ACCESS POINT INFORMATION
SWITCHED MAINTENANCE ACCESS SYSTEM (SMAS)

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1. GENERAL

1.01 This section presents guidelines for the location and assignment of test access points for the Switched Maintenance Access System (SMAS) ▶ and the Digital Access and Cross-Connect System (DACS).◀ This section also gives the format of the access point data appearing on the circuit layout record (CLR). Correct access point (AP) data is imperative to take full advantage of the remote trouble sectionalization capabilities of the Switched Access Remote Test System 1A (SARTS 1A).

1.02 Revision arrows are used to emphasize significant changes. The reasons for reissue are provided below:

(a) Adds information relating to DACS and termination and leave.

(b) Provides a general clarification and emphasis on the explanation of codes for access point testing data.

(c) Adds unitized facility terminal (UFT) arrangements.

1.03 ▶The SMAS and DACS Systems allow a tester to obtain access to many circuits from a centralized location.◀ The SMAS uses access relays physically located in the circuit at the desired access point. On command, an access point is switched through a concentration stage(s) to a centralized test location. ▶The DACS provides per channel digital signal zero (DS0) electronic cross-connection and test access for digital signals at the digital signal one (DS1) rate. The DACS terminates up to 127 DS1 circuits and provides cross-connections for a maximum

of 1524 DS0 circuits. The test access link which forms the interface between the SMAS network and DACS consists of a T1 test line connected to the DACS DS1 test termination and a D4 channel bank connected to a digital test access connector (DTAC). The DTAC provides the interface between the D4 channel bank channel units and the SMAS network (Fig. 1).◀ The tester then proceeds with verification and testing of the accessed circuit.

1.04 Correct circuit testing requires accurate records of cross-connections between circuits and test access point. The type and format of available cross-connect information will depend on local practices. Note that some unitized facility terminal (UFT) equipment is available with built-in SMAS access point provided by maintenance connectors (see Section 667-000-002 for SMAS maintenance connector information). The access point information described in this section is applicable to all types of test access points regardless of implementation (see Part 3).

1.05 Unitized facility terminal equipment includes analog facility terminals (AFT), digital facility terminals (DFT), and metallic facility terminals (MFT). The use of built-in SMAS access points in UFT equipment introduces some new access point configurations. The SARTS access and testing of these configurations require definition of additional configuration codes for the SARTS access point data. These codes are defined in this section.

1.06 Figure 2 is a schematic representation of 4-wire (or two 2-wire) and 6-wire access points with their main frame lead designations (when terminal on the main frame) and reference transmission directions ▶toward the facility (fac) and equipment (eqpt).◀

2. LOCATION OF ACCESS POINTS

2.01 The access point location plan gives ***guidelines*** for placement of a ***minimum*** set of access points on circuits to be able to ***sectionalize*** troubles with SARTS. The final goal of any access point location plan must be to at least satisfy guidelines given in this section. However, when initial funding does not allow deployment of a sufficient number of access points to follow the guidelines, the first choice is to provide an access point on each circuit at every metallic customer loop interface. When trouble ***isolation*** is desired, and when economic analysis can support it, more than the minimum set of access points may be used. To achieve trouble isolation, access points must be provided at all interfaces between the individual equipment (eqpt) and facility (fac), except within unitized equipment bays.

2.02 The fundamental access point location plan objectives are to provide a minimum of ***one access point per building and to ensure at least one access point per facility.*** To satisfy these objectives the following interfaces are considered for access point placement:

- Metallic customer loop interfaces
- Carrier facility interfaces
- Bridge interfaces
- Metallic trunk facility to metallic trunk facility interfaces
- Metallic trunk facilities to central office equipment interfaces
- Switch interfaces (equivalent of no-test trunk access)
- Interfaces with non-SMAS environments.

A. Definition of Terms

Metallic Customer Loop

2.03 A metallic customer loop is all metallic facilities, either 2- or 4-wire, extending from the last central office distribution frame (MDF) to the customer. This includes all station equipment and direct current (dc) control channels extended to the customer.

Central Office Equipment

2.04 Central office (CO) equipment is any equipment, or tandem interconnection of equipment, common to one circuit and appearing within one wire center or building. This includes all equipment required to provide transmission and signaling functions for a single customer service or circuit. Bridges require special consideration and are discussed in paragraphs 2.07 and 2.08.

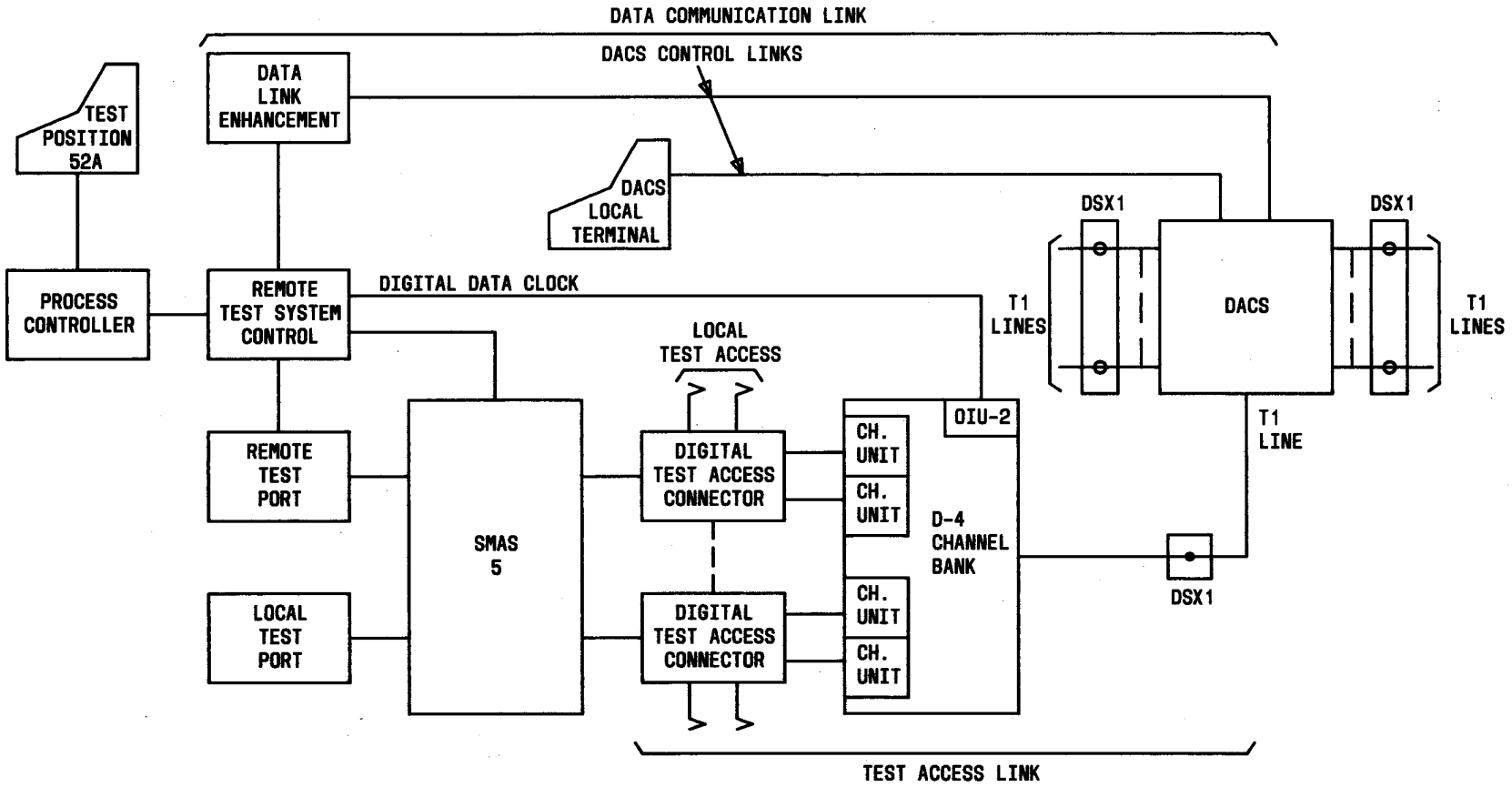


Fig. 1—DACS—SMAS Interface to SARTS

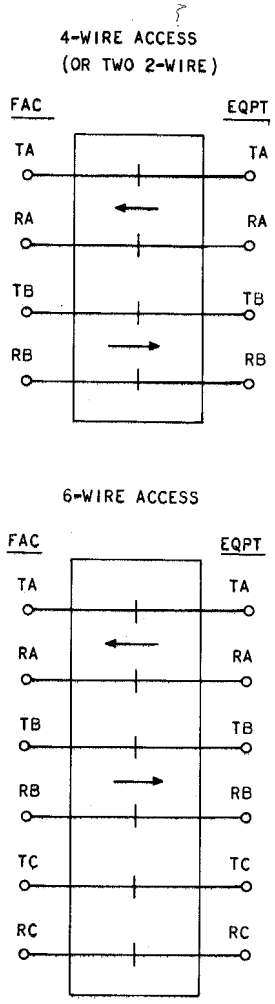


Fig. 2—Schematic Representation of Access Points

Metallic Trunk Facilities

2.05 A metallic trunk facility is the wire pair(s) extending from the last frame appearance in one building to the first frame appearance in the next building and carrying all signals associated with a single service or circuit. These facilities include 2- and 4-wire facilities and any associated dc control channels.

Carrier Facility

2.06 A carrier facility is the segment of a circuit extending from the last accessible voice-frequency (VF) point in a carrier system to the next accessible VF point (equivalent of the VF patch points).

Bridges

2.07 Bridges require special consideration in the access point location plan. Two categories of bridges must be considered. The first, a direct bridge, is used primarily to provide extensions on switched special service circuits. A direct bridge consists of a direct connection of a 2-wire pair to another 2-wire pair. Because a direct bridge disrupts impedance, some means is normally used to remove all bridged legs from the circuit except the leg using the circuit. This is usually accomplished with relay circuits or saturable inductors, both of which are called *bridge lifters.*

2.08 The second category includes all other bridges and will be referred to simply as *bridges.* This includes series interconnections used for alarm circuits and specific units of equipment designed for multipoint service on private line circuits.

B. Access Point Placement Guidelines

Metallic Customer Loop Interfaces

2.09 An access point is required at the central office end of a metallic customer loop. A direct connection of a metallic customer loop to a metallic trunk facility requires an access point at the first interface of the metallic trunk with central office equipment or a bridge (Fig. 3).

Carrier Facility Interfaces

2.10 Access points are required on both ends of a carrier (carr) facility segment. In carrier systems with E&M signaling leads (out-of-band signaling, T-carrier E&M channel units, etc) the E&M leads must be included in the access point (Fig. 4A). Where back-to-back carrier systems are used without signaling conversion equipment, only a single access point is required at the interface of the two systems (Fig. 4B). ▶Where digital carrier systems with DACS access by a DTAC are used, access may be 2/4-wire, digital, 6- or 8-wire (Fig. 5 illustrates 8-wire access), dependent upon the access mode.◀

Bridge Interfaces

2.11 Access points on direct bridges should be located on each circuit leg which leaves the office in the direction of a station. The access point should be located at the equivalent of the last frame

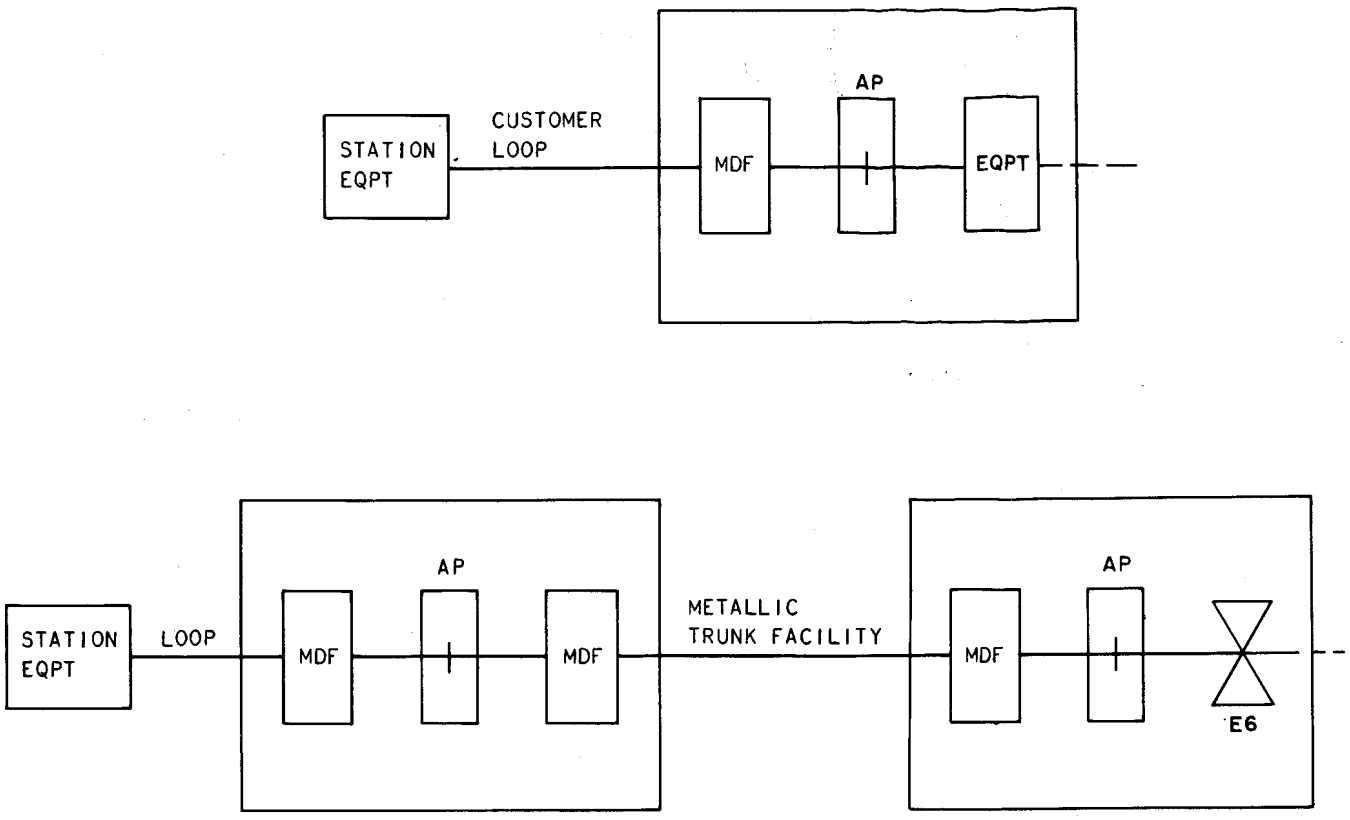


Fig. 3—Metallic Customer Loop Interfaces

in the office. An access point can be located on the switched side of the direct bridge depending on whether or not an access point is located on the other end of the connecting metallic facility (Fig. 6A).

2.12 Access points on multipoint private line circuits should be located on each circuit leg at the point where the leg leaves the office. Thus any central office equipment associated with the leg will be between the access point and the bridge. Note that all of these access points will include access to any signaling, dc or VF, associated with the circuit operation. ▶An additional access point may be located at the bridge interface (Fig. 6B) to assist in the testing of equalization problems and/or to provide terminate and leave. Terminate and leave in conjunction with a type 3 maintenance connector may be used to split and terminate an access point without maintaining a holding path through the SMAS connector. This provides a means to terminate the bridge ports and simultaneously provide test access to its associated legs.◀

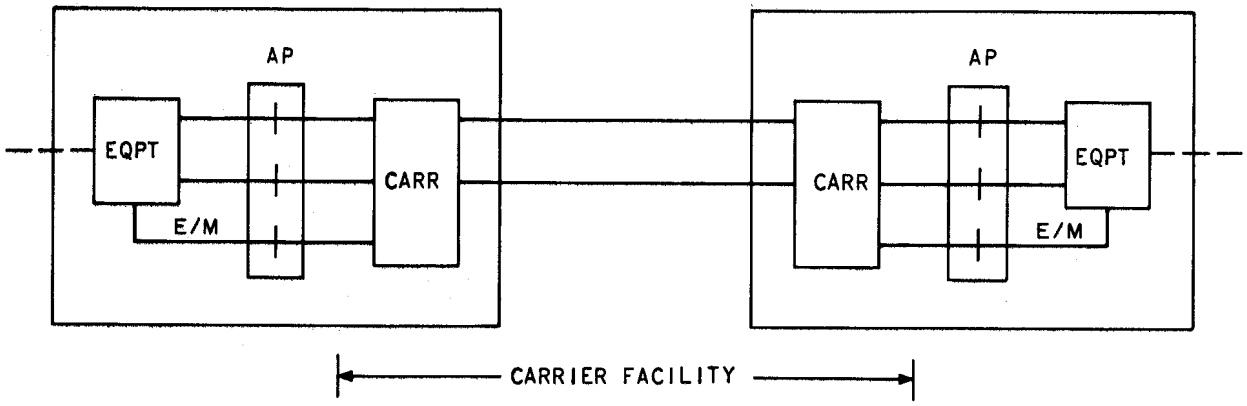
2.13 ▶A DTAC access point on a bridge leg should be oriented with the code EF (equipment toward the bridge) so that termination of the circuit would cause DACS to insert unassigned channel code towards the bridge.◀

Metallic Trunk Facility to Another Metallic Trunk Facility

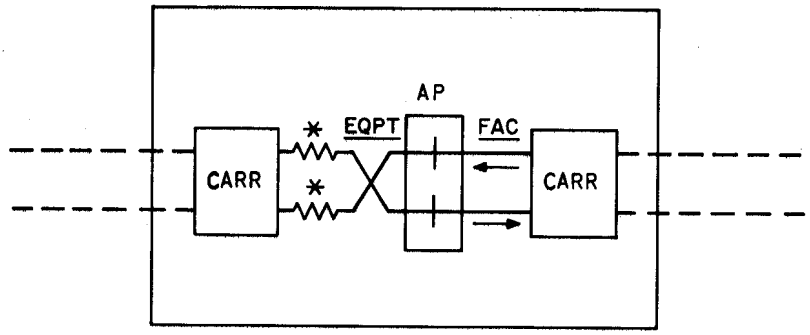
2.14 An access point is required at the interface of a metallic trunk facility with another metallic trunk facility (Fig. 7).

Metallic Trunk Facility (MTF) to Central Office Equipment Interface

2.15 At metallic trunk facility (MTF) to central office equipment interfaces, when access points are required according to the plan objective, they should be placed on the side of equipment away from the talk battery source or the side(s) supplying talk battery (eg, private line automatic ringdown equipment will need an access point on both sides). On dry-loop circuits, access points may be placed on either side of the equipment. In either case, access points are to be placed at these interfaces to ensure



(a) ACCESS POINT LOCATION AT BOTH ENDS OF A CARRIER FACILITY



* MAY BE LOCATED IN CHANNEL UNIT

(b) THE INTERFACE OF BACK–TO–BACK CARRIER SEGMENTS

Fig. 4—Carrier Facility Interfaces

at least one access point per facility and at least one access point per building (Fig. 8).

Switch Interfaces (Equivalent of No-Test Access)

2.16 The SMAS Systems can gain access to switched customer lines through access points placed on standard test trunks with no-test capabilities (eg, SD-26136-01: Crossbar System No. 5 incoming test trunk from local test desk No. 14 or local test cabinet No. 3 or office test frame test circuit, dial or multifrequency pulsing, or SD-1A186-01: Electronic Switching System No. 1 incoming trunk circuit from local test desk No. 14 or local test cabinet No. 3 sleeve lead supervision). The test trunk on which an access point is placed must be dedicated to the SMAS (ie, it cannot be shared). The access capability provided by this access point is the same as provided to a local test desk. If this type of access is not used, an access point should be located on the customer side of the switch (Fig. 9).

Interfaces With Non-SMAS Environments

2.17 Considerations must be given to circuits with portions that are not accessible by SMAS. The following procedures should be used:

(a) For the portion of the circuit that is accessible by SMAS, access points should be assigned according to the preceding guidelines.

(b) For the portion of the circuit that is ***not*** accessible by SMAS, an access point should be placed at the last available point in the circuit before the circuit is no longer accessible by SMAS. This will allow the maximum capability of sectionalizing a circuit using SMAS.

3. ACCESS POINT IMPLEMENTATION

3.01 There are various methods of providing for access points. First, some facility terminals

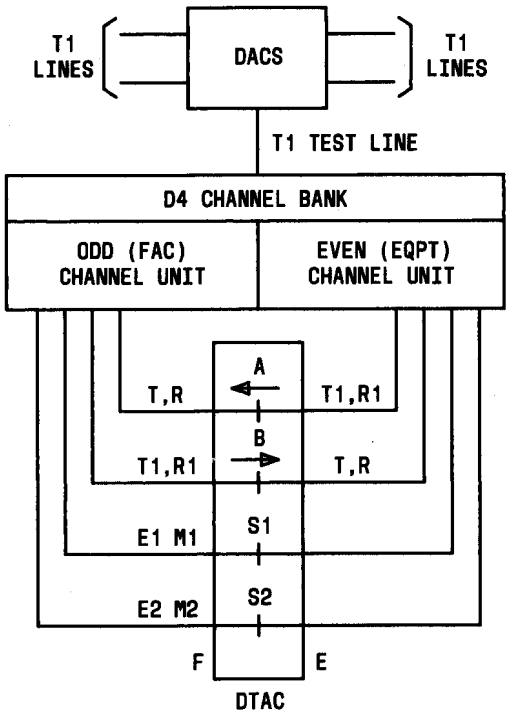


Fig. 5—DACS—DTAC Digital Carrier Interface

are available with built-in SMAS access; second, access points may be provided within tie pairs; third, access points may be terminated on a distributing frame and be cross-connected, as required, or hard-wired into assemblies of various types of nonfacility terminal equipment; and finally, DACS access where the facility may be electronically assigned to a DTAC access point.

A. Facility Terminals

3.02 The MFTs, AFTs, and DFTs are available with built-in access points. The use of built-in SMAS/SARTS access points provides significant reductions in distributing frame appearances and cross-connections.

3.03 The use of facility terminals with built-in SMAS access reduces cost in administration and installation. Each plug-in location within the facility terminal has associated with it an access point (or points) with a fixed address within the SMAS System. This access point(s) is compatible with the function of any plug-in unit in the facility terminal. Therefore, when special service circuits change, there is no need to cross-connect new access points.

B. Tie Pairs

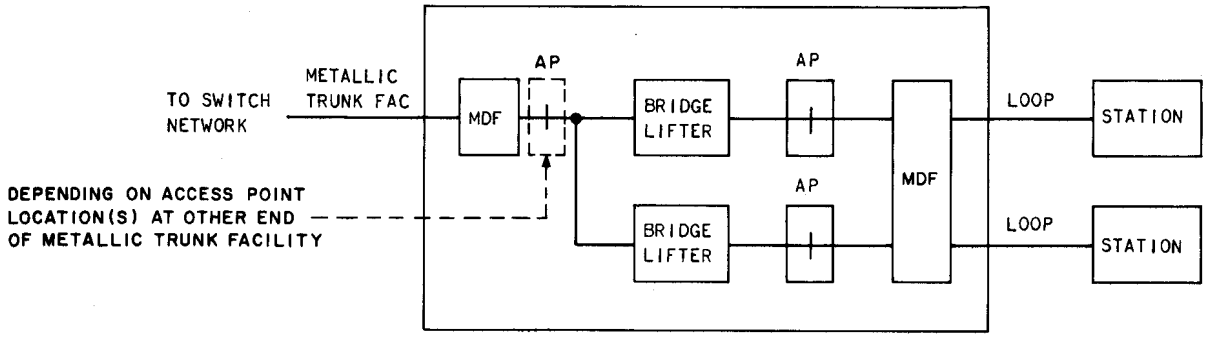
3.04 The number of access point appearances and cross-connections at distributing frames may be sharply reduced by including access points in tie pairs. ***A fixed pattern of assignment of facility (F) and equipment (E) sides of the access point termination should be employed to simplify administration and observe current restrictions on cosmic frame terminations.*** This pattern requires that the facility side of the access point be terminated on the subscriber main distributing frame (SMDF) and the equipment side be terminated on the trunk main distributing frame (TMDF) or intermediate distributing frame (IDF). The equipment side also terminates on the TMDF for IDF-to-TMDF access point tie pairs. Preferential assignment of access point tie pairs at the SMDF will be provided by Trunk Integrated Record Keeping System (TIRKS) in version 12 and later issues. Due to the variations normally encountered in special services circuits and the fixed pattern assignment of access point tie pairs, the equipment/facility orientation may not always correspond to the guidelines established for direct-wired or built-in access points or access points where both sides are terminated at the same distributing frame. (See paragraph 5.02.)

C. Distributing Frames

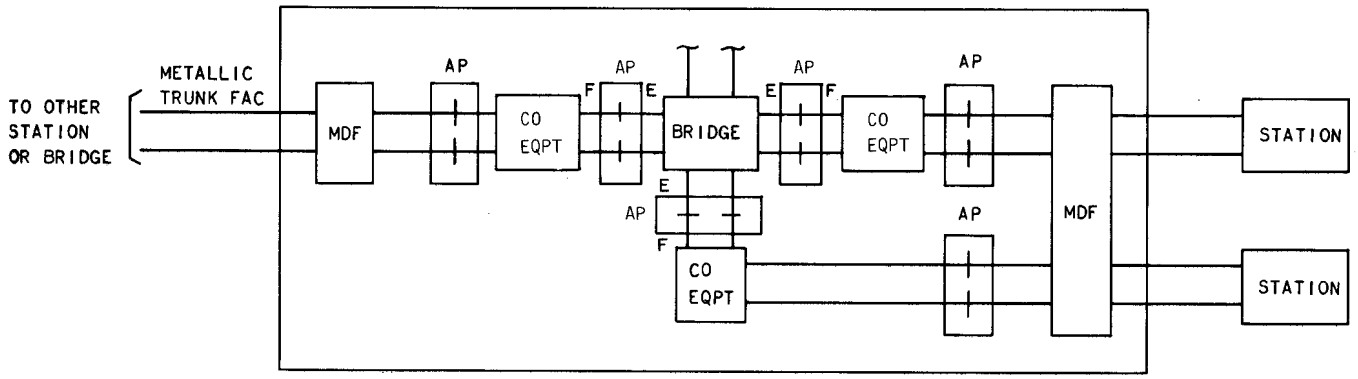
3.05 Only if the two preceding methods of SMAS/SARTS access point implementation cannot be employed should the use of distributing frame terminated access points or hard-wired access points in old equipment assemblies be considered. If access points are to be terminated on a distributing frame, ideally they should be terminated in close proximity to the equipment with which they are to be used. In this manner, the required cross-connections between equipment and access points can be kept short, minimizing the growth of long distributing frame cross-connections. An alternative to distributing frame termination is to hard wire the access points into assemblies of old equipment. This approach limits the future usage of the equipment. This method is not recommended unless forecasts of the use of the hard-wired assemblies have been made and are fairly certain.

D. Digital Test Access Connector

3.06 The DACS will provide test access for digital signals at the DS1 rate. Bridging or splitting



(a) ACCESS POINTS LOCATED ON ALL MDF AND LOOP LEGS OF A DIRECT BRIDGE CIRCUIT AT LAST FRAME APPEARANCE.



(b) MULTIPOINT CIRCUIT ACCESS POINTS ON METALLIC TRUNK FACILITIES AND LOOP LEGS AT THE LAST FRAME APPEARANCE.

Fig. 6—Bridge Interfaces

test access to any circuit is electronically cross-connected to the DACS DS1 test termination, a D4-channel bank, and the DTAC which provides an interface between D4-channel bank channel units and the SMAS network.

4. ACCESS POINT DATA AND CIRCUIT LAYOUT RECORD (CLR) ENTRY FORMAT

4.01 This part of the section defines the access point data codes and gives the format for entering information on the CLR.

4.02 Access point data is the information about an access point required by the SARTS to perform the following functions:

(a) Test control

(1) Far-end hardware control

(2) Individual tests

(3) Automated test sequences

(4) Uniformity of operation for all access systems

(b) Screening

(1) Prevention of circuit damage or test equipment damage

(2) Prevention of service interruption or service degradation

(c) Test result computation

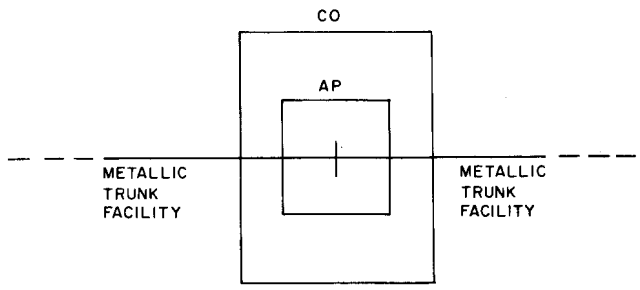


Fig. 7—Metallic Trunk Facility to Metallic Trunk Facility Interfaces

(d) Human machine interface

(e) Compatibility with future circuit maintenance systems.

4.03 Access point data consists of two parts: identification data and testing data. The identification data is used for circuit access, test status verification, and cathode-ray tube (CRT) terminal display configurations. The testing data is used for automated test sequences, control of far-end hardware, test result computation, and protection against circuit degradation or damage.

4.04 Identification data and testing data are provided on consecutive lines of the CLR at the location of each access point in the sequential listing of circuit elements (Fig. 10 and 11). Access point data should not be used as a replacement for other circuit information that may normally be on the CLR

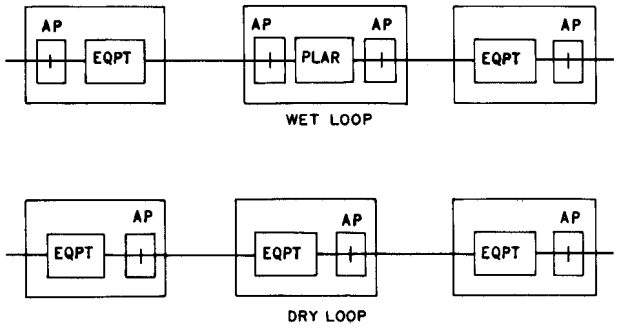


Fig. 8—Metallic Trunk Facility to Central Office Equipment Interfaces

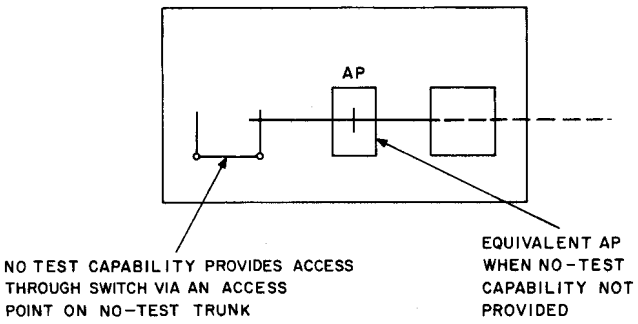


Fig. 9—Switch Interfaces (Equivalent of No-Test Access)

(such as frame coordinates, cross-connect information, equipment location, etc); rather, it is additional information required by SARTS in a standardized format for computer usage.

IDENTIFICATION DATA

4.05 The following information defines codes for the identification and testing data entries. A CLR (Fig. 10 ▶and 11◀) entry format is also defined. The character *A* is alphabetic, *N* is numeric, *X* is either alphabetic or numeric. The circled letters on Fig. 10 ▶and 11◀ are keyed to the lettered headings that follow and should be referred to during the discussion about the identification and testing data entries.

A. Access System Location (Fig. 10)

4.06 ▶The access system location is an 8-character alphanumeric common language location identification (CLLI) code used to identify the place, state, and building location of the Remote Test System (RTS) (Section 795-100-100).◀

B. Remote Test System Identity (Fig. 10)

4.07 The remote test system identifier is a 2-character numeric code. The first number of the code usually identifies the access system type (eg, 4 = SMAS 4, 5 = SMAS 5, etc); however, its meaning is determined by the telephone company for reference purposes or other uses. This makes it unnecessary to change records when converting a SMAS 4A to a SMAS 5B. The second number of the code identifies the RTS (regardless of type) within the building (eg, 1 = first RTS, 2 = second RTS, etc). The CLLI code together with the RTS identity is used by the SARTS process controller to set up data links and communication links to the proper RTS.

C. SMAS Number (Fig. 10)

4.08 The SMAS number is a 7-character maximum code identifying the address of the access point used to gain test access to the circuit through the SMAS. A 5-digit SMAS number is required for remote testing, the first digits (0-3) denote the connector group network, the first digits 5-8 denote the maintenance connector network. ▶The letter T following the 5-digit SMAS number indicates a maintenance connector with terminate and leave capability.◀

Note: Starting with Generic 1A and later generics, the 5-digit SMAS numbers are required to be inputted to the process controller to obtain remote access.

D. Orientation Code (Fig. 10)

4.09 The 2-character alpha orientation code identifies how the access point has been wired to the SMAS network with respect to the A and Z ends of the circuit under test. The code EF means the ***equipment (E)*** side of the point is wired to the circuit element ***above*** the access point on the CLR and that the ***facility (F)*** side of the point is wired to the circuit element ***below*** the access point. The code FE indicates the reverse wiring. The orientation code is determined by application of guidelines found in Part 5. For the special case of access points on distributing

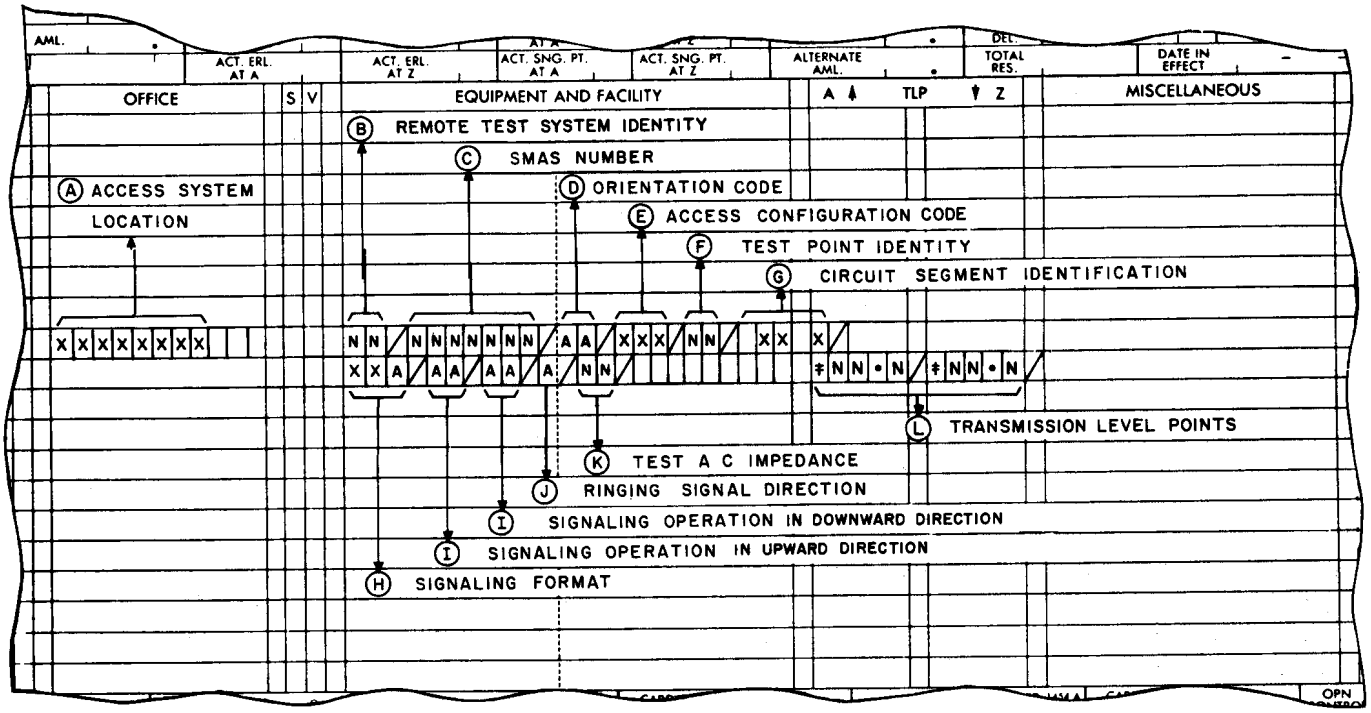


Fig. 10—Example of CLR Entry Format

frame test trunks, the code FO is used to indicate that the ***facility*** side of the access point is connected to the ***outward*** or vertical side of the distributing frame when a test shoe(s) connects to the test trunk.

E. Access Configuration Codes (Fig. 10)

4.10 Access configuration information (Table A) is required for proper test status verification and for testing control. The access configuration code characterizes the circuit as a single wire, 2-, 4-, or 6-circuit and contains information for 4- or 6-wire access points that provides transmission direction information. The second and third characters of the configuration code refer to the upward and downward transmission directions of the circuit segment (eg, 4BA - B↑A↓ and 4 AB - A↑B↓), with A facing the facility.

4.11 The 22A, 22B, 24A, 24B, 42A and 42B codes are MFT 2-wire configuration codes. See Part 8 for MFT access point information.

4.12 The 26X code is an AFT 2-wire configuration code, and the 46X code is an AFT 4-wire configuration code. See Part 9 for AFT access point information.

▶4.13 The DACS configuration codes QAB and QBA indicate a 4-wire voice-freqency circuit using 4-state digital signaling. See Part 11, for DACS access point information.◀

4.14 Connections to the special service circuit transmission and signaling leads and the transmission direction for each access configuration code are shown in Table A. A summary of access point lead usage is given in Fig. 12. ▶The SD-1P138-01, Maintenance Connector Application Schematic, provides detailed lead usage.◀

> ***Note:*** For access points which use unitized configurations but are cross-connected at the main distributing frame (MDF), the orientation ***must*** be identified to that which would result if the access points were in a unitized arrangement.

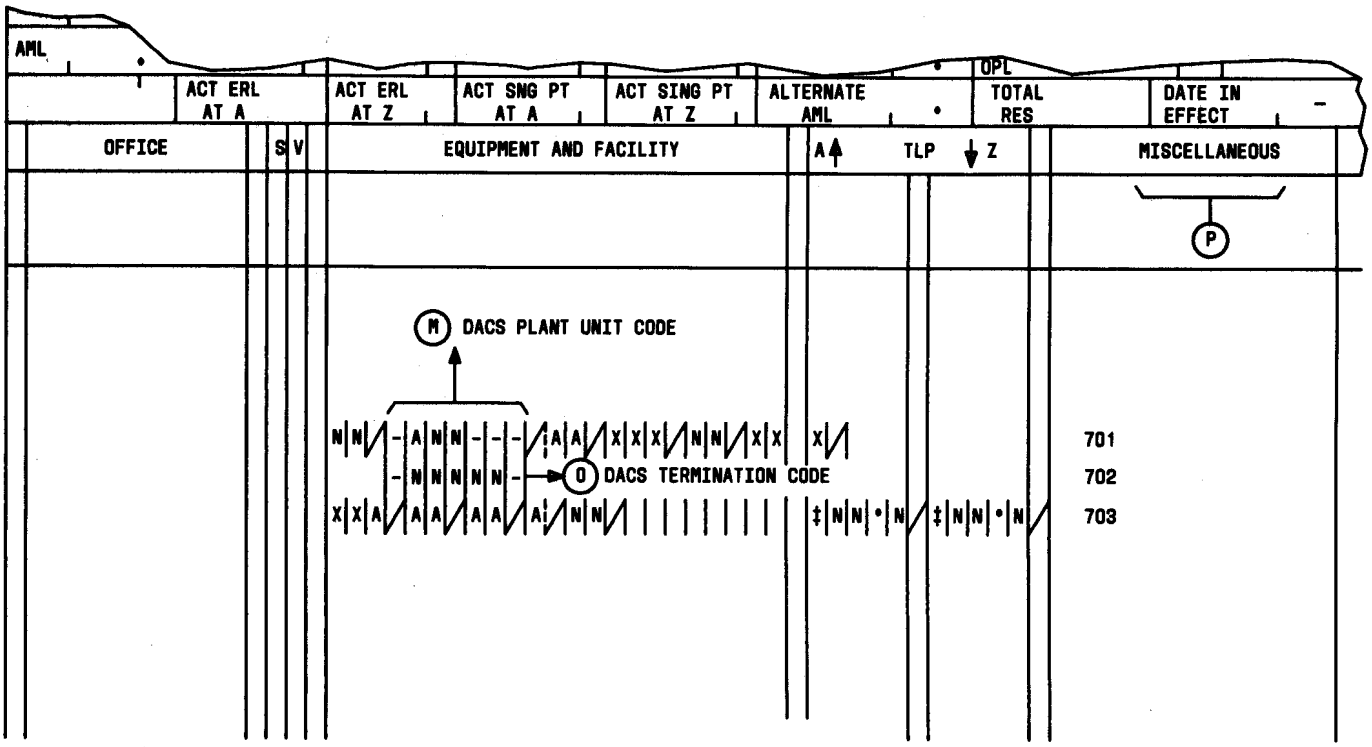


Fig. 11—Example of CLR Entry Format for DACS

F. Test Point Identity (Fig. 10)

4.15 The test point identity is a 2-character numeric code. Test points are numbered sequentially from the A to the Z end of the circuit or of the circuit segment (each segment is numbered independently of other segments). The numbers need not be consecutive; this allows omitting numbers when additional access points are to be installed at a later time.

> ***Note:*** Special case = 00 or 99 for no-test trunk access points depending on location of switch on CLR (00 = A end, 99 = Z end).

G. Circuit Segment Identification (Fig. 10)

4.16 The circuit segement identification is a 3-character alphanumeric code. Circuit segment identification is used to identify individual 2-point segments that make up a circuit. Segmentation is primarily intended for multipoint circuits, but may be used to subdivide complex 2-point circuits. For information on circuit segmenting standards, Section 682-400-011 should be used.

TESTING DATA

H. Signaling Format (Fig. 10)

4.17 The signaling format defines the electrical method of passing signaling information at the access point. The signaling operation defines the ***signaling sequence*** used within each format at the access point. For example, ground-start operation signals appear as signal frequency (SF) tones at an access point with the signaling format code (SFC).

4.18 In ringdown applications, access points may appear on a dry circuit (no dc voltage) where only 20-Hz ringing is used for signaling. In these cases an appropriate L( )( ) code should be used rather than a 7( )( ) code.

4.19 Signaling format codes are listed and illustrated in Table B.

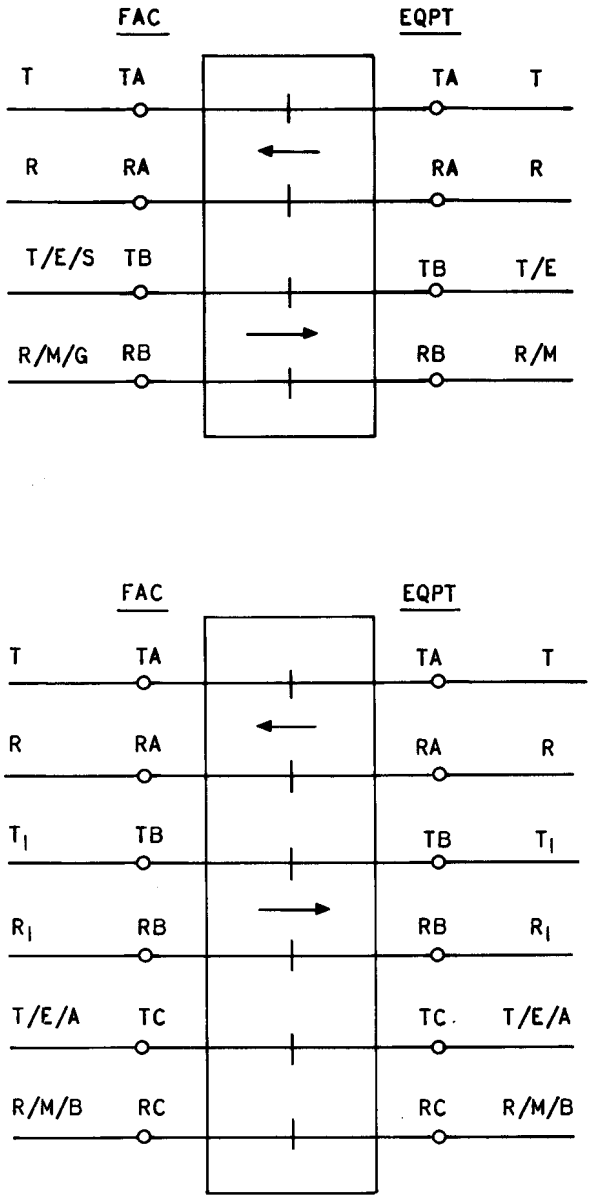


Fig. 12—Summary of Lead Usage

4.20 Three types of E&M signaling interface circuits exist and are referred to as types 1, 2, and 3 (Fig. 13). The type 1 circuit is the most common and is used in all types of electromechanical switching systems [Fig. 13(a)]. Types 2 and 3 are used in electronic switching system circuits [Fig. 13(b) and 13(c)]. Signaling codes SMF, SME, EMF, or EME can be used for access points on circuits with type 1, 2, or 3 E&M signaling. The only exception in using these signaling codes is for access points on back-to-back trunk circuits or back-to-back signaling circuits with type 2 E&M signaling [Fig. 13(d) and 13(e)]. Signaling format codes SMF, SME, EMF, or EME can be used for any circuit with type 2 or 3 E&M signaling circuit which is interfaced to a type 1 E&M signaling circuit through an interface circuit [Fig. 13(f), 13(g), and 13(h)].

4.21 A flowchart that can be used to determine the signaling format code of an access point is shown in Fig. 20.

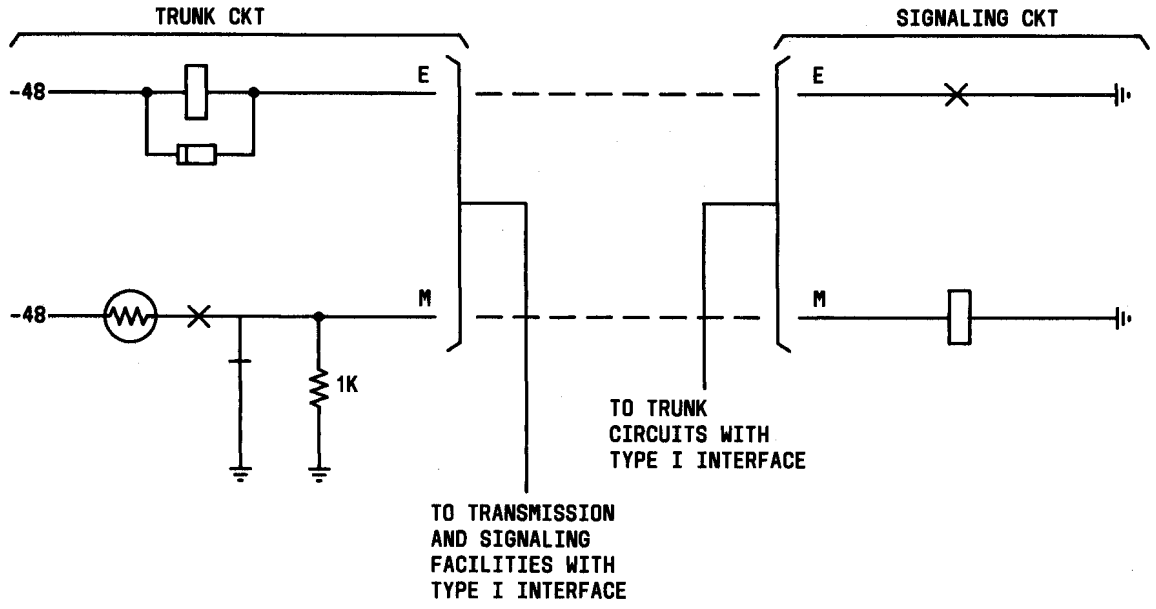
I. Signaling Operation in Each Direction (Fig. 10)

4.22 The 2-character signaling operation code is specified for each direction at an access point, upward from the E or F side (first field in Fig. 10 and 11) and downward from the F or E side, consistent with the orientation code (second field in Fig. 10 and 11). Generally, the code for the signaling operation is the same in both directions. However, in the case of PBX tie trunks, combinations of operation are used in different directions. It is in these tie trunk applications where the signaling operation code may be different for each direction of the circuit.

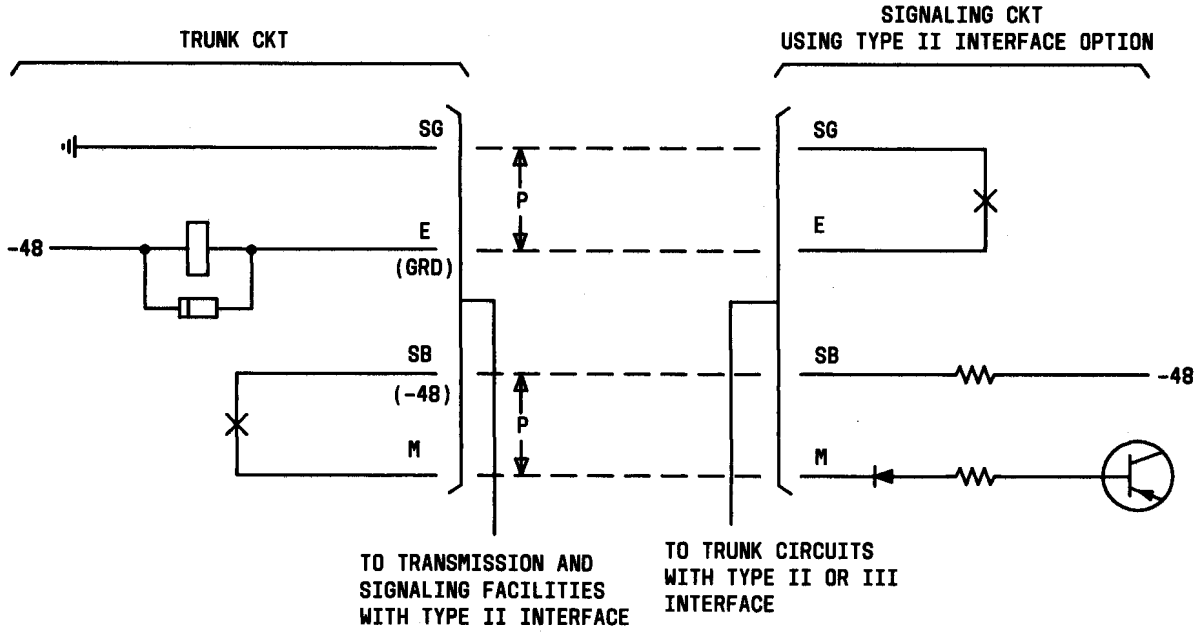
(a) ***Loop-start normal (LN):*** The LN code applies to access points on circuits where the station starts a call by a loop closure followed by address information in the form of TOUCH-TONE* dialing or dial pulsing, and where an alerting signal is passed to the station by applying 20-Hz ringing across the tip and ring conductors. This operation is usually associated with station loop signaling. (The signals need not be the metallic types previously described; they may appear as corresponding signals in the signaling format at the access point.) The LN code generally applies to both directions of the circuit at any access point on the circuit so long as the loop-start operational sequence applies. (See exception under LR code.)

(b) ***Loop-start reversed (LR):*** The LR code applies specifically to loop-start operation in the EM() or DX() format. The LR code is used if the M-lead (or the DX-extended M-lead) is at battery when idle and at ground when a ringing signal is present. The LN code applies if the M-lead is at ground when idle and at battery for ringing. The LR code generally applies to both directions of the circuit.

* Registered service mark of AT&T.

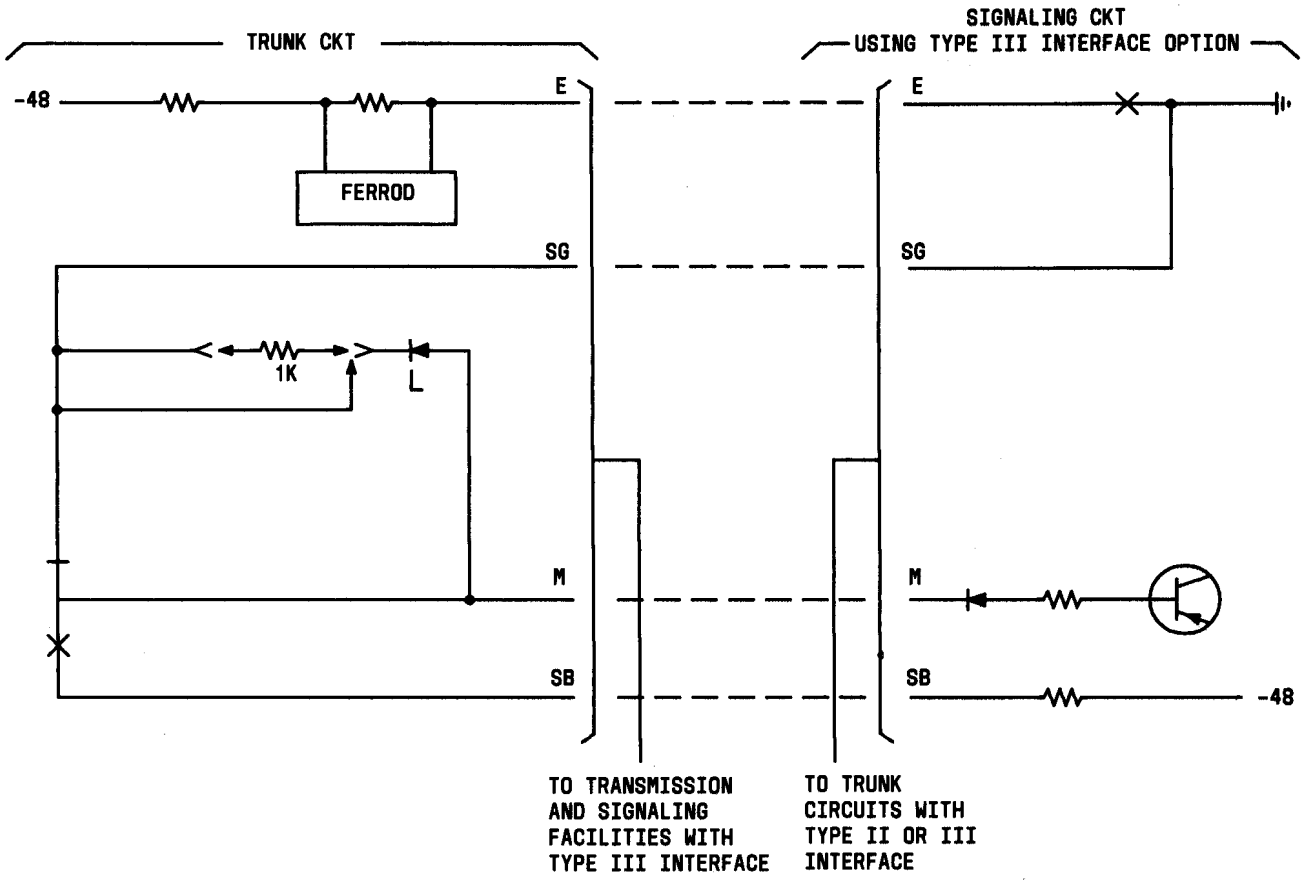


(a) – Type 1 E&M Signaling

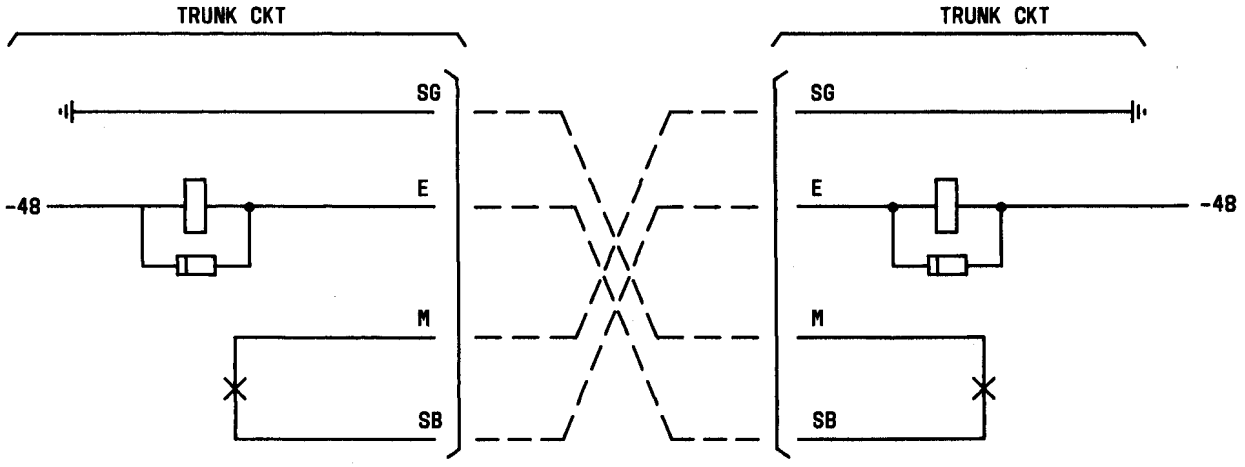


(b) – Type 2 E&M Signaling

Fig. 13 — E&M Signaling Interface Circuits (Sheet 1 of 4)

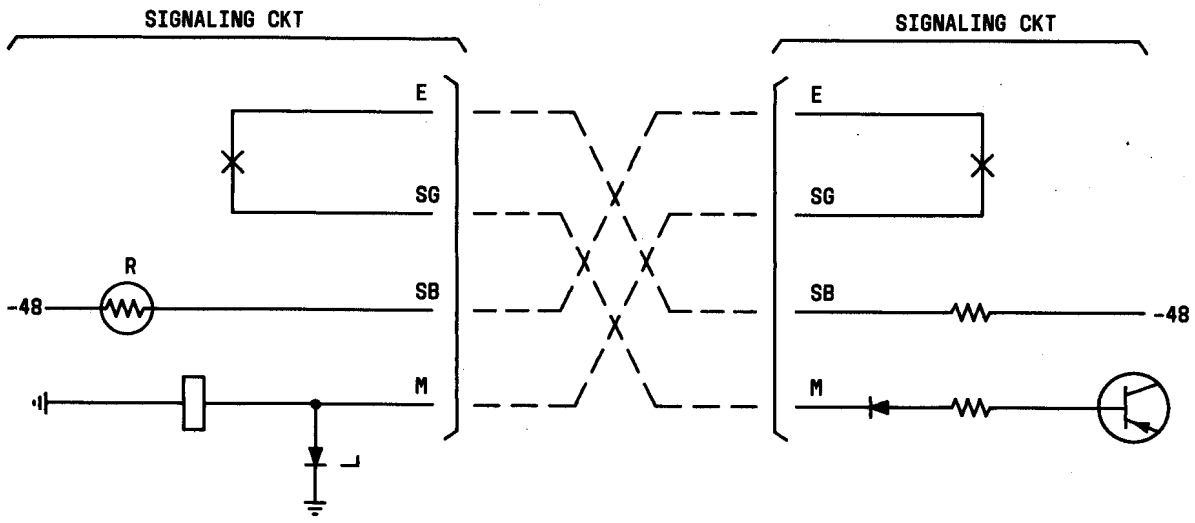


(c) – Type 3 E&M Signaling

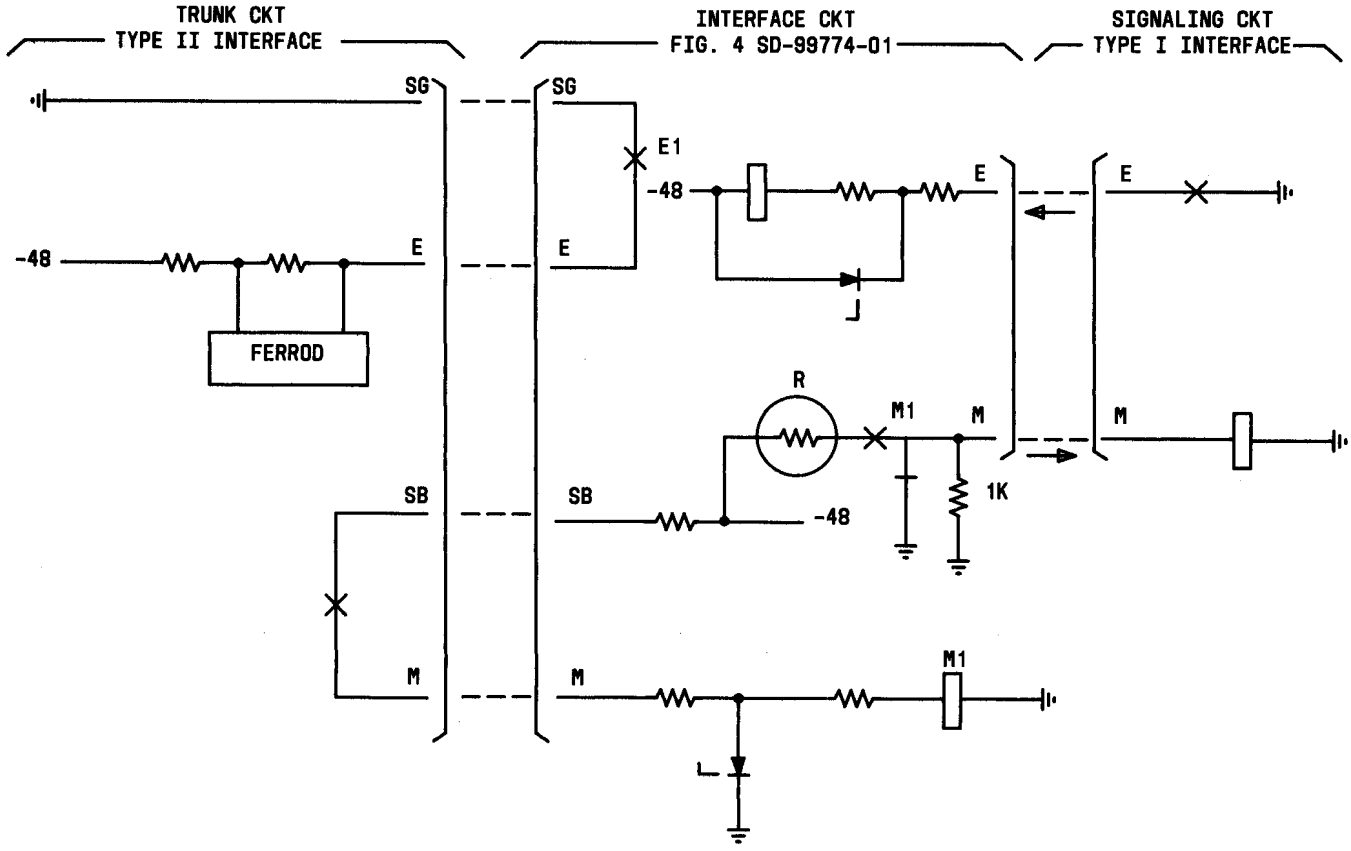


(d) – Type 2 Back-to-Back Trunk Circuits

Fig. 13 — E&M Signaling Interface Circuits (Sheet 2 of 4)

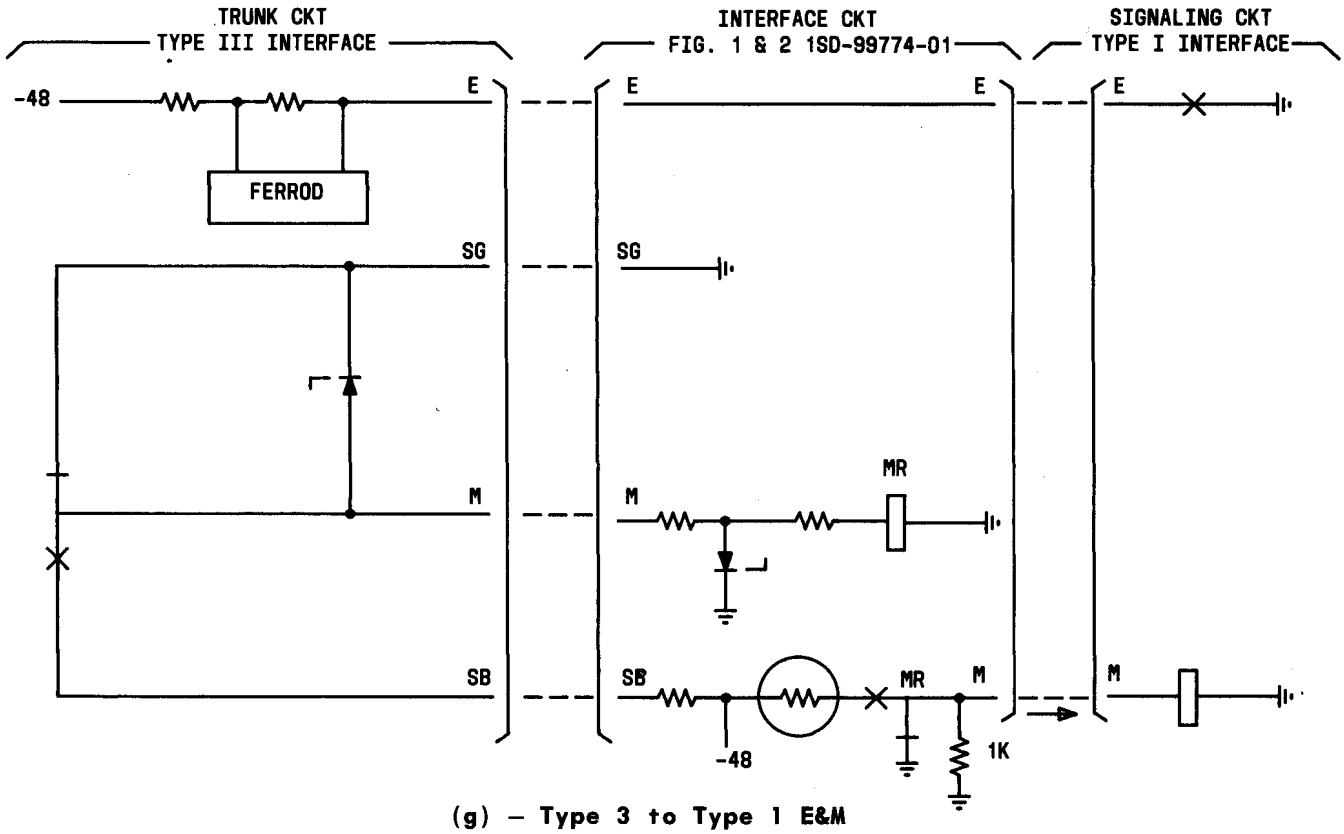


(e) – Type 2 Back-to-Back Signaling Circuits

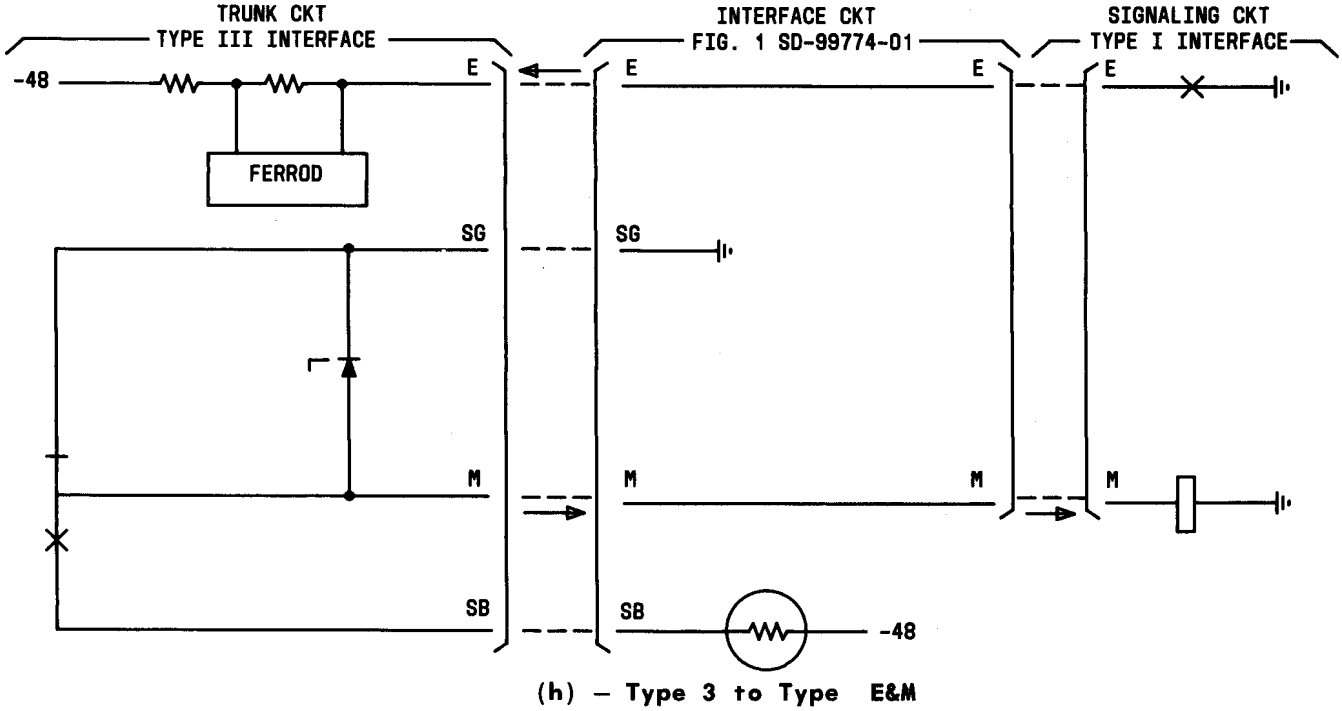


(f) – Type 2 to Type 1 E&M

Fig. 13 — E&M Signaling Interface Circuits (Sheet 3 of 4)



(g) – Type 3 to Type 1 E&M



(h) – Type 3 to Type E&M

Fig. 13 — E&M Signaling Interface Circuits (Sheet 4 of 4)

(c) ***Ground start (GS):*** The GS code applies to access points on circuits where the station starts by applying ground to the ring conductor followed by a loop closure and address information. A call is started from the central office (station end is alerted) by applying ground to the tip conductor, followed by application of 20-Hz ringing between tip and ring (as for loop-start operation). This operation is usually associated with PBX central office trunks or automatic call distributors (ACDs). The signals need not be of the metallic type described, but may appear as signals in the signaling format at the access point. The GS code generally applies to both directions of the circuit.

(d) ***High low (HL):*** The HL code applies to access points on circuits where a seizure signal consists of applying battery and ground at the calling end, and where the called end idle condition is a high resistance (usually over 30K ohms), which changes to a low resistance when the called end answers. The HL code usually applies to both directions of the circuit. However, in some PBX tie trunks, HL may apply in only one direction.

(e) ***Reverse battery (RB):*** The RB code applies to access points on circuits where the calling end seizure signal is indicated by closure of the circuit conductors and where an answer signal from the called end is a reversal of the battery condition at the called end. The RB code usually applies to both directions of the circuit. However, in some PBX tie trunks, RB may apply in only one direction.

(f) ***Battery ground (BG):*** The BG code applies to access points on circuits where the calling end seizure signal is an application of a battery and ground condition which is series-aiding the polarity of the voltage applied at the called end. The called end answers by reversing its voltage polarity which in turn causes a battery reversal at the calling end to hold the connection. Pulsing from the calling end is battery-ground pulsing. The BG code generally applies to both directions of the circuit.

(g) ***Ringdown (RD):*** The RD code applies to access points on circuits where the alerting signal is the application of 20-Hz ringing. The RD code can be associated with PBX tie trunks where it may apply to only one direction of the tie trunk. Since the definitions of the LN and GS codes include methods of alerting, the RD code should not be used for the operation code in the direction of the station on circuits with LN or GS operation.

(h) ***Private line automatic ringdown (AU):*** The AU code applies to access points on circuits where a seizure signal in one direction is a loop closure (automatically causing 20-Hz ringing to be applied to the called end by intermediate equipment), and where a seizure signal in the other direction is an application of 20-Hz ring(j) Other (OT): The OT code applies for access points on circuits whose signaling operation does not allow use of any other signaling operation code.

J. Ringing Signal Direction (Fig. 10)

4.23 The following ringing signal direction code specifies the direction (relative to the access point) in which a ringing signal is sent during normal circuit operation. Note that the ringing signal appears in the signaling format of the circuit found at the access point (eg, a ringing signal in the SF signaling format appears as an SF tone signal).

Code	Direction
F	Ringing signal (station) outward from F
E	Ringing signal (station) outward from E
B	Ringing signal (station) outward from both F and E
N	No ringing signal.

4.24 The ringing signal direction data is required for screening functions and ringdown private line testing. In the case of an access point on a private line automatic ringdown (PLAR) circuit, a ringing signal is considered to be sent in only one direction even though a loop closure in the opposite direction results in a ringing signal applied to the opposite station by intermediate equipment (Fig. 14).

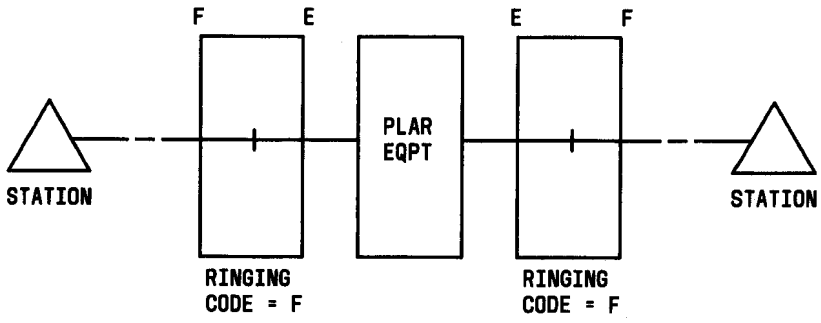


Fig. 14—Example of Ringing Signal Direction Codes for PLAR Circuit

K. Test Impedance (Fig. 10)

4.25 The following 2-character test impedance codes anticipate future, specialized terminating networks. The future networks will be alphabetically coded, and the information for application will be by the positional sequence of the impedance code corresponding to the EF or FE orientation code. Until the networks are available, the SARTS operates with the same impedance level in both circuit directions.

TEST IMPEDANCE	TEST IMPEDANCE IDENTITY CODE	CLR CODE
150 Ohms	1	11
600 Ohms	2	22
900 Ohms	3	33
1200 Ohms	4	44

L. Transmission Level Points (TLPs) (Fig. 10)

4.26 The 5-character (± NN.N) transmission level points (TLPs) information at each access point is standard TLP information. For more information, refer to Section 682-000-011. The SARTS tester requires both a TLP A and a TLP Z at a 2-wire access point to send tones and talk in either direction at the access point.

M. DACS Plant Unit Code (Fig. 11)

4.27 The 3-character alphanumeric plant unit code (PUC) appears in the DACS CLLI code and in the SMAS field (701 line) instead of a SMAS number for the test access. The PUC alphabetic code D should be followed by two numbers which represent the frame number or number of the DACS in a DACS complex (ie, DACS would be numbered 1 to 63, eg, D01, D02, etc).

N. DACS Termination Code (Fig. 11)

4.28 The first 3 digits of the 5-digit DACS termination code correspond to the digroup circuit terminating on DACS (002- 128), and the last 2 digits indicate the time slot on the DS1 signal of 24 time slots indicating the T1 carrier channel.

O. Miscellaneous Column (Fig. 11)

4.29 The miscellaneous column on the CLR may contain several DACS entries. The notation 701 indicates this line contains the 701 access command information used by the tester. The 702 line contains the DACS termination code (data required for the tester 701 command).

5. ORIENTATION GUIDELINES

5.01 This part presents guidelines for orienting access point connectors when installed in a circuit.

> ***Note:*** These guidelines are referred to as rules 1 through 7 when access point locations are shown on standard design documentation per Section 851-XXX-YYY.

5.02 As a general guideline, access connector orientation should usually be consistent with the equipment/facility identification of access points.

Therefore, if possible, the connector should be oriented in a circuit with the facility side facing the facility at each access point. Table C illustrates special situations to which corollary guidelines are applied.

5.03 Table D summarizes the orientation information. The table indicates the orientation code as a function of the circuit elements above or below the access point on a CLR. Also indicated in the lower right corner are the applicable guidelines used to determine the orientation code.

6. ACCESS POINT INFORMATION UNIQUE TO SMAS 4A

A. Information Used For Cross-Connecting

6.01 Connection of SMAS 4A access points must be made by using the following information. Also refer to paragraph 4.05.

SMAS 4A Number and A- or B-Half Assignment

6.02 The assigned access point is identified by its SMAS 4A number and by assignment to either the A- or B-half of the SMAS 4A number (when the circuit is 2-wire). The A- or B-half assignment is indicated by the access configuration code, for example, code 2WA or DFA for an A-half assignment and code 2WB or DFB for a B-half assignment. The main frame location of the assigned SMAS point is designated by front terminal strip stamping of the first three digits of the SMAS 4A number (connector group and control number) as well as other stamping normally provided by local practices.

Access Point Orientation

6.03 See paragraph 4.08 for access point orientation information.

Transmission and Signaling Lead Designations and Reference Transmission Directions

6.04 Refer to Table A for connections to the special service circuit transmission and signaling leads and the transmission direction for each access configuration code.

B. Marking of SMAS 4A Access Points

6.05 Each access point is equipped with a VA lead for marking access points according to the following rules:

(a) If the full access point (A and B halves) is unassigned, the VA lead is left open (Fig. 15).

(b) If only the A- or B-half of an access point is assigned, the entire access point is considered assigned and ground is to be placed on the VA lead, except for access points on circuits considered special types [see (c)].

Note: As the practices of designating special type circuits and their indication on the CLR will vary, individual company policies should be followed.

(c) If the circuit assigned to an access point is considered a special type, −48V battery is supplied through an 11C resistance lamp (SD-90232-01 is typical) or a 13A resistance lamp is connected to the VA lead.

(d) If either the A- or B-half of an access point is assigned to a special type circuit, the VA lead is connected to battery, and both 2-wire circuits are considered to be special types.

C. SMAS 4A Connector Group Assignment Guidelines

6.06 Each SMAS 4A access point is assigned a 5-digit SMAS 4A number. The SMAS 4A number identifies an access point for either two 2-wire circuits, one 4-wire circuit, or one 6-wire circuit. The access points are available in connector groups of one hundred 4-wire (two hundred 2-wire) or one hundred 6-wire points. The test selection of an access point in a connector group prevents the test selection of any of the other ninety-nine 4-wire (one hundred ninety-nine 2-wire) or ninety-nine 6-wire points in that group. The following guidelines are to be used for assignment of access points to connector groups:

(a) Access points that are to be used simultaneously should not be assigned to the same connector group. Exceptions to this rule occur when connector group access points are applied to

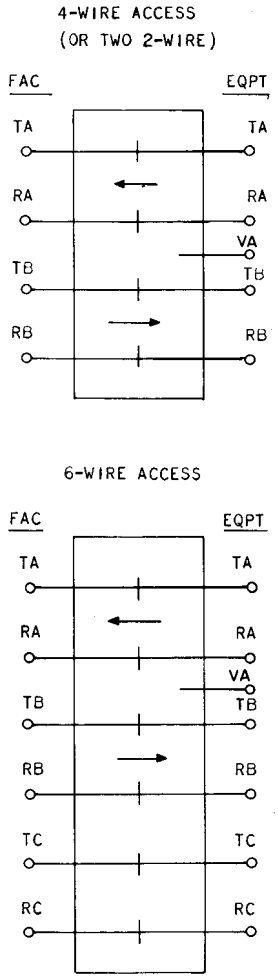


Fig. 15—Schematic Representation of Access Points with VA Lead

circuits in the same configurations and orientation as those used in unitized equipment arrangements as described in Parts 8, 9, and 10. (In these cases, the orientation of the access points ***must*** be consistent with the unitized arrangements.)

(b) A 2-wire access point on a special circuit should not be assigned a SMAS 4A number already assigned to a 2-wire access point on a regular circuit. A special type circuit is one that, when accessed, gives a special indication, eg, the red lamp SPL CKT 0/1 lights in the local access test port (LATP) or the jack-ended test port (JETP). Since both 2-wire circuits assigned to a 4-wire access point will be simultaneously accessible at a test port, companies may elect to assign only one 2-wire special circuit to a 4-wire access point to guard against inadvertent service interruption of the special type circuits. As the method of designating special type circuits will vary, individual company policies should be followed.

(c) The 00 access point in each 4-wire connector group may be optionally equipped with automatic disconnect features for no-test trunks and is, in this case, reserved exclusively for use with no-test access trunks. If, in this case, the 00 point is not used for no-test trunk access, it remains unassigned.

(d) The SMAS 4A numbers 00099 and 00199 are not to be assigned to circuits because they are reserved for SMAS 4A and SARTS 1A maintenance (Sections 667-302-510 and 666-610-500).

(e) Connector groups should be evenly loaded as circuits are added to the system. Loading refers to connector group activity load rather than simply the number of circuits assigned to a group. (See paragraph 6.07 for connector group fill.) Circuits with high maintenance activity should not be assigned to the same connector group but should be dispersed among low-activity groups or groups with a low fill.

6.07 Circuit access blockage has not posed a problem in early SMAS 4A installations. Data gathered on the initial SMAS 4A installations indicate negligible blockage on connector groups which were filled to as much as 86 percent of capacity. Unless unique local conditions exist, connector group fill need not be limited.

7. ACCESS POINT INFORMATION UNIQUE TO SMAS 5A/5B

7.01 The need for special class markings is indicated on the CLR by entries in space allotted for priority classification or it is indicated by local practices. These circuits are referred to as special types in this section. Circuits so designated are marked as special on the maintenance connector by proper placement of a diode or the setting of a rocker switch. [See drawings for type 2 maintenance connector (SD-1C454-01) type 3 maintenance connector (SD-1C605-02) type 4 maintenance connector (SD-1P169-01), and Section 667-000-002 for additional information.]

A. SMAS 5A Assignment Guidelines

7.02 Each SMAS 5A access point is assigned a 5-digit SMAS 5A number. The SMAS 5A number identifies an access point for either two 2-wire circuits, one 4-wire circuit, or one 6-wire circuit. Access points are available in types 3 and 4 maintenance connectors with twenty-four 4-wire (forty-eight 2-wire) or type 2 maintenance connectors with twenty-four 6-wire points (type 3 and type 2 maintenance connectors). The following guidelines are to be used for assigning access points to maintenance connectors.

(a) Access points that are to be used simultaneously should not be assigned to the same maintenance connector except in unitized access point configurations as described in Parts 8, 9, and 10.

(b) A 2-wire access point on a special type circuit should not be assigned a SMAS 5A number already assigned to a 2-wire access point on a regular circuit. A special type circuit is one that, when accessed, gives a special indication, eg, the lamp SPL lights in the local test port (LTP). Since both 2-wire circuits assigned to a 4-wire access point will be simultaneously accessible by the local port, companies may elect to assign only one 2-wire priority circuit to a 4-wire access point to guard against inadvertent service interruption of special circuits.

7.03 The assigned access point is identified by its SMAS 5A number and by assignment to either the A- or B-half of the SMAS 5A number (when the circuit is 2-wire). The A- or B-half assignment is indicated by the access configuration code, eg, code 2WA or DFA for an A-half assignment and code 2WB or DFB for a B-half assignment.

7.04 Refer to Table A for connections to the special service circuit transmission and signaling leads and the transmission direction for each access configuration code.

B. Access Point Information Unique to SMAS 5B

7.05 Each SMAS 5B access point is assigned a 5-digit SMAS 5B number. The SMAS 5B number identifies an access point for either two 2-wire circuits, one 4-wire circuit, or one 6-wire circuit. Two types of access points are available in the SMAS 5B:

(1) in connector groups (first digit 0, 1, 2, or 3) with one hundred 4-wire (two hundred 2-wire) or one hundred 6-wire points, and (2) in maintenance connectors (first digit 5, 6, 7, or 8) with twenty-four 4-wire (forty-eight 2-wire) or twenty-four 6-wire points (type 3 and type 2 maintenance connectors, respectively). The following guidelines are used for assigning access points in the SMAS 5B:

(a) Access points that are to be used simultaneously should not be assigned to the same maintenance connector or connector group except in unitized access point configurations as described in Parts 8, 9, and 10.

(b) A 2-wire access point on a special type circuit should not be assigned a SMAS 5B number already assigned to a 2-wire access point on a regular circuit. A special type circuit is one that, when accessed, gives a special indication, eg, the red lamp SPL lights in the LTP. See paragraph 7.08 for special class marking. Since both 2-wire circuits assigned to a 4-wire access point will be locally, simultaneously accessible, companies may elect to assign only one 2-wire priority circuit to a 4-wire access point to guard against inadvertent service interruption of special type circuits.

7.06 The assigned access point is identified by its SMAS 5B number and by assignment to either the A- or B-half of the SMAS 5B number (when the circuit is 2-wire). The A- or B-half assignment is indicated by the access configuration code, eg, code 2WA or DFA for an A-half assignment and code 2WB or DFB for a B-half assignment.

7.07 Refer to Table A for connections to the special service circuit transmission and signaling leads and the transmission direction for each access configuration code.

7.08 The need for special class markings is indicated on the CLR by entries in space allotted for priority classification or it is indicated by local practices. These circuits are referred to as special types in this section. Circuits so designated are marked as special on maintenance connectors by proper placement of a diode. [See drawings for type 2 maintenance connector (SD-1C454-01) and type 3 maintenance connector (SD-1C605-02) for additional

information.] Each connector group access point is equipped with a VA lead for marking access points according to the following rules:

(a) If the full access point (A and B halves) is not considered special, the VA lead is left open (Fig. 16).

(b) If the circuit assigned to an access point is considered a special type, −48V battery is supplied through an 11C resistance lamp (SD-90232-01 is typical) or a 13A resistance lamp is connected to the VA lead.

(c) If either the A- or B-half of an access point is assigned to a special type circuit, the VA lead is connected to battery, and ***both*** 2-wire circuits are considered to be special types.

8. ACCESS POINT INFORMATION UNIQUE TO METALLIC FACILITY TERMINALS (MFT)

8.01 The MFTs have been designed to provide built-in SMAS access points using the type 3 maintenance connector. The type 3 maintenance connector contains twenty-four 4-wire access points which are similar to MDF-connected SMAS 4A access points, but which in some applications may be configured differently from previous uses of SMAS 4 access points, and which are assigned differently because they are built-in. Refer to Section 332-910-180 for more information on MFTs. One type 3 maintenance connector is required for each set of twenty-four 4-wire (or up to forty-eight 2-wire) MFT circuits.

A. MFT Access Point Configuration

8.02 Table A shows access point configurations of the MFT as a function of the type of MFT plug-in transmission unit. Configurations which are different from those previously used in SMAS 4A are noted by an asterisk (*). These configurations have two new features: (1) a single 4-wire access point may be used to provide two 2-wire access points at different locations on the ***same*** circuit (22A and 22B codes), and (2) a single 4-wire access point may be used to provide a 2-wire access point plus half of a 4-wire access point on the same circuit (24A or 24B and 42A or 42B codes). Table E lists the applicable configuration codes for MFT plug-in units with built-in SMAS access.

8.03 The SARTS access and testing of these arrangements require definition of additional configuration codes for the SARTS access point data. These new configuration codes will be used by the SARTS process controller (PC 1A) to control the testing and displays for the new arrangements. Each half of a 4-wire access point connected to different locations on the same circuit will be tested as if they were independent access points, but they will be ***temporarily*** restricted to being ***remotely*** tested only one point at a time, eg, only one 2-wire point of an MFT 22A or 22B configuration on the same SMAS number will be testable at the 52A test position at one time. If one point is accessed, a SMAS busy will occur when access is attempted at the other point. Local test ports ***will*** be able to simultaneously test these configurations.

8.04 For MFT access point configurations which are the same as for existing MDF-connected configurations, the access point data is the same as previously defined in Part 4.

B. MFT Access Point Assignment

8.05 Because MFT access points are built-in, their assignment becomes part of the circuit equipment assignment. The assignment of the MFT mounting determines the SMAS number, and the assignment of the MFT plug-in units determines the configuration and placement of the access points in the circuit. The access point data is located and formatted on the CLR in the same way as for MDF-connected access points.

8.06 Each operating telephone company must develop an assignment plan for the SMAS numbers according to their practice of numbering plug-in mountings and their assignment of maintenance connectors to the SMAS distribution networks. The plan should consider frames which may not be fully equipped with maintenance connectors. The SMAS numbers should be reserved for the unequipped portions of the frames to achieve a viable and consistent plan. The following guidelines may be used:

(a) A record must be kept of the SMAS numbers associated with plug-in mountings and/or miscellaneously mounted maintenance connector access points.

(b) Even loading of maintenance connectors is not required because of the anticipated low access blockage probability (1 out of 24 within the connectors).

(c) Special type circuits (SSP, SSM, or others) are marked in the maintenance connector by plug-in diodes.

(d) No special SMAS numbers need be reserved for system installation and maintenance. Other means are provided for these functions outside of the normal SMAS numbering range.

(e) Special access points are not reserved for use on no-test trunks because special connectors similar to the SMAS 4 phantom groups are available for use on no-test trunks.

9. ACCESS POINT INFORMATION UNIQUE TO ANALOG FACILITY TERMINALS (AFT)

9.01 The AFTs have been designed to provide built-in SMAS access points using the type 2 maintenance connector. The type 2 maintenance connector contains twenty-four 6-wire access points. See Section 667-000-002 for type 2 maintenance connector information.

A. AFT Access Point Configuration

9.02 The transmission leads (T, R, T1, R1) are accessed at the carrier and signaling interface. The other access point is used for the signaling leads (E&M, A&B, SX&SX1) or 2-wire leads (T,R) on special services extensions. One advantage of this arrangement is that a single SMAS number gives the tester access to the carrier side and the metallic extension side of a 2-wire special services signaling unit (see paragraph 9.06).

9.03 The 4-wire transmission leads may be bridged or split. In the split mode, access measurements can be made in either direction, but only one direction at a time. The signaling access point can also be bridged or split. When the signaling leads are split, both directions are available simultaneously for looping through or splitting.

9.04 Codes MAB or MBA, 46X, and 6AB or 6BA in Table A are examples of AFT access configurations. These examples are representative of A5, A6, N2, and N3 carrier systems.

9.05 The 26X and 46X codes are new configurations which were not previously used in SMAS 4A. The new configurations exist when the C pair is connected to a 2-wire point (T, R) on a circuit and the A and B pairs are connected to a 4-wire point (T, R, T1, R1) ***on the same circuit*** (Fig. 16).

9.06 The 4- and 2-wire portions of the circuit shown in Fig. 16 are tested as if they were independent access points, but remote testing will be ***temporarily*** restricted to testing at only one point at a time, eg, only the 2-wire point (26X code) or the 4-wire point (46X code) on the same SMAS number will be testable at one time. If one point is accessed, a SMAS busy will occur when access is attempted at the other point.

9.07 The configuration in Fig. 16 is not restricted to AFT. It may also be used with MDF-connected SMAS 4A access points or access points in miscellaneously mounted type 2 maintenance connectors. In these cases the orientation of the access points must be consistent with the orientation of the unitized configurations.

Miscellaneously Mounted Type 2 Maintenance Connectors

9.08 The circuit configurations on miscellaneously mounted type 2 connectors should be limited to those 6-wire configurations shown in Table A (26X, 46X, MAB, MBA, CAB, CBA, 6AB and 6BA codes).

B. AFT Access Point Assignment

9.09 Because AFT access points are built-in, their assignment becomes part of the circuit equipment assignment. The connection of the maintenance connector to the SMAS network and the assignment of the AFT mounting determine the SMAS number, and the assignment of the AFT plug-in units determines the configuration and placement of the access points in the circuit. The access point data is located and formatted on the CLR in the same way as for MDF-connected access points.

9.10 Each operating telephone company must develop an assignment plan for the SMAS numbers according to their practice of numbering plug-in mountings and their assignment of maintenance connectors to the SMAS distribution networks. The plan should consider frames which may not be fully equipped with maintenance connectors. The SMAS

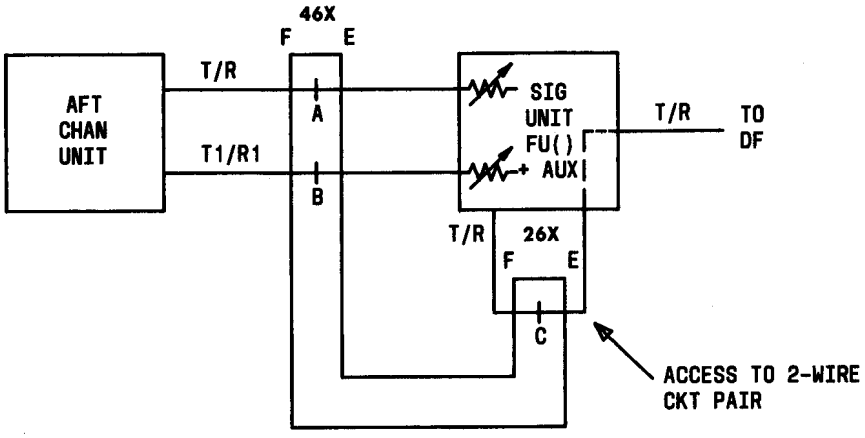


Fig. 16—Example of a 2-Wire AFT Access Configuration

numbers should be reserved for the unequipped portions of the frames to achieve a viable and consistent plan. The following guidelines may be used:

(a) A record must be kept of the SMAS numbers associated with plug-in mountings and/or miscellaneously mounted maintenance connector access points.

(b) Even loading of maintenance connectors is not required because of the anticipated low access blockage probability (1 out of 24 within the connectors).

(c) Special type circuits (SSP, SSM, or others) are marked in the maintenance connector by plug-in diodes.

(d) No special SMAS numbers need be reserved for system installation and maintenance. Other means are provided for these functions outside of the normal SMAS numbering range.

(e) Special access points are not reserved for use on no-test trunks because phantom maintenance connectors similar to the SMAS 4 phantom groups are available for use for no-test trunk access points.

10. ACCESS POINT INFORMATION UNIQUE TO DIGITAL FACILITY TERMINALS (DFT)

10.01 The DFTs have been designed to provide built-in SMAS access points using the type 2 maintenance connector. The type 2 maintenance connector contains twenty-four 6-wire access points. See Section 667-000-002 for type 2 maintenance connector information.

A. DFT Access Point Configuration

10.02 Figure 17 is an example of a DFT access configuration. This example is representative of D3 carrier systems.

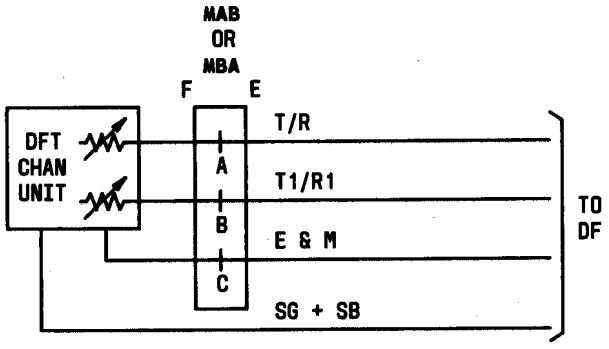


Fig. 17—Example of a 4-Wire E&M DFT Access Configuration

10.03 New DFTs are available with types 2, 3, or 4 maintenance connectors. These designs use the D4 channel banks. Access point information for these terminals is shown in Fig. 18 and 19.

B. DFT Access Point Assignment

10.04 Because DFT access points are built-in, their assignment becomes part of the circuit equipment assignment: the connection of the maintenance connectors to the SMAS network and the assignment of the DFT mounting determine the SMAS number, and the assignment of the DFT plug-in units determines the configuration and placement of the access points in the circuit. The access point data is located and formatted on the CLR in the same way as for MDF-connected access points.

10.05 Each operating telephone company must develop an assignment plan for the SMAS numbers according to their practice of numbering plug-in mountings and their assignment of maintenance connectors to the SMAS distribution networks. The plan should consider frames which may not be fully equipped with maintenance connectors. The SMAS numbers should be reserved for the unequipped portions of the frames to achieve a viable and consistent plan. The following guidelines may be used:

(a) A record must be kept of the SMAS numbers associated with plug-in mountings and/or miscellaneously mounted maintenance connector access points.

(b) Even loading of maintenance connectors is not required because of the anticipated low access blockage probability (1 out of 24 within the connectors).

(c) Special type circuits (SSP, SSM, or others) are marked in the maintenance connector by plug-in diodes.

(d) No special SMAS numbers need be reserved for system installation and maintenance. Other means are provided for these functions outside of the normal SMAS numbering range.

(e) Special access points are not reserved for use on no-test trunks because special phantom maintenance connectors similar to the SMAS 4 phantom groups are available for use for no-test trunk access points.

11. ACCESS POINT INFORMATION UNIQUE TO THE DIGITAL ACCESS AND CROSS-CONNECTION SYSTEM (DACS)

11.01 The DTAC has been designed to provide four different SMAS access points to test circuits appearing on DACS. Section 667-303-112 provides a description of the DTAC.

11.02 The DTAC provides the following four different interfaces:

(1) 4-wire transmission-only voice frequency circuits (configuration 4AB, 4BA)

(2) 6-wire voice frequency circuits with 2-state signaling (configuration MAB, MBA)

(3) 8-wire voice frequency circuits with 4-state signaling (configuration QAB, QBA)

(4) 4-wire digital data DSOA circuits (configuration DAB, DBA)

11.03 As illustrated in Fig. 11, a third line of access point information is provided on the CLR for DACS. The system maintenance manager utilizes the information to construct DACS access point tables for each configuration. This information is necessary to perform remote test access from the 52A test position. Section 666-611-102 provides the method for constructing the tables utilizing side dependant data.

▶12. UNITIZED FACILITY TERMINAL

12.01 The unitized facility terminal (UFT) includes retrofitted maintenance connectors as well as frames equipped as unitized facility terminals. Access points in UFTs are permanent and integral parts of this equipment configuration and are not assignable in the sense of cross-connections but are assigned in fixed relationships with the associated UFT equipment.

12.02 Tables E through J contain a summary of SMAS access point identification and testing data for unitized configurations and line entry information for CLR items D, E, H, I, J, K and the TLP (Fig. 10). Figure 23 is referenced in the tables to illustrate common circuit applications. Should the units be used in less common arrangements, such as MRT

with the B side toward the A end of the CLR or where the definition of A end does not conform with the conventions shown in Fig. 23, the codes may need to be reversed (eg, EF to FE, MAB to MBA).◀

13. IDENTIFICATION AND TESTING DATA APPLICATION

13.01 Figures 21 and 22 illustrate a comparison of circuit layout record identification and testing data to a circuit layout.

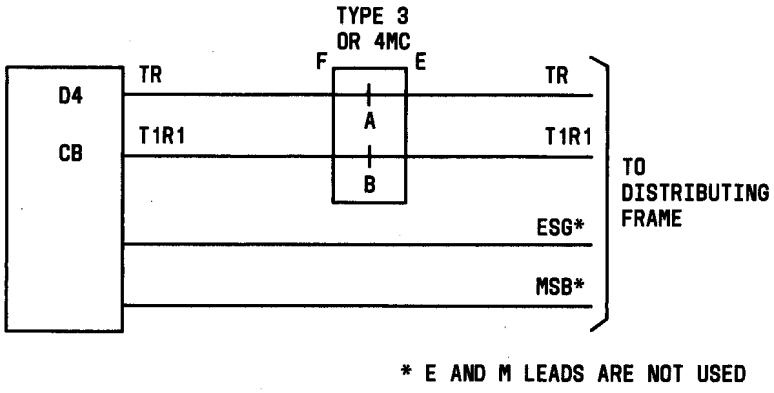


Fig. 18—DFT Access Points

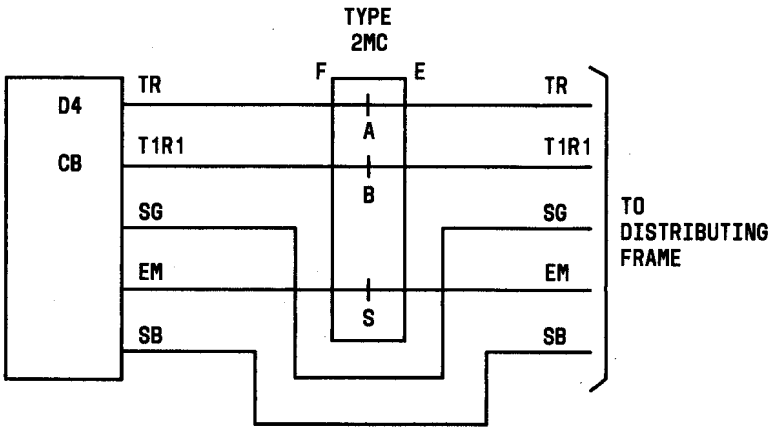


Fig. 19—DFT Access Points

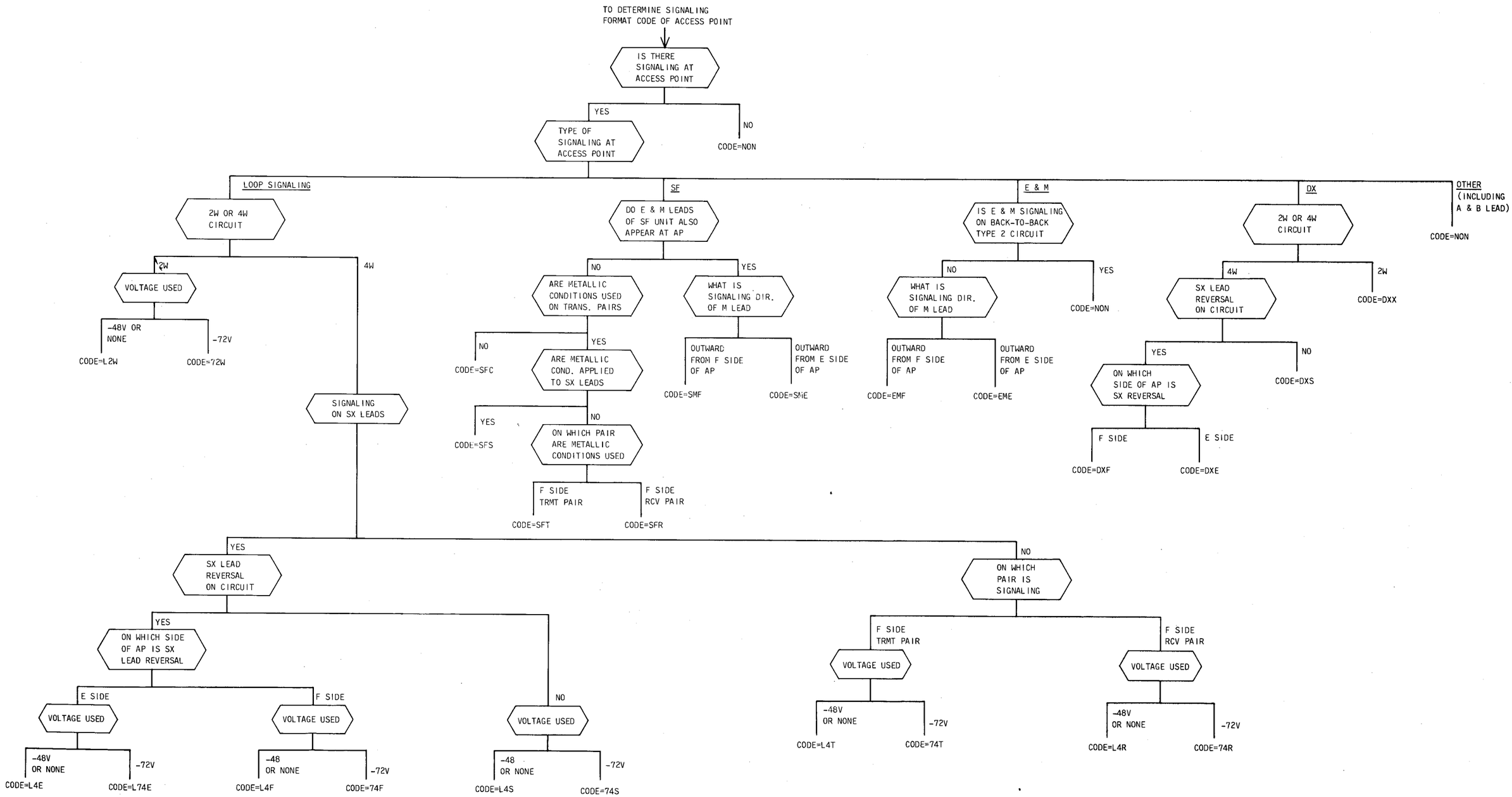


Fig. 20—Flowchart of Signaling Format Code

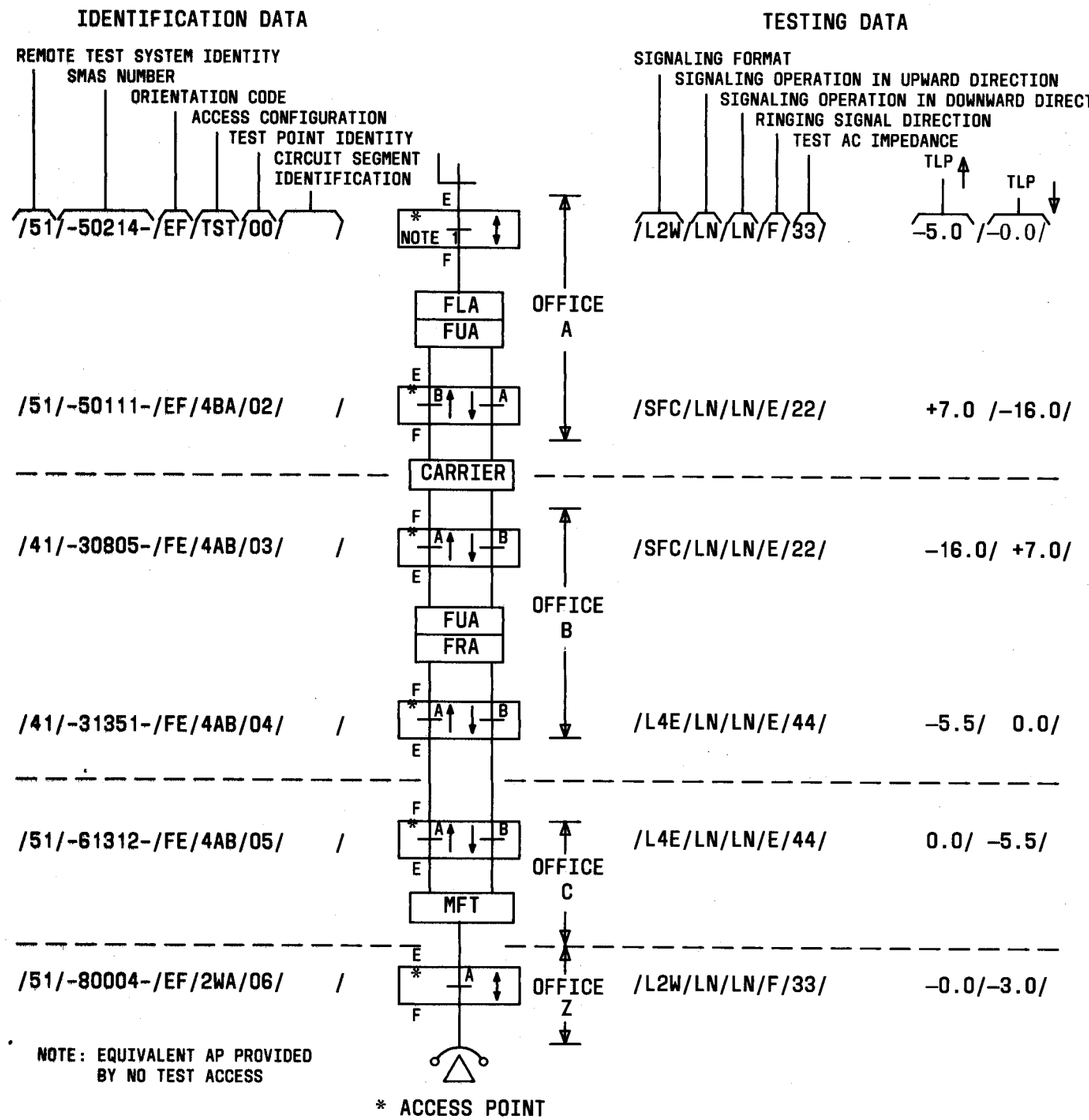


Fig. 21—Example of Identification Testing Data

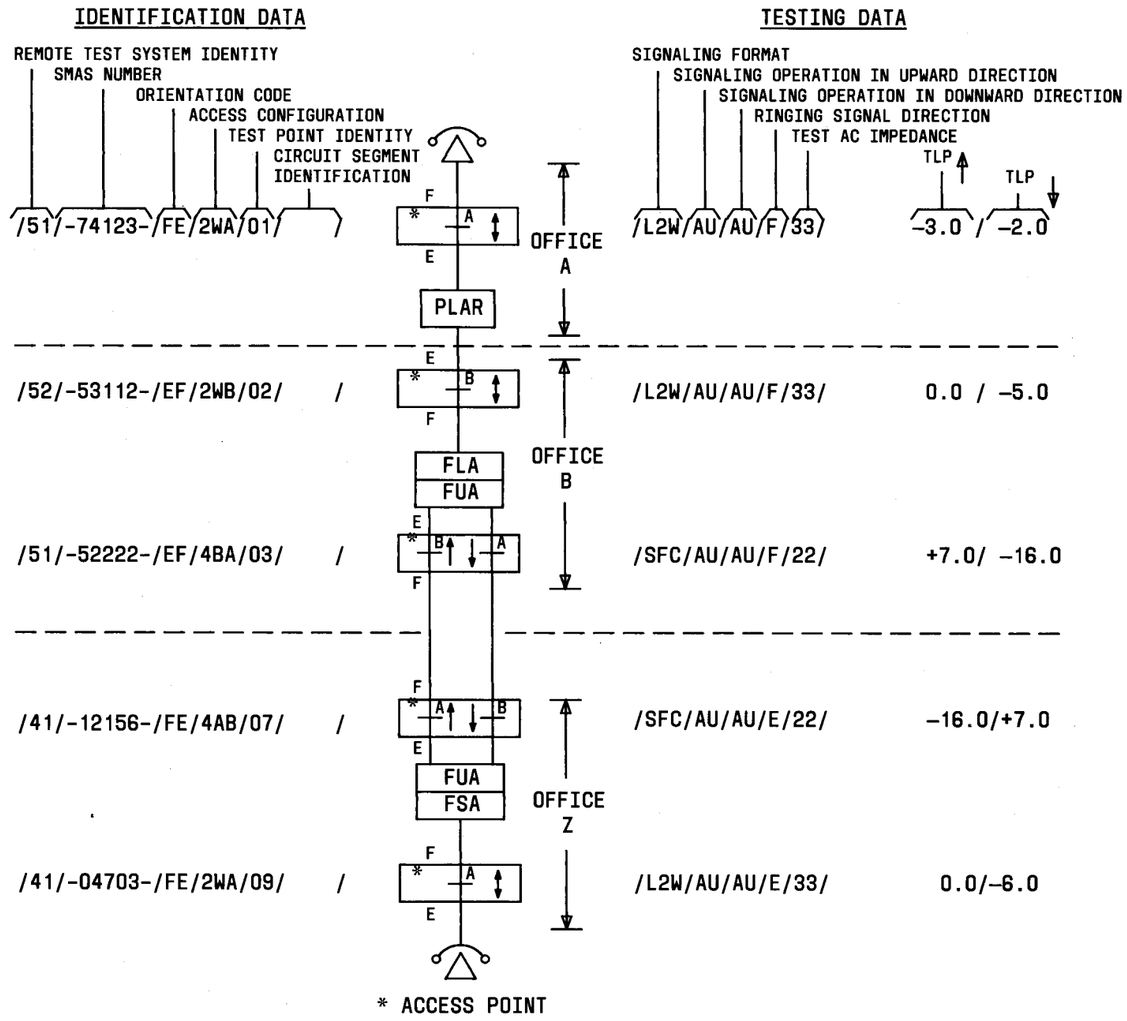
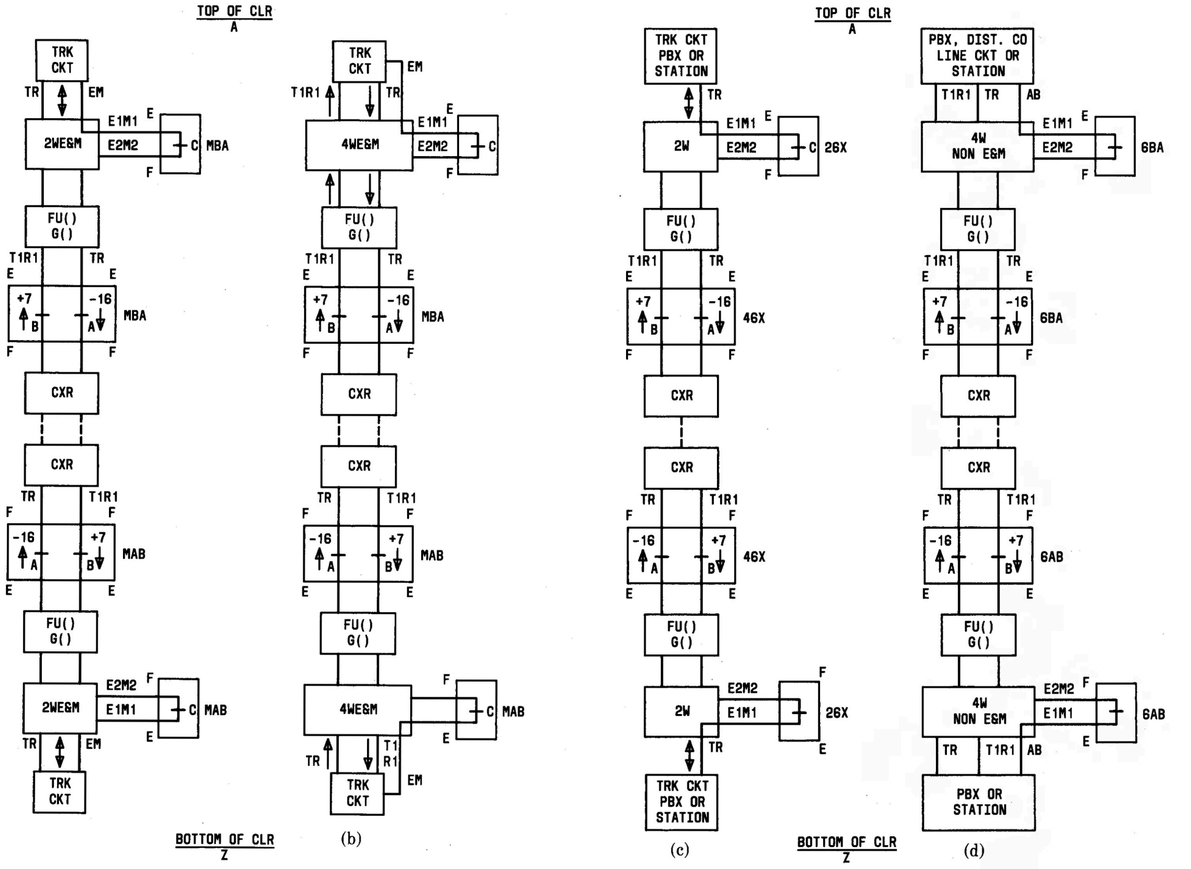


Fig. 22—Example of Identification Testing Data



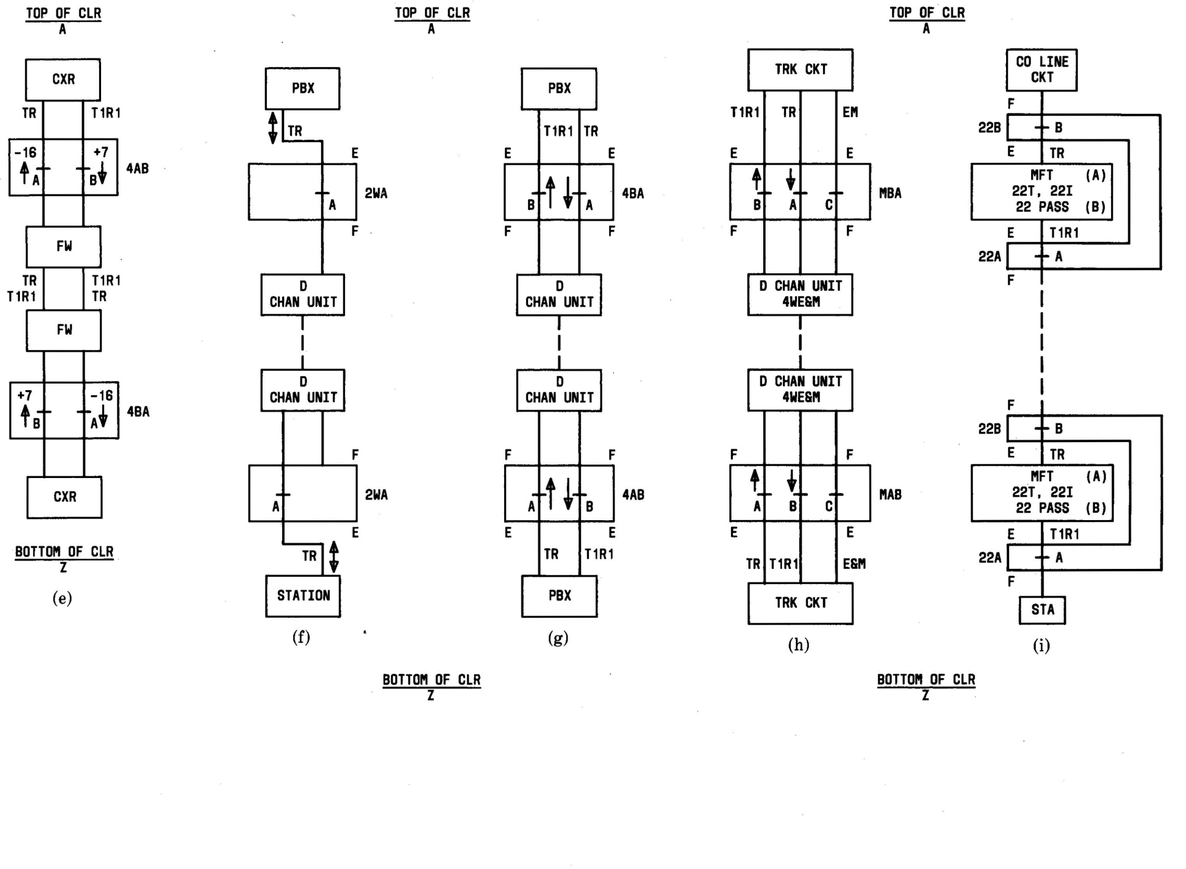


Fig. 23—Unitized Facility Terminal Circuit Application (Sheet 1 of 2)

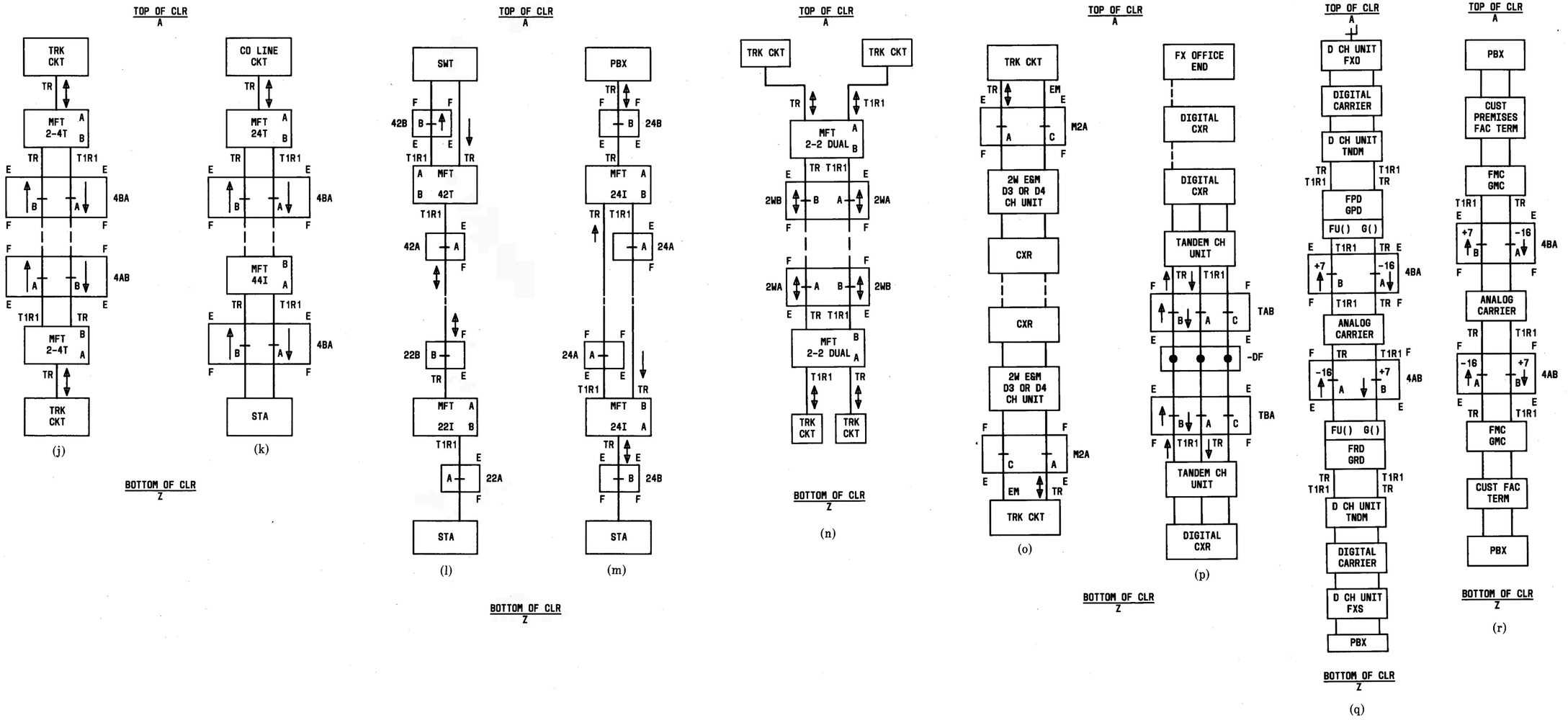
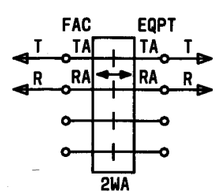
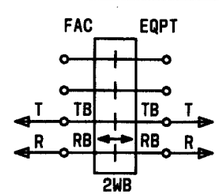


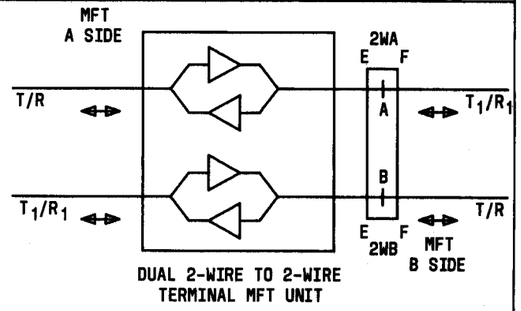
Fig. 23—Unitized Facility Terminal Circuit Application (Sheet 2 of 2)

TABLE A
ACCESS CONFIGURATION CODES

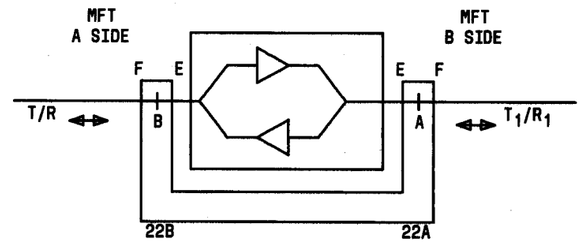
CODE	ACCESS CONFIGURATION
	1 WIRE TYPES
1TA	SINGLE WIRE, TIP, ON A HALF OF ACCESS CONNECTOR
1RA	SINGLE WIRE, RING, ON A HALF OF ACCESS CONNECTOR
1TB	SINGLE WIRE, TIP, ON B HALF OF ACCESS CONNECTOR
1RB	SINGLE WIRE, RING, ON B HALF OF ACCESS CONNECTOR
	2 WIRE TYPES
2WA	2-WIRE ON A-HALF OF ACCESS CONNECTOR
2WB	2-WIRE ON B-HALF OF ACCESS CONNECTOR
22A	THE A-HALF OF A 4-WIRE ACCESS CONNECTOR WHEN THE 4-WIRE ACCESS CONNECTOR IS ASSIGNED TO TWO 2-WIRE POINTS ON THE SAME CIRCUIT.
22B	THE B-HALF OF A 4-WIRE ACCESS CONNECTOR WHEN THE 4-WIRE ACCESS CONNECTOR IS ASSIGNED TO TWO 2-WIRE POINTS ON THE SAME CIRCUIT.
24A	THE A-HALF OF A 4-WIRE ACCESS CONNECTOR WHEN THE 4-WIRE ACCESS CONNECTOR IS ASSIGNED TO A 2-WIRE POINT AND HALF OF A 4-WIRE POINT ON THE SAME CIRCUIT. THE A-HALF OF THE ACCESS CONNECTOR MUST BE ASSIGNED TO THE TRANSMIT PAIR OF THE 4-WIRE POINT ON THE CIRCUIT (TRANSMISSION DIRECTION E TO F).
24B	THE B-HALF OF A 4-WIRE ACCESS CONNECTOR WHEN THE 4-WIRE ACCESS CONNECTOR IS ASSIGNED TO A 2-WIRE POINT AND HALF OF A 4-WIRE POINT ON THE SAME CIRCUIT. THE B-HALF OF THE ACCESS CONNECTOR MUST BE ASSIGNED TO THE 2-WIRE POINT ON THE CIRCUIT.



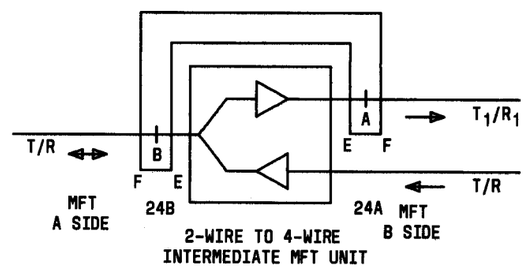




DUAL 2-WIRE TO 2-WIRE
TERMINAL MFT UNIT



2-WIRE TO 2-WIRE TERMINAL OR
INTERMEDIATE MFT UNIT



2-WIRE TO 4-WIRE
INTERMEDIATE MFT UNIT

TABLE A (Contd)

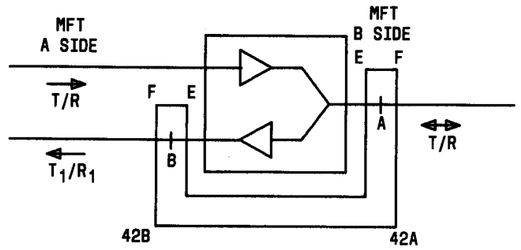
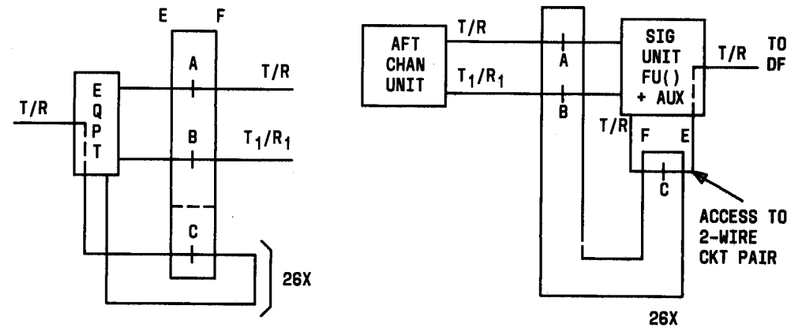
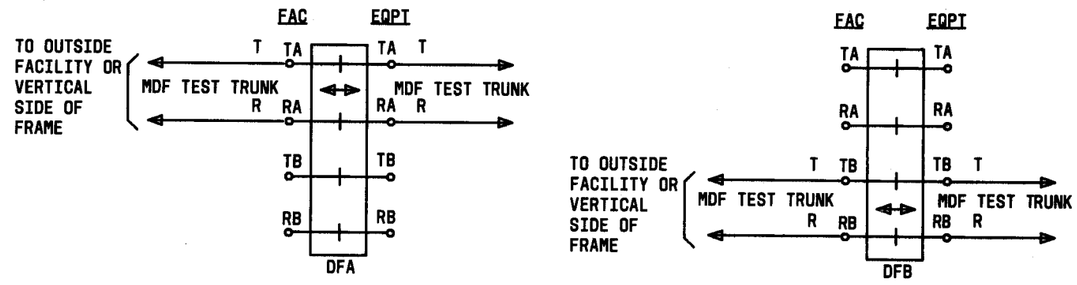
CODE	ACCESS CONFIGURATION
	2-WIRE TYPES (CONTD)
42A	THE A-HALF OF A 4-WIRE ACCESS CONNECTOR WHEN THE 4-WIRE ACCESS CONNECTOR IS ASSIGNED TO A 2-WIRE POINT AND HALF OF A 4-WIRE POINT ON THE SAME CIRCUIT. THE A-HALF OF THE ACCESS CONNECTOR MUST BE ASSIGNED TO THE 2-WIRE POINT ON THE CIRCUIT.
42B	THE B-HALF OF A 4-WIRE ACCESS CONNECTOR WHEN THE 4-WIRE ACCESS CONNECTOR IS ASSIGNED TO A 2-WIRE POINT AND HALF OF A 4-WIRE POINT ON THE SAME CIRCUIT. THE B-HALF OF THE ACCESS CONNECTOR MUST BE ASSIGNED TO THE TRANSMIT PAIR OF THE 4-WIRE POINT ON THE CIRCUIT (TRANSMISSION DIRECTION E TO F).
	 4-WIRE TO 2-WIRE TERMINAL OR INTERMEDIATE MFT UNIT
26X	THE C PAIR OF A 6-WIRE ACCESS CONNECTOR WHEN THE C PAIR IS LOCATED AT A 2-WIRE POINT ON A CIRCUIT AND THE A AND B PAIRS OF THE ACCESS CONNECTOR ARE LOCATED AT A 4-WIRE POINT ON THE SAME CIRCUIT.
	
DFA	DISTRIBUTING FRAME TEST TRUNK ON A-HALF OF ACCESS CONNECTOR
DFB	DISTRIBUTING FRAME TEST TRUNK ON B-HALF OF ACCESS CONNECTOR
	

TABLE A (Contd)

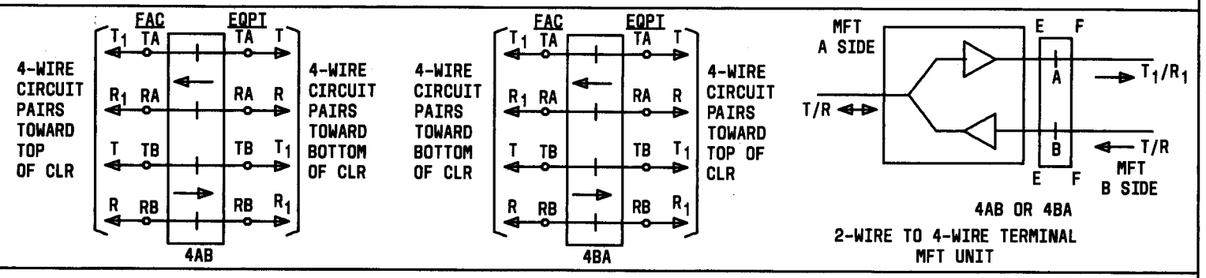
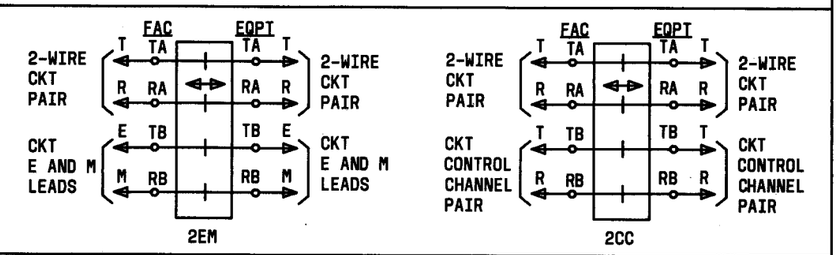
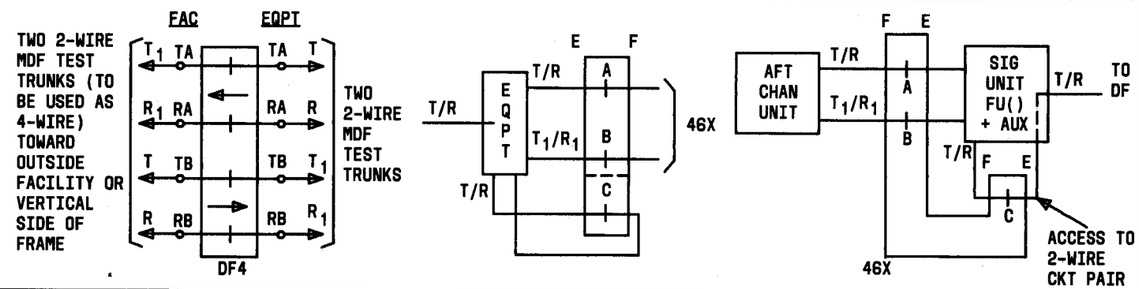
CODE	ACCESS CONFIGURATION
4AB 4BA	4-WIRE TYPES 4-WIRE WITH FE ORIENTATION CODE 4-WIRE WITH EF ORIENTATION CODE 
2EM 2CC	2-WIRE WITH E&M LEADS 2-WIRE WITH CONTROL CHANNEL 
DF4 46X	4-WIRE DISTRIBUTING FRAME TEST TRUNK (TWO 2-WIRE TRUNKS TO BE USED AS 4-WIRE). THE A AND B PAIRS OF A 6-WIRE ACCESS CONNECTOR WHEN THE A AND B PAIRS OF THE ACCESS CONNECTOR ARE LOCATED AT A 4-WIRE POINT ON A CIRCUIT AND THE C PAIR OF THE CONNECTOR IS LOCATED AT A 2-WIRE POINT ON THE SAME CIRCUIT. 

TABLE A (Contd)

CODE	ACCESS CONFIGURATION
DAB	4-WIRE ACCESS POINT WITH FE ORIENTATION CODE AT THE DSOA LEVEL OF A DDS CIRCUIT. (THIS TYPE OF ACCESS POINT REQUIRES THE USE OF A TYPE 3 OR TYPE 4 MAINTENANCE CONNECTOR WITH Y OPTION).
DBA	4-WIRE ACCESS POINT WITH EF ORIENTATION CODE AT THE DSOA LEVEL OF A DDS CIRCUIT. (THIS TYPE OF ACCESS POINT REQUIRES THE USE OF A TYPE 3 OR TYPE 4 MAINTENANCE CONNECTOR WITH Y OPTION).
QAB	8-WIRE ACCESS POINT WITH FE ORIENTATION
QBA	8-WIRE ACCESS POINT WITH EF ORIENTATION (SEE FX APPLICATION)

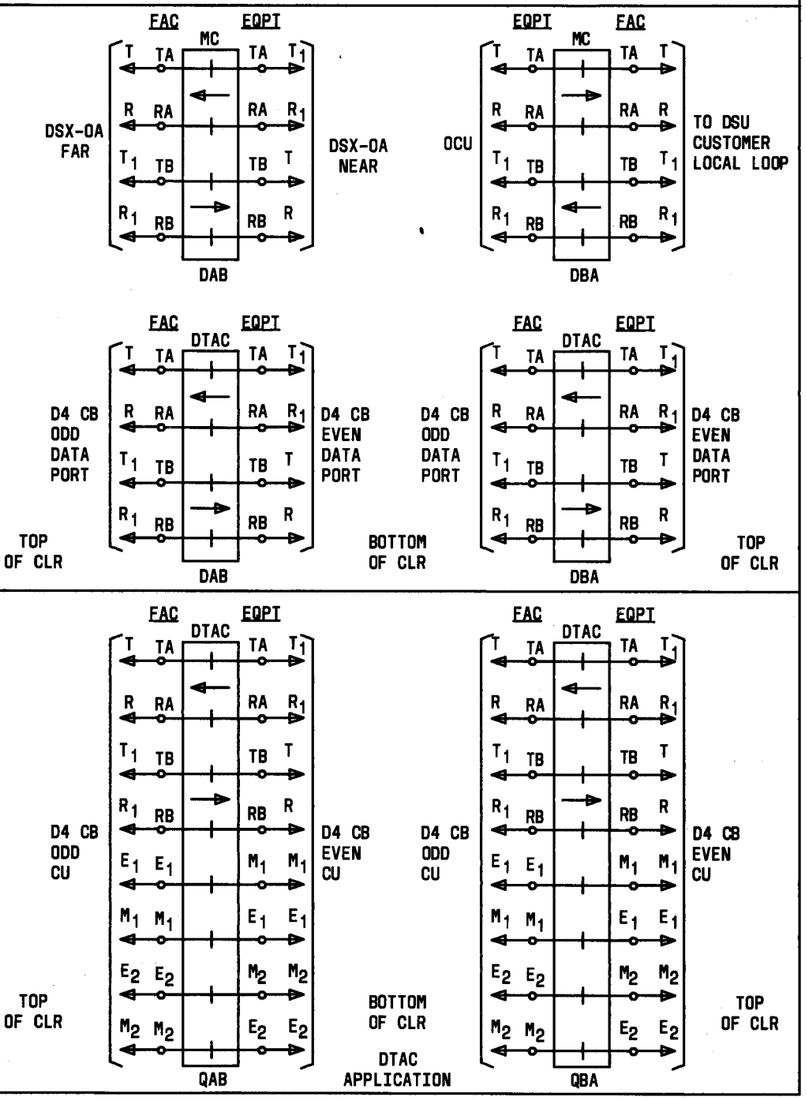
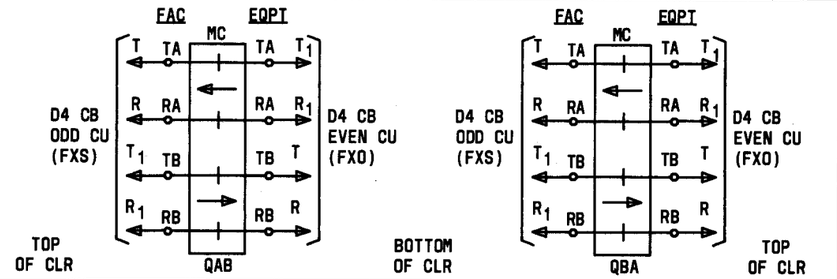
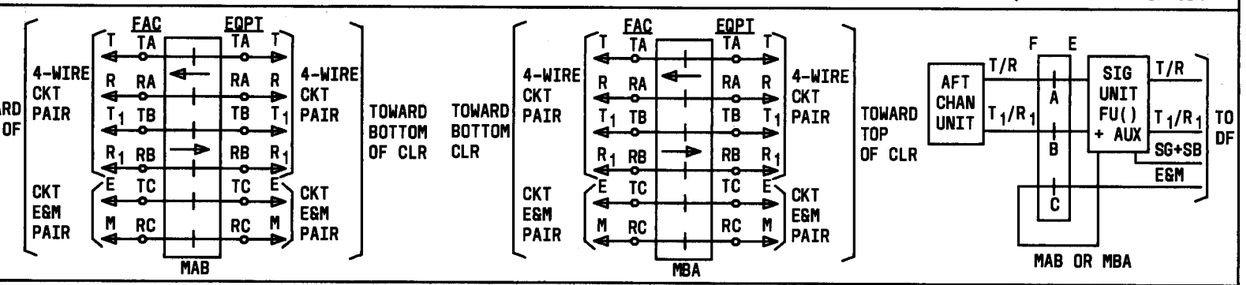


TABLE A (Contd)

CODE	ACCESS CONFIGURATION
QAB QBA	DACS ACCESS FOR FX CIRCUITS WITH FE ORIENTATION (SWITCH AT TOP OF CLR) DACS ACCESS FOR FX CIRCUITS WITH EF ORIENTATION (STATION AT TOP OF CLR)
MAB MBA	6-WIRE TYPES 4-WIRE E&M WITH FE ORIENTATION CODE. 4-WIRE E&M WITH EF ORIENTATION CODE.
CAB CBA	4-WIRE WITH CONTROL CHANNEL, FE ORIENTATION CODE. 4-WIRE WITH CONTROL CHANNEL, EF ORIENTATION CODE.





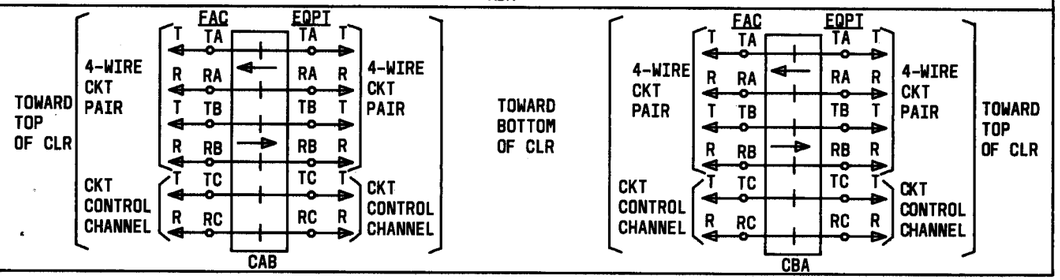
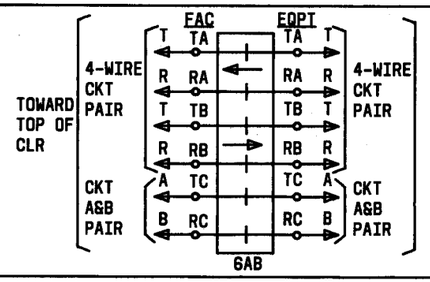
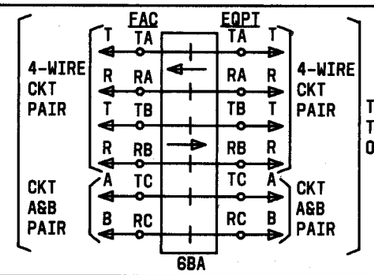
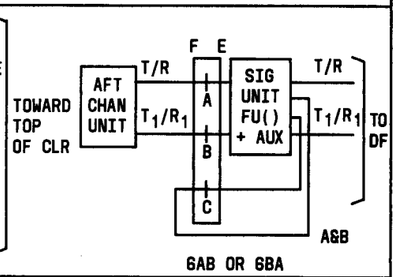


TABLE A (Contd)

CODE	ACCESS CONFIGURATION
6AB 6BA	4-WIRE A&B WITH FE ORIENTATION CODE. 4-WIRE A&B WITH EF ORIENTATION CODE.







TST	SPECIAL TYPE ACCESS POINT ON NO-TEST TRUNK

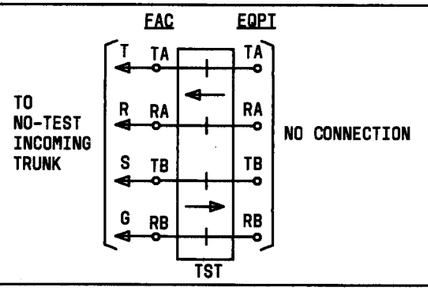


TABLE B

SIGNALING FORMAT

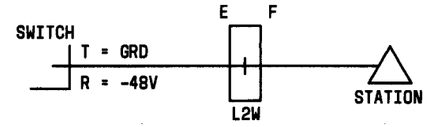
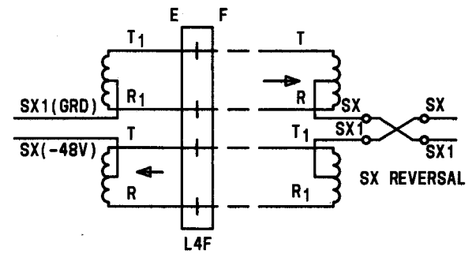
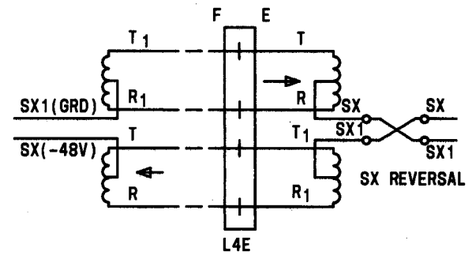
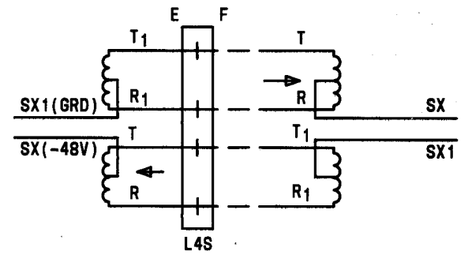
CODE	FORMAT
L2W	A 2-WIRE CIRCUIT USING -48 VDC BATTERY FOR TALKING AND SIGNALING AND/OR 20 HZ AC VOLTAGE FOR RINGING. SIGNALING IS DONE BY OPENINGS AND CLOSINGS OF THE CIRCUIT CONDUCTORS. 
L4F	A 4-WIRE CIRCUIT USING SIMPLEXED -48 VDC BATTERY FOR TALKING AND SIGNALING AND/OR 20 HZ AC VOLTAGE FOR RINGING. A SIMPLEX LEAD REVERSAL EXISTS ON THE CIRCUIT BETWEEN THE FACILITY (F) SIDE OF THE ACCESS POINT AND THE CIRCUIT TERMINATION. 
L4E	A 4-WIRE CIRCUIT USING SIMPLEXED -48 VDC BATTERY FOR TALKING AND SIGNALING AND/OR 20 HZ AC VOLTAGE FOR RINGING. A SIMPLEX LEAD REVERSAL EXISTS ON THE CIRCUIT BETWEEN THE EQUIPMENT (E) SIDE OF THE ACCESS POINT AND THE CIRCUIT TERMINATION. 
L4S	A 4-WIRE CIRCUIT USING SIMPLEXED -48 VDC BATTERY FOR TALKING AND SIGNALING AND/OR 20 HZ AC VOLTAGE FOR RINGING. NO SIMPLEX LEAD REVERSALS EXIST AT ANY POINT ON THE CIRCUIT. 

TABLE B (Contd)

SIGNALING FORMAT

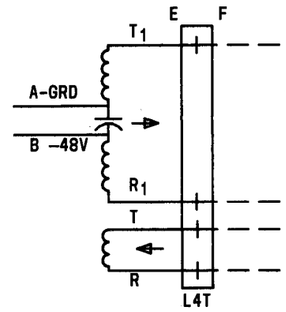
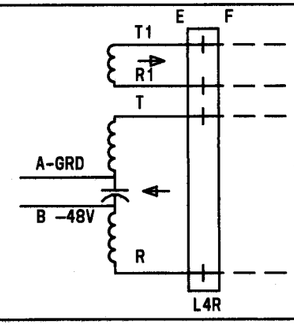
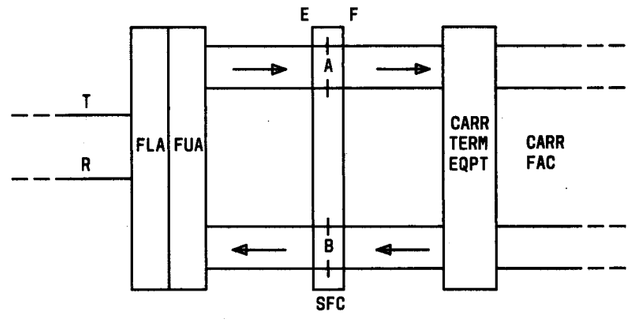
CODE	FORMAT
L4T	A 4-WIRE CIRCUIT USING –48 VDC BATTERY AND/OR 20 HZ AC VOLTAGE FOR RINGING ON THE CIRCUIT PAIR WHOSE TRANSMISSION DIRECTION IS OUTWARD FROM THE F SIDE OF THE ACCESS POINT. 
L4R	A 4-WIRE CIRCUIT USING –48 VDC BATTERY AND/OR 20 HZ AC VOLTAGE FOR RINGING ON THE CIRCUIT PAIR WHOSE TRANSMISSION DIRECTION IS INWARD FROM THE F SIDE OF THE ACCESS POINT. 
72W	THE SAME AS L2W EXCEPT USING –72 VDC.
74F	THE SAME AS L4F EXCEPT USING –72 VDC.
74E	THE SAME AS L4E EXCEPT USING –72 VDC.
74S	THE SAME AS L4S EXCEPT USING –72 VDC.
74T	THE SAME AS L4T EXCEPT USING –72 VDC.
74R	THE SAME AS L4R EXCEPT USING –72 VDC.
SFC	A 4-WIRE CIRCUIT AT A CARRIER SYSTEM INTERFACE USING SINGLE FREQUENCY (SF) SIGNALING AT THE ACCESS POINT. NEITHER DC NOR LOOP CONDITIONS ARE USED ON THE CIRCUIT TRANSMISSION PAIRS AND THE ACCESS POINT IS NOT AT AN INTERFACE WITH METALLIC FACILITIES (SEE SFD CODE FOR METALLIC FACILITIES INTERFACE) THE ACCESS POINT COULD BE BETWEEN THE CARRIER SYSTEM AND ITS SIGNAL EQUIPMENT OR BETWEEN TWO BACK-TO-BACK CARRIER SYSTEMS. 

Table B (Contd)

TABLE B (Contd)

SIGNALING FORMAT

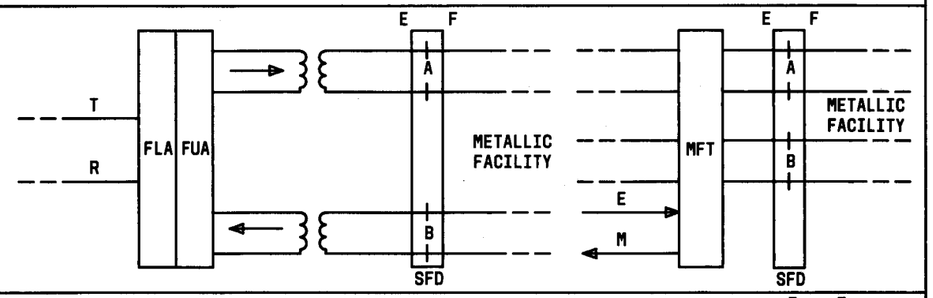
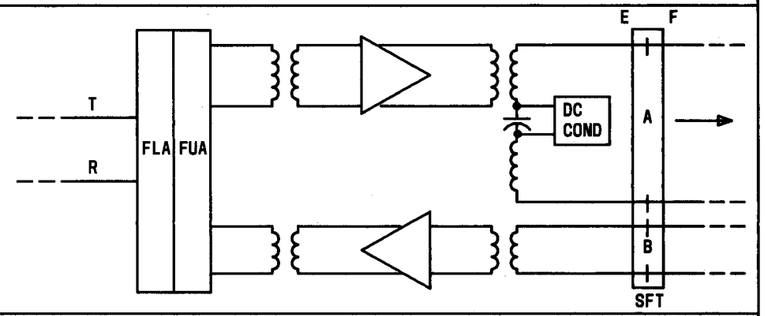
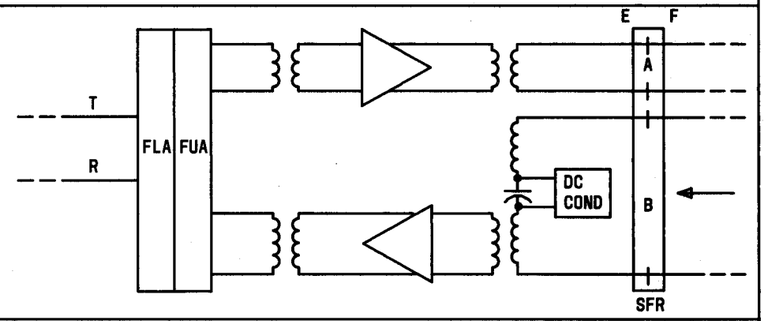
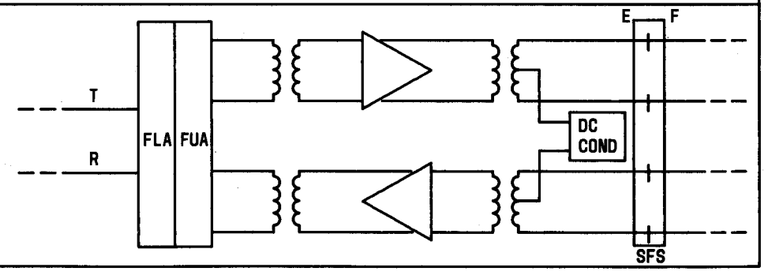
CODE	FORMAT
SFD	A 4-WIRE METALLIC CIRCUIT USING SF SIGNALING WITH NEITHER DC NOR LOOP CONDITIONS USED ON THE TRANSMISSION PAIRS. 
SFT	A 4-WIRE METALLIC CIRCUIT USING SF SIGNALING AND WITH DC OR LOOP CONDITIONS ON THE ACCESS POINT PAIR WHOSE TRANSMISSION DIRECTION IS OUTWARD FROM THE F SIDE OF THE ACCESS POINT (A PAIR). THE METALLIC CIRCUIT CONDITIONS MAY BE USED FOR CONTROLLING LOOP AROUND OR OTHER FUNCTIONS. 
SFR	A 4-WIRE METALLIC CIRCUIT USING SF SIGNALING AND WITH DC OR LOOP CONDITIONS ON THE ACCESS POINT PAIR WHOSE TRANSMISSION DIRECTION IS INWARD ON THE F-SIDE OF THE ACCESS POINT (B PAIR). 
SFS	A 4-WIRE METALLIC CIRCUIT USING SF SIGNALING AND WITH SIMPLEXED METALLIC CONDITIONS ON THE CIRCUIT PAIRS. 

Table B (Contd)

TABLE B (Contd)
SIGNALING FORMAT

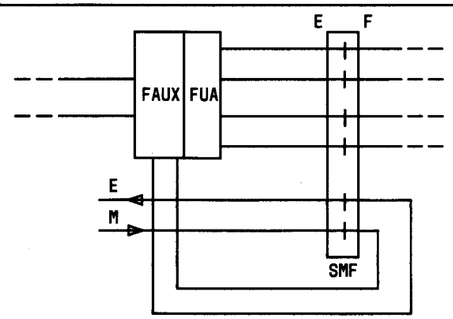
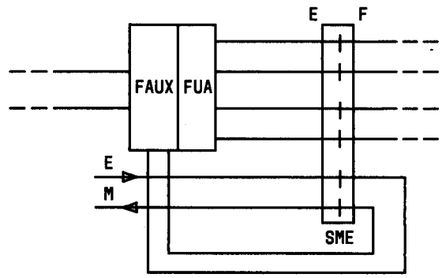
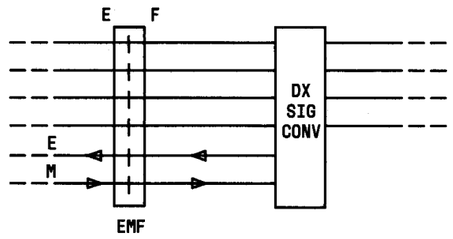
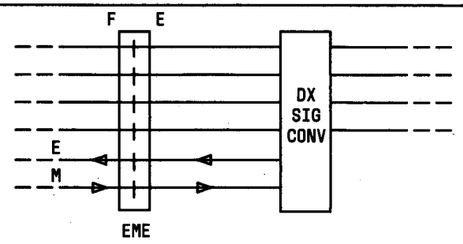
CODE	FORMAT
SMF	A CIRCUIT WITH BOTH SF SIGNALING AND E&M SIGNALING APPEARING AT THE ACCESS POINT. THE M-LEAD SIGNALING DIRECTION IS OUTWARD FROM THE FACILITY (F) SIDE OF THE ACCESS POINT. 
SME	A CIRCUIT WITH BOTH SF SIGNALING AND E&M SIGNALING APPEARING AT THE ACCESS POINT. THE M-LEAD SIGNALING DIRECTION IS OUTWARD FROM THE EQUIPMENT (E) SIDE OF THE ACCESS POINT. 
EMF	A CIRCUIT USING E&M SIGNALING AT THE ACCESS POINT. THE M-LEAD SIGNALING DIRECTION IS OUTWARD FROM THE F SIDE OF THE ACCESS POINT. 
EME	A CIRCUIT USING E&M SIGNALING AT THE ACCESS POINT. THE M-LEAD SIGNALING DIRECTION IS OUTWARD FROM THE E SIDE OF THE ACCESS POINT. 

TABLE B (Contd)

SIGNALING FORMAT

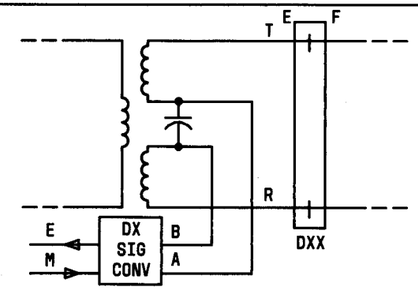
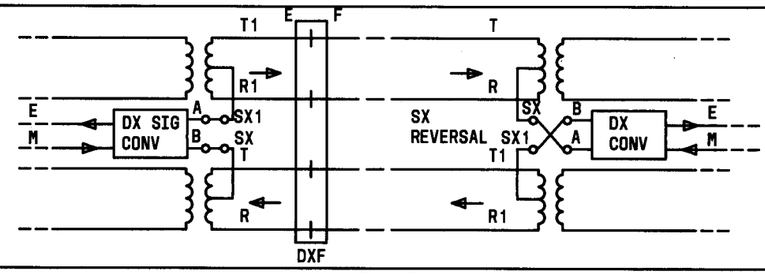
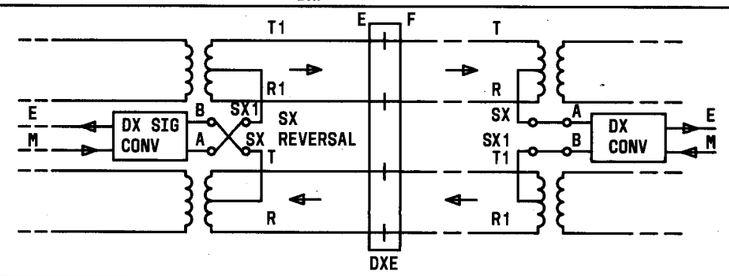
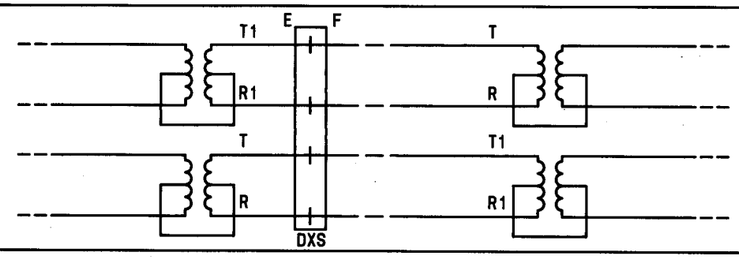
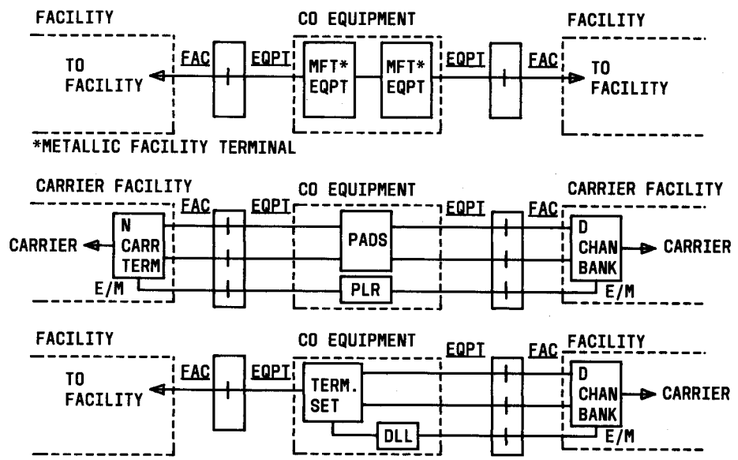
CODE	FORMAT
DXX	A 2-WIRE CIRCUIT USING DX SIGNALING AT THE ACCESS POINT. 
DXF	A 4-WIRE CIRCUIT USING SIMPLEXED DX SIGNALING AT THE ACCESS POINT. A SIMPLEX LEAD REVERSAL EXITS ON THE CIRCUIT BETWEEN THE FACILITY (F) SIDE OF THE ACCESS POINT AND THE CIRCUIT TERMINATION. 
DXE	A 4-WIRE CIRCUIT USING SIMPLEXED DX SIGNALING AT THE ACCESS POINT. A SIMPLEX LEAD REVERSAL EXISTS ON THE CIRCUIT BETWEEN THE EQUIPMENT (E) SIDE OF THE ACCESS POINT AND THE CIRCUIT TERMINATION. 
DXS	A 4-WIRE CIRCUIT USING SIMPLEXED DX SIGNALING AT THE ACCESS POINT. THERE ARE NO SIMPLEX REVERSALS AT ANY POINT ON THE CIRCUIT. 
NON	ANY CIRCUIT ON WHICH NO SIGNALING APPEARS, OR A CIRCUIT TO WHICH NO OTHER CODE APPLIES. AN EXAMPLE OF A CASE FOR WHICH NO EXISTING CODE APPLIES IS A CIRCUIT WITH TYPE 2 E & M SIGNALING BETWEEN BACK-TO-BACK TRUNK CIRCUITS OR BACK-TO-BACK SIGNALING CIRCUITS.	

TABLE C
GUIDELINES FOR ORIENTING ACCESS POINTS

GUIDELINE	ORIENTATION GUIDELINES
1	AT INTERFACES OF FACILITIES WITH CENTRAL OFFICE EQUIPMENT, THE FAC SIDE SHOULD FACE THE FACILITY EXCEPT AS NOTED IN RULES 2-7.
2	ACCESS POINTS AT SINGLE-FREQUENCY (SF) EQUIPMENT INTERFACES ARE PROVIDED AS FOLLOWS: (A) ON THE FACILITY (LINE) SIDE OF SF EQUIPMENT, FAC SHOULD FACE AWAY FROM THE SF EQUIPMENT. (B) ON THE EQUIPMENT (DROP) SIDE OF SF EQUIPMENT FAC SHOULD FACE TOWARD THE SF EQUIPMENT EXCEPT WHEN DIRECTLY INTERFACING A DROP SIDE CARRIER FACILITY; IN THAT CASE FAC SHOULD FACE THE CARRIER

GUIDELINE 1 = CO EQPT - FAC INTERFACES



GUIDLINE 2 - SF EQUIPMENT

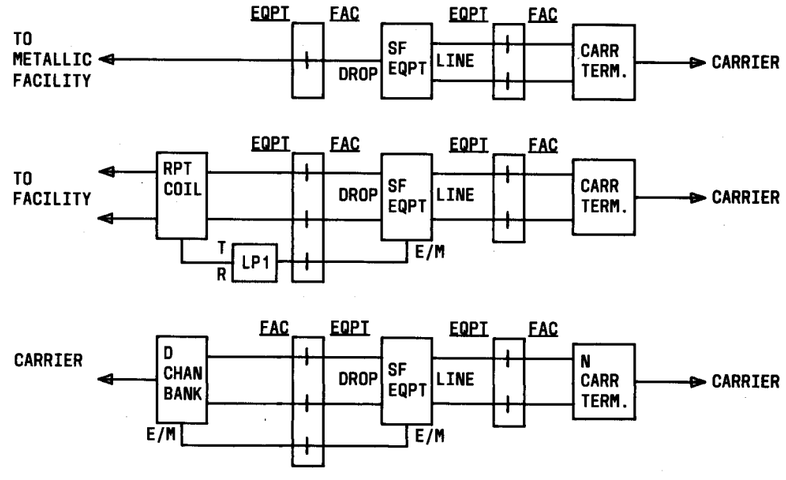
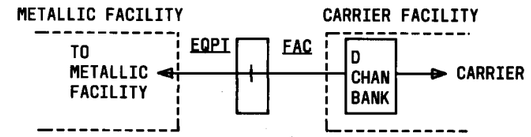


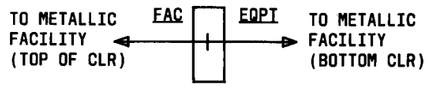
TABLE C (Contd)
GUIDELINES FOR ORIENTING ACCESS POINTS

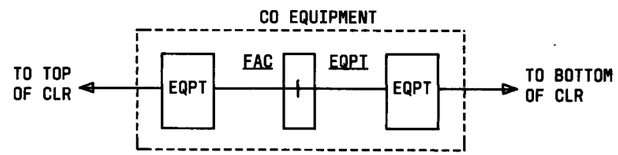
GUIDELINE	ORIENTATION GUIDELINES
3	AT INTERFACES OF CARRIER FACILITIES AND METALLIC FACILITIES, FAC SHOULD FACE THE CARRIER FACILITY
4	AT ALL OTHER INTERFACES OF FACILITIES OR AT TANDEM INTERCONNECTIONS OF EQUIPMENT (EXCEPT SF AS NOTED IN RULE 2), THE FAC SIDE OF THE CONNECTOR SHOULD FACE THE A CIRCUIT END (TOP OF CLR).

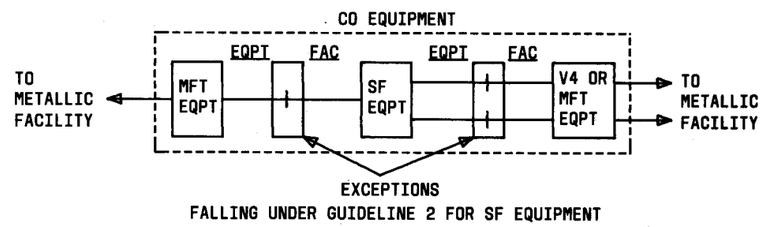
GUIDELINE 3 - DIRECT CARRIER -METALLIC FACILITY INTERFACE



GUIDELINE 4 - FACILITY-TANDEM INTERFACES







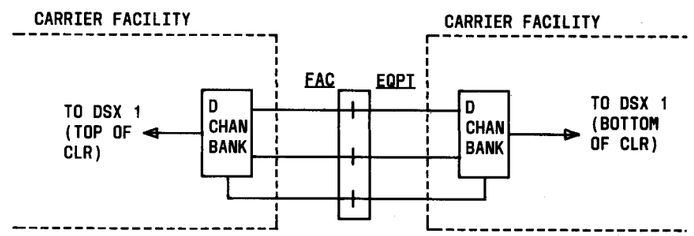


TABLE C (Contd)
GUIDELINES FOR ORIENTING ACCESS POINTS

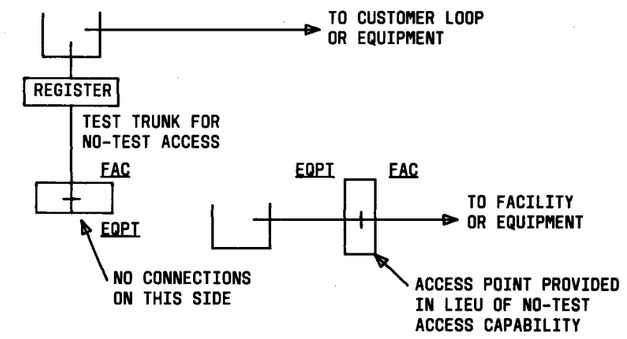
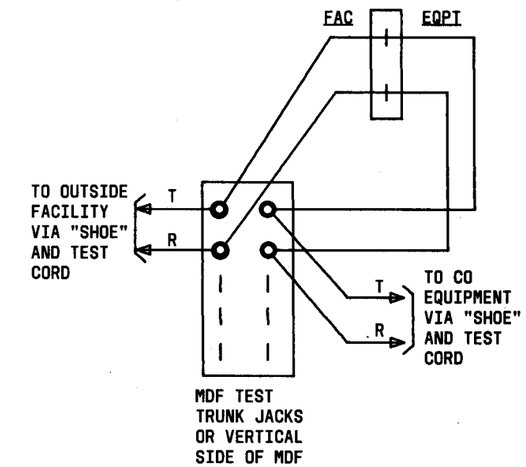
GUIDELINE	ORIENTATION GUIDELINES
5	ACCESS POINTS PROVIDED ON TEST TRUNKS FOR NO-TEST ACCESS CAPABILITY TO SWITCHED CUSTOMER LINES MUST HAVE THE FAC SIDE OF THE CONNECTOR FACING THE TEST TRUNK REGISTER BECAUSE OF SPECIAL ARRANGEMENTS IN THE SMAS AND SARTS. ACCESS POINTS LOCATED AT THE SWITCH INTERFACE IN LIEU OF NO-TEST ACCESS CAPABILITY SHOULD HAVE FAC FACING AWAY FROM THE SWITCH. GUIDELINE 5 
6	ACCESS POINTS ON DISTRIBUTING FRAME TEST TRUNKS SHOULD HAVE FAC FACING OUT, IE, TOWARD THE OUTSIDE FACILITY OR THE VERTICAL SIDE OF THE FRAME. GUIDELINE 6 
7	WHEN FRAME APPEARANCES OF SMAS CONNECTORS DO NOT ALLOW OBSERVANCE OF GUIDELINES 1-6, SUCH AS FOR APPLICATIONS WITHIN TIE PAIRS (PGH 3.04), THE PREVAILING CONDITIONS DETERMINE THE CONNECTOR ORIENTATION. ORIENTATIONS OF ACCESS POINT CONFIGURATIONS WHICH DUPLICATE THOSE FOUND IN UNITIZED FACILITY TERMINALS SHALL BE IDENTICAL TO THE UNITIZED EQUIPMENT ORIENTATIONS.

TABLE D

SUMMARY OF ACCESS CONNECTOR ORIENTATION INFORMATION (NOTE)

Equipment or Facility *ABOVE* Access Point on CLR

CARRIER FACILITY	METALLIC FACILITY	EQUIPMENT	S F EQPT (line side)	S F EQPT (drop side)	SWITCH	
FE 4	EF 3	EF 1	EF 2a	EF 2b	EF 5	CARRIER FACILITY
FE 3	FE 4	EF 1	EF 2a	FE 2b	EF 5	METALLIC FACILITY
FE 1	FE 1	FE 4	EF 2a	FE 2b	EF 5	EQUIPMENT
FE 2a	FE 2a	FE 2a				S F EQPT (line side)
FE 2b	EF 2b	EF 2b		FE 2b	EF 5	S F EQPT (drop side)
FE 5	FE 5	FE 5		FE 5		SWITCH

Equipment or Facility *BELOW* Access Point on CLR

SWITCH AT TOP OF CLR, ORIENTATION CODE = EF

NO-TEST ACCESS TRUNK-

SWITCH AT BOTTOM OF CLR, ORIENTATION CODE = FE 5

M D F TEST TRUNK ORIENTATION CODE = FO (O for OUT) 6

Note: EF = Equipment — Facility
FE = Facility — Equipment
Numbers in lower right corner indicate applicable COROLLARY GUIDELINES

TABLE E
G SIGNALING (J99395)
UNITIZED CONFIGURATION
ACCESS POINT INFORMATION

TYPE/FUNCTION & UNIT		FIG.	ORIENTATION CODE (D)	ACCESS CONFIGURATION CODE (E)	SIGNALING FORMAT (H)	SIGNALING FORMAT DEFAULT	SIGNALING OPERATION (I)	SIGNALING OPERATION DEFAULT	RINGING SIGNAL DIRECTION (J)	RINGING SIGNAL DIRECTION DEFAULT	TEST AC IMPEDANCE (K)	TRANSMISSION LEVEL POINT ▲	TRANSMISSION LEVEL POINT ▼
2-Wire E&M	AA	23a	EF/FE	MBA/MAB	SMF			OT		N	33	+7/–16	–16/+7
	AB	23a	EF/FE	MBA/MAB	SMF			OT		N	22	+7/–16	–16/+7
4-Wire E&M	BA	23b	EF/FE	MBA/MAB	SMF			OT		N	22	+7/–16	–16/+7
E&M – PLR	BM	23a	EF/FE	MBA/MAB	SME			OT		N	22	+7/–16	–16/+7
Loop Originating	CA	23c	EF	26X	L2W		RB		N		33	*	*
		23c	EF	46X	SFC		RB		N		22	+7	–16
Loop Terminating	DA	23c	FE	46X	SFC		RB		N		22	–16	+7
		23c	FE	26X	L2W		RB		N		33	*	*
2-Wire DX	GA	23c	EF/FE	26X	DXX			OT		N	33	*	*
		23c	EF/FE	46X	SFC			OT		N	22	+7/–16	–16/+7
	GB	23c	EF/FE	26X	DXX			OT		N	33	*	*
		23c	EF/FE	46X	SFC			OT		N	22	+7/–16	–16/+7
4-Wire	FA	23d	EF/FE	6BA/6AB	SFC		AU		B		22	+7/–16	–16/+7
4-Wire Ring Down	FB	23d	EF/FE	6BA/6AB	SFC		RD		B		22	+7/–16	–16/+7
2-Wire	EB	23c	EF/FE	26X	72W		AU		E		33	*	*
		23c	EF/FE	46X	SFC		AU		B		22	+7/–16	–16/+7
2-Wire Ring Down	EB	23c	EF/FE	26X	L2W		RD		B		33	*	*
		23c	EF/FE	46X	SFC		RD		B		22	+7/–16	–16/+7
4-Wire DX	HA	23d	EF/FE	6BA/6AB	SFC			OT		N	22	+7/–16	–16/+7

See Footnotes at end of table.

TABLE E (Contd)
G SIGNALING (J99395)
UNITIZED CONFIGURATION
ACCESS POINT INFORMATION

TYPE/FUNCTION & UNIT	FIG.	ORIENTATION CODE (D)	ACCESS CONFIGURATION CODE (E)	SIGNALING FORMAT (H)	SIGNALING FORMAT DEFAULT	SIGNALING OPERATION (I)	SIGNALING OPERATION DEFAULT	RINGING SIGNAL DIRECTION (J)	RINGING SIGNAL DIRECTION DEFAULT	TEST AC IMPEDANCE (K)	TRANSMISSION LEVEL POINT ↑	TRANSMISSION LEVEL POINT ↓
2-Wire Foreign Exchange – Central Office LA	23c	EF	26X	L2W		AU/LN/GS	LN	F		33	*	*
	23c	EF	46X	SFC		AU/LN/GS	LN	F		22	+7	–16
2-Wire Foreign Exchange – Central Office LB	23c	EF	26X	L2W		AU/LN/GS	LN	F		22	*	*
	23c	EF	46X	SFC		AU/LN/GS	LN	F		22	+7	–16
PADS MA	23e	EF/FE	† 4BA/4AB		NON		OT		N	22	+7/–16	–16/+7
BY PASS MB	23e	EF/FE	4BA/4AB		NON		OT		N	22	+7/–16	–16/+7
4W Extension MC		EF/FE	4BA/4AB		NON		OT		N	22	+7/–16	–16/+7
Terminating Set NA	23c	EF/FE	26X		NON		OT		N	33	*	*
		EF/FE	46X		NON		OT		N	22	+7/–16	–16/+7
4-Wire Foreign Exchange – Central Office PA	23d	EF	6BA	SFC		AU/LN/GS	LN	F		22	+7	–16
Tandem Foreign Exchange – Central Office PD	23q	EF	4BA	SFC		AU/LN/GS	LN	F		22	+7	–16
4-Wire Foreign Exchange Station RA	23d	FE	6AB	SFC		AU/LN/GS	LN	E		22	–16	+7
Tandem Foreign Exchange Station RD	23q	EF	4AB	SFC		AU/LN/GS	LN	F		22	–16	+7
2-Wire Foreign Exchange Station SA	23c	FE	46X	SFC		AU/LN/GS	LN	E		22	–16	+7
	23c	FE	26X	L2W		AU/LN/GS	LN	E		33	*	*
2-Wire Foreign Exchange Station SB	23c	FE	46X	SFC		AU/LN/GS	LN	E		22	–16	+7
	23c	FE	26X	L2W		AU/LN/GS	LN	E		33	*	*
2-Wire Foreign Exchange Station SC	23c	FE	46X	SFC		AU/LN	LN	E		22	–16	+7
	23c	FE	26X	72W		AU/LN	LN	E		33	*	*

* TLP determined by circuit usage.
† When used alone and not in conjunction with another signaling unit.

TABLE F
F SIGNALING (J99335)
UNITIZED CONFIGURATION
ACCESS POINT INFORMATION

TYPE/FUNCTION & UNIT		FIG.	ORIENTATION CODE (D)	ACCESS CONFIGURATION CODE (E)	SIGNALING FORMAT (H)	SIGNALING FORMAT DEFAULT	SIGNALING OPERATION (I)	SIGNALING OPERATION DEFAULT	RINGING SIGNAL DIRECTION (J)	RINGING SIGNAL DIRECTION DEFAULT	TEST AC IMPEDANCE (K)	TRANSMISSION LEVEL POINT ↑	TRANSMISSION LEVEL POINT ↓
2-Wire E&M	AA	23a	EF/FE	MBA/MAB	SMF			OT		N	22	+7/–16	–16/+7
	AB	23a	EF/FE	MBA/MAB	SMF			OT		N	22	+7/–16	–16/+7
	AC	23a	EF/FE	MBA/MAB	SMF			OT		N	22	+7/–16	–16/+7
	AD	23a	EF/FE	MBA/MAB	SMF			OT		N	22	+7/–16	–16/+7
	AE	23a	EF/FE	MBA/MAB	SMF			OT		N	22	+7/–16	–16/+7
	AF	23a	EF/FE	MBA/MAB	SMF			OT		N	22	+7/–16	–16/+7
4-Wire E&M	BA	23b	EF/FE	MBA/MAB	SMF			OT		N	22	+7/–16	–16/+7
	BB	23b	EF/FE	MBA/MAB	SMF			OT		N	22	+7/–16	–16/+7
	BC	23b	EF/FE	MBA/MAB	SMF			OT		N	22	+7/–16	–16/+7
E&M – PLR	BM	23a	EF/FE	MBA/MAB	SME			OT		N	22	+7/–16	–16/+7
	BN	23a	EF/FE	MBA/MAB	SME			OT		N	22	+7/–16	–16/+7
	BO	23a	EF/FE	MBA/MAB	SME			OT		N	22	+7/–16	–16/+7
LOOP ORIGINATING	CA	23b	EF	26X	L2W		RB		N		33	*	*
		23b	EF	46X	SFC		RB		N		22	+7	–16
LOOP TERMINATING	DA	23b	FE	46X	SFC		RB		N		22	–16	+7
		23b	FE	26X	L2W		RB		N		33	*	*
	DB	23b	FE	46X	SFC		RB		N		22	–16	+7
		23b	FE	26X	L2W		RB		N		33	*	*
2-Wire DX	GA	23b	EF/FE	26X	DXX			OT		N	33	*	*
		23b	EF/FE	46X	SFC			OT		N	22	+7/–16	–16/+7

See Footnotes at end of table.

TABLE F (Contd)
F SIGNALING (J99335)
UNITIZED CONFIGURATION
ACCESS POINT INFORMATION

TYPE/FUNCTION & UNIT		FIG.	ORIENTATION CODE (D)	ACCESS CONFIGURATION CODE (E)	SIGNALING FORMAT (H)	SIGNALING FORMAT DEFAULT	SIGNALING OPERATION (I)	SIGNALING OPERATION DEFAULT	RINGING SIGNAL DIRECTION (J)	RINGING SIGNAL DIRECTION DEFAULT	TEST AC IMPEDANCE (K)	TRANSMISSION LEVEL POINT ↑	TRANSMISSION LEVEL POINT ↓
2-Wire Ring Down	GM	23b	EF/FE	26X	L2W		RD		B		33	*	*
		23b	EF/FE	46X	SFC		RD		B		22	+7/−16	−16/+7
	GN	23b	EF/FE	26X	L2W		RD		B		33	*	*
		23b		46X	SFC		RD		B		22	+7/−16	−16/+7
4-Wire DX	HA	23d	EF/FE	6BA/6AB	SFC			OT		N	22	+7/−16	−16/+7
4-Wire RD	HM	23d	EF/FE	6BA/6AB	SFC		RD		B		22	+7/−16	−16/+7
	HN	23d	EF/FE	6BA/6AB	SFC		RD		B		22	+7/−16	−16/+7
2-Wire FX-CO	LA	23c	EF	26X	L2W		AU/LN/GS	LN	F		33	*	*
		23c	EF	46X	SFC		AU/LN/GS	LN	F		22	+7	−16
	LB	23c	EF	26X	L2W		AU/LN/GS	LN	F		22	*	*
		23c	EF	46X	SFC		AU/LN/GS	LN	F		22	+7	−16
	LC	23c	EF	26X	L2W		AU/LN	LN	F		33	*	*
		23c	EF	46X	SFC		AU/LN	LN	F		22	+7	−16
	LD	23c	EF	26X	L2W		AU/LN	LN	F		22	*	*
		23c	EF	46X	SFC		AU/LN	LN	F		22	+7	−16
PADS	MA	23e	EF/FE	†4BA/4AB		NON		OT		N	22	+7/−16	−16/+7
BYPASS	MB	23e	EF/FE	4BA/4AB		NON		OT		N	22	+7/−16	−16/+7
4-Wire Extension	MC	23r	EF/FE	4BA/4AB		NON		OT		N	22	+7/−16	−16/+7
900 Ohm Terminating Set	MD	23c	EF/FE	26X		NON					33	*	*
		23c	EF/FE	46X		NON					22	+7/−16	−16/+7
600 Ohm Terminating Set	ME	23	EF/FE	26X		NON					22	*	*
		23c		46X		NON					22	+7/−16	−16/+7

* TLP determined by circuit usage
† When used alone and not in conjunction with another signaling unit

TABLE G
D3 CHANNEL BANK – 6-WIRE CONNECTOR
(J98718)
UNITIZED CONFIGURATION
ACCESS POINT INFORMATION

TYPE/FUNCTION & UNIT		FIG.	ORIENTATION CODE (D)	ACCESS CONFIGURATION CODE (E)	SIGNALING FORMAT (H)	SIGNALING FORMAT DEFAULT	SIGNALING OPERATION (I)	SIGNALING OPERATION DEFAULT	RINGING SIGNAL DIRECTION (J)	RINGING SIGNAL DIRECTION DEFAULT	TEST AC IMPEDANCE (K)	TRANSMISSION LEVEL POINT (NOTE 1) ↑	TRANSMISSION LEVEL POINT (NOTE 1) ↓
2-Wire Dial Pulse – Originating	BA	23f	EF	2WA	L2W		RB		N		33		
2-Wire Dial Pulse – Terminating	BB	23f	FE	2WA	L2W		RB		N		33		
4-Wire E&M	BC	23h	EF/FE	MBA/MAB	EMF			OT		N	22		
2-Wire Foreign Exchange – Station	BD	23f	FE	2WA	L2W		AU/LN/GS	LN	E		33		
2-Wire Foreign Exchange – Originating	BE	23f	EF	2WA	L2W		AU/LN/GS	LN	F		33		
2-Wire Revertive Pulse – Originating	BF	23f	EF	2WA	L2W		OT		N		33		
2-Wire Revertive Pulse – Terminating	BG	23f	EF	2WA	L2W		OT		N		33		
2-Wire Sleeve Ground Pulse – Originating	BH	23f	EF	2WA	L2W		RB		N		33		
2-Wire E&M	BJ	23o	EF/FE	M2A	EMF		OT			N	33		
2-Wire Special Access – Station End	BK	23f	FE	2WA	L2W		AU/LN	LN	E		33		
2-Wire Special Access – Serving Office	BL	23f	EF	2WA	L2W		AU/LN	LN	F		33		
4-Wire 64 KB/S Level Zero Data Port	BM	23g	EF/FE	4BA/4AB	NON		OT		N		11		
4-Wire Office Channel Unit	BN	23g	EF/FE	4BA/4AB	NON		OT		N		11		
Originating	BP	23f	EF	2WA	L2W		OT		N		33		
Terminating	BS	23f	FE										
2-Wire E&M	BT	23o	EF/FE	M2A	EMF			OT		N	22		
2-Wire E&M	BU	23o	EF/FE	M2A	EMF			OT		N	33		
4-Wire E&M	BW	23h	EF/FE	MBA/MAB	EMF			OT		N	22		
Multifrequency Originating	BY	23f	EF	2WA	L2W		RB		N		33		
4-Wire Loop Simplex Originating	BZ	23g	EF	4BA	L4S		RB		N				

See notes at end of table

TABLE G (Contd)
D3 CHANNEL BANK – 6-WIRE CONNECTOR
(J98718)
UNITIZED CONFIGURATION
ACCESS POINT INFORMATION

TYPE/FUNCTION & UNIT		FIG.	ORIENTATION CODE (D)	ACCESS CONFIGURATION CODE (E)	SIGNALING FORMAT (H)	SIGNALING FORMAT DEFAULT	SIGNALING OPERATION (I)	SIGNALING OPERATION DEFAULT	RINGING SIGNAL DIRECTION (J)	RINGING SIGNAL DIRECTION DEFAULT	TEST AC IMPEDANCE (K)	TRANSMISSION LEVEL POINT (NOTE 1) ↑	TRANSMISSION LEVEL POINT (NOTE 1) ↓
Program 5 kHz Transmit	CA	23f	EF/FE	2WA	NON		OT		N		22		
Program 5 kHz Receive	CB	23f	EF/FE	2WA	NON		OT		N		22		
Program 8 kHz Transmit	CC	23h	EF/FE	2WA	NON		OT		N		22		
Program 8 kHz Receive	CD	23f	EF/FE	2WA	NON		OT		N		22		
4-Wire Foreign Exchange – Station	SB	23g	FE	4BA/4AB	L4S	AU/LN/GS	LN		E		†11,22,44		
4-Wire Foreign Exchange – Originating	SC	23g	EF	4BA/4AB	L4S	AU/LN/GS	LN		F		†11,22,44		
2-Wire DX	SD	23f	EF/FE	2WA	DXX			OT		N	33		
4-Wire DX	SE	23g	EF/FE	4BA/4AB	DXF/DXS	DSX		OT		N	†11,22,44		
4-Wire Tandem	SF	23p	EF/FE	TBA/TAB*	EXX*			LN		E or F	22		
4-Wire Transmission	SH	23g	EF/FE	4BA/4AB		NON		OT		N	22		
2-Wire Transmission	SJ	23f	EF/FE	2WA		NON		OT		N	33		
4-Wire Pulse Line Repeat	SK	23g	EF/FE	MBA/MAB	EME			OT		N	22		
2-Wire Ringdown	SL	23f	EF/FE	2WA	L2W		RD		B		33		
4-Wire Ringdown	SM	23g	EF/FE	4BA/4AB	L4S		RD		B		†11,22,44		
2-Wire Private Line Automatic Ringdown	SN	23f	EF/FE	2WA	L2W		AU		E		33		
4-Wire Private Line Automatic Ringdown	SP	23g	EF/FE	4BA/4AB	L4S		AU		E		†11,22,44		
4-Wire Equalized Transmission Only	SQ	23g	EF/FE	4BA/4AB		NON		OT		N	†11,22,44		
2-Wire Foreign Exchange – Station with Gain	SR	23f	FE	2WA	L4S		AU/LN	LN	F		33		
4-Wire Foreign Exchange – Station with Gain	SS	23f	FE	2WA	L4S		AU/LN	LN	E		33		

Notes:
1. TLP determined by circuit usage
2. Not in SARTS software
3. Dependent upon switch setting

TABLE H
D4 CHANNEL BANK – 4-WIRE CONNECTOR
(J98726)
UNITIZED CONFIGURATION
ACCESS POINT INFORMATION

TYPE/FUNCTION & UNIT		FIG.	ORIENTATION CODE (D)	ACCESS CONFIGURATION CODE (E)	SIGNALING FORMAT (H)	SIGNALING FORMAT DEFAULT	SIGNALING OPERATION (I)	SIGNALING OPERATION DEFAULT	RINGING SIGNAL DIRECTION (J)	RINGING SIGNAL DIRECTION DEFAULT	TEST AC IMPEDANCE (K)	TRANSMISSION LEVEL POINT (NOTE 1)	
												↑	↓
2-Wire Dial Pulse – Originating	BA	23f	EF	2WA	L2W		RB		N		33		
2-Wire Dial Pulse – Terminating	BB	23f	FE	2WA	L2W		RB		N		33		
2-Wire Foreign Exchange – Station	BD	23f	FE	2WA	L2W		AU/LN/GS	LN	E		33		
2-Wire Foreign Exchange – Office	BE	23f	EF	2WA	L2W		AU/LN/GS	LN	F		33		
2-Wire Revertive Pulse – Originating	BF	23f	EF	2WA	L2W		OT		N		33		
2-Wire Revertive Pulse – Terminating	BG	23f	FE	2WA	L2W		OT		N		33		
2-Wire Sleeve Dial – Originating	BH	23f	EF	2WA	L2W		RB		N		33		
2-Wire Foreign Exchange Station Loop-Start	BK	23f	FE	2WA	L2W			LN	E		33		
2-Wire Foreign Exchange Office Loop-Start	BL	23f	EF	2WA	L2W			LN	F		33		
2-Wire Dial Multifrequency Originating	NM	23f	EF	2WA	L2W		RB		N		33		
2-Wire No. 2 ESS Terminating Interface	BR	23f	FE	2WA	L2W		OT		N		33		
2-Wire No. 2 ESS Originating Interface	BS	23f	EF	2WA			OT		N		33		
2-Wire No. 3 ESS T Carrier Interface	BU	23f	EF/FE	2WA	L2W		OT		N		33		
2-Wire Remote Switching Control Office	BW	23f	EF/FE	2WA	NON		OT		N		33		
4-Wire Loop Simplex – Originate	BY	23f	EF/FE	2WA	L2W		OT		N				
Program 5 KHz Transmit	CA	23f	EF/FE	2WA	NON		OT		N		22		
Program 5 KHz Receive	CB	23f	EF/FE	2WA	NON		OT		N		22		
Program 8 KHz Transmit	CC	23f	EF/FE	2WA	NON		OT		N		22		
Program 8 KHz Receive	CD	23f	EF/FE	2WA	NON		OT		N		22		

See notes at end of table.

TABLE H (Contd)
D4 CHANNEL BANK – 4-WIRE CONNECTOR
(J98726)
UNITIZED CONFIGURATION
ACCESS POINT INFORMATION

TYPE/FUNCTION & UNIT		FIG.	ORIENTATION CODE (D)	ACCESS CONFIGURATION CODE (E)	SIGNALING FORMAT (H)	SIGNALING FORMAT DEFAULT	SIGNALING OPERATION (I)	SIGNALING OPERATION DEFAULT	RINGING SIGNAL DIRECTION (J)	RINGING SIGNAL DIRECTION DEFAULT	TEST AC IMPEDANCE (K)	TRANSMISSION LEVEL POINT (NOTE 1) ↑	TRANSMISSION LEVEL POINT (NOTE 1) ↓
Digital Signal Zero Data Port	DA	23g	EF/FE	4BA/4AB	NON		OT		N		11		
Office Channel Unit Data Port	DB	23g	EF/FE	4BA/4AB	NON		OT		N		11		
Data Service Unit Data Port	DC	23g	EF/FE	4BA/4AB	NON		OT		N		11		
4-Wire Foreign Exchange – Subscriber	SB	23g	EF/FE	4BA/4AB	L4F/L4S	L4S	AU/LN/GS	LN	E		11,22,44		
4-Wire Foreign Exchange – Office	SC	23g	EF/FE	4BA/4AB	L4F/L4S	L4S	AU/LN/GS	LN	F		11,22,44		
2-Wire Duplex with Gain	SD	23f	EF/FE	2WA	DXX			OT		N	33		
4-Wire Duplex	SE	23g	EF/FE	4BA/4AB	DXF/DXS	DXS		OT		N	11,22,44		
4-Wire Tandem	SF	23g	EF/FE	4BA/4AB		NON		LN		E or F	22	*–2.1	*–2.1
2-Wire Foreign Exchange – Subscriber with Gain	SG	23f	EF/FE	2WA	L2W/72W	72W	AU/LN/GS	LN	E		33		
4-Wire Transmission Only	SH	23g	EF/FE	4BA/4AB		NON		OT		N	22		
2-Wire Transmission Only	SJ	23f	EF/FE	2WA		NON		OT		N	33		
2-Wire Foreign Exchange – Office with Gain	SK	23f	EF/FE	2WA	L2W			LN	F		33		
2-Wire Ring Down	SL	23f	EF/FE	2WA	L2W		RD		B		33		
2-Wire Private Line Automatic Ring	SL	23f	EF/FE	2WA	L2W		AU		E		33		
4-Wire Ring Down	SM	23g	EF/FE	4BA/4AB	L4S		RD		B		11,22,44		
4-Wire Private Line Automatic Ring	SM	23g	EF/FE	4BA/4AB	L4S	L4S	AU		E		11,22,44		
4-Wire Equalized Transmission	SQ	23g	EF/FE	4BA/4AB		NON		OT		N	11,22,44		

Notes:
1. TLP determined by circuit usage.
* May be determined by circuit usage.

TABLE I
D4 CHANNEL BANK – 6-WIRE CONNECTOR
(J98726)
UNITIZED CONFIGURATION
ACCESS POINT INFORMATION

TYPE/FUNCTION & UNIT		FIG.	ORIENTATION CODE (D)	ACCESS CONFIGURATION CODE (E)	SIGNALING FORMAT (H)	SIGNALING FORMAT DEFAULT	SIGNALING OPERATION (I)	SIGNALING OPERATION DEFAULT	RINGING SIGNAL DIRECTION (J)	RINGING SIGNAL DIRECTION DEFAULT	TEST AC IMPEDANCE (K)	TRANSMISSION LEVEL POINT (NOTE 1) ↑	TRANSMISSION LEVEL POINT (NOTE 1) ↓
2-Wire Dial Pulse – Originating	BA	23f	EF	2WA	L2W		RB		N		33		
2-Wire Dial Pulse – Terminating	BB	23f	FE	2WA	L2W		RB		N		33		
4-Wire E&M	BC	23h	EF/FE	MBA/MAB	EMF			OT		N	22		
2-Wire Foreign Exchange – Station	BD	23f	FE	2WA	L2W			LN	E		33		
2-Wire Foreign Exchange – Office	BE	23f	EF	2WA	L2W			LN	F		33		
2-Wire Revertive Pulse – Originating	BF	23f	EF	2WA	L2W		OT		N		33		
2-Wire Revertive Pulse – Terminating	BG	23f	FE	2WA	L2W		OT		N		33		
2-Wire Sleeve Dial – Originating	BH	23f	EF	2WA	L2W		RB		N		33		
2-Wire E&M	BJ	23p	EF/FE	†M2A	EMF			OT		N	33		
2-Wire Foreign Exchange Station Loop-Start	BK	23f	FE	2WA	L2W			LN	E		33		
2-Wire Foreign Exchange Office Loop-Start	BL	23f	EF	2WA	L2W			LN	F		33		
2-Wire Dial Multifrequency Originating	BM	23f	EF	2WA	L2W		RB		N		33		
4-Wire Pulse Link Repeater	BN	23h	EF/FE	MBA/MAB	EME			OT		N	22		
4-Wire E&M	BP	23h	EF/FE	MBA/MAB	EMF			OT		N	22		
2-Wire No. 2 ESS Terminating Interface	BR	23f	FE	2WA	L2W		OT		N		33		
2-Wire No. 2 ESS Originating Interface	BS	23f	EF	2WA	L2W		OT		N		33		
2-Wire E&M	BT	23o	EF/FE	†M2A	EMF			OT		N	22		
2-Wire No. 3 ESS T Carrier Interface	BU	23f	EF/FE	2WA	L2W		OT		N		33		
2-Wire Remote Switching Control Office	BW	23f	EF/FE	2WA	NON		OT		N		33		
4-Wire Loop Simplex – Originate	BY	23f	EF/FE	2WA	L2W		OT		N				
Program 5 KHz Transmit	CA	23f	EF/FE	2WA	NON		OT		N		22		
Program 5 KHz Receive	CB	23f	EF/FE	2WA	NON		OT		N		22		
Program 8 KHz Transmit	CC	23f	EF/FE	2WA	NON		OT		N		22		
Program 8 KHz Receive	CD	23f	EF/FE	2WA	NON		OT		N		22		

See notes at end of table.

TABLE I (Contd)
D4 CHANNEL BANK – 6-WIRE CONNECTOR
(J98726)
UNITIZED CONFIGURATION
ACCESS POINT INFORMATION

TYPE/FUNCTION & UNIT		FIG.	ORIENTATION CODE (D)	ACCESS CONFIGURATION CODE (E)	SIGNALING FORMAT (H)	SIGNALING FORMAT DEFAULT	SIGNALING OPERATION (I)	SIGNALING OPERATION DEFAULT	RINGING SIGNAL DIRECTION (J)	RINGING SIGNAL DIRECTION DEFAULT	TEST AC IMPEDANCE (K)	TRANSMISSION LEVEL POINT (NOTE 1) ↑	TRANSMISSION LEVEL POINT (NOTE 1) ↓
Digital Signal Zero Data Port	DA	23g	EF/FE	4BA/4AB	NON		OT		N		11		
Office Channel Unit Data Port	DB	23g	EF/FE	4BA/4AB	NON		OT		N		11		
Data Service Unit Data Port	DC	23g	EF/FE	4BA/4AB	NON		OT		N		11		
4-Wire Foreign Exchange – Subscriber	SB	23g	FE	4BA/4AB	L4F/L4S	L4S	AU/LN/GS	LN	E		11,22,44		
4-Wire Foreign Exchange – Office	SC	23g	EF	4BA/4AB	L4F/L4S	L4S	AU/LN/GS	LN	F		11,22,44		
2-Wire Duplex with Gain	SD	23f	EF/FE	2WA	DXX			OT		N	33		
4-Wire Duplex	SE	23g	EF/FE	4BA/4AB	DXF/DXS	DXS		OT		N	11,22,44		
4-Wire Tandem	SF	23p	EF/FE	† TBA/TAB				LN	E or F		22	*–2.1	*–2.1
2-Wire Foreign Exchange – Subscriber with Gain	SG	23f	EF/FE	2WA	L2W/72W	72W	AU/LN/GS	LN	E		33	*–2.1	*–2.1
4-Wire Transmission Only	SH	23g	EF/FE	4BA/4AB		NON		OT		N	22	*–2.1	*–2.1
2-Wire Transmission Only	SJ	23f	EF/FE	2WA		NON		OT		N	33	*–2.1	*–2.1
2-Wire Foreign Exchange – Office with Gain	SK	23f	EF/FE	2WA	L2W			LN	F		33	*–2.1	*–2.1
2-Wire Ring Down	SL	23f	EF/FE	2WA	L2W		RD		B		33	*–2.1	*–2.1
2-Wire Private Line Automatic Ring	SL	23f	EF/FE	2WA	L2W		AU		E		33	*–2.1	*–2.1
4-Wire Ring Down	SM	23g	EF/FE	4BA/4AB	L4F		RD		B		11,22,44		
4-Wire Private Line Automatic Ring	SM	23g	EF/FE	4BA/4AB	L4F		AU		E		11,22,44		
4-Wire Equalized Transmission	SQ	23g	EF/FE	4BA/4AB		NON		OT		N	11,22,44		

Notes:
1. TLP determined by circuit usage.
* May be determined by circuit usage.
† Not in SARTS software

TABLE J
METALLIC FACILITY TERMINAL (J99343)
UNITIZED CONFIGURATION
ACCESS POINT INFORMATION

TYPE/FUNCTION & UNIT		FIG.	ORIENTATION CODE (D)	ACCESS CONFIGURATION CODE (E)	SIGNALING FORMAT (H)	SIGNALING FORMAT DEFAULT	SIGNALING OPERATION (I)	SIGNALING OPERATION DEFAULT	RINGING SIGNAL DIRECTION (J)	RINGING SIGNAL DIRECTION DEFAULT	TEST AC IMPEDANCE (K)		TRANSMISSION LEVEL POINT (NOTE 1)	
											MFT A SIDE	MFT B SIDE	↑	↓
2-Wire Transmission	BC	23i	EF	22A							22/33	22/33		
		23i	FE	22B							22/33	22/33		
4-Wire Transmission	BD	231	EF	4BA								22/44		
2-4 Wire Transmission	BE	23k	EF	4BA								22/44		
	BF	23k	EF	4BA								22/44		
Loop Signaling Extender	C( )	23i	EF	22A	L2W/72W	72W	LN			F				
		23i	FE	22B	L2W		LN			F				
2-4 Wire Transmission Signaling	G( )	23i	EF	22A	L2W/72W	72W	LN			E	33	33		
		23i	FE	22B	L2W		LN			E	33	33		
2-4 Wire Terminal Repeater	RA	23k	EF	4BA								22/33		
4-2 Wire Intermediate Terminal Repeater	RB	231	EF	42A							33	22/44		
		231	FE	42B							33	22/44		
	RC	231	EF	42A							33	22/44		
		231	FE	42B							33	22/44		
2-4 Wire Intermediate Repeater	RD	23m	EF	24A							33	22/44		
		23m	FE	24B							33	22/44		
	RE	23m	EF	24A							33	22/44		
		23m	FE	24B							33	22/44		
2-4 Wire Terminal Repeater	RF	23k	EF	4BA							33	22/44		
4-2 Wire Terminal Repeater	RG	231	EF	42A							33	22/44		
		231	FE	42B							33	22/44		
2-4 Wire Terminal Repeater	RH	23m	EF	24A							33	22/44		
		23m	FE	24B							33	22/44		
2-Wire Repeater	P( )	23i	EF	22A							33	22/44		

See note at end of table.

TABLE J (Contd)
METALLIC FACILITY TERMINAL (J99343)
UNITIZED CONFIGURATION
ACCESS POINT INFORMATION

TYPE/FUNCTION & UNIT	FIG.	ORIENTATION CODE (D)	ACCESS CONFIGURATION CODE (E)	SIGNALING FORMAT (H)	SIGNALING FORMAT DEFAULT	SIGNALING OPERATION (I)	SIGNALING OPERATION DEFAULT	RINGING SIGNAL DIRECTION (J)	RINGING SIGNAL DIRECTION DEFAULT	TEST AC IMPEDANCE (K) MFT A SIDE	TEST AC IMPEDANCE (K) MFT B SIDE	TRANSMISSION LEVEL POINT (NOTE 1) ↑	TRANSMISSION LEVEL POINT (NOTE 1) ↓
2-Wire Repeater	23i	FE	22B										
2-Wire Dual Terminal Repeater PL	23n	EF	2WA							33	33		
		FE	2WB							33	33		
4-Wire Terminal Repeater SA	23k	EF	4BA										
4-Wire Intermediate Repeater SB	23k	EF	4AB										

Note 1: TLP determined by circuit usage.