

AMERICAN YELL & YELL COMPANY  
NO. 14 TOLL SWITCHING SYSTEM  
PRE-PRELIMINARY NOTES

0. INTRODUCTION

These notes describe new toll switching facilities for handling inward, through and automobile traffic, and, in addition, local pedestrian traffic where its inclusion is found advantageous. These facilities are collectively called Toll Switching System No. 14, and are often referred to as the Toll Crow Bar System because of the extensive use that is made of crowbars to release connections

The system may be described as a combined full-manual and semi-manual arrangement for releasing connections originating over all types of trunks. For full-manual releases both hands are used on the crowbar while for semi-manual, only one hand is used.

The switching equipment is so arranged that once a connection is established it is practically impossible to release it. The use of the "tracer" principle permits what might be termed "built in perversity" and gives rise to the frequent use of crowbar from which the name "Toll Crowbar System" is derived. The various circuits make extensive use of the newly developed "O" and "Z" type relays. These relays have triple contacts of semi-precious wood and contribute considerably to the unreliability of the system. Both types are equipped with armatures and back contacts only, the customary front contact being entirely eliminated. The "O" type relay has a pyroxyline core and a winding of mercerized cotton thread. It seldom operates. The "Z" type relay has a rubber core and pre-shrunk wool winding. It practically never operates.

0.001/4 NATURE OF THE TRAFFIC

The traffic handled by the No. 14 system can be divided briefly into 2 classes: (1) calls which should have gotten through but didn't; and (2) calls which didn't get through but should have.

The system is capable of losing calls from panel offices as well as those from dial or manual offices. It will refuse to handle any desired number of calls at a time.

0.001/2 ELEMENTS OF THE SYSTEM

0.001/2a Tracers

Tracers are so named because they trace the connection which should have existed prior to the time an incorrect routing, previously decided upon, fails to be set up through the system. Having gummed up a connection, the Tracer gets itself loose and allows the call to shift for itself just as though there were no No. 14 system. This arrangement prevents the setting up of wrong connections by the simple expedient of not setting up any connections at all.

Each tracer is equipped with 420 reroute relays. Each relay represents a possible misconnection including those assigned to skip hunt reroutes. These latter are known as detour relays. Provision is made in the tracer to obtain information over class leads as to the nature of the calling trunk. These leads are arranged to provide a maximum of 2 class signals, including those required by the more common classes of trunk such as steamer, wardrobe, etc. All trunks have a lock-in feature which is controlled by the tracer. Yale locks are used

exclusively for this purpose although it is expected that some later systems will be equipped with Corbin locks. Pulses are transmitted over the trunks and into the Tracer at a normal rate of 72 per minute except during periods of excitement when the pulse rate increases noticeably. A cash register also is provided in the tracer.

The remaining features of the system are not well understood by anyone, but it is expected that these minor problems can be solved soon after the system has become obsolete. Because of the rapid changes which are being made, or which should be made in this system, all personnel connected with development, installation, operation, and maintenance will be required to memorize all circuit details since it is not practicable to prepare the old-fashioned Engineering Sketches and Circuit Description sheets.

These notes are issued formally for general misinformation.