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Pictures in
Est 1674

OUTLINE OF PLAN

Estimate No. 1674 - Kansas City, Kansas - Drexel C. O. - Replacing cable on 12th Street bridge over the Kansas River on account of fire.

This estimate covers the cost of replacing cables to restore service to the Argentine district of Kansas City, Kansas, interrupted on April 16, 1940, when the 12th Street bridge over the Kansas River was partially destroyed by fire. This bridge, approximately 1,030 feet long, was made up of five spans; 3 of which were 200 feet each over the river channel, one 160 feet at the south end over the Santa Fe Railroad tracks, and a long section of 270 feet at the north end.

The bridge was of steel construction with a roadway of creosoted planks and blocks. It was the main traffic connection from the Argentine district of Kansas City, Kansas, to the rest of the city. In addition to the roadway for vehicles, the only street car line into the Argentine section passed over this bridge.

Last year the Telephone Company placed two cables on this bridge in transferring the Argentine subscribers to the new dial Drexel office. These cables, consisting of a 900 pair 22 gauge and a 700 pair composite cable, having 200 pairs of 19 gauge, and 500 pairs 22 gauge, were carried across from the north abutment to the pier between the river and the railroad tracks under the roadway on messenger strand supported from the steel structure. In the last span over the railroad tracks, due to lack of head room above the rails, four iron pipes were clamped to the bridge structure.

The fire on April 16th started in one of the center spans of the bridge from causes unknown; and, fanned by a stiff wind from the east, spread rapidly throughout the three 200-foot center spans of the bridge.

The heat from the burning roadway soon melted the cable sheaths and the lines in trouble caused the line finders at the Drexel office to tie up. In tracing the lines in trouble, it soon developed that the cables

affected were those serving the Argentine district; and at about the same time, the report was received in the Wire Chief's office that the bridge was burning. Heat coils were pulled on the two cables immediately restoring the dial equipment to normal operation.

The bridge consisted of two steel structures side by side, and the intense heat from the burning roadway caused the steel in the three spans of the west roadway to give away and to fall into the river below. While the flames destroyed the floor of the east structure and caused the steel to warp badly, it did not fall into the river. The fire-fighting forces were able to save the north span and the south span over the railroad tracks.

In the north 270-foot span the cables were not damaged, but in the south span over the railroad tracks, part of the cable sheath in the pipes was melted. While the fire was in progress, it was decided that restoration of service would be considerably delayed if we had to wait until the steel in the bridge had cooled off. Also, the condition of the bridge indicated that if the cables were replaced on the steel structure, it would be necessary to remove them later while the steel was being replaced.

The desirable plan appeared to be to restore service by placing the two cables in the water and in a trench from the water's edge to the north abutment. Since the cables over the railroad tracks were partly destroyed, it was decided that they should be removed, and when the bridge cooled off sufficiently, the pipes would be reused for the two sections of cable from the south end of the bridge to the first abutment.

Since there were no submarine cables or tape armored cables in stock, it was necessary to use standard lead covered cable without protection. By lowering the two spans of cable at the north end to the ground,

it was possible to secure two sections of cable that would reach from the end of the pipes at the railroad tracks through the bed of the river and through the ditch in the bank to the end of the old cables.

The new cables were placed down stream about 40 feet from the piers and at the north river bank the trench gradually approached the bridge to a position about 16 feet from the pier. At the south side of the river the riser cables to the overhead pipes were enclosed in a boxing to protect them from injury. A section of 1200 pair 24 gauge cable was used to replace the 900 pair cable and a section of 900 pair cable was used to replace the 700 pair composite cable. In the pipes over the railroad tracks, 2 - 900 pair cables were used to replace the 900 pair and the 700 pair cables.

By midnight of the same day, service had been restored on 60 lines. By 8:00 a.m., on April 17th, 75 per cent of the lines were back in service, and all lines were in service by 4:00 p.m. of that day.

Emergency service was provided by setting up a 551-B 80-line switchboard in the old Argentine office with several telephones for the use of the public. Temporary trunks were secured by stringing drop wire from the old Argentine cables to Westport cables at the south boundary of the district. A force of installers and maintenance people were assigned to the work of notifying the subscribers of the service interruption and the probable time it would be resumed. A few important lines were made available for fire stations, police lines, water pumping stations, doctors, and drug stores, through a 50-pair cable that was still terminated on the old Argentine frame and connected to the Drexel office.

The County authorities contemplate replacing the bridge structure with one that will be entirely fireproof. A controversy has arisen as to their authority to rebuild the bridge, and suit has been brought in the State Supreme Court to settle that issue. They hope that the matter can be settled during the month of June, in order that they may proceed with the plans for rebuilding the bridge. If the County authorities are not able to secure a decision this summer, it will be necessary to wait until the Legislature meets this winter to secure the passage of the necessary legislation.

The present view is that the Telephone Company will desire to use the bridge again for the cables, assuming that it is so constructed as to prevent the possibility of a recurrence of the disaster.

If the decision is not obtained soon, it is planned that submarine cables will be installed to take the place of the temporary buried cables. As the cable sheath is thin, it has seemed advisable that both cables be placed under gas pressure to postpone a cable failure while a replacing cable is being installed. Gas pressure plugs are being installed in the manhole south of the bridge and at the office manhole at Drexel. Pressure contactors are being installed in the manholes at both ends of the bridge on each cable, and the cables are being placed under gas pressure. As a further precaution, 2 - 200 cubic feet cylinders of nitrogen gas are being placed in each manhole, in order that there may be no delay in adding gas to the cables if a break should occur in the cable.

Since the old steel structure is being left up in the three center spans to carry a water main while the west roadway is being rebuilt, a second precautionary measure has been taken to insure uninterrupted service.

Two 16,000-pound messenger strands have been placed from the north abutment to the abutment between the river and the railroad tracks, and if a cable failure should occur in the river section, or while the water is high on the adjacent bank making it impossible to clear the trouble by digging, it will be possible to place the relief cable without delay.

A factor in the quick restoration of service was the Argentine cables still being terminated on the Argentine M.D.F. and tied to the Drexel office over the two cables destroyed by the fire. Since the work under Estimate 1448 is in progress and this M.D.F. will be eliminated, at an early date, it was thought advisable that the two cables should be tagged, in order that the delay in identifying cable pairs, in the event of a cable failure, would be reduced to a minimum. These cables are being tagged in stubs, linen tag boards being wrapped in the stubs, making it possible to identify the pairs quickly, if needed.

Transmission

The introduction of 24 gauge for the 22 gauge and the 22 gauge for the 19 gauge in the replacing cables will not effect materially the loops in the Argentine district. There is sufficient margin in those loops to permit the use of the finer gauge wire for the short lengths involved.

1940 Provisional Estimate

This work will be charged to the Division Project 114-A. A special estimate for the permanent cables will be prepared when the decision is reached regarding the reconstruction of the bridge.

H. F. MARCH
Prepared: _____
Division Plant Engineer

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12th St Bridge

Extracts from Est 1817 - Replacing
cables

"On Dec 24 1940 trouble was experienced in one of the cables, and, in attempting to clear it, the cable was found to be caught under debris in the water. By maintaining heavy gas pressure on the cable the loss of the cable was avoided until a section of 909 ft in lead covered cable was placed through the water and farther down stream. This was done to avoid damage while the old steel work of the bridge was being dismantled in preparation for rebuilding the bridge. As the rebuilding of the bridge was scheduled to start immediately, it was thought advisable to replace the second cable also and to place it further downstream. This was done on Est 1-12379.