



FIGURE 1

TITLE

Install Load Control Telemetering Equipment At Various Steam Heat System Locations

EXISTING CONDITIONS

The telemetering installation at the Auditorium Hotel was measuring steam pressure midway in the steam heat system. The equipment has been removed along with the Hotel. The steam system low pressure point presently is in the Cosmopolitan Hotel which will be removed starting in 1983. A contract with the Lincoln Towers Building owners to install "Low Point" telemetry equipment in the building basement is being negotiated by Consumer Services. Within the steam heat distribution system, telemetering installations now exist at Prudential Plaza, United Bank, Hilton Hotel, Cosmopolitan Hotel, Auraria Campus, and the State Steam Plant. Telemetering receivers are located at Zuni and Denver Steam Plant. Steam send out can be controlled from either plant. There is a mixture of different brands and ages of telemetering equipment at the various system locations. None of the telemetering equipment is frequency coordinated with conceptually similar load control installations at the Company's electric facilities and Lookout Center.

The telemetering facilities for Steam Heat have a history of erratic operation. Some telemetering failures can be ascribed to aging equipment while others have been due to telephone circuit failures. The existing d.c. loops (metallic circuits) are old and cannot be electronically switched through Mountain Bell's more modern telephone equipment.

A budget item exists to replace the Zuni Plant telephone switching system and upgrade the telephone entrance facilities. The work, if approved, is proposed to be completed in February, 1983.

PROPOSED CONSTRUCTION

Modern telemetering equipment will be installed at all existing permanent monitoring locations. Two new installations will be established at Lincoln Towers and Headquarters Building. The system low pressure monitoring point will be at Lincoln Towers and mid-point monitoring point will be PSCC Headquarters Building. Equipment upgrading and standarization will be accomplished at some installations by exchanging components.

Modern telephone circuits will be ordered from Mountain Bell and routed through the Company's new telephone facilities at Headquarters building. Electronic equipment for switching and combining circuits will be installed at Headquarters Building. Telemetering receivers corresponding to the system additions will be installed at Zuni and Denver Steam Heat Plant.

NECESSITY AND BENEFITS

Loss of system low point and midpoint steam pressure signals to the steam plants and would force the plant operators to adjust controls manually with no way of knowing what system conditions exist. During rapid load changes in either summer or winter it is possible to place sudden demands on the steam distribution system capacity such that steam delivery pressure would go below acceptable minimum values. Excessive steam send out rates would be expensive if operators tried to guess the correct controls set point. Installations at Lincoln Towers and Headquarters Building are necessary to continue the accurate operation of the steam distribution system by providing reliable pressure signals for system control. Additions and changes to all other existing telemetering installations would be required as a result of the replacement of the Zuni Plant telephone system with a modern electronic switch. The existing dc loops (metallic circuits) simply will not communicate through a modern facility of this type.

Such sweeping changes in a telemetering system allows incorporation of features for system reliability and signal redundancy. Additional items of telephone equipment installed with the Headquarters "Dimension" PBX will provide a reliable signal to the steam plants for steam send out control.

Further, by selection of standard channel frequencies the new tone equipment can be made compatible with other company installations involving identical equipment. Down time could be reduced by having a readily available source of frequency compatible equipment.

Approval of this job order would allow work to proceed prior to the loss of the one remaining low pressure telemetering installation at the Cosmopolitan Hotel.

COST SUMMARY

STEAM HEAT SYSTEM TELEMETERING

<u>LOCATION</u>	<u>CONSTRUCTION</u>	<u>RETIREMENT</u>
Auraria Campus	1,450	100
Cosmopolitan Hotel	0	660
Denver Steam Plant	13,700	1000
Headquarters Bldg.	12,220	0
Hilton Hotel	4,300	500
Lincoln Towers Bldg.	3,385	0
Prudential Plaza	4,300	0
State Steam Plant	1,450	100
United Bank Building	4,300	0
Zuni Steam Plant	13,700	1000
SUBTOTALS	<u>\$58,805</u>	<u>\$3860</u>
PROJECT TOTAL	\$62,665	