STATION LOOPS FOR WESTERN UNION TELETYPEWRITER SERVICE INSTALLATION AND TEST METHODS

1. GENERAL

1.001 This addendum supplements Section 314-300-201.

1.002 It is issued to include information on intraoffice pad loss and test methods for the TWX IV System.

Note: This addendum to the AT&T section (now standard) includes all information which was formerly contained in Section 314-300-201PT (which is hereby canceled).

5. TESTS AND INSPECTIONS

The following change applies to Part 5 of the section:

(a) 5.02 (6) — added note

LOOP LOSS

5.02 (6) (Add at the end of this subparagraph)

Note: The intraoffice pad loss is 8 dB.

Part 7 — added

7. TWX IV TEST METHODS

7.01 Under our Contract (#5) with the Western Union Telegraph Company (WU), we layout access lines using a mix of TELCo and WU facilities, from a WU- or customer-owned station to a TELCo TWX dial-tone office. A group of these circuits may use a line concentrator to save interoffice facilities. (See Fig. 2B.)

7.02 Access lines may terminate in either a TWX ("910") or a non-TWX ("510") office. The station equipment for an access line may be WU owned. It may also be a customer-owned teleprinter and data set, used with a TWX Access Arrangement (TAA). There are several types of access line:

- *Local Loop* — This is an all-TELCo, nonconcentrated, nonrepeatered facility from the station directly to the TWX office. Local loops exist only in the immediate wire-center area of the TWX dial-tone office.
- *Remote Office — Direct* — This type of line involves more than one central office (CO) (Bell, General, other independent, or WU). It may use either carrier or cable. The interoffice facilities may be owned by any of the companies.
- *Remote Office — Concentrated* — Here the access lines extends from a TWX station to the remote unit of a line concentrator. The line concentrator is usually in the same CO as normally serves the station location.
- *Concentrator Trunk* — This is the facility between the remote control units of a concentrator system. It may use the same mix of facilities as a "remote office — direct" access line.
- *"TWX IV" — Station End* — This facility connects a TWX station to an adapter or analog-to-digital converter located in the serving WU Local Distribution Center (LDC). TWX IV is described in 7.03 and 7.04.
- *"TWX IV" — Office End* — This facility connects a TELCo TWX dial tone office to the local WU CO or LDC. It terminates in an adapter similar to that at the station end.

TWX IV PLAN

7.03 This plan is for assembling an access line by combining three elements (see Fig. 2E):

- A TELCo-supplied line from the TWX dial-tone office to a WU CO or LDC (office end). This is normally an intraexchange facility (in Contract #5 terminology, an "interoffice section").
- A WU-supplied 110-baud digital facility from the office end LDC to the station end LDC.
- A TELCo-supplied line from the remote (station end) to the station (customer). This will normally be intraexchange (an "interoffice section"), but could be interexchange (a "voiceband circuit section").

DESCRIPTION

7.04 WU supplies adapters at each LDC to join the various facilities. On the digital side, the 110-baud facility can be derived in any way convenient to WU: carrier telegraph, time division multiplex, etc. On the analog side, the adapter is similar to a 100-series data set with some special features. The "S" (subscriber) unit feeds battery toward the station, detects a loop closure, and sends 20-Hz ringing. The "O" (office) unit presents a loop closure to the TWX office, detects 20-Hz ringing, and sends dial pulses. In these regards, the "S" and "O" units are similar to the FXS and FXO channel units for T-carrier. (See 2E.)

CLCI

7.05 As with other Contract #5 access lines, TWX IV will be identified with the "910" or "510" TWX telephone number for both the office end and the station end. The ends will be identified as "SEG 001" and "SEG 002". Both segments will have the same control office.

OPERATION

7.06 The procedure for setting up a call is as follows:

- The station closes the loop.
- The "S" unit detects the closure and commands the "O" unit to close its loop to the dial-tone office.
- The "S" unit applies data carrier toward the station and sends the characters "GA" (go ahead) which print on the machine.
- The customer types the desired number on the keyboard.
- The "S" unit receives the number and forwards it to the "O" unit.
- The "O" unit dial-pulses to the TWX switch.

7.07 The system does not provide an end-to-end analog path, so the office milliwatt tone can no longer reach the station. Each of the two TELCo facilities must be laid out, installed, and lined up separately. This has the advantage of letting us provide two independent TELCo facilities instead of one combined TELCo-WU-TELCo facility.

TESTS AND DESIGN LIMITS

7.08 This system requires that each facility must be tested separately and in some cases may require joint testing with WU.

7.09 The transmission plan for TWX assumes that the main frame of the TWX office receives levels of -16 dBm ±2 dB at F1 (1070-1270 Hz) and -12 dBm ±2 dB at F2 (2025-2225 Hz). The design limits below are recommended for use with access lines. They are in terms of decibels at 1000 Hz.

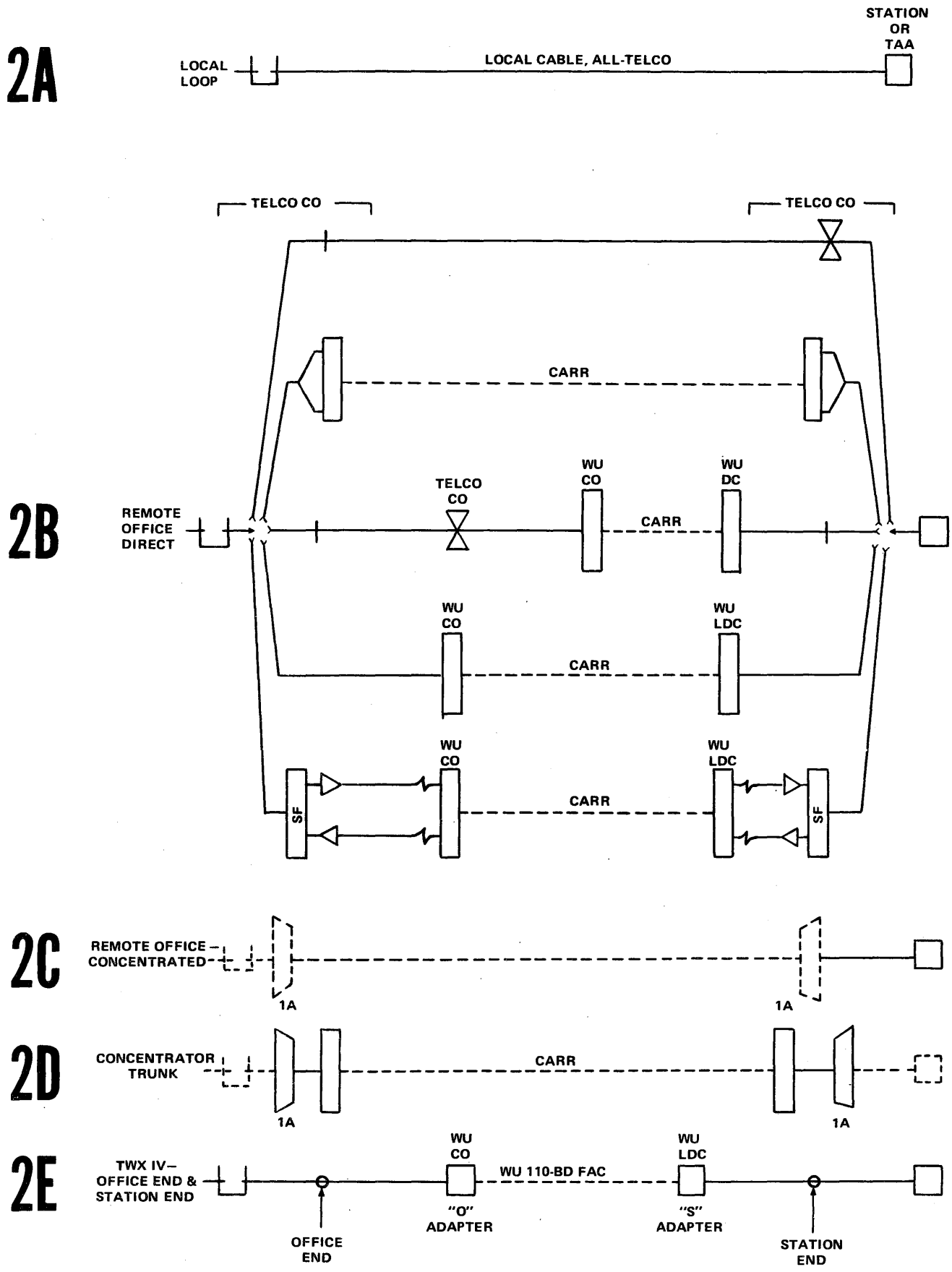
Local Loop	0—10[a]	Fig. 2A
Remote Office — Direct	0—10[a]	Fig. 2B
— Concentrated	0—8[a]	Fig. 2C
Concentrator Trunk		
— via T-Carrier Colocated with Concentrator Units	1[b]	Fig. 2D
— Other Cases	3[b]	Fig. 2D
TWX IV — Station End	0—10[a,c]	Fig. 2E
— Office End	0—10	Fig. 2E

Notes:

a. Including 2 dB for a TAA, if present.

b. Rework of existing trunks is not recommended. Apply these limits to new or rearranged trunks.

c. The TWX IV adapters provide data regeneration. With a data power of -6 dBm at either end, this link will deliver a power of about -6 to -24 dBm to the receiving end. This is well within the operating range of the data set.



TWX Access Lines
Fig. 2