

PROJECT NOTES

ECO-5: INTERIOR LIGHTING

SCOPE OF WORK: EVALUATE USE OF HIGHER EFFICIENCY INTERIOR LIGHTING IN  
SELECTED FACILITIES AT FT CAMPBELL.

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6254

TIME 14:00:03

ITEM AND FACILITY SUMMARY

SUMMARY PAGE 2

BID ITEM 1 BUILDING TO THE 5 FOOT LINE

BASE BID

| ID             | FACILITY   |         | COST TO PRM | OVERHEAD | HOME OFC | PROFIT | BOND | OTHER FCTR | TOTAL COST | UNIT COST |
|----------------|------------|---------|-------------|----------|----------|--------|------|------------|------------|-----------|
| AA             | ELECTRICAL |         |             | 10.0%    | 0.0%     | 7.5%   | 2.5% | 0.0%       |            |           |
|                |            | 1.00 EA | 14,713      | 1,471    | 0        | 1,214  | 435  | 0          | 17,833     | 17832.83  |
| BID ITEM TOTAL |            | 1.00 EA | 14,713      | 1,471    | 0        | 1,214  | 435  | 0          | 17,833     | 17832.83  |
| TOTAL BASE BID |            |         | 14,713      | 1,471    | 0        | 1,214  | 435  | 0          | 17,833     |           |
| TOTAL ADDITIVE |            |         | 0           | 0        | 0        | 0      | 0    | 0          | 0          |           |
| TOTAL INCL ADD |            |         | 14,713      | 1,471    | 0        | 1,214  | 435  | 0          | 17,833     |           |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6254E5  
4-295

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6254

TIME 14:00:03

JECT CWE SUMMARY

SUMMARY PAGE 3

| ID | BID ITEM                                                   | QUANTITY | UOM  | BASE BID | ADDITIVE | TOTAL COST | UNIT COST |
|----|------------------------------------------------------------|----------|------|----------|----------|------------|-----------|
| 1. | BUILDING TO THE 5 FOOT LINE                                | 1.00     | EA   | 17,833   |          | 17,833     | 17832.80  |
|    | TOTAL CURRENT CONTRACT COST                                |          |      | 17,833   | 0        | 17,833     |           |
|    | Cost Growth from 08/93 to 08/94<br>Index Values: 0000 0000 | 0.0%     |      | 0        | 0        | 0          |           |
|    | ESCALATED CONTRACT COST                                    |          |      | 17,833   | 0        | 17,833     |           |
|    | Government-Furnished Property                              |          |      | 0        |          | 0          |           |
|    | SUBTOTAL                                                   |          |      | 17,833   | 0        | 17,833     |           |
|    | Contingencies                                              | 10.0%    |      | 1,783    | 0        | 1,783      |           |
|    | SUBTOTAL                                                   |          |      | 19,616   | 0        | 19,616     |           |
|    | SIOH (S&A)                                                 | 5.0%     |      | 981      | 0        | 981        |           |
|    | CURRENT WORKING ESTIMATE                                   |          |      | 20,597   | 0        | 20,597     |           |
|    | Estimated Construction Time                                | 365      | Days |          |          |            |           |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6254E5  
4-296

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6254

TIME 14:00:00

CONTRACTOR DIRECT SUMMARY

SUMMARY PAGE

| ID | CONTRACTOR    | PM | QUANTITY | UOM | MANHRS | LABOR | EQUIPMENT | MAT    | W/TX | ** TOTAL DIRECT * | * SUBCON * | W/OH&P | SUBTOTAL |
|----|---------------|----|----------|-----|--------|-------|-----------|--------|------|-------------------|------------|--------|----------|
|    |               |    |          |     |        |       |           |        |      | AMOUNT            | PCT        |        |          |
| AA | GENERAL/PRIME |    | 1.00     | EA  | 59     | 1,933 | 7         | 12,773 |      | 14,713            | 100.0%     | 0      | 14,713   |
|    | TOTAL DIRECT  |    |          |     | 59     | 1,933 | 7         | 12,773 |      | 14,713            | 100.0%     |        |          |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6254

TIME 14:00:03

CONTRACTOR INDIRECT SUMMARY

SUMMARY PAGE 5

| ID | CONTRACTOR              | PH | SUBTOTAL | *** OVERHEAD *** | AMOUNT | PCT | HOFC% | **** PROFIT **** | AMOUNT | PCT  | BOND% | OTHER% | ***** TOTAL CONTRACT ***** | AMOUNT | PCT | UNIT COST |
|----|-------------------------|----|----------|------------------|--------|-----|-------|------------------|--------|------|-------|--------|----------------------------|--------|-----|-----------|
| AA | GENERAL/PRIME           |    | 14,713   | 1,471            | 10.0%  | 0.0 |       | 1,214            | 7.5%   | 2.5% | 0.0%  |        | 17,833                     | 100.0% |     | 17832.84  |
|    | TOTAL OVERHEAD & PROFIT |    |          | 1,471            | 10.0%  |     |       | 1,214            | 7.5%   |      |       |        |                            |        |     |           |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6254E5  
4-298



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6254

TIME 14:00:03

DIVISION SUMMARY

SUMMARY PAGE 6

| ID CSI DIVISION | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|-----------------|----------|-------|-----------|----------|-----------|-------------------------|
| 16 ELECTRICAL   | 59       | 1,933 | 7         | 12,165   | 608       | 14,713                  |
| TOTAL DIRECT    | 59       | 1,933 | 7         | 12,165   | 608       | 14,713                  |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6254E5  
4-299

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6254

TIME 14:00:03

SYSTEMS SUMMARY

SUMMARY PAGE 7

| ID SYSTEM              | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|------------------------|----------|-------|-----------|----------|-----------|-------------------------|
| 11 INTERIOR ELECTRICAL | 59       | 1,933 | 7         | 12,165   | 608       | 14,713                  |
| TOTAL DIRECT           | 59       | 1,933 | 7         | 12,165   | 608       | 14,713                  |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6254E5  
4-300

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6254

TIME 14:00:03

EQUIPMENT SUMMARY

SUMMARY PAGE 8

| EQUIP DESCRIPTION             | LIFE HRS | TL HRLY | OWNRSH | OWNS | OVTM | OWNRSH | EXPENSE | HRLY RATE | UPB RATE | HOURS | TOTAL COST |
|-------------------------------|----------|---------|--------|------|------|--------|---------|-----------|----------|-------|------------|
| EMI20 SMALL TOOLS             |          |         |        |      |      |        |         | 1.40      | 1.40     | 5     | 7          |
| TOTAL PROJECT EQUIPMENT HOURS |          |         |        |      |      |        |         |           |          | 5     | 7          |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6254

TIME 14:00:0

LABOR SUMMARY

SUMMARY PAGE

| CRAFT DESCRIPTION      | BASE  | OVERTM | TXS/INS | FRNG | TRVL | HRLY<br>RATE | UPB<br>RATE | ****<br>HOURS | TOTAL<br>COST |
|------------------------|-------|--------|---------|------|------|--------------|-------------|---------------|---------------|
| LELEC ELECTRICIANS     | 20.50 | 0.0%   | 24.0%   | 7.49 | 0.00 | 32.91        | 25.79       | 59            | 1,933         |
| TOTAL PROJECT MANHOURS |       |        |         |      |      |              |             | 59            | 1,933         |

\* \* \* END OF SUMMARY REPORT \* \* \*

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

PAGE 1 OF 1

31 AUGUST 1993

## BUILDING WIDE FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6302

BUILDING USE:

HOURS/DAY 10

DAYS/WEEK 5

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.76 PER KW

### EXISTING FIXTURE DATA

4 FOOT

0 1 LAMP @ 48 W/FXT = 0 WATTS  
 0 1 LAMP @ 37.8 W/FXT = 0 WATTS  
 14 2 LAMP @ 96 W/FXT = 1344 WATTS  
 0 2 LAMP @ 75.6 W/FXT = 0 WATTS  
 0 3 LAMP @ 144 W/FXT = 0 WATTS  
 0 3 LAMP @ 113.4 W/FXT = 0 WATTS  
 28 4 LAMP @ 192 W/FXT = 5376 WATTS  
 0 4 LAMP @ 151.2 W/FXT = 0 WATTS

2 FOOT

0 1 LAMP @ 31 W/FXT = 0 WATTS  
 0 4 LAMP @ 88 W/FXT = 0 WATTS  
 0 2 LAMP U @ 96 W/FXT = 0 WATTS  
 0 2 LAMP U @ 75.6 W/FXT = 0 WATTS

8 FOOT

0 2 LAMP @ 180 W/FXT = 0 WATTS  
 0 2 LAMP @ 168 W/FXT = 0 WATTS

TOTAL EXISTING KW

6.7

### REPLACEMENT FIXTURE DATA

4 FOOT

0 1 LAMP @ 37 W/FXT = 0 WATTS  
 14 1 LAMP W/ REFLECTORS 37 W/FXT = 518 WATTS  
 0 2 LAMP W/ REFLECTORS 58 W/FXT = 0 WATTS  
 28 2 LAMP W/ REFLECTORS 58 W/FXT = 1624 WATTS

2 FOOT

0 1 LAMP @ 24 W/FXT = 0 WATTS  
 0 2 LAMP W/ REFLECTORS 41 W/FXT = 0 WATTS  
 0 2 LAMP U @ 58 W/FXT = 0 WATTS

8 FOOT

0 1 LAMP W/ REFLECTORS 58 W/FXT = 0 WATTS

TOTAL REPLACEMENT KW

2.1

NET ENERGY SAVINGS

40.6 MBTU/YR

NET DOLLAR SAVINGS

\$898.77

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES

TIME 14:11:56

TITLE PAGE

---

ENERGY SAVINGS OPPORTUNITY SURVY  
FT CAMPBELL, KY  
ECO-5: BUILDING 6302

Contract No: 27-93-C-0096

Prepared By: Systems Corp  
Estimator: Keith A. Derrington  
Estimate Prep. Date: 08/31/93  
Current UPB/CSI ID: ORL290

M - C A C E S E D I T I O N  
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Release 4.20

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6302E5  
4-304

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6302

TIME 14:11:56

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DETAILED ESTIMATE DETAIL PAGE

|                                |   |
|--------------------------------|---|
| 1. BUILDING TO THE 5 FOOT LINE |   |
| AA. ELECTRICAL.....            | 1 |

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Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
 ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
 ECO-5: BUILDING 6302  
 1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 14:11:56

TAILED ESTIMATE

DETAIL PAGE 1

BASE BID

| DIVISION 16 ELECTRICAL                                  |                                 | QUANTITY | UOM             | CREW | MANHR | LABOR | EQUIPMENT | MATERIAL | SALESTX | DIRECT \$ |
|---------------------------------------------------------|---------------------------------|----------|-----------------|------|-------|-------|-----------|----------|---------|-----------|
| 16500 LIGHTING                                          |                                 |          |                 |      |       |       |           |          |         |           |
| 16512 7000 FLUORESCENT - RECESSED T8 ELECTRONIC BALLAST |                                 |          |                 |      |       |       |           |          |         |           |
| CD=3 EL 7002                                            | 4 FT 1 LAMP PARABOLIC LOUVRE W/ | ***      | UNIT COSTS: *** | 0.54 | 17.84 | 0.07  | 122.00    | 6.10     | 146.01  |           |
| WC=1100                                                 | REFLECTOR                       | 14.00    | EA EELEB        | 8    | 250   | 1     | 1,708     | 85       | 2,044   |           |
| CD=3 EL 7003                                            | 4 FT 2 LAMP PARABOLIC LOUVRE W/ | ***      | UNIT COSTS: *** | 0.59 | 19.42 | 0.08  | 136.00    | 6.80     | 162.29  |           |
| WC=1100                                                 | REFLECTOR                       | 28.00    | EA EELEB        | 16   | 544   | 2     | 3,808     | 190      | 4,544   |           |
| TOTAL DIVISION 16 ELECTRICAL                            |                                 |          |                 | 24   | 793   | 3     | 5,516     | 276      | 6,588   |           |
| TOTAL FACILITY AA. ELECTRICAL                           |                                 |          |                 | 24   | 793   | 3     | 5,516     | 276      | 6,588   |           |
| TOTAL BID ITEM 1. BUILDING TO THE 5 FOOT LINE           |                                 |          |                 | 24   | 793   | 3     | 5,516     | 276      | 6,588   |           |
| TOTAL BASE BID                                          |                                 |          |                 | 24   | 793   | 3     | 5,516     | 276      | 6,588   |           |
| TOTAL ADDITIVE                                          |                                 |          |                 | 0    | 0     | 0     | 0         | 0        | 0       |           |
| TOTAL INCL ADD ENERGY SAVINGS OPPORTUNITY SURVY         |                                 |          |                 | 24   | 793   | 3     | 5,516     | 276      | 6,588   |           |

\* \* \* END OF DETAIL REPORT \* \* \*



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6302

TIME 14:11:56

PROJECT NOTES

SUMMARY PAGE 1

---

PROJECT NOTES

ECO-5: INTERIOR LIGHTING

SCOPE OF WORK: EVALUATE USE OF HIGHER EFFICIENCY INTERIOR LIGHTING IN  
SELECTED FACILITIES AT FT CAMPBELL.

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6302

TIME 14:11:50

BID ITEM AND FACILITY SUMMARY

SUMMARY PAGE 1

BID ITEM 1 BUILDING TO THE 5 FOOT LINE

BASE BID

| ID             | FACILITY   |         | COST TO PRM | OVERHEAD     | HOME OPC  | PROFIT      | BOND        | OTHER FCTR | TOTAL COST | UNIT COST |
|----------------|------------|---------|-------------|--------------|-----------|-------------|-------------|------------|------------|-----------|
| AA             | ELECTRICAL | 1.00 EA | 6,588       | 10.0%<br>659 | 0.0%<br>0 | 7.5%<br>544 | 2.5%<br>195 | 0.0%<br>0  | 7,986      | 7985.50   |
| BID ITEM TOTAL |            | 1.00 EA | 6,588       | 659          | 0         | 544         | 195         | 0          | 7,986      | 7985.50   |
| TOTAL BASE BID |            |         | 6,588       | 659          | 0         | 544         | 195         | 0          | 7,986      |           |
| TOTAL ADDITIVE |            |         | 0           | 0            | 0         | 0           | 0           | 0          | 0          |           |
| TOTAL INCL ADD |            |         | 6,588       | 659          | 0         | 544         | 195         | 0          | 7,986      |           |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6302E5  
4-308

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6302

TIME 14:11:56

PROJECT CWE SUMMARY

SUMMARY PAGE 3

| ID                                                         | BID ITEM                    | QUANTITY | UOM | BASE BID | ADDITIVE | TOTAL COST | UNIT COST |
|------------------------------------------------------------|-----------------------------|----------|-----|----------|----------|------------|-----------|
| 1.                                                         | BUILDING TO THE 5 FOOT LINE | 1.00     | EA  | 7,986    |          | 7,986      | 7985.60   |
| TOTAL CURRENT CONTRACT COST                                |                             |          |     | 7,986    | 0        | 7,986      |           |
| Cost Growth from 08/93 to 08/94<br>Index Values: 0000 0000 |                             | 0.0%     |     | 0        | 0        | 0          |           |
| ESCALATED CONTRACT COST                                    |                             |          |     | 7,986    | 0        | 7,986      |           |
| Government-Furnished Property                              |                             |          |     | 0        |          | 0          |           |
| SUBTOTAL                                                   |                             |          |     | 7,986    | 0        | 7,986      |           |
| Contingencies                                              |                             | 10.0%    |     | 799      | 0        | 799        |           |
| SUBTOTAL                                                   |                             |          |     | 8,784    | 0        | 8,784      |           |
| SIOH (S&A)                                                 |                             | 5.0%     |     | 439      | 0        | 439        |           |
| CURRENT WORKING ESTIMATE                                   |                             |          |     | 9,223    | 0        | 9,223      |           |

Estimated Construction Time 365 Days

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6302

TIME 14:11:56

CONTRACTOR DIRECT SUMMARY

SUMMARY PAGE 4

| ID | CONTRACTOR    | PM | QUANTITY | UOM | MANHRS | LABOR | EQUIPMENT | MAT   | W/TX | AMOUNT | PCT    | W/OH&P | SUBTOTAL |
|----|---------------|----|----------|-----|--------|-------|-----------|-------|------|--------|--------|--------|----------|
| AA | GENERAL/PRIME |    | 1.00     | EA  | 24     | 793   | 3         | 5,792 |      | 6,588  | 100.0% | 0      | 6,588    |
|    | TOTAL DIRECT  |    |          |     | 24     | 793   | 3         | 5,792 |      | 6,588  | 100.0% |        |          |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6302E5  
4-310

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6302

TIME 14:11:56

CONTRACTOR INDIRECT SUMMARY

SUMMARY PAGE 5

| ID | CONTRACTOR              | PM | SUBTOTAL | *** OVERHEAD *** | AMOUNT | PCT   | HOFC% | **** PROFIT **** | AMOUNT | PCT  | BOND% | OTHER% | ***** TOTAL CONTRACT ***** | AMOUNT | PCT    | UNIT COST |
|----|-------------------------|----|----------|------------------|--------|-------|-------|------------------|--------|------|-------|--------|----------------------------|--------|--------|-----------|
| AA | GENERAL/PRIME           |    | 6,588    |                  | 659    | 10.0% | 0.0   |                  | 544    | 7.5% | 2.5%  | 0.0%   |                            | 7,986  | 100.0% | 7985.55   |
|    | TOTAL OVERHEAD & PROFIT |    |          |                  | 659    | 10.0% |       |                  | 544    | 7.5% |       |        |                            |        |        |           |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6302E5  
4-311

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6302

TIME 14:11:56

SI DIVISION SUMMARY

SUMMARY PAGE 6

| ID CSI DIVISION | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|-----------------|----------|-------|-----------|----------|-----------|-------------------------|
| 16 ELECTRICAL   | 24       | 793   | 3         | 5,516    | 276       | 6,588                   |
| TOTAL DIRECT    | 24       | 793   | 3         | 5,516    | 276       | 6,588                   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6302E5  
4-312

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6302

TIME 14:11:56

STEMS SUMMARY

SUMMARY PAGE 7

| ID SYSTEM              | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|------------------------|----------|-------|-----------|----------|-----------|-------------------------|
| 11 INTERIOR ELECTRICAL | 24       | 793   | 3         | 5,516    | 276       | 6,588                   |
| TOTAL DIRECT           | 24       | 793   | 3         | 5,516    | 276       | 6,588                   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6302E5  
4-313

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6302

TIME 14:11:56

EQUIPMENT SUMMARY

SUMMARY PAGE 8

| EQUIP DESCRIPTION             | LIFE HRS | TL HRLY | OWNRSH | OWNS | OVTM | OWNRSH | EXPENSE | HRLY RATE | UPB RATE | HOURS | TOTAL COST |
|-------------------------------|----------|---------|--------|------|------|--------|---------|-----------|----------|-------|------------|
| ENI20 SMALL TOOLS             |          |         |        |      |      |        |         | 1.40      | 1.40     | 2     | 3          |
| TOTAL PROJECT EQUIPMENT HOURS |          |         |        |      |      |        |         |           |          | 2     | 3          |



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6302

TIME 14:11:56

BOR SUMMARY

SUMMARY PAGE 9

| CRAFT DESCRIPTION      | BASE  | OVERTM | TXS/INS | FRNG | TRVL | HRLY<br>RATE | UPB<br>RATE | ****<br>HOURS | TOTAL<br>COST |
|------------------------|-------|--------|---------|------|------|--------------|-------------|---------------|---------------|
| LELEC ELECTRICIANS     | 20.50 | 0.0%   | 24.0%   | 7.49 | 0.00 | 32.91        | 25.79       | 24            | 794           |
| TOTAL PROJECT MANHOURS |       |        |         |      |      |              |             | 24            | 794           |

\* \* \* END OF SUMMARY REPORT \* \* \*

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 6. INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

PAGE 1 OF 1

31 AUGUST 1993

## BUILDING WIDE FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6304

BUILDING USE:

HOURS/DAY 10  
DAYS/WEEK 5

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH  
DEMAND CHARGE \$11.78 PER KW

### EXISTING FIXTURE DATA

### REPLACEMENT FIXTURE DATA

4 FOOT

2 1 LAMP @ 48 W/FXT = 96 WATTS  
0 1 LAMP @ 37.8 W/FXT = 0 WATTS  
14 2 LAMP @ 96 W/FXT = 1344 WATTS  
0 2 LAMP @ 75.6 W/FXT = 0 WATTS  
0 3 LAMP @ 144 W/FXT = 0 WATTS  
0 3 LAMP @ 113.4 W/FXT = 0 WATTS  
30 4 LAMP @ 192 W/FXT = 5760 WATTS  
0 4 LAMP @ 151.2 W/FXT = 0 WATTS

4 FOOT

2 1 LAMP @ 37 W/FXT = 74 WATTS  
14 1 LAMP W/ REFLECTORS 37 W/FXT = 518 WATTS  
0 2 LAMP W/ REFLECTORS 58 W/FXT = 0 WATTS  
30 2 LAMP W/ REFLECTORS 58 W/FXT = 1740 WATTS

2 FOOT

0 1 LAMP @ 31 W/FXT = 0 WATTS  
0 4 LAMP @ 86 W/FXT = 0 WATTS  
0 2 LAMP U @ 96 W/FXT = 0 WATTS  
0 2 LAMP U @ 75.6 W/FXT = 0 WATTS

2 FOOT

0 1 LAMP @ 24 W/FXT = 0 WATTS  
0 2 LAMP W/ REFLECTORS 41 W/FXT = 0 WATTS  
0 2 LAMP U @ 58 W/FXT = 0 WATTS

8 FOOT

0 2 LAMP @ 180 W/FXT = 0 WATTS  
0 2 LAMP @ 168 W/FXT = 0 WATTS

8 FOOT

0 1 LAMP W/ REFLECTORS 58 W/FXT = 0 WATTS

TOTAL EXISTING KW

7.2

TOTAL REPLACEMENT KW

2.3

NET ENERGY SAVINGS

43.2 MBTU/YR

NET DOLLAR SAVINGS

\$955.71

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES

TIME 14:20:54

TITLE PAGE

---

ENERGY SAVINGS OPPORTUNITY SURVY  
FT CAMPBELL, KY  
ECO-5: BUILDING 6304

Contract No: 27-93-C-0096

Prepared By: Systems Corp  
Estimator: Keith A. Derrington  
Estimate Prep. Date: 08/31/93  
Current UPB/CSI ID: ORL290

M - C A C E S   E D I T I O N  
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by Building Systems Design, Inc.  
Release 4.20

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6304E5  
4-317

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6304

TIME 14:20:54

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| BID ITEM AND FACILITY SUMMARY..... | 2            |
| PROJECT CWE SUMMARY.....           | 3            |
| CONTRACTOR DIRECT SUMMARY.....     | 4            |
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| DETAILED ESTIMATE              | DETAIL PAGE |
|--------------------------------|-------------|
| 1. BUILDING TO THE 5 FOOT LINE |             |
| AA. ELECTRICAL.....            | 1           |

\*\*\* END TABLE OF CONTENTS \*\*\*

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
 ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
 ECO-5: BUILDING 6304  
 1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 14:20:54

DETAILED ESTIMATE

DETAIL PAGE 1

BASE BID

| DIVISION 16 ELECTRICAL                                  |                                 | QUANTITY            | UOM | CREW | MANHR | LABOR | EQUIPMENT | MATERIAL | SALESTY | DIRECT \$ |
|---------------------------------------------------------|---------------------------------|---------------------|-----|------|-------|-------|-----------|----------|---------|-----------|
| 16500 LIGHTING                                          |                                 |                     |     |      |       |       |           |          |         |           |
| 16512 7000 FLUORESCENT - RECESSED T8 ELECTRONIC BALLAST |                                 |                     |     |      |       |       |           |          |         |           |
| CD=3 EL 7001                                            | 4 FT 1 LAMP PARABOLIC LOUVRE    | *** UNIT COSTS: *** |     |      | 0.57  | 18.86 | 0.07      | 105.25   | 5.26    | 129.45    |
| WC=1100                                                 |                                 | 2.00 EA EELEB       |     | 1    | 38    | 0     | 211       | 11       | 259     |           |
| CD=3 EL 7002                                            | 4 FT 1 LAMP PARABOLIC LOUVRE W/ | *** UNIT COSTS: *** |     |      | 0.54  | 17.84 | 0.07      | 122.00   | 6.10    | 146.01    |
| WC=1100                                                 | REFLECTOR                       | 14.00 EA EELEB      |     | 8    | 250   | 1     | 1,708     | 85       | 2,044   |           |
| CD=3 EL 7003                                            | 4 FT 2 LAMP PARABOLIC LOUVRE W/ | *** UNIT COSTS: *** |     |      | 0.59  | 19.42 | 0.08      | 136.00   | 6.80    | 162.29    |
| WC=1100                                                 | REFLECTOR                       | 30.00 EA EELEB      |     | 18   | 583   | 2     | 4,080     | 204      | 4,869   |           |
| TOTAL DIVISION 16 ELECTRICAL                            |                                 |                     |     |      | 26    | 870   | 3         | 5,999    | 300     | 7,172     |
| TOTAL FACILITY AA. ELECTRICAL                           |                                 |                     |     |      | 26    | 870   | 3         | 5,999    | 300     | 7,172     |
| TOTAL BID ITEM 1. BUILDING TO THE 5 FOOT LINE           |                                 |                     |     |      | 26    | 870   | 3         | 5,999    | 300     | 7,172     |
| TOTAL BASE BID                                          |                                 |                     |     |      | 26    | 870   | 3         | 5,999    | 300     | 7,172     |
| TOTAL ADDITIVE                                          |                                 |                     |     |      | 0     | 0     | 0         | 0        | 0       | 0         |
| TOTAL INCL ADD ENERGY SAVINGS OPPORTUNITY SURVY         |                                 |                     |     |      | 26    | 870   | 3         | 5,999    | 300     | 7,172     |

\* \* \* END OF DETAIL REPORT \* \* \*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6304E5  
 4-319

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6304

TIME 14:20:54

PROJECT NOTES

SUMMARY PAGE 1

---

PROJECT NOTES

ECO-5: INTERIOR LIGHTING

SCOPE OF WORK: EVALUATE USE OF HIGHER EFFICIENCY INTERIOR LIGHTING IN  
SELECTED FACILITIES AT FT CAMPBELL.

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
 ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
 ECO-5: BUILDING 6304

TIME 14:20:54

BID ITEM AND FACILITY SUMMARY

SUMMARY PAGE 2

BID ITEM 1 BUILDING TO THE 5 FOOT LINE

BASE BID

| ID             | FACILITY   | COST TO PRM | OVERHEAD | HOME OPC     | PROFIT    | BOND        | OTHER FCTR  | TOTAL COST | UNIT COST |         |
|----------------|------------|-------------|----------|--------------|-----------|-------------|-------------|------------|-----------|---------|
| AA             | ELECTRICAL | 1.00 EA     | 7,172    | 10.0%<br>717 | 0.0%<br>0 | 7.5%<br>592 | 2.5%<br>212 | 0.0%<br>0  | 8,693     | 8692.78 |
| BID ITEM TOTAL |            | 1.00 EA     | 7,172    | 717          | 0         | 592         | 212         | 0          | 8,693     | 8692.78 |
| TOTAL BASE BID |            |             | 7,172    | 717          | 0         | 592         | 212         | 0          | 8,693     |         |
| TOTAL ADDITIVE |            |             | 0        | 0            | 0         | 0           | 0           | 0          | 0         |         |
| TOTAL INCL ADD |            |             | 7,172    | 717          | 0         | 592         | 212         | 0          | 8,693     |         |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6304

TIME 14:20:54

PROJECT CWE SUMMARY

SUMMARY PAGE 3

| ID                                                         | BID ITEM                    | QUANTITY | UOM | BASE BID | ADDITIVE | TOTAL COST | UNIT COST |
|------------------------------------------------------------|-----------------------------|----------|-----|----------|----------|------------|-----------|
| 1.                                                         | BUILDING TO THE 5 FOOT LINE | 1.00     | EA  | 8,693    |          | 8,693      | 8692.80   |
| TOTAL CURRENT CONTRACT COST                                |                             |          |     | 8,693    | 0        | 8,693      |           |
| Cost Growth from 08/93 to 08/94<br>Index Values: 0000 0000 |                             | 0.0%     |     | 0        | 0        | 0          |           |
| ESCALATED CONTRACT COST                                    |                             |          |     | 8,693    | 0        | 8,693      |           |
| Government-Furnished Property                              |                             |          |     | 0        |          | 0          |           |
| SUBTOTAL                                                   |                             |          |     | 8,693    | 0        | 8,693      |           |
| Contingencies                                              |                             | 10.0%    |     | 869      | 0        | 869        |           |
| SUBTOTAL                                                   |                             |          |     | 9,562    | 0        | 9,562      |           |
| SIOH (S&A)                                                 |                             | 5.0%     |     | 478      | 0        | 478        |           |
| CURRENT WORKING ESTIMATE                                   |                             |          |     | 10,040   | 0        | 10,040     |           |

Estimated Construction Time 365 Days

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6304E5  
4-322



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6304

TIME 14:20:5

CONTRACTOR DIRECT SUMMARY

SUMMARY PAGE

| ID | CONTRACTOR    | PM | QUANTITY | DOM | MANHRS | LABOR | EQUIPMENT | MAT   | W/TX | ** TOTAL DIRECT * | * SUBCON * | W/OH&P | SUBTOTAL |
|----|---------------|----|----------|-----|--------|-------|-----------|-------|------|-------------------|------------|--------|----------|
|    |               |    |          |     |        |       |           |       |      | AMOUNT            | PCT        |        |          |
| AA | GENERAL/PRIME |    | 1.00     | EA  | 26     | 870   | 3         | 6,298 |      | 7,172             | 100.0%     | 0      | 7,172    |
|    | TOTAL DIRECT  |    |          |     | 26     | 870   | 3         | 6,298 |      | 7,172             | 100.0%     |        |          |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6304E5

4-323

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6304

TIME 14:20:54

CONTRACTOR INDIRECT SUMMARY

SUMMARY PAGE 5

| ID | CONTRACTOR              | PM | SUBTOTAL | *** OVERHEAD *** | AMOUNT | PCT | HOFC% | **** PROFIT **** | AMOUNT | PCT  | BOND% | OTHER% | ***** TOTAL CONTRACT ***** | AMOUNT | PCT | UNIT COST |
|----|-------------------------|----|----------|------------------|--------|-----|-------|------------------|--------|------|-------|--------|----------------------------|--------|-----|-----------|
| AA | GENERAL/PRIME           |    | 7,172    | 717              | 10.0%  | 0.0 |       | 592              | 7.5%   | 2.5% | 0.0%  |        | 8,693                      | 100.0% |     | 8692.77   |
|    | TOTAL OVERHEAD & PROFIT |    |          | 717              | 10.0%  |     |       | 592              | 7.5%   |      |       |        |                            |        |     |           |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6304

TIME 14:20:5-

SI DIVISION SUMMARY

SUMMARY PAGE 1

| ID CSI DIVISION | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|-----------------|----------|-------|-----------|----------|-----------|-------------------------|
| 16 ELECTRICAL   | 26       | 870   | 3         | 5,999    | 300       | 7,172                   |
| TOTAL DIRECT    | 26       | 870   | 3         | 5,999    | 300       | 7,172                   |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6304

TIME 14:20:5

SYSTEMS SUMMARY

SUMMARY PAGE

| ID SYSTEM              | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|------------------------|----------|-------|-----------|----------|-----------|-------------------------|
| 11 INTERIOR ELECTRICAL | 26       | 870   | 3         | 5,999    | 300       | 7,172                   |
| TOTAL DIRECT           | 26       | 870   | 3         | 5,999    | 300       | 7,172                   |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6304

TIME 14:20:54

EQUIPMENT SUMMARY

SUMMARY PAGE 8

| EQUIP DESCRIPTION             | LIFE HRS | TL HRLY | OWNRSH | OWNS | OVTM | OWNRSH | EXPENSE | HRLY RATE | UPB RATE | HOURS | TOTAL COST |
|-------------------------------|----------|---------|--------|------|------|--------|---------|-----------|----------|-------|------------|
| EMI20 SMALL TOOLS             |          |         |        |      |      |        |         | 1.40      | 1.40     | 2     | 3          |
| TOTAL PROJECT EQUIPMENT HOURS |          |         |        |      |      |        |         |           |          | 2     | 3          |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6304E5  
4-327

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6304

TIME 14:20:54

LABOR SUMMARY

SUMMARY PAGE 9

| CRAFT DESCRIPTION      | BASE  | OVERTM | TXS/INS | FRNG | TRVL | HRLY<br>RATE | UPB<br>RATE | ****<br>HOURS | TOTAL<br>COST |
|------------------------|-------|--------|---------|------|------|--------------|-------------|---------------|---------------|
| LELEC ELECTRICIANS     | 20.50 | 0.0%   | 24.0%   | 7.49 | 0.00 | 32.91        | 25.79       | 26            | 871           |
| TOTAL PROJECT MANHOURS |       |        |         |      |      |              |             | 26            | 871           |

\* \* \* END OF SUMMARY REPORT \* \* \*

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

PAGE 1 OF 1

31 AUGUST 1993

## BUILDING WIDE FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6306

BUILDING USE:

HOURS/DAY 10

DAYS/WEEK 5

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

### EXISTING FIXTURE DATA

#### 4 FOOT

0.1 LAMP @ 48 W/FIXT = 0 WATTS  
 0.1 LAMP @ 37.8 W/FIXT = 0 WATTS  
 23.2 LAMP @ 96 W/FIXT = 2208 WATTS  
 0.2 LAMP @ 75.6 W/FIXT = 0 WATTS  
 0.3 LAMP @ 144 W/FIXT = 0 WATTS  
 0.3 LAMP @ 113.4 W/FIXT = 0 WATTS  
 30.4 LAMP @ 192 W/FIXT = 5760 WATTS  
 0.4 LAMP @ 151.2 W/FIXT = 0 WATTS

#### 2 FOOT

0.1 LAMP @ 31 W/FIXT = 0 WATTS  
 0.4 LAMP @ 88 W/FIXT = 0 WATTS  
 0.2 LAMP U @ 96 W/FIXT = 0 WATTS  
 0.2 LAMP U @ 75.6 W/FIXT = 0 WATTS

#### 8 FOOT

0.2 LAMP @ 180 W/FIXT = 0 WATTS  
 0.2 LAMP @ 168 W/FIXT = 0 WATTS

TOTAL EXISTING KW 8.0

### REPLACEMENT FIXTURE DATA

#### 4 FOOT

0.1 LAMP @ 37 W/FIXT = 0 WATTS  
 23.1 LAMP W/ REFLECTORS 37 W/FIXT = 851 WATTS  
 0.2 LAMP W/ REFLECTORS 58 W/FIXT = 0 WATTS  
 30.2 LAMP W/ REFLECTORS 58 W/FIXT = 1740 WATTS

#### 2 FOOT

0.1 LAMP @ 24 W/FIXT = 0 WATTS  
 0.2 LAMP W/ REFLECTORS 41 W/FIXT = 0 WATTS  
 0.2 LAMP U @ 58 W/FIXT = 0 WATTS

#### 8 FOOT

0.1 LAMP W/ REFLECTORS 58 W/FIXT = 0 WATTS

TOTAL REPLACEMENT KW 2.6

NET ENERGY SAVINGS 47.7 MBTU/YR

NET DOLLAR SAVINGS \$1,055.63

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES

TIME 14:29:38

TITLE PAGE

---

ENERGY SAVINGS OPPORTUNITY SURVY  
FT CAMPBELL, KY  
ECO-5: BUILDING 6306

Contract No: 27-93-C-0096

Prepared By: Systems Corp  
Estimator: Keith A. Derrington  
Estimate Prep. Date: 08/31/93

Current UPB/CSI ID: ORL290

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Release 4.20

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6306E5

4-330



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6306

TIME 14:29:38

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| 1. BUILDING TO THE 5 FOOT LINE |             |
| AA. ELECTRICAL.....            | 1           |

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Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
 ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
 ECO-5: BUILDING 6306  
 1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 14:29:38

DETAILED ESTIMATE

DETAIL PAGE 1

BASE BID

| DIVISION 16 ELECTRICAL                                  |                                 | QUANTITY            | UOM | CREW | MANHR | LABOR | EQUIPMENT | MATERIAL | SALESTY | DIRECT \$ |
|---------------------------------------------------------|---------------------------------|---------------------|-----|------|-------|-------|-----------|----------|---------|-----------|
| 16500 LIGHTING                                          |                                 |                     |     |      |       |       |           |          |         |           |
| 16512 7000 FLUORESCENT - RECESSED T8 ELECTRONIC BALLAST |                                 |                     |     |      |       |       |           |          |         |           |
| CD=3 EL 7002                                            | 4 FT 1 LAMP PARABOLIC LOUVRE W/ | *** UNIT COSTS: *** |     |      | 0.54  | 17.84 | 0.07      | 122.00   | 6.10    | 146.01    |
| WC=1100                                                 | REFLECTOR                       | 23.00 EA EELEB      |     | 12   | 410   |       | 2         | 2,806    | 140     | 3,358     |
| CD=3 EL 7003                                            | 4 FT 2 LAMP PARABOLIC LOUVRE W/ | *** UNIT COSTS: *** |     |      | 0.59  | 19.42 | 0.08      | 136.00   | 6.80    | 162.29    |
| WC=1100                                                 | REFLECTOR                       | 30.00 EA EELEB      |     | 18   | 583   |       | 2         | 4,080    | 204     | 4,869     |
| TOTAL DIVISION 16 ELECTRICAL                            |                                 |                     |     |      | 30    | 993   | 4         | 6,886    | 344     | 8,227     |
| TOTAL FACILITY AA. ELECTRICAL                           |                                 |                     |     |      | 30    | 993   | 4         | 6,886    | 344     | 8,227     |
| TOTAL BID ITEM 1. BUILDING TO THE 5 FOOT LINE           |                                 |                     |     |      | 30    | 993   | 4         | 6,886    | 344     | 8,227     |
| TOTAL BASE BID                                          |                                 |                     |     |      | 30    | 993   | 4         | 6,886    | 344     | 8,227     |
| TOTAL ADDITIVE                                          |                                 |                     |     |      | 0     | 0     | 0         | 0        | 0       | 0         |
| TOTAL INCL ADD ENERGY SAVINGS OPPORTUNITY SURVY         |                                 |                     |     |      | 30    | 993   | 4         | 6,886    | 344     | 8,227     |

\*\*\* END OF DETAIL REPORT \*\*\*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6306E5  
 4-332

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6306

TIME 14:29:3

PROJECT NOTES

SUMMARY PAGE

---

PROJECT NOTES

ECO-5: INTERIOR LIGHTING

SCOPE OF WORK: EVALUATE USE OF HIGHER EFFICIENCY INTERIOR LIGHTING IN  
SELECTED FACILITIES AT FT CAMPBELL.

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6306E5  
4-333

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
 ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
 ECO-5: BUILDING 6306

TIME 14:29:38

BID ITEM AND FACILITY SUMMARY

SUMMARY PAGE 2

BID ITEM 1 BUILDING TO THE 5 FOOT LINE

BASE BID

| ID             | FACILITY   | COST TO PRM | OVERHEAD | HOME OFC     | PROFIT    | BOND        | OTHER FCTR  | TOTAL COST | UNIT COST     |
|----------------|------------|-------------|----------|--------------|-----------|-------------|-------------|------------|---------------|
| AA             | ELECTRICAL | 1.00 EA     | 8,227    | 10.0%<br>823 | 0.0%<br>0 | 7.5%<br>679 | 2.5%<br>243 | 0.0%<br>0  | 9,972 9971.77 |
| BID ITEM TOTAL | 1.00 EA    | 8,227       | 823      | 0            | 679       | 243         | 0           | 9,972      | 9971.77       |
| TOTAL BASE BID |            | 8,227       | 823      | 0            | 679       | 243         | 0           | 9,972      |               |
| TOTAL ADDITIVE |            | 0           | 0        | 0            | 0         | 0           | 0           | 0          |               |
| TOTAL INCL ADD |            | 8,227       | 823      | 0            | 679       | 243         | 0           | 9,972      |               |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6306

TIME 14:29:38

PROJECT CWE SUMMARY

SUMMARY PAGE

| ID | BID ITEM                                                   | QUANTITY UOM | BASE BID | ADDITIVE | TOTAL COST | UNIT COST |
|----|------------------------------------------------------------|--------------|----------|----------|------------|-----------|
| 1. | BUILDING TO THE 5 FOOT LINE                                | 1.00 EA      | 9,972    |          | 9,972      | 9971.80   |
|    | TOTAL CURRENT CONTRACT COST                                |              | 9,972    | 0        | 9,972      |           |
|    | Cost Growth from 08/93 to 08/94<br>Index Values: 0000 0000 | 0.0%         | 0        | 0        | 0          |           |
|    | ESCALATED CONTRACT COST                                    |              | 9,972    | 0        | 9,972      |           |
|    | Government-Furnished Property                              |              | 0        |          | 0          |           |
|    | SUBTOTAL                                                   |              | 9,972    | 0        | 9,972      |           |
|    | Contingencies                                              | 10.0%        | 997      | 0        | 997        |           |
|    | SUBTOTAL                                                   |              | 10,969   | 0        | 10,969     |           |
|    | SIOH (S&A)                                                 | 5.0%         | 548      | 0        | 548        |           |
|    | CURRENT WORKING ESTIMATE                                   |              | 11,517   | 0        | 11,517     |           |
|    | Estimated Construction Time                                | 365 Days     |          |          |            |           |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6306

TIME 14:29:38

CONTRACTOR DIRECT SUMMARY

SUMMARY PAGE 4

| ID | CONTRACTOR    | PM | QUANTITY | UOM | MANHRS | LABOR | EQUIPMENT | MAT   | W/TX | AMOUNT | PCT    | W/OH&P | SUBTOTAL |
|----|---------------|----|----------|-----|--------|-------|-----------|-------|------|--------|--------|--------|----------|
| AA | GENERAL/PRIME |    | 1.00     | EA  | 30     | 993   | 4         | 7,230 |      | 8,227  | 100.0% | 0      | 8,227    |
|    | TOTAL DIRECT  |    |          |     | 30     | 993   | 4         | 7,230 |      | 8,227  | 100.0% |        |          |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6306E5

4-336

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6306

TIME 14:29:3

CONTRACTOR INDIRECT SUMMARY

SUMMARY PAGE

| ID | CONTRACTOR              | PM | SUBTOTAL | *** OVERHEAD ***<br>AMOUNT | PCT   | HOF% | **** PROFIT ****<br>AMOUNT | PCT  | BOND% | OTHER% | ***** TOTAL CONTRACT *****<br>AMOUNT | PCT    | UNIT COS |
|----|-------------------------|----|----------|----------------------------|-------|------|----------------------------|------|-------|--------|--------------------------------------|--------|----------|
| AA | GENERAL/PRIME           |    | 8,227    | 823                        | 10.0% | 0.0  | 679                        | 7.5% | 2.5%  | 0.0%   | 9,972                                | 100.0% | 9971.7   |
|    | TOTAL OVERHEAD & PROFIT |    |          | 823                        | 10.0% |      | 679                        | 7.5% |       |        |                                      |        |          |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS N-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6306

TIME 14:29:38

SI DIVISION SUMMARY

SUMMARY PAGE 6

| ID CSI DIVISION | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|-----------------|----------|-------|-----------|----------|-----------|-------------------------|
| 16 ELECTRICAL   | 30       | 993   | 4         | 6,886    | 344       | 8,227                   |
| TOTAL DIRECT    | 30       | 993   | 4         | 6,886    | 344       | 8,227                   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6306E5  
4-338



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6306

TIME 14:29:38

SYSTEMS SUMMARY

SUMMARY PAGE

| ID SYSTEM              | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|------------------------|----------|-------|-----------|----------|-----------|-------------------------|
| 11 INTERIOR ELECTRICAL | 30       | 993   | 4         | 6,886    | 344       | 8,227                   |
| TOTAL DIRECT           | 30       | 993   | 4         | 6,886    | 344       | 8,227                   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6306E5  
4-339

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6306

TIME 14:29:38

EQUIPMENT SUMMARY

SUMMARY PAGE 8

| EQUIP DESCRIPTION             | LIFE HRS | TL HRLY | OWNRSH | OWNS | OVTH | OWNRSH | EXPENSE | HRLY RATE | UPB RATE | HOURS | TOTAL COST |
|-------------------------------|----------|---------|--------|------|------|--------|---------|-----------|----------|-------|------------|
| EMI20 SMALL TOOLS             |          |         |        |      |      |        |         | 1.40      | 1.40     | 3     | 4          |
| TOTAL PROJECT EQUIPMENT HOURS |          |         |        |      |      |        |         |           |          | 3     | 4          |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6306

TIME 14:29:3

BOR SUMMARY

SUMMARY PAGE

| CRAFT DESCRIPTION      | BASE  | OVERTM | TXS/INS | FRNG | TRVL | HRLY<br>RATE | UPB<br>RATE | ****<br>HOURS | TOTAL<br>COST |
|------------------------|-------|--------|---------|------|------|--------------|-------------|---------------|---------------|
| LELEC ELECTRICIANS     | 20.50 | 0.0%   | 24.0%   | 7.49 | 0.00 | 32.91        | 25.79       | 30            | 993           |
| TOTAL PROJECT MANHOURS |       |        |         |      |      |              |             | 30            | 993           |

\* \* \* END OF SUMMARY REPORT \* \* \*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6306E5

4-341

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

31 AUGUST 1993

PAGE 1 OF 1

## BUILDING WIDE FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6308

BUILDING USE:

HOURS/DAY 12

DAYS/WEEK 5

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

### EXISTING FIXTURE DATA

#### 4 FOOT

2 1 LAMP @ 48 W/FIXT = 96 WATTS  
 0 1 LAMP @ 37.8 W/FIXT = 0 WATTS  
 2 4 2 LAMP @ 96 W/FIXT = 2304 WATTS  
 0 2 LAMP @ 75.6 W/FIXT = 0 WATTS  
 0 3 LAMP @ 144 W/FIXT = 0 WATTS  
 0 3 LAMP @ 113.4 W/FIXT = 0 WATTS  
 3 2 4 LAMP @ 192 W/FIXT = 6144 WATTS  
 0 4 LAMP @ 151.2 W/FIXT = 0 WATTS

#### 2 FOOT

0 1 LAMP @ 31 W/FIXT = 0 WATTS  
 0 4 LAMP @ 88 W/FIXT = 0 WATTS  
 0 2 LAMP U @ 96 W/FIXT = 0 WATTS  
 0 2 LAMP U @ 75.6 W/FIXT = 0 WATTS

#### 8 FOOT

0 2 LAMP @ 180 W/FIXT = 0 WATTS  
 0 2 LAMP @ 168 W/FIXT = 0 WATTS

TOTAL EXISTING KW 8.5

### REPLACEMENT FIXTURE DATA

#### 4 FOOT

2 1 LAMP @ 37 W/FIXT = 74 WATTS  
 2 4 1 LAMP W/ REFLECTORS 37 W/FIXT = 888 WATTS  
 0 2 LAMP W/ REFLECTORS 58 W/FIXT = 0 WATTS  
 3 2 2 LAMP W/ REFLECTORS 58 W/FIXT = 1856 WATTS

#### 2 FOOT

0 1 LAMP @ 24 W/FIXT = 0 WATTS  
 0 2 LAMP W/ REFLECTORS 41 W/FIXT = 0 WATTS  
 0 2 LAMP U @ 58 W/FIXT = 0 WATTS

#### 8 FOOT

0 1 LAMP W/ REFLECTORS 58 W/FIXT = 0 WATTS

TOTAL REPLACEMENT KW 2.8

NET ENERGY SAVINGS 61.0 MBTU/YR

NET DOLLAR SAVINGS \$1,187.10

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES

TIME 14:36:23

TITLE PAGE

---

ENERGY SAVINGS OPPORTUNITY SURVY  
FT CAMPBELL, KY  
ECO-5: BUILDING 6308

Contract No: 27-93-C-0096

Prepared By: Systems Corp  
Estimator: Keith A. Derrington  
Estimate Prep. Date: 08/31/93  
Current UPB/CSI ID: ORL290

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Mon 30 Aug 1993

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ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6308

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| DETAILED ESTIMATE              | DETAIL PAGE |
|--------------------------------|-------------|
| 1. BUILDING TO THE 5 FOOT LINE |             |
| AA. ELECTRICAL.....            | 1           |

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Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
 ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
 ECO-5: BUILDING 6308  
 1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 14:36:23

DETAILED ESTIMATE

DETAIL PAGE 1

BASE BID

| DIVISION 16 ELECTRICAL                                  |                                           | QUANTITY | UOM             | CREW | MANHR | LABOR | EQUIPMENT | MATERIAL | SALESTY | DIRECT \$ |
|---------------------------------------------------------|-------------------------------------------|----------|-----------------|------|-------|-------|-----------|----------|---------|-----------|
| 16500 LIGHTING                                          |                                           |          |                 |      |       |       |           |          |         |           |
| 16512 7000 FLUORESCENT - RECESSED T8 ELECTRONIC BALLAST |                                           |          |                 |      |       |       |           |          |         |           |
| CD=3 EL 7001                                            | 4 FT 1 LAMP PARABOLIC LOUVRE              | ***      | UNIT COSTS: *** | 0.57 | 18.86 | 0.07  | 105.25    | 5.26     | 129.45  |           |
| WC=1100                                                 |                                           | 2.00     | EA EELEB        | 1    | 38    | 0     | 211       | 11       | 259     |           |
| CD=3 EL 7002                                            | 4 FT 1 LAMP PARABOLIC LOUVRE W/ REFLECTOR | ***      | UNIT COSTS: *** | 0.54 | 17.84 | 0.07  | 122.00    | 6.10     | 146.01  |           |
| WC=1100                                                 |                                           | 24.00    | EA EELEB        | 13   | 428   | 2     | 2,928     | 146      | 3,504   |           |
| CD=3 EL 7003                                            | 4 FT 2 LAMP PARABOLIC LOUVRE W/ REFLECTOR | ***      | UNIT COSTS: *** | 0.59 | 19.42 | 0.08  | 136.00    | 6.80     | 162.29  |           |
| WC=1100                                                 |                                           | 32.00    | EA EELEB        | 19   | 621   | 2     | 4,352     | 218      | 5,193   |           |
| TOTAL DIVISION 16 ELECTRICAL                            |                                           | 33       |                 |      | 1,087 | 4     | 7,491     | 375      | 8,957   |           |
| TOTAL FACILITY AA. ELECTRICAL                           |                                           | 33       |                 |      | 1,087 | 4     | 7,491     | 375      | 8,957   |           |
| TOTAL BID ITEM 1. BUILDING TO THE 5 FOOT LINE           |                                           | 33       |                 |      | 1,087 | 4     | 7,491     | 375      | 8,957   |           |
| TOTAL BASE BID                                          |                                           | 33       |                 |      | 1,087 | 4     | 7,491     | 375      | 8,957   |           |
| TOTAL ADDITIVE                                          |                                           | 0        |                 |      | 0     | 0     | 0         | 0        | 0       |           |
| TOTAL INCL ADD ENERGY SAVINGS OPPORTUNITY SURVY         |                                           | 33       |                 |      | 1,087 | 4     | 7,491     | 375      | 8,957   |           |

\*\*\* END OF DETAIL REPORT \*\*\*

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6308

TIME 14:36:23

PROJECT NOTES

SUMMARY PAGE 1

---

PROJECT NOTES

ECO-5: INTERIOR LIGHTING

SCOPE OF WORK: EVALUATE USE OF HIGHER EFFICIENCY INTERIOR LIGHTING IN  
SELECTED FACILITIES AT FT CAMPBELL.



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6308

TIME 14:36:23

BID ITEM AND FACILITY SUMMARY

SUMMARY PAGE 2

BID ITEM 1 BUILDING TO THE 5 FOOT LINE

BASE BID

| ID             | FACILITY   | COST TO PRM | OVERHEAD | HOME OFC | PROFIT | BOND | OTHER PCTR | TOTAL COST | UNIT COST |
|----------------|------------|-------------|----------|----------|--------|------|------------|------------|-----------|
| AA             | ELECTRICAL |             | 10.0%    | 0.0%     | 7.5%   | 2.5% | 0.0%       |            |           |
|                | 1.00 EA    | 8,957       | 896      | 0        | 739    | 265  | 0          | 10,856     | 10855.96  |
| BID ITEM TOTAL | 1.00 EA    | 8,957       | 896      | 0        | 739    | 265  | 0          | 10,856     | 10855.96  |
| TOTAL BASE BID |            | 8,957       | 896      | 0        | 739    | 265  | 0          | 10,856     |           |
| TOTAL ADDITIVE |            | 0           | 0        | 0        | 0      | 0    | 0          | 0          |           |
| TOTAL INCL ADD |            | 8,957       | 896      | 0        | 739    | 265  | 0          | 10,856     |           |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6308

TIME 14:36:23

PROJECT CWE SUMMARY

SUMMARY PAGE 3

| ID | BID ITEM                                                   | QUANTITY | UOM | BASE BID | ADDITIVE | TOTAL COST | UNIT COST |
|----|------------------------------------------------------------|----------|-----|----------|----------|------------|-----------|
| 1. | BUILDING TO THE 5 FOOT LINE                                | 1.00     | EA  | 10,856   |          | 10,856     | 10856.00  |
|    | TOTAL CURRENT CONTRACT COST                                |          |     | 10,856   | 0        | 10,856     |           |
|    | Cost Growth from 08/93 to 08/94<br>Index Values: 0000 0000 | 0.0%     |     | 0        | 0        | 0          |           |
|    | ESCALATED CONTRACT COST                                    |          |     | 10,856   | 0        | 10,856     |           |
|    | Government-Furnished Property                              |          |     | 0        |          | 0          |           |
|    | SUBTOTAL                                                   |          |     | 10,856   | 0        | 10,856     |           |
|    | Contingencies                                              | 10.0%    |     | 1,086    | 0        | 1,086      |           |
|    | SUBTOTAL                                                   |          |     | 11,942   | 0        | 11,942     |           |
|    | SIOH (S&A)                                                 | 5.0%     |     | 597      | 0        | 597        |           |
|    | CURRENT WORKING ESTIMATE                                   |          |     | 12,539   | 0        | 12,539     |           |

Estimated Construction Time

365 Days

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6308

TIME 14:36:23

CONTRACTOR DIRECT SUMMARY

SUMMARY PAGE 4

| ID | CONTRACTOR    | PM | QUANTITY | UOM | MANHRS | LABOR | EQUIPMENT | MAT W/TX | AMOUNT | PCT    | W/OH&P | SUBTOTAL |
|----|---------------|----|----------|-----|--------|-------|-----------|----------|--------|--------|--------|----------|
| AA | GENERAL/PRIME |    | 1.00     | EA  | 33     | 1,087 | 4         | 7,865    | 8,957  | 100.0% | 0      | 8,957    |
|    | TOTAL DIRECT  |    |          |     | 33     | 1,087 | 4         | 7,865    | 8,957  | 100.0% |        |          |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6308

TIME 14:36:23

CONTRACTOR INDIRECT SUMMARY

SUMMARY PAGE 5

| ----- |               | *** OVERHEAD *** | -----                   |        | **** PROFIT **** | ----- |        | ***** TOTAL CONTRACT ***** |       |        |        |        |           |
|-------|---------------|------------------|-------------------------|--------|------------------|-------|--------|----------------------------|-------|--------|--------|--------|-----------|
| ID    | CONTRACTOR    | PH               | SUBTOTAL                | AMOUNT | PCT              | HOFC% | AMOUNT | PCT                        | BOND% | OTHER% | AMOUNT | PCT    | UNIT COST |
| AA    | GENERAL/PRIME |                  | 8,957                   | 896    | 10.0%            | 0.0   | 739    | 7.5%                       | 2.5%  | 0.0%   | 10,856 | 100.0% | 10855.96  |
|       |               |                  |                         | -----  |                  |       | -----  |                            |       |        |        |        |           |
|       |               |                  |                         | 896    | 10.0%            |       | 739    | 7.5%                       |       |        |        |        |           |
|       |               |                  | TOTAL OVERHEAD & PROFIT |        |                  |       |        |                            |       |        |        |        |           |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6308

TIME 14:36:23

CSI DIVISION SUMMARY

SUMMARY PAGE 6

| ID CSI DIVISION | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|-----------------|----------|-------|-----------|----------|-----------|-------------------------|
| 16 ELECTRICAL   | 33       | 1,087 | 4         | 7,491    | 375       | 8,957                   |
| TOTAL DIRECT    | 33       | 1,087 | 4         | 7,491    | 375       | 8,957                   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6308E5  
4-351

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6308

TIME 14:36:21

SYSTEMS SUMMARY

SUMMARY PAGE 1

| ID SYSTEM              | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|------------------------|----------|-------|-----------|----------|-----------|-------------------------|
| 11 INTERIOR ELECTRICAL | 33       | 1,087 | 4         | 7,491    | 375       | 8,957                   |
| TOTAL DIRECT           | 33       | 1,087 | 4         | 7,491    | 375       | 8,957                   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6308E5

4-352

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6308

TIME 14:36:2

EQUIPMENT SUMMARY

SUMMARY PAGE 8

| EQUIP DESCRIPTION             | LIFE HRS | TL HRLY | OWNRSHP | OWNS | OVTM | OWNRSHP | EXPENSE | HRLY RATE | UPB RATE | HOURS | TOTAL COST |
|-------------------------------|----------|---------|---------|------|------|---------|---------|-----------|----------|-------|------------|
| ENI20 SMALL TOOLS             |          |         |         |      |      |         |         | 1.40      | 1.40     | 3     |            |
| TOTAL PROJECT EQUIPMENT HOURS |          |         |         |      |      |         |         |           |          | 3     |            |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6308

TIME 14:36:23

LABOR SUMMARY

SUMMARY PAGE 9

| CRAFT DESCRIPTION      | BASE  | OVERTM | TXS/INS | FRNG | TRVL | HRLY<br>RATE | UPB<br>RATE | ****<br>HOURS | TOTAL<br>COST |
|------------------------|-------|--------|---------|------|------|--------------|-------------|---------------|---------------|
| LELEC ELECTRICIANS     | 20.50 | 0.0%   | 24.0%   | 7.49 | 0.00 | 32.91        | 25.79       | 33            | 1,088         |
| TOTAL PROJECT MANHOURS |       |        |         |      |      |              |             | 33            | 1,088         |

\* \* \* END OF SUMMARY REPORT \* \* \*



# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

PAGE 1 OF 3

31 AUGUST 1993

## BUILDING WIDE FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6390

BUILDING USE:

HOURS/DAY 12

DAYS/WEEK 5

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

### EXISTING FIXTURE DATA

4 FOOT

0.1 LAMP @ 48 W/FXT = 0 WATTS  
 0.1 LAMP @ 37.8 W/FXT = 0 WATTS  
 0.2 LAMP @ 96 W/FXT = 0 WATTS  
 180 2 LAMP @ 75.6 W/FXT = 13608 WATTS  
 0.3 LAMP @ 144 W/FXT = 0 WATTS  
 8.3 LAMP @ 113.4 W/FXT = 907.2 WATTS  
 0.4 LAMP @ 192 W/FXT = 0 WATTS  
 28.4 LAMP @ 151.2 W/FXT = 4233.6 WATTS

2 FOOT

0.1 LAMP @ 31 W/FXT = 0 WATTS  
 0.4 LAMP @ 88 W/FXT = 0 WATTS  
 0.2 LAMP U @ 96 W/FXT = 0 WATTS  
 0.2 LAMP U @ 75.6 W/FXT = 0 WATTS

8 FOOT

0.2 LAMP @ 180 W/FXT = 0 WATTS  
 0.2 LAMP @ 168 W/FXT = 0 WATTS

TOTAL EXISTING KW 18.7

### REPLACEMENT FIXTURE DATA

4 FOOT

0.1 LAMP @ 37 W/FXT = 0 WATTS  
 180 1 LAMP W/ REFLECTORS 37 W/FXT = 6660 WATTS  
 8.2 LAMP W/ REFLECTORS 58 W/FXT = 484 WATTS  
 28.2 LAMP W/ REFLECTORS 58 W/FXT = 1624 WATTS

2 FOOT

0.1 LAMP @ 24 W/FXT = 0 WATTS  
 0.2 LAMP W/ REFLECTORS 41 W/FXT = 0 WATTS  
 0.2 LAMP U @ 58 W/FXT = 0 WATTS

8 FOOT

0.1 LAMP W/ REFLECTORS 58 W/FXT = 0 WATTS

TOTAL REPLACEMENT KW 8.7

NET ENERGY SAVINGS 106.5 MBTU/YR

NET DOLLAR SAVINGS \$2,073.93

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

PAGE 2 OF 3

31 AUGUST 1993

## OVERLIT AREA FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6390  
AREA: OFFICE

AREA USE:  
HOURS/DAY 12  
DAYS/WEEK 5

ELECTRIC COSTS:  
ENERGY CHARGE \$0.0211 PER KWH  
DEMAND CHARGE \$11.78 PER KW

### EXISTING FIXTURE DATA

#### 4 FOOT

1 LAMP @ 48 W/FIXT = 0 WATTS  
1 LAMP @ 37.5 W/FIXT = 0 WATTS  
2 LAMP @ 96 W/FIXT = 0 WATTS  
4 LAMP @ 75.6 W/FIXT = 302.4 WATTS  
3 LAMP @ 144 W/FIXT = 0 WATTS  
3 LAMP @ 113.4 W/FIXT = 0 WATTS  
4 LAMP @ 192 W/FIXT = 0 WATTS  
4 LAMP @ 151.2 W/FIXT = 0 WATTS

#### 2 FOOT

1 LAMP @ 31 W/FIXT = 0 WATTS  
4 LAMP @ 88 W/FIXT = 0 WATTS  
2 LAMP U @ 96 W/FIXT = 0 WATTS  
2 LAMP U @ 75.6 W/FIXT = 0 WATTS

#### 8 FOOT

2 LAMP @ 180 W/FIXT = 0 WATTS  
2 LAMP @ 168 W/FIXT = 0 WATTS

TOTAL EXISTING KW 0.302

### REPLACEMENT FIXTURE DATA

#### 4 FOOT

0 1 LAMP @ 37 W/FIXT = 0 WATTS  
4 1 LAMP @ 37 W/FIXT = 148 WATTS  
0 2 LAMP @ 58 W/FIXT = 0 WATTS  
0 2 LAMP @ 58 W/FIXT = 0 WATTS

#### 2 FOOT

0 1 LAMP @ 24 W/FIXT = 0 WATTS  
0 2 LAMP @ 41 W/FIXT = 0 WATTS

0 2 LAMP U @ 58 W/FIXT = 0 WATTS

#### 8 FOOT

0 1 LAMP @ 58 W/FIXT = 0 WATTS

TOTAL REPLACEMENT KW 0.148

NET ENERGY SAVINGS 1.64 MBTU/YR

NET DOLLAR SAVINGS \$32.01

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

31 AUGUST 1993

PAGE 3 OF 3

EXIT SIGN REPLACEMENT - INCANDESCENT TO LED

BUILDING #: 6390

# EXIT SIGNS 8

CURRENT WATTAGE 40

REPLACEMENT WATTAGE 3

HOURS/YEAR 8760

ELECTRIC COSTS:  
ENERGY CHARGE \$0.0211 PER KWH  
DEMAND CHARGE \$11.78 PER KW

NET ENERGY SAVINGS

8.84 MBTU/YR

NET DOLLAR SAVINGS

\$96.66

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES

TIME 14:42:51

TITLE PAGE

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ENERGY SAVINGS OPPORTUNITY SURVY  
FT CAMPBELL, KY  
ECO-5: BUILDING 6390

Contract No: 27-93-C-0096

Prepared By: Systems Corp  
Estimator: Keith A. Derrington  
Estimate Prep. Date: 08/31/93  
Current UPB/CSI ID: ORL290

M - C A C E S E D I T I O N  
COMPOSER Plus Copyright (C) 1985, 1988  
by Building Systems Design, Inc.  
Release 4.20

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6390E5  
4-358

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6390

TIME 14:42:52

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|                                |   |
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| AA. ELECTRICAL.....            | 1 |

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Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
 ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
 ECO-5: BUILDING 6390  
 1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 14:42:51

DETAILED ESTIMATE

DETAIL PAGE 1

BASE BID

| DIVISION 16 ELECTRICAL                                  |                                           | QUANTITY            | UOM | CREW | MANHR | LABOR | EQUIPMENT | MATERIAL | SALESTX | DIRECT S |
|---------------------------------------------------------|-------------------------------------------|---------------------|-----|------|-------|-------|-----------|----------|---------|----------|
| 16500 LIGHTING                                          |                                           |                     |     |      |       |       |           |          |         |          |
| 16512 7000 FLUORESCENT - RECESSED T8 ELECTRONIC BALLAST |                                           |                     |     |      |       |       |           |          |         |          |
| CD=3 EL 7001                                            | 4 FT 1 LAMP PARABOLIC LOUVRE              | *** UNIT COSTS: *** |     |      | 0.57  | 18.86 | 0.07      | 105.25   | 5.26    | 129.41   |
| WC=1100                                                 |                                           | 4.00 EA EELEB       |     | 2    |       | 75    | 0         | 421      | 21      | 518      |
| CD=3 EL 7002                                            | 4 FT 1 LAMP PARABOLIC LOUVRE W/ REFLECTOR | *** UNIT COSTS: *** |     |      | 0.54  | 17.84 | 0.07      | 122.00   | 6.10    | 146.01   |
| WC=1100                                                 |                                           | 176.00 EA EELEB     |     | 95   |       | 3,140 | 12        | 21,472   | 1,074   | 25,698   |
| CD=3 EL 7003                                            | 4 FT 2 LAMP PARABOLIC LOUVRE W/ REFLECTOR | *** UNIT COSTS: *** |     |      | 0.59  | 19.42 | 0.08      | 136.00   | 6.80    | 162.28   |
| WC=1100                                                 |                                           | 36.00 EA EELEB      |     | 21   |       | 699   | 3         | 4,896    | 245     | 5,843    |
| 16530 1100 SURFACE OR PENDANT MOUNTED                   |                                           |                     |     |      |       |       |           |          |         |          |
| CD=3 EL 1118                                            | LED EXIT SIGN W/ BATTERY                  | *** UNIT COSTS: *** |     |      | 1.25  | 41.26 | 0.00      | 121.45   | 6.07    | 168.79   |
| WC=1100                                                 |                                           | 8.00 EA EELEA       |     | 10   |       | 330   | 0         | 972      | 49      | 1,350    |
| TOTAL DIVISION 16 ELECTRICAL                            |                                           |                     |     |      | 129   | 4,245 | 15        | 27,761   | 1,388   | 33,409   |
| TOTAL FACILITY AA. ELECTRICAL                           |                                           |                     |     |      | 129   | 4,245 | 15        | 27,761   | 1,388   | 33,409   |
| TOTAL BID ITEM 1. BUILDING TO THE 5 FOOT LINE           |                                           |                     |     |      | 129   | 4,245 | 15        | 27,761   | 1,388   | 33,409   |
| TOTAL BASE BID                                          |                                           |                     |     |      | 129   | 4,245 | 15        | 27,761   | 1,388   | 33,409   |
| TOTAL ADDITIVE                                          |                                           |                     |     |      | 0     | 0     | 0         | 0        | 0       | 0        |
| TOTAL INCL ADD ENERGY SAVINGS OPPORTUNITY SURVY         |                                           |                     |     |      | 129   | 4,245 | 15        | 27,761   | 1,388   | 33,409   |

\*\*\* END OF DETAIL REPORT \*\*\*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6390E5  
 4-360

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6390

TIME 14:42:52

PROJECT NOTES

SUMMARY PAGE 1

---

PROJECT NOTES

ECO-5: INTERIOR LIGHTING

SCOPE OF WORK: EVALUATE USE OF HIGHER EFFICIENCY INTERIOR LIGHTING IN  
SELECTED FACILITIES AT FT CAMPBELL.

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6390

TIME 14:42:5

BID ITEM AND FACILITY SUMMARY

SUMMARY PAGE

BID ITEM 1 BUILDING TO THE 5 FOOT LINE

BASE BID

| ID             | FACILITY   |         | COST TO PRM | OVERHEAD | HOME OFC | PROFIT | BOND | OTHER FCTR | TOTAL COST | UNIT COS |
|----------------|------------|---------|-------------|----------|----------|--------|------|------------|------------|----------|
| AA             | ELECTRICAL |         |             | 10.0%    | 0.0%     | 7.5%   | 2.5% | 0.0%       |            |          |
|                |            | 1.00 EA | 33,409      | 3,341    | 0        | 2,756  | 988  | 0          | 40,494     | 40493.72 |
| BID ITEM TOTAL |            | 1.00 EA | 33,409      | 3,341    | 0        | 2,756  | 988  | 0          | 40,494     | 40493.72 |
| TOTAL BASE BID |            |         | 33,409      | 3,341    | 0        | 2,756  | 988  | 0          | 40,494     |          |
| TOTAL ADDITIVE |            |         | 0           | 0        | 0        | 0      | 0    | 0          | 0          |          |
| TOTAL INCL ADD |            |         | 33,409      | 3,341    | 0        | 2,756  | 988  | 0          | 40,494     |          |



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6390

TIME 14:42:51

PROJECT CWE SUMMARY

SUMMARY PAGE 1

| ID | BID ITEM                                                   | QUANTITY | UOM  | BASE BID | ADDITIVE | TOTAL COST | UNIT COST |
|----|------------------------------------------------------------|----------|------|----------|----------|------------|-----------|
| 1. | BUILDING TO THE 5 FOOT LINE                                | 1.00     | EA   | 40,494   |          | 40,494     | 40493.70  |
|    | TOTAL CURRENT CONTRACT COST                                |          |      | 40,494   | 0        | 40,494     |           |
|    | Cost Growth from 08/93 to 08/94<br>Index Values: 0000 0000 | 0.0%     |      | 0        | 0        | 0          |           |
|    | ESCALATED CONTRACT COST                                    |          |      | 40,494   | 0        | 40,494     |           |
|    | Government-Furnished Property                              |          |      | 0        |          | 0          |           |
|    | SUBTOTAL                                                   |          |      | 40,494   | 0        | 40,494     |           |
|    | Contingencies                                              | 10.0%    |      | 4,049    | 0        | 4,049      |           |
|    | SUBTOTAL                                                   |          |      | 44,543   | 0        | 44,543     |           |
|    | SIOH (S&A)                                                 | 5.0%     |      | 2,227    | 0        | 2,227      |           |
|    | CURRENT WORKING ESTIMATE                                   |          |      | 46,770   | 0        | 46,770     |           |
|    | Estimated Construction Time                                | 365      | Days |          |          |            |           |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6390E5

4-363

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6390

TIME 14:42:52

CONTRACTOR DIRECT SUMMARY

SUMMARY PAGE 4

| ID | CONTRACTOR    | PH | QUANTITY | UOM | MANHRS | LABOR | EQUIPMENT | MAT W/TX | ** TOTAL DIRECT *<br>AMOUNT PCT | * SUBCON *<br>W/OH&P | SUBTOTAL |
|----|---------------|----|----------|-----|--------|-------|-----------|----------|---------------------------------|----------------------|----------|
| AA | GENERAL/PRIME |    | 1.00     | EA  | 129    | 4,245 | 15        | 29,149   | 33,409 100.0%                   | 0                    | 33,409   |
|    | TOTAL DIRECT  |    |          |     | 129    | 4,245 | 15        | 29,149   | 33,409 100.0%                   |                      |          |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6390E5

4-364

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6390

TIME 14:42:5.

CONTRACTOR INDIRECT SUMMARY

SUMMARY PAGE

| ID | CONTRACTOR              | PH | SUBTOTAL | *** OVERHEAD ***<br>AMOUNT | PCT   | HOFC% | **** PROFIT ****<br>AMOUNT | PCT  | BOND% | OTHER% | ***** TOTAL CONTRACT *****<br>AMOUNT | PCT    | UNIT    | COS' |
|----|-------------------------|----|----------|----------------------------|-------|-------|----------------------------|------|-------|--------|--------------------------------------|--------|---------|------|
| AA | GENERAL/PRIME           |    | 33,409   | 3,341                      | 10.0% | 0.0   | 2,756                      | 7.5% | 2.5%  | 0.0%   | 40,494                               | 100.0% | 40493.7 |      |
|    | TOTAL OVERHEAD & PROFIT |    |          | 3,341                      | 10.0% |       | 2,756                      | 7.5% |       |        |                                      |        |         |      |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6390

TIME 14:42:52

CSI DIVISION SUMMARY

SUMMARY PAGE 6

| ID CSI DIVISION | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|-----------------|----------|-------|-----------|----------|-----------|-------------------------|
| 16 ELECTRICAL   | 129      | 4,245 | 15        | 27,761   | 1,388     | 33,409                  |
| TOTAL DIRECT    | 129      | 4,245 | 15        | 27,761   | 1,388     | 33,409                  |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6390E5  
4-366

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6390

TIME 14:42:5.

SYSTEMS SUMMARY

SUMMARY PAGE

| ID SYSTEM              | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|------------------------|----------|-------|-----------|----------|-----------|-------------------------|
| 11 INTERIOR ELECTRICAL | 129      | 4,245 | 15        | 27,761   | 1,388     | 33,409                  |
| TOTAL DIRECT           | 129      | 4,245 | 15        | 27,761   | 1,388     | 33,409                  |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6390

TIME 14:42:51

EQUIPMENT SUMMARY

SUMMARY PAGE 8

| ----- *** BOOK VALUE *** ADJ FACTOR ADJUSTD BOOK OP -- HRLY --- UPB **** TOTAL **** |          |         |        |      |      |        |         |      |      |       |       |
|-------------------------------------------------------------------------------------|----------|---------|--------|------|------|--------|---------|------|------|-------|-------|
| EQUIP DESCRIPTION                                                                   | LIFE HRS | TL HRLY | OWNRSH | OWNS | OVTM | OWNRSH | EXPENSE | RATE | RATE | HOURS | COST  |
| -----                                                                               |          |         |        |      |      |        |         |      |      |       |       |
| EMI20 SMALL TOOLS                                                                   |          |         |        |      |      |        |         | 1.40 | 1.40 | 11    | 15    |
|                                                                                     |          |         |        |      |      |        |         |      |      | ----- | ----- |
| TOTAL PROJECT EQUIPMENT HOURS                                                       |          |         |        |      |      |        |         |      |      | 11    | 15    |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6390

TIME 14:42:51

LABOR SUMMARY

SUMMARY PAGE 9

| CRAFT DESCRIPTION      | BASE  | OVERTM | TXS/INS | FRNG | TRVL | HRLY<br>RATE | UPB<br>RATE | ****<br>HOURS | TOTAL<br>COST |
|------------------------|-------|--------|---------|------|------|--------------|-------------|---------------|---------------|
| LELEC ELECTRICIANS     | 20.50 | 0.0%   | 24.0%   | 7.49 | 0.00 | 32.91        | 25.79       | 129           | 4,244         |
| TOTAL PROJECT MANHOURS |       |        |         |      |      |              |             | 129           | 4,244         |

\* \* \* END OF SUMMARY REPORT \* \* \*

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

PAGE 1 OF 2

31 AUGUST 1993

## BUILDING WIDE FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6708

BUILDING USE:

HOURS/DAY 14

DAYS/WEEK 5

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.76 PER KW

### EXISTING FIXTURE DATA

4 FOOT

0 1 LAMP @ 48 W/FXT = 0 WATTS  
 0 1 LAMP @ 37.8 W/FXT = 0 WATTS  
 0 2 LAMP @ 96 W/FXT = 0 WATTS  
 0 2 LAMP @ 75.6 W/FXT = 0 WATTS  
 0 3 LAMP @ 144 W/FXT = 0 WATTS  
 0 3 LAMP @ 113.4 W/FXT = 0 WATTS  
 0 4 LAMP @ 192 W/FXT = 0 WATTS  
 28 4 LAMP @ 151.2 W/FXT = 4233.6 WATTS

2 FOOT

0 1 LAMP @ 31 W/FXT = 0 WATTS  
 0 4 LAMP @ 88 W/FXT = 0 WATTS  
 0 2 LAMP U @ 96 W/FXT = 0 WATTS  
 0 2 LAMP U @ 75.6 W/FXT = 0 WATTS

8 FOOT

0 2 LAMP @ 180 W/FXT = 0 WATTS  
 0 2 LAMP @ 168 W/FXT = 0 WATTS

TOTAL EXISTING KW 4.2

### REPLACEMENT FIXTURE DATA

4 FOOT

0 1 LAMP @ 37 W/FXT = 0 WATTS  
 0 1 LAMP W/ REFLECTORS 37 W/FXT = 0 WATTS  
 0 2 LAMP W/ REFLECTORS 58 W/FXT = 0 WATTS  
 28 2 LAMP W/ REFLECTORS 58 W/FXT = 1624 WATTS

2 FOOT

0 1 LAMP @ 24 W/FXT = 0 WATTS  
 0 2 LAMP W/ REFLECTORS 41 W/FXT = 0 WATTS  
 0 2 LAMP U @ 58 W/FXT = 0 WATTS

8 FOOT

0 1 LAMP W/ REFLECTORS 58 W/FXT = 0 WATTS

TOTAL REPLACEMENT KW 1.6

NET ENERGY SAVINGS 32.4 MBTU/YR

NET DOLLAR SAVINGS \$569.70



# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

PAGE 2 OF 2

31 AUGUST 1993

## BUILDING WIDE INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6708

LAMP USE:

HOURS/DAY 3

DAYS/WEEK 5

PEAK USE 2 (1-YES, 2-NO)

### ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$0.00 PER KW

### EXISTING INCANDESCENTS

|                       |           |                      |          |
|-----------------------|-----------|----------------------|----------|
| 0 LAMPS @ 25 WATTS =  | 0 WATTS   | 0 LAMPS @ 7 WATTS =  | 0 WATTS  |
| 0 LAMPS @ 40 WATTS =  | 0 WATTS   | 0 LAMPS @ 9 WATTS =  | 0 WATTS  |
| 0 LAMPS @ 52 WATTS =  | 0 WATTS   | 0 LAMPS @ 13 WATTS = | 0 WATTS  |
| 0 LAMPS @ 60 WATTS =  | 0 WATTS   |                      |          |
| 0 LAMPS @ 75 WATTS =  | 0 WATTS   | 0 LAMPS @ 18 WATTS = | 0 WATTS  |
| 3 LAMPS @ 90 WATTS =  | 270 WATTS |                      |          |
| 0 LAMPS @ 100 WATTS = | 0 WATTS   | 3 LAMPS @ 26 WATTS = | 78 WATTS |

TOTAL EXISTING WATTS 270

TOTAL REPLACEMENT WATTS 78

NET ENERGY SAVINGS 0.51 MBTU/YR

NET DOLLAR SAVINGS \$3.17

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES

TIME 14:49:37

TITLE PAGE

---

ENERGY SAVINGS OPPORTUNITY SURVY  
FT CAMPBELL, KY  
ECO-5: BUILDING 6708

Contract No: 27-93-C-0096

Prepared By: Systems Corp  
Estimator: Keith A. Derrington  
Estimate Prep. Date: 08/31/93

Current UPB/CSI ID: ORL290

M - C A C E S E D I T I O N  
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Release 4.20

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6708

TIME 14:49:3

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Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
 ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
 ECO-5: BUILDING 6708  
 1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 14:49:3

DETAILED ESTIMATE

DETAIL PAGE

BASE BID

| DIVISION 16 ELECTRICAL                                  |                                                     | QUANTITY | UOM | CREW | MANHR | LABOR | EQUIPMENT | MATERIAL | SALESTX | DIRECT |
|---------------------------------------------------------|-----------------------------------------------------|----------|-----|------|-------|-------|-----------|----------|---------|--------|
| 16500 LIGHTING                                          |                                                     |          |     |      |       |       |           |          |         |        |
| 16512 6100 SMALL FL FIXTURES (LESS THAN 40 WATT LAMPS)  |                                                     |          |     |      |       |       |           |          |         |        |
| CD=3 EL 6107                                            | SURF SQ W/1 26W BIAxIAL FL LAMP *** UNIT COSTS: *** | 1.25     |     |      |       | 41.26 | 0.00      | 31.00    | 1.55    | 73.81  |
| WC=1100                                                 | WHITE ACRYLIC LENS 3.00 EA EELEA                    | 4        |     |      |       | 124   | 0         | 93       | 5       | 22     |
| 16512 7000 FLUORESCENT - RECESSED T8 ELECTRONIC BALLAST |                                                     |          |     |      |       |       |           |          |         |        |
| CD=3 EL 7003                                            | 4 FT 2 LAMP PARABOLIC LOUVRE W/ *** UNIT COSTS: *** | 0.59     |     |      |       | 19.42 | 0.08      | 136.00   | 6.80    | 162.29 |
| WC=1100                                                 | REFLECTOR 28.00 EA EELEB                            | 16       |     |      |       | 544   | 2         | 3,808    | 190     | 4,544  |
| TOTAL DIVISION 16 ELECTRICAL                            |                                                     | 20       |     |      |       | 667   | 2         | 3,901    | 195     | 4,766  |
| TOTAL FACILITY AA. ELECTRICAL                           |                                                     | 20       |     |      |       | 667   | 2         | 3,901    | 195     | 4,766  |
| TOTAL BID ITEM 1. BUILDING TO THE 5 FOOT LINE           |                                                     | 20       |     |      |       | 667   | 2         | 3,901    | 195     | 4,766  |
| TOTAL BASE BID                                          |                                                     | 20       |     |      |       | 667   | 2         | 3,901    | 195     | 4,766  |
| TOTAL ADDITIVE                                          |                                                     | 0        |     |      |       | 0     | 0         | 0        | 0       | 0      |
| TOTAL INCL ADD ENERGY SAVINGS OPPORTUNITY SURVY         |                                                     | 20       |     |      |       | 667   | 2         | 3,901    | 195     | 4,766  |

\*\*\* END OF DETAIL REPORT \*\*\*

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6708

TIME 14:49:3

PROJECT NOTES

SUMMARY PAGE

---

PROJECT NOTES

ECO-5: INTERIOR LIGHTING

SCOPE OF WORK: EVALUATE USE OF HIGHER EFFICIENCY INTERIOR LIGHTING IN  
SELECTED FACILITIES AT FT CAMPBELL.

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6708

TIME 14:49:37

BID ITEM AND FACILITY SUMMARY

SUMMARY PAGE 1

BID ITEM 1 BUILDING TO THE 5 FOOT LINE

BASE BID

| ID             | FACILITY   |         | COST TO PRM | OVERHEAD | HOME OFC | PROFIT | BOND | OTHER FCTR | TOTAL COST | UNIT COST |
|----------------|------------|---------|-------------|----------|----------|--------|------|------------|------------|-----------|
| AA             | ELECTRICAL |         |             | 10.0%    | 0.0%     | 7.5%   | 2.5% | 0.0%       |            |           |
|                |            | 1.00 EA | 4,766       | 477      | 0        | 393    | 141  | 0          | 5,776      | 5776.28   |
| BID ITEM TOTAL |            | 1.00 EA | 4,766       | 477      | 0        | 393    | 141  | 0          | 5,776      | 5776.28   |
| TOTAL BASE BID |            |         | 4,766       | 477      | 0        | 393    | 141  | 0          | 5,776      |           |
| TOTAL ADDITIVE |            |         | 0           | 0        | 0        | 0      | 0    | 0          | 0          |           |
| TOTAL INCL ADD |            |         | 4,766       | 477      | 0        | 393    | 141  | 0          | 5,776      |           |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6708

TIME 14:49:37

PROJECT CWE SUMMARY

SUMMARY PAGE 3

| ID | BID ITEM                                                   | QUANTITY | UOM | BASE BID | ADDITIVE | TOTAL COST | UNIT COST |
|----|------------------------------------------------------------|----------|-----|----------|----------|------------|-----------|
| 1. | BUILDING TO THE 5 FOOT LINE                                | 1.00     | EA  | 5,776    |          | 5,776      | 5776.30   |
|    | TOTAL CURRENT CONTRACT COST                                |          |     | 5,776    | 0        | 5,776      |           |
|    | Cost Growth from 08/93 to 08/94<br>Index Values: 0000 0000 | 0.0%     |     | 0        | 0        | 0          |           |
|    | ESCALATED CONTRACT COST                                    |          |     | 5,776    | 0        | 5,776      |           |
|    | Government-Furnished Property                              |          |     | 0        |          | 0          |           |
|    | SUBTOTAL                                                   |          |     | 5,776    | 0        | 5,776      |           |
|    | Contingencies                                              | 10.0%    |     | 578      | 0        | 578        |           |
|    | SUBTOTAL                                                   |          |     | 6,354    | 0        | 6,354      |           |
|    | SIOH (S&A)                                                 | 5.0%     |     | 318      | 0        | 318        |           |
|    | CURRENT WORKING ESTIMATE                                   |          |     | 6,672    | 0        | 6,672      |           |

Estimated Construction Time 365 Days

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6708

TIME 14:49:37

CONTRACTOR DIRECT SUMMARY

SUMMARY PAGE 4

| ID | CONTRACTOR    | PH | QUANTITY | UOM | MANHRS | LABOR | EQUIPMENT | MAT   | W/TX | ** TOTAL DIRECT *<br>AMOUNT PCT | * SUBCON *<br>W/OH&P | SUBTOTAL |
|----|---------------|----|----------|-----|--------|-------|-----------|-------|------|---------------------------------|----------------------|----------|
| AA | GENERAL/PRIME |    | 1.00     | EA  | 20     | 667   | 2         | 4,096 |      | 4,766 100.0%                    | 0                    | 4,766    |
|    | TOTAL DIRECT  |    |          |     | 20     | 667   | 2         | 4,096 |      | 4,766 100.0%                    |                      |          |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6708E5  
4-378



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6708

TIME 14:49:37

CONTRACTOR INDIRECT SUMMARY

SUMMARY PAGE 5

| ID | CONTRACTOR              | PM | SUBTOTAL | *** OVERHEAD ***<br>AMOUNT | PCT   | HOFC% | **** PROFIT ****<br>AMOUNT | PCT  | BOND% | OTHER% | ***** TOTAL CONTRACT *****<br>AMOUNT | PCT    | UNIT COST |
|----|-------------------------|----|----------|----------------------------|-------|-------|----------------------------|------|-------|--------|--------------------------------------|--------|-----------|
| AA | GENERAL/PRIME           |    | 4,766    | 477                        | 10.0% | 0.0   | 393                        | 7.5% | 2.5%  | 0.0%   | 5,776                                | 100.0% | 5776.27   |
|    | TOTAL OVERHEAD & PROFIT |    |          | 477                        | 10.0% |       | 393                        | 7.5% |       |        |                                      |        |           |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6708

TIME 14:49:37

CSI DIVISION SUMMARY

SUMMARY PAGE 1

| ID CSI DIVISION | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|-----------------|----------|-------|-----------|----------|-----------|-------------------------|
| 16 ELECTRICAL   | 20       | 667   | 2         | 3,901    | 195       | 4,766                   |
| TOTAL DIRECT    | 20       | 667   | 2         | 3,901    | 195       | 4,766                   |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6708

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SYSTEMS SUMMARY

SUMMARY PAGE 7

| ID SYSTEM              | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|------------------------|----------|-------|-----------|----------|-----------|-------------------------|
| 11 INTERIOR ELECTRICAL | 20       | 667   | 2         | 3,901    | 195       | 4,766                   |
| TOTAL DIRECT           | 20       | 667   | 2         | 3,901    | 195       | 4,766                   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6708E5  
4-381

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6708

TIME 14:49:37

EQUIPMENT SUMMARY

SUMMARY PAGE 8

| EQUIP DESCRIPTION             | LIFE HRS | TL HRLY | OWNRSH | OWNS | OVTM | OWNRSH | EXPENSE | HRLY RATE | UPB RATE | HOURS | TOTAL COST |
|-------------------------------|----------|---------|--------|------|------|--------|---------|-----------|----------|-------|------------|
| ENI20 SMALL TOOLS             |          |         |        |      |      |        |         | 1.40      | 1.40     | 2     | 2          |
| TOTAL PROJECT EQUIPMENT HOURS |          |         |        |      |      |        |         |           |          | 2     | 2          |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6708

TIME 14:49:37

LABOR SUMMARY

SUMMARY PAGE 9

| CRAFT DESCRIPTION      | BASE  | OVERTM | TXS/INS | FRNG | TRVL | HRLY<br>RATE | UPB<br>RATE | ****<br>HOURS | TOTAL<br>COST |
|------------------------|-------|--------|---------|------|------|--------------|-------------|---------------|---------------|
| LELEC ELECTRICIANS     | 20.50 | 0.0%   | 24.0%   | 7.49 | 0.00 | 32.91        | 25.79       | 20            | 668           |
| TOTAL PROJECT MANHOURS |       |        |         |      |      |              |             | 20            | 668           |

\* \* \* END OF SUMMARY REPORT \* \* \*

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

PAGE 1 OF 1

31 AUGUST 1993

## BUILDING WIDE FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6713

BUILDING USE:

HOURS/DAY 9

DAYS/WEEK 5

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

### EXISTING FIXTURE DATA

#### 4 FOOT

|             |               |              |              |            |            |
|-------------|---------------|--------------|--------------|------------|------------|
| 0 1 LAMP @  | 48 W/FXT =    | 0 WATTS      | 0 1 LAMP @   | 37 W/FXT = | 0 WATTS    |
| 0 1 LAMP @  | 37.8 W/FXT =  | 0 WATTS      | 0 1 LAMP W/  | 37 W/FXT = | 0 WATTS    |
| 0 2 LAMP @  | 96 W/FXT =    | 0 WATTS      | REFLECTORS   |            |            |
| 0 2 LAMP @  | 75.6 W/FXT =  | 0 WATTS      | 0 2 LAMP W/  | 58 W/FXT = | 0 WATTS    |
| 0 3 LAMP @  | 144 W/FXT =   | 0 WATTS      | REFLECTORS   |            |            |
| 0 3 LAMP @  | 113.4 W/FXT = | 0 WATTS      | 37 2 LAMP W/ | 58 W/FXT = | 2146 WATTS |
| 0 4 LAMP @  | 192 W/FXT =   | 0 WATTS      | REFLECTORS   |            |            |
| 37 4 LAMP @ | 151.2 W/FXT = | 5594.4 WATTS |              |            |            |

#### 2 FOOT

|              |              |         |              |            |         |
|--------------|--------------|---------|--------------|------------|---------|
| 0 1 LAMP @   | 31 W/FXT =   | 0 WATTS | 0 1 LAMP @   | 24 W/FXT = | 0 WATTS |
| 0 4 LAMP @   | 88 W/FXT =   | 0 WATTS | 0 2 LAMP W/  | 41 W/FXT = | 0 WATTS |
|              |              |         | REFLECTORS   |            |         |
| 0 2 LAMP U @ | 96 W/FXT =   | 0 WATTS | 0 2 LAMP U @ | 58 W/FXT = | 0 WATTS |
| 0 2 LAMP U @ | 75.6 W/FXT = | 0 WATTS |              |            |         |

#### 8 FOOT

|            |             |         |             |            |         |
|------------|-------------|---------|-------------|------------|---------|
| 0 2 LAMP @ | 180 W/FXT = | 0 WATTS | 0 1 LAMP W/ | 58 W/FXT = | 0 WATTS |
| 0 2 LAMP @ | 166 W/FXT = | 0 WATTS | REFLECTORS  |            |         |

TOTAL EXISTING KW

5.6

TOTAL REPLACEMENT KW

2.1

NET ENERGY SAVINGS

27.5 MBTU/YR

NET DOLLAR SAVINGS

\$658.05

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES

TIME 14:56:11

TITLE PAGE

---

ENERGY SAVINGS OPPORTUNITY SURVY  
FT CAMPBELL, KY  
ECO-5: BUILDING 6713

Contract No: 27-93-C-0096

Prepared By: Systems Corp  
Estimator: Keith A. Derrington  
Estimate Prep. Date: 08/31/93  
Current UPB/CSI ID: ORL290

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Release 4.20

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6713E5

4-385

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6713

TIME 14:56:17

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| CONTRACTOR DIRECT SUMMARY.....     | 4            |
| CONTRACTOR INDIRECT SUMMARY.....   | 5            |
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| EQUIPMENT SUMMARY.....             | 8            |
| LABOR SUMMARY.....                 | 9            |

| DETAILED ESTIMATE              | DETAIL PAGE |
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| 1. BUILDING TO THE 5 FOOT LINE |             |
| AA. ELECTRICAL.....            | 1           |

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Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6713  
1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 14:56:17

DETAILED ESTIMATE

DETAIL PAGE 1

BASE BID

| DIVISION 16 ELECTRICAL                                         | QUANTITY | UOM             | CREW  | MANHR | LABOR | EQUIPMENT | MATERIAL | SALESTX | DIRECT \$ |
|----------------------------------------------------------------|----------|-----------------|-------|-------|-------|-----------|----------|---------|-----------|
| 16500 LIGHTING                                                 |          |                 |       |       |       |           |          |         |           |
| 16512 7000 FLDORESCENT - RECESSED T8 ELECTRONIC BALLAST        |          |                 |       |       |       |           |          |         |           |
| CD=3 EL 7003 4 FT 2 LAMP PARABOLIC LOUVRE W/ WC=1100 REFLECTOR | ***      | UNIT COSTS: *** |       | 0.59  | 19.42 | 0.08      | 136.00   | 6.80    | 162.29    |
|                                                                | 37.00    | EA              | EELEB | 22    | 718   | 3         | 5,032    | 252     | 6,005     |
| TOTAL DIVISION 16 ELECTRICAL                                   |          |                 |       | 22    | 718   | 3         | 5,032    | 252     | 6,005     |
| TOTAL FACILITY AA. ELECTRICAL                                  |          |                 |       | 22    | 718   | 3         | 5,032    | 252     | 6,005     |
| TOTAL BID ITEM 1. BUILDING TO THE 5 FOOT LINE                  |          |                 |       | 22    | 718   | 3         | 5,032    | 252     | 6,005     |
| TOTAL BASE BID                                                 |          |                 |       | 22    | 718   | 3         | 5,032    | 252     | 6,005     |
| TOTAL ADDITIVE                                                 |          |                 |       | 0     | 0     | 0         | 0        | 0       | 0         |
| TOTAL INCL ADD ENERGY SAVINGS OPPORTUNITY SURVY                |          |                 |       | 22    | 718   | 3         | 5,032    | 252     | 6,005     |

\* \* \* END OF DETAIL REPORT \* \* \*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6713E5  
4-387

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6713

TIME 14:56:17

PROJECT NOTES

SUMMARY PAGE 1

---

PROJECT NOTES

ECO-5: INTERIOR LIGHTING

SCOPE OF WORK: EVALUATE USE OF HIGHER EFFICIENCY INTERIOR LIGHTING IN  
SELECTED FACILITIES AT FT CAMPBELL.

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
 ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
 ECO-5: BUILDING 6713

TIME 14:56:17

BID ITEM AND FACILITY SUMMARY

SUMMARY PAGE 2

BID ITEM 1 BUILDING TO THE 5 FOOT LINE

BASE BID

| ID             | FACILITY   | COST TO PRM | OVERHEAD | HOME OFC     | PROFIT    | BOND        | OTHER FCTR  | TOTAL COST | UNIT COST     |
|----------------|------------|-------------|----------|--------------|-----------|-------------|-------------|------------|---------------|
| AA             | ELECTRICAL | 1.00 EA     | 6,005    | 10.0%<br>600 | 0.0%<br>0 | 7.5%<br>495 | 2.5%<br>178 | 0.0%<br>0  | 7,278 7278.27 |
| BID ITEM TOTAL | 1.00 EA    | 6,005       | 600      | 0            | 495       | 178         | 0           | 7,278      | 7278.27       |
| TOTAL BASE BID |            | 6,005       | 600      | 0            | 495       | 178         | 0           | 7,278      |               |
| TOTAL ADDITIVE |            | 0           | 0        | 0            | 0         | 0           | 0           | 0          |               |
| TOTAL INCL ADD |            | 6,005       | 600      | 0            | 495       | 178         | 0           | 7,278      |               |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS H-CACES  
ENERGY SAVINGS OPPORTUNITY SURVEY / FT CAMPBELL, KY  
ECO-5: BUILDING 6713

TIME 14:56:17

PROJECT CWE SUMMARY

SUMMARY PAGE 1

| ID                                                         | BID ITEM                    | QUANTITY | UOM | BASE BID | ADDITIVE | TOTAL COST | UNIT COST |
|------------------------------------------------------------|-----------------------------|----------|-----|----------|----------|------------|-----------|
| 1.                                                         | BUILDING TO THE 5 FOOT LINE | 1.00     | EA  | 7,278    |          | 7,278      | 7278.30   |
| TOTAL CURRENT CONTRACT COST                                |                             |          |     | 7,278    | 0        | 7,278      |           |
| Cost Growth from 08/93 to 08/94<br>Index Values: 0000 0000 |                             | 0.0%     |     | 0        | 0        | 0          |           |
| ESCALATED CONTRACT COST                                    |                             |          |     | 7,278    | 0        | 7,278      |           |
| Government-Furnished Property                              |                             |          |     | 0        |          | 0          |           |
| SUBTOTAL                                                   |                             |          |     | 7,278    | 0        | 7,278      |           |
| Contingencies                                              |                             | 10.0%    |     | 728      | 0        | 728        |           |
| SUBTOTAL                                                   |                             |          |     | 8,006    | 0        | 8,006      |           |
| SIOH (S&A)                                                 |                             | 5.0%     |     | 400      | 0        | 400        |           |
| CURRENT WORKING ESTIMATE                                   |                             |          |     | 8,406    | 0        | 8,406      |           |

Estimated Construction Time 365 Days

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6713E5  
4-390

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6713

TIME 14:56:17

CONTRACTOR DIRECT SUMMARY

SUMMARY PAGE 4

| ID | CONTRACTOR    | PM | QUANTITY | UOM | MANHRS | LABOR | EQUIPMENT | MAT   | W/TX | AMOUNT | PCT    | SUBCON<br>W/OH&P | SUBTOTAL |
|----|---------------|----|----------|-----|--------|-------|-----------|-------|------|--------|--------|------------------|----------|
| AA | GENERAL/PRIME |    | 1.00     | EA  | 22     | 718   | 3         | 5,284 |      | 6,005  | 100.0% | 0                | 6,005    |
|    | TOTAL DIRECT  |    |          |     | 22     | 718   | 3         | 5,284 |      | 6,005  | 100.0% |                  |          |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6713E5  
4-391

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6713

TIME 14:56:1

CONTRACTOR INDIRECT SUMMARY

SUMMARY PAGE

| ID | CONTRACTOR              | PM | SUBTOTAL | *** OVERHEAD *** | AMOUNT | PCT | HOPC% | **** PROFIT **** | AMOUNT | PCT  | BOND% | OTHER% | ***** TOTAL CONTRACT ***** | AMOUNT | PCT | UNIT   | COS |
|----|-------------------------|----|----------|------------------|--------|-----|-------|------------------|--------|------|-------|--------|----------------------------|--------|-----|--------|-----|
| AA | GENERAL/PRIME           |    | 6,005    | 600              | 10.0%  | 0.0 |       | 495              | 7.5%   | 2.5% | 0.0%  |        | 7,278                      | 100.0% |     | 7278.2 |     |
|    | TOTAL OVERHEAD & PROFIT |    |          | 600              | 10.0%  |     |       | 495              | 7.5%   |      |       |        |                            |        |     |        |     |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6713

TIME 14:56:17

CSI DIVISION SUMMARY

SUMMARY PAGE 6

| ID CSI DIVISION | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|-----------------|----------|-------|-----------|----------|-----------|-------------------------|
| 16 ELECTRICAL   | 22       | 718   | 3         | 5,032    | 252       | 6,005                   |
| TOTAL DIRECT    | 22       | 718   | 3         | 5,032    | 252       | 6,005                   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6713EE  
4-393

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6713

TIME 14:56:17

SYSTEMS SUMMARY

SUMMARY PAGE 7

| ID SYSTEM              | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|------------------------|----------|-------|-----------|----------|-----------|-------------------------|
| 11 INTERIOR ELECTRICAL | 22       | 718   | 3         | 5,032    | 252       | 6,005                   |
| TOTAL DIRECT           | 22       | 718   | 3         | 5,032    | 252       | 6,005                   |



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6713

TIME 14:56:17

EQUIPMENT SUMMARY

SUMMARY PAGE 8

| EQUIP DESCRIPTION             | LIFE HRS | TL HRLY | OWNRSH | OWNS | OVTM | OWNRSH | EXPENSE | HRLY RATE | UPB RATE | HOURS | TOTAL COST |
|-------------------------------|----------|---------|--------|------|------|--------|---------|-----------|----------|-------|------------|
| ENI20 SMALL TOOLS             |          |         |        |      |      |        |         | 1.40      | 1.40     | 2     | 3          |
| TOTAL PROJECT EQUIPMENT HOURS |          |         |        |      |      |        |         |           |          | 2     | 3          |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6713

TIME 14:56:17

LABOR SUMMARY

SUMMARY PAGE 9

| CRAFT DESCRIPTION      | BASE  | OVERTM | TXS/INS | FRNG | TRVL | HRLY<br>RATE | UPB<br>RATE | ****<br>HOURS | TOTAL<br>COST |
|------------------------|-------|--------|---------|------|------|--------------|-------------|---------------|---------------|
| LELEC ELECTRICIANS     | 20.50 | 0.0%   | 24.0%   | 7.49 | 0.00 | 32.91        | 25.79       | 22            | 719           |
| TOTAL PROJECT MANHOURS |       |        |         |      |      |              |             | 22            | 719           |

\*\*\* END OF SUMMARY REPORT \*\*\*

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

PAGE 1 OF 2

31 AUGUST 1993

## BUILDING WIDE FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6714

BUILDING USE:

HOURS/DAY 9

DAYS/WEEK 5

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

### EXISTING FIXTURE DATA

#### 4 FOOT

0.1 LAMP @ 48 W/FXT = 0 WATTS  
 0.1 LAMP @ 37.8 W/FXT = 0 WATTS  
 13.2 LAMP @ 96 W/FXT = 1248 WATTS  
 0.2 LAMP @ 75.6 W/FXT = 0 WATTS  
 0.3 LAMP @ 144 W/FXT = 0 WATTS  
 0.3 LAMP @ 113.4 W/FXT = 0 WATTS  
 14.4 LAMP @ 192 W/FXT = 2688 WATTS  
 0.4 LAMP @ 151.2 W/FXT = 0 WATTS

### REPLACEMENT FIXTURE DATA

#### 4 FOOT

0.1 LAMP @ 37 W/FXT = 0 WATTS  
 13.1 LAMP W/ REFLECTORS 37 W/FXT = 481 WATTS  
 0.2 LAMP W/ REFLECTORS 58 W/FXT = 0 WATTS  
 14.2 LAMP W/ REFLECTORS 58 W/FXT = 812 WATTS

#### 2 FOOT

0.1 LAMP @ 31 W/FXT = 0 WATTS  
 0.4 LAMP @ 88 W/FXT = 0 WATTS  
 0.2 LAMP U @ 96 W/FXT = 0 WATTS  
 0.2 LAMP U @ 75.6 W/FXT = 0 WATTS

#### 2 FOOT

0.1 LAMP @ 24 W/FXT = 0 WATTS  
 0.2 LAMP W/ REFLECTORS 41 W/FXT = 0 WATTS  
 0.2 LAMP U @ 58 W/FXT = 0 WATTS

#### 8 FOOT

0.2 LAMP @ 180 W/FXT = 0 WATTS  
 0.2 LAMP @ 168 W/FXT = 0 WATTS

#### 8 FOOT

0.1 LAMP W/ REFLECTORS 58 W/FXT = 0 WATTS

TOTAL EXISTING KW 3.9

TOTAL REPLACEMENT KW 1.3

NET ENERGY SAVINGS 21.1 MBTU/YR

NET DOLLAR SAVINGS \$504.56

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

31 AUGUST 1993

PAGE 2 OF 2

## BUILDING WIDE INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6714

LAMP USE:

HOURS/DAY 5

DAYS/WEEK 5

PEAK USE 2 (1-YES, 2-NO)

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$0.00 PER KW

### EXISTING INCANDESCENTS

|                             |             |            |
|-----------------------------|-------------|------------|
| 0 LAMPS @                   | 25 WATTS =  | 0 WATTS    |
| 0 LAMPS @                   | 40 WATTS =  | 0 WATTS    |
| 3 LAMPS @                   | 52 WATTS =  | 156 WATTS  |
| 0 LAMPS @                   | 60 WATTS =  | 0 WATTS    |
| 0 LAMPS @                   | 75 WATTS =  | 0 WATTS    |
| 0 LAMPS @                   | 90 WATTS =  | 0 WATTS    |
| 0 LAMPS @                   | 100 WATTS = | 0 WATTS    |
| <b>TOTAL EXISTING WATTS</b> |             | <b>156</b> |

### COMPACT FLUORESCENT REPLACEMENT

|                                |            |           |
|--------------------------------|------------|-----------|
| 0 LAMPS @                      | 7 WATTS =  | 0 WATTS   |
| 0 LAMPS @                      | 9 WATTS =  | 0 WATTS   |
| 3 LAMPS @                      | 13 WATTS = | 39 WATTS  |
| 0 LAMPS @                      | 18 WATTS = | 0 WATTS   |
| 0 LAMPS @                      | 26 WATTS = | 0 WATTS   |
| <b>TOTAL REPLACEMENT WATTS</b> |            | <b>39</b> |

NET ENERGY SAVINGS 0.51 MBTU/YR

NET DOLLAR SAVINGS \$3.22

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES

TIME 15:03:14

TITLE PAGE

---

ENERGY SAVINGS OPPORTUNITY SURVY  
PT CAMPBELL, KY  
ECO-5: BUILDING 6714

Contract No: 27-93-C-0096

Prepared By: Systems Corp  
Estimator: Keith A. Derrington  
Estimate Prep. Date: 08/31/93  
Current UPB/CSI ID: ORL290

M - C A C E S E D I T I O N  
COMPOSER Plus Copyright (C) 1985, 1988  
by Building Systems Design, Inc.  
Release 4.20

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6714E5  
4-399

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6714

TIME 15:03:14

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DETAILED ESTIMATE

DETAIL PAGE

|                                |   |
|--------------------------------|---|
| 1. BUILDING TO THE 5 FOOT LINE |   |
| AA. ELECTRICAL.....            | 1 |

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Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
 ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
 ECO-5: BUILDING 6714  
 1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 15:03:14

DETAILED ESTIMATE

DETAIL PAGE 1

BASE BID

| DIVISION 16 ELECTRICAL | QUANTITY | UOM | CREW | MANHR | LABOR | EQUIPMENT | MATERIAL | SALESTX | DIRECT S |
|------------------------|----------|-----|------|-------|-------|-----------|----------|---------|----------|
|------------------------|----------|-----|------|-------|-------|-----------|----------|---------|----------|

16500 LIGHTING

16512 6100 SMALL FL FIXTURES (LESS THAN 40 WATT LAMPS)

|              |                                 |                     |      |       |      |       |      |       |
|--------------|---------------------------------|---------------------|------|-------|------|-------|------|-------|
| CD=3 EL 6105 | SURF SQ W/1 13W BIAXIAL FL LAMP | *** UNIT COSTS: *** | 1.25 | 41.26 | 0.00 | 27.80 | 1.39 | 70.45 |
| WC=1100      | WHITE ACRYLIC LENS              | 3.00 EA EELEA       | 4    | 124   | 0    | 83    | 4    | 211   |

16512 7000 FLUORESCENT - RECESSED T8 ELECTRONIC BALLAST

|              |                                 |                     |      |       |      |        |      |        |
|--------------|---------------------------------|---------------------|------|-------|------|--------|------|--------|
| CD=3 EL 7002 | 4 FT 1 LAMP PARABOLIC LOUVRE W/ | *** UNIT COSTS: *** | 0.54 | 17.84 | 0.07 | 122.00 | 6.10 | 146.01 |
| WC=1100      | REFLECTOR                       | 13.00 EA EELEB      | 7    | 232   | 1    | 1,586  | 79   | 1,898  |

|              |                                 |                     |      |       |      |        |      |        |
|--------------|---------------------------------|---------------------|------|-------|------|--------|------|--------|
| CD=3 EL 7003 | 4 FT 2 LAMP PARABOLIC LOUVRE W/ | *** UNIT COSTS: *** | 0.59 | 19.42 | 0.08 | 136.00 | 6.80 | 162.29 |
| WC=1100      | REFLECTOR                       | 14.00 EA EELEB      | 8    | 272   | 1    | 1,904  | 95   | 2,272  |

|                              |    |     |   |       |     |       |
|------------------------------|----|-----|---|-------|-----|-------|
| TOTAL DIVISION 16 ELECTRICAL | 19 | 628 | 2 | 3,573 | 179 | 4,382 |
|------------------------------|----|-----|---|-------|-----|-------|

|                               |    |     |   |       |     |       |
|-------------------------------|----|-----|---|-------|-----|-------|
| TOTAL FACILITY AA. ELECTRICAL | 19 | 628 | 2 | 3,573 | 179 | 4,382 |
|-------------------------------|----|-----|---|-------|-----|-------|

|                                               |    |     |   |       |     |       |
|-----------------------------------------------|----|-----|---|-------|-----|-------|
| TOTAL BID ITEM 1. BUILDING TO THE 5 FOOT LINE | 19 | 628 | 2 | 3,573 | 179 | 4,382 |
|-----------------------------------------------|----|-----|---|-------|-----|-------|

|                |    |     |   |       |     |       |
|----------------|----|-----|---|-------|-----|-------|
| TOTAL BASE BID | 19 | 628 | 2 | 3,573 | 179 | 4,382 |
|----------------|----|-----|---|-------|-----|-------|

|                |   |   |   |   |   |   |
|----------------|---|---|---|---|---|---|
| TOTAL ADDITIVE | 0 | 0 | 0 | 0 | 0 | 0 |
|----------------|---|---|---|---|---|---|

|                                                 |    |     |   |       |     |       |
|-------------------------------------------------|----|-----|---|-------|-----|-------|
| TOTAL INCL ADD ENERGY SAVINGS OPPORTUNITY SURVY | 19 | 628 | 2 | 3,573 | 179 | 4,382 |
|-------------------------------------------------|----|-----|---|-------|-----|-------|

\*\*\* END OF DETAIL REPORT \*\*\*

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6714

TIME 15:03:14

PROJECT NOTES

SUMMARY PAGE 1

---

PROJECT NOTES

ECO-5: INTERIOR LIGHTING

SCOPE OF WORK: EVALUATE USE OF HIGHER EFFICIENCY INTERIOR LIGHTING IN  
SELECTED FACILITIES AT FT CAMPBELL.

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6714E5  
4-402



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6714

TIME 15:03:11

BID ITEM AND FACILITY SUMMARY

SUMMARY PAGE 1

BID ITEM 1 BUILDING TO THE 5 FOOT LINE

BASE BID

| ID             | FACILITY   | COST TO PRM | OVERHEAD | HOME OFC | PROFIT | BOND | OTHER FCTR | TOTAL COST | UNIT COST |
|----------------|------------|-------------|----------|----------|--------|------|------------|------------|-----------|
| AA             | ELECTRICAL |             | 10.0%    | 0.0%     | 7.5%   | 2.5% | 0.0%       |            |           |
|                | 1.00 EA    | 4,382       | 438      | 0        | 361    | 130  | 0          | 5,311      | 5310.82   |
| BID ITEM TOTAL | 1.00 EA    | 4,382       | 438      | 0        | 361    | 130  | 0          | 5,311      | 5310.82   |
| TOTAL BASE BID |            | 4,382       | 438      | 0        | 361    | 130  | 0          | 5,311      |           |
| TOTAL ADDITIVE |            | 0           | 0        | 0        | 0      | 0    | 0          | 0          |           |
| TOTAL INCL ADD |            | 4,382       | 438      | 0        | 361    | 130  | 0          | 5,311      |           |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6714E5  
4-403

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6714

TIME 15:03:14

PROJECT CWE SUMMARY

SUMMARY PAGE 3

| ID | BID ITEM                                                   | QUANTITY | UOM  | BASE BID | ADDITIVE | TOTAL COST | UNIT COST |
|----|------------------------------------------------------------|----------|------|----------|----------|------------|-----------|
| 1. | BUILDING TO THE 5 FOOT LINE                                | 1.00     | EA   | 5,311    |          | 5,311      | 5310.80   |
|    | TOTAL CURRENT CONTRACT COST                                |          |      | 5,311    | 0        | 5,311      |           |
|    | Cost Growth from 08/93 to 08/94<br>Index Values: 0000 0000 | 0.0%     |      | 0        | 0        | 0          |           |
|    | ESCALATED CONTRACT COST                                    |          |      | 5,311    | 0        | 5,311      |           |
|    | Government-Furnished Property                              |          |      | 0        |          | 0          |           |
|    | SUBTOTAL                                                   |          |      | 5,311    | 0        | 5,311      |           |
|    | Contingencies                                              | 10.0%    |      | 531      | 0        | 531        |           |
|    | SUBTOTAL                                                   |          |      | 5,842    | 0        | 5,842      |           |
|    | SIOH (S&A)                                                 | 5.0%     |      | 292      | 0        | 292        |           |
|    | CURRENT WORKING ESTIMATE                                   |          |      | 6,134    | 0        | 6,134      |           |
|    | Estimated Construction Time                                | 365      | Days |          |          |            |           |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6714E5  
4-404

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6714

TIME 15:03:14

CONTRACTOR DIRECT SUMMARY

SUMMARY PAGE 4

| ID | CONTRACTOR    | PM | QUANTITY | UOM | MANHRS | LABOR | EQUIPMENT | MAT   | W/TX | AMOUNT | PCT    | W/OH&P | SUBTOTAL |
|----|---------------|----|----------|-----|--------|-------|-----------|-------|------|--------|--------|--------|----------|
| AA | GENERAL/PRIME |    | 1.00     | EA  | 19     | 628   | 2         | 3,752 |      | 4,382  | 100.0% | 0      | 4,382    |
|    | TOTAL DIRECT  |    |          |     | 19     | 628   | 2         | 3,752 |      | 4,382  | 100.0% |        |          |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6714E5  
4-405

on 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6714

TIME 15:03:1

CONTRACTOR INDIRECT SUMMARY

SUMMARY PAGE

| ID | CONTRACTOR              | PM | SUBTOTAL | *** OVERHEAD *** | AMOUNT | PCT | BOFC | **** PROFIT **** | AMOUNT | PCT  | BOND | OTHER | ***** TOTAL CONTRACT ***** | AMOUNT | PCT | UNIT   | COS |
|----|-------------------------|----|----------|------------------|--------|-----|------|------------------|--------|------|------|-------|----------------------------|--------|-----|--------|-----|
| AA | GENERAL/PRIME           |    | 4,382    | 438              | 10.0%  | 0.0 |      | 361              | 7.5%   | 2.5% | 0.0% |       | 5,311                      | 100.0% |     | 5310.8 |     |
|    | TOTAL OVERHEAD & PROFIT |    |          | 438              | 10.0%  |     |      | 361              | 7.5%   |      |      |       |                            |        |     |        |     |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6714

TIME 15:03:14

CSI DIVISION SUMMARY

SUMMARY PAGE 6

| ID CSI DIVISION | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|-----------------|----------|-------|-----------|----------|-----------|-------------------------|
| 16 ELECTRICAL   | 19       | 628   | 2         | 3,573    | 179       | 4,382                   |
| TOTAL DIRECT    | 19       | 628   | 2         | 3,573    | 179       | 4,382                   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6714E5  
4-407

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6714

TIME 15:03:14

SYSTEMS SUMMARY

SUMMARY PAGE 7

| ID SYSTEM              | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|------------------------|----------|-------|-----------|----------|-----------|-------------------------|
| 11 INTERIOR ELECTRICAL | 19       | 628   | 2         | 3,573    | 179       | 4,382                   |
| TOTAL DIRECT           | 19       | 628   | 2         | 3,573    | 179       | 4,382                   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6714E5

4-408

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6714

TIME 15:03:1

EQUIPMENT SUMMARY

SUMMARY PAGE

| EQUIP DESCRIPTION             | LIFE HRS | TL HRLY | OWNRSH | OWNS | OVTM | OWNRSH | EXPENSE | HRLY RATE | UPB RATE | HOURS | TOTAL COST |
|-------------------------------|----------|---------|--------|------|------|--------|---------|-----------|----------|-------|------------|
| EMI20 SMALL TOOLS             |          |         |        |      |      |        |         | 1.40      | 1.40     | 1     |            |
| TOTAL PROJECT EQUIPMENT HOURS |          |         |        |      |      |        |         |           |          | 1     |            |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6714

TIME 15:03:14

LABOR SUMMARY

SUMMARY PAGE 9

| CRAFT DESCRIPTION      | BASE  | OVERTM | TKS/INS | FRNG | TRVL | HRLY<br>RATE | UPB<br>RATE | ****<br>HOURS | TOTAL<br>COST |
|------------------------|-------|--------|---------|------|------|--------------|-------------|---------------|---------------|
| LELEC ELECTRICIANS     | 20.50 | 0.0%   | 24.0%   | 7.49 | 0.00 | 32.91        | 25.79       | 19            | 627           |
| TOTAL PROJECT MANHOURS |       |        |         |      |      |              |             | 19            | 627           |

\* \* \* END OF SUMMARY REPORT \* \* \*



# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

PAGE 1 OF 1

31 AUGUST 1993

## BUILDING WIDE FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6715

BUILDING USE:

HOURS/DAY 9

DAYS/WEEK 5

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.76 PER KW

### EXISTING FIXTURE DATA

4 FOOT

0.1 LAMP @ 48 W/FXT = 0 WATTS  
 0.1 LAMP @ 37.8 W/FXT = 0 WATTS  
 12.2 LAMP @ 96 W/FXT = 1152 WATTS  
 0.2 LAMP @ 75.6 W/FXT = 0 WATTS  
 0.3 LAMP @ 144 W/FXT = 0 WATTS  
 0.3 LAMP @ 113.4 W/FXT = 0 WATTS  
 6.4 LAMP @ 192 W/FXT = 1152 WATTS  
 110.4 LAMP @ 180 W/FXT = 19800 WATTS

### REPLACEMENT FIXTURE DATA

4 FOOT

0.1 LAMP @ 37 W/FXT = 0 WATTS  
 12.1 LAMP W/ 37 W/FXT = 444 WATTS  
 REFLECTORS  
 0.2 LAMP W/ 58 W/FXT = 0 WATTS  
 REFLECTORS  
 116.2 LAMP W/ 58 W/FXT = 6728 WATTS  
 REFLECTORS

2 FOOT

0.1 LAMP @ 31 W/FXT = 0 WATTS  
 0.4 LAMP @ 88 W/FXT = 0 WATTS  
 0.2 LAMP U @ 96 W/FXT = 0 WATTS  
 0.2 LAMP U @ 75.6 W/FXT = 0 WATTS

2 FOOT

0.1 LAMP @ 24 W/FXT = 0 WATTS  
 0.2 LAMP W/ 41 W/FXT = 0 WATTS  
 REFLECTORS  
 0.2 LAMP U @ 58 W/FXT = 0 WATTS

8 FOOT

0.2 LAMP @ 180 W/FXT = 0 WATTS  
 0.2 LAMP @ 168 W/FXT = 0 WATTS

8 FOOT

0.1 LAMP W/ 58 W/FXT = 0 WATTS  
 REFLECTORS

TOTAL EXISTING KW 22.1

TOTAL REPLACEMENT KW 7.2

NET ENERGY SAVINGS 119.2 MBTU/YR

NET DOLLAR SAVINGS \$2,849.44

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES

TIME 15:10:11

TITLE PAGE

---

ENERGY SAVINGS OPPORTUNITY SURVY  
FT CAMPBELL, KY  
ECO-5: BUILDING 6715

Contract No: 27-93-C-0096

Prepared By: Systems Corp  
Estimator: Keith A. Derrington  
Estimate Prep. Date: 08/31/93  
Current UPB/CSI ID: ORL290

M - C A C E S   E D I T I O N  
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by Building Systems Design, Inc.  
Release 4.20

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6715E5  
4-412

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6715

TIME 15:10:11

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| DETAILED ESTIMATE              | DETAIL PAGE |
|--------------------------------|-------------|
| 1. BUILDING TO THE 5 FOOT LINE |             |
| AA. ELECTRICAL.....            | 1           |

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Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
 ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
 ECO-5: BUILDING 6715  
 1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 15:10:13

DETAIL PAGE 1

RAILED ESTIMATE

BASE BID

| DIVISION 16 ELECTRICAL                                  |                                           | QUANTITY            | UOM | CREW | MANHR | LABOR | EQUIPMENT | MATERIAL | SALESTY | DIRECT \$ |
|---------------------------------------------------------|-------------------------------------------|---------------------|-----|------|-------|-------|-----------|----------|---------|-----------|
| 16500 LIGHTING                                          |                                           |                     |     |      |       |       |           |          |         |           |
| 16512 7000 FLUORESCENT - RECESSED T8 ELECTRONIC BALLAST |                                           |                     |     |      |       |       |           |          |         |           |
| CD=3 EL 7002                                            | 4 FT 1 LAMP PARABOLIC LOUVRE W/ REFLECTOR | *** UNIT COSTS: *** |     |      | 0.54  | 17.84 | 0.07      | 122.00   | 6.10    | 146.01    |
| WC=1100                                                 |                                           | 12.00 EA EELEB      |     | 6    | 214   |       | 1         | 1,464    | 73      | 1,752     |
| CD=3 EL 7003                                            | 4 FT 2 LAMP PARABOLIC LOUVRE W/ REFLECTOR | *** UNIT COSTS: *** |     |      | 0.59  | 19.42 | 0.08      | 136.00   | 6.80    | 162.29    |
| WC=1100                                                 |                                           | 116.00 EA EELEB     |     | 68   | 2,252 |       | 9         | 15,776   | 789     | 18,826    |
| TOTAL DIVISION 16 ELECTRICAL                            |                                           |                     |     |      | 75    | 2,467 | 10        | 17,240   | 862     | 20,578    |
| TOTAL FACILITY AA. ELECTRICAL                           |                                           |                     |     |      | 75    | 2,467 | 10        | 17,240   | 862     | 20,578    |
| TOTAL BID ITEM 1. BUILDING TO THE 5 FOOT LINE           |                                           |                     |     |      | 75    | 2,467 | 10        | 17,240   | 862     | 20,578    |
| TOTAL BASE BID                                          |                                           |                     |     |      | 75    | 2,467 | 10        | 17,240   | 862     | 20,578    |
| TOTAL ADDITIVE                                          |                                           |                     |     |      | 0     | 0     | 0         | 0        | 0       | 0         |
| TOTAL INCL ADD ENERGY SAVINGS OPPORTUNITY SURVY         |                                           |                     |     |      | 75    | 2,467 | 10        | 17,240   | 862     | 20,578    |

\*\*\* END OF DETAIL REPORT \*\*\*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6715E5

4-414

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6715

TIME 15:10:13

PROJECT NOTES

SUMMARY PAGE 1

---

PROJECT NOTES

ECO-5: INTERIOR LIGHTING

SCOPE OF WORK: EVALUATE USE OF HIGHER EFFICIENCY INTERIOR LIGHTING IN  
SELECTED FACILITIES AT FT CAMPBELL.

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6715

TIME 15:10:11

BID ITEM AND FACILITY SUMMARY

SUMMARY PAGE 1

BID ITEM 1 BUILDING TO THE 5 FOOT LINE

BASE BID

| ID             | FACILITY   |         | COST TO PRM | OVERHEAD | HOME OFC | PROFIT | BOND | OTHER FCTR | TOTAL COST | UNIT COST |
|----------------|------------|---------|-------------|----------|----------|--------|------|------------|------------|-----------|
| AA             | ELECTRICAL |         |             | 10.0%    | 0.0%     | 7.5%   | 2.5% | 0.0%       |            |           |
|                |            | 1.00 EA | 20,578      | 2,058    | 0        | 1,698  | 608  | 0          | 24,942     | 24942.08  |
| BID ITEM TOTAL |            | 1.00 EA | 20,578      | 2,058    | 0        | 1,698  | 608  | 0          | 24,942     | 24942.08  |
| TOTAL BASE BID |            |         | 20,578      | 2,058    | 0        | 1,698  | 608  | 0          | 24,942     |           |
| TOTAL ADDITIVE |            |         | 0           | 0        | 0        | 0      | 0    | 0          | 0          |           |
| TOTAL INCL ADD |            |         | 20,578      | 2,058    | 0        | 1,698  | 608  | 0          | 24,942     |           |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6715

TIME 15:10:13

PROJECT CWE SUMMARY

SUMMARY PAGE 3

| ID | BID ITEM                                                   | QUANTITY | UOM | BASE BID | ADDITIVE | TOTAL COST | UNIT COST |
|----|------------------------------------------------------------|----------|-----|----------|----------|------------|-----------|
| 1. | BUILDING TO THE 5 FOOT LINE                                | 1.00     | EA  | 24,942   |          | 24,942     | 24942.10  |
|    | TOTAL CURRENT CONTRACT COST                                |          |     | 24,942   | 0        | 24,942     |           |
|    | Cost Growth from 08/93 to 08/94<br>Index Values: 0000 0000 | 0.0%     |     | 0        | 0        | 0          |           |
|    | ESCALATED CONTRACT COST                                    |          |     | 24,942   | 0        | 24,942     |           |
|    | Government-Furnished Property                              |          |     | 0        |          | 0          |           |
|    | SUBTOTAL                                                   |          |     | 24,942   | 0        | 24,942     |           |
|    | Contingencies                                              | 10.0%    |     | 2,494    | 0        | 2,494      |           |
|    | SUBTOTAL                                                   |          |     | 27,436   | 0        | 27,436     |           |
|    | SIOH (S&A)                                                 | 5.0%     |     | 1,372    | 0        | 1,372      |           |
|    | CURRENT WORKING ESTIMATE                                   |          |     | 28,808   | 0        | 28,808     |           |

Estimated Construction Time

365 Days

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6715E5  
4-417

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6715

TIME 15:10:13

CONTRACTOR DIRECT SUMMARY

SUMMARY PAGE 4

| ID | CONTRACTOR    | PM | QUANTITY | UOM | MANHRS | LABOR | EQUIPMENT | MAT W/TX | AMOUNT | PCT    | SUBCON W/OH&P | SUBTOTAL |
|----|---------------|----|----------|-----|--------|-------|-----------|----------|--------|--------|---------------|----------|
| AA | GENERAL/PRIME |    | 1.00     | EA  | 75     | 2,467 | 10        | 18,102   | 20,578 | 100.0% | 0             | 20,578   |
|    | TOTAL DIRECT  |    |          |     | 75     | 2,467 | 10        | 18,102   | 20,578 | 100.0% |               |          |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6715E5  
4-418



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6715

TIME 15:10:11

CONTRACTOR INDIRECT SUMMARY

SUMMARY PAGE 1

| ID | CONTRACTOR              | PH | SUBTOTAL | *** OVERHEAD *** | AMOUNT | PCT | HOPC% | **** PROFIT **** | AMOUNT | PCT  | BOND% | OTHER% | ***** TOTAL CONTRACT ***** | AMOUNT | PCT | UNIT COST |
|----|-------------------------|----|----------|------------------|--------|-----|-------|------------------|--------|------|-------|--------|----------------------------|--------|-----|-----------|
| AA | GENERAL/PRIME           |    | 20,578   | 2,058            | 10.0%  | 0.0 |       | 1,698            | 7.5%   | 2.5% | 0.0%  |        | 24,942                     | 100.0% |     | 24942.0%  |
|    | TOTAL OVERHEAD & PROFIT |    |          | 2,058            | 10.0%  |     |       | 1,698            | 7.5%   |      |       |        |                            |        |     |           |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6715

TIME 15:10:13

CSI DIVISION SUMMARY

SUMMARY PAGE 6

| ID CSI DIVISION | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|-----------------|----------|-------|-----------|----------|-----------|-------------------------|
| 16 ELECTRICAL   | 75       | 2,467 | 10        | 17,240   | 862       | 20,578                  |
| TOTAL DIRECT    | 75       | 2,467 | 10        | 17,240   | 862       | 20,578                  |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6715E5  
4-420

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6715

TIME 15:10:11

SYSTEMS SUMMARY

SUMMARY PAGE

| ID SYSTEM              | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|------------------------|----------|-------|-----------|----------|-----------|-------------------------|
| 11 INTERIOR ELECTRICAL | 75       | 2,467 | 10        | 17,240   | 862       | 20,578                  |
| TOTAL DIRECT           | 75       | 2,467 | 10        | 17,240   | 862       | 20,578                  |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6715E5  
4-421

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6715

TIME 15:10:13

EQUIPMENT SUMMARY

SUMMARY PAGE 8

| EQUIP DESCRIPTION             | LIFE HRS | TL HRLY | OWNRSHP | OWNS | OVTM | OWNRSHP | EXPENSE | HRLY RATE | UPB RATE | HOURS | TOTAL COST |
|-------------------------------|----------|---------|---------|------|------|---------|---------|-----------|----------|-------|------------|
| EMI20 SMALL TOOLS             |          |         |         |      |      |         |         | 1.40      | 1.40     | 7     | 10         |
| TOTAL PROJECT EQUIPMENT HOURS |          |         |         |      |      |         |         |           |          | 7     | 10         |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6715

TIME 15:10:11

LABOR SUMMARY

SUMMARY PAGE

| CRAFT DESCRIPTION      | BASE  | OVERTM | TXS/INS | FRNG | TRVL | HRLY<br>RATE | UPB<br>RATE | ****<br>HOURS | TOTAL<br>COST |
|------------------------|-------|--------|---------|------|------|--------------|-------------|---------------|---------------|
| LELEC ELECTRICIANS     | 20.50 | 0.0%   | 24.0%   | 7.49 | 0.00 | 32.91        | 25.79       | 75            | 2,466         |
| TOTAL PROJECT MANHOURS |       |        |         |      |      |              |             | 75            | 2,466         |

\* \* \* END OF SUMMARY REPORT \* \* \*

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

31 AUGUST 1993

PAGE 1 OF 2

## BUILDING WIDE FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6717

BUILDING USE:

HOURS/DAY 12

DAYS/WEEK 5

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.76 PER KW

### EXISTING FIXTURE DATA

#### 4 FOOT

0.1 LAMP @ 48 W/FIXT = 0 WATTS  
 0.1 LAMP @ 37.8 W/FIXT = 0 WATTS  
 17.2 LAMP @ 96 W/FIXT = 1632 WATTS  
 0.2 LAMP @ 75.6 W/FIXT = 0 WATTS  
 0.3 LAMP @ 144 W/FIXT = 0 WATTS  
 0.3 LAMP @ 113.4 W/FIXT = 0 WATTS  
 4.4 LAMP @ 192 W/FIXT = 768 WATTS  
 0.4 LAMP @ 151.2 W/FIXT = 0 WATTS

#### 2 FOOT

0.1 LAMP @ 31 W/FIXT = 0 WATTS  
 0.4 LAMP @ 88 W/FIXT = 0 WATTS  
 0.2 LAMP U @ 96 W/FIXT = 0 WATTS  
 0.2 LAMP U @ 75.6 W/FIXT = 0 WATTS

#### 8 FOOT

0.2 LAMP @ 180 W/FIXT = 0 WATTS  
 0.2 LAMP @ 168 W/FIXT = 0 WATTS

TOTAL EXISTING KW 2.4

### REPLACEMENT FIXTURE DATA

#### 4 FOOT

0.1 LAMP @ 37 W/FIXT = 0 WATTS  
 17.1 LAMP W/ 37 W/FIXT = 629 WATTS  
 REFLECTORS  
 0.2 LAMP W/ 58 W/FIXT = 0 WATTS  
 REFLECTORS  
 4.2 LAMP W/ 58 W/FIXT = 232 WATTS  
 REFLECTORS

#### 2 FOOT

0.1 LAMP @ 24 W/FIXT = 0 WATTS  
 0.2 LAMP W/ 41 W/FIXT = 0 WATTS  
 REFLECTORS  
 0.2 LAMP U @ 58 W/FIXT = 0 WATTS

#### 8 FOOT

0.1 LAMP W/ 58 W/FIXT = 0 WATTS  
 REFLECTORS

TOTAL REPLACEMENT KW 0.9

NET ENERGY SAVINGS 16.4 MBTU/YR

NET DOLLAR SAVINGS \$319.06

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

31 AUGUST 1993

PAGE 2 OF 2

## BUILDING WIDE INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6717

LAMP USE:

HOURS/DAY 12

DAYS/WEEK 5

PEAK USE 2 (1-YES, 2-NO)

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$0.00 PER KW

### EXISTING INCANDESCENTS

|           |             |           |
|-----------|-------------|-----------|
| 0 LAMPS @ | 25 WATTS =  | 0 WATTS   |
| 0 LAMPS @ | 40 WATTS =  | 0 WATTS   |
| 3 LAMPS @ | 52 WATTS =  | 156 WATTS |
| 0 LAMPS @ | 60 WATTS =  | 0 WATTS   |
| 0 LAMPS @ | 75 WATTS =  | 0 WATTS   |
| 0 LAMPS @ | 90 WATTS =  | 0 WATTS   |
| 1 LAMPS @ | 100 WATTS = | 100 WATTS |

TOTAL EXISTING WATTS 256

### COMPACT FLUORESCENT REPLACEMENT

|           |            |          |
|-----------|------------|----------|
| 0 LAMPS @ | 7 WATTS =  | 0 WATTS  |
| 0 LAMPS @ | 9 WATTS =  | 0 WATTS  |
| 3 LAMPS @ | 13 WATTS = | 39 WATTS |
| 0 LAMPS @ | 18 WATTS = | 0 WATTS  |
| 1 LAMPS @ | 28 WATTS = | 28 WATTS |

TOTAL REPLACEMENT WATTS 65

NET ENERGY SAVINGS 2.03 MBTU/YR

NET DOLLAR SAVINGS \$12.60

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES

TIME 15:16:58

FILE PAGE

---

ENERGY SAVINGS OPPORTUNITY SURVY  
FT CAMPBELL, KY  
ECO-5: BUILDING 6717

Contract No: 27-93-C-0096

Prepared By: Systems Corp  
Estimator: Keith A. Derrington  
Estimate Prep. Date: 08/31/93  
Current UPB/CSI ID: ORL290

M - C A C E S E D I T I O N  
COMPOSER Plus Copyright (C) 1985, 1988  
by Building Systems Design, Inc.  
Release 4.20

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6717E5  
4-426



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6717

TIME 15:16:58

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| DETAILED ESTIMATE              | DETAIL PAGE |
|--------------------------------|-------------|
| 1. BUILDING TO THE 5 FOOT LINE |             |
| AA. ELECTRICAL.....            | 1           |

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Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6717  
1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 15:16:58

DETAILED ESTIMATE

DETAIL PAGE 1

BASE BID

| DIVISION 16 ELECTRICAL                                  |                                 | QUANTITY | UOM             | CREW | MANHR | LABOR | EQUIPMENT | MATERIAL | SALESTX | DIRECT \$ |
|---------------------------------------------------------|---------------------------------|----------|-----------------|------|-------|-------|-----------|----------|---------|-----------|
| 16500 LIGHTING                                          |                                 |          |                 |      |       |       |           |          |         |           |
| 16512 6100 SMALL FL FIXTURES (LESS THAN 40 WATT LAMPS)  |                                 |          |                 |      |       |       |           |          |         |           |
| CD=3 EL 6105                                            | SURF SQ W/1 13W BIAxIAL FL LAMP | ***      | UNIT COSTS: *** | 1.25 |       | 41.26 | 0.00      | 27.80    | 1.39    | 70.45     |
| WC=1100                                                 | WHITE ACRYLIC LENS              | 3.00     | EA EELEA        | 4    |       | 124   | 0         | 83       | 4       | 211       |
| CD=3 EL 6107                                            | SURF SQ W/1 26W BIAxIAL FL LAMP | ***      | UNIT COSTS: *** | 1.25 |       | 41.26 | 0.00      | 31.00    | 1.55    | 73.81     |
| WC=1100                                                 | WHITE ACRYLIC LENS              | 1.00     | EA EELEA        | 1    |       | 41    | 0         | 31       | 2       | 74        |
| 16512 7000 FLUORESCENT - RECESSED T8 ELECTRONIC BALLAST |                                 |          |                 |      |       |       |           |          |         |           |
| CD=3 EL 7002                                            | 4 FT 1 LAMP PARABOLIC LOUVRE W/ | ***      | UNIT COSTS: *** | 0.54 |       | 17.84 | 0.07      | 122.00   | 6.10    | 146.01    |
| WC=1100                                                 | REFLECTOR                       | 17.00    | EA EELEB        | 9    |       | 303   | 1         | 2,074    | 104     | 2,482     |
| CD=3 EL 7003                                            | 4 FT 2 LAMP PARABOLIC LOUVRE W/ | ***      | UNIT COSTS: *** | 0.59 |       | 19.42 | 0.08      | 136.00   | 6.80    | 162.29    |
| WC=1100                                                 | REFLECTOR                       | 4.00     | EA EELEB        | 2    |       | 78    | 0         | 544      | 27      | 649       |
| TOTAL DIVISION 16 ELECTRICAL                            |                                 |          |                 |      | 17    | 546   | 1         | 2,732    | 137     | 3,417     |
| TOTAL FACILITY AA. ELECTRICAL                           |                                 |          |                 |      | 17    | 546   | 1         | 2,732    | 137     | 3,417     |
| TOTAL BID ITEM 1. BUILDING TO THE 5 FOOT LINE           |                                 |          |                 |      | 17    | 546   | 1         | 2,732    | 137     | 3,417     |
| TOTAL BASE BID                                          |                                 |          |                 |      | 17    | 546   | 1         | 2,732    | 137     | 3,417     |
| TOTAL ADDITIVE                                          |                                 |          |                 |      | 0     | 0     | 0         | 0        | 0       | 0         |
| TOTAL INCL ADD ENERGY SAVINGS OPPORTUNITY SURVY         |                                 |          |                 |      | 17    | 546   | 1         | 2,732    | 137     | 3,417     |

\*\*\* END OF DETAIL REPORT \*\*\*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6717E5  
4-428

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6717

TIME 15:16:5

PROJECT NOTES

SUMMARY PAGE

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PROJECT NOTES

ECO-5: INTERIOR LIGHTING

SCOPE OF WORK: EVALUATE USE OF HIGHER EFFICIENCY INTERIOR LIGHTING IN  
SELECTED FACILITIES AT FT CAMPBELL.

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6717

TIME 15:16:58

BID ITEM AND FACILITY SUMMARY

SUMMARY PAGE 1

BID ITEM 1 BUILDING TO THE 5 FOOT LINE

BASE BID

| ID             | FACILITY   | COST TO PRM | OVERHEAD | HOME OFC | PROFIT | BOND | OTHER FCTR | TOTAL COST | UNIT COST |
|----------------|------------|-------------|----------|----------|--------|------|------------|------------|-----------|
| AA             | ELECTRICAL |             | 10.0%    | 0.0%     | 7.5%   | 2.5% | 0.0%       |            |           |
|                | 1.00 EA    | 3,417       | 342      | 0        | 282    | 101  | 0          | 4,141      | 4141.00   |
| BID ITEM TOTAL | 1.00 EA    | 3,417       | 342      | 0        | 282    | 101  | 0          | 4,141      | 4141.00   |
| TOTAL BASE BID |            | 3,417       | 342      | 0        | 282    | 101  | 0          | 4,141      |           |
| TOTAL ADDITIVE |            | 0           | 0        | 0        | 0      | 0    | 0          | 0          |           |
| TOTAL INCL ADD |            | 3,417       | 342      | 0        | 282    | 101  | 0          | 4,141      |           |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6717

TIME 15:16:58

PROJECT CWE SUMMARY

SUMMARY PAGE 3

| ID                                                         | BID ITEM                    | QUANTITY | UOM | BASE BID | ADDITIVE | TOTAL COST | UNIT COST |
|------------------------------------------------------------|-----------------------------|----------|-----|----------|----------|------------|-----------|
| 1.                                                         | BUILDING TO THE 5 FOOT LINE | 1.00     | EA  | 4,141    |          | 4,141      | 4141.10   |
| TOTAL CURRENT CONTRACT COST                                |                             |          |     | 4,141    | 0        | 4,141      |           |
| Cost Growth from 08/93 to 08/94<br>Index Values: 0000 0000 |                             | 0.0%     |     | 0        | 0        | 0          |           |
| ESCALATED CONTRACT COST                                    |                             |          |     | 4,141    | 0        | 4,141      |           |
| Government-Furnished Property                              |                             |          |     | 0        |          | 0          |           |
| SUBTOTAL                                                   |                             |          |     | 4,141    | 0        | 4,141      |           |
| Contingencies                                              |                             | 10.0%    |     | 414      | 0        | 414        |           |
| SUBTOTAL                                                   |                             |          |     | 4,555    | 0        | 4,555      |           |
| SIOH (S&A)                                                 |                             | 5.0%     |     | 228      | 0        | 228        |           |
| CURRENT WORKING ESTIMATE                                   |                             |          |     | 4,783    | 0        | 4,783      |           |

Estimated Construction Time 365 Days

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6717E5  
4-431

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6717

TIME 15:16:58

CONTRACTOR DIRECT SUMMARY

SUMMARY PAGE 4

| ID | CONTRACTOR    | PM | QUANTITY | UOM | MANHRS | LABOR | EQUIPMENT | MAT W/TX | ** TOTAL DIRECT * | * SUBCON * | W/OH&P | SUBTOTAL |
|----|---------------|----|----------|-----|--------|-------|-----------|----------|-------------------|------------|--------|----------|
|    |               |    |          |     |        |       |           |          | AMOUNT            | PCT        |        |          |
| AA | GENERAL/PRIME |    | 1.00     | EA  | 17     | 546   | 1         | 2,869    | 3,417             | 100.0%     | 0      | 3,417    |
|    | TOTAL DIRECT  |    |          |     | 17     | 546   | 1         | 2,869    | 3,417             | 100.0%     |        |          |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6717E5  
4-432

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6717

TIME 15:16:58

CONTRACTOR INDIRECT SUMMARY

SUMMARY PAGE 5

| ID | CONTRACTOR              | PM | SUBTOTAL | *** OVERHEAD *** | AMOUNT | PCT | BOFC% | **** PROFIT **** | AMOUNT | PCT  | BOND% | OTHER% | ***** TOTAL CONTRACT ***** | AMOUNT | PCT | UNIT COST |
|----|-------------------------|----|----------|------------------|--------|-----|-------|------------------|--------|------|-------|--------|----------------------------|--------|-----|-----------|
| AA | GENERAL/PRIME           |    | 3,417    | 342              | 10.0%  | 0.0 |       | 282              | 7.5%   | 2.5% | 0.0%  |        | 4,141                      | 100.0% |     | 4141.09   |
|    | TOTAL OVERHEAD & PROFIT |    |          | 342              | 10.0%  |     |       | 282              | 7.5%   |      |       |        |                            |        |     |           |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6717

TIME 15:16:58

I DIVISION SUMMARY

SUMMARY PAGE 6

| ID CSI DIVISION | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|-----------------|----------|-------|-----------|----------|-----------|-------------------------|
| 16 ELECTRICAL   | 17       | 546   | 1         | 2,732    | 137       | 3,417                   |
| TOTAL DIRECT    | 17       | 546   | 1         | 2,732    | 137       | 3,417                   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6717E5

4-434



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6717

TIME 15:16:58

SYSTEMS SUMMARY

SUMMARY PAGE 7

| ID SYSTEM              | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|------------------------|----------|-------|-----------|----------|-----------|-------------------------|
| 11 INTERIOR ELECTRICAL | 17       | 546   | 1         | 2,732    | 137       | 3,417                   |
| TOTAL DIRECT           | 17       | 546   | 1         | 2,732    | 137       | 3,417                   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6717E5  
4-435

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6717

TIME 15:16:58

EQUIPMENT SUMMARY

SUMMARY PAGE 8

| EQUIP DESCRIPTION             | LIFE HRS | TL | HRLY | OWNRSH | OWNS | OVTH | OWNRSH | EXPENSE | HRLY RATE | UPB RATE | HOURS | TOTAL COST |
|-------------------------------|----------|----|------|--------|------|------|--------|---------|-----------|----------|-------|------------|
| EMI20 SMALL TOOLS             |          |    |      |        |      |      |        |         | 1.40      | 1.40     | 1     | 1          |
| TOTAL PROJECT EQUIPMENT HOURS |          |    |      |        |      |      |        |         |           |          | 1     | 1          |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6717

TIME 15:16:58

LABOR SUMMARY

SUMMARY PAGE 9

| CRAFT DESCRIPTION      | BASE  | OVERTM | TXS/INS | FRNG | TRVL | HRLY<br>RATE | UPB<br>RATE | ****<br>HOURS | TOTAL<br>COST |
|------------------------|-------|--------|---------|------|------|--------------|-------------|---------------|---------------|
| LELEC ELECTRICIANS     | 20.50 | 0.0%   | 24.0%   | 7.49 | 0.00 | 32.91        | 25.79       | 17            | 546           |
| TOTAL PROJECT MANHOURS |       |        |         |      |      |              |             | 17            | 546           |

\* \* \* END OF SUMMARY REPORT \* \* \*

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

PAGE 1 OF 2

31 AUGUST 1993

## BUILDING WIDE FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6720

BUILDING USE: \_\_\_\_\_

HOURS/DAY: 18

DAYS/WEEK: 5

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.76 PER KW

### EXISTING FIXTURE DATA

4 FOOT

0 1 LAMP @ 48 W/FXT = 0 WATTS

0 1 LAMP @ 37.8 W/FXT = 0 WATTS

0 2 LAMP @ 96 W/FXT = 0 WATTS

0 2 LAMP @ 75.6 W/FXT = 0 WATTS

0 3 LAMP @ 144 W/FXT = 0 WATTS

0 3 LAMP @ 113.4 W/FXT = 0 WATTS

40 4 LAMP @ 192 W/FXT = 7680 WATTS

0 4 LAMP @ 151.2 W/FXT = 0 WATTS

### 2 FOOT

0 1 LAMP @ 31 W/FXT = 0 WATTS

0 4 LAMP @ 88 W/FXT = 0 WATTS

0 2 LAMP U @ 96 W/FXT = 0 WATTS

0 2 LAMP U @ 75.6 W/FXT = 0 WATTS

### 8 FOOT

0 2 LAMP @ 180 W/FXT = 0 WATTS

0 2 LAMP @ 168 W/FXT = 0 WATTS

TOTAL EXISTING KW 7.7

### REPLACEMENT FIXTURE DATA

4 FOOT

0 1 LAMP @ 37 W/FXT = 0 WATTS

0 1 LAMP W/ REFLECTORS 37 W/FXT = 0 WATTS

0 2 LAMP W/ REFLECTORS 58 W/FXT = 0 WATTS

40 2 LAMP W/ REFLECTORS 58 W/FXT = 2320 WATTS

### 2 FOOT

0 1 LAMP @ 24 W/FXT = 0 WATTS

0 2 LAMP W/ REFLECTORS 41 W/FXT = 0 WATTS

0 2 LAMP U @ 58 W/FXT = 0 WATTS

### 8 FOOT

0 1 LAMP W/ REFLECTORS 58 W/FXT = 0 WATTS

TOTAL REPLACEMENT KW 2.3

NET ENERGY SAVINGS 85.6 MBTU/YR

NET DOLLAR SAVINGS \$1,287.98

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

31 AUGUST 1993

PAGE 2 OF 2

## BUILDING WIDE INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6720

LAMP USE:

HOURS/DAY 5

DAYS/WEEK 5

PEAK USE 2 (1-YES, 2-NO)

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$0.00 PER KW

### EXISTING INCANDESCENTS

|           |             |           |
|-----------|-------------|-----------|
| 0 LAMPS @ | 25 WATTS =  | 0 WATTS   |
| 0 LAMPS @ | 40 WATTS =  | 0 WATTS   |
| 0 LAMPS @ | 52 WATTS =  | 0 WATTS   |
| 3 LAMPS @ | 60 WATTS =  | 180 WATTS |
| 0 LAMPS @ | 75 WATTS =  | 0 WATTS   |
| 0 LAMPS @ | 90 WATTS =  | 0 WATTS   |
| 0 LAMPS @ | 100 WATTS = | 0 WATTS   |

TOTAL EXISTING WATTS 180

### COMPACT FLUORESCENT REPLACEMENT

|           |            |          |
|-----------|------------|----------|
| 0 LAMPS @ | 7 WATTS =  | 0 WATTS  |
| 0 LAMPS @ | 9 WATTS =  | 0 WATTS  |
| 3 LAMPS @ | 18 WATTS = | 39 WATTS |
| 0 LAMPS @ | 18 WATTS = | 0 WATTS  |
| 0 LAMPS @ | 26 WATTS = | 0 WATTS  |

TOTAL REPLACEMENT WATTS 39

NET ENERGY SAVINGS 0.62 MBTU/YR

NET DOLLAR SAVINGS \$3.87

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES

TIME 15:23:55

TITLE PAGE

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ENERGY SAVINGS OPPORTUNITY SURVY  
FT CAMPBELL, KY  
ECO-5: BUILDING 6720

Contract No: 27-93-C-0096

Prepared By: Systems Corp  
Estimator: Keith A. Derrington  
Estimate Prep. Date: 08/31/93

Current UPB/CSI ID: ORL290

M - C A C E S E D I T I O N  
COMPOSER Plus Copyright (C) 1985, 1988  
by Building Systems Design, Inc.  
Release 4.20

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6720E5

4-440

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6720

TIME 15:23:55

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| 1. BUILDING TO THE 5 FOOT LINE |             |
| AA. ELECTRICAL.....            | 1           |

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Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
 ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
 ECO-5: BUILDING 6720  
 1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 15:23:55

TAILED ESTIMATE

DETAIL PAGE 1

BASE BID

| DIVISION 16 ELECTRICAL                                           | QUANTITY | UOM | CREW | MANHR | LABOR | EQUIPMENT | MATERIAL | SALESTX | DIRECT \$ |
|------------------------------------------------------------------|----------|-----|------|-------|-------|-----------|----------|---------|-----------|
| 16500 LIGHTING                                                   |          |     |      |       |       |           |          |         |           |
| 16512 6100 SMALL FL FIXTURES (LESS THAN 40 WATT LAMPS)           |          |     |      |       |       |           |          |         |           |
| CD=3 EL 6105 SURF SQ W/1 13W BIAXIAL FL LAMP *** UNIT COSTS: *** | 1.25     |     |      |       | 41.26 | 0.00      | 27.80    | 1.39    | 70.45     |
| WC=1100 WHITE ACRYLIC LENS 3.00 EA EELEA                         | 4        |     |      |       | 124   | 0         | 83       | 4       | 211       |
| 16512 7000 FLUORESCENT - RECESSED T8 ELECTRONIC BALLAST          |          |     |      |       |       |           |          |         |           |
| CD=3 EL 7003 4 FT 2 LAMP PARABOLIC LOUVRE W/ *** UNIT COSTS: *** | 0.59     |     |      |       | 19.42 | 0.08      | 136.00   | 6.80    | 162.29    |
| WC=1100 REFLECTOR 40.00 EA EELEB                                 | 24       |     |      |       | 777   | 3         | 5,440    | 272     | 6,492     |
| TOTAL DIVISION 16 ELECTRICAL                                     | 27       |     |      |       | 900   | 3         | 5,523    | 276     | 6,703     |
| TOTAL FACILITY AA. ELECTRICAL                                    | 27       |     |      |       | 900   | 3         | 5,523    | 276     | 6,703     |
| TOTAL BID ITEM 1. BUILDING TO THE 5 FOOT LINE                    | 27       |     |      |       | 900   | 3         | 5,523    | 276     | 6,703     |
| TOTAL BASE BID                                                   | 27       |     |      |       | 900   | 3         | 5,523    | 276     | 6,703     |
| TOTAL ADDITIVE                                                   | 0        |     |      |       | 0     | 0         | 0        | 0       | 0         |
| TOTAL INCL ADD ENERGY SAVINGS OPPORTUNITY SURVY                  | 27       |     |      |       | 900   | 3         | 5,523    | 276     | 6,703     |

\*\*\* END OF DETAIL REPORT \*\*\*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6720E5  
 4-442



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6720

TIME 15:23:55

PROJECT NOTES

SUMMARY PAGE 1

---

PROJECT NOTES

ECO-5: INTERIOR LIGHTING

SCOPE OF WORK: EVALUATE USE OF HIGHER EFFICIENCY INTERIOR LIGHTING IN  
SELECTED FACILITIES AT FT CAMPBELL.

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6720E5  
4-443

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6720

TIME 15:23:58

BID ITEM AND FACILITY SUMMARY

SUMMARY PAGE 1

BID ITEM 1 BUILDING TO THE 5 FOOT LINE

BASE BID

| ID             | FACILITY   |         | COST TO PRM | OVERHEAD     | HOME OPC  | PROFIT      | BOND        | OTHER FCTR | TOTAL COST | UNIT COST |
|----------------|------------|---------|-------------|--------------|-----------|-------------|-------------|------------|------------|-----------|
| AA             | ELECTRICAL | 1.00 EA | 6,703       | 10.0%<br>670 | 0.0%<br>0 | 7.5%<br>553 | 2.5%<br>198 | 0.0%<br>0  | 8,125      | 8124.58   |
| BID ITEM TOTAL |            | 1.00 EA | 6,703       | 670          | 0         | 553         | 198         | 0          | 8,125      | 8124.58   |
| TOTAL BASE BID |            |         | 6,703       | 670          | 0         | 553         | 198         | 0          | 8,125      |           |
| TOTAL ADDITIVE |            |         | 0           | 0            | 0         | 0           | 0           | 0          | 0          |           |
| TOTAL INCL ADD |            |         | 6,703       | 670          | 0         | 553         | 198         | 0          | 8,125      |           |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6720E5  
4-444

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6720

TIME 15:23:51

PROJECT CWE SUMMARY

SUMMARY PAGE 3

| ID | BID ITEM                                                   | QUANTITY | UOM | BASE BID | ADDITIVE | TOTAL COST | UNIT COST |
|----|------------------------------------------------------------|----------|-----|----------|----------|------------|-----------|
| 1. | BUILDING TO THE 5 FOOT LINE                                | 1.00     | EA  | 8,125    |          | 8,125      | 8124.60   |
|    | TOTAL CURRENT CONTRACT COST                                |          |     | 8,125    | 0        | 8,125      |           |
|    | Cost Growth from 08/93 to 08/94<br>Index Values: 0000 0000 | 0.0%     |     | 0        | 0        | 0          |           |
|    | ESCALATED CONTRACT COST                                    |          |     | 8,125    | 0        | 8,125      |           |
|    | Government-Furnished Property                              |          |     | 0        |          | 0          |           |
|    | SUBTOTAL                                                   |          |     | 8,125    | 0        | 8,125      |           |
|    | Contingencies                                              | 10.0%    |     | 812      | 0        | 812        |           |
|    | SUBTOTAL                                                   |          |     | 8,937    | 0        | 8,937      |           |
|    | SIOH (S&A)                                                 | 5.0%     |     | 447      | 0        | 447        |           |
|    | CURRENT WORKING ESTIMATE                                   |          |     | 9,384    | 0        | 9,384      |           |

Estimated Construction Time 365 Days

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6720E5

4-445

Mon 30 Aug 1993

- U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6720

TIME 15:23:55

CONTRACTOR DIRECT SUMMARY

SUMMARY PAGE 4

| ID | CONTRACTOR    | PM | QUANTITY | UOM | MANHRS | LABOR | EQUIPMENT | MAT   | W/TX | ** TOTAL DIRECT * | * SUBCON * | W/OH&P | SUBTOTAL |
|----|---------------|----|----------|-----|--------|-------|-----------|-------|------|-------------------|------------|--------|----------|
|    |               |    |          |     |        |       |           |       |      | AMOUNT            | PCT        |        |          |
| AA | GENERAL/PRIME |    | 1.00     | EA  | 27     | 900   | 3         | 5,800 |      | 6,703             | 100.0%     | 0      | 6,703    |
|    | TOTAL DIRECT  |    |          |     | 27     | 900   | 3         | 5,800 |      | 6,703             | 100.0%     |        |          |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6720

TIME 15:23:55

CONTRACTOR INDIRECT SUMMARY

SUMMARY PAGE 5

| ID | CONTRACTOR              | PH | SUBTOTAL | *** OVERHEAD *** | AMOUNT | PCT | HOFC% | **** PROFIT **** | AMOUNT | PCT  | BOND% | OTHER% | ***** TOTAL CONTRACT ***** | AMOUNT | PCT | UNIT COST |
|----|-------------------------|----|----------|------------------|--------|-----|-------|------------------|--------|------|-------|--------|----------------------------|--------|-----|-----------|
| AA | GENERAL/PRIME           |    | 6,703    | 670              | 10.0%  | 0.0 |       | 553              | 7.5%   | 2.5% | 0.0%  |        | 8,125                      | 100.0% |     | 8124.57   |
|    | TOTAL OVERHEAD & PROFIT |    |          | 670              | 10.0%  |     |       | 553              | 7.5%   |      |       |        |                            |        |     |           |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6720

TIME 15:23:55

CSI DIVISION SUMMARY

SUMMARY PAGE 6

| ID CSI DIVISION | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|-----------------|----------|-------|-----------|----------|-----------|-------------------------|
| 16 ELECTRICAL   | 27       | 900   | 3         | 5,523    | 276       | 6,703                   |
| TOTAL DIRECT    | 27       | 900   | 3         | 5,523    | 276       | 6,703                   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6720E5  
4-448

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6720

TIME 15:23:55

SYSTEMS SUMMARY

SUMMARY PAGE 7

| ID SYSTEM              | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|------------------------|----------|-------|-----------|----------|-----------|-------------------------|
| 11 INTERIOR ELECTRICAL | 27       | 900   | 3         | 5,523    | 276       | 6,703                   |
| TOTAL DIRECT           | 27       | 900   | 3         | 5,523    | 276       | 6,703                   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6720E5  
4-449

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6720

TIME 15:23:55

EQUIPMENT SUMMARY

SUMMARY PAGE 8

| EQUIP DESCRIPTION             | LIFE HRS | TL HRLY | OWNRSH | OWNS | OVTM | OWNRSH | EXPENSE | HRLY RATE | UPB RATE | HOURS | TOTAL COST |
|-------------------------------|----------|---------|--------|------|------|--------|---------|-----------|----------|-------|------------|
| EMI20 SMALL TOOLS             |          |         |        |      |      |        |         | 1.40      | 1.40     | 2     | 3          |
| TOTAL PROJECT EQUIPMENT HOURS |          |         |        |      |      |        |         |           |          | 2     | 3          |



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6720

TIME 15:23:51

LABOR SUMMARY

SUMMARY PAGE 9

| CRAFT DESCRIPTION      | BASE  | OVERTM | TXS/INS | FRNG | TRVL | HRLY<br>RATE | UPB<br>RATE | ****<br>HOURS | TOTAL<br>COST |
|------------------------|-------|--------|---------|------|------|--------------|-------------|---------------|---------------|
| LELEC ELECTRICIANS     | 20.50 | 0.0%   | 24.0%   | 7.49 | 0.00 | 32.91        | 25.79       | 27            | 900           |
| TOTAL PROJECT MANHOURS |       |        |         |      |      |              |             | 27            | 900           |

\*\*\* END OF SUMMARY REPORT \*\*\*

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

PAGE 1 OF 2

31 AUGUST 1993

## BUILDING WIDE FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6723

BUILDING USE:

HOURS/DAY 9

DAYS/WEEK 5

### ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

### EXISTING FIXTURE DATA

4 FOOT

|             |               |            |
|-------------|---------------|------------|
| 0.1 LAMP @  | 48 W/FXT =    | 0 WATTS    |
| 0.1 LAMP @  | 37.8 W/FXT =  | 0 WATTS    |
| 0.2 LAMP @  | 96 W/FXT =    | 576 WATTS  |
| 0.2 LAMP @  | 75.6 W/FXT =  | 0 WATTS    |
| 0.3 LAMP @  | 144 W/FXT =   | 0 WATTS    |
| 0.3 LAMP @  | 113.4 W/FXT = | 0 WATTS    |
| 27.4 LAMP @ | 192 W/FXT =   | 5184 WATTS |
| 0.4 LAMP @  | 151.2 W/FXT = | 0 WATTS    |

2 FOOT

|              |              |         |
|--------------|--------------|---------|
| 0.1 LAMP @   | 31 W/FXT =   | 0 WATTS |
| 0.4 LAMP @   | 88 W/FXT =   | 0 WATTS |
| 0.2 LAMP U @ | 96 W/FXT =   | 0 WATTS |
| 0.2 LAMP U @ | 75.6 W/FXT = | 0 WATTS |

8 FOOT

|            |             |         |
|------------|-------------|---------|
| 0.2 LAMP @ | 180 W/FXT = | 0 WATTS |
| 0.2 LAMP @ | 168 W/FXT = | 0 WATTS |

TOTAL EXISTING KW

5.8

### REPLACEMENT FIXTURE DATA

4 FOOT

|                         |            |            |
|-------------------------|------------|------------|
| 0.1 LAMP @              | 37 W/FXT = | 0 WATTS    |
| 6.1 LAMP W/ REFLECTORS  | 37 W/FXT = | 222 WATTS  |
| 0.2 LAMP W/ REFLECTORS  | 58 W/FXT = | 0 WATTS    |
| 27.2 LAMP W/ REFLECTORS | 58 W/FXT = | 1566 WATTS |

2 FOOT

|                        |            |         |
|------------------------|------------|---------|
| 0.1 LAMP @             | 24 W/FXT = | 0 WATTS |
| 0.2 LAMP W/ REFLECTORS | 41 W/FXT = | 0 WATTS |
| 0.2 LAMP U @           | 58 W/FXT = | 0 WATTS |

8 FOOT

|                        |            |         |
|------------------------|------------|---------|
| 0.1 LAMP W/ REFLECTORS | 58 W/FXT = | 0 WATTS |
|------------------------|------------|---------|

TOTAL REPLACEMENT KW

1.8

NET ENERGY SAVINGS

31.7 MBTU/YR

NET DOLLAR SAVINGS

\$757.97

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

31 AUGUST 1993

PAGE 2 OF 2

## BUILDING WIDE INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6723

LAMP USE:

HOURS/DAY 3

DAYS/WEEK 5

PEAK USE 2 (1-YES, 2-NO)

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$0.00 PER KW

### EXISTING INCANDESCENTS

|                             |            |
|-----------------------------|------------|
| 0 LAMPS @ 25 WATTS =        | 0 WATTS    |
| 0 LAMPS @ 40 WATTS =        | 0 WATTS    |
| 0 LAMPS @ 52 WATTS =        | 0 WATTS    |
| 0 LAMPS @ 60 WATTS =        | 0 WATTS    |
| 0 LAMPS @ 75 WATTS =        | 0 WATTS    |
| 0 LAMPS @ 90 WATTS =        | 0 WATTS    |
| 4 LAMPS @ 100 WATTS =       | 400 WATTS  |
| <b>TOTAL EXISTING WATTS</b> | <b>400</b> |

### COMPACT FLUORESCENT REPLACEMENT

|                                |            |
|--------------------------------|------------|
| 0 LAMPS @ 7 WATTS =            | 0 WATTS    |
| 0 LAMPS @ 9 WATTS =            | 0 WATTS    |
| 0 LAMPS @ 13 WATTS =           | 0 WATTS    |
| 0 LAMPS @ 18 WATTS =           | 0 WATTS    |
| 4 LAMPS @ 26 WATTS =           | 104 WATTS  |
| <b>TOTAL REPLACEMENT WATTS</b> | <b>104</b> |

NET ENERGY SAVINGS 0.78 MBTU/YR

NET DOLLAR SAVINGS \$4.88

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES

TIME 15:44:38

TITLE PAGE

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ENERGY SAVINGS OPPORTUNITY SURVY  
FT CAMPBELL, KY  
ECO-5: BUILDING 6723

Contract No: 27-93-C-0096

Prepared By: Systems Corp  
Estimator: Keith A. Derrington  
Estimate Prep. Date: 08/31/93  
Current UPB/CSI ID: ORL290

M - C A C E S E D I T I O N  
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Release 4.20

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6723E5

4-454

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6723

TIME 15:44:30

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| LABOR SUMMARY.....                 | 9            |

| DETAILED ESTIMATE              | DETAIL PAGE |
|--------------------------------|-------------|
| 1. BUILDING TO THE 5 FOOT LINE |             |
| AA. ELECTRICAL.....            | 1           |

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Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
 ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
 ECO-5: BUILDING 6723  
 1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 15:44:36

DETAILED ESTIMATE

DETAIL PAGE 1

BASE BID

| DIVISION 16 ELECTRICAL                                  |                                                     | QUANTITY | UOM | CREW | MANHR | LABOR | EQUIPMENT | MATERIAL | SALESTX | DIRECT \$ |
|---------------------------------------------------------|-----------------------------------------------------|----------|-----|------|-------|-------|-----------|----------|---------|-----------|
| 16500 LIGHTING                                          |                                                     |          |     |      |       |       |           |          |         |           |
| 16512 6100 SMALL FL FIXTURES (LESS THAN 40 WATT LAMPS)  |                                                     |          |     |      |       |       |           |          |         |           |
| CD=3 EL 6107                                            | SURF SQ W/1 26W BIAXIAL FL LAMP *** UNIT COSTS: *** | 1.25     |     |      |       | 41.26 | 0.00      | 31.00    | 1.55    | 73.81     |
| WC=1100                                                 | WHITE ACRYLIC LENS 4.00 EA EELEA                    | 5        |     |      |       | 165   | 0         | 124      | 6       | 295       |
| 16512 7000 FLUORESCENT - RECESSED T8 ELECTRONIC BALLAST |                                                     |          |     |      |       |       |           |          |         |           |
| CD=3 EL 7002                                            | 4 FT 1 LAMP PARABOLIC LOUVRE W/ *** UNIT COSTS: *** | 0.54     |     |      |       | 17.84 | 0.07      | 122.00   | 6.10    | 146.01    |
| WC=1100                                                 | REFLECTOR 6.00 EA EELEB                             | 3        |     |      |       | 107   | 0         | 732      | 37      | 876       |
| CD=3 EL 7003                                            | 4 FT 2 LAMP PARABOLIC LOUVRE W/ *** UNIT COSTS: *** | 0.59     |     |      |       | 19.42 | 0.08      | 136.00   | 6.80    | 162.29    |
| WC=1100                                                 | REFLECTOR 27.00 EA EELEB                            | 16       |     |      |       | 524   | 2         | 3,672    | 184     | 4,382     |
| TOTAL DIVISION 16 ELECTRICAL                            |                                                     | 24       |     |      |       | 796   | 2         | 4,528    | 226     | 5,553     |
| TOTAL FACILITY AA. ELECTRICAL                           |                                                     | 24       |     |      |       | 796   | 2         | 4,528    | 226     | 5,553     |
| TOTAL BID ITEM 1. BUILDING TO THE 5 FOOT LINE           |                                                     | 24       |     |      |       | 796   | 2         | 4,528    | 226     | 5,553     |
| TOTAL BASE BID                                          |                                                     | 24       |     |      |       | 796   | 2         | 4,528    | 226     | 5,553     |
| TOTAL ADDITIVE                                          |                                                     | 0        |     |      |       | 0     | 0         | 0        | 0       | 0         |
| TOTAL INCL ADD ENERGY SAVINGS OPPORTUNITY SURVY         |                                                     | 24       |     |      |       | 796   | 2         | 4,528    | 226     | 5,553     |

\*\*\* END OF DETAIL REPORT \*\*\*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6723E5  
 4-456

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6723

TIME 15:44:36

PROJECT NOTES

SUMMARY PAGE 1

---

PROJECT NOTES

ECO-5: INTERIOR LIGHTING

SCOPE OF WORK: EVALUATE USE OF HIGHER EFFICIENCY INTERIOR LIGHTING IN  
SELECTED FACILITIES AT FT CAMPBELL.

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6723

TIME 15:44:30

BID ITEM AND FACILITY SUMMARY

SUMMARY PAGE 1

BID ITEM 1 BUILDING TO THE 5 FOOT LINE

BASE BID

| ID             | FACILITY   |         | COST TO PRM | OVERHEAD | HOME OPC | PROFIT | BOND | OTHER FCTR | TOTAL COST | UNIT COST |
|----------------|------------|---------|-------------|----------|----------|--------|------|------------|------------|-----------|
| AA             | ELECTRICAL |         |             | 10.0%    | 0.0%     | 7.5%   | 2.5% | 0.0%       |            |           |
|                |            | 1.00 EA | 5,553       | 555      | 0        | 458    | 164  | 0          | 6,731      | 6730.90   |
| BID ITEM TOTAL |            | 1.00 EA | 5,553       | 555      | 0        | 458    | 164  | 0          | 6,731      | 6730.90   |
| TOTAL BASE BID |            |         | 5,553       | 555      | 0        | 458    | 164  | 0          | 6,731      |           |
| TOTAL ADDITIVE |            |         | 0           | 0        | 0        | 0      | 0    | 0          | 0          |           |
| TOTAL INCL ADD |            |         | 5,553       | 555      | 0        | 458    | 164  | 0          | 6,731      |           |



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6723

TIME 15:44:36

PROJECT CWE SUMMARY

SUMMARY PAGE 3

| ID BID ITEM                                                | QUANTITY UOM | BASE BID | ADDITIVE | TOTAL COST | UNIT COST |
|------------------------------------------------------------|--------------|----------|----------|------------|-----------|
| 1. BUILDING TO THE 5 FOOT LINE                             | 1.00 EA      | 6,731    |          | 6,731      | 6730.90   |
| TOTAL CURRENT CONTRACT COST                                |              | 6,731    | 0        | 6,731      |           |
| Cost Growth from 08/93 to 08/94<br>Index Values: 0000 0000 | 0.0%         | 0        | 0        | 0          |           |
| ESCALATED CONTRACT COST                                    |              | 6,731    | 0        | 6,731      |           |
| Government-Furnished Property                              |              | 0        |          | 0          |           |
| SUBTOTAL                                                   |              | 6,731    | 0        | 6,731      |           |
| Contingencies                                              | 10.0%        | 673      | 0        | 673        |           |
| SUBTOTAL                                                   |              | 7,404    | 0        | 7,404      |           |
| SIOH (S&A)                                                 | 5.0%         | 370      | 0        | 370        |           |
| CURRENT WORKING ESTIMATE                                   |              | 7,774    | 0        | 7,774      |           |

Estimated Construction Time 365 Days

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6723E5  
4-459

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6723

TIME 15:44:36

CONTRACTOR DIRECT SUMMARY

SUMMARY PAGE 4

| ID | CONTRACTOR    | PM | QUANTITY | DOM | MANHRS | LABOR | EQUIPMENT | MAT   | W/TX | AMOUNT | PCT    | W/OH&P | SUBTOTAL |
|----|---------------|----|----------|-----|--------|-------|-----------|-------|------|--------|--------|--------|----------|
| AA | GENERAL/PRIME |    | 1.00     | EA  | 24     | 796   | 2         | 4,754 |      | 5,553  | 100.0% | 0      | 5,553    |
|    | TOTAL DIRECT  |    |          |     | 24     | 796   | 2         | 4,754 |      | 5,553  | 100.0% |        |          |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS H-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6723

TIME 15:44:36

CONTRACTOR INDIRECT SUMMARY

SUMMARY PAGE 5

| ID | CONTRACTOR              | PM | SUBTOTAL | *** OVERHEAD *** | AMOUNT | PCT | HOFC% | **** PROFIT **** | AMOUNT | PCT  | BOND% | OTHER% | ***** TOTAL CONTRACT ***** | AMOUNT | PCT | UNIT COST |
|----|-------------------------|----|----------|------------------|--------|-----|-------|------------------|--------|------|-------|--------|----------------------------|--------|-----|-----------|
| AA | GENERAL/PRIME           |    | 5,553    | 555              | 10.0%  | 0.0 |       | 458              | 7.5%   | 2.5% | 0.0%  |        | 6,731                      | 100.0% |     | 6730.89   |
|    | TOTAL OVERHEAD & PROFIT |    |          | 555              | 10.0%  |     |       | 458              | 7.5%   |      |       |        |                            |        |     |           |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6723E5

4-461

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6723

TIME 15:44:36

DIVISION SUMMARY

SUMMARY PAGE 6

| ID CSI DIVISION | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|-----------------|----------|-------|-----------|----------|-----------|-------------------------|
| 16 ELECTRICAL   | 24       | 796   | 2         | 4,528    | 226       | 5,553                   |
| TOTAL DIRECT    | 24       | 796   | 2         | 4,528    | 226       | 5,553                   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6723E5  
4-462

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6723

TIME 15:44:36

SYSTEMS SUMMARY

SUMMARY PAGE 7

| ID SYSTEM              | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|------------------------|----------|-------|-----------|----------|-----------|-------------------------|
| 11 INTERIOR ELECTRICAL | 24       | 796   | 2         | 4,528    | 226       | 5,553                   |
| TOTAL DIRECT           | 24       | 796   | 2         | 4,528    | 226       | 5,553                   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6723E5

4-463

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6723

TIME 15:44:36

EQUIPMENT SUMMARY

SUMMARY PAGE 8

| EQUIP DESCRIPTION             | LIFE HRS | TL | HRLY | OWNRSH | OWNS | OVTM | OWNRSH | EXPENSE | HRLY | UPB  | ***** TOTAL ***** | COST |
|-------------------------------|----------|----|------|--------|------|------|--------|---------|------|------|-------------------|------|
| EMI20 SMALL TOOLS             |          |    |      |        |      |      |        |         | 1.40 | 1.40 | 2                 | 2    |
| TOTAL PROJECT EQUIPMENT HOURS |          |    |      |        |      |      |        |         |      |      | 2                 | 2    |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6723

TIME 15:44:36

LABOR SUMMARY

SUMMARY PAGE 9

| CRAFT DESCRIPTION      | BASE  | OVERTM | TXS/INS | FRNG | TRVL | ERLY<br>RATE | UPB<br>RATE | ****<br>HOURS | TOTAL<br>COST |
|------------------------|-------|--------|---------|------|------|--------------|-------------|---------------|---------------|
| LELEC ELECTRICIANS     | 20.50 | 0.0%   | 24.0%   | 7.49 | 0.00 | 32.91        | 25.79       | 24            | 796           |
| TOTAL PROJECT MANHOURS |       |        |         |      |      |              |             | 24            | 796           |

\* \* \* END OF SUMMARY REPORT \* \* \*

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

PAGE 1 OF 1

31 AUGUST 1993

## BUILDING WIDE FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6729

BUILDING USE: \_\_\_\_\_

HOURS/DAY: 10

DAYS/WEEK: 5

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

### EXISTING FIXTURE DATA

4 FOOT

0.1 LAMP @ 48 W/FIXT = 0 WATTS

0.1 LAMP @ 37.8 W/FIXT = 0 WATTS

45.2 LAMP @ 96 W/FIXT = 4320 WATTS

0.2 LAMP @ 75.6 W/FIXT = 0 WATTS

0.3 LAMP @ 144 W/FIXT = 0 WATTS

0.3 LAMP @ 113.4 W/FIXT = 0 WATTS

1.4 LAMP @ 192 W/FIXT = 192 WATTS

0.4 LAMP @ 151.2 W/FIXT = 0 WATTS

2 FOOT

0.1 LAMP @ 31 W/FIXT = 0 WATTS

0.4 LAMP @ 88 W/FIXT = 0 WATTS

0.2 LAMP U @ 96 W/FIXT = 0 WATTS

0.2 LAMP U @ 75.6 W/FIXT = 0 WATTS

8 FOOT

0.2 LAMP @ 180 W/FIXT = 0 WATTS

0.2 LAMP @ 168 W/FIXT = 0 WATTS

TOTAL EXISTING KW 4.5

NET ENERGY SAVINGS 24.7 MBTU/YR

### REPLACEMENT FIXTURE DATA

4 FOOT

0.1 LAMP @ 37 W/FIXT = 0 WATTS

45.1 LAMP W/ REFLECTORS 37 W/FIXT = 1665 WATTS

0.2 LAMP W/ REFLECTORS 58 W/FIXT = 0 WATTS

1.2 LAMP W/ REFLECTORS 58 W/FIXT = 58 WATTS

2 FOOT

0.1 LAMP @ 24 W/FIXT = 0 WATTS

0.2 LAMP W/ REFLECTORS 41 W/FIXT = 0 WATTS

0.2 LAMP U @ 58 W/FIXT = 0 WATTS

8 FOOT

0.1 LAMP W/ REFLECTORS 58 W/FIXT = 0 WATTS

TOTAL REPLACEMENT KW 1.7

NET DOLLAR SAVINGS \$547.55



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES

TIME 15:37:26

TITLE PAGE

---

ENERGY SAVINGS OPPORTUNITY SURVY  
FT CAMPBELL, KY  
ECO-5: BUILDING 6729

Contract No: 27-93-C-0096

Prepared By: Systems Corp  
Estimator: Keith A. Derrington  
Estimate Prep. Date: 08/31/93  
Current UPB/CSI ID: ORL290

M - C A C E S   E D I T I O N  
COMPOSER Plus Copyright (C) 1985, 1988  
by Building Systems Design, Inc.  
Release 4.20

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6729E5  
4-467

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6729

TIME 15:37:26

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| LABOR SUMMARY.....                 | 9            |

| DETAILED ESTIMATE              | DETAIL PAGE |
|--------------------------------|-------------|
| 1. BUILDING TO THE 5 FOOT LINE |             |
| AA. ELECTRICAL.....            | 1           |

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Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
 ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
 ECO-5: BUILDING 6729  
 1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 15:37:26

DETAILED ESTIMATE

DETAIL PAGE 1

BASE BID

| DIVISION 16 ELECTRICAL                                  |                                           | QUANTITY            | UOM | CREW | MANHR | LABOR | EQUIPMENT | MATERIAL | SALESTX | DIRECT \$ |
|---------------------------------------------------------|-------------------------------------------|---------------------|-----|------|-------|-------|-----------|----------|---------|-----------|
| 16500 LIGHTING                                          |                                           |                     |     |      |       |       |           |          |         |           |
| 16512 7000 FLUORESCENT - RECESSED T8 ELECTRONIC BALLAST |                                           |                     |     |      |       |       |           |          |         |           |
| CD=3 EL 7002                                            | 4 FT 1 LAMP PARABOLIC LOUVRE W/ REFLECTOR | *** UNIT COSTS: *** |     |      | 0.54  | 17.84 | 0.07      | 122.00   | 6.10    | 146.01    |
| WC=1100                                                 |                                           | 45.00 EA EELEB      |     | 24   |       | 803   | 3         | 5,490    | 275     | 6,571     |
| CD=3 EL 7003                                            | 4 FT 2 LAMP PARABOLIC LOUVRE W/ REFLECTOR | *** UNIT COSTS: *** |     |      | 0.59  | 19.42 | 0.08      | 136.00   | 6.80    | 162.29    |
| WC=1100                                                 |                                           | 1.00 EA EELEB       |     | 1    |       | 19    | 0         | 136      | 7       | 162       |
| TOTAL DIVISION 16 ELECTRICAL                            |                                           |                     |     |      | 25    | 822   | 3         | 5,626    | 281     | 6,733     |
| TOTAL FACILITY AA. ELECTRICAL                           |                                           |                     |     |      | 25    | 822   | 3         | 5,626    | 281     | 6,733     |
| TOTAL BID ITEM 1. BUILDING TO THE 5 FOOT LINE           |                                           |                     |     |      | 25    | 822   | 3         | 5,626    | 281     | 6,733     |
| TOTAL BASE BID                                          |                                           |                     |     |      | 25    | 822   | 3         | 5,626    | 281     | 6,733     |
| TOTAL ADDITIVE                                          |                                           |                     |     |      | 0     | 0     | 0         | 0        | 0       | 0         |
| TOTAL INCL ADD ENERGY SAVINGS OPPORTUNITY SURVY         |                                           |                     |     |      | 25    | 822   | 3         | 5,626    | 281     | 6,733     |

\*\*\* END OF DETAIL REPORT \*\*\*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6729E5

4-469

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6729

TIME 15:37:26

PROJECT NOTES

SUMMARY PAGE 1

---

PROJECT NOTES

ECO-5: INTERIOR LIGHTING

SCOPE OF WORK: EVALUATE USE OF HIGHER EFFICIENCY INTERIOR LIGHTING IN  
SELECTED FACILITIES AT FT CAMPBELL.

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6729

TIME 15:37:26

BID ITEM AND FACILITY SUMMARY

SUMMARY PAGE 2

BID ITEM 1 BUILDING TO THE 5 FOOT LINE

BASE BID

| ID             | FACILITY   |         | COST TO PRM | OVERHEAD     | HOME OFC  | PROFIT      | BOND        | OTHER PCTR | TOTAL COST | UNIT COST |
|----------------|------------|---------|-------------|--------------|-----------|-------------|-------------|------------|------------|-----------|
| AA             | ELECTRICAL | 1.00 EA | 6,733       | 10.0%<br>673 | 0.0%<br>0 | 7.5%<br>555 | 2.5%<br>199 | 0.0%<br>0  | 8,161      | 8160.66   |
| <hr/>          |            |         |             |              |           |             |             |            |            |           |
| BID ITEM TOTAL |            | 1.00 EA | 6,733       | 673          | 0         | 555         | 199         | 0          | 8,161      | 8160.66   |
| <hr/>          |            |         |             |              |           |             |             |            |            |           |
| TOTAL BASE BID |            |         | 6,733       | 673          | 0         | 555         | 199         | 0          | 8,161      |           |
| TOTAL ADDITIVE |            |         | 0           | 0            | 0         | 0           | 0           | 0          | 0          |           |
| <hr/>          |            |         |             |              |           |             |             |            |            |           |
| TOTAL INCL ADD |            |         | 6,733       | 673          | 0         | 555         | 199         | 0          | 8,161      |           |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6729

TIME 15:37:26

PROJECT CWE SUMMARY

SUMMARY PAGE 3

| ID | BID ITEM                                                   | QUANTITY | UOM  | BASE BID | ADDITIVE | TOTAL COST | UNIT COST |
|----|------------------------------------------------------------|----------|------|----------|----------|------------|-----------|
| 1. | BUILDING TO THE 5 FOOT LINE                                | 1.00     | EA   | 8,161    |          | 8,161      | 8160.70   |
|    | TOTAL CURRENT CONTRACT COST                                |          |      | 8,161    | 0        | 8,161      |           |
|    | Cost Growth from 08/93 to 08/94<br>Index Values: 0000 0000 | 0.0%     |      | 0        | 0        | 0          |           |
|    | ESCALATED CONTRACT COST                                    |          |      | 8,161    | 0        | 8,161      |           |
|    | Government-Furnished Property                              |          |      | 0        |          | 0          |           |
|    | SUBTOTAL                                                   |          |      | 8,161    | 0        | 8,161      |           |
|    | Contingencies                                              | 10.0%    |      | 816      | 0        | 816        |           |
|    | SUBTOTAL                                                   |          |      | 8,977    | 0        | 8,977      |           |
|    | SIOH (S&A)                                                 | 5.0%     |      | 449      | 0        | 449        |           |
|    | CURRENT WORKING ESTIMATE                                   |          |      | 9,426    | 0        | 9,426      |           |
|    | Estimated Construction Time                                | 365      | Days |          |          |            |           |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6729

TIME 15:37:20

CONTRACTOR DIRECT SUMMARY

SUMMARY PAGE 4

| ID | CONTRACTOR    | PM | QUANTITY | UOM | MANHRS | LABOR | EQUIPMENT | MAT   | W/TX | ** TOTAL DIRECT<br>AMOUNT PCT | ** SUBCON<br>W/OH&P | SUBTOTAL |
|----|---------------|----|----------|-----|--------|-------|-----------|-------|------|-------------------------------|---------------------|----------|
| AA | GENERAL/PRIME |    | 1.00     | EA  | 25     | 822   | 3         | 5,907 |      | 6,733 100.0%                  | 0                   | 6,733    |
|    | TOTAL DIRECT  |    |          |     | 25     | 822   | 3         | 5,907 |      | 6,733 100.0%                  |                     |          |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6729E5

4-473

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6729

TIME 15:37:26

CONTRACTOR INDIRECT SUMMARY

SUMMARY PAGE 5

| ID | CONTRACTOR              | PH | SUBTOTAL | *** OVERHEAD ***<br>AMOUNT | PCT   | HOPC% | **** PROFIT ****<br>AMOUNT | PCT  | BOND% | OTHER% | ***** TOTAL CONTRACT *****<br>AMOUNT | PCT    | UNIT COST |
|----|-------------------------|----|----------|----------------------------|-------|-------|----------------------------|------|-------|--------|--------------------------------------|--------|-----------|
| AA | GENERAL/PRIME           |    | 6,733    | 673                        | 10.0% | 0.0   | 555                        | 7.5% | 2.5%  | 0.0%   | 8,161                                | 100.0% | 8160.67   |
|    | TOTAL OVERHEAD & PROFIT |    |          | 673                        | 10.0% |       | 555                        | 7.5% |       |        |                                      |        |           |



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6729

TIME 15:37:26

CSI DIVISION SUMMARY

SUMMARY PAGE 6

| ID CSI DIVISION | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|-----------------|----------|-------|-----------|----------|-----------|-------------------------|
| 16 ELECTRICAL   | 25       | 822   | 3         | 5,626    | 281       | 6,733                   |
| TOTAL DIRECT    | 25       | 822   | 3         | 5,626    | 281       | 6,733                   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 6729E5

4-475

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6729

TIME 15:37:2

SYSTEMS SUMMARY

SUMMARY PAGE

| ID SYSTEM              | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|------------------------|----------|-------|-----------|----------|-----------|-------------------------|
| 11 INTERIOR ELECTRICAL | 25       | 822   | 3         | 5,626    | 281       | 6,733                   |
| TOTAL DIRECT           | 25       | 822   | 3         | 5,626    | 281       | 6,733                   |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6729

TIME 15:37:26

EQUIPMENT SUMMARY

SUMMARY PAGE 8

| EQUIP DESCRIPTION             | LIFE HRS | TL HRLY | OWNRSH | OWNS | OVTM | OWNRSH | EXPENSE | HRLY RATE | UPB RATE | HOURS | TOTAL COST |
|-------------------------------|----------|---------|--------|------|------|--------|---------|-----------|----------|-------|------------|
| EMI20 SMALL TOOLS             |          |         |        |      |      |        |         | 1.40      | 1.40     | 2     | 3          |
| TOTAL PROJECT EQUIPMENT HOURS |          |         |        |      |      |        |         |           |          | 2     | 3          |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 6729

TIME 15:37:26

LABOR SUMMARY

SUMMARY PAGE 9

| CRAFT DESCRIPTION      | BASE  | OVERTM | TXS/INS | FRNG | TRVL | HRLY<br>RATE | UPB<br>RATE | ****<br>HOURS | TOTAL<br>COST |
|------------------------|-------|--------|---------|------|------|--------------|-------------|---------------|---------------|
| LELEC ELECTRICIANS     | 20.50 | 0.0%   | 24.0%   | 7.49 | 0.00 | 32.91        | 25.79       | 25            | 823           |
| TOTAL PROJECT MANHOURS |       |        |         |      |      |              |             | 25            | 823           |

\* \* \* END OF SUMMARY REPORT \* \* \*

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

PAGE 1 OF 2

31 AUGUST 1993

## BUILDING WIDE FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 7510

BUILDING USE:

HOURS/DAY 11

DAYS/WEEK 5

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

### EXISTING FIXTURE DATA

4 FOOT

|              |               |             |               |            |            |
|--------------|---------------|-------------|---------------|------------|------------|
| 2 1 LAMP @   | 48 W/FXT =    | 96 WATTS    | 2 1 LAMP @    | 37 W/FXT = | 74 WATTS   |
| 0 1 LAMP @   | 37.8 W/FXT =  | 0 WATTS     |               |            |            |
| 265 2 LAMP @ | 96 W/FXT =    | 25440 WATTS | 265 1 LAMP W/ | 37 W/FXT = | 9605 WATTS |
| 0 2 LAMP @   | 75.6 W/FXT =  | 0 WATTS     | REFLECTORS    |            |            |
| 0 3 LAMP @   | 144 W/FXT =   | 0 WATTS     | 0 2 LAMP W/   | 58 W/FXT = | 0 WATTS    |
| 0 3 LAMP @   | 113.4 W/FXT = | 0 WATTS     | REFLECTORS    |            |            |
| 0 4 LAMP @   | 192 W/FXT =   | 0 WATTS     | 45 2 LAMP W/  | 58 W/FXT = | 2610 WATTS |
| 45 4 LAMP @  | 151.2 W/FXT = | 6804 WATTS  | REFLECTORS    |            |            |

2 FOOT

|              |              |             |              |            |           |
|--------------|--------------|-------------|--------------|------------|-----------|
| 0 1 LAMP @   | 31 W/FXT =   | 0 WATTS     | 0 1 LAMP @   | 24 W/FXT = | 0 WATTS   |
| 0 4 LAMP @   | 88 W/FXT =   | 0 WATTS     | 0 2 LAMP W/  | 41 W/FXT = | 0 WATTS   |
|              |              |             | REFLECTORS   |            |           |
| 0 2 LAMP U @ | 96 W/FXT =   | 0 WATTS     | 2 2 LAMP U @ | 58 W/FXT = | 116 WATTS |
| 2 2 LAMP U @ | 75.6 W/FXT = | 151.2 WATTS |              |            |           |

8 FOOT

|            |             |         |             |            |         |
|------------|-------------|---------|-------------|------------|---------|
| 0 2 LAMP @ | 180 W/FXT = | 0 WATTS | 0 1 LAMP W/ | 58 W/FXT = | 0 WATTS |
| 0 2 LAMP @ | 168 W/FXT = | 0 WATTS | REFLECTORS  |            |         |

TOTAL EXISTING KW

32.5

TOTAL REPLACEMENT KW

12.6

NET ENERGY SAVINGS

194.1 MBTU/YR

NET DOLLAR SAVINGS

\$4,013.44

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

31 AUGUST 1993

PAGE 2 OF 2

## EXIT SIGN REPLACEMENT - INCANDESCENT TO LED

BUILDING #: 7510

# EXIT SIGNS 1

CURRENT WATTAGE 40

REPLACEMENT WATTAGE 3

HOURS/YEAR 8760

### ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

NET ENERGY SAVINGS

1.10 MBTU/YR

NET DOLLAR SAVINGS

\$12.08

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES

TIME 08:07:34

TITLE PAGE

---

ENERGY SAVINGS OPPORTUNITY SURVY  
FT CAMPBELL, KY  
ECO-5: BUILDING 7510

Contract No: 27-93-C-0096

Prepared By: Systems Corp  
Estimator: Keith A. Derrington  
Estimate Prep. Date: 08/31/93  
Current UPB/CSI ID: ORL290

M - C A C E S E D I T I O N  
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Release 4.20

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 7510E5  
4-481

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7510

TIME 08:07:34

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| AA. ELECTRICAL.....            | 1           |

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Tue 31 Aug 1993

- U.S. ARMY CORPS of ENGINEERS M-CACES  
 ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
 ECO-5: BUILDING 7510  
 1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 08:07:34

DETAILED ESTIMATE

DETAIL PAGE 1

BASE BID

| DIVISION 16 ELECTRICAL                                  |                                           | QUANTITY            | UOM | CREW | MANHR | LABOR | EQUIPMENT | MATERIAL | SALESTX | DIRECT \$    |
|---------------------------------------------------------|-------------------------------------------|---------------------|-----|------|-------|-------|-----------|----------|---------|--------------|
| 16500 LIGHTING                                          |                                           |                     |     |      |       |       |           |          |         |              |
| 16512 7000 FLUORESCENT - RECESSED T8 ELECTRONIC BALLAST |                                           |                     |     |      |       |       |           |          |         |              |
| CD=3 EL 7001                                            | 4 FT 1 LAMP PARABOLIC LOUVRE              | *** UNIT COSTS: *** |     |      | 0.57  | 18.86 | 0.07      | 105.25   | 5.26    | 129.45       |
| WC=1100                                                 |                                           | 2.00 EA EELEB       |     | 1    | 38    | 0     | 211       | 11       | 259     |              |
| CD=3 EL 7002                                            | 4 FT 1 LAMP PARABOLIC LOUVRE W/ REFLECTOR | *** UNIT COSTS: *** |     |      | 0.54  | 17.84 | 0.07      | 122.00   | 6.10    | 146.01       |
| WC=1100                                                 |                                           | 265.00 EA EELEB     |     | 143  | 4,728 | 18    | 32,330    | 1,617    | 38,693  |              |
| CD=3 EL 7003                                            | 4 FT 2 LAMP PARABOLIC LOUVRE W/ REFLECTOR | *** UNIT COSTS: *** |     |      | 0.59  | 19.42 | 0.08      | 136.00   | 6.80    | 162.29       |
| WC=1100                                                 |                                           | 45.00 EA EELEB      |     | 26   | 874   | 3     | 6,120     | 306      | 7,303   |              |
| CD=3 EL 7006                                            | 2 FT 2 LAMP U PARABOLIC LOUVRE            | *** UNIT COSTS: *** |     |      | 0.52  | 17.19 | 0.07      | 119.00   | 5.95    | 142.21       |
| WC=1100                                                 |                                           | 2.00 EA EELEB       |     | 1    | 34    | 0     | 238       | 12       | 284     |              |
| 16530 1100 SURFACE OR PENDANT MOUNTED                   |                                           |                     |     |      |       |       |           |          |         |              |
| CD=3 EL 1118                                            | LED EXIT SIGN W/ BATTERY                  | *** UNIT COSTS: *** |     |      | 1.25  | 41.26 | 0.00      | 121.45   | 6.07    | 168.79       |
| WC=1100                                                 |                                           | 1.00 EA EELEA       |     | 1    | 41    | 0     | 121       | 6        | 169     |              |
| TOTAL DIVISION 16 ELECTRICAL                            |                                           |                     |     |      |       | 173   | 5,716     | 22       | 39,020  | 1,951 46,709 |
| TOTAL FACILITY AA. ELECTRICAL                           |                                           |                     |     |      |       | 173   | 5,716     | 22       | 39,020  | 1,951 46,709 |
| TOTAL BID ITEM 1. BUILDING TO THE 5 FOOT LINE           |                                           |                     |     |      |       | 173   | 5,716     | 22       | 39,020  | 1,951 46,709 |
| TOTAL BASE BID                                          |                                           |                     |     |      |       | 173   | 5,716     | 22       | 39,020  | 1,951 46,709 |
| TOTAL ADDITIVE                                          |                                           |                     |     |      |       | 0     | 0         | 0        | 0       | 0            |
| TOTAL INCL ADD ENERGY SAVINGS OPPORTUNITY SURVY         |                                           |                     |     |      |       | 173   | 5,716     | 22       | 39,020  | 1,951 46,709 |

\* \* \* END OF DETAIL REPORT \* \* \*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 7510E5

4-483

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7510

TIME 08:07:34

PROJECT NOTES

SUMMARY PAGE 1

---

PROJECT NOTES

ECO-5: INTERIOR LIGHTING

SCOPE OF WORK: EVALUATE USE OF HIGHER EFFICIENCY INTERIOR LIGHTING IN  
SELECTED FACILITIES AT FT CAMPBELL.

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 7510E5

4-484

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7510

TIME 08:07:34

BID ITEM AND FACILITY SUMMARY

SUMMARY PAGE 2

BID ITEM 1 BUILDING TO THE 5 FOOT LINE

BASE BID

| ID             | FACILITY   |         | COST TO PRM | OVERHEAD       | HOME OFC  | PROFIT        | BOND          | OTHER FCTR | TOTAL COST | UNIT COST |
|----------------|------------|---------|-------------|----------------|-----------|---------------|---------------|------------|------------|-----------|
| AA             | ELECTRICAL | 1.00 EA | 46,709      | 10.0%<br>4,671 | 0.0%<br>0 | 7.5%<br>3,853 | 2.5%<br>1,381 | 0.0%<br>0  | 56,614     | 56613.94  |
| BID ITEM TOTAL |            | 1.00 EA | 46,709      | 4,671          | 0         | 3,853         | 1,381         | 0          | 56,614     | 56613.94  |
| TOTAL BASE BID |            |         | 46,709      | 4,671          | 0         | 3,853         | 1,381         | 0          | 56,614     |           |
| TOTAL ADDITIVE |            |         | 0           | 0              | 0         | 0             | 0             | 0          | 0          |           |
| TOTAL INCL ADD |            |         | 46,709      | 4,671          | 0         | 3,853         | 1,381         | 0          | 56,614     |           |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 7510E5

4-485

Tue 31 Aug 1993

- U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7510

TIME 08:07:34

PROJECT CWE SUMMARY

SUMMARY PAGE 3

| ID | BID ITEM                                                   | QUANTITY | UOM  | BASE BID | ADDITIVE | TOTAL COST | UNIT COST |
|----|------------------------------------------------------------|----------|------|----------|----------|------------|-----------|
| 1. | BUILDING TO THE 5 FOOT LINE                                | 1.00     | EA   | 56,614   |          | 56,614     | 56613.90  |
|    | TOTAL CURRENT CONTRACT COST                                |          |      | 56,614   | 0        | 56,614     |           |
|    | Cost Growth from 08/93 to 08/94<br>Index Values: 0000 0000 | 0.0%     |      | 0        | 0        | 0          |           |
|    | ESCALATED CONTRACT COST                                    |          |      | 56,614   | 0        | 56,614     |           |
|    | Government-Furnished Property                              |          |      | 0        |          | 0          |           |
|    | SUBTOTAL                                                   |          |      | 56,614   | 0        | 56,614     |           |
|    | Contingencies                                              | 10.0%    |      | 5,661    | 0        | 5,661      |           |
|    | SUBTOTAL                                                   |          |      | 62,275   | 0        | 62,275     |           |
|    | SIOH (S&A)                                                 | 5.0%     |      | 3,114    | 0        | 3,114      |           |
|    | CURRENT WORKING ESTIMATE                                   |          |      | 65,389   | 0        | 65,389     |           |
|    | Estimated Construction Time                                | 365      | Days |          |          |            |           |

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7510

TIME 08:07:34

CONTRACTOR DIRECT SUMMARY

SUMMARY PAGE 4

| ID | CONTRACTOR    | PM | QUANTITY | UOM | MANHRS | LABOR | EQUIPMENT | MAT W/TX | ** TOTAL DIRECT *<br>AMOUNT PCT | * SUBCON *<br>W/OH&P | SUBTOTAL |
|----|---------------|----|----------|-----|--------|-------|-----------|----------|---------------------------------|----------------------|----------|
| AA | GENERAL/PRIME |    | 1.00     | EA  | 173    | 5,716 | 22        | 40,971   | 46,709 100.0%                   | 0                    | 46,709   |
|    | TOTAL DIRECT  |    |          |     | 173    | 5,716 | 22        | 40,971   | 46,709 100.0%                   |                      |          |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 7510E5

4-487

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7510

TIME 08:07:34

CONTRACTOR INDIRECT SUMMARY

SUMMARY PAGE 5

| ID | CONTRACTOR              | PK | SUBTOTAL | *** OVERHEAD ***<br>AMOUNT | PCT   | HOFC% | **** PROFIT ****<br>AMOUNT | PCT  | BOND% | OTHER% | ***** TOTAL CONTRACT *****<br>AMOUNT | PCT    | UNIT COST |
|----|-------------------------|----|----------|----------------------------|-------|-------|----------------------------|------|-------|--------|--------------------------------------|--------|-----------|
| AA | GENERAL/PRIME           |    | 46,709   | 4,671                      | 10.0% | 0.0   | 3,853                      | 7.5% | 2.5%  | 0.0%   | 56,614                               | 100.0% | 56613.92  |
|    | TOTAL OVERHEAD & PROFIT |    |          | 4,671                      | 10.0% |       | 3,853                      | 7.5% |       |        |                                      |        |           |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 7510E5  
4-488

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7510

TIME 08:07:34

1 DIVISION SUMMARY

SUMMARY PAGE 6

| ID CSI DIVISION | MANHOOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|-----------------|-----------|-------|-----------|----------|-----------|-------------------------|
| 16 ELECTRICAL   | 173       | 5,716 | 22        | 39,020   | 1,951     | 46,709                  |
| TOTAL DIRECT    | 173       | 5,716 | 22        | 39,020   | 1,951     | 46,709                  |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 7510E5  
4-489

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7510

TIME 08:07:34

SYSTEMS SUMMARY

SUMMARY PAGE 7

| ID SYSTEM              | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|------------------------|----------|-------|-----------|----------|-----------|-------------------------|
| 11 INTERIOR ELECTRICAL | 173      | 5,716 | 22        | 39,020   | 1,951     | 46,709                  |
| TOTAL DIRECT           | 173      | 5,716 | 22        | 39,020   | 1,951     | 46,709                  |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 7510E5  
4-490



Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7510

TIME 08:07:34

EQUIPMENT SUMMARY

SUMMARY PAGE 8

| EQUIP DESCRIPTION             | LIFE HRS | TL HRLY | OWNRSH | OWNS | OVTM | OWNRSH | EXPENSE | HRLY RATE | UPB RATE | HOURS | TOTAL COST |
|-------------------------------|----------|---------|--------|------|------|--------|---------|-----------|----------|-------|------------|
| EMI20 SMALL TOOLS             |          |         |        |      |      |        |         | 1.40      | 1.40     | 16    | 22         |
| TOTAL PROJECT EQUIPMENT HOURS |          |         |        |      |      |        |         |           |          | 16    | 22         |

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7510

TIME 08:07:34

LABOR SUMMARY

SUMMARY PAGE 9

| CRAFT DESCRIPTION      | BASE  | OVERTH | TXS/INS | FRNG | TRVL | HRLY<br>RATE | UPB<br>RATE | ****<br>HOURS | TOTAL<br>COST |
|------------------------|-------|--------|---------|------|------|--------------|-------------|---------------|---------------|
| LELEC ELECTRICIANS     | 20.50 | 0.0%   | 24.0%   | 7.49 | 0.00 | 32.91        | 25.79       | 173           | 5,717         |
| TOTAL PROJECT MANHOURS |       |        |         |      |      |              |             | 173           | 5,717         |

\* \* \* END OF SUMMARY REPORT \* \* \*

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

PAGE 1 OF 2

31 AUGUST 1993

## BUILDING WIDE FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 7514

BUILDING USE:

HOURS/DAY 5

DAYS/WEEK 1

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$0.00 PER KW

### EXISTING FIXTURE DATA

4 FOOT

0.1 LAMP @ 48 W/FXT = 0 WATTS  
 0.1 LAMP @ 37.8 W/FXT = 0 WATTS  
 16.2 LAMP @ 96 W/FXT = 1536 WATTS  
 0.2 LAMP @ 75.6 W/FXT = 0 WATTS  
 0.3 LAMP @ 144 W/FXT = 0 WATTS  
 0.3 LAMP @ 113.4 W/FXT = 0 WATTS  
 0.4 LAMP @ 192 W/FXT = 0 WATTS  
 0.4 LAMP @ 151.2 W/FXT = 0 WATTS

2 FOOT

4.1 LAMP @ 31 W/FXT = 124 WATTS  
 0.4 LAMP @ 88 W/FXT = 0 WATTS  
 0.2 LAMP U @ 96 W/FXT = 0 WATTS  
 0.2 LAMP U @ 75.6 W/FXT = 0 WATTS

8 FOOT

0.2 LAMP @ 180 W/FXT = 0 WATTS  
 0.2 LAMP @ 168 W/FXT = 0 WATTS

TOTAL EXISTING KW

1.7

### REPLACEMENT FIXTURE DATA

4 FOOT

0.1 LAMP @ 37 W/FXT = 0 WATTS  
 16.1 LAMP W/ REFLECTORS 37 W/FXT = 592 WATTS  
 0.2 LAMP W/ REFLECTORS 58 W/FXT = 0 WATTS  
 0.2 LAMP W/ REFLECTORS 58 W/FXT = 0 WATTS

2 FOOT

4.1 LAMP @ 24 W/FXT = 96 WATTS  
 0.2 LAMP W/ REFLECTORS 41 W/FXT = 0 WATTS  
 0.2 LAMP U @ 58 W/FXT = 0 WATTS

8 FOOT

0.1 LAMP W/ REFLECTORS 58 W/FXT = 0 WATTS

TOTAL REPLACEMENT KW

0.7

NET ENERGY SAVINGS

0.9 MBTU/YR

NET DOLLAR SAVINGS

\$5.34

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

PAGE 2 OF 2

31 AUGUST 1993

## BUILDING WIDE INCANDESCENT LAMP REPLACEMENT

BUILDING #: 7514

LAMP USE:

HOURS/DAY 5

DAYS/WEEK 1

PEAK USE 2 (1-YES, 2-NO)

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$0.00 PER KW

### EXISTING INCANDESCENTS

|                       |            |
|-----------------------|------------|
| 0 LAMPS @ 25 WATTS =  | 0 WATTS    |
| 0 LAMPS @ 40 WATTS =  | 0 WATTS    |
| 0 LAMPS @ 52 WATTS =  | 0 WATTS    |
| 22 LAMPS @ 60 WATTS = | 1320 WATTS |
| 0 LAMPS @ 75 WATTS =  | 0 WATTS    |
| 1 LAMPS @ 90 WATTS =  | 90 WATTS   |
| 0 LAMPS @ 100 WATTS = | 0 WATTS    |

TOTAL EXISTING WATTS 1410

### COMPACT FLUORESCENT REPLACEMENT

|                       |           |
|-----------------------|-----------|
| 0 LAMPS @ 7 WATTS =   | 0 WATTS   |
| 0 LAMPS @ 9 WATTS =   | 0 WATTS   |
| 22 LAMPS @ 13 WATTS = | 286 WATTS |
| 0 LAMPS @ 18 WATTS =  | 0 WATTS   |
| 1 LAMPS @ 26 WATTS =  | 26 WATTS  |

TOTAL REPLACEMENT WATTS 312

NET ENERGY SAVINGS 0.97 MBTU/YR

NET DOLLAR SAVINGS \$6.04

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES

TIME 15:57:49

TITLE PAGE

---

ENERGY SAVINGS OPPORTUNITY SURVY  
FT CAMPBELL, KY  
ECO-5: BUILDING 7514

Contract No: 27-93-C-0096

Prepared By: Systems Corp  
Estimator: Keith A. Derrington  
Estimate Prep. Date: 08/31/93  
Current UPB/CSI ID: ORL290

M - C A C E S E D I T I O N  
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Release 4.20

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 7514E5  
4-495

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7514

TIME 15:57:49

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DETAILED ESTIMATE

DETAIL PAGE

|                                |   |
|--------------------------------|---|
| 1. BUILDING TO THE 5 FOOT LINE |   |
| AA. ELECTRICAL.....            | 1 |

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Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
 ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
 ECO-5: BUILDING 7514  
 1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 15:57:49

DETAILED ESTIMATE

DETAIL PAGE 1

BASE BID

| DIVISION 16 ELECTRICAL                                  |                                 | QUANTITY | UOM             | CREW | MANHR | LABOR | EQUIPMENT | MATERIAL | SALESTY | DIRECT \$ |
|---------------------------------------------------------|---------------------------------|----------|-----------------|------|-------|-------|-----------|----------|---------|-----------|
| 16500 LIGHTING                                          |                                 |          |                 |      |       |       |           |          |         |           |
| 16512 6100 SMALL FL FIXTURES (LESS THAN 40 WATT LAMPS)  |                                 |          |                 |      |       |       |           |          |         |           |
| CD=3 EL 6105                                            | SURF SQ W/1 13W BIAXIAL FL LAMP | ***      | UNIT COSTS: *** | 1.25 | 41.26 | 0.00  | 27.80     | 1.39     | 70.45   |           |
| WC=1100                                                 | WHITE ACRYLIC LENS              | 22.00    | EA EELEA        | 28   | 908   | 0     | 612       | 31       | 1,550   |           |
| CD=3 EL 6107                                            | SURF SQ W/1 26W BIAXIAL FL LAMP | ***      | UNIT COSTS: *** | 1.25 | 41.26 | 0.00  | 31.00     | 1.55     | 73.81   |           |
| WC=1100                                                 | WHITE ACRYLIC LENS              | 1.00     | EA EELEA        | 1    | 41    | 0     | 31        | 2        | 74      |           |
| 16512 7000 FLUORESCENT - RECESSED T8 ELECTRONIC BALLAST |                                 |          |                 |      |       |       |           |          |         |           |
| CD=3 EL 7002                                            | 4 FT 1 LAMP PARABOLIC LOUVRE W/ | ***      | UNIT COSTS: *** | 0.54 | 17.84 | 0.07  | 122.00    | 6.10     | 146.01  |           |
| WC=1100                                                 | REFLECTOR                       | 16.00    | EA EELEB        | 9    | 285   | 1     | 1,952     | 98       | 2,336   |           |
| CD=3 EL 7004                                            | 2 FT 1 LAMP                     | ***      | UNIT COSTS: *** | 0.55 | 18.09 | 0.07  | 83.50     | 4.18     | 105.83  |           |
| WC=1100                                                 |                                 | 4.00     | EA EELEB        | 2    | 72    | 0     | 334       | 17       | 423     |           |
| TOTAL DIVISION 16 ELECTRICAL                            |                                 |          |                 |      | 40    | 1,307 | 1         | 2,929    | 146     | 4,383     |
| TOTAL FACILITY AA. ELECTRICAL                           |                                 |          |                 |      | 40    | 1,307 | 1         | 2,929    | 146     | 4,383     |
| TOTAL BID ITEM 1. BUILDING TO THE 5 FOOT LINE           |                                 |          |                 |      | 40    | 1,307 | 1         | 2,929    | 146     | 4,383     |
| TOTAL BASE BID                                          |                                 |          |                 |      | 40    | 1,307 | 1         | 2,929    | 146     | 4,383     |
| TOTAL ADDITIVE                                          |                                 |          |                 |      | 0     | 0     | 0         | 0        | 0       | 0         |
| TOTAL INCL ADD ENERGY SAVINGS OPPORTUNITY SURVY         |                                 |          |                 |      | 40    | 1,307 | 1         | 2,929    | 146     | 4,383     |

\* \* \* END OF DETAIL REPORT \* \* \*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 7514E5  
4-497

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7514

TIME 15:57:49

PROJECT NOTES

SUMMARY PAGE 1

---

PROJECT NOTES

ECO-5: INTERIOR LIGHTING

SCOPE OF WORK: EVALUATE USE OF HIGHER EFFICIENCY INTERIOR LIGHTING IN  
SELECTED FACILITIES AT FT CAMPBELL.



Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7514

TIME 15:57:49

BID ITEM AND FACILITY SUMMARY

SUMMARY PAGE 2

BID ITEM 1 BUILDING TO THE 5 FOOT LINE

BASE BID

| ID             | FACILITY   | COST TO PRM | OVERHEAD | HOME OFC | PROFIT | BOND | OTHER FCTR | TOTAL COST | UNIT COST |
|----------------|------------|-------------|----------|----------|--------|------|------------|------------|-----------|
| AA             | ELECTRICAL |             | 10.0%    | 0.0%     | 7.5%   | 2.5% | 0.0%       |            |           |
|                | 1.00 EA    | 4,383       | 438      | 0        | 362    | 130  | 0          | 5,313      | 5312.85   |
| <hr/>          |            |             |          |          |        |      |            |            |           |
| BID ITEM TOTAL | 1.00 EA    | 4,383       | 438      | 0        | 362    | 130  | 0          | 5,313      | 5312.85   |
| <hr/>          |            |             |          |          |        |      |            |            |           |
| TOTAL BASE BID |            | 4,383       | 438      | 0        | 362    | 130  | 0          | 5,313      |           |
| TOTAL ADDITIVE |            | 0           | 0        | 0        | 0      | 0    | 0          | 0          |           |
| <hr/>          |            |             |          |          |        |      |            |            |           |
| TOTAL INCL ADD |            | 4,383       | 438      | 0        | 362    | 130  | 0          | 5,313      |           |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7514

TIME 15:57:49

PROJECT CWE SUMMARY

SUMMARY PAGE 1

| ID BID ITEM                                                | QUANTITY UOM | BASE BID | ADDITIVE | TOTAL COST | UNIT COST |
|------------------------------------------------------------|--------------|----------|----------|------------|-----------|
| 1. BUILDING TO THE 5 FOOT LINE                             | 1.00 EA      | 5,313    |          | 5,313      | 5312.80   |
| TOTAL CURRENT CONTRACT COST                                |              | 5,313    | 0        | 5,313      |           |
| Cost Growth from 08/93 to 08/94<br>Index Values: 0000 0000 | 0.0%         | 0        | 0        | 0          |           |
| ESCALATED CONTRACT COST                                    |              | 5,313    | 0        | 5,313      |           |
| Government-Furnished Property                              |              | 0        |          | 0          |           |
| SUBTOTAL                                                   |              | 5,313    | 0        | 5,313      |           |
| Contingencies                                              | 10.0%        | 531      | 0        | 531        |           |
| SUBTOTAL                                                   |              | 5,844    | 0        | 5,844      |           |
| SIOH (S&A)                                                 | 5.0%         | 292      | 0        | 292        |           |
| CURRENT WORKING ESTIMATE                                   |              | 6,136    | 0        | 6,136      |           |

Estimated Construction Time 365 Days

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7514

TIME 15:57:49

CONTRACTOR DIRECT SUMMARY

SUMMARY PAGE 4

| ID | CONTRACTOR    | PM | QUANTITY | DOM | MANHRS | LABOR | EQUIPMENT | MAT   | W/TX | ** TOTAL DIRECT *<br>AMOUNT PCT | * SUBCON *<br>W/OH&P | SUBTOTAL |
|----|---------------|----|----------|-----|--------|-------|-----------|-------|------|---------------------------------|----------------------|----------|
| AA | GENERAL/PRIME |    | 1.00     | EA  | 40     | 1,307 | 1         | 3,075 |      | 4,383 100.0%                    | 0                    | 4,383    |
|    | TOTAL DIRECT  |    |          |     | 40     | 1,307 | 1         | 3,075 |      | 4,383 100.0%                    |                      |          |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 7514E5  
4-501

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7514

TIME 15:57:4

CONTRACTOR INDIRECT SUMMARY

SUMMARY PAGE 1

| ID | CONTRACTOR              | PM | SUBTOTAL | *** OVERHEAD *** | AMOUNT | PCT | HOFC% | **** PROFIT **** | AMOUNT | PCT  | BOND% | OTHER% | ***** TOTAL CONTRACT ***** | AMOUNT | PCT | UNIT COST |
|----|-------------------------|----|----------|------------------|--------|-----|-------|------------------|--------|------|-------|--------|----------------------------|--------|-----|-----------|
| AA | GENERAL/PRIME           |    | 4,383    | 438              | 10.0%  | 0.0 |       | 362              | 7.5%   | 2.5% | 0.0%  |        | 5,313                      | 100.0% |     | 5312.8    |
|    | TOTAL OVERHEAD & PROFIT |    |          | 438              | 10.0%  |     |       | 362              | 7.5%   |      |       |        |                            |        |     |           |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 7514E5

4-502

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7514

TIME 15:57:49

I DIVISION SUMMARY

SUMMARY PAGE 6

| ID CSI DIVISION | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|-----------------|----------|-------|-----------|----------|-----------|-------------------------|
| 16 ELECTRICAL   | 40       | 1,307 | 1         | 2,929    | 146       | 4,383                   |
| TOTAL DIRECT    | 40       | 1,307 | 1         | 2,929    | 146       | 4,383                   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 7514E5  
4-503

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7514

TIME 15:57:49

SYSTEMS SUMMARY

SUMMARY PAGE 7

| ID SYSTEM              | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|------------------------|----------|-------|-----------|----------|-----------|-------------------------|
| 11 INTERIOR ELECTRICAL | 40       | 1,307 | 1         | 2,929    | 146       | 4,383                   |
| TOTAL DIRECT           | 40       | 1,307 | 1         | 2,929    | 146       | 4,383                   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 7514E5  
4-504

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7514

TIME 15:57:49

EQUIPMENT SUMMARY

SUMMARY PAGE 8

| EQUIP DESCRIPTION             | LIFE HRS | TL HRLY | OWNRSH | OWNS | OVTM | OWNRSH | EXPENSE | HRLY RATE | UPB RATE | HOURS | TOTAL COST |
|-------------------------------|----------|---------|--------|------|------|--------|---------|-----------|----------|-------|------------|
| EMI20 SMALL TOOLS             |          |         |        |      |      |        |         | 1.40      | 1.40     | 1     | 1          |
| TOTAL PROJECT EQUIPMENT HOURS |          |         |        |      |      |        |         |           |          | 1     | 1          |

Mon 30 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7514

TIME 15:57:49

LABOR SUMMARY

SUMMARY PAGE 9

| CRAFT DESCRIPTION      | BASE  | OVERTM | TXS/INS | FRNG | TRVL | HRLY<br>RATE | UPB<br>RATE | ****<br>HOURS | ****<br>TOTAL<br>COST |
|------------------------|-------|--------|---------|------|------|--------------|-------------|---------------|-----------------------|
| LELEC ELECTRICIANS     | 20.50 | 0.0%   | 24.0%   | 7.49 | 0.00 | 32.91        | 25.79       | 40            | 1,307                 |
| TOTAL PROJECT MANHOURS |       |        |         |      |      |              |             | 40            | 1,307                 |

\* \* \* END OF SUMMARY REPORT \* \* \*



# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

31 AUGUST 1993

PAGE 1 OF 4

## BUILDING WIDE FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 7541

BUILDING USE:

HOURS/DAY 16

DAYS/WEEK 5

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

### EXISTING FIXTURE DATA

#### 4 FOOT

0.1 LAMP @ 48 W/FXT = 0 WATTS  
 0.1 LAMP @ 37.8 W/FXT = 0 WATTS  
 0.2 LAMP @ 96 W/FXT = 0 WATTS  
 0.2 LAMP @ 75.6 W/FXT = 0 WATTS  
 0.3 LAMP @ 144 W/FXT = 0 WATTS  
 0.3 LAMP @ 113.4 W/FXT = 0 WATTS  
 0.4 LAMP @ 192 W/FXT = 0 WATTS  
 131 4 LAMP @ 151.2 W/FXT = 19807 WATTS

#### 2 FOOT

0.1 LAMP @ 31 W/FXT = 0 WATTS  
 0.4 LAMP @ 88 W/FXT = 0 WATTS  
 0.2 LAMP U @ 96 W/FXT = 0 WATTS  
 0.2 LAMP U @ 75.6 W/FXT = 0 WATTS

#### 8 FOOT

0.2 LAMP @ 180 W/FXT = 0 WATTS  
 0.2 LAMP @ 168 W/FXT = 0 WATTS

TOTAL EXISTING KW 19.8

### REPLACEMENT FIXTURE DATA

#### 4 FOOT

0.1 LAMP @ 37 W/FXT = 0 WATTS  
 0.1 LAMP W/ REFLECTORS 37 W/FXT = 0 WATTS  
 0.2 LAMP W/ REFLECTORS 58 W/FXT = 0 WATTS  
 131 2 LAMP W/ REFLECTORS 58 W/FXT = 7598 WATTS

#### 2 FOOT

0.1 LAMP @ 24 W/FXT = 0 WATTS  
 0.2 LAMP W/ REFLECTORS 41 W/FXT = 0 WATTS  
 0.2 LAMP U @ 58 W/FXT = 0 WATTS

#### 8 FOOT

0.1 LAMP W/ REFLECTORS 58 W/FXT = 0 WATTS

TOTAL REPLACEMENT KW 7.6

NET ENERGY SAVINGS 173.3 MBTU/YR

NET DOLLAR SAVINGS \$2,799.60

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

31 AUGUST 1993

PAGE 2 OF 4

## OVERLIT AREA FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 7541  
AREA: OFFICE

AREA USE:  
HOURS/DAY 16  
DAYS/WEEK 5

ELECTRIC COSTS:  
ENERGY CHARGE \$0.0211 PER KWH  
DEMAND CHARGE \$11.78 PER KW

### EXISTING FIXTURE DATA

#### 4 FOOT

1 LAMP @ 48 W/FIXT = 0 WATTS  
1 LAMP @ 37.8 W/FIXT = 0 WATTS  
2 LAMP @ 96 W/FIXT = 0 WATTS  
2 LAMP @ 75.6 W/FIXT = 0 WATTS  
3 LAMP @ 144 W/FIXT = 0 WATTS  
3 LAMP @ 113.4 W/FIXT = 0 WATTS  
4 LAMP @ 192 W/FIXT = 0 WATTS  
2 4 LAMP @ 151.2 W/FIXT = 302.4 WATTS

#### 2 FOOT

1 LAMP @ 31 W/FIXT = 0 WATTS  
4 LAMP @ 88 W/FIXT = 0 WATTS  
2 LAMP U @ 96 W/FIXT = 0 WATTS  
2 LAMP U @ 75.6 W/FIXT = 0 WATTS

#### 8 FOOT

2 LAMP @ 180 W/FIXT = 0 WATTS  
2 LAMP @ 168 W/FIXT = 0 WATTS

TOTAL EXISTING KW 0.302

### REPLACEMENT FIXTURE DATA

#### 4 FOOT

0 1 LAMP @ 37 W/FIXT = 0 WATTS  
0 1 LAMP @ 37 W/FIXT = 0 WATTS  
0 2 LAMP @ 58 W/FIXT = 0 WATTS  
2 2 LAMP @ 58 W/FIXT = 116 WATTS

#### 2 FOOT

0 1 LAMP @ 24 W/FIXT = 0 WATTS  
0 2 LAMP @ 41 W/FIXT = 0 WATTS  
0 2 LAMP U @ 58 W/FIXT = 0 WATTS

#### 8 FOOT

0 1 LAMP @ 58 W/FIXT = 0 WATTS

TOTAL REPLACEMENT KW 0.116

NET ENERGY SAVINGS 2.64 MBTU/YR

NET DOLLAR SAVINGS \$42.74

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

31 AUGUST 1993

PAGE 3 OF 4

## OVERLIT AREA FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 7541  
AREA: RESTROOM

AREA USE:  
HOURS/DAY 16  
DAYS/WEEK 5

ELECTRIC COSTS:  
ENERGY CHARGE \$0.0211 PER KWH  
DEMAND CHARGE \$11.78 PER KW

### EXISTING FIXTURE DATA

#### 4 FOOT

1 LAMP @ 48 W/FIXT = 0 WATTS  
1 LAMP @ 37.8 W/FIXT = 0 WATTS  
2 LAMP @ 96 W/FIXT = 0 WATTS  
2 LAMP @ 75.6 W/FIXT = 0 WATTS  
3 LAMP @ 144 W/FIXT = 0 WATTS  
3 LAMP @ 113.4 W/FIXT = 0 WATTS  
4 LAMP @ 192 W/FIXT = 0 WATTS  
2 4 LAMP @ 151.2 W/FIXT = 302.4 WATTS

#### 2 FOOT

1 LAMP @ 31 W/FIXT = 0 WATTS  
4 LAMP @ 88 W/FIXT = 0 WATTS  
2 LAMP U @ 96 W/FIXT = 0 WATTS  
2 LAMP U @ 75.6 W/FIXT = 0 WATTS

#### 8 FOOT

2 LAMP @ 180 W/FIXT = 0 WATTS  
2 LAMP @ 168 W/FIXT = 0 WATTS

TOTAL EXISTING KW 0.302

### REPLACEMENT FIXTURE DATA

#### 4 FOOT

0 1 LAMP @ 37 W/FIXT = 0 WATTS  
0 1 LAMP @ 37 W/FIXT = 0 WATTS  
0 2 LAMP @ 58 W/FIXT = 0 WATTS  
2 2 LAMP @ 58 W/FIXT = 116 WATTS

#### 2 FOOT

0 1 LAMP @ 24 W/FIXT = 0 WATTS  
0 2 LAMP @ 41 W/FIXT = 0 WATTS  
0 2 LAMP U @ 58 W/FIXT = 0 WATTS

#### 8 FOOT

0 1 LAMP @ 58 W/FIXT = 0 WATTS

TOTAL REPLACEMENT KW 0.116

NET ENERGY SAVINGS 2.64 METU/YR

NET DOLLAR SAVINGS \$42.74

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 6: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

31 AUGUST 1993

PAGE 4 OF 4

## EXIT SIGN REPLACEMENT - INCANDESCENT TO LED

BUILDING #: 7541

# EXIT SIGNS 10

CURRENT WATTAGE 40

REPLACEMENT WATTAGE 3

HOURS/YEAR 8760

### ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

NET ENERGY SAVINGS 11.0 MBTU/YR

NET DOLLAR SAVINGS \$120.82

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES

TIME 08:14:14

TITLE PAGE

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ENERGY SAVINGS OPPORTUNITY SURVY  
FT CAMPBELL, KY  
ECO-5: BUILDING 7541

Contract No: 27-93-C-0096

Prepared By: Systems Corp  
Estimator: Keith A. Derrington  
Estimate Prep. Date: 08/31/93  
Current UPB/CSI ID: ORL290

M - C A C E S E D I T I O N  
COMPOSER Plus Copyright (C) 1985, 1988  
by Building Systems Design, Inc.  
Release 4.20

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 7541E5  
4-511

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7541

TIME 08:14:14

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DETAILED ESTIMATE

DETAIL PAGE

|                                |   |
|--------------------------------|---|
| 1. BUILDING TO THE 5 FOOT LINE |   |
| AA. ELECTRICAL.....            | 1 |

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Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
 ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
 ECO-5: BUILDING 7541  
 1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 08:14:14

DETAILED ESTIMATE

DETAIL PAGE 1

BASE BID

| DIVISION 16 ELECTRICAL                                  |                                 | QUANTITY            | UOM | CREW | MANHR | LABOR | EQUIPMENT | MATERIAL | SALESTX | DIRECT \$ |
|---------------------------------------------------------|---------------------------------|---------------------|-----|------|-------|-------|-----------|----------|---------|-----------|
| 16500 LIGHTING                                          |                                 |                     |     |      |       |       |           |          |         |           |
| 16512 7000 FLUORESCENT - RECESSED T8 ELECTRONIC BALLAST |                                 |                     |     |      |       |       |           |          |         |           |
| CD=3 EL 7003                                            | 4 FT 2 LAMP PARABOLIC LOUVRE W/ | *** UNIT COSTS: *** |     |      | 0.59  | 19.42 | 0.08      | 136.00   | 6.80    | 162.29    |
| WC=1100                                                 | REFLECTOR                       | 127.00 EA EELEB     |     | 75   | 2,466 | 10    | 17,272    | 864      | 20,611  |           |
| CD=3 EL 7008                                            | 4 FT 2 LAMP PARABOLIC LOUVRE    | *** UNIT COSTS: *** |     |      | 0.50  | 16.51 | 0.06      | 120.00   | 6.00    | 142.57    |
| WC=1100                                                 |                                 | 4.00 EA EELEB       |     | 2    | 66    | 0     | 480       | 24       | 570     |           |
| 16530 1100 SURFACE OR PENDANT MOUNTED                   |                                 |                     |     |      |       |       |           |          |         |           |
| CD=3 EL 1118                                            | LED EXIT SIGN W/ BATTERY        | *** UNIT COSTS: *** |     |      | 1.25  | 41.26 | 0.00      | 121.45   | 6.07    | 168.79    |
| WC=1100                                                 |                                 | 10.00 EA EELEA      |     | 13   | 413   | 0     | 1,215     | 61       | 1,688   |           |
| TOTAL DIVISION 16 ELECTRICAL                            |                                 |                     |     |      | 89    | 2,945 | 10        | 18,967   | 948     | 22,869    |
| TOTAL FACILITY AA. ELECTRICAL                           |                                 |                     |     |      | 89    | 2,945 | 10        | 18,967   | 948     | 22,869    |
| TOTAL BID ITEM 1. BUILDING TO THE 5 FOOT LINE           |                                 |                     |     |      | 89    | 2,945 | 10        | 18,967   | 948     | 22,869    |
| TOTAL BASE BID                                          |                                 |                     |     |      | 89    | 2,945 | 10        | 18,967   | 948     | 22,869    |
| TOTAL ADDITIVE                                          |                                 |                     |     |      | 0     | 0     | 0         | 0        | 0       | 0         |
| TOTAL INCL ADD ENERGY SAVINGS OPPORTUNITY SURVY         |                                 |                     |     |      | 89    | 2,945 | 10        | 18,967   | 948     | 22,869    |

\* \* \* END OF DETAIL REPORT \* \* \*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 7541E5  
4-513

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7541

TIME 08:14:14

PROJECT NOTES

SUMMARY PAGE 1

---

PROJECT NOTES

ECO-5: INTERIOR LIGHTING

SCOPE OF WORK: EVALUATE USE OF HIGHER EFFICIENCY INTERIOR LIGHTING IN  
SELECTED FACILITIES AT FT CAMPBELL.



Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7541

TIME 08:14:14

BID ITEM AND FACILITY SUMMARY

SUMMARY PAGE 2

BID ITEM 1 BUILDING TO THE 5 FOOT LINE

BASE BID

| ID             | FACILITY   | COST TO PRM | OVERHEAD | HOME OFC       | PROFIT    | BOND          | OTHER FCTR  | TOTAL COST | UNIT COST       |
|----------------|------------|-------------|----------|----------------|-----------|---------------|-------------|------------|-----------------|
| AA             | ELECTRICAL | 1.00 EA     | 22,869   | 10.0%<br>2,287 | 0.0%<br>0 | 7.5%<br>1,887 | 2.5%<br>676 | 0.0%<br>0  | 27,719 27719.15 |
| BID ITEM TOTAL |            | 1.00 EA     | 22,869   | 2,287          | 0         | 1,887         | 676         | 0          | 27,719 27719.15 |
| TOTAL BASE BID |            |             | 22,869   | 2,287          | 0         | 1,887         | 676         | 0          | 27,719          |
| TOTAL ADDITIVE |            |             | 0        | 0              | 0         | 0             | 0           | 0          | 0               |
| TOTAL INCL ADD |            |             | 22,869   | 2,287          | 0         | 1,887         | 676         | 0          | 27,719          |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 7541E5  
4-515

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7541

TIME 08:14:14

PROJECT CWE SUMMARY

SUMMARY PAGE 3

| ID | BID ITEM                                                   | QUANTITY | UOM  | BASE BID | ADDITIVE | TOTAL COST | UNIT COST |
|----|------------------------------------------------------------|----------|------|----------|----------|------------|-----------|
|    | 1. BUILDING TO THE 5 FOOT LINE                             | 1.00     | EA   | 27,719   |          | 27,719     | 27719.20  |
|    | TOTAL CURRENT CONTRACT COST                                |          |      | 27,719   | 0        | 27,719     |           |
|    | Cost Growth from 08/93 to 08/94<br>Index Values: 0000 0000 | 0.0%     |      | 0        | 0        | 0          |           |
|    | ESCALATED CONTRACT COST                                    |          |      | 27,719   | 0        | 27,719     |           |
|    | Government-Furnished Property                              |          |      | 0        |          | 0          |           |
|    | SUBTOTAL                                                   |          |      | 27,719   | 0        | 27,719     |           |
|    | Contingencies                                              | 10.0%    |      | 2,772    | 0        | 2,772      |           |
|    | SUBTOTAL                                                   |          |      | 30,491   | 0        | 30,491     |           |
|    | SIOH (S&A)                                                 | 5.0%     |      | 1,525    | 0        | 1,525      |           |
|    | CURRENT WORKING ESTIMATE                                   |          |      | 32,016   | 0        | 32,016     |           |
|    | Estimated Construction Time                                | 365      | Days |          |          |            |           |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 7541E5  
4-516

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7541

TIME 08:14:14

CONTRACTOR DIRECT SUMMARY

SUMMARY PAGE 4

| ID | CONTRACTOR    | PM | QUANTITY | UOM | MANHRS | LABOR | EQUIPMENT | MAT    | W/TX | AMOUNT | PCT    | W/OH&P | SUBTOTAL |
|----|---------------|----|----------|-----|--------|-------|-----------|--------|------|--------|--------|--------|----------|
| AA | GENERAL/PRIME |    | 1.00     | EA  | 89     | 2,945 | 10        | 19,915 |      | 22,869 | 100.0% | 0      | 22,869   |
|    | TOTAL DIRECT  |    |          |     | 89     | 2,945 | 10        | 19,915 |      | 22,869 | 100.0% |        |          |

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7541

TIME 08:14:14

CONTRACTOR INDIRECT SUMMARY

SUMMARY PAGE 5

| ID | CONTRACTOR              | PM | SUBTOTAL | *** OVERHEAD *** | AMOUNT | PCT | HOFC% | **** PROFIT **** | AMOUNT | PCT  | BOND% | OTHER% | ***** TOTAL CONTRACT ***** | AMOUNT | PCT | UNIT COST |
|----|-------------------------|----|----------|------------------|--------|-----|-------|------------------|--------|------|-------|--------|----------------------------|--------|-----|-----------|
| AA | GENERAL/PRIME           |    | 22,869   | 2,287            | 10.0%  | 0.0 |       | 1,887            | 7.5%   | 2.5% | 0.0%  |        | 27,719                     | 100.0% |     | 27719.15  |
|    | TOTAL OVERHEAD & PROFIT |    |          | 2,287            | 10.0%  |     |       | 1,887            | 7.5%   |      |       |        |                            |        |     |           |

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7541

TIME 08:14:1-

SI DIVISION SUMMARY

SUMMARY PAGE 1

| ID CSI DIVISION | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|-----------------|----------|-------|-----------|----------|-----------|-------------------------|
| 16 ELECTRICAL   | 89       | 2,945 | 10        | 18,967   | 948       | 22,869                  |
| TOTAL DIRECT    | 89       | 2,945 | 10        | 18,967   | 948       | 22,869                  |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 7541E5  
4-519

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7541

TIME 08:14:14

SYSTEMS SUMMARY

SUMMARY PAGE 7

| ID SYSTEM              | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|------------------------|----------|-------|-----------|----------|-----------|-------------------------|
| 11 INTERIOR ELECTRICAL | 89       | 2,945 | 10        | 18,967   | 948       | 22,869                  |
| TOTAL DIRECT           | 89       | 2,945 | 10        | 18,967   | 948       | 22,869                  |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 7541E5  
4-520

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7541

TIME 08:14:14

EQUIPMENT SUMMARY

SUMMARY PAGE 8

| EQUIP DESCRIPTION             | LIFE HRS | TL | HRLY | OWNRSH | OWNS | OVTM | OWNRSH | EXPENSE | HRLY | UPB  | ***** TOTAL ***** |      |
|-------------------------------|----------|----|------|--------|------|------|--------|---------|------|------|-------------------|------|
|                               |          |    |      |        |      |      |        |         | RATE | RATE | HOURS             | COST |
| EMI20 SMALL TOOLS             |          |    |      |        |      |      |        |         | 1.40 | 1.40 | 7                 | 10   |
| TOTAL PROJECT EQUIPMENT HOURS |          |    |      |        |      |      |        |         |      |      | 7                 | 10   |

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7541

TIME 08:14:14

LABOR SUMMARY

SUMMARY PAGE 9

| CRAFT DESCRIPTION      | BASE  | OVERTM | TXS/INS | FRNG | TRVL | HRLY<br>RATE | UPB<br>RATE | ****<br>HOURS | TOTAL<br>COST |
|------------------------|-------|--------|---------|------|------|--------------|-------------|---------------|---------------|
| LELEC ELECTRICIANS     | 20.50 | 0.0%   | 24.0%   | 7.49 | 0.00 | 32.91        | 25.79       | 89            | 2,944         |
| TOTAL PROJECT MANHOURS |       |        |         |      |      |              |             | 89            | 2,944         |

\*\*\* END OF SUMMARY REPORT \*\*\*



# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

PAGE 1 OF 1

31 AUGUST 1993

## BUILDING WIDE FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 7543

BUILDING USE:

HOURS/DAY 9

DAYS/WEEK 5

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

### EXISTING FIXTURE DATA

### REPLACEMENT FIXTURE DATA

#### 4 FOOT

|            |               |           |                        |            |          |
|------------|---------------|-----------|------------------------|------------|----------|
| 0 1 LAMP @ | 48 W/FXT =    | 0 WATTS   | 0 1 LAMP @             | 37 W/FXT = | 0 WATTS  |
| 0 1 LAMP @ | 37.8 W/FXT =  | 0 WATTS   | 2 1 LAMP W/ REFLECTORS | 37 W/FXT = | 74 WATTS |
| 2 2 LAMP @ | 96 W/FXT =    | 192 WATTS | 0 2 LAMP W/ REFLECTORS | 58 W/FXT = | 0 WATTS  |
| 0 2 LAMP @ | 75.6 W/FXT =  | 0 WATTS   | 0 2 LAMP W/ REFLECTORS | 58 W/FXT = | 0 WATTS  |
| 0 3 LAMP @ | 144 W/FXT =   | 0 WATTS   |                        |            |          |
| 0 3 LAMP @ | 113.4 W/FXT = | 0 WATTS   |                        |            |          |
| 0 4 LAMP @ | 192 W/FXT =   | 0 WATTS   |                        |            |          |
| 0 4 LAMP @ | 151.2 W/FXT = | 0 WATTS   |                        |            |          |

#### 2 FOOT

|              |              |         |              |            |         |
|--------------|--------------|---------|--------------|------------|---------|
| 0 1 LAMP @   | 31 W/FXT =   | 0 WATTS | 0 1 LAMP @   | 24 W/FXT = | 0 WATTS |
| 0 4 LAMP @   | 88 W/FXT =   | 0 WATTS | 0 2 LAMP U @ | 41 W/FXT = | 0 WATTS |
| 0 2 LAMP U @ | 96 W/FXT =   | 0 WATTS | 0 2 LAMP U @ | 58 W/FXT = | 0 WATTS |
| 0 2 LAMP U @ | 75.6 W/FXT = | 0 WATTS |              |            |         |

#### 8 FOOT

|            |             |           |                        |            |           |
|------------|-------------|-----------|------------------------|------------|-----------|
| 0 2 LAMP @ | 180 W/FXT = | 0 WATTS   | 3 1 LAMP W/ REFLECTORS | 58 W/FXT = | 174 WATTS |
| 3 2 LAMP @ | 168 W/FXT = | 504 WATTS |                        |            |           |

TOTAL EXISTING KW 0.7

TOTAL REPLACEMENT KW 0.2

NET ENERGY SAVINGS 3.6 MBTU/YR

NET DOLLAR SAVINGS \$85.49

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES

TIME 08:20:51

TITLE PAGE

---

ENERGY SAVINGS OPPORTUNITY SURVY  
FT CAMPBELL, KY  
ECO-5: BUILDING 7543

Contract No: 27-93-C-0096

Prepared By: Systems Corp  
Estimator: Keith A. Derrington  
Estimate Prep. Date: 08/31/93  
Current UPB/CSI ID: ORL290

M - C A C E S E D I T I O N  
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Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7543

TIME 08:20:55

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| DETAILED ESTIMATE              | DETAIL PAGE |
|--------------------------------|-------------|
| 1. BUILDING TO THE 5 FOOT LINE |             |
| AA. ELECTRICAL.....            | 1           |

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Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
 ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
 ECO-5: BUILDING 7543  
 1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 08:20:51

DETAILED ESTIMATE

DETAIL PAGE 1

BASE BID

| DIVISION 16 ELECTRICAL                                  |                                 | QUANTITY            | UOM | CREW | MANHR | LABOR | EQUIPMENT | MATERIAL | SALESTX | DIRECT \$ |
|---------------------------------------------------------|---------------------------------|---------------------|-----|------|-------|-------|-----------|----------|---------|-----------|
| 16500 LIGHTING                                          |                                 |                     |     |      |       |       |           |          |         |           |
| 16512 7000 FLUORESCENT - RECESSED T8 ELECTRONIC BALLAST |                                 |                     |     |      |       |       |           |          |         |           |
| CD=3 EL 7002                                            | 4 FT 1 LAMP PARABOLIC LOUVRE W/ | *** UNIT COSTS: *** |     |      | 0.54  | 17.84 | 0.07      | 122.00   | 6.10    | 146.01    |
| WC=1100                                                 | REFLECTOR                       | 2.00 EA EELEB       |     | 1    | 36    | 0     | 0         | 244      | 12      | 292       |
| CD=3 EL 7007                                            | 8 FT 1 LAMP W/ REFLECTOR        | *** UNIT COSTS: *** |     |      | 0.54  | 17.84 | 0.07      | 109.00   | 5.45    | 132.36    |
| WC=1100                                                 |                                 | 3.00 EA EELEB       |     | 2    | 54    | 0     | 0         | 327      | 16      | 397       |
| TOTAL DIVISION 16 ELECTRICAL                            |                                 |                     |     |      | 3     | 89    | 0         | 571      | 29      | 689       |
| TOTAL FACILITY AA. ELECTRICAL                           |                                 |                     |     |      | 3     | 89    | 0         | 571      | 29      | 689       |
| TOTAL BID ITEM 1. BUILDING TO THE 5 FOOT LINE           |                                 |                     |     |      | 3     | 89    | 0         | 571      | 29      | 689       |
| TOTAL BASE BID                                          |                                 |                     |     |      | 3     | 89    | 0         | 571      | 29      | 689       |
| TOTAL ADDITIVE                                          |                                 |                     |     |      | 0     | 0     | 0         | 0        | 0       | 0         |
| TOTAL INCL ADD ENERGY SAVINGS OPPORTUNITY SURVY         |                                 |                     |     |      | 3     | 89    | 0         | 571      | 29      | 689       |

\* \* \* END OF DETAIL REPORT \* \* \*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 7543E5  
 4-526

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7543

TIME 08:20:51

PROJECT NOTES

SUMMARY PAGE

---

PROJECT NOTES

ECO-5: INTERIOR LIGHTING

SCOPE OF WORK: EVALUATE USE OF HIGHER EFFICIENCY INTERIOR LIGHTING IN  
SELECTED FACILITIES AT FT CAMPBELL.

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7543

TIME 08:20:55

BID ITEM AND FACILITY SUMMARY

SUMMARY PAGE 2

BID ITEM 1 BUILDING TO THE 5 FOOT LINE

BASE BID

| ID             | FACILITY   | COST TO PRM | OVERHEAD | HOME OFC | PROFIT | BOND | OTHER FCTR | TOTAL COST | UNIT COST |
|----------------|------------|-------------|----------|----------|--------|------|------------|------------|-----------|
| AA             | ELECTRICAL |             | 10.0%    | 0.0%     | 7.5%   | 2.5% | 0.0%       |            |           |
|                | 1.00 EA    | 689         | 69       | 0        | 57     | 20   | 0          | 835        | 835.26    |
| BID ITEM TOTAL | 1.00 EA    | 689         | 69       | 0        | 57     | 20   | 0          | 835        | 835.26    |
| TOTAL BASE BID |            | 689         | 69       | 0        | 57     | 20   | 0          | 835        |           |
| TOTAL ADDITIVE |            | 0           | 0        | 0        | 0      | 0    | 0          | 0          |           |
| TOTAL INCL ADD |            | 689         | 69       | 0        | 57     | 20   | 0          | 835        |           |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 7543E5

4-528

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7543

TIME 08:20:55

PROJECT CWE SUMMARY

SUMMARY PAGE 3

| ID | BID ITEM                                                   | QUANTITY | UOM  | BASE BID | ADDITIVE | TOTAL COST | UNIT COST |
|----|------------------------------------------------------------|----------|------|----------|----------|------------|-----------|
| 1. | BUILDING TO THE 5 FOOT LINE                                | 1.00     | EA   | 835      |          | 835        | 835.30    |
|    | TOTAL CURRENT CONTRACT COST                                |          |      | 835      | 0        | 835        |           |
|    | Cost Growth from 08/93 to 08/94<br>Index Values: 0000 0000 | 0.0%     |      | 0        | 0        | 0          |           |
|    | ESCALATED CONTRACT COST                                    |          |      | 835      | 0        | 835        |           |
|    | Government-Furnished Property                              |          |      | 0        |          | 0          |           |
|    | SUBTOTAL                                                   |          |      | 835      | 0        | 835        |           |
|    | Contingencies                                              | 10.0%    |      | 84       | 0        | 84         |           |
|    | SUBTOTAL                                                   |          |      | 919      | 0        | 919        |           |
|    | SIOH (S&A)                                                 | 5.0%     |      | 46       | 0        | 46         |           |
|    | CURRENT WORKING ESTIMATE                                   |          |      | 965      | 0        | 965        |           |
|    | Estimated Construction Time                                | 365      | Days |          |          |            |           |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 7543E5  
4-529

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7543

TIME 08:20:51

CONTRACTOR DIRECT SUMMARY

SUMMARY PAGE 4

| ID | CONTRACTOR    | PM | QUANTITY | UOM | MANHRS | LABOR | EQUIPMENT | MAT | W/TX | AMOUNT | PCT    | W/OH&P | SUBTOTAL |
|----|---------------|----|----------|-----|--------|-------|-----------|-----|------|--------|--------|--------|----------|
| AA | GENERAL/PRIME |    | 1.00     | EA  | 3      | 89    | 0         | 600 |      | 689    | 100.0% | 0      | 689      |
|    | TOTAL DIRECT  |    |          |     | 3      | 89    | 0         | 600 |      | 689    | 100.0% |        |          |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 7543E5

4-530



Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS H-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7543

TIME 08:20:55

CONTRACTOR INDIRECT SUMMARY

SUMMARY PAGE 5

| ID | CONTRACTOR              | PM | SUBTOTAL | *** OVERHEAD *** | AMOUNT | PCT | HOF% | **** PROFIT **** | AMOUNT | PCT  | BOND% | OTHER% | ***** TOTAL CONTRACT ***** | AMOUNT | PCT | UNIT COST |
|----|-------------------------|----|----------|------------------|--------|-----|------|------------------|--------|------|-------|--------|----------------------------|--------|-----|-----------|
| AA | GENERAL/PRIME           |    | 689      | 69               | 10.0%  | 0.0 |      | 57               | 7.5%   | 2.5% | 0.0%  |        | 835                        | 100.0% |     | 835.25    |
|    | TOTAL OVERHEAD & PROFIT |    |          | 69               | 10.0%  |     |      | 57               | 7.5%   |      |       |        |                            |        |     |           |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 7543E5  
4-531

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7543

TIME 08:20:55

SI DIVISION SUMMARY

SUMMARY PAGE 6

| ID CSI DIVISION | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|-----------------|----------|-------|-----------|----------|-----------|-------------------------|
| 16 ELECTRICAL   | 3        | 89    | 0         | 571      | 29        | 689                     |
| TOTAL DIRECT    | 3        | 89    | 0         | 571      | 29        | 689                     |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 7543E5  
4-532

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7543

TIME 08:20:55

SYSTEMS SUMMARY

SUMMARY PAGE 7

| ID SYSTEM              | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|------------------------|----------|-------|-----------|----------|-----------|-------------------------|
| 11 INTERIOR ELECTRICAL | 3        | 89    | 0         | 571      | 29        | 689                     |
| TOTAL DIRECT           | 3        | 89    | 0         | 571      | 29        | 689                     |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 7543E5  
4-533

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7543

TIME 08:20:55

EQUIPMENT SUMMARY

SUMMARY PAGE 8

| EQUIP DESCRIPTION             | LIFE HRS | TL HRLY | OWNRSH | OWNS | OVTM | OWNRSH | EXPENSE | RATE | UPB  | HOURS | TOTAL | COST |
|-------------------------------|----------|---------|--------|------|------|--------|---------|------|------|-------|-------|------|
| EMI20 SMALL TOOLS             |          |         |        |      |      |        |         | 1.40 | 1.40 | 0     | 0     | 0    |
| TOTAL PROJECT EQUIPMENT HOURS |          |         |        |      |      |        |         |      |      | 0     | 0     | 0    |

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7543

TIME 08:20:5

LABOR SUMMARY

SUMMARY PAGE

| CRAFT DESCRIPTION      | BASE  | OVERTM | TXS/INS | FRNG | TRVL | HRLY<br>RATE | UPB<br>RATE | ****<br>HOURS | TOTAL<br>COST |
|------------------------|-------|--------|---------|------|------|--------------|-------------|---------------|---------------|
| LELEC ELECTRICIANS     | 20.50 | 0.0%   | 24.0%   | 7.49 | 0.00 | 32.91        | 25.79       | 3             | 89            |
| TOTAL PROJECT MANHOURS |       |        |         |      |      |              |             | 3             | 89            |

\* \* \* END OF SUMMARY REPORT \* \* \*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 7543E5  
4-535

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

PAGE 1 OF 1

31 AUGUST 1993

## BUILDING WIDE FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 7562

BUILDING USE:

HOURS/DAY 2  
DAYS/WEEK 5

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH  
DEMAND CHARGE \$0.00 PER KW

### EXISTING FIXTURE DATA

4 FOOT

0.1 LAMP @ 48 W/FXT = 0 WATTS  
0.1 LAMP @ 37.8 W/FXT = 0 WATTS  
0.2 LAMP @ 96 W/FXT = 0 WATTS  
0.2 LAMP @ 75.6 W/FXT = 0 WATTS  
0.3 LAMP @ 144 W/FXT = 0 WATTS  
0.3 LAMP @ 113.4 W/FXT = 0 WATTS  
0.4 LAMP @ 192 W/FXT = 0 WATTS  
17.4 LAMP @ 151.2 W/FXT = 2570.4 WATTS

2 FOOT

0.1 LAMP @ 31 W/FXT = 0 WATTS  
0.4 LAMP @ 88 W/FXT = 0 WATTS  
0.2 LAMP U @ 96 W/FXT = 0 WATTS  
0.2 LAMP U @ 75.6 W/FXT = 0 WATTS

8 FOOT

0.2 LAMP @ 180 W/FXT = 0 WATTS  
0.2 LAMP @ 168 W/FXT = 0 WATTS

TOTAL EXISTING KW 2.6

### REPLACEMENT FIXTURE DATA

4 FOOT

0.1 LAMP @ 37 W/FXT = 0 WATTS  
0.1 LAMP W/ REFLECTORS 37 W/FXT = 0 WATTS  
0.2 LAMP W/ REFLECTORS 58 W/FXT = 0 WATTS  
17.2 LAMP W/ REFLECTORS 58 W/FXT = 986 WATTS

2 FOOT

0.1 LAMP @ 24 W/FXT = 0 WATTS  
0.2 LAMP W/ REFLECTORS 41 W/FXT = 0 WATTS  
0.2 LAMP U @ 58 W/FXT = 0 WATTS

8 FOOT

0.1 LAMP W/ REFLECTORS 58 W/FXT = 0 WATTS

TOTAL REPLACEMENT KW 1.0

NET ENERGY SAVINGS 2.8 MBTU/YR

NET DOLLAR SAVINGS \$17.42

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES

TIME 08:29:47

TITLE PAGE

---

ENERGY SAVINGS OPPORTUNITY SURVY  
FT CAMPBELL, KY  
ECO-5: BUILDING 7562

Contract No: 27-93-C-0096

Prepared By: Systems Corp  
Estimator: Keith A. Derrington  
Estimate Prep. Date: 08/31/93  
Current UPB/CSI ID: ORL290

M - C A C E S E D I T I O N  
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Release 4.20

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 7562E5

4-537

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7562

TIME 08:29:47

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| DETAILED ESTIMATE              | DETAIL PAGE |
|--------------------------------|-------------|
| 1. BUILDING TO THE 5 FOOT LINE |             |
| AA. ELECTRICAL.....            | 1           |

\* \* \* END TABLE OF CONTENTS \* \* \*



Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
 ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
 ECO-5: BUILDING 7562  
 1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 08:29:47

DETAILED ESTIMATE

DETAIL PAGE 1

BASE BID

| DIVISION 16 ELECTRICAL                                  |                                 | QUANTITY | UOM             | CREW | MANHR | LABOR | EQUIPMENT | MATERIAL | SALESTX | DIRECT \$ |
|---------------------------------------------------------|---------------------------------|----------|-----------------|------|-------|-------|-----------|----------|---------|-----------|
| 16500 LIGHTING                                          |                                 |          |                 |      |       |       |           |          |         |           |
| 16512 7000 FLUORESCENT - RECESSED T8 ELECTRONIC BALLAST |                                 |          |                 |      |       |       |           |          |         |           |
| CD=3 EL 7003                                            | 4 FT 2 LAMP PARABOLIC LOUVRE W/ | ***      | UNIT COSTS: *** | 0.59 | 19.42 | 0.08  | 136.00    | 6.80     | 162.29  |           |
| WC=1100                                                 | REFLECTOR                       | 17.00    | EA EELEB        | 10   | 330   | 1     | 2,312     | 116      | 2,759   |           |
| TOTAL DIVISION 16 ELECTRICAL                            |                                 |          |                 | 10   | 330   | 1     | 2,312     | 116      | 2,759   |           |
| TOTAL FACILITY AA. ELECTRICAL                           |                                 |          |                 | 10   | 330   | 1     | 2,312     | 116      | 2,759   |           |
| TOTAL BID ITEM 1. BUILDING TO THE 5 FOOT LINE           |                                 |          |                 | 10   | 330   | 1     | 2,312     | 116      | 2,759   |           |
| TOTAL BASE BID                                          |                                 |          |                 | 10   | 330   | 1     | 2,312     | 116      | 2,759   |           |
| TOTAL ADDITIVE                                          |                                 |          |                 | 0    | 0     | 0     | 0         | 0        | 0       |           |
| TOTAL INCL ADD ENERGY SAVINGS OPPORTUNITY SURVY         |                                 |          |                 | 10   | 330   | 1     | 2,312     | 116      | 2,759   |           |

\* \* \* END OF DETAIL REPORT \* \* \*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 7562E5

4-539

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7562

TIME 08:29:4

PROJECT NOTES

SUMMARY PAGE :

---

PROJECT NOTES

ECO-5: INTERIOR LIGHTING

SCOPE OF WORK: EVALUATE USE OF HIGHER EFFICIENCY INTERIOR LIGHTING IN  
SELECTED FACILITIES AT FT CAMPBELL.

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7562

TIME 08:29:47

BID ITEM AND FACILITY SUMMARY

SUMMARY PAGE 2

BID ITEM 1 BUILDING TO THE 5 FOOT LINE

BASE BID

| ID             | FACILITY   | COST TO PRM | OVERHEAD | HOME OFC | PROFIT | BOND | OTHER FCTR | TOTAL COST | UNIT COST |
|----------------|------------|-------------|----------|----------|--------|------|------------|------------|-----------|
| AA             | ELECTRICAL |             | 10.0%    | 0.0%     | 7.5%   | 2.5% | 0.0%       |            |           |
|                | 1.00 EA    | 2,759       | 276      | 0        | 228    | 82   | 0          | 3,344      | 3344.07   |
| <hr/>          |            |             |          |          |        |      |            |            |           |
| BID ITEM TOTAL | 1.00 EA    | 2,759       | 276      | 0        | 228    | 82   | 0          | 3,344      | 3344.07   |
| <hr/>          |            |             |          |          |        |      |            |            |           |
| TOTAL BASE BID |            | 2,759       | 276      | 0        | 228    | 82   | 0          | 3,344      |           |
| TOTAL ADDITIVE |            | 0           | 0        | 0        | 0      | 0    | 0          | 0          |           |
| <hr/>          |            |             |          |          |        |      |            |            |           |
| TOTAL INCL ADD |            | 2,759       | 276      | 0        | 228    | 82   | 0          | 3,344      |           |

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7562

TIME 08:29:47

PROJECT CWE SUMMARY

SUMMARY PAGE 3

| ID | BID ITEM                                                   | QUANTITY | UOM  | BASE BID | ADDITIVE | TOTAL COST | UNIT COST |
|----|------------------------------------------------------------|----------|------|----------|----------|------------|-----------|
|    | 1. BUILDING TO THE 5 FOOT LINE                             | 1.00     | EA   | 3,344    |          | 3,344      | 3344.10   |
|    | TOTAL CURRENT CONTRACT COST                                |          |      | 3,344    | 0        | 3,344      |           |
|    | Cost Growth from 08/93 to 08/94<br>Index Values: 0000 0000 | 0.0%     |      | 0        | 0        | 0          |           |
|    | ESCALATED CONTRACT COST                                    |          |      | 3,344    | 0        | 3,344      |           |
|    | Government-Furnished Property                              |          |      | 0        |          | 0          |           |
|    | SUBTOTAL                                                   |          |      | 3,344    | 0        | 3,344      |           |
|    | Contingencies                                              | 10.0%    |      | 334      | 0        | 334        |           |
|    | SUBTOTAL                                                   |          |      | 3,679    | 0        | 3,679      |           |
|    | SIOH (S&A)                                                 | 5.0%     |      | 184      | 0        | 184        |           |
|    | CURRENT WORKING ESTIMATE                                   |          |      | 3,862    | 0        | 3,862      |           |
|    | Estimated Construction Time                                | 365      | Days |          |          |            |           |

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7562

TIME 08:29:47

CONTRACTOR DIRECT SUMMARY

SUMMARY PAGE 4

| ID | CONTRACTOR    | PM | QUANTITY | UOM | MANHRS | LABOR | EQUIPMENT | MAT   | W/TX | AMOUNT | PCT    | W/OH&P | SUBTOTAL |
|----|---------------|----|----------|-----|--------|-------|-----------|-------|------|--------|--------|--------|----------|
| AA | GENERAL/PRIME |    | 1.00     | EA  | 10     | 330   | 1         | 2,428 |      | 2,759  | 100.0% | 0      | 2,759    |
|    | TOTAL DIRECT  |    |          |     | 10     | 330   | 1         | 2,428 |      | 2,759  | 100.0% |        |          |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 7562E5

4-543

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7562

TIME 08:29:47

CONTRACTOR INDIRECT SUMMARY

SUMMARY PAGE 5

| ID | CONTRACTOR              | PH | SUBTOTAL | *** OVERHEAD *** | AMOUNT | PCT | HOFC% | **** PROFIT **** | AMOUNT | PCT  | BOND% | OTHER% | ***** TOTAL CONTRACT ***** | AMOUNT | PCT | UNIT COST |
|----|-------------------------|----|----------|------------------|--------|-----|-------|------------------|--------|------|-------|--------|----------------------------|--------|-----|-----------|
| AA | GENERAL/PRIME           |    | 2,759    | 276              | 10.0%  | 0.0 |       | 228              | 7.5%   | 2.5% | 0.0%  |        | 3,344                      | 100.0% |     | 3344.07   |
|    | TOTAL OVERHEAD & PROFIT |    |          | 276              | 10.0%  |     |       | 228              | 7.5%   |      |       |        |                            |        |     |           |

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7562

TIME 08:29:47

CSI DIVISION SUMMARY

SUMMARY PAGE 6

| ID CSI DIVISION | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|-----------------|----------|-------|-----------|----------|-----------|-------------------------|
| 16 ELECTRICAL   | 10       | 330   | 1         | 2,312    | 116       | 2,759                   |
| TOTAL DIRECT    | 10       | 330   | 1         | 2,312    | 116       | 2,759                   |

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7562

TIME 08:29:47

SYSTEMS SUMMARY

SUMMARY PAGE 7

| ID SYSTEM              | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|------------------------|----------|-------|-----------|----------|-----------|-------------------------|
| 11 INTERIOR ELECTRICAL | 10       | 330   | 1         | 2,312    | 116       | 2,759                   |
| TOTAL DIRECT           | 10       | 330   | 1         | 2,312    | 116       | 2,759                   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 7562E5

4-546



Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7562

TIME 08:29:47

EQUIPMENT SUMMARY

SUMMARY PAGE 8

| EQUIP DESCRIPTION             | LIFE HRS | TL | HRLY | OWNRSH | OWNS | OVTM | OWNRSH | EXPENSE | HRLY | UPB  | **** TOTAL **** | COST |
|-------------------------------|----------|----|------|--------|------|------|--------|---------|------|------|-----------------|------|
| EMI20 SMALL TOOLS             |          |    |      |        |      |      |        |         | 1.40 | 1.40 | 1               | 1    |
| TOTAL PROJECT EQUIPMENT HOURS |          |    |      |        |      |      |        |         |      |      | 1               | 1    |

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7562

TIME 08:29:47

LABOR SUMMARY

SUMMARY PAGE 9

| CRAFT DESCRIPTION      | BASE  | OVERTM | TXS/INS | FRNG | TRVL | HRLY<br>RATE | UPB<br>RATE | ****<br>HOURS | TOTAL<br>COST |
|------------------------|-------|--------|---------|------|------|--------------|-------------|---------------|---------------|
| LELEC ELECTRICIANS     | 20.50 | 0.0%   | 24.0%   | 7.49 | 0.00 | 32.91        | 25.79       | 10            | 330           |
| TOTAL PROJECT MANHOURS |       |        |         |      |      |              |             | 10            | 330           |

\* \* \* END OF SUMMARY REPORT \* \* \*

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

PAGE 1 OF 1

31 AUGUST 1993

## BUILDING WIDE FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 7574

BUILDING USE:

HOURS/DAY 12

DAYS/WEEK 5

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

### EXISTING FIXTURE DATA

4 FOOT

0 1 LAMP @ 48 W/FXT = 0 WATTS  
 0 1 LAMP @ 37.8 W/FXT = 0 WATTS  
 1 2 LAMP @ 96 W/FXT = 96 WATTS  
 0 2 LAMP @ 75.6 W/FXT = 0 WATTS  
 0 3 LAMP @ 144 W/FXT = 0 WATTS  
 0 3 LAMP @ 113.4 W/FXT = 0 WATTS  
 0 4 LAMP @ 192 W/FXT = 0 WATTS  
 0 4 LAMP @ 151.2 W/FXT = 0 WATTS

2 FOOT

0 1 LAMP @ 31 W/FXT = 0 WATTS  
 0 4 LAMP @ 88 W/FXT = 0 WATTS  
 0 2 LAMP U @ 96 W/FXT = 0 WATTS  
 0 2 LAMP U @ 75.6 W/FXT = 0 WATTS

8 FOOT

0 2 LAMP @ 180 W/FXT = 0 WATTS  
 0 2 LAMP @ 168 W/FXT = 0 WATTS

TOTAL EXISTING KW

0.1

### REPLACEMENT FIXTURE DATA

4 FOOT

0 1 LAMP @ 37 W/FXT = 0 WATTS  
 1 1 LAMP W/ REFLECTORS 37 W/FXT = 37 WATTS  
 0 2 LAMP W/ REFLECTORS 58 W/FXT = 0 WATTS  
 0 2 LAMP W/ REFLECTORS 58 W/FXT = 0 WATTS

2 FOOT

0 1 LAMP @ 24 W/FXT = 0 WATTS  
 0 2 LAMP W/ REFLECTORS 41 W/FXT = 0 WATTS  
 0 2 LAMP U @ 58 W/FXT = 0 WATTS

8 FOOT

0 1 LAMP W/ REFLECTORS 58 W/FXT = 0 WATTS

TOTAL REPLACEMENT KW

0.04

NET ENERGY SAVINGS

0.6 MBTU/YR

NET DOLLAR SAVINGS

\$12.23

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES

TIME 08:36:19

TITLE PAGE

---

ENERGY SAVINGS OPPORTUNITY SURVY  
FT CAMPBELL, KY  
ECO-5: BUILDING 7574

Contract No: 27-93-C-0096

Prepared By: Systems Corp  
Estimator: Keith A. Derrington  
Estimate Prep. Date: 08/31/93  
Current UPB/CSI ID: ORL290

M - C A C E S E D I T I O N  
COMPOSER Plus Copyright (C) 1985, 1988  
by Building Systems Design, Inc.  
Release 4.20

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 7574E5  
4-550

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7574

TIME 08:36:19

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DETAILED ESTIMATE DETAIL PAGE

|                                |   |
|--------------------------------|---|
| 1. BUILDING TO THE 5 FOOT LINE |   |
| AA. ELECTRICAL.....            | 1 |

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Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7574  
1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 08:36:19

DETAILED ESTIMATE

DETAIL PAGE 1

BASE BID

| DIVISION 16 ELECTRICAL                                         | QUANTITY            | UOM | CREW | MANHR | LABOR | EQUIPMENT | MATERIAL | SALESTX | DIRECT \$ |
|----------------------------------------------------------------|---------------------|-----|------|-------|-------|-----------|----------|---------|-----------|
| 16500 LIGHTING                                                 |                     |     |      |       |       |           |          |         |           |
| 16512 7000 FLUORESCENT - RECESSED T8 ELECTRONIC BALLAST        |                     |     |      |       |       |           |          |         |           |
| CD=3 EL 7002 4 FT 1 LAMP PARABOLIC LOUVRE W/ WC=1100 REFLECTOR | *** UNIT COSTS: *** |     |      | 0.54  | 17.84 | 0.07      | 122.00   | 6.10    | 146.01    |
|                                                                | 1.00 EA EELEB       |     |      | 1     | 18    | 0         | 122      | 6       | 146       |
| TOTAL DIVISION 16 ELECTRICAL                                   |                     |     |      | 1     | 18    | 0         | 122      | 6       | 146       |
| TOTAL FACILITY AA. ELECTRICAL                                  |                     |     |      | 1     | 18    | 0         | 122      | 6       | 146       |
| TOTAL BID ITEM 1. BUILDING TO THE 5 FOOT LINE                  |                     |     |      | 1     | 18    | 0         | 122      | 6       | 146       |
| TOTAL BASE BID                                                 |                     |     |      | 1     | 18    | 0         | 122      | 6       | 146       |
| TOTAL ADDITIVE                                                 |                     |     |      | 0     | 0     | 0         | 0        | 0       | 0         |
| TOTAL INCL ADD ENERGY SAVINGS OPPORTUNITY SURVY                |                     |     |      | 1     | 18    | 0         | 122      | 6       | 146       |

\* \* \* END OF DETAIL REPORT \* \* \*

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7574

TIME 08:36:19

PROJECT NOTES

SUMMARY PAGE 1

---

PROJECT NOTES

ECO-5: INTERIOR LIGHTING

SCOPE OF WORK: EVALUATE USE OF HIGHER EFFICIENCY INTERIOR LIGHTING IN  
SELECTED FACILITIES AT FT CAMPBELL.

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7574

TIME 08:36:19

BID ITEM AND FACILITY SUMMARY

SUMMARY PAGE 2

BID ITEM 1 BUILDING TO THE 5 FOOT LINE

BASE BID

| ID             | FACILITY   | COST TO PRM | OVERHEAD | HOME OFC | PROFIT | BOND | OTHER FCTR | TOTAL COST | UNIT COST |
|----------------|------------|-------------|----------|----------|--------|------|------------|------------|-----------|
| AA             | ELECTRICAL |             | 10.0%    | 0.0%     | 7.5%   | 2.5% | 0.0%       |            |           |
|                | 1.00 EA    | 146         | 15       | 0        | 12     | 4    | 0          | 177        | 176.97    |
| <hr/>          |            |             |          |          |        |      |            |            |           |
| BID ITEM TOTAL | 1.00 EA    | 146         | 15       | 0        | 12     | 4    | 0          | 177        | 176.97    |
| <hr/>          |            |             |          |          |        |      |            |            |           |
| TOTAL BASE BID |            | 146         | 15       | 0        | 12     | 4    | 0          | 177        |           |
| TOTAL ADDITIVE |            | 0           | 0        | 0        | 0      | 0    | 0          | 0          |           |
| <hr/>          |            |             |          |          |        |      |            |            |           |
| TOTAL INCL ADD |            | 146         | 15       | 0        | 12     | 4    | 0          | 177        |           |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 7574E5  
4-554



Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7574

TIME 08:36:14

PROJECT CWE SUMMARY

SUMMARY PAGE 1

| ID | BID ITEM                                                   | QUANTITY | UOM | BASE BID | ADDITIVE | TOTAL COST | UNIT COST |
|----|------------------------------------------------------------|----------|-----|----------|----------|------------|-----------|
|    | 1. BUILDING TO THE 5 FOOT LINE                             | 1.00     | EA  | 177      |          | 177        | 177.00    |
|    | TOTAL CURRENT CONTRACT COST                                |          |     | 177      | 0        | 177        |           |
|    | Cost Growth from 08/93 to 08/94<br>Index Values: 0000 0000 | 0.0%     |     | 0        | 0        | 0          |           |
|    | ESCALATED CONTRACT COST                                    |          |     | 177      | 0        | 177        |           |
|    | Government-Furnished Property                              |          |     | 0        |          | 0          |           |
|    | SUBTOTAL                                                   |          |     | 177      | 0        | 177        |           |
|    | Contingencies                                              | 10.0%    |     | 18       | 0        | 18         |           |
|    | SUBTOTAL                                                   |          |     | 195      | 0        | 195        |           |
|    | SIOH (S&A)                                                 | 5.0%     |     | 10       | 0        | 10         |           |
|    | CURRENT WORKING ESTIMATE                                   |          |     | 204      | 0        | 204        |           |

Estimated Construction Time 365 Days

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7574

TIME 08:36:19

CONTRACTOR DIRECT SUMMARY

SUMMARY PAGE 4

| ID | CONTRACTOR    | PM | QUANTITY | UOM | MANHRS | LABOR | EQUIPMENT | MAT | W/TX | ** TOTAL DIRECT *<br>AMOUNT PCT | * SUBCON *<br>W/OH&P | SUBTOTAL |
|----|---------------|----|----------|-----|--------|-------|-----------|-----|------|---------------------------------|----------------------|----------|
| AA | GENERAL/PRIME |    | 1.00     | EA  | 1      | 18    | 0         | 128 |      | 146 100.0%                      | 0                    | 146      |
|    | TOTAL DIRECT  |    |          |     | 1      | 18    | 0         | 128 |      | 146 100.0%                      |                      |          |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 7574E5  
4-556

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7574

TIME 08:36:14

CONTRACTOR INDIRECT SUMMARY

SUMMARY PAGE 1

| ID | CONTRACTOR              | PM | SUBTOTAL | AMOUNT | PCT   | HOFC% | AMOUNT | PCT  | BOND% | OTHER% | AMOUNT | PCT    | UNIT COST |
|----|-------------------------|----|----------|--------|-------|-------|--------|------|-------|--------|--------|--------|-----------|
| AA | GENERAL/PRIME           |    | 146      | 15     | 10.0% | 0.0   | 12     | 7.5% | 2.5%  | 0.0%   | 177    | 100.0% | 176.98    |
|    | TOTAL OVERHEAD & PROFIT |    |          | 15     | 10.0% |       | 12     | 7.5% |       |        |        |        |           |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 7574E5  
4-557

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7574

TIME 08:36:19

CSI DIVISION SUMMARY

SUMMARY PAGE 6

| ID CSI DIVISION | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|-----------------|----------|-------|-----------|----------|-----------|-------------------------|
| 16 ELECTRICAL   | 1        | 18    | 0         | 122      | 6         | 146                     |
| TOTAL DIRECT    | 1        | 18    | 0         | 122      | 6         | 146                     |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 7574E5

4-558

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7574

TIME 08:36:19

SYSTEMS SUMMARY

SUMMARY PAGE 7

| ID SYSTEM              | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|------------------------|----------|-------|-----------|----------|-----------|-------------------------|
| 11 INTERIOR ELECTRICAL | 1        | 18    | 0         | 122      | 6         | 146                     |
| TOTAL DIRECT           | 1        | 18    | 0         | 122      | 6         | 146                     |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: 7574E5

4-559

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7574

TIME 08:36:19

EQUIPMENT SUMMARY

SUMMARY PAGE 8

| EQUIP                         | DESCRIPTION | LIFE HRS | TL | HRLY | OWNRSH | OWNS | OVTH | OWNRSH | EXPENSE | HRLY | UPB  | HRLY | UPB | TOTAL | COST |
|-------------------------------|-------------|----------|----|------|--------|------|------|--------|---------|------|------|------|-----|-------|------|
| EMI20                         | SMALL TOOLS |          |    |      |        |      |      |        |         | 1.40 | 1.40 |      |     | 0     | 0    |
|                               |             |          |    |      |        |      |      |        |         |      |      |      |     | 0     | 0    |
| TOTAL PROJECT EQUIPMENT HOURS |             |          |    |      |        |      |      |        |         |      |      |      |     | 0     | 0    |

Tue 31 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: BUILDING 7574

TIME 08:36:19

LABOR SUMMARY

SUMMARY PAGE 9

| CRAFT DESCRIPTION      | BASE  | OVERTM | TXS/INS | FRNG | TRVL | HRLY<br>RATE | UPB<br>RATE | ****<br>HOURS | TOTAL<br>COST |
|------------------------|-------|--------|---------|------|------|--------------|-------------|---------------|---------------|
| LELEC ELECTRICIANS     | 20.50 | 0.0%   | 24.0%   | 7.49 | 0.00 | 32.91        | 25.79       | 1             | 18            |
| TOTAL PROJECT MANHOURS |       |        |         |      |      |              |             | 1             | 18            |

\* \* \* END OF SUMMARY REPORT \* \* \*

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

PAGE 1 OF 1

31 AUGUST 1993

## MERCURY VAPOR STREET LIGHT REPLACEMENT

AREA: HAMMOND HEIGHTS

### ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

FIXTURE USE: 5200 HR/YR

### EXISTING MERCURY VAPOR FIXTURES

175 WATT LAMPS

0 FIXTURES @ 210 W/FIXT = 0 WATTS

BASELINE ENERGY CONSUMPTION 0 KWH

400 WATT LAMPS

57 FIXTURES @ 454 W/FIXT = 25678 WATTS

BASELINE DEMAND 26 KW  
BASELINE ENERGY CONSUMPTION 134565 KWH

NET BASELINE ENERGY CONSUMPTION 459 MBTU/YR

### REPLACEMENT HIGH PRESSURE SODIUM FIXTURES

100 WATT LAMPS

0 FIXTURES @ 130 W/FIXT = 0 WATTS

REPLACEMENT ENERGY CONSUMPTION 0 KWH

100 WATT LAMPS

57 FIXTURES @ 130 W/FIXT = 7410 WATTS

REPLACEMENT DEMAND 7 KW  
REPLACEMENT ENERGY CONSUMPTION 38532 KWH

NET REPLCMT ENERGY CONSUMPTION 131 MBTU/YR

NET ENERGY SAVINGS 328 MBTU/YR

NET DOLLAR SAVINGS \$2,247.70



Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES

TIME 16:03:50

TITLE PAGE

---

ENERGY SAVINGS OPPORTUNITY SURVY  
FT CAMPBELL, KY  
ECO-5: HAMMOND HEIGHTS

Contract No: 27-93-C-0096

Prepared By: Systems Corp  
Estimator: Keith A. Derrington  
Estimate Prep. Date: 08/31/93  
Current UPB/CSI ID: ORL290

M - C A C E S E D I T I O N  
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Release 4.20

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: HHEC05  
4-563

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: HAMMOND HEIGHTS  
1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 16:03:50

DETAILED ESTIMATE

DETAIL PAGE 1

BASE BID

| DIVISION 16 ELECTRICAL                          | QUANTITY            | UOM | CREW | MANHR | LABOR | EQUIPMENT | MATERIAL | SALESTX | DIRECT \$ |
|-------------------------------------------------|---------------------|-----|------|-------|-------|-----------|----------|---------|-----------|
| 16500 LIGHTING                                  |                     |     |      |       |       |           |          |         |           |
| 16524 3000 HIGH PRESSURE SODIUM                 |                     |     |      |       |       |           |          |         |           |
| CD=4 EL 3101 FIXTURE 402C 100 WATT              | *** UNIT COSTS: *** |     |      | 2.73  | 82.31 | 8.11      | 146.48   | 7.32    | 244.21    |
| WC=1100                                         | 57.00 EA EELEK      |     |      | 156   | 4,692 | 463       | 8,349    | 417     | 13,921    |
| TOTAL DIVISION 16 ELECTRICAL                    |                     |     |      | 156   | 4,692 | 463       | 8,349    | 417     | 13,921    |
| TOTAL FACILITY AA. ELECTRICAL                   |                     |     |      | 156   | 4,692 | 463       | 8,349    | 417     | 13,921    |
| TOTAL BID ITEM 1. BUILDING TO THE 5 FOOT LINE   |                     |     |      | 156   | 4,692 | 463       | 8,349    | 417     | 13,921    |
| TOTAL BASE BID                                  |                     |     |      | 156   | 4,692 | 463       | 8,349    | 417     | 13,921    |
| TOTAL ADDITIVE                                  |                     |     |      | 0     | 0     | 0         | 0        | 0       | 0         |
| TOTAL INCL ADD ENERGY SAVINGS OPPORTUNITY SURVY |                     |     |      | 156   | 4,692 | 463       | 8,349    | 417     | 13,921    |

\* \* \* END OF DETAIL REPORT \* \* \*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: EHEC05  
4-564

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: HAMMOND HEIGHTS

TIME 16:03:50

PROJECT NOTES

SUMMARY PAGE 1

---

PROJECT NOTES

ECO-5: STREET LIGHTS

SCOPE OF WORK: EVALUATE USE OF HIGHER EFFICIENCY STREET LIGHTING IN SELECTED  
FAMILY HOUSING AREAS.

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: HAMMOND HEIGHTS

TIME 16:03:50

BID ITEM AND FACILITY SUMMARY

SUMMARY PAGE 2

BID ITEM 1 BUILDING TO THE 5 FOOT LINE

BASE BID

| ID             | FACILITY   |         | COST TO PRM | OVERHEAD       | HOME OFC  | PROFIT        | BOND        | OTHR FCTR | TOTAL COST | UNIT COST |
|----------------|------------|---------|-------------|----------------|-----------|---------------|-------------|-----------|------------|-----------|
| AA             | ELECTRICAL | 1.00 EA | 13,921      | 10.0%<br>1,392 | 0.0%<br>0 | 7.5%<br>1,148 | 2.5%<br>412 | 0.0%<br>0 | 16,873     | 16873.09  |
| <hr/>          |            |         |             |                |           |               |             |           |            |           |
| BID ITEM TOTAL |            | 1.00 EA | 13,921      | 1,392          | 0         | 1,148         | 412         | 0         | 16,873     | 16873.09  |
| <hr/>          |            |         |             |                |           |               |             |           |            |           |
| TOTAL BASE BID |            |         | 13,921      | 1,392          | 0         | 1,148         | 412         | 0         | 16,873     |           |
| TOTAL ADDITIVE |            |         | 0           | 0              | 0         | 0             | 0           | 0         | 0          |           |
| <hr/>          |            |         |             |                |           |               |             |           |            |           |
| TOTAL INCL ADD |            |         | 13,921      | 1,392          | 0         | 1,148         | 412         | 0         | 16,873     |           |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: HHECO5

4-566

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: HAMMOND HEIGHTS

TIME 16:03:50

PROJECT CWE SUMMARY

SUMMARY PAGE 3

| ID                                                         | BID ITEM                    | QUANTITY | UOM | BASE BID | ADDITIVE | TOTAL COST | UNIT COST |
|------------------------------------------------------------|-----------------------------|----------|-----|----------|----------|------------|-----------|
| 1.                                                         | BUILDING TO THE 5 FOOT LINE | 1.00     | EA  | 16,873   |          | 16,873     | 16873.10  |
| TOTAL CURRENT CONTRACT COST                                |                             |          |     | 16,873   | 0        | 16,873     |           |
| Cost Growth from 08/93 to 08/94<br>Index Values: 0000 0000 |                             |          |     | 0.0%     | 0        | 0          | 0         |
| ESCALATED CONTRACT COST                                    |                             |          |     | 16,873   | 0        | 16,873     |           |
| Government-Furnished Property                              |                             |          |     | 0        |          | 0          |           |
| SUBTOTAL                                                   |                             |          |     | 16,873   | 0        | 16,873     |           |
| Contingencies                                              |                             |          |     | 10.0%    | 1,687    | 0          | 1,687     |
| SUBTOTAL                                                   |                             |          |     | 18,560   | 0        | 18,560     |           |
| SIOH (S&A)                                                 |                             |          |     | 5.5%     | 1,021    | 0          | 1,021     |
| CURRENT WORKING ESTIMATE                                   |                             |          |     | 19,581   | 0        | 19,581     |           |
| Estimated Construction Time                                |                             | 365 Days |     |          |          |            |           |

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: HAMMOND HEIGHTS

TIME 16:03:50

CONTRACTOR DIRECT SUMMARY

SUMMARY PAGE 4

| ID | CONTRACTOR    | PH | QUANTITY | UOM | MANHRS | LABOR | EQUIPMENT | MAT   | W/TX | ** TOTAL DIRECT * | * SUBCON * | W/OH&P | SUBTOTAL |
|----|---------------|----|----------|-----|--------|-------|-----------|-------|------|-------------------|------------|--------|----------|
|    |               |    |          |     |        |       |           |       |      | AMOUNT            | PCT        |        |          |
| AA | GENERAL/PRIME |    | 1.00     | EA  | 156    | 4,692 | 463       | 8,767 |      | 13,921            | 100.0%     | 0      | 13,921   |
|    | TOTAL DIRECT  |    |          |     | 156    | 4,692 | 463       | 8,767 |      | 13,921            | 100.0%     |        |          |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: HHECO5  
4-568

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: HAMMOND HEIGHTS

TIME 16:03:50

CONTRACTOR INDIRECT SUMMARY

SUMMARY PAGE 1

| ID | CONTRACTOR              | PH | SUBTOTAL | *** OVERHEAD *** | AMOUNT | PCT | HOFC% | **** PROFIT **** | AMOUNT | PCT  | BOND% | OTHER% | ***** TOTAL CONTRACT ***** | AMOUNT | PCT | UNIT COST |
|----|-------------------------|----|----------|------------------|--------|-----|-------|------------------|--------|------|-------|--------|----------------------------|--------|-----|-----------|
| AA | GENERAL/PRIME           |    | 13,921   | 1,392            | 10.0%  | 0.0 |       | 1,148            | 7.5%   | 2.5% | 0.0%  |        | 16,873                     | 100.0% |     | 16873.08  |
|    | TOTAL OVERHEAD & PROFIT |    |          | 1,392            | 10.0%  |     |       | 1,148            | 7.5%   |      |       |        |                            |        |     |           |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: HHEC05  
4-569

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: HAMMOND HEIGHTS

TIME 16:03:50

CSI DIVISION SUMMARY

SUMMARY PAGE 6

| ID CSI DIVISION | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|-----------------|----------|-------|-----------|----------|-----------|-------------------------|
| 16 ELECTRICAL   | 156      | 4,692 | 463       | 8,349    | 417       | 13,921                  |
| TOTAL DIRECT    | 156      | 4,692 | 463       | 8,349    | 417       | 13,921                  |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: HHECO5  
4-570



Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: HAMMOND HEIGHTS

TIME 16:03:50

SYSTEMS SUMMARY

SUMMARY PAGE 7

| ID SYSTEM              | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|------------------------|----------|-------|-----------|----------|-----------|-------------------------|
| 11 INTERIOR ELECTRICAL | 156      | 4,692 | 463       | 8,349    | 417       | 13,921                  |
| TOTAL DIRECT           | 156      | 4,692 | 463       | 8,349    | 417       | 13,921                  |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: HHEC05  
4-571

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: HAMMOND HEIGHTS

TIME 16:03:50

EQUIPMENT SUMMARY

SUMMARY PAGE 8

| EQUIP DESCRIPTION             | LIFE HRS | TL HRLY | OWNRSHP | OWNS | OVTH | OWNRSHP | EXPENSE | HRLY RATE | UPB RATE | HOURS | TOTAL COST |
|-------------------------------|----------|---------|---------|------|------|---------|---------|-----------|----------|-------|------------|
| EMI20 SMALL TOOLS             |          |         |         |      |      |         |         | 1.40      | 1.40     | 15    | 21         |
| ETR90 LINE TRUCK              |          |         |         |      |      |         |         | 19.86     | 19.86    | 22    | 441        |
| TOTAL PROJECT EQUIPMENT HOURS |          |         |         |      |      |         |         |           |          | 37    | 462        |

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: HAMMOND HEIGHTS

TIME 16:03:50

LABOR SUMMARY

SUMMARY PAGE 9

| CRAFT DESCRIPTION      | BASE  | OVERTM | TXS/INS | FRNG | TRVL | HRLY<br>RATE | UPB<br>RATE | ****<br>HOURS | TOTAL<br>****<br>COST |
|------------------------|-------|--------|---------|------|------|--------------|-------------|---------------|-----------------------|
| LELEC ELECTRICIANS     | 20.50 | 0.0%   | 24.0%   | 7.49 | 0.00 | 32.91        | 25.79       | 156           | 4,691                 |
| TOTAL PROJECT MANHOURS |       |        |         |      |      |              |             | 156           | 4,691                 |

\* \* \* END OF SUMMARY REPORT \* \* \*

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: HAMMOND HEIGHTS

TIME 16:03:50

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| EQUIPMENT SUMMARY.....             | 8            |
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| DETAILED ESTIMATE              | DETAIL PAGE |
|--------------------------------|-------------|
| 1. BUILDING TO THE 5 FOOT LINE |             |
| AA. ELECTRICAL.....            | 1           |

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# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

31 AUGUST 1993

PAGE 1 OF 1

## MERCURY VAPOR STREET LIGHT REPLACEMENT

AREA: LAPOINTE VILLAGE

### ELECTRIC COSTS:

FIXTURE USE: 5200 HR/YR  
 ENERGY CHARGE \$0.0211 PER KWH  
 DEMAND CHARGE \$11.78 PER KW

### EXISTING MERCURY VAPOR FIXTURES

175 WATT LAMPS

13 FIXTURES @ 210 W/FIXT = 2730 WATTS

BASELINE ENERGY CONSUMPTION 14196 KWH

400 WATT LAMPS

18 FIXTURES @ 454 W/FIXT = 8172 WATTS

BASELINE DEMAND 11 KW  
 BASELINE ENERGY CONSUMPTION 42494 KWH

### REPLACEMENT HIGH PRESSURE SODIUM FIXTURES

100 WATT LAMPS

13 FIXTURES @ 130 W/FIXT = 1690 WATTS

REPLACEMENT ENERGY CONSUMPTION 8788 KWH

100 WATT LAMPS

18 FIXTURES @ 130 W/FIXT = 2340 WATTS

REPLACEMENT DEMAND 4 KW  
 REPLACEMENT ENERGY CONSUMPTION 12168 KWH

NET BASELINE ENERGY CONSUMPTION 193 MBTU/YR

NET RPLCMT ENERGY CONSUMPTION 72 MBTU/YR

NET ENERGY SAVINGS 122 MBTU/YR

NET DOLLAR SAVINGS \$836.38

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES

TIME 15:55:00

TITLE PAGE

---

ENERGY SAVINGS OPPORTUNITY SURVY  
FT CAMPBELL, KY  
ECO-5: LAPOINTE VILLAGE

Contract No: 27-93-C-0096

Prepared By: Systems Corp  
Estimator: Keith A. Derrington  
Estimate Prep. Date: 08/31/93  
Current UPB/CSI ID: ORL290

M - C A C E S E D I T I O N  
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Release 4.20

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: LPEC05  
4-576

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: LAPOINTE VILLAGE

TIME 15:55:00

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| LABOR SUMMARY.....                 | 9            |

| DETAILED ESTIMATE              | DETAIL PAGE |
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| 1. BUILDING TO THE 5 FOOT LINE |             |
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Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: LAPOINTE VILLAGE  
1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 15:55:00

DETAILED ESTIMATE

DETAIL PAGE 1

BASE BID

| DIVISION 16 ELECTRICAL                          | QUANTITY            | UOM | CREW | MANHR | LABOR | EQUIPMENT | MATERIAL | SALESTX | DIRECT |
|-------------------------------------------------|---------------------|-----|------|-------|-------|-----------|----------|---------|--------|
| 16500 LIGHTING                                  |                     |     |      |       |       |           |          |         |        |
| 16524 3000 HIGH PRESSURE SODIUM                 |                     |     |      |       |       |           |          |         |        |
| CD=4 EL 3101 FIXTURE 402C 100 WATT<br>WC=1100   | *** UNIT COSTS: *** |     |      | 2.73  | 82.31 | 8.11      | 146.48   | 7.32    | 244.21 |
|                                                 | 31.00 EA EELEK      |     |      | 85    | 2,552 | 252       | 4,541    | 227     | 7,571  |
| TOTAL DIVISION 16 ELECTRICAL                    |                     |     |      | 85    | 2,552 | 252       | 4,541    | 227     | 7,571  |
| TOTAL FACILITY AA. ELECTRICAL                   |                     |     |      | 85    | 2,552 | 252       | 4,541    | 227     | 7,571  |
| TOTAL BID ITEM 1. BUILDING TO THE 5 FOOT LINE   |                     |     |      | 85    | 2,552 | 252       | 4,541    | 227     | 7,571  |
| TOTAL BASE BID                                  |                     |     |      | 85    | 2,552 | 252       | 4,541    | 227     | 7,571  |
| TOTAL ADDITIVE                                  |                     |     |      | 0     | 0     | 0         | 0        | 0       | 0      |
| TOTAL INCL ADD ENERGY SAVINGS OPPORTUNITY SURVY |                     |     |      | 85    | 2,552 | 252       | 4,541    | 227     | 7,571  |

\* \* \* END OF DETAIL REPORT \* \* \*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: LPEC05  
4-578



Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: LAPOINTE VILLAGE

TIME 15:55:00

PROJECT NOTES

SUMMARY PAGE 1

---

PROJECT NOTES

ECO-5: STREET LIGHTS

SCOPE OF WORK: EVALUATE USE OF HIGHER EFFICIENCY STREET LIGHTING IN SELECTED  
FAMILY HOUSING AREAS.

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
 ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
 ECO-5: LAPOINTE VILLAGE

TIME 15:55:00

BID ITEM AND FACILITY SUMMARY

SUMMARY PAGE 2

BID ITEM 1 BUILDING TO THE 5 FOOT LINE

BASE BID

| ID             | FACILITY   |         | COST TO PRM | OVERHEAD     | HOME OFC  | PROFIT      | BOND        | OTHER FCTR | TOTAL COST | UNIT COST |
|----------------|------------|---------|-------------|--------------|-----------|-------------|-------------|------------|------------|-----------|
| AA             | ELECTRICAL | 1.00 EA | 7,571       | 10.0%<br>757 | 0.0%<br>0 | 7.5%<br>625 | 2.5%<br>224 | 0.0%<br>0  | 9,177      | 9176.59   |
| BID ITEM TOTAL |            | 1.00 EA | 7,571       | 757          | 0         | 625         | 224         | 0          | 9,177      | 9176.59   |
| TOTAL BASE BID |            |         | 7,571       | 757          | 0         | 625         | 224         | 0          | 9,177      |           |
| TOTAL ADDITIVE |            |         | 0           | 0            | 0         | 0           | 0           | 0          | 0          |           |
| TOTAL INCL ADD |            |         | 7,571       | 757          | 0         | 625         | 224         | 0          | 9,177      |           |

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: LAPOINTE VILLAGE

TIME 15:55:00

PROJECT CWE SUMMARY

SUMMARY PAGE 2

| ID | BID ITEM                                                   | QUANTITY UOM | BASE BID | ADDITIVE | TOTAL COST | UNIT COST |
|----|------------------------------------------------------------|--------------|----------|----------|------------|-----------|
|    | 1. BUILDING TO THE 5 FOOT LINE                             | 1.00 EA      | 9,177    |          | 9,177      | 9176.60   |
|    | TOTAL CURRENT CONTRACT COST                                |              | 9,177    | 0        | 9,177      |           |
|    | Cost Growth from 08/93 to 08/94<br>Index Values: 0000 0000 | 0.0%         | 0        | 0        | 0          |           |
|    | ESCALATED CONTRACT COST                                    |              | 9,177    | 0        | 9,177      |           |
|    | Government-Furnished Property                              |              | 0        |          | 0          |           |
|    | SUBTOTAL                                                   |              | 9,177    | 0        | 9,177      |           |
|    | Contingencies                                              | 10.0%        | 918      | 0        | 918        |           |
|    | SUBTOTAL                                                   |              | 10,094   | 0        | 10,094     |           |
|    | SIOH (S&A)                                                 | 5.5%         | 555      | 0        | 555        |           |
|    | CURRENT WORKING ESTIMATE                                   |              | 10,649   | 0        | 10,649     |           |
|    | Estimated Construction Time                                | 365 Days     |          |          |            |           |

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: LAPOINTE VILLAGE

TIME 15:55:00

CONTRACTOR DIRECT SUMMARY

SUMMARY PAGE 4

| ID | CONTRACTOR    | PM | QUANTITY | UOM | MANHRS | LABOR | EQUIPMENT | MAT   | W/TX | ** TOTAL DIRECT *<br>AMOUNT PCT | * SUBCON *<br>W/OH&P | SUBTOTAL |
|----|---------------|----|----------|-----|--------|-------|-----------|-------|------|---------------------------------|----------------------|----------|
| AA | GENERAL/PRIME |    | 1.00     | EA  | 85     | 2,552 | 252       | 4,768 |      | 7,571 100.0%                    | 0                    | 7,571    |
|    | TOTAL DIRECT  |    |          |     | 85     | 2,552 | 252       | 4,768 |      | 7,571 100.0%                    |                      |          |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: LPEC05

4-582

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: LAPOINTE VILLAGE

TIME 15:55:00

CONTRACTOR INDIRECT SUMMARY

SUMMARY PAGE 5

| ID | CONTRACTOR              | PH | SUBTOTAL | *** OVERHEAD *** | AMOUNT | PCT | HOPC% | **** PROFIT **** | AMOUNT | PCT  | BOND% | OTHER% | ***** TOTAL CONTRACT ***** | AMOUNT | PCT | UNIT COST |
|----|-------------------------|----|----------|------------------|--------|-----|-------|------------------|--------|------|-------|--------|----------------------------|--------|-----|-----------|
| AA | GENERAL/PRIME           |    | 7,571    | 757              | 10.0%  | 0.0 |       | 625              | 7.5%   | 2.5% | 0.0%  |        | 9,177                      | 100.0% |     | 9176.59   |
|    | TOTAL OVERHEAD & PROFIT |    |          | 757              | 10.0%  |     |       | 625              | 7.5%   |      |       |        |                            |        |     |           |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: LPEC05  
4-583

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: LAPOINTE VILLAGE

TIME 15:55:00

I DIVISION SUMMARY

SUMMARY PAGE 6

| ID CSI DIVISION | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|-----------------|----------|-------|-----------|----------|-----------|-------------------------|
| 16 ELECTRICAL   | 85       | 2,552 | 252       | 4,541    | 227       | 7,571                   |
| TOTAL DIRECT    | 85       | 2,552 | 252       | 4,541    | 227       | 7,571                   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: LPEC05  
4-584

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: LAPOINTE VILLAGE

TIME 15:55:00

SYSTEMS SUMMARY

SUMMARY PAGE 7

| ID SYSTEM              | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|------------------------|----------|-------|-----------|----------|-----------|-------------------------|
| 11 INTERIOR ELECTRICAL | 85       | 2,552 | 252       | 4,541    | 227       | 7,571                   |
| TOTAL DIRECT           | 85       | 2,552 | 252       | 4,541    | 227       | 7,571                   |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: LPEC05

4-585

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: LAPOINTE VILLAGE

TIME 15:55:00

EQUIPMENT SUMMARY

SUMMARY PAGE 8

| EQUIP                         | DESCRIPTION | LIFE HRS | TL HRLY | OWNRSH | OWNS | OVTH | OWNRSH | EXPENSE | HRLY<br>RATE | UPB<br>RATE | HOURS | TOTAL<br>COST |
|-------------------------------|-------------|----------|---------|--------|------|------|--------|---------|--------------|-------------|-------|---------------|
| EMI20                         | SMALL TOOLS |          |         |        |      |      |        |         | 1.40         | 1.40        | 8     | 12            |
| ETR90                         | LINE TRUCK  |          |         |        |      |      |        |         | 19.86        | 19.86       | 12    | 240           |
| TOTAL PROJECT EQUIPMENT HOURS |             |          |         |        |      |      |        |         |              |             | 20    | 252           |



Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: LAPOINTE VILLAGE

TIME 15:55:00

LABOR SUMMARY

SUMMARY PAGE 9

| CRAFT DESCRIPTION      | BASE  | OVERTH | TXS/INS | FRNG | TRVL | HRLY<br>RATE | UPB<br>RATE | ****<br>HOURS | ****<br>TOTAL<br>COST |
|------------------------|-------|--------|---------|------|------|--------------|-------------|---------------|-----------------------|
| LELEC ELECTRICIANS     | 20.50 | 0.0%   | 24.0%   | 7.49 | 0.00 | 32.91        | 25.79       | 85            | 2,553                 |
| TOTAL PROJECT MANHOURS |       |        |         |      |      |              |             | 85            | 2,553                 |

\* \* \* END OF SUMMARY REPORT \* \* \*

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

31 AUGUST 1993

PAGE 1 OF 1

## MERCURY VAPOR STREET LIGHT REPLACEMENT

AREA: LEE VILLAGE

### ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

FIXTURE USE: 5200 HR/YR

### EXISTING MERCURY VAPOR FIXTURES

175 WATT LAMPS

4 FIXTURES @ 210 W/FIXT = 840 WATTS

BASELINE ENERGY CONSUMPTION 4368 KWH

400 WATT LAMPS

124 FIXTURES @ 454 W/FIXT = 56296 WATTS

BASELINE DEMAND 57 KW  
BASELINE ENERGY CONSUMPTION 292739 KWH

### REPLACEMENT HIGH PRESSURE SODIUM FIXTURES

100 WATT LAMPS

4 FIXTURES @ 130 W/FIXT = 520 WATTS

REPLACEMENT ENERGY CONSUMPTION 2704 KWH

100 WATT LAMPS

124 FIXTURES @ 130 W/FIXT = 16120 WATTS

REPLACEMENT DEMAND 17 KW  
REPLACEMENT ENERGY CONSUMPTION 83824 KWH

NET BASELINE ENERGY CONSUMPTION 1014 MBTU/YR NET RPLCMT ENERGY CONSUMPTION 295 MBTU/YR

NET ENERGY SAVINGS 7.18 MBTU/YR NET DOLLAR SAVINGS \$4,928.69

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES

TIME 14:36:33

TITLE PAGE

---

ENERGY SAVINGS OPPORTUNITY SURVY  
FT CAMPBELL, KY  
ECO-5: LEE VILLAGE

Contract No: 27-93-C-0096

Prepared By: Systems Corp  
Estimator: Keith A. Derrington  
Estimate Prep. Date: 08/31/93  
Current UPB/CSI ID: ORL290

M - C A C E S E D I T I O N  
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by Building Systems Design, Inc.  
Release 4.20

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: LVECO5  
4-589

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: LEE VILLAGE

TIME 14:36:31

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| PROJECT CWE SUMMARY.....           | 3            |
| CONTRACTOR DIRECT SUMMARY.....     | 4            |
| CONTRACTOR INDIRECT SUMMARY.....   | 5            |
| CSI DIVISION SUMMARY.....          | 6            |
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| LABOR SUMMARY.....                 | 9            |

| DETAILED ESTIMATE              | DETAIL PAGE |
|--------------------------------|-------------|
| 1. BUILDING TO THE 5 FOOT LINE |             |
| AA. ELECTRICAL.....            | 1           |

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Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS H-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: LEE VILLAGE  
1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 14:36:31

DETAILED ESTIMATE

DETAIL PAGE 2

BASE BID

| DIVISION 16 ELECTRICAL                          | QUANTITY            | UOM | CREW | MANHR | LABOR  | EQUIPMENT | MATERIAL | SALESTX | DIRECT S |
|-------------------------------------------------|---------------------|-----|------|-------|--------|-----------|----------|---------|----------|
| 16500 LIGHTING                                  |                     |     |      |       |        |           |          |         |          |
| 16524 3000 HIGH PRESSURE SODIUM                 |                     |     |      |       |        |           |          |         |          |
| CD=4 EL 3101 FIXTURE 402C 100 WATT              | *** UNIT COSTS: *** |     |      | 2.73  | 82.31  | 8.11      | 146.48   | 7.32    | 244.23   |
| WC=1100                                         | 128.00 EA EELEK     |     |      | 349   | 10,536 | 1,039     | 18,749   | 937     | 31,261   |
| TOTAL DIVISION 16 ELECTRICAL                    |                     |     |      | 349   | 10,536 | 1,039     | 18,749   | 937     | 31,261   |
| TOTAL FACILITY AA. ELECTRICAL                   |                     |     |      | 349   | 10,536 | 1,039     | 18,749   | 937     | 31,261   |
| TOTAL BID ITEM 1. BUILDING TO THE 5 FOOT LINE   |                     |     |      | 349   | 10,536 | 1,039     | 18,749   | 937     | 31,261   |
| TOTAL BASE BID                                  |                     |     |      | 349   | 10,536 | 1,039     | 18,749   | 937     | 31,261   |
| TOTAL ADDITIVE                                  |                     |     |      | 0     | 0      | 0         | 0        | 0       | 0        |
| TOTAL INCL ADD ENERGY SAVINGS OPPORTUNITY SURVY |                     |     |      | 349   | 10,536 | 1,039     | 18,749   | 937     | 31,261   |

\* \* \* END OF DETAIL REPORT \* \* \*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: LVECO5

4-591

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: LEE VILLAGE

TIME 14:36:33

PROJECT NOTES

SUMMARY PAGE 1

---

PROJECT NOTES

ECO-5: STREET LIGHTS

SCOPE OF WORK: EVALUATE USE OF HIGHER EFFICIENCY STREET LIGHTING IN SELECTED  
FAMILY HOUSING AREAS.

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: LVECO5  
4-592

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS H-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: LEE VILLAGE

TIME 14:36:33

BID ITEM AND FACILITY SUMMARY

SUMMARY PAGE 2

BID ITEM 1 BUILDING TO THE 5 FOOT LINE

BASE BID

| ID             | FACILITY   |         | COST TO PRM | OVERHEAD | BONE OFC | PROFIT | BOND | OTHR FCTR | TOTAL COST | UNIT COST |
|----------------|------------|---------|-------------|----------|----------|--------|------|-----------|------------|-----------|
| AA             | ELECTRICAL | 1.00 EA | 31,261      | 3,126    | 0        | 2,579  | 924  | 0         | 37,890     | 37890.43  |
| BID ITEM TOTAL |            |         | 31,261      | 3,126    | 0        | 2,579  | 924  | 0         | 37,890     | 37890.43  |
| TOTAL BASE BID |            |         | 31,261      | 3,126    | 0        | 2,579  | 924  | 0         | 37,890     |           |
| TOTAL ADDITIVE |            |         | 0           | 0        | 0        | 0      | 0    | 0         | 0          |           |
| TOTAL INCL ADD |            |         | 31,261      | 3,126    | 0        | 2,579  | 924  | 0         | 37,890     |           |

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: LEE VILLAGE

TIME 14:36:33

PROJECT CWE SUMMARY

SUMMARY PAGE 3

| ID | BID ITEM                                                   | QUANTITY UOM | BASE BID | ADDITIVE | TOTAL COST | UNIT COST |
|----|------------------------------------------------------------|--------------|----------|----------|------------|-----------|
| 1. | BUILDING TO THE 5 FOOT LINE                                | 1.00 EA      | 37,890   |          | 37,890     | 37890.40  |
|    | TOTAL CURRENT CONTRACT COST                                |              | 37,890   | 0        | 37,890     |           |
|    | Cost Growth from 08/93 to 08/94<br>Index Values: 0000 0000 | 0.0%         | 0        | 0        | 0          |           |
|    | ESCALATED CONTRACT COST                                    |              | 37,890   | 0        | 37,890     |           |
|    | Government-Furnished Property                              |              | 0        |          | 0          |           |
|    | SUBTOTAL                                                   |              | 37,890   | 0        | 37,890     |           |
|    | Contingencies                                              | 10.0%        | 3,789    | 0        | 3,789      |           |
|    | SUBTOTAL                                                   |              | 41,679   | 0        | 41,679     |           |
|    | SIOH (S&A)                                                 | 5.5%         | 2,292    | 0        | 2,292      |           |
|    | CURRENT WORKING ESTIMATE                                   |              | 43,972   | 0        | 43,972     |           |

Estimated Construction Time 365 Days



Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: LEE VILLAGE

TIME 14:36:31

CONTRACTOR DIRECT SUMMARY

SUMMARY PAGE 4

| ID | CONTRACTOR    | PM | QUANTITY | UOM | MANHRS | LABOR  | EQUIPMENT | MAT W/TX | ** TOTAL DIRECT * | * SUBCON * | W/OH&P | SUBTOTAL |
|----|---------------|----|----------|-----|--------|--------|-----------|----------|-------------------|------------|--------|----------|
|    |               |    |          |     |        |        |           |          | AMOUNT            | PCT        |        |          |
| AA | GENERAL/PRIME |    | 1.00     | EA  | 349    | 10,536 | 1,039     | 19,687   | 31,261            | 100.0%     | 0      | 31,261   |
|    | TOTAL DIRECT  |    |          |     | 349    | 10,536 | 1,039     | 19,687   | 31,261            | 100.0%     |        |          |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: LVECO5  
4-595

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: LEE VILLAGE

TIME 14:36:3

CONTRACTOR INDIRECT SUMMARY

SUMMARY PAGE

| ID | CONTRACTOR              | PH | SUBTOTAL | *** OVERHEAD *** | AMOUNT | PCT | HOFC% | **** PROFIT **** | AMOUNT | PCT  | BOND% | OTHER% | ***** TOTAL CONTRACT ***** | AMOUNT | PCT | UNIT    | COS |
|----|-------------------------|----|----------|------------------|--------|-----|-------|------------------|--------|------|-------|--------|----------------------------|--------|-----|---------|-----|
| AA | GENERAL/PRIME           |    | 31,261   | 3,126            | 10.0%  | 0.0 |       | 2,579            | 7.5%   | 2.5% | 0.0%  |        | 37,890                     | 100.0% |     | 37890.4 |     |
|    | TOTAL OVERHEAD & PROFIT |    |          | 3,126            | 10.0%  |     |       | 2,579            | 7.5%   |      |       |        |                            |        |     |         |     |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: LVEC05  
4-596

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: LEE VILLAGE

TIME 14:36:33

SI DIVISION SUMMARY

SUMMARY PAGE 6

| ID CSI DIVISION | MANHOURS | LABOR  | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|-----------------|----------|--------|-----------|----------|-----------|-------------------------|
| 16 ELECTRICAL   | 349      | 10,536 | 1,039     | 18,749   | 937       | 31,261                  |
| TOTAL DIRECT    | 349      | 10,536 | 1,039     | 18,749   | 937       | 31,261                  |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: LVECO5

4-597

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: LEE VILLAGE

TIME 14:36:33

SYSTEMS SUMMARY

SUMMARY PAGE 7

| ID SYSTEM              | MANHOURS | LABOR  | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|------------------------|----------|--------|-----------|----------|-----------|-------------------------|
| 11 INTERIOR ELECTRICAL | 349      | 10,536 | 1,039     | 18,749   | 937       | 31,261                  |
| TOTAL DIRECT           | 349      | 10,536 | 1,039     | 18,749   | 937       | 31,261                  |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: LVECO5  
4-598

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: LEE VILLAGE

TIME 14:36:3

EQUIPMENT SUMMARY

SUMMARY PAGE 1

| EQUIP DESCRIPTION             | LIFE HRS | TL HRLY | OWNRSH | OWNS | OVTM | OWNRSH | EXPENSE | HRLY RATE | UPB RATE | HOURS | TOTAL COST |
|-------------------------------|----------|---------|--------|------|------|--------|---------|-----------|----------|-------|------------|
| EMI20 SMALL TOOLS             |          |         |        |      |      |        |         | 1.40      | 1.40     | 34    | 48         |
| ETR90 LINE TRUCK              |          |         |        |      |      |        |         | 19.86     | 19.86    | 50    | 992        |
| TOTAL PROJECT EQUIPMENT HOURS |          |         |        |      |      |        |         |           |          | 84    | 1,039      |

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: LEE VILLAGE

TIME 14:36:33

LABOR SUMMARY

SUMMARY PAGE 9

| CRAFT DESCRIPTION      | BASE  | OVERTM | TXS/INS | FRNG | TRVL | HRLY<br>RATE | UPB<br>RATE | ****<br>HOURS | TOTAL<br>COST |
|------------------------|-------|--------|---------|------|------|--------------|-------------|---------------|---------------|
| LELEC ELECTRICIANS     | 20.50 | 0.0%   | 24.0%   | 7.49 | 0.00 | 32.91        | 25.79       | 349           | 10,535        |
| TOTAL PROJECT MANHOURS |       |        |         |      |      |              |             | 349           | 10,535        |

\* \* \* END OF SUMMARY REPORT \* \* \*

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: LEE VILLAGE

TIME 14:36:31

ERROR REPORT

ERROR PAGE 1

---

1AA 16524 3101 FIXTURE 402C 100 WATT Contractor EL Not Identified in BI 0 - Prime OH & P only applied  
Escalation Index Values Missing -- Zero Escalation assumed

\* \* \* END OF ERROR REPORT \* \* \*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: LVECO5  
4-601

# FORT CAMPBELL ENERGY SAVINGS OPPORTUNITY SURVEY

ECO 5: INDOOR/OUTDOOR LIGHTING EFFICIENCIES TO RECOMMENDED LEVELS

31 AUGUST 1993

PAGE 1 OF 1

## MERCURY VAPOR STREET LIGHT REPLACEMENT

AREA: PIERCE VILLAGE

### ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.76 PER KW

FIXTURE USE: 5200 HR/YR

### EXISTING MERCURY VAPOR FIXTURES

175 WATT LAMPS

3 FIXTURES @ 210 W/FIXT = 630 WATTS

BASELINE ENERGY CONSUMPTION 3276 KWH

400 WATT LAMPS

66 FIXTURES @ 454 W/FIXT = 29964 WATTS

BASELINE DEMAND 31 KW  
BASELINE ENERGY CONSUMPTION 155812 KWH

### REPLACEMENT HIGH PRESSURE SODIUM FIXTURES

100 WATT LAMPS

3 FIXTURES @ 130 W/FIXT = 390 WATTS

REPLACEMENT ENERGY CONSUMPTION 2028 KWH

100 WATT LAMPS

66 FIXTURES @ 130 W/FIXT = 8580 WATTS

REPLACEMENT DEMAND 9 KW  
REPLACEMENT ENERGY CONSUMPTION 44616 KWH

NET BASELINE ENERGY CONSUMPTION 543 MBTU/YR

NET REPLCMT ENERGY CONSUMPTION 159 MBTU/YR

NET ENERGY SAVINGS 384 MBTU/YR

NET DOLLAR SAVINGS \$2,631.81



Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES

TIME 15:46:28

TITLE PAGE

---

ENERGY SAVINGS OPPORTUNITY SURVY  
FT CAMPBELL, KY  
ECO-5: PIERCE VILLAGE

Contract No: 27-93-C-0096

Prepared By: Systems Corp  
Estimator: Keith A. Derrington  
Estimate Prep. Date: 08/31/93

Current UPB/CSI ID: ORL290

M - C A C E S E D I T I O N  
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by Building Systems Design, Inc.  
Release 4.20

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: PVECO5  
4-603

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: PIERCE VILLAGE

TIME 15:46:28

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| CONTRACTOR DIRECT SUMMARY.....     | 4            |
| CONTRACTOR INDIRECT SUMMARY.....   | 5            |
| CSI DIVISION SUMMARY.....          | 6            |
| SYSTEMS SUMMARY.....               | 7            |
| EQUIPMENT SUMMARY.....             | 8            |
| LABOR SUMMARY.....                 | 9            |

| DETAILED ESTIMATE              | DETAIL PAGE |
|--------------------------------|-------------|
| 1. BUILDING TO THE 5 FOOT LINE |             |
| AA. ELECTRICAL.....            | 1           |

\* \* \* END TABLE OF CONTENTS \* \* \*

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
 ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
 ECO-5: PIERCE VILLAGE  
 1. BUILDING TO THE 5 FOOT LINE / AA. ELECTRICAL

TIME 15:46:28

MAILED ESTIMATE

DETAIL PAGE 1

BASE BID

| DIVISION 16 ELECTRICAL                          | QUANTITY | UOM             | CREW  | MANHR | LABOR | EQUIPMENT | MATERIAL | SALESTX | DIRECT \$ |
|-------------------------------------------------|----------|-----------------|-------|-------|-------|-----------|----------|---------|-----------|
| 16500 LIGHTING                                  |          |                 |       |       |       |           |          |         |           |
| 16524 3000 HIGH PRESSURE SODIUM                 |          |                 |       |       |       |           |          |         |           |
| CD=4 EL 3101 FIXTURE 402C 100 WATT              | ***      | UNIT COSTS: *** |       | 2.73  | 82.31 | 8.11      | 146.48   | 7.32    | 244.23    |
| WC=1100                                         | 69.00    | EA              | EELEK | 188   | 5,679 | 560       | 10,107   | 505     | 16,852    |
| TOTAL DIVISION 16 ELECTRICAL                    |          |                 |       | 188   | 5,679 | 560       | 10,107   | 505     | 16,852    |
| TOTAL FACILITY AA. ELECTRICAL                   |          |                 |       | 188   | 5,679 | 560       | 10,107   | 505     | 16,852    |
| TOTAL BID ITEM 1. BUILDING TO THE 5 FOOT LINE   |          |                 |       | 188   | 5,679 | 560       | 10,107   | 505     | 16,852    |
| TOTAL BASE BID                                  |          |                 |       | 188   | 5,679 | 560       | 10,107   | 505     | 16,852    |
| TOTAL ADDITIVE                                  |          |                 |       | 0     | 0     | 0         | 0        | 0       | 0         |
| TOTAL INCL ADD ENERGY SAVINGS OPPORTUNITY SURVY |          |                 |       | 188   | 5,679 | 560       | 10,107   | 505     | 16,852    |

\* \* \* END OF DETAIL REPORT \* \* \*

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: PVECO5

4-605

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: PIERCE VILLAGE

TIME 15:46:28

JECT NOTES

SUMMARY PAGE 1

---

PROJECT NOTES

ECO-5: STREET LIGHTS

SCOPE OF WORK: EVALUATE USE OF HIGHER EFFICIENCY STREET LIGHTING IN SELECTED  
FAMILY HOUSING AREAS.

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: PVECO5  
4-606

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
 ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
 ECO-5: PIERCE VILLAGE

TIME 15:46:28

BID ITEM AND FACILITY SUMMARY

SUMMARY PAGE 2

BID ITEM 1 BUILDING TO THE 5 FOOT LINE

BASE BID

| ID             | FACILITY   |         | COST TO PRM | OVERHEAD       | HOME OFC  | PROFIT        | BOND        | OTHER FCTR | TOTAL COST | UNIT COST |
|----------------|------------|---------|-------------|----------------|-----------|---------------|-------------|------------|------------|-----------|
| AA             | ELECTRICAL | 1.00 EA | 16,852      | 10.0%<br>1,685 | 0.0%<br>0 | 7.5%<br>1,390 | 2.5%<br>498 | 0.0%<br>0  | 20,425     | 20425.31  |
| BID ITEM TOTAL |            | 1.00 EA | 16,852      | 1,685          | 0         | 1,390         | 498         | 0          | 20,425     | 20425.31  |
| TOTAL BASE BID |            |         | 16,852      | 1,685          | 0         | 1,390         | 498         | 0          | 20,425     |           |
| TOTAL ADDITIVE |            |         | 0           | 0              | 0         | 0             | 0           | 0          | 0          |           |
| TOTAL INCL ADD |            |         | 16,852      | 1,685          | 0         | 1,390         | 498         | 0          | 20,425     |           |

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: PIERCE VILLAGE

TIME 15:46:28

PROJECT CWE SUMMARY

SUMMARY PAGE 3

| ID | BID ITEM                                                   | QUANTITY | UOM  | BASE BID | ADDITIVE | TOTAL COST | UNIT COST |
|----|------------------------------------------------------------|----------|------|----------|----------|------------|-----------|
|    | 1. BUILDING TO THE 5 FOOT LINE                             | 1.00     | EA   | 20,425   |          | 20,425     | 20425.30  |
|    | TOTAL CURRENT CONTRACT COST                                |          |      | 20,425   | 0        | 20,425     |           |
|    | Cost Growth from 08/93 to 08/94<br>Index Values: 0000 0000 | 0.0%     |      | 0        | 0        | 0          |           |
|    | ESCALATED CONTRACT COST                                    |          |      | 20,425   | 0        | 20,425     |           |
|    | Government-Furnished Property                              |          |      | 0        |          | 0          |           |
|    | SUBTOTAL                                                   |          |      | 20,425   | 0        | 20,425     |           |
|    | Contingencies                                              | 10.0%    |      | 2,043    | 0        | 2,043      |           |
|    | SUBTOTAL                                                   |          |      | 22,468   | 0        | 22,468     |           |
|    | SIOH (S&A)                                                 | 5.5%     |      | 1,236    | 0        | 1,236      |           |
|    | CURRENT WORKING ESTIMATE                                   |          |      | 23,704   | 0        | 23,704     |           |
|    | Estimated Construction Time                                | 365      | Days |          |          |            |           |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: PVEC05  
4-608

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: PIERCE VILLAGE

TIME 15:46:28

TRACTOR DIRECT SUMMARY

SUMMARY PAGE 4

| ID | CONTRACTOR    | PM | QUANTITY | UOM | MANHRS | LABOR | EQUIPMENT | MAT W/TX | AMOUNT | PCT    | W/OH&P | SUBTOTAL |
|----|---------------|----|----------|-----|--------|-------|-----------|----------|--------|--------|--------|----------|
| AA | GENERAL/PRIME |    | 1.00     | EA  | 188    | 5,679 | 560       | 10,612   | 16,852 | 100.0% | 0      | 16,852   |
|    | TOTAL DIRECT  |    |          |     | 188    | 5,679 | 560       | 10,612   | 16,852 | 100.0% |        |          |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: PVECO5  
4-609

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: PIERCE VILLAGE

TIME 15:46:28

CONTRACTOR INDIRECT SUMMARY

SUMMARY PAGE 5

| ID | CONTRACTOR              | PM | SUBTOTAL | *** OVERHEAD ***<br>AMOUNT | PCT   | HOFC% | **** PROFIT ****<br>AMOUNT | PCT  | BOND% | OTHER% | ***** TOTAL CONTRACT *****<br>AMOUNT | PCT    | UNIT COST |
|----|-------------------------|----|----------|----------------------------|-------|-------|----------------------------|------|-------|--------|--------------------------------------|--------|-----------|
| AA | GENERAL/PRIME           |    | 16,852   | 1,685                      | 10.0% | 0.0   | 1,390                      | 7.5% | 2.5%  | 0.0%   | 20,425                               | 100.0% | 20425.31  |
|    | TOTAL OVERHEAD & PROFIT |    |          | 1,685                      | 10.0% |       | 1,390                      | 7.5% |       |        |                                      |        |           |



Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: PIERCE VILLAGE

TIME 15:46:28

CSI DIVISION SUMMARY

SUMMARY PAGE 6

| ID CSI DIVISION | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|-----------------|----------|-------|-----------|----------|-----------|-------------------------|
| 16 ELECTRICAL   | 188      | 5,679 | 560       | 10,107   | 505       | 16,852                  |
| TOTAL DIRECT    | 188      | 5,679 | 560       | 10,107   | 505       | 16,852                  |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: PVECO5

4-611

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: PIERCE VILLAGE

TIME 15:46:28

SYSTEMS SUMMARY

SUMMARY PAGE 7

| ID SYSTEM              | MANHOURS | LABOR | EQUIPMENT | MATERIAL | SALES TAX | ***** TOTAL *<br>DIRECT |
|------------------------|----------|-------|-----------|----------|-----------|-------------------------|
| 11 INTERIOR ELECTRICAL | 188      | 5,679 | 560       | 10,107   | 505       | 16,852                  |
| TOTAL DIRECT           | 188      | 5,679 | 560       | 10,107   | 505       | 16,852                  |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: PVECO5  
4-612

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: PIERCE VILLAGE

TIME 15:46:28

EQUIPMENT SUMMARY

SUMMARY PAGE 8

| EQUIP DESCRIPTION             | LIFE HRS | TL HRLY | OWNRSH | OWNS | OVTM | OWNRSH | EXPENSE | RATE  | RATE  | HOURS | COST |
|-------------------------------|----------|---------|--------|------|------|--------|---------|-------|-------|-------|------|
| EMI20 SMALL TOOLS             |          |         |        |      |      |        |         | 1.40  | 1.40  | 18    | 26   |
| ETR90 LINE TRUCK              |          |         |        |      |      |        |         | 19.86 | 19.86 | 27    | 534  |
| TOTAL PROJECT EQUIPMENT HOURS |          |         |        |      |      |        |         |       |       | 45    | 560  |

CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: PVECO5  
4-613

Wed 25 Aug 1993

U.S. ARMY CORPS of ENGINEERS M-CACES  
ENERGY SAVINGS OPPORTUNITY SURVY / FT CAMPBELL, KY  
ECO-5: PIERCE VILLAGE

TIME 15:46:28

BOR SUMMARY

SUMMARY PAGE 9

| CRAFT DESCRIPTION      | BASE  | OVERTM | TXS/INS | FRNG | TRVL | HRLY<br>RATE | UPB<br>RATE | ****<br>HOURS | TOTAL<br>COST |
|------------------------|-------|--------|---------|------|------|--------------|-------------|---------------|---------------|
| LELEC ELECTRICIANS     | 20.50 | 0.0%   | 24.0%   | 7.49 | 0.00 | 32.91        | 25.79       | 188           | 5,679         |
| TOTAL PROJECT MANHOURS |       |        |         |      |      |              |             | 188           | 5,679         |

\*\*\* END OF SUMMARY REPORT \*\*\*

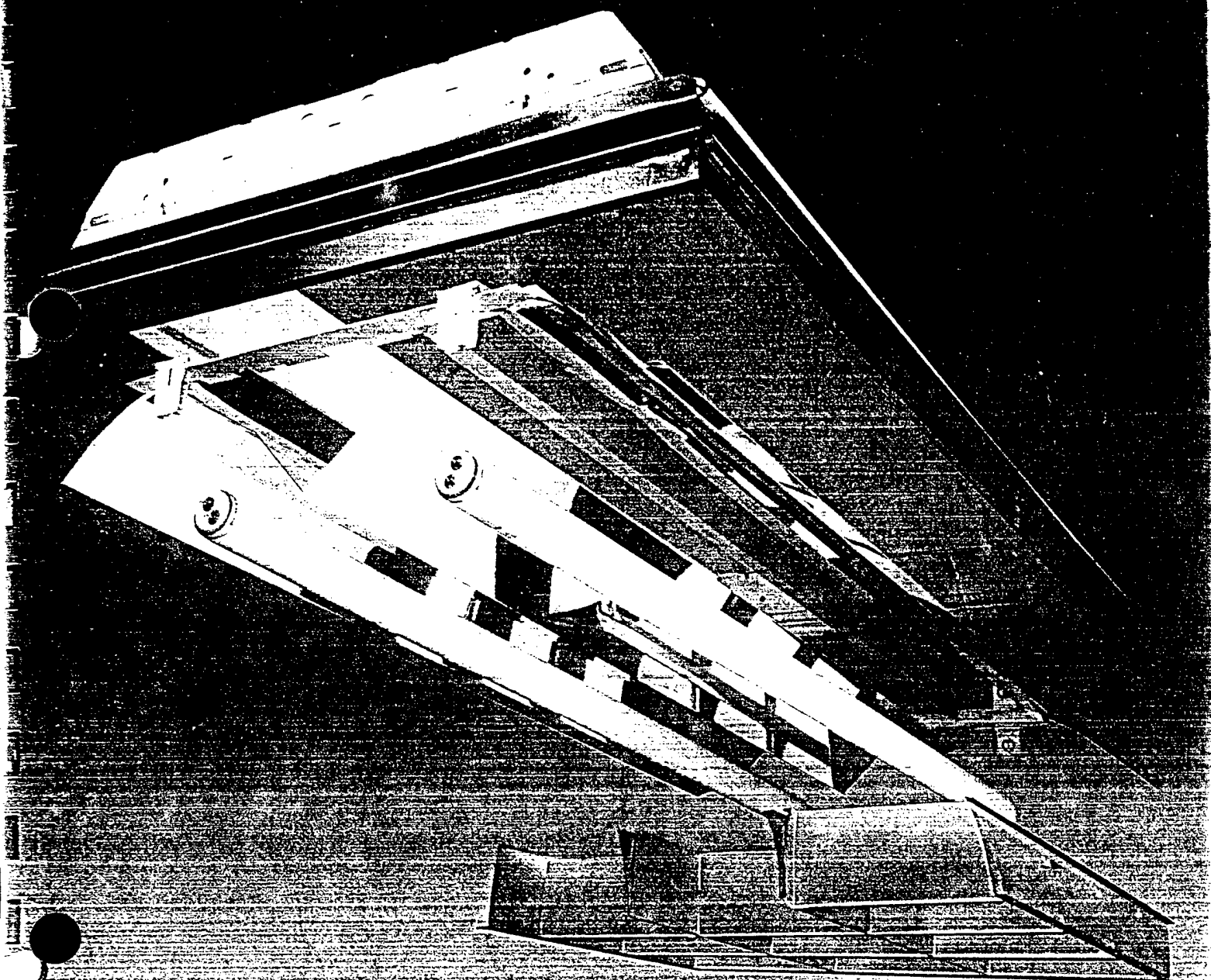
CREW ID: ORL290

CURRENCY in DOLLARS

PROJECT ID: PVECO5  
4-614



# Parke Powerlite 4 Series

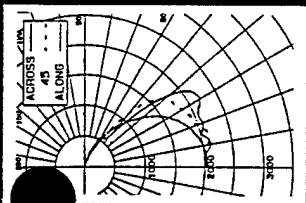


# **With Parke Powerlites, You Can Save Up To 60% Of Your Lighting Costs Each Year!**

- Dramatic reduction in energy consumption.
- Operates on .8 - 1.5 watts per square foot.
- Lowers heat load factors enabling HVAC systems to be down-sized.
- Lowers operating costs up to \$1.00 per square foot.
- Increases visual comfort level.



**Parke Powerlites incorporate the latest state of the art reflector technology with the best lamp, ballast, lens and louver combinations to produce maximum efficiency and an excellent return on investment.**



| CANDLEPOWER SUMMARY |     | ANGLE ALONG |    | ACROSS |    | OUTPUT |     |
|---------------------|-----|-------------|----|--------|----|--------|-----|
|                     |     | 22.5        | 45 | 67.5   | 90 | 112.5  | 135 |
| 0                   | 0   | 0           | 0  | 0      | 0  | 0      | 0   |
| 5                   | 5   | 0           | 0  | 0      | 0  | 0      | 0   |
| 10                  | 10  | 0           | 0  | 0      | 0  | 0      | 0   |
| 15                  | 15  | 0           | 0  | 0      | 0  | 0      | 0   |
| 20                  | 20  | 0           | 0  | 0      | 0  | 0      | 0   |
| 25                  | 25  | 0           | 0  | 0      | 0  | 0      | 0   |
| 30                  | 30  | 0           | 0  | 0      | 0  | 0      | 0   |
| 35                  | 35  | 0           | 0  | 0      | 0  | 0      | 0   |
| 40                  | 40  | 0           | 0  | 0      | 0  | 0      | 0   |
| 45                  | 45  | 0           | 0  | 0      | 0  | 0      | 0   |
| 50                  | 50  | 0           | 0  | 0      | 0  | 0      | 0   |
| 55                  | 55  | 0           | 0  | 0      | 0  | 0      | 0   |
| 60                  | 60  | 0           | 0  | 0      | 0  | 0      | 0   |
| 65                  | 65  | 0           | 0  | 0      | 0  | 0      | 0   |
| 70                  | 70  | 0           | 0  | 0      | 0  | 0      | 0   |
| 75                  | 75  | 0           | 0  | 0      | 0  | 0      | 0   |
| 80                  | 80  | 0           | 0  | 0      | 0  | 0      | 0   |
| 85                  | 85  | 0           | 0  | 0      | 0  | 0      | 0   |
| 90                  | 90  | 0           | 0  | 0      | 0  | 0      | 0   |
| 95                  | 95  | 0           | 0  | 0      | 0  | 0      | 0   |
| 100                 | 100 | 0           | 0  | 0      | 0  | 0      | 0   |
| 105                 | 105 | 0           | 0  | 0      | 0  | 0      | 0   |
| 110                 | 110 | 0           | 0  | 0      | 0  | 0      | 0   |
| 115                 | 115 | 0           | 0  | 0      | 0  | 0      | 0   |
| 120                 | 120 | 0           | 0  | 0      | 0  | 0      | 0   |
| 125                 | 125 | 0           | 0  | 0      | 0  | 0      | 0   |
| 130                 | 130 | 0           | 0  | 0      | 0  | 0      | 0   |
| 135                 | 135 | 0           | 0  | 0      | 0  | 0      | 0   |
| 140                 | 140 | 0           | 0  | 0      | 0  | 0      | 0   |
| 145                 | 145 | 0           | 0  | 0      | 0  | 0      | 0   |
| 150                 | 150 | 0           | 0  | 0      | 0  | 0      | 0   |
| 155                 | 155 | 0           | 0  | 0      | 0  | 0      | 0   |
| 160                 | 160 | 0           | 0  | 0      | 0  | 0      | 0   |
| 165                 | 165 | 0           | 0  | 0      | 0  | 0      | 0   |
| 170                 | 170 | 0           | 0  | 0      | 0  | 0      | 0   |
| 175                 | 175 | 0           | 0  | 0      | 0  | 0      | 0   |
| 180                 | 180 | 0           | 0  | 0      | 0  | 0      | 0   |
| 185                 | 185 | 0           | 0  | 0      | 0  | 0      | 0   |
| 190                 | 190 | 0           | 0  | 0      | 0  | 0      | 0   |
| 195                 | 195 | 0           | 0  | 0      | 0  | 0      | 0   |
| 200                 | 200 | 0           | 0  | 0      | 0  | 0      | 0   |
| 205                 | 205 | 0           | 0  | 0      | 0  | 0      | 0   |
| 210                 | 210 | 0           | 0  | 0      | 0  | 0      | 0   |
| 215                 | 215 | 0           | 0  | 0      | 0  | 0      | 0   |
| 220                 | 220 | 0           | 0  | 0      | 0  | 0      | 0   |
| 225                 | 225 | 0           | 0  | 0      | 0  | 0      | 0   |
| 230                 | 230 | 0           | 0  | 0      | 0  | 0      | 0   |
| 235                 | 235 | 0           | 0  | 0      | 0  | 0      | 0   |
| 240                 | 240 | 0           | 0  | 0      | 0  | 0      | 0   |
| 245                 | 245 | 0           | 0  | 0      | 0  | 0      | 0   |
| 250                 | 250 | 0           | 0  | 0      | 0  | 0      | 0   |
| 255                 | 255 | 0           | 0  | 0      | 0  | 0      | 0   |
| 260                 | 260 | 0           | 0  | 0      | 0  | 0      | 0   |
| 265                 | 265 | 0           | 0  | 0      | 0  | 0      | 0   |
| 270                 | 270 | 0           | 0  | 0      | 0  | 0      | 0   |
| 275                 | 275 | 0           | 0  | 0      | 0  | 0      | 0   |
| 280                 | 280 | 0           | 0  | 0      | 0  | 0      | 0   |
| 285                 | 285 | 0           | 0  | 0      | 0  | 0      | 0   |
| 290                 | 290 | 0           | 0  | 0      | 0  | 0      | 0   |
| 295                 | 295 | 0           | 0  | 0      | 0  | 0      | 0   |
| 300                 | 300 | 0           | 0  | 0      | 0  | 0      | 0   |

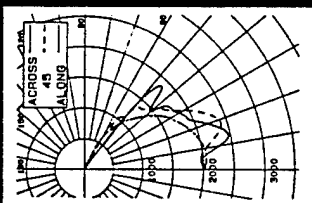
| CCC<br>WALL | COEFFICIENT OF<br>EFFECTIVE FL. |    | TOTAL CAVITY METHOD<br>REFLECTANCE - 20 |    | 83.1 Watts |    |
|-------------|---------------------------------|----|-----------------------------------------|----|------------|----|
|             | 90                              | 70 | 30                                      | 10 | 30         | 10 |
| 0           | 70                              | 50 | 30                                      | 10 | 50         | 30 |
| 1           | 89                              | 87 | 87                                      | 87 | 76         | 75 |
| 2           | 76                              | 82 | 79                                      | 76 | 76         | 76 |
| 3           | 72                              | 68 | 65                                      | 61 | 70         | 69 |
| 4           | 67                              | 61 | 57                                      | 53 | 65         | 61 |
| 5           | 62                              | 54 | 50                                      | 47 | 59         | 54 |
| 6           | 57                              | 48 | 44                                      | 41 | 53         | 47 |
| 7           | 51                              | 43 | 39                                      | 36 | 47         | 41 |
| 8           | 46                              | 38 | 34                                      | 31 | 42         | 36 |
| 9           | 41                              | 33 | 29                                      | 26 | 37         | 32 |
| 10          | 36                              | 28 | 24                                      | 21 | 32         | 28 |
|             | 31                              | 23 | 20                                      | 17 | 27         | 23 |
|             | 26                              | 19 | 16                                      | 13 | 22         | 19 |
|             | 21                              | 14 | 12                                      | 9  | 17         | 14 |
|             | 16                              | 10 | 8                                       | 6  | 12         | 10 |
|             | 11                              | 7  | 5                                       | 4  | 7          | 6  |
|             | 6                               | 4  | 3                                       | 2  | 2          | 2  |

| ZONE   | LUMENS | %LAMP LUMINAIRE |
|--------|--------|-----------------|
| 0-30   | 1671   | 26.12           |
| 0-40   | 2768   | 43.57           |
| 0-60   | 4005   | 68.85           |
| 0-90   | 4792   | 74.89           |
| 40-90  | 2004   | 31.32           |
| 60-90  | 386    | 6.03            |
| 90-180 | 0      | 0.00            |
| 0-180  | 4792   | 74.89           |

\*\* EFFICIENCY = 74.9% \*\*  
 S/MIN = 1.5  
 SC(ALONG) = 1.2  
 SC(CROSS) = 5.5

**#7568 - PARKE POWERLITE A SERIES™**  
 RECESSED 2X4 LUMINAIRE, MODEL  
 #PP42425DC12B1 SILVER REFLECTOR, (2)  
 #F40T12/WW LAMPS, (1) ADVANCE R - 2540  
 BALLAST, 12 - CELL SEMI - SPECULAR 3"  
 DEEP LOUVER, LUMEN RATING = 1200.

- Code gauge steel
- 6" deep troffer
- 3" 12 - cell semi - specular parabolic louver
- Energy saver ballast
- (2) #F40T12 lamps
- 3 - piece specular silver reflector with tablock fastening
- 2"x4"

[illegible][illegible]

| ZONE   | LUMENS | %LUM  | %LUM/LUMINAIRE |
|--------|--------|-------|----------------|
| 0-30   | 1753   | 29.72 | 36.25          |
| 0-40   | 2840   | 48.15 | 58.72          |
| 0-50   | 4656   | 78.93 | 96.27          |
| 0-60   | 4837   | 81.99 | 100.00         |
| 40-60  | 1996   | 33.85 | 41.28          |
| 60-90  | 180    | 3.06  | 3.73           |
| 90-180 | 0      | .00   | .00            |
| 0-180  | 4837   | 81.99 | 100.00         |

\*\* EFFICIENCY = 82.0% \*\*  
 S.M.H. = 1.3  
 SC(ALONG) = 1.2  
 SC(ACROSS) = 1.3

**Model #PP4242OEDC12B1**

**PP9655 - PARKE POWERLITE 4 SERIES...RECESSED SILVER ALUMINAIRE, MODEL #PP4242OEDC12B1, 12" X 12" SILVER REFLECTOR, (2) GE F032/SF41 12-0/WATT T8 LAMPS, (1) TRIAD B3321120 ELEC-TRONIC BALLAST, 12" - CELL SEMI - SPECULAR 3" DEEP LOUVER. LUMEN RATING = 2950.**

Code guage steel

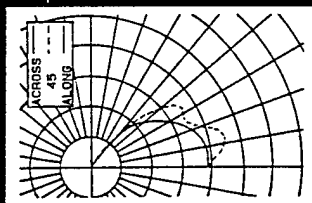
3" 12" cell semi - specular parabolic louver

Electronic ballast

(2) T8 lamps

3 - piece specular silver reflector with tablock fastening

2" X4"



| ANGLE | CARLOPPA SUMMARY |      |      |      |      |        |      |      |      |      |
|-------|------------------|------|------|------|------|--------|------|------|------|------|
|       | ALONG            |      |      |      |      | ACROSS |      |      |      |      |
|       | 1890             | 1900 | 1910 | 1920 | 1930 | 1890   | 1900 | 1910 | 1920 | 1930 |
| 0     | 1866             | 1932 | 2009 | 2055 | 2079 |        |      |      |      |      |
| 5     | 1866             | 1932 | 2009 | 2055 | 2079 |        |      |      |      |      |
| 10    | 1819             | 1919 | 1985 | 2031 | 2055 |        |      |      |      |      |
| 15    | 1819             | 1919 | 1985 | 2031 | 2055 |        |      |      |      |      |
| 20    | 1720             | 1913 | 2036 | 2072 | 2097 |        |      |      |      |      |
| 25    | 1639             | 1953 | 2060 | 2107 | 2163 |        |      |      |      |      |
| 30    | 1466             | 1953 | 2060 | 2107 | 2163 |        |      |      |      |      |
| 35    | 1334             | 1548 | 1646 | 1633 | 1702 |        |      |      |      |      |
| 40    | 1165             | 979  | 1152 | 1136 | 1110 |        |      |      |      |      |
| 45    | 956              | 979  | 1152 | 1136 | 1110 |        |      |      |      |      |
| 50    | 747              | 757  | 870  | 874  | 868  |        |      |      |      |      |
| 55    | 538              | 537  | 585  | 612  | 626  |        |      |      |      |      |
| 60    | 313              | 313  | 337  | 349  | 331  |        |      |      |      |      |
| 65    | 172              | 172  | 177  | 187  | 187  |        |      |      |      |      |
| 70    | 59               | 72   | 75   | 88   | 93   |        |      |      |      |      |
| 75    | 14               | 14   | 10   | 9    | 5    |        |      |      |      |      |
| 80    | 6                | 6    | 6    | 5    | 5    |        |      |      |      |      |
| 85    | 1                | 2    | 1    | 1    | 1    |        |      |      |      |      |
| 90    | 0                | 0    | 0    | 0    | 0    |        |      |      |      |      |

| CC WALL |    | COEFFICIENTS OF UTILIZATION ZONAL CAVITY METHOD |    |    |    |    |                                          |    |    |    |    | 83.1 Wcfts |    |    |
|---------|----|-------------------------------------------------|----|----|----|----|------------------------------------------|----|----|----|----|------------|----|----|
|         |    | EFFECTIVE FLOOR CAVITY REFLECTANCE = .20        |    |    |    |    | EFFECTIVE FLOOR CAVITY REFLECTANCE = .30 |    |    |    |    |            |    |    |
|         |    | 80                                              |    | 70 |    | 50 |                                          | 30 |    | 10 |    |            |    |    |
|         |    | 70                                              | 50 | 30 | 10 | 70 | 50                                       | 30 | 10 | 70 | 50 | 30         | 10 | 0  |
| PCR     |    |                                                 |    |    |    |    |                                          |    |    |    |    |            |    |    |
| 1       | 1  | 77                                              | 77 | 77 | 77 | 75 | 75                                       | 75 | 75 | 72 | 72 | 72         | 69 | 69 |
| 1       | 1  | 73                                              | 71 | 69 | 67 | 71 | 69                                       | 67 | 66 | 68 | 65 | 64         | 64 | 64 |
| 1       | 1  | 72                                              | 71 | 69 | 64 | 70 | 68                                       | 64 | 63 | 63 | 62 | 61         | 59 | 59 |
| 1       | 1  | 68                                              | 64 | 64 | 64 | 68 | 66                                       | 64 | 63 | 62 | 61 | 59         | 57 | 55 |
| 1       | 1  | 65                                              | 63 | 62 | 61 | 65 | 63                                       | 61 | 60 | 59 | 57 | 55         | 53 | 51 |
| 4       | 1  | 61                                              | 58 | 58 | 58 | 61 | 59                                       | 57 | 56 | 55 | 54 | 52         | 50 | 48 |
| 4       | 4  | 51                                              | 55 | 51 | 48 | 59 | 54                                       | 51 | 48 | 47 | 46 | 44         | 42 | 40 |
| 4       | 4  | 47                                              | 51 | 46 | 43 | 55 | 50                                       | 47 | 45 | 44 | 43 | 41         | 39 | 37 |
| 4       | 4  | 43                                              | 47 | 42 | 39 | 52 | 46                                       | 42 | 39 | 41 | 38 | 35         | 33 | 31 |
| 7       | 4  | 43                                              | 47 | 42 | 39 | 45 | 41                                       | 38 | 35 | 41 | 37 | 34         | 31 | 29 |
| 7       | 7  | 40                                              | 43 | 38 | 35 | 42 | 38                                       | 34 | 31 | 37 | 34 | 31         | 28 | 26 |
| 8       | 4  | 46                                              | 39 | 35 | 32 | 45 | 39                                       | 34 | 31 | 37 | 34 | 31         | 28 | 27 |
| 8       | 8  | 46                                              | 39 | 35 | 32 | 42 | 38                                       | 33 | 31 | 36 | 33 | 30         | 28 | 27 |
| 9       | 4  | 43                                              | 40 | 36 | 33 | 42 | 38                                       | 33 | 31 | 36 | 33 | 30         | 28 | 27 |
| 9       | 9  | 43                                              | 40 | 36 | 33 | 40 | 36                                       | 32 | 30 | 35 | 32 | 29         | 27 | 26 |
| 10      | 4  | 39                                              | 35 | 32 | 29 | 42 | 38                                       | 33 | 31 | 36 | 33 | 30         | 28 | 26 |
| 10      | 10 | 39                                              | 35 | 32 | 29 | 40 | 36                                       | 32 | 30 | 35 | 32 | 29         | 27 | 26 |

| ZONE  | LUMENS | RELAMP | LUM/LIN/LURE |
|-------|--------|--------|--------------|
| 0-30  | 1635   | 26.0   | 40.3         |
| 0-40  | 2595   | 41.2   | 63.9         |
| 0-60  | 3948   | 62.7   | 97.2         |
| 0-90  | 4051   | 64.5   | 100.0        |
| 0-100 | 0      | 0      | 0            |
| 0-180 | 0      | 0      | 0            |
| 0-180 | 4051   | 64.5   | 100.0        |

\*EFFICIENCY\*\* = 64.9% \*\*

7MM = 1.2  
 36(CALONG) = 1.4  
 36(CACROSS) = 1.2

**Model #PP4222BXDC09B1**

**191918A - PARKE POWERLITE 4 SERIES...2X2**  
LUMINAIRE, MODEL #PP4222BXDC09B1,  
SILVER REFLECTOR, (2) GE FO40BXSPX3SR,  
BALLAST, 9 - CELL SEMI-SPECULAR 3"  
BUILT LOUVER, LUMEN RATING = 3150.

**Code gauge steel**  
3" 9 - cell semi - specular louver  
Blax magnetic ballast  
(2) F40 BX lamps  
3 - piece specular silver reflector with tablock fastening  
2"X2"



PAAKE INDUSTRIES INC.



**MOTOROLA**  
Lighting Inc.



A General Electric Company



**MOTOROLA**  
Lighting Inc.

**ELECTRONIC BALLAST RAPID START**  
MODEL NO. M3-RN-T12-1LL-120  
FOR SERVICE: 1-800-MLI-0089  
BUFFALO GROVE, IL 60089

NO PCB'S

**3 LAMPS**  
INPUT:  
120 VOLTS AC 60 Hz



WHITE  
BLACK

LINE

BALLAST

LAMPS

RED  
YELLOW

LAMP



WHITE  
BLACK

LINE

BALLAST

LAMPS

RED  
YELLOW  
BLUE/WHY  
BROWN  
BLUE

18 AWG Solid Copper Wire  
Strip to 3/8 inch

MFG IN USA



LISTED  
1LS3

PATENT PENDING

CLASS P

HIGH POWER FACTOR

LAMP  
TYPE  
F02T8  
F025T8

32W  
25W

44 AMP  
35 AMP

INSTALL IN ACCORDANCE WITH  
NATIONAL AND LOCAL ELECTRICAL CODES

SOUND RATING: A

MIN.

STARTING

TEMP

50° F  
50° F

**HIGH PERFORMANCE  
ELECTRONIC BALLASTS**  
FLUORESCENT 1, 2, 3 and 4 LAMP  
RAPID START

*Total Customer Satisfaction*





**MOTOROLA**

**Lighting Inc.**

Total Customer Satisfaction

# CUSTOMER SUPPORT 1-800-MLI-0089

## HIGH PERFORMANCE FEATURES

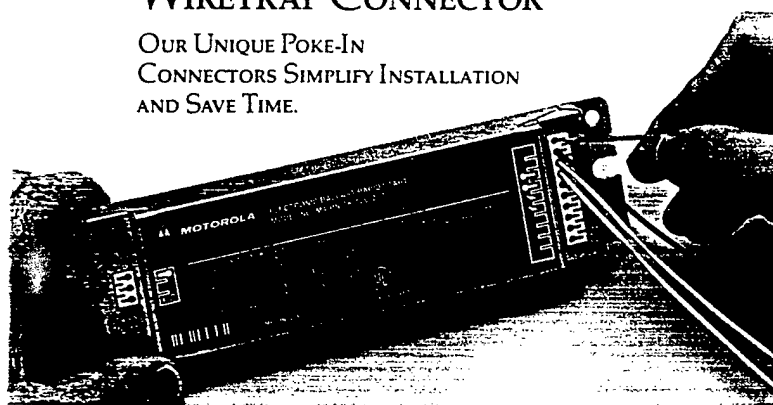
|                            |                                             |
|----------------------------|---------------------------------------------|
| Power Factor:              | Greater than .99                            |
| Total Harmonic Distortion: | Less than 10%                               |
| Third Harmonic Distortion: | Less than 6%                                |
| Lamp Current Crest Factor: | Less than 1.5                               |
| Lamp Current Frequency:    | Greater than 25 KHz                         |
| Lamp Configuration:        | Series                                      |
| Lamp Flicker:              | Less than 2%, Not Visible                   |
| Sound Rating:              | Class A                                     |
| Projected Life:            | 20 years plus                               |
| Connector:                 | Poke-in wire trap for 18 gauge (solid wire) |
| Weight:                    | 1.2 lbs.                                    |
| EMI:                       | Meets FCC Part 18, Subpart C                |

### CODES

|                       |                                               |
|-----------------------|-----------------------------------------------|
| UL Listed:            | Class P                                       |
| Transient Protection: | Meets ANSI C62.41, Cat. A (Formerly IEEE 587) |

## WIRETRAP CONNECTOR

OUR UNIQUE POKE-IN  
CONNECTORS SIMPLIFY INSTALLATION  
AND SAVE TIME.



## PART NUMBER DESCRIPTION

| MODEL NUMBER EXPLANATION                     |                             |                       |                                               |              |             |
|----------------------------------------------|-----------------------------|-----------------------|-----------------------------------------------|--------------|-------------|
| M                                            | 4                           | R                     | N                                             | T8           | 1LL-277     |
| Motorola Lighting Inc.<br>Electronic Ballast | Number of<br>Lamps Operated | Lamp Start<br>Sensing | Light Output<br>N = Normal<br>A = Rapid Start | Lamp Type T8 | Voltage 277 |
|                                              |                             |                       |                                               |              | 120         |

## QUALITY

Motorola's goal of acceptable quality is at Six Sigma or no more than 3.4 defects per million opportunities. Motorola Lighting Inc. designed its electronic ballast to meet the most rigorous performance standards at world class levels. This translates into a highly robust product that goes through extensive environmental stress testing to assure our customers of very low initial defect levels (less than 0.1%) and high reliability (greater than 500,000 hours Mean Time to Failure—MTTF).

The economic ballast life is 20 years when operated at 45°C ambient temperature. Operation of MLI's ballast at 50°C may derate life expectancy by 25%.

Six Sigma Quality means "world class" in all that we do at Motorola Lighting Inc., which is part of our commitment to TOTAL CUSTOMER SATISFACTION.



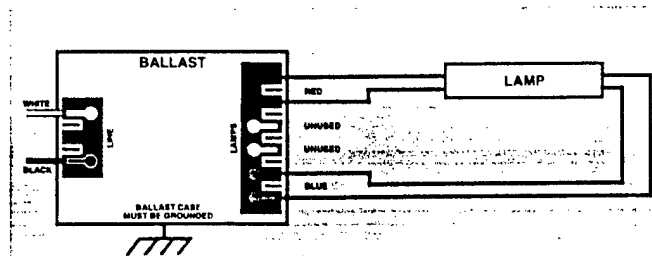
# RAPID START BALLASTS

| Lamp Type  | Rated Lamp Wattage (W) | Lamp Length (FT) | Model No.         | Line Voltage (V) | Max Line Current (A) | Typical Line Current (A) | Typical Input Power (W) |          | Min. Starting Temp (F) |
|------------|------------------------|------------------|-------------------|------------------|----------------------|--------------------------|-------------------------|----------|------------------------|
|            |                        |                  |                   |                  |                      |                          | Open                    | Enclosed |                        |
| 1 LAMP T8  |                        |                  |                   |                  |                      |                          |                         |          |                        |
| F32T8      | 32                     | 4                | M1-RN-T8-1LL-120  | 120              | .31                  | .24                      | 29                      | 28       | 50°                    |
| F32T8      | 32                     | 4                | M1-RN-T8-1LL-277  | 277              | .13                  | .11                      | 29                      | 28       | 50°                    |
| F25T8      | 25                     | 3                | M1-RN-T8-1LL-120  | 120              | .24                  | .19                      | 23                      | 22       | 50°                    |
| F25T8      | 25                     | 3                | M1-RN-T8-1LL-277  | 277              | .10                  | .08                      | 23                      | 22       | 50°                    |
| F17T8      | 17                     | 2                | M1-RN-T8-1LL-120  | 120              | .17                  | .13                      | 16                      | 15       | 50°                    |
| F17T8      | 17                     | 2                | M1-RN-T8-1LL-277  | 277              | .07                  | .08                      | 16                      | 15       | 50°                    |
| 2 LAMP T8  |                        |                  |                   |                  |                      |                          |                         |          |                        |
| F32T8      | 32                     | 4                | M2-RN-T8-1LL-120  | 120              | .55                  | .51                      | 61                      | 58       | 50°                    |
| F32T8      | 32                     | 4                | M2-RN-T8-1LL-277  | 277              | .24                  | .21                      | 59                      | 56       | 50°                    |
| F25T8      | 25                     | 3                | M2-RN-T8-1LL-120  | 120              | .42                  | .40                      | 48                      | 45       | 50°                    |
| F25T8      | 25                     | 3                | M2-RN-T8-1LL-277  | 277              | .18                  | .17                      | 46                      | 44       | 50°                    |
| F17T8      | 17                     | 2                | M2-RN-T8-1LL-120  | 120              | .27                  | .24                      | 32                      | 29       | 50°                    |
| F17T8      | 17                     | 2                | M2-RN-T8-1LL-277  | 277              | .12                  | .10                      | 34                      | 31       | 50°                    |
| 2 LAMP T12 |                        |                  |                   |                  |                      |                          |                         |          |                        |
| F40T12     | 40                     | 4                | M2-RN-T12-1LL-120 | 120              | .64                  | .59                      | 71                      | 69       | 50°                    |
| F40T12     | 40                     | 4                | M2-RN-T12-1LL-277 | 277              | .27                  | .25                      | 69                      | 67       | 50°                    |
| F40T12     | 34                     | 4                | M2-RN-T12-1LL-120 | 120              | .54                  | .50                      | 60                      | 59       | 60°                    |
| F40T12     | 34                     | 4                | M2-RN-T12-1LL-277 | 277              | .23                  | .21                      | 58                      | 57       | 60°                    |
| F40T10     | 40                     | 4                | M2-RN-T12-1LL-120 | 120              | .64                  | .60                      | 72                      | 71       | 50°                    |
| F40T10     | 40                     | 4                | M2-RN-T12-1LL-277 | 277              | .27                  | .25                      | 70                      | 69       | 50°                    |
| F30T12     | 30                     | 3                | M2-RN-T12-1LL-120 | 120              | .48                  | .44                      | 53                      | 52       | 50°                    |
| F30T12     | 30                     | 3                | M2-RN-T12-1LL-277 | 277              | .21                  | .19                      | 52                      | 50       | 50°                    |
| F30T12     | 25                     | 3                | M2-RN-T12-1LL-120 | 120              | .40                  | .37                      | 44                      | 43       | 60°                    |
| F30T12     | 25                     | 3                | M2-RN-T12-1LL-277 | 277              | .17                  | .16                      | 43                      | 42       | 60°                    |
| 3 LAMP T8  |                        |                  |                   |                  |                      |                          |                         |          |                        |
| F32T8      | 32                     | 4                | M3-RN-T8-1LL-120  | 120              | .78                  | .76                      | 90                      | 87       | 50°                    |
| F32T8      | 32                     | 4                | M3-RN-T8-1LL-277  | 277              | .33                  | .32                      | 89                      | 85       | 50°                    |
| F25T8      | 25                     | 3                | M3-RN-T8-1LL-120  | 120              | .61                  | .59                      | 70                      | 67       | 50°                    |
| F25T8      | 25                     | 3                | M3-RN-T8-1LL-277  | 277              | .26                  | .25                      | 69                      | 66       | 50°                    |
| F17T8      | 17                     | 2                | M3-RN-T8-1LL-120  | 120              | .39                  | .35                      | 47                      | 44       | 50°                    |
| F17T8      | 17                     | 2                | M3-RN-T8-1LL-277  | 277              | .16                  | .14                      | 44                      | 41       | 50°                    |
| 3 LAMP T12 |                        |                  |                   |                  |                      |                          |                         |          |                        |
| F40T12     | 40                     | 4                | M3-RN-T12-1LL-120 | 120              | .92                  | .90                      | 107                     | 105      | 50°                    |
| F40T12     | 40                     | 4                | M3-RN-T12-1LL-277 | 277              | .45                  | .38                      | 105                     | 103      | 50°                    |
| F40T12     | 34                     | 4                | M3-RN-T12-1LL-120 | 120              | .84                  | .77                      | 91                      | 89       | 60°                    |
| F40T12     | 34                     | 4                | M3-RN-T12-1LL-277 | 277              | .41                  | .33                      | 90                      | 88       | 60°                    |
| F40T10     | 40                     | 4                | M3-RN-T12-1LL-120 | 120              | .99                  | .92                      | 109                     | 107      | 50°                    |
| F40T10     | 40                     | 4                | M3-RN-T12-1LL-277 | 277              | .48                  | .39                      | 107                     | 105      | 50°                    |
| F30T12     | 30                     | 3                | M3-RN-T12-1LL-120 | 120              | .76                  | .67                      | 80                      | 78       | 50°                    |
| F30T12     | 30                     | 3                | M3-RN-T12-1LL-277 | 277              | .37                  | .29                      | 78                      | 76       | 50°                    |
| F30T12     | 25                     | 3                | M3-RN-T12-1LL-120 | 120              | .71                  | .57                      | 67                      | 65       | 60°                    |
| F30T12     | 25                     | 3                | M3-RN-T12-1LL-277 | 277              | .35                  | .24                      | 66                      | 64       | 60°                    |
| 4 LAMP T8  |                        |                  |                   |                  |                      |                          |                         |          |                        |
| F32T8      | 32                     | 4                | M4-RN-T8-1LL-120  | 120              | 1.04                 | 1.02                     | 121                     | 118      | 50°                    |
| F32T8      | 32                     | 4                | M4-RN-T8-1LL-277  | 277              | .44                  | .43                      | 118                     | 115      | 50°                    |
| F25T8      | 25                     | 3                | M4-RN-T8-1LL-120  | 120              | .81                  | .80                      | 95                      | 91       | 50°                    |
| F25T8      | 25                     | 3                | M4-RN-T8-1LL-277  | 277              | .35                  | .34                      | 93                      | 90       | 50°                    |
| F17T8      | 17                     | 2                | M4-RN-T8-1LL-120  | 120              | .55                  | .49                      | 67                      | 64       | 50°                    |
| F17T8      | 17                     | 2                | M4-RN-T8-1LL-277  | 277              | .22                  | .19                      | 61                      | 58       | 50°                    |

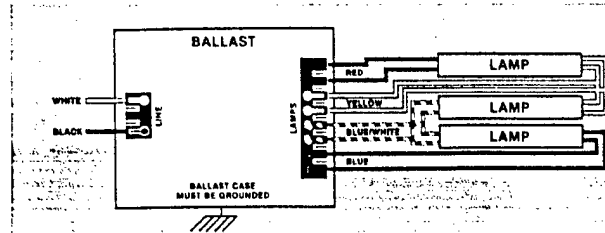
Ballast Will Operate the U-Shaped Equivalents of the Above Lamps. Test Data from Independent Test Lab Available on Request from Factory.

# WIRING DIAGRAMS AND BALLAST DIMENSIONS

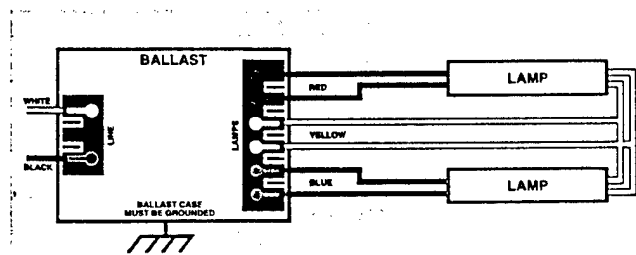
## WIRING DIAGRAMS



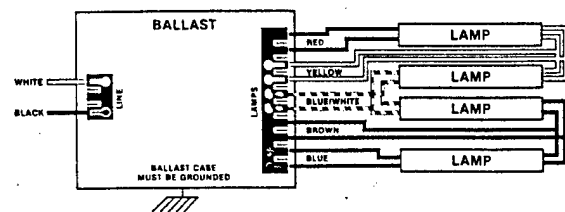
1 LAMP



3 LAMP

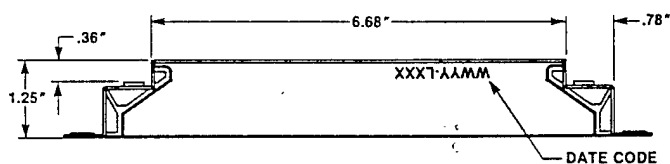
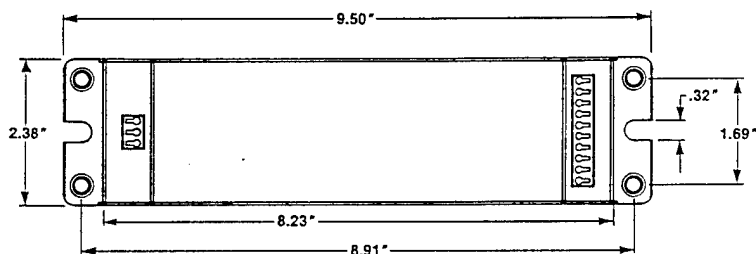


2 LAMP

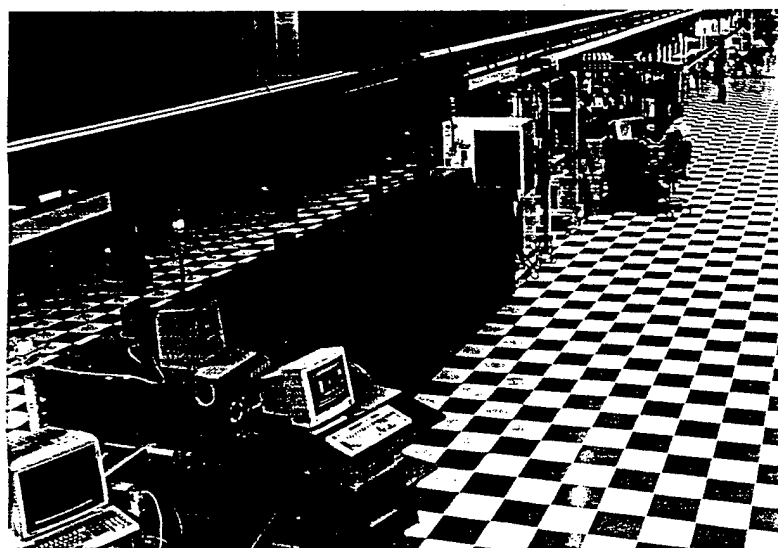


4 LAMP

## BALLAST DIMENSIONS\*



\*BALLAST IS SYMMETRICAL FOR MOUNTING PURPOSES



Our state-of-the-art manufacturing facility in Buffalo Grove, Illinois—in the U.S.A.

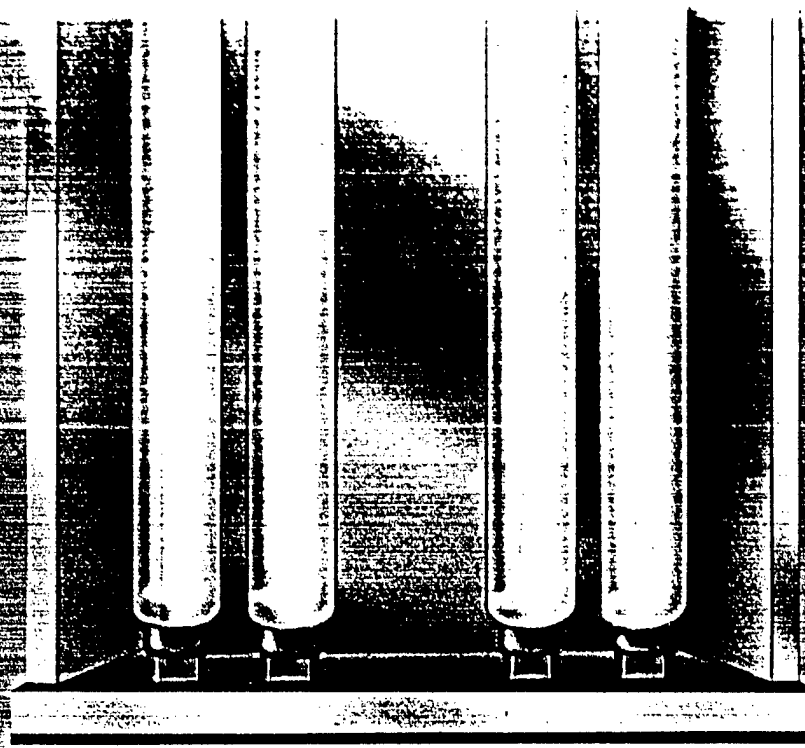


**MOTOROLA**  
Lighting Inc.

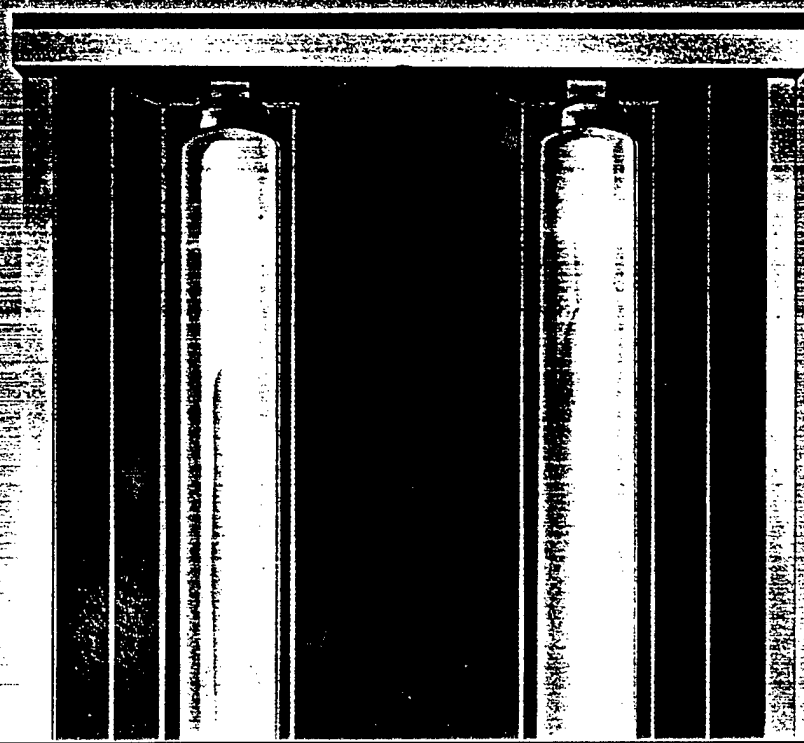
887 Deerfield Parkway  
Buffalo Grove, IL 60089  
1-800-MLI-0089

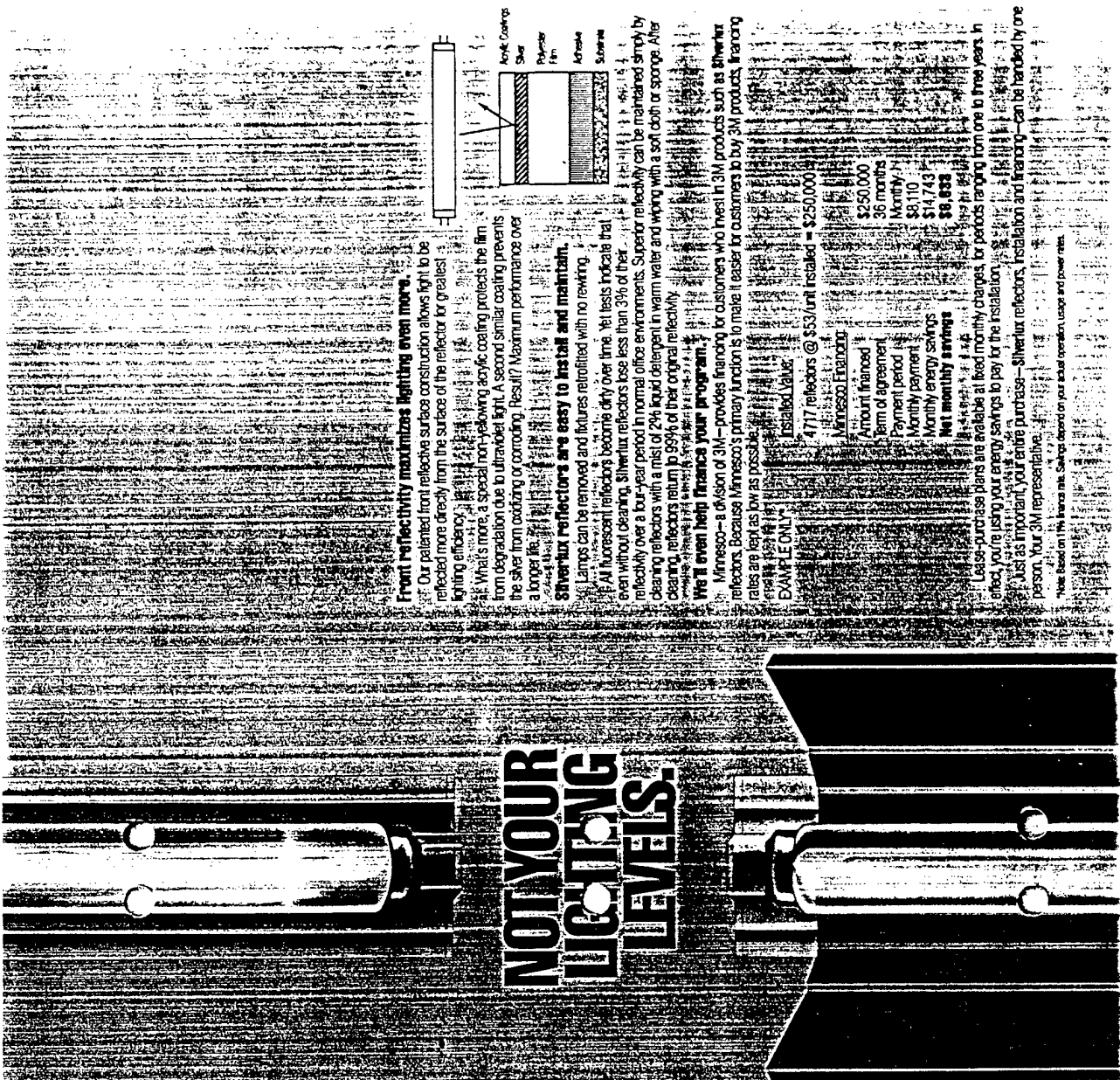
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Opportunity/Affirmative Action Employer



**SILVERLUX<sup>TM</sup>**  
**REFLECTORS**  
**CUT YOUR**  
**LIGHTING ENERGY**  
**COSTS IN HALF.**





# NOT YOUR LIGHTING LEVELS.

**The energy-saving outlook is bright.**  
 Silverlux reflectors let you remove as many as half your fluorescent lamps, while maintaining optimum lighting levels and a fully-lamped look. And when you cut the number of fluorescent lamps in half, you can also cut your energy costs in half.

Or Silverlux reflectors can actually deliver more light out of the same lamps—improving lighting levels dramatically—without increasing energy lamp or ballast costs.

**The payback—short!—usually less than two years.**

Direct savings in the form of lower lighting energy costs pay off quickly. Additional indirect savings such as lower lamps and ballasts, lower maintenance costs, and lower air conditioning costs can accelerate payback even more.

**Reflectivity and efficiency—the highest available.**

After determining your exact lighting requirements, 3M computer-aided design software is used to determine your reflectors for highest performance.

Part of that performance stems from a unique silver film made by 3M that has 95% specular reflectivity—the highest reflectivity on the market. This film is first laminated to specified, pre-tested metal substrates, then mated with proven 3M adhesives. This adhesive expertise provides a strong film-to-substrate bond, uniform appearance and exceptional performance year after year.

As shown in the table, 3M Silverlux reflectors are available in three sizes.

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**Front reflectivity maximizes lighting even more.**

Our patented front reflective surface construction allows light to be reflected more directly from the surface of the reflector for greatest lighting efficiency.

What's more, a special non-yellowing acrylic coating protects the film from degradation due to ultraviolet light. A second similar coating prevents the silver from oxidizing or corroding. Result? Maximum performance over a longer life.

**Silverlux reflectors are easy to install and maintain.**

Lamps can be removed and fixtures relit with no rewiring. All fluorescent reflectors become dry over time. Yet tests indicate that even without cleaning, Silverlux reflectors lose less than 3% of their reflectivity over a four-year period in normal office environments. Superior reflectivity can be maintained simply by cleaning reflectors with a mist of 2% liquid detergent in warm water and wiping with a soft cloth or sponge. After cleaning, reflectors return to 99% of their original reflectivity.

**We'll even help finance your program.**

Minnesota—a division of 3M—provides financing for customers who invest in 3M products such as Silverlux reflectors. Because Minnesota's primary function is to make it easier for customers to buy 3M products, financing rates are kept as low as possible.

**EXAMPLE ONLY**

Installed value: 1717 reflectors @ \$53/unit installed = \$250,000

Minnesota Financing

Amount financed: \$250,000

Term of agreement: 36 months

Monthly payment: \$8,110

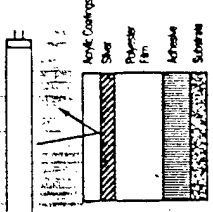
Monthly energy savings: \$8,938

Net monthly savings: \$8,938

Less purchase plans are available at fixed monthly charges, for periods ranging from one to three years. In effect, you're using your energy savings to pay for the installation.

Just as important, your entire purchase—Silverlux reflectors, installation and financing—can be handled by one person. Your 3M representative.

\*Note: Based on the above data. Savings depend on your actual operation, usage and power rates.



Acrylic Coating  
 Silver  
 Polymer Film  
 Acrylic  
 Substrate

| Reflector Surface                          | Specular Reflectivity | Total Reflectivity |
|--------------------------------------------|-----------------------|--------------------|
| 3M Specularized Fluorescent Reflector      | 95%                   | 99%                |
| Acrylic-coated, non-fluorescent Reflectors | 80% - 85%             | 70% - 80%          |
| White                                      | 5%                    | 60% - 80%          |

As shown in the table, 3M Silverlux reflectors are available in three sizes.

The higher the reflectivity, the greater the light delivery. The more light reflected into the work space, the more efficient the lighting system. And maximum efficiency means lower costs.

In short, the Silverlux reflector design offers a significant improvement in lighting efficiency, coupled with our state-of-the-art film and proven adhesives.



# SILVERLUX FLUORESCENT REFLECTORS

- Cut energy costs in half or enhance lighting levels
- Pay for themselves in two years or less
- Install and maintain easily
- Warranted for 5 years
- Attractive low-rate financing available
- Available from nationwide dealer network

**For more information just call.**

3M is a part of the Green Lights Program—a voluntary, non-regulatory program organized by the Environmental Protection Agency (EPA). This program encourages corporations to take advantage of new lighting technologies and design principles that benefit the environment. 3M is a unique member of the program because it participates as both a consumer of electrical lighting energy and as a developer of electrical lighting products. Silverlux reflectors demonstrate 3M's commitment to energy-efficient lighting technologies that reduce energy consumption and pollution while delivering the same or better lighting.

**Cut costs, not lighting.**

**3M Construction Markets**

3M Center Bldg. 225-4S-08

St. Paul, MN 55144-1000

612-736-2388

**Innovation working for you™**

**3M**

# ENERGY EFFICIENCY IN LIGHTING

**LIGHTWAY  
INDUSTRIES**

4-625

# CEILINGWAY Low Profile

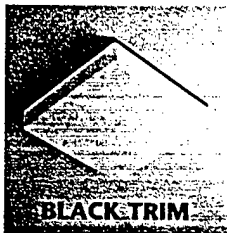
*A classic ceiling fixture with clean, angular lines designed to blend in with a wide variety of architectural styles. The high light output and close profile make it an excellent choice for bathrooms, kitchens and corridors.*

## OPTIONS AVAILABLE

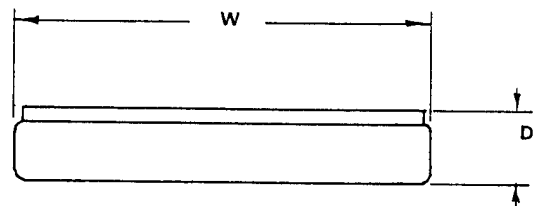
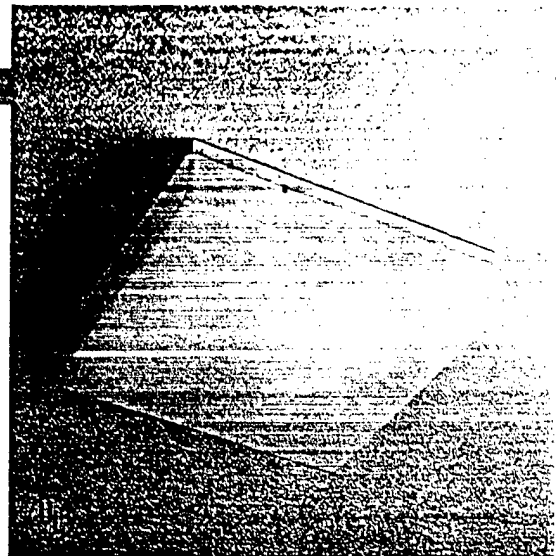
- Cold weather or 277v ballast
- Rapid start ballast for 22 watt
- White polycarbonate diffuser
- Black trim
- Custom color finish
- Emergency Ballast - extended pan req'd
- Tamper proof screws (tool available)

## STANDARD FEATURES

- **Construction** Heavy gauge steel
- **Pan** White polyester powder coated
- **Diffuser** White, non-yellowing acrylic
- **Ballast** Rapid start on 32 & 54 watt
- **UL Listed** Damp location
- Mounting hardware & lamp(s)



| MODEL  | LAMP         | W   | D      | L   |
|--------|--------------|-----|--------|-----|
| CS13LP | 13 watt      | 14" | 3 1/4" | 14" |
| CS26LP | 2-13 watt    | 14" | 3 1/4" | 14" |
| CS20LP | 20 watt      | 14" | 3 1/4" | 14" |
| CS22LP | 22 watt      | 14" | 3 1/4" | 14" |
| CS32LP | 32 watt      | 14" | 3 1/4" | 14" |
| CS54LP | 22 & 32 watt | 14" | 3 1/4" | 14" |



# CEILINGWAY Square

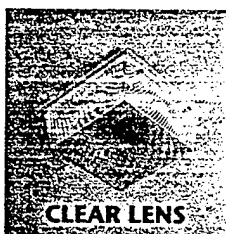
*An economical square ceiling fixture, designed for both strength and economy. Available with circline or twin tube lamps. Optional clear or white polycarbonate diffuser and tamper proof screws are available.*

## OPTIONS AVAILABLE

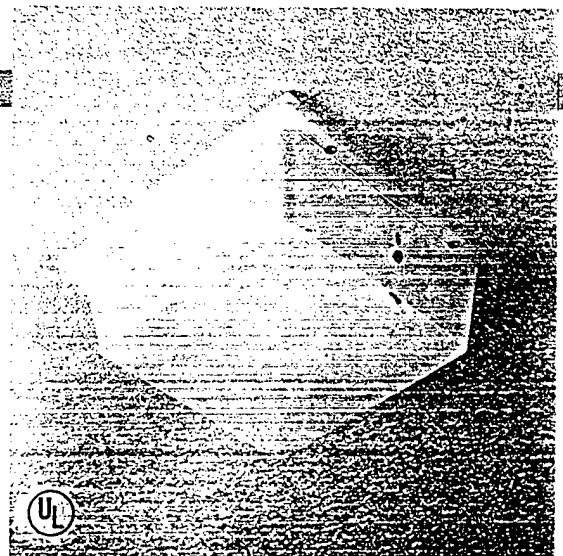
- Cold weather or 277v ballast
- Rapid start ballast for 22 watt
- Clear prismatic acrylic diffuser
- Clear prismatic or white polycarbonate diffuser
- Tamper proof screws (tool available)
- Emergency Ballast - extended pan req'd
- High Pressure Sodium - see new CEILINGWAY HPS/MH on page 19

## STANDARD FEATURES

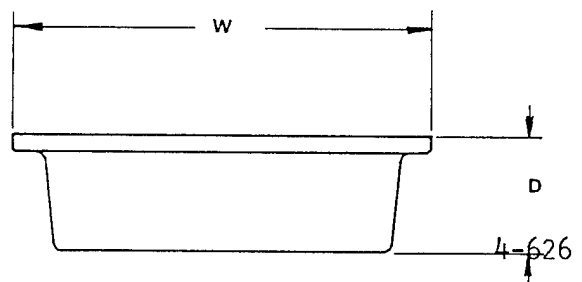
- **Construction** Heavy gauge steel
- **Pan** White polyester powder coated
- **Diffuser** White, non-yellowing acrylic
- **UL Listed** Damp location
- Mounting hardware & lamp(s)



| MODEL | LAMP      | W       | D  | L       |
|-------|-----------|---------|----|---------|
| CS9   | 9 watt    | 10 1/2" | 4" | 10 1/2" |
| CS13  | 13 watt   | 10 1/2" | 4" | 10 1/2" |
| CS18  | 2-9 watt  | 10 1/2" | 4" | 10 1/2" |
| CS26  | 2-13 watt | 10 1/2" | 4" | 10 1/2" |
| CS20  | 20 watt   | 10 1/2" | 4" | 10 1/2" |
| CS22  | 22 watt   | 10 1/2" | 4" | 10 1/2" |

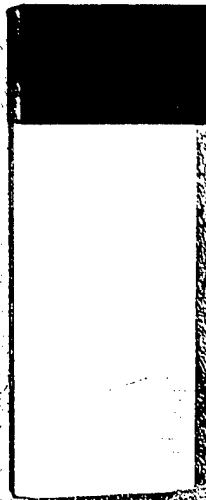


Note: To convert existing fixture to fluorescent see CWS retrofit, page 27





# SLIMWAY



*A sleek, compact fluorescent wall bracket with UL Wet listing, ideal for outdoor as well as indoor applications.*

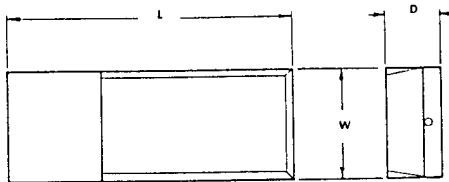
*New: the SLIMWAY Miniature with a 5 watt fluorescent lamp, ideal for steps, closets and more.*

## STANDARD FEATURES

- **Construction** Heavy gauge steel
- **Finish** Low gloss black polyester powder coated
- **Diffuser** White UV stabilized textured polycarbonate
- **UL Listed** Wet location
- Mounting hardware & Lamp(s)

## OPTIONS AVAILABLE

- Clear textured polycarbonate diffuser
- Cold weather or 277v ballast
- Custom color exterior finish
- Tamper proof screw (tool available)
- Back box with knock-outs
- Photo cell - see SLIMWAY Photo cell



| MODEL | LAMP     | W  | D  | L       |
|-------|----------|----|----|---------|
| SW7   | 7 watt   | 4" | 2" | 10 1/2" |
| SW9   | 9 watt   | 4" | 2" | 10 1/2" |
| SW13  | 13 watt  | 4" | 2" | 10 1/2" |
| SW18  | 2-9 watt | 4" | 2" | 10 1/2" |
| SWM5  | 5 watt   | 4" | 2" | 6 1/2"  |

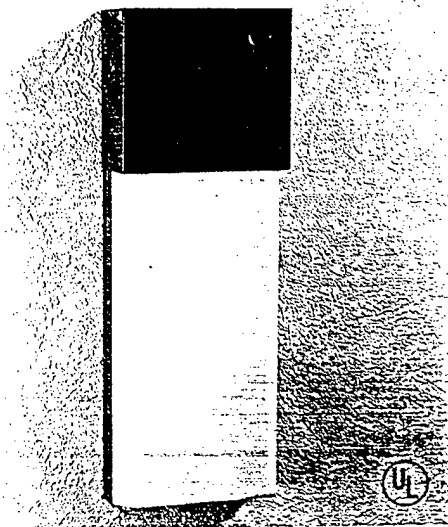


**New!**

**MINIATURE**

# SLIMWAY Photo Cell

*Our very popular SLIMWAY with a built-in "Dusk to Dawn" photo cell. The same quality construction and finish in a slightly taller size. Standard lens is white polycarbonate, but can be ordered with optional clear polycarbonate lens.*

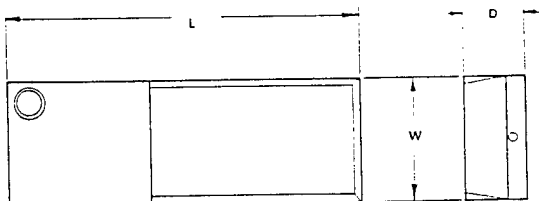


## STANDARD FEATURES

- **Construction** Heavy gauge steel
- **Finish** Low gloss black polyester powder coated
- **Diffuser** White UV stabilized textured polycarbonate
- **UL Listed** Wet location
- Mounting hardware & Lamp(s)

## OPTIONS AVAILABLE

- Clear textured polycarbonate diffuser
- Cold weather or 277v ballast
- Custom color exterior finish
- Tamper proof screw (tool available)
- Back box with knock-outs



| MODEL | LAMP     | W  | D  | L       |
|-------|----------|----|----|---------|
| SWP7  | 7 watt   | 4" | 2" | 11 3/4" |
| SWP9  | 9 watt   | 4" | 2" | 11 3/4" |
| SWP13 | 13 watt  | 4" | 2" | 11 3/4" |
| SWP18 | 2-9 watt | 4" | 2" | 11 3/4" |

4-627

# SIDEWAY

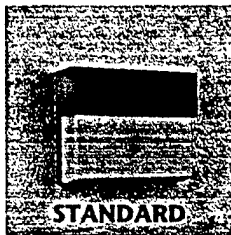
*A sister to our SLIMWAY with the same low profile construction, UL Wet Listing and white polycarbonate lens. SIDEWAY is designed for compact fluorescent lighting to 26 watts (2-13 watt). Optional photo cell shown is available.*

## OPTIONS AVAILABLE

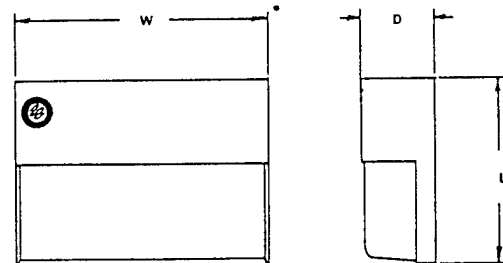
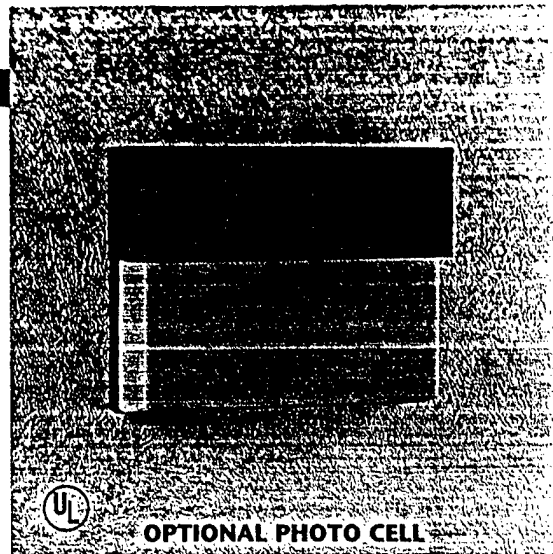
- Clear polycarbonate diffuser
- Cold weather or 277v ballast
- Custom color exterior
- Tamper proof screw (tool available)
- Photo cell

## STANDARD FEATURES

- **Construction** Heavy gauge steel
- **Finish** Low gloss black polyester powder coated
- **Diffuser** White UV stabilized textured polycarbonate
- **UL Listed** Wet location
- Mounting hardware & Lamp(s)



| MODEL | LAMP      | W      | D      | L        |
|-------|-----------|--------|--------|----------|
| SDW7  | 7 watt    | 8 5/8" | 2 1/2" | 6 11/16" |
| SDW9  | 9 watt    | 8 5/8" | 2 1/2" | 6 11/16" |
| SDW13 | 13 watt   | 8 5/8" | 2 1/2" | 6 11/16" |
| SDW18 | 2-9 watt  | 8 5/8" | 2 1/2" | 6 11/16" |
| SDW26 | 2-13 watt | 8 5/8" | 2 1/2" | 6 11/16" |



# BRIGHTWAY

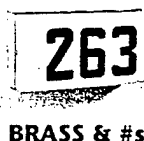
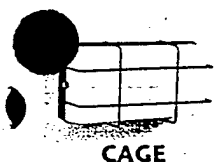
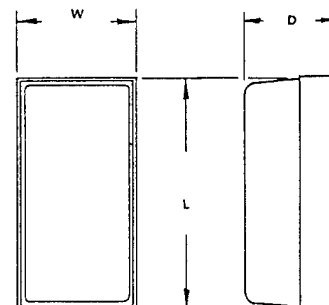
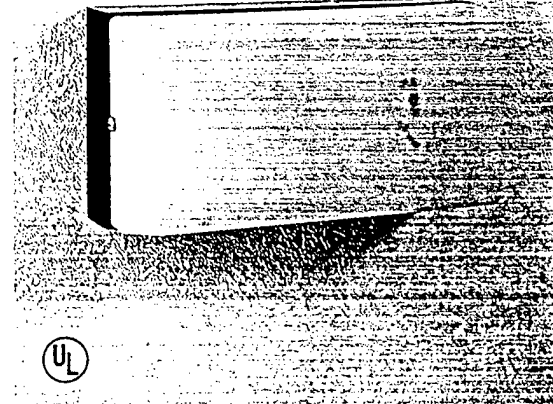
*UL Wet Listed for use indoors or out, in wall or ceiling applications. White polycarbonate lens and powder coated steel construction are standard features. Options include Polished Brass finish and Bulkhead style cage.*

## OPTIONS AVAILABLE

- Clear textured polycarbonate diffuser
- Cold weather or 277v ballast
- Chrome or Polished Brass finish
- 3" letters or numbers (up to 4 digits)
- Bulkhead style cage
- Custom color finish
- Back box with knock-outs or backplate
- Tamper proof screws (tool available)
- Photo cell

## STANDARD FEATURES

- **Construction** Heavy gauge steel
- **Finish** Low gloss black polyester powder coated
- **Diffuser** White UV stabilized textured polycarbonate
- **UL Listed** Wet location
- Mounting hardware & Lamp(s)



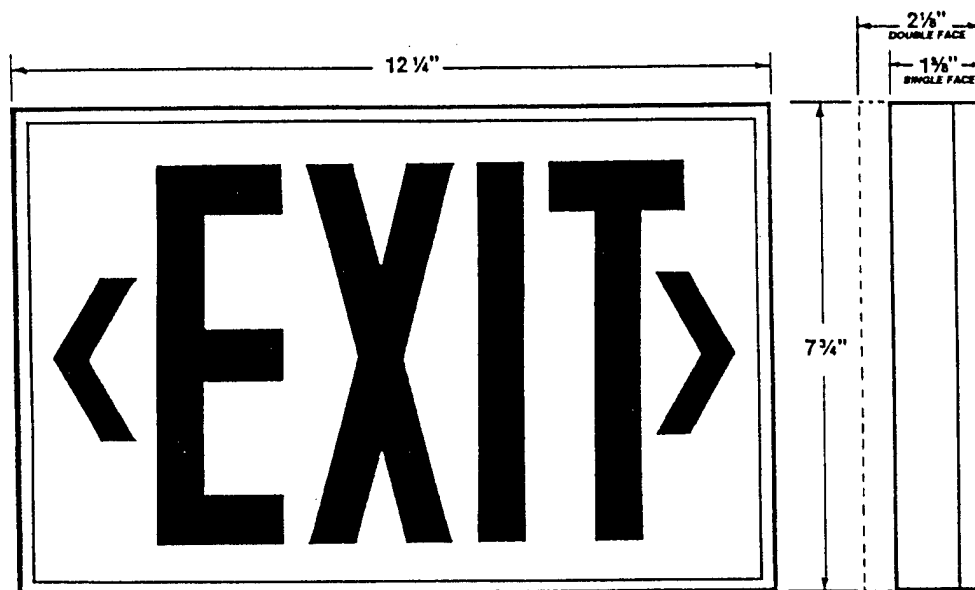
| MODEL | LAMP      | W      | D      | L       |
|-------|-----------|--------|--------|---------|
| BW7   | 7 watt    | 4 1/2" | 3 1/2" | 8 9/16" |
| BW9   | 9 watt    | 4 1/2" | 3 1/2" | 8 9/16" |
| BW13  | 13 watt   | 4 1/2" | 3 1/2" | 8 9/16" |
| BW18  | 2-9 watt  | 4 1/2" | 3 1/2" | 8 9/16" |
| BW26  | 2-13 watt | 4 1/2" | 3 1/2" | 8 9/16" |

4-628

# **Evenlite** LED Exit Lights

**EV SERIES**

*The LED of the 21st Century*



*No Ifs, Ands or Buts.*

This is exactly how the EVENLITE 2000 appears! Perfectly even illumination is produced by indirect lighting, so that the LED's are invisible, with no hot spots. All this is provided in the slimmest sign on the market with integral charger and battery.

No competitor comes close to these combined specifications:

- Less than 3 watts total power per face
- Perfect light distribution across face
- Single face only 1 5/8 " thick
- Double face only 2 1/8" thick
- Remote unit only 1/2" thick
- Multiple LED lamps with 20 year unconditional guarantee
- NICAD batteries with 5 year guarantee
- Aluminum housing for light weight and strength
- Universal mount
- Baked enamel, vinyl clad or satin anodized finishes
- Polycarbonate faceplate

Patent Pending



SHIELD SOURCE INCORPORATED  
220 VFW Avenue, Grasonville, Maryland 21638  
Tel.: (410) 827-6022 Fax: (410) 827-9657

4-629



SHIELD SOURCE INCORPORATED

## EXIT SIGN COST COMPARISON

### MODEL 101 SELF-LUMINOUS SIGN VS ELECTRICAL SIGNS

#### 10 YEAR COSTS:

|                                  | AC/DC Battery<br>2 x PL7 Lamps | AC/DC Battery<br>2 x 25w Lamps | SHIELD<br>Model 101 |
|----------------------------------|--------------------------------|--------------------------------|---------------------|
| Fixture (1)                      | 120                            | 80                             |                     |
| Labor & Material (1)             | 80                             | 80                             | 15                  |
| <u>INITIAL INSTALLED COST:</u>   | <u>200</u>                     | <u>160</u>                     |                     |
| Electricity                      | 123 (2A)                       | 438 (2B)                       | 0                   |
| Lamp                             | 144 (3A)                       | 115 (3B)                       | 0                   |
| Lamp replacement labor(4)        | 45                             | 575                            | 0                   |
| Battery replacement (5)          | 220                            | 220                            | 0                   |
| Battery maintenance (6)          | 40                             | 40                             | 0                   |
| Cost inflation factor (7)        | 160                            | 389                            | 0                   |
| <u>TOTAL COSTS AFTER 10 YRS:</u> | <u>\$932</u>                   | <u>\$1,937</u>                 | <u>\$</u>           |

TO COMPARE COSTS, INSERT YOUR QUOTE FOR SHIELD SIGNS IN COLUMN 3.

*Based on above and assuming SHIELD sign average cost is \$200 installed, if you now have 50 Exit signs operating with 25w lamps over 10 years, and we include the cost of a new SHIELD sign in 1998 at \$256 installed (inflation at 2.5% per yr) YOU COULD SAVE \$96,394! Even with current "power and labor saving" exits with PL7 lamps, savings will be \$46,144!*

#### NOTES:

- (1) Average 1987 Fixture costs: Electrical contractor labor at \$30/hr: Material includes typical pipe, wire, & circuit breaker: If new load center needed, add to material costs.
- (2A) Two 7 watt PL7 lamps/sign, 24 hrs/day at \$0.10/kwh.
- (2B) Two 25w lamps/sign, 24 hrs/day at \$.10/kwh.
- (3A) 10,000 hr lamps, 9 changes of 2 lamps/sign, lamp at \$8.00 ea.
- (3B) 750 hr lamps, 115 changes of 2 lamps/sign, lamp at \$.50 ea.
- (4) Lamp replacement, 15 min/sign, labor \$10.00/hr.
- (5) Battery costs estimated for a change every 2½ years per sign or 4 changes at a cost of \$55.00/unit. The cost per battery will vary as to type of battery installed. This estimate also assumes no failure of charger or transfer circuits.
- (6) Battery maintenance and replacement per (7) above, 4 changes per sign, 1 hr/sign, labor at \$10.00/hr.
- (7) Inflation 2.5% per year applied to operating and maintenance costs for electric signs after installation.

# UNENCO®

Designers and Manufacturers of Reliable, Common Sense, Energy Conservation Equipment

## 1993 PRICE LIST

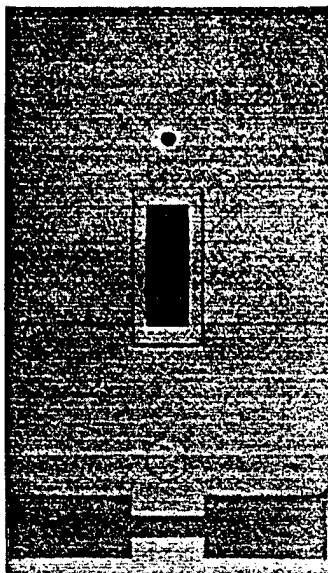
January 1993

Supersedes all previous price lists.

Prices subject to change without notice.

The Most Specified Occupancy Sensor In The Industry

### The Only Automatic Light Switch That Looks Like a...



### Switch to Everyone!

The model SOM-500-A **Switchomat** can save \$60 per year in a typical office; \$30,000 a year in a 100,000 sq. ft. facility, and is the most specified automatic lighting control in the industry. With its unique, sensitive high density pattern and 20-year, trouble-free life expectancy, the SOM-500-A **Switchomat** is the world's best investment in energy conservation. All UNENCO sensors work with new and existing lighting technologies. And, along with the UNENCO free layout and design service, as with all our products, we offer a 90-day money-back guarantee and up to 5 years warranty.

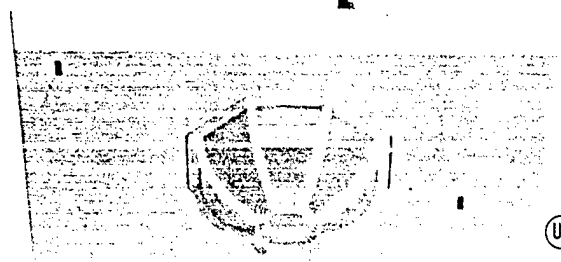
Evaluation Price: \$52.00



Look for the UNENCO lightning bolt for innovative designs and new products!

### UNENCO'S NEW and EXCLUSIVE "QUIK-TO-INSTALL"

Tailored  to the needs of the Professional Installer!



PIR-1000-QTI

The "**QUIK-TO-INSTALL**" (**QTI**) is the new industry standard.

With **color-coded**, low voltage connectors and **standard** plenum harness cable lengths the **QTI** is fast and easy to assemble! The PIR-1000-**QTI** occupancy sensor with 360° viewing pattern covers 1,000 square feet. All features of the revolutionary "**QUIK-TO-INSTALL**" are designed to reduce material and labor costs and deliver 100 years of trouble-free performance. Compatible with new and existing lighting technologies.

Evaluation Price: \$74.50  
(for complete **QTI** system)

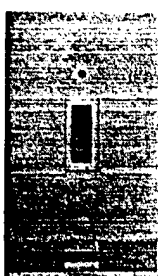
## Risk Free Offer

Take advantage of our UNENCO Equipment Evaluation Period policy. Order any of the products on this page and try them for 30 days, risk free! If you are not fully satisfied with their performance, send them back to us within 30 days and pay nothing. UNENCO offers a 90 day money-back guarantee and up to 5 years warranty on all our products. UNENCO has a proven history of quality products, service and performance since 1983.

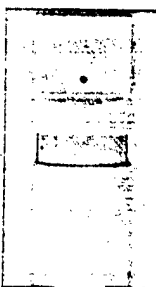
UNENCO, Inc.  
Corporate Headquarters  
2555 Nicholson Street  
San Leandro, CA 94577-4216  
510-352-1802 • FAX: 510-895-5753 • 1-800-227-0452

Texas Office:  
208-B Industrial Court  
P. O. Box 416  
Wylie, TX 75098-0416  
214-442-5493 • FAX: 214-442-4198 • 1-800-527-7406

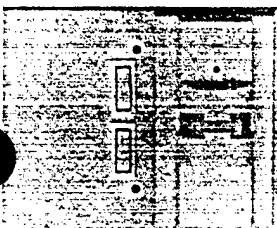
4-631

**Automatic Wall Light Switches *Switchomat*™ Passive Infrared**

SOM-500-A

SOM-1000-A  
SOM-1000-B

SOM-1000-A-2

**SOM-500-A**

***Switchomat*™** Manual lights off switch with built-in safety neon night light. Occupancy sensor, up to 800 sq. ft. coverage. 120/277 Volt, 1000/1800 Watt switching capacity, fluorescent or incandescent. Immediate activation when entering room.

**\$78.00** \$60.00 \$56.00 \$52.00

**SOM-1000-A**

***Switchomat*™** Occupancy Sensor, up to 1000 sq. ft. coverage. 120/277 Volt, 1000/1800 Watt switching capacity, fluorescent or incandescent, 180° coverage. Immediate activation when entering room.

**84.00** 64.00 60.00 56.00

**SOM-1000-B**

***Switchomat*™** Occupancy Sensor, up to 1000 sq. ft. coverage. Single circuit heavy load capacity. Min. 900 Watt to max. 2400 Watt at 120V ballast rating. Min. 1800 Watt to max. 4500 Watt at 277V ballast rating, 180° coverage. Immediate activation when entering room.

**97.50** 73.00 69.00 65.00

**SOM-1000-A-2**

***Switchomat*™** 2 switches, 2 circuits, occupancy sensor, up to 1000 sq. ft. coverage. 120/277 Volt, 1000/1800 Watt switching capacity on each circuit (2 wires) 180° coverage. Immediate activation when entering room.

**93.00** 70.00 66.00 62.00

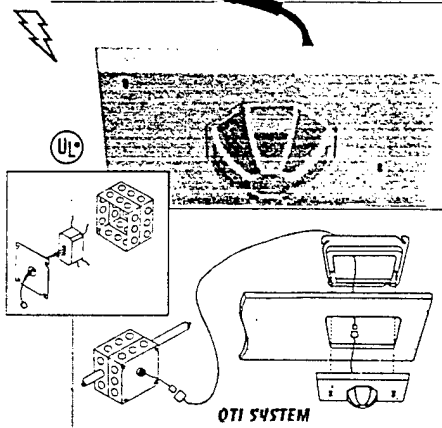
**SOM-1200-2-HD**

***Switchomat*™** Tailored specifically for classrooms! 2 switches, 2 circuits, immediate activation sensor with up to 4000 sq. ft., 180° coverage. 120/277V, 2000/4000 Watt switching capacity on each circuit (2 wires). Can be mounted in either double or triple gang wall box or plaster ring.

**132.00** 96.00 92.00 88.00

**Ceiling-Mounted Passive Infrared *Conserver*™ Occupancy Sensors**

The NEW "Quik-To-Install" (QTI) product line can be ordered separately, in any combination to fit any installation need. The color-coded connectors make assembly of a QTI sensor, QTI Plenum Harness Cables and a QTI Power Pack fast and easy!



QTI SYSTEM

**PIR-1000-QTI**

The PIR-1000-QTI, occupancy sensor. Up to 1000 sq. ft. coverage, 360° high density viewing pattern. Color-coded connectors and standard length approved plenum harness cable makes installation *fast and easy*. For use with QTI Power Pack, 20 amp switching capacity. Saves materials and labor!

**78.00** 60.00 56.00 52.00

**PIR-2000-QTI**

The PIR-2000-QTI, occupancy sensor. Up to 2000 sq. ft. coverage, 360° high density viewing pattern. Color-coded connectors and standard length approved plenum harness cable makes installation *fast and easy*. For use with QTI Power Pack, 20 amp switching capacity. Saves materials and labor!

**112.50** 85.00 80.00 75.50

**PIR-1000-P**

***Conserver*™** Self contained occupancy sensor. Up to 1000 sq. ft. coverage. 360° high density viewing pattern. ***Specify voltage when ordering.***

**93.00** 68.00 64.00 62.00

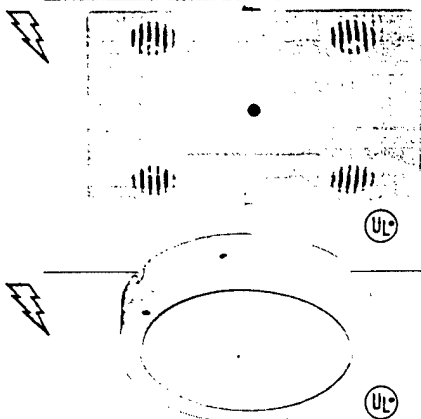
**PIR-2000-P**

***Conserver*™** Self contained occupancy sensor. Up to 2000 sq. ft. coverage. 360° high density viewing pattern. ***Specify voltage when ordering.***

**127.50** 95.00 90.00 85.00

## Ceiling-Mounted Ultrasonic *Conserver*™ Occupancy Sensors

All Ceiling-Mounted occupancy sensors can automatically control the On/Off for lighting and HVAC.



|                       |                 |                |                |                |
|-----------------------|-----------------|----------------|----------------|----------------|
| <b>C-500-2000-QTI</b> | <b>\$132.00</b> | <b>\$98.00</b> | <b>\$93.00</b> | <b>\$88.50</b> |
|-----------------------|-----------------|----------------|----------------|----------------|

Up to 2000 sq. ft. coverage occupancy sensor. Color-coded connectors for easy identification. For use in large open offices. Also suitable for long hallways, 100' x 15'. For use with QTI Power Pack and harness cables.

|                       |               |              |              |              |
|-----------------------|---------------|--------------|--------------|--------------|
| <b>C-500-1000-QTI</b> | <b>118.00</b> | <b>88.00</b> | <b>83.00</b> | <b>78.50</b> |
|-----------------------|---------------|--------------|--------------|--------------|

Up to 1000 sq. ft. coverage. For use with QTI Power Pack and harness cables.

|                    |              |              |              |              |
|--------------------|--------------|--------------|--------------|--------------|
| <b>C-600-R-QTI</b> | <b>91.50</b> | <b>69.00</b> | <b>65.00</b> | <b>61.50</b> |
|--------------------|--------------|--------------|--------------|--------------|

### *Conserver*™

Up to 600 sq. ft. coverage. Equipped with versatile transmitter power slide switch feature for use in small rooms. For use with QTI Power Pack and harness cables.

|                     |               |               |               |              |
|---------------------|---------------|---------------|---------------|--------------|
| <b>C-500-2000-P</b> | <b>148.50</b> | <b>109.00</b> | <b>104.00</b> | <b>99.00</b> |
|---------------------|---------------|---------------|---------------|--------------|

### *Conserver*™

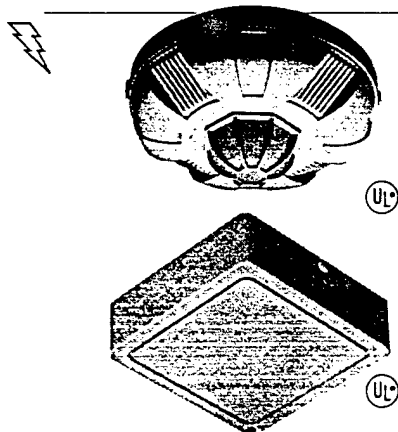
Self contained, 2000 sq. ft. coverage sensor for multiple unit installations in large open offices. Also suitable for long hallways, 100' x 15'. *Specify voltage when ordering.*

|                     |               |               |              |              |
|---------------------|---------------|---------------|--------------|--------------|
| <b>C-500-1000-P</b> | <b>143.50</b> | <b>104.00</b> | <b>99.00</b> | <b>94.00</b> |
|---------------------|---------------|---------------|--------------|--------------|

### *Conserver*™

Self contained up to 1000 sq. ft. sensor. *Specify voltage when ordering.*

## Combination Ultrasonic and Passive Infrared /Specialty Occupancy Sensors



### Combo Sensor QTI

"Combo"

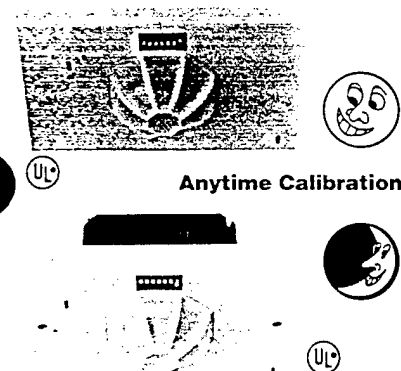
Dual technology occupancy sensor combines both ultrasonic and passive infrared for those specifiers who cannot take any chances. Built in light level sensor for additional savings where feasible. For use in large offices where small motion detection is vital.

### HVAC Control *Conserver*™

|              |               |              |              |              |
|--------------|---------------|--------------|--------------|--------------|
| <b>HMS-1</b> | <b>103.50</b> | <b>78.00</b> | <b>73.00</b> | <b>69.50</b> |
|--------------|---------------|--------------|--------------|--------------|

HVAC control for offices, Hotel/Motel guest rooms up to 400 sq. ft. with built-in fresh air comfort cycle timer.

## Photoelectric Controller Automatic Light Level Controls



|                            |              |              |              |              |
|----------------------------|--------------|--------------|--------------|--------------|
| <b>DAYLIGHT TRACKER DT</b> | <b>63.00</b> | <b>50.00</b> | <b>46.00</b> | <b>42.00</b> |
|----------------------------|--------------|--------------|--------------|--------------|

Measures ambient daylight levels, then automatically activates lights only when lighting is necessary. Factory calibrated foot candle level settings, adjustable with unique "dip switch". No more guesswork.

|                              |              |              |              |              |
|------------------------------|--------------|--------------|--------------|--------------|
| <b>DAYLIGHT TRACKER DT-D</b> | <b>63.00</b> | <b>50.00</b> | <b>46.00</b> | <b>42.00</b> |
|------------------------------|--------------|--------------|--------------|--------------|

Measures ambient daylight levels, then automatically dims to preset light levels. To be used with I. C. Controllable Electronic Ballast.

|                              |              |              |              |              |
|------------------------------|--------------|--------------|--------------|--------------|
| <b>DAYLIGHT TRACKER DT-P</b> | <b>78.00</b> | <b>60.00</b> | <b>56.00</b> | <b>52.00</b> |
|------------------------------|--------------|--------------|--------------|--------------|

Self-contained, measures ambient daylight levels. 20 amp switching capacity. *Specify voltage when ordering.*

January 1993

Supersedes all previous price lists  
Prices subject to change without notice.

| LIST<br>PRICE | 1-23<br>UNITS | 24-95<br>UNITS | 96 UNITS<br>and Up. |
|---------------|---------------|----------------|---------------------|
|---------------|---------------|----------------|---------------------|

## Power Switch Packs / Accessories

### Model 211-QTI

120V Power/Switch Pack with isolated relay contacts and color-coded connectors. 20 AMP ballast rating. 40 year life expectancy at full load. *Heavy duty power packs for motor loads available upon request.*

|         |         |         |         |
|---------|---------|---------|---------|
| \$27.75 | \$22.00 | \$20.00 | \$18.50 |
|---------|---------|---------|---------|

### Model 212-QTI

208/240V Power/Switch Pack with isolated relay contacts and color-coded connectors. 20 AMP ballast rating. 40 year life expectancy at full load. *Heavy duty power packs for motor loads available upon request.*

|       |       |       |       |
|-------|-------|-------|-------|
| 27.75 | 22.00 | 20.00 | 18.50 |
|-------|-------|-------|-------|

### Model 213-QTI

277V Power/Switch Pack with isolated relay contacts and color-coded connectors. 20 AMP ballast rating. 40 year life expectancy at full load. *Heavy duty power packs for motor loads available upon request.*

|       |       |       |       |
|-------|-------|-------|-------|
| 27.75 | 22.00 | 20.00 | 18.50 |
|-------|-------|-------|-------|

### QTI 15' Plenum Harness Cable

UL approved plenum harness cable with color-coded connectors. Makes a QTI occupancy sensor and QTI Power Pack installation *fast and easy.*

|      |      |      |      |
|------|------|------|------|
| 7.00 | 5.00 | 4.50 | 4.00 |
|------|------|------|------|

### QTI 20' Plenum Harness Cable

UL approved plenum harness cable with color-coded connectors. Makes a QTI occupancy sensor and QTI Power Pack installation *fast and easy.*

|      |      |      |      |
|------|------|------|------|
| 7.50 | 5.50 | 5.00 | 4.50 |
|------|------|------|------|

### QTI Splitter S-3M-3F

Used in conjunction with QTI system for multiple sensor, power pack installations.

|      |      |      |      |
|------|------|------|------|
| 7.50 | 6.00 | 5.50 | 5.00 |
|------|------|------|------|

Double Gang Adapter Plate  
Model DGAP-500

### DGAP-500

Model SOM-500-A Occupancy Sensor accessory.

|      |      |      |      |
|------|------|------|------|
| 4.15 | 2.75 | 2.75 | 2.75 |
|------|------|------|------|

Double Gang Adapter Plate  
Model DGAP-1000

### DGAP-1000

Model SOM-1000 Occupancy Sensor accessory.

|      |      |      |      |
|------|------|------|------|
| 4.15 | 2.75 | 2.75 | 2.75 |
|------|------|------|------|

### RRU

Remote Relay Unit for switching additional circuits or can be used as interface for HVAC controls since contacts are isolated. For use with self-contained "P" version units. 20 AMP switching capacity, 1 to 1.5 HP, 4 wire connection. *Specify voltage when ordering.*

|       |       |       |       |
|-------|-------|-------|-------|
| 30.00 | 24.00 | 22.00 | 20.00 |
|-------|-------|-------|-------|

## TERMS AND CONDITIONS

### Payment Terms

2% cash discount if paid 10 days from date of invoice or on any COD shipment. Net 30 days after date of invoice. Sales tax added to California and Texas unless resale number is provided. Minimum order \$100.00. On any order below \$100.00 a \$10.00 service charge for shipping and handling will be added. Prices subject to change without notice. Past due accounts accrue 1.5% charge per month.

### Freight

Freight FOB San Leandro, CA, USA.

Hawaii, Puerto Rico and Alaska charges will be added to invoice. Next day delivery UPS red charges will be added to invoice. Second day delivery UPS blue charges will be added to invoice.

4-634



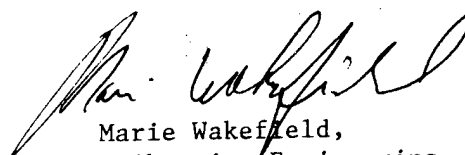


DEPARTMENT OF THE ARMY  
CONSTRUCTION ENGINEERING RESEARCH LABORATORIES, CORPS OF ENGINEERS  
P.O. BOX 9005  
CHAMPAIGN, ILLINOIS 61826-9005

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17 Sep 1997

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