CUSTOMIZED WIRING INSTRUCTION (CWI) (USERS INFORMATION)

CONTENTS

Graphic Reproduction Section GR 40G Required.

1. GENERAL

1.1 Scope of Section

1.1.1 This section explains the information contained in the Customized Wiring Instructions (CWI).

1.1.1.1 The items listed on CWI(s) are according to standard arrangement which, under conditions usually encountered, is the sequence believed best adapted for performing the operations. However, if the sequence specified is not practical, due to local conditions, your judgement should prevail. Where there is a need for Engineering Change Procedure (ECP) the CWI will contain this information.

1.1.1.2 CWI are computer generated documents that are customized mechanically to the features required. All potential Detail Change Sheets (DCS) or Circuit Revision Instruction (CRI) are being produced as CWI's. Any present active DCS or CRI are candidates for conversion to CWI's.

2. PURPOSE AND APPLICATION OF CWI'S

2.1 Purpose

2.1.1 CWI's provide the detailed instructions to add, remove, and reconnect wiring and apparatus, and to modify existing equipment to agree with a particular issue of a schematic drawing and any associated Class "A" type change.

2.1.1.1 Job specifications engineered with the application of the CWI will list the CWI number and features involved. 1 CWI output should be available at job site.

2.2 Application

2.2.1 CWI's are originated to detail changes on wiring diagrams as a result of a change to a Bell Laboratories Schematic. They may also be originated to provide a reference to installation information including Engineering Change Procedure (ECP's) or test information.

2.2.1.1 CWI's cover features and options affected by the schematic reissue under the following conditions:

1. Wiring diagram changes which result from Bell Laboratories Class "B", "D", or "AC" schematic changes when 12 or more corrections and disconnections are involved or when 2 or more wiring diagrams are affected.

2. On issue 1 of a circuit containing figures and options which are not mandatory a CWI may be prepared to cover the modification to add these optional figures and options.

3. For Class "A" or "AR" changes on nondial switching products if details cannot be covered on a change supplement.

2.2.1.2 CWI's are not usually provided when wiring diagram changes involve the following:

1. A straight addition of an entire figure or unit.

2. Trunks and miscellaneous units - relay rack mounted.

3. STRUCTURE OF CWI OUTPUT

3.1 Front Section

3.1.1 The "Front Section" consists of the Cover Sheet, Installation Instructions, Title, Application and Coordination Notes, Drawing and Issues, Description of Features, Material Changes, Switchboard Cable Changes (New Cables), List of Wire, Installers Notes, Local Cable Running List, and I.E. Information as described below:

3.1.1.1 Cover Sheet - Provides order number, specification number, and work items that the CWI has been customized to. It also includes persons to contact should questions arise pertaining to this output.

3.1.1.2 Installation Instructions - A synopsis of the definitions required to interpret the "Installer's Wiring Instructions" sheets. (These instructions may only

appear once per job location.)

3.1.1.3 Title - The Title information consists of the CWI number, system, name of circuit and equipment involved, and circuit drawings modified to reflect listed SD change.

3.1.1.4 Application and Coordination Notes - This sheet lists prerequisites to the application of a CWI. It also will be used to list engineering information not readily apparent from the CWI or any data that will improve the application of the CWI.

3.1.1.5 Drawings and Issues - Wiring diagrams and their issue numbers from which the CWI is prepared are listed. Also numbers and issues of equipment drawings, arbitrary numbering drawings, and "A" drawings, (layout of holes for mounting plates and panels) required on job site will be listed. Features pertaining only to work items for this order are shown adjacent to the associated drawing.

3.1.1.6 Description of Features - This sheet provides a brief description of only the features and subfeatures and the work to be performed for this order.

3.1.1.7 Material Changes - A tabular listing of material changes indicating the function (add, replace, remove, etc.) to be performed for the feature designated.

3.1.1.8 Switchboard Cable Requirements - Any new cable involved is shown indicating its application and associated feature listed.

3.1.1.9 List of Wire - This sheet lists by feature and subfeature all the bulk wire required for the changes covered by the CWI. If no bulk wire is required the notation "none" is shown.

3.1.1.10 Installer's Notes - All statements which would be too long to add on the local cable running list are covered as Installer's Notes. Also included is an explanation on conventions used and any note which would be helpful to the installer such as, insulation of leads, looping of leads, leads requiring special treatment, etc. When a sequence of procedure is furnished by the Bell Laboratories this information is shown in terms of CWI features.

3.1.1.11 Local Cable Running List - Lists all local cable wires which are added by the modification, except when a standard supplementary local cable is furnished, in which case the local cable drawing number is shown. The wires are listed per feature order. If an explanation is required for an added wire, the lines directly below are used for this purpose. The leads are listed in color preference order starting with the lowest number gauge.

3.1.1.11.1 Loop leads and paired leads are shown by the color of the leads only at the starting point, with all other points of termination listed under the heading "To", one point of termination after another until the end is reached.

3.1.1.11.2 If the action on a particular lead in the table differs from the other leads listed, the succeeding line or lines are used for an explanation.

3.1.1.11.3 Leads are identified in the stitch or terminal column as follows:

1. Leads terminating on relays and similar type apparatus are identified by stitches (L) Left, (R) Right, (M) Middle, (LM) Left Middle, (RM) Right Middle, etc.

2. Leads terminating on terminal strips are identified by the actual terminal number.

3. Single stitch wiring carries no identification.

3.1.1.11.4 An installing note is added to each CWI to cover terminal designations for apparatus which have no designations on the wiring diagram. Reference to this note is made on the line following the affected apparatus.

3.1.1.12 I.E. Information - Provides Engineering Change Procedure which lists Installation Handbook instruction and associated Installation Engineer responsible. Also lists transition material required.

3.2 Rear Section

3.2.1 The rear section consists of the Installer's Wiring Instructions, Cross Reference By Line, and Notes pertaining to this output. Wiring information stored in a data base is retrieved on an office and frame basis for the features required.

3.2.1.1 All the CWI connecting sheets have been analyzed and assembled with work operations beginning at the top of the frame, and working left to right, to the bottom of the frame. All possible work is to be done on a plate before proceeding to the next plate, as individual office conditions permit.

3.2.1.2 All removals are listed first and in the following sequence:

1. Pigtail Apparatus Leads (PT) - Networks, Resistors, Diodes, etc.

2. Switchboard Cable Leads (CA) - Only those leads associated with a removal, disconnect, reconnect and connect operation of an existing switchboard cable. All other added switchboard cable should be picked up in the cabling specification (CCD, CCS/SWF sheets).

3.2.1.3 The sequence is then reversed for the adds that follow removals.

3.2.1.4 It is possible to have less than the above mentioned operation on any given sheet; however, the sequence is still applied for the required steps. If preliminary operations are included in the CWI output, they will be sequenced and completed before the regular work operations.

3.2.1.5 If a work item contains more than 1 CWI all will be included in the same package.

3.2.2 Installer's Wiring Instructions - Description of Columns

3.2.2.1 Column "A/R" identifies the work operation for the line entry.

1. Entries for surface wiring, loose wiring, strapping, switchboard cable and pigtail apparatus are:
   A = Add
   R = Remove

NOTE: Surface wiring, loose wiring, strapping, switchboard cable, and "PT" apparatus records will appear only once in the output. The work operation is performed on both the "from" and "to" sides of the line.

2. Entries for Local Cable

   R = Remove
   R* = Disconnect (to be later reconnected per A*)
   R: = Remove
   RS = Remove and Spare
   A = Add
   A* = Reconnect (lead previously disconnected by R*)
   A: = Add

3. When A or R are followed by any character (*, S, :), the records appear only once in the output. The work operation is performed only from the "from" side of the line.

4. When the entries A, C, D, or R are not followed by any character (*, S, :), the work operation will be performed on the "from" side of the line only, and the program will later generate a line reversing the information, due to the top to bottom frame connecting sequence. This second appearance of the line will be identified in the output as follows:

First Appearance	Second Appearance
A	A#
R	R

NOTE: # - A pound sign indicates a repeated record shown in reverse order for sequence connecting of leads (second appearance of lead).

3.2.2.2 Column "Lead Color" provides the color of the lead. For switchboard cable designated "SWBD CA" or the functional designation of the lead is used to indicate outside of frame cabling.

3.2.2.3 Column "LC" identifies the type of connection between terminal points.

LC = Local Cable
SW = Surface Wire
LW = Loose Wire
CA = Switchboard Cable
PT = Pigtail Apparatus
(If "PT" is indicated, a reference to a note number which specifies the code of pigtail apparatus is made in the column "note" and the letters "PT" are indicated in the column "Lead Color", or the code itself will be shown the column "Lead Color".)

3.2.2.4 Column "Plt No" are plate numbers of a frame from the bottom up, beginning with "0".

1. A negative value to the plate numbers (-001 to -999) are displaced units mounted in various relay racks.

2. Plate numbers for circuits that have more than 1 frame are numbered from bottom up and left to right (1st FR 000-099, 2nd FR 100-199, 3rd FR 200-299, etc.).

3.2.2.5 Column "Type CPNT" identifies types of components being connected. (REL=Relay, TS=Terminal Strip, RES=Resistor etc.)

3.2.2.6 Column "Desig" provides the designation of the component.

3.2.2.7 Column "Term" shows the terminal number of the component. A "-F" after the terminal number indicates an "F Stitch". A "F" before the terminal number indicates that the connection is made on the front of the terminal strip or apparatus.

3.2.2.8 Column "Notes" contains job information and a description of pigtail apparatus. All notes appear after the "Cross-Reference Sheet".
*** The installer shall use only those notes applicable to the job. ***
*** Notes 0 and 1 will be required for all jobs. ***

3.2.3 Cross Reference by Line Sheet - Provides the matching line number on "Wiring" instruction to indicate the associated "from" unit and "to" unit identification and feature for each line of wiring. The information provided on one line of the "Cross-Reference Sheet" is used with the same line in the "Wiring Section".

1. Column "Line" contains the line number used in the "Wiring Section".

2. Column "From Unit" and "To Unit" show suffix letters of the "J" unit for each side.

3. Column "Feature" provides the feature for the specified line number.

Feature	A or B	Shown As	A/B
Feature	A w/o B	Shown As	A-B
Feature	A with B	Shown As	A&B
Feature	A & B w/o C	Shown As	A&B-C
Feature	A & B & C	Shown As	A&B&C

3.2.4 "Wiring" Notes contains job information and a description of pigtail apparatus. Apply applicable notes only. Notes 0 and 1 will always apply.

Engineering Planning Manager
(Installation)

Reason for Reissue:
Complete revision of section.