

August 19, 1949

THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY

NORTHERN CALIFORNIA AND NEVADA AREA

CHIEF ENGINEER'S DEPARTMENT

OAKLAND, CALIFORNIA - NO. 4 TOLL SWITCHING SYSTEM

The Oakland, California No. 4 Toll Switching System which is scheduled for service in October, 1949, together with similar installations now in service in Philadelphia, New York, Chicago and Cleveland, form the first steps in a nationwide toll dialing network. It is planned that ultimately this network will be expanded to embrace all of the United States as well as part of Canada and Mexico.

San Francisco and Oakland are treated as one exchange from a local service standpoint. From a toll service standpoint, however, they are presently treated as two toll centers, with outward, inward, through and toll tandem facilities in each city. At present San Francisco is the regional center for the Pacific Coast and Oakland is a toll center.

With the No. 4 cutover the majority of the "long haul" toll circuits to the Bay Area will terminate in Oakland, with only those circuits that are used for terminal business being terminated in San Francisco. At the time of this change, Oakland will become the regional center for the Pacific Coast and San Francisco will be a toll center.

THE PROJECT

The overall project consists of the No. 4 and related installations in the East Bay Franklin Building together with some 296 associated jobs at other points. These associated jobs are being completed in 28 exchanges throughout Northern California and Nevada and 18 cities throughout the balance of the United States. In order that the overall project be completed as planned, it is required that all of these associated jobs complete prior to the time the No. 4 system is placed in service.

Facilities are being provided in the Oakland installation to connect the following cities as one of the initial steps of the nationwide toll dialing network:

Albuquerque, N.M.	Hayward, Calif.	Palo Alto, Calif.	San Mateo, Calif.
Bakersfield, Calif.	Klamath Falls, Ore.	*Philadelphia, Pa.	San Rafael, Calif.
Boston, Mass.	Livermore, Calif.	Phoenix, Ariz.	Santa Cruz, Calif.
*Chicago, Ill.	Martinez, Calif.	Pittsburg, Calif.	Santa Rosa, Calif.
*Cleveland, O.	Marysville, Calif.	Portland, Ore.	Sonora, Calif.
Crockett, Calif.	Medford, Ore.	Redding, Calif.	Stockton, Calif.
Dayton, O.	Modesto, Calif.	Reno, Nev.	Suisun, Calif.
Denver, Colo.	Monterey, Calif.	Salt Lake City, Utah	Tacoma, Wash.
Detroit, Mich.	Napa, Calif.	Sacramento, Calif.	Tucson, Ariz.
El Paso, Tex.	*New York, N.Y.	San Francisco, Calif.	Vallejo, Calif.
Eureka, Calif.	*Oakland, Calif.	San Jose, Calif.	Watsonville, Calif.
Fresno, Calif.	Ogden, Utah		

*No. 4 Toll Switching Systems

In addition to the above cities, calls to many others will be completed by dialing through the No. 4 offices mentioned above.

THE BUILDING

A new fifteen story equipment building has been erected with approximately 16,900 square feet per average floor. The cubic content of the building is 5,284,570 cubic feet.

All floors of the building are designed to support equipment and at a future date equipment may be installed in space now used for offices. Part of seven floors will be used for the No. 4 and associated equipment.

Complete heating, ventilating and chilled water cooling systems including automatic temperature regulation have been provided for each floor. This system has a capacity to provide six air changes per hour and is fully automatic in control and operation.

Steam is supplied for heating by boilers located in the basement. Condensation from the heating systems is returned by automatic electrical vapor pumps to the steam boilers. Three gas-or-oil fired steel boilers for low pressure steam heating, each with a rating of 36,430 square feet of direct radiation, have been provided. The boilers and associated equipment are fully automatic in control and operation.

Population of the building during normal working hours is expected to be approximately 1100 people.

The initial assignments by floors in the building are as follows:

<u>Floor No.</u>	<u>Assignment</u>
1.	Downtown Business office and Commercial Dept. offices.
2.	Traffic operators' lounge, locker room and cafeteria.

<u>Floor No.</u>	<u>Assignment</u>
3.	Information desks, Outward toll switchboard and Highseas and Overseas switchboard.
4.	No. 4 Toll switching equipment and Medical Center.
5.	No. 4 trunk equipment and American Telephone and Telegraph Company Long Lines Overseas equipment.
6.	Toll test and toll terminal equipment and Plant Department offices.
7.	L carrier equipment, future micro-wave radio relay terminating equipment and Traffic Department offices.
8.	Equipment power plant, main distributing frame and Plant Department offices.
9.	K carrier equipment, future television monitoring equipment, future Plant Service Center and Plant Department offices.
10.	Traffic Department offices, future No. 1 local crossbar office and Telephone Company dial Private Branch Exchange.
11, 12 & 13.	East Bay and North Coast Revenue Accounting offices.
14.	Directory Advertising and Commercial Department offices.
15.	Plant Department offices.

THE EQUIPMENT

Present equipment installed in the building consists of 227 No. 4 crossbar frames, 60 positions of No. 5 and overseas switchboard, 24 positions of No. 3-CL outward switchboard, 40 positions of No. 3 information desk, 1000 single frequency signaling sets and other toll terminal equipment, 5 positions of 17-C toll testboard, 11 positions of 18-B toll testboard, 5 K-2 carrier systems, 5 L carrier A-2 channel banks, 189 E.B. channel banks and associated power equipment.

The power plant is one of the largest telephone plants on the Pacific Coast. Automatic starting, stopping and voltage regulation have been provided. Diesel engine alternator sets will provide emergency power. The 130 volt power plant is equipped for automatic switching of end cells. This is the first application of 130 volt automatic end cell switching in the area. Fluorescent lighting has been provided in all equipment rooms.

The initial No. 4 crossbar toll equipment, which is the first installation of this type west of Chicago, will serve 1560 intertoll trunks, 1210 toll tandem trunks, 960 toll switching trunks and 695 miscellaneous trunks. Direct toll switching trunks are provided to each East Bay local office and tributary. Direct trunks to two units of crossbar tandem equipment in San Francisco will serve all San Francisco inward traffic. Toll tandem trunks to the No. 4 office are provided from nine decentralized outward toll boards in San Francisco and East Bay and their tributaries.

The Highseas and Overseas switchboard and A. T. and T. Co. Long Lines Department radio terminal equipment previously located in San Francisco have been moved to the East Bay Franklin Building. Nineteen overseas circuits were involved in this move with two additional circuits proposed. These circuits are:

Honolulu	6 circuits	Batavia-Wellington	1 circuit
Tokyo	3 circuits	Seoul	1 circuit
Shanghai	2 circuits	Highseas	1 circuit
Manila	2 circuits	Hongkong	1 circuit Proposed
Sydney	2 circuits	Canton	1 circuit Proposed
Okinawa	1 circuit		

These overseas circuits are served by a No. 5 type (4-wire) switchboard. Although No. 5 switchboards to handle call order and circuit request traffic have been provided for all No. 4 installations, this is the only application of overseas and highseas operation to this type of switchboard.

SERVICE DATES

Cutover dates for the various units of equipment are:

No. 3-CL Outward Switchboard	In service
No. 3 Information Desk	In service
Overseas and Highseas Switchboard	In service
No. 4 Office 1st Step	10-1-49
2nd Step	10-8-49
3rd Step	10-22-49

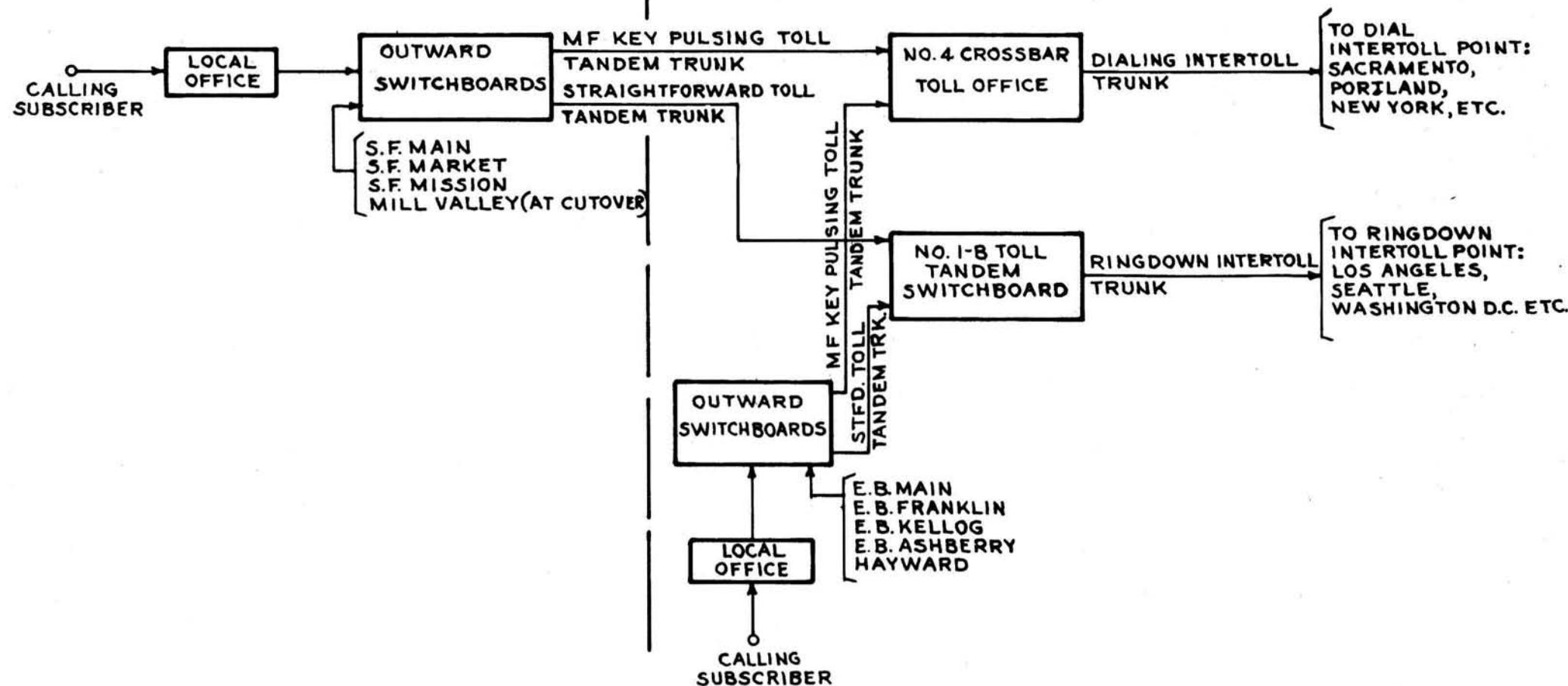
The first K carrier and E.B. channel bank equipment was placed in operation in January, 1949. Additional equipment of this type has been placed in service progressively since that date.

ATTACHMENTS

Sketch 1 - Outward Traffic San Francisco and East Bay
 Sketch 2 - Inward Traffic San Francisco and East Bay
 Sketch 3 - Through Traffic, Oakland
 Sketch 4 - Control and Talking Connections, No. 4 Office

SAN FRANCISCO

EAST BAY



THE PACIFIC TEL. & TEL. CO. #1

NO. CALIF. & NEV. AREA

OFFICE OF CHIEF ENGINEER

SAN FRANCISCO - EAST BAY

OAKLAND TOLL OFFICES

OUTWARD INTERTOLL DIAL TRAFFIC

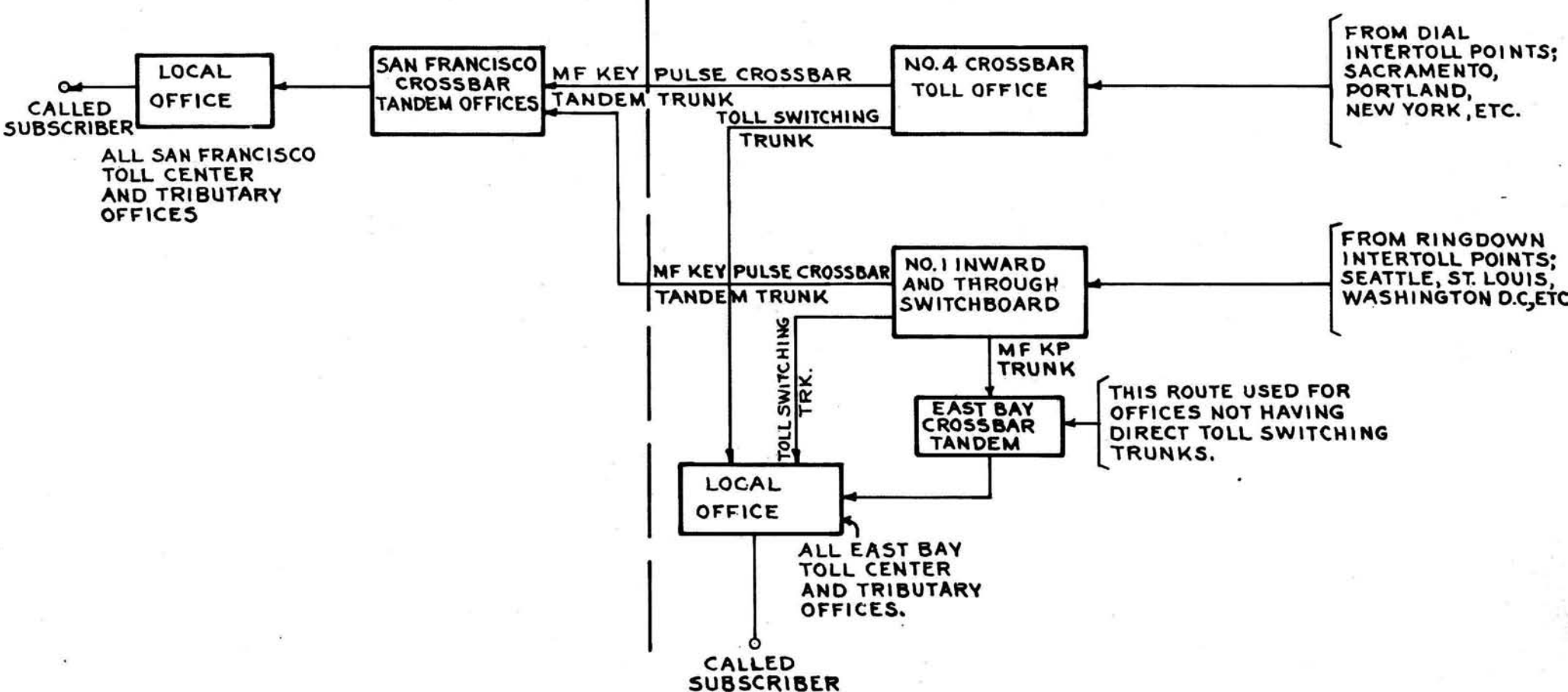
OUTWARD INTERTOLL RINGDOWN TRAFFIC

8-23-49

F.B.N.

SAN FRANCISCO

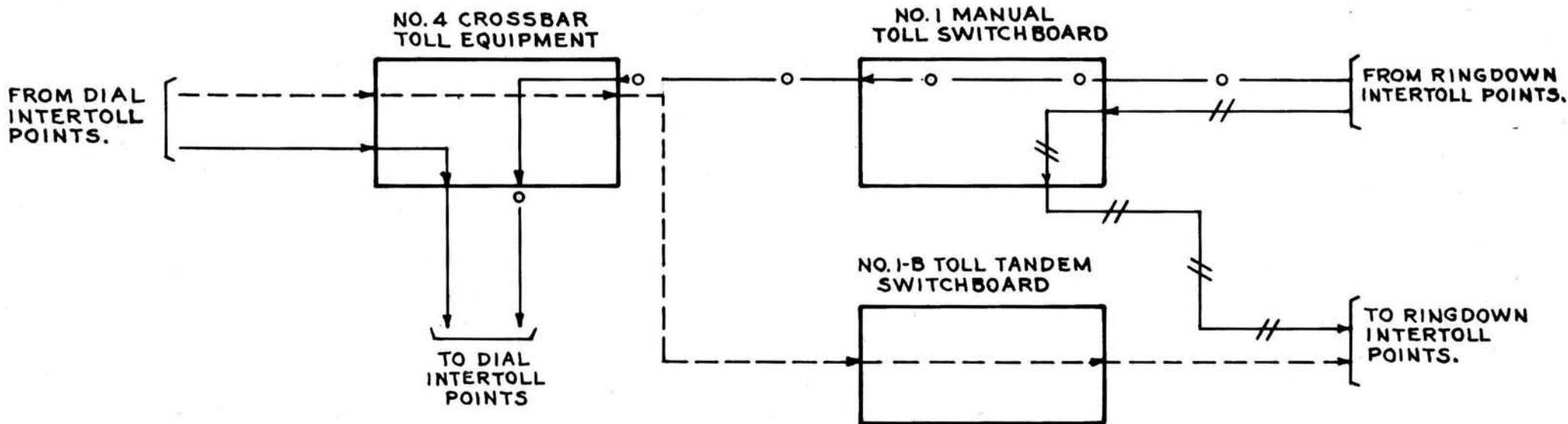
EAST BAY



THE PACIFIC TEL. & TEL. CO. #2
 NO. CALIF. & NEV. AREA
 OFFICE OF CHIEF ENGINEER
 SAN FRANCISCO - EAST BAY
 OAKLAND TOLL OFFICES
 INWARD INTERTOLL DIAL TRAFFIC
 INWARD INTERTOLL RINGDOWN TRAFFIC
 8-23-49 F.B.N.

CROSSBAR DIAL TOLL OFFICE

MANUAL TOLL OFFICE



LEGEND

- DIAL TO DIAL CALL
- DIAL TO RINGDOWN CALL
- o — RINGDOWN TO DIAL CALL
- // — RINGDOWN TO RINGDOWN CALL

THE PACIFIC TEL. & TEL. CO. #3
 NO. CALIF. & NEV. AREA
 OFFICE OF CHIEF ENGINEER
 SAN FRANCISCO - EAST BAY
 OAKLAND TOLL OFFICES
 THROUGH TRAFFIC VIA
 OAKLAND TOLL OFFICES

8-23-49

F.B.N.