COST COMPARISON REPORT

FOR

AMP INCORPORATED

BY

ELECT, PC

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Electrical Engineering Consulting & Testing, (ELECT PC), was commissioned by AMP Incorporated to perform an independent cost analysis of two methods of providing branch circuit distribution to typical commercial offices using access flooring. The two methods studied were:

1. Field installed boxes, conduit, and wire.
2. Manufactured Wiring System, AMPINNERGY, a factory pre-fabricated modular wiring system.

SUMMARY

A zone distribution method was selected as being representative of typical office practices of today for a modern electronic office. Both methods had exactly the same electrical characteristics and the same physical dimensions. The AMPINNERGY required significantly less direct labor cost to install; **$1,030.58 to $6,254.69 (rigid conduit) or $5,955.86 (EMT conduit).** This is a labor savings of approximately **$193 or $182 per workstation**. The total cost savings were **$6,551.11 to $7,700.92 (rigid conduit) or $7,180.55 (EMT conduit).** This is a total saving of approximately **$43 or $23 per workstation.**

This analysis only included the initial installation cost and did not consider any life cycle savings due to office relocation in the future. However, it is obvious that the life cycle savings would be significant, considering the wide disparagement in labor cost and the relative ease of relocating an AFWM when it can be simply unplugged, moved to a new location, and plugged into either the same relocated harness or another harness that only had to be moved slightly. In addition, it does not include any consideration of using 5-year depreciation as office equipment instead of 50-year depreciation as building equipment. Although this is not really clear, some accountants believe that modular wiring can be properly classified as office equipment because it can be easily unplugged and moved with the tenant the same as desks, etc.

Other cost savings such as less wiring errors, possible delay of move in, and less electrical failures could be considered.

METHOD

A 27 office space using typical 10 ft by 10 ft, (100 ft^2), was selected as being typical of modern office practices. A load of 1,080 watts per office was chosen as the average load per office. The power factor was assumed to be 0.90 and the combined demand and diversity factor was assumed to be 0.70. The distribution system was 3 phase 120/208 volts with an isolated, (insulated), equipment grounding conductor for electronic devices and a standard, (safety), equipment grounding conductor for other devices and required grounding. Each office was designed to have four (4) receptacles mounted in the AMP Access Floor Work Station Module, (AFWM) with one (1) AFWM in each office. There were four (4) circuit conductors, two (2) neutral conductors, and two (2) equipment grounding conductors to each AFWM. Each office had a continuous load of seven (7) amperes under the above criteria. This gives a circuit loading of 15.8 amperes for the 12 circuits required to meet *National Electrical Code* requirements.

The 1999 edition of *R. S. Means Electrical Cost Data* was used for labor and material cost data as available. The AMPINNERGY material price was the expected resale price from the AMP distributor price list. The national average wage and productivity figures were used. They can be adjusted using R.S. Means' location adjustment figures. The figures can also be adjusted using the supplied Excel spreadsheet to adjust wage rate, material mark-up, and overhead and profit mark-up.

The cost estimate is not intended to show the complete installation cost for either method, but only the difference in cost. Therefore, no material or labor cost was included for common activities. Accepted estimating practices and professional engineering opinions were used to arrive at the comparative installation costs. Two types of conduit, rigid steel and EMT, were used to allow for different practices across the country. The total cost figures includes one but not both methods.