Telecommunications Improvement Project Services (TIPS): A Pictorial Review

Cross-section of 3-inch black communications cable containing 3600 copper wires. The #5ESS telephone switch will make the connection between all campus phones over these wires.

University Telecommunications
The University of Arizona
September 21, 1989

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Inventorying Telephone Equipment: Joy Facio of the Steward Observatory, and Jill Pelton, U S WEST Representative, verify the types and kinds of telephone equipment currently in use in the Steward Observatory. The information is being used to build the new 5ESS telephone equipment database.
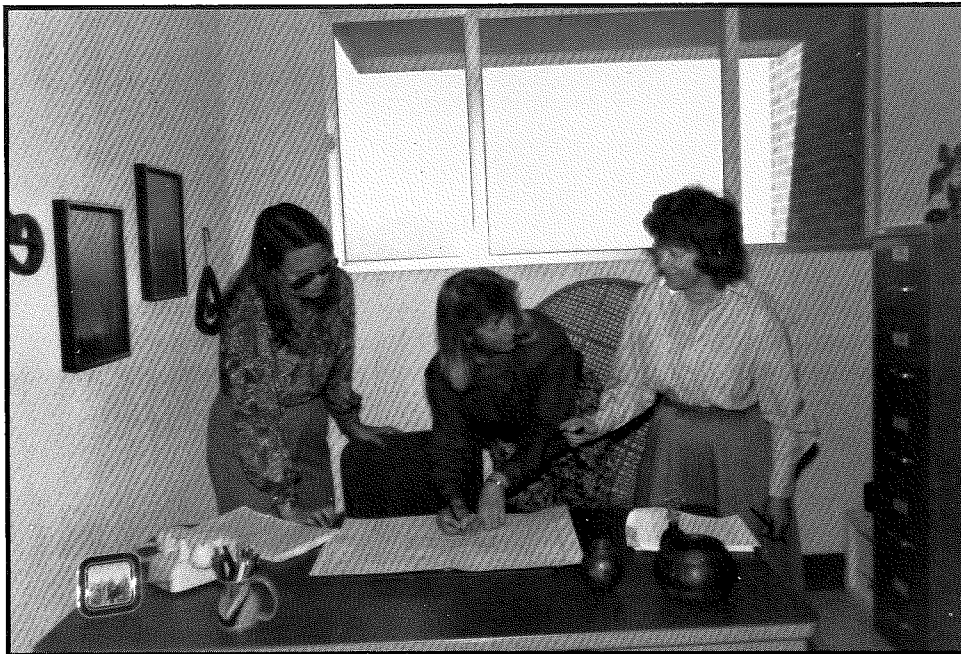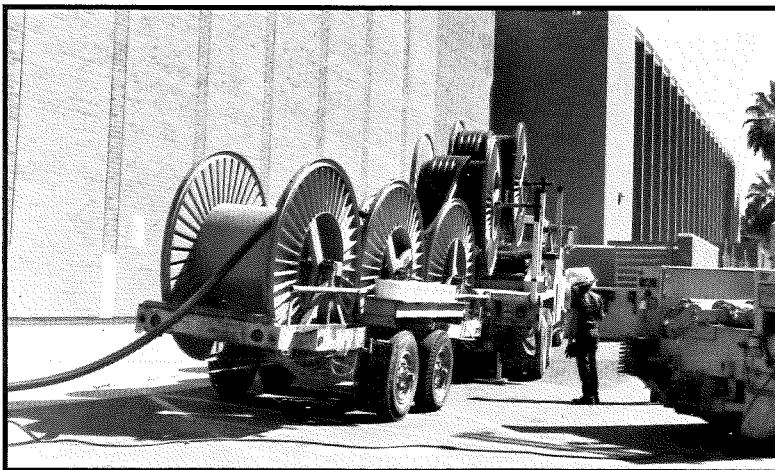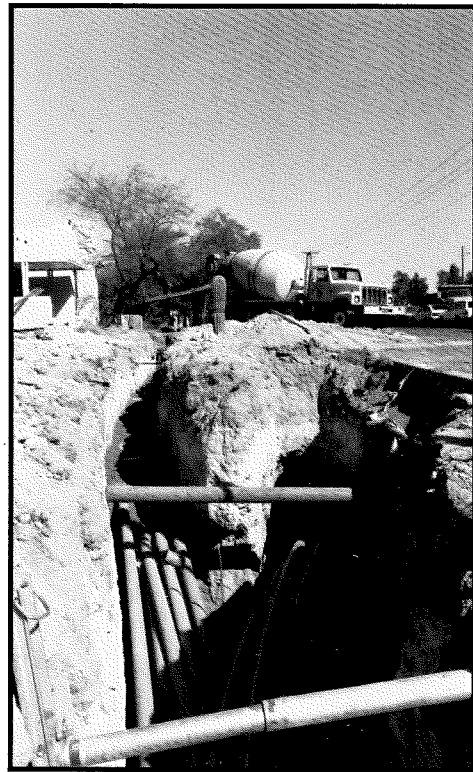

Marking Jack Locations on Floor Plans: Eugenie Potter, TIPS Coordinator for the College of Education, assists Linda McKelvey, U S WEST Representative, and Susan Ewing, TIPS staff member, in verifying telephone jack locations for the new dual voice and data jacks and the new internal wiring to those jacks.

Digging Trenches: The UA's new underground communications system requires massive construction across campus, such as the digging of a trench between the Electrical and Computer Engineering building and the Harvill building.

Placing Conduits in Trenches: Conduits (pipes) are placed in trenches, such as the one shown near Fremont and Helen, north of Speedway. Conduits carry the copper and fiber optic cables that will provide voice and data connectivity to all buildings on campus. The conduit system will extend communications north of Speedway to the Arizona Health Sciences Center and to other areas currently not served on campus.
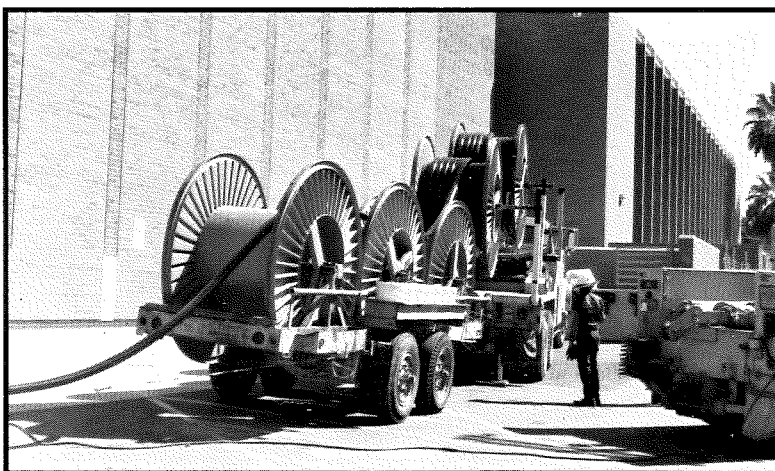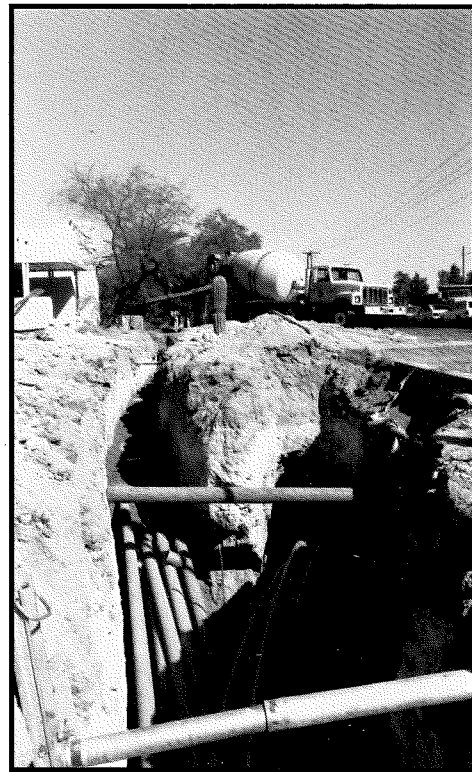

Pulling Cables through Conduits: Cables, 3 inches in diameter, with 3600 copper wires in each, are pulled into the new underground conduit near Mountain and Speedway. (A cross-section of a copper cable is shown on the cover of this handout.)

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New Switchroom Before Switch Installation: This is the large room, located in the basement of the Computer Center addition, that houses the switch and associated equipment (unassembled main distribution frame can be seen on right side of photo). A technician inspects the cable vault where cables enter the switchroom from around campus.

Main Distribution Frame: This steel gridwork, 80-feet long, 9-feet tall, and 3-feet deep, effectively divides the switchroom, one side devoted to incoming cables from campus, and the other side devoted to the switch and associated telecommunications equipment. The main distribution frame serves as the connection point between the switch and the campus cable system.

Connecting the Campus Cable System and the Switch: Coils of smaller cables wait to be connected to the underground cables coming into the switchroom and to the switch and its associated equipment.
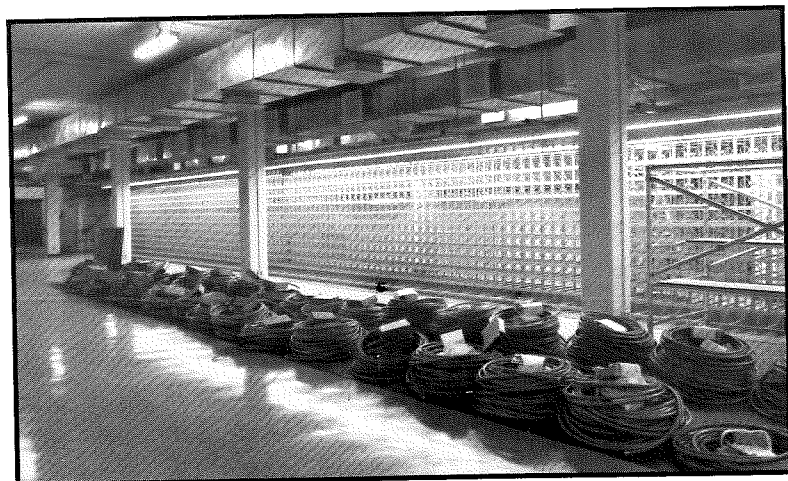
**Batteries Provide Electric Power to Switch Even During Power Failures:** A set of 48 lead-acid batteries, located in the switchroom, will provide electric power to the switch and will also serve as emergency backup power until a diesel generator can kick in. These batteries have power equal to that of 900 standard car batteries.
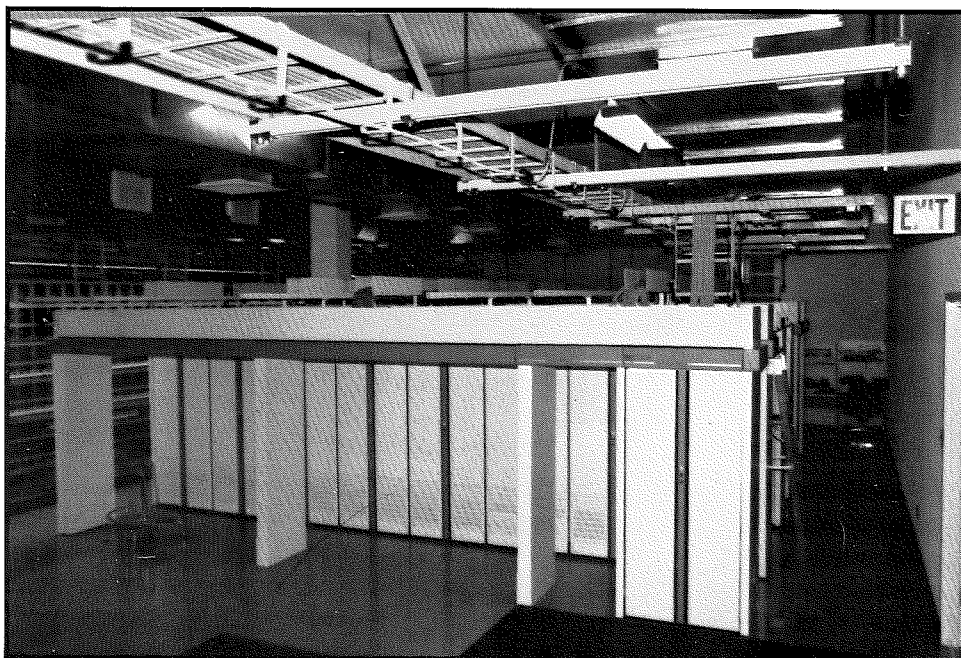
AT&T 5ESS Switch Will Power the UA's New Phone System: This powerful digital computer, located in the switchroom, is what will make the connection between campus phone lines. The 5ESS will provide the capacity, service quality, reliability, and flexibility that the present system can no longer provide.

Campus Cables Enter Switchroom Via Cable Vault: The 3-inch black underground communications cables that connect campus buildings end up below ground level in the cable vault. The vault is a pit 10-feet deep, 20-feet wide, and 110-feet long on the south side of the switchroom.
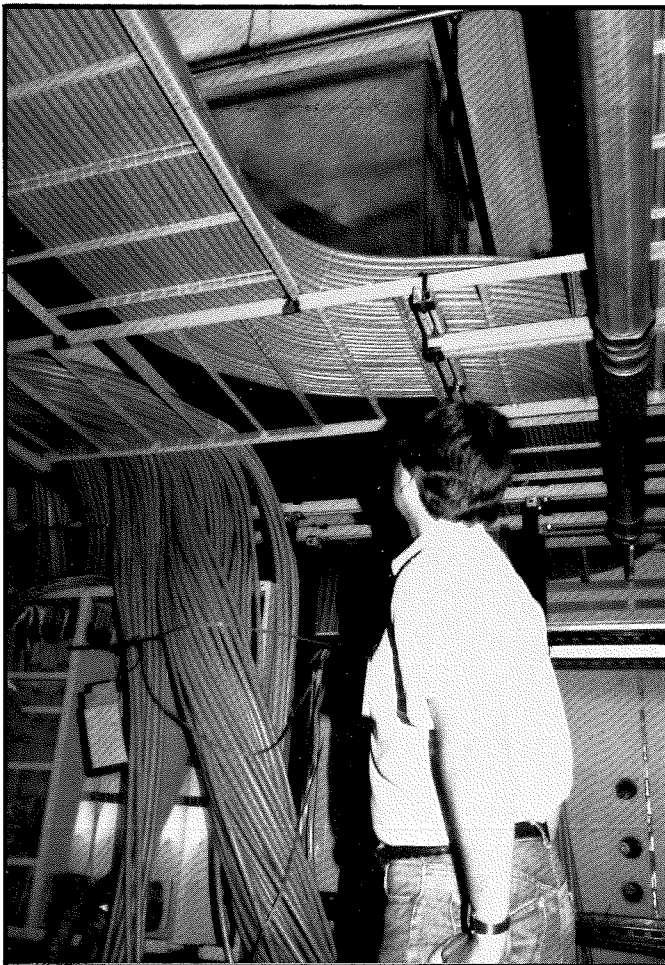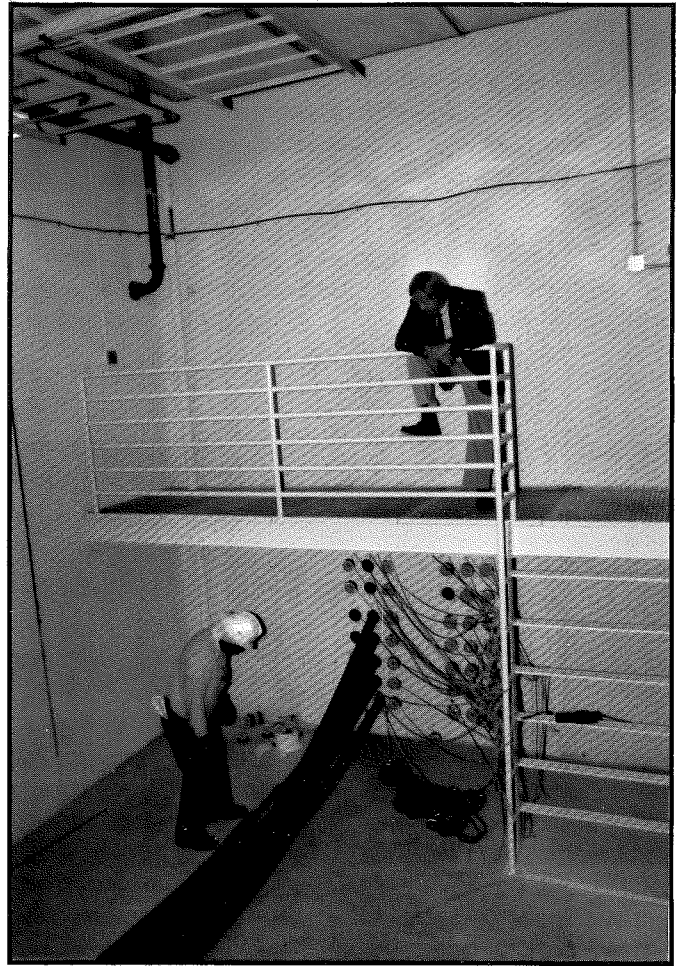
Cables Ascending from Cable Vault: Cables are directed up out of the cable vault by steel racks. Thousands of copper wires are released from each cable and connected to the main distribution frame.

Inspecting TIPS Inside Wiring: The quality of TIPS work, such as the wiring connections between offices and the campus cable system in Modern Languages, is reviewed by a telecommunications consultant from Telecommunications International, Inc. This quality review will ensure adherence to project specifications, will help remedy unexpected problems during TIPS work, and will minimize rework and the consequent inconvenience to those in offices.
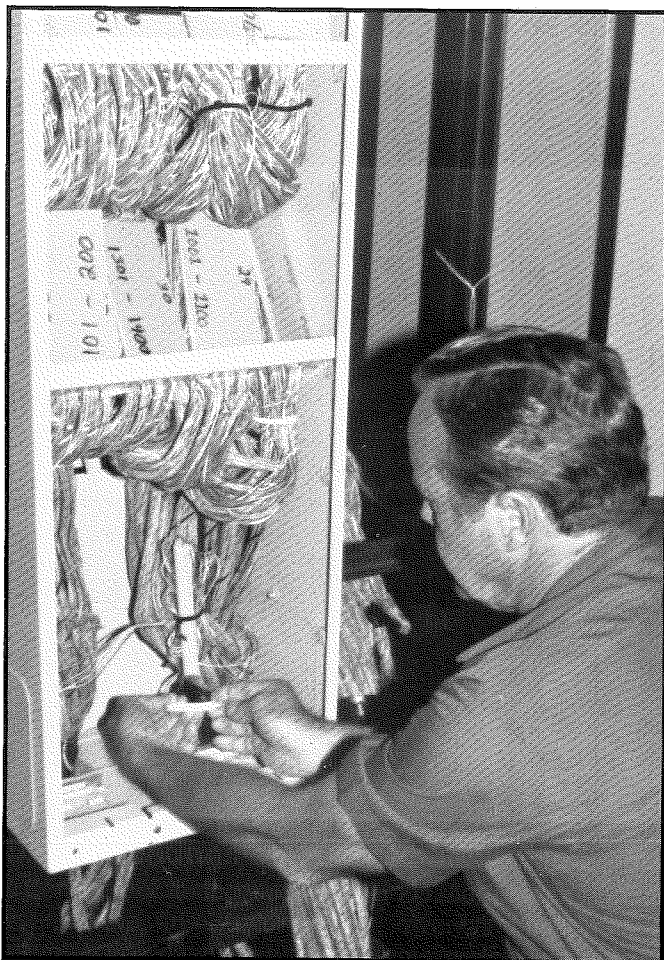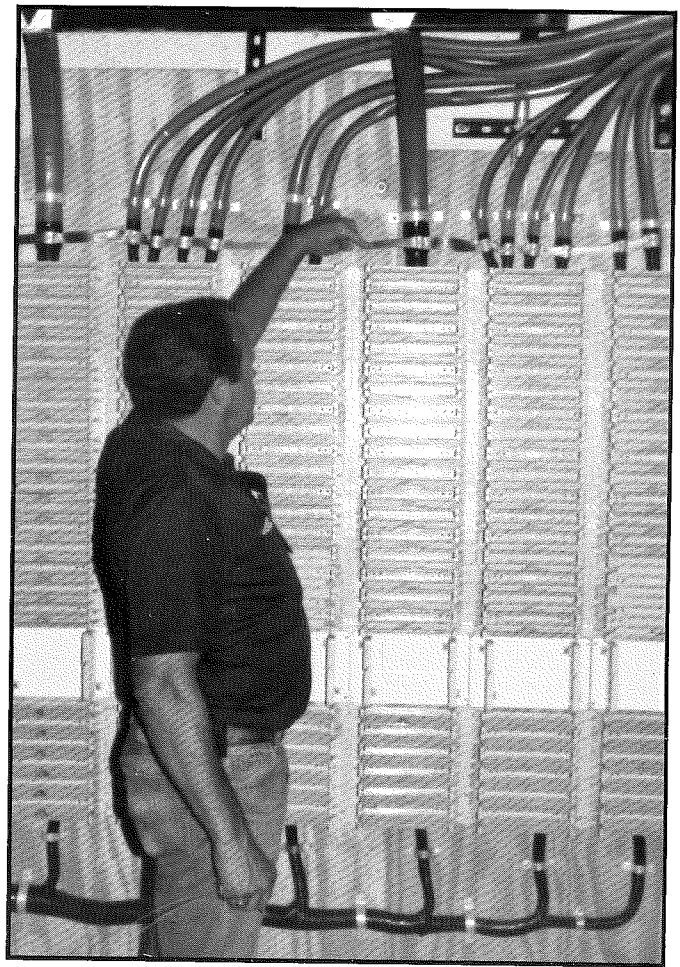
Tagging of Approved TIPS Work: Telecommunications International, Inc., the telecommunications consulting firm for TIPS, tags work that meets inspection standards. The consultant shown is tagging the wiring connections between campus and the main distribution frame in the switchroom.

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