S. GORN, Editor; E. L. LOHSE, Asst. Editor

PROPOSED AMERICAN STANDARD

Twelve-Row Punched-Card Code for Information Interchange*

1. Scope

This standard specifies the representation of the American Standard Code for Information Interchange (ASA X3.4–1965) in the twelve-row punched-card for use in general information interchange. This standard also recognizes interim Hollerith representation of 43 of the characters in columns 2, 3, 4 and 5 of the ASCII code table.

2. Twelve-Row Punched-Card Representations

2.1 *Standard Representation* (Table 1).

2.2 *Interim Hollerith Representation.* It is recognized that there is a wide variety of equipment now in use which is based on the Hollerith representation. The Hollerith representation in Table 2, of 43 of the characters in columns 2, 3, 4 and 5 of the ASCII code table is recognized for interim use until such time as equipment which conforms to the standard becomes available.

3. Notation

3.1 In the American Standard Code for Information Interchange (ASA X3.4–1965) the 7-bit positional notation identifies each character position by locating the cell at a table column and row intersection. The columns, 0–7, are designated by b_7, b_6, b_5 and the rows, 0–15, are designated by b_4, b_3, b_2 and b_1. The high order position is b_7, the low order is b_1.

3.2 Similarly in Tables 1 and 2 of this Standard each intersection of a column and a row identifies a particular character and ts corresponding hole-pattern.

For convenience in reference, the Code Table position of a particular hole-pattern may be represented by the notation C/R where C identifies a table column and R identifies a table row.

3.3 Designation of Card Rows: Zone Punches are identified as 12, 11, 0 and Digit Punches are 1, 2, · · · , 9. These numbers identify corresponding punches in rows 12, 11, 0, 1, 2, · · · , 9, of the punched card as indicated in Figure 1. *Note:* Do not confuse punch positions in a card row with the row notation of the ASCII table.

3.4 In Table 1 the Zone Punches relate a zone hole-pattern to each table column, e.g. the hole pattern 12–11–0 associates with column 0; 12 associates with column 4.

The Digit Punches relate a digit hole-pattern to each table row, e.g., the 2 punch associates with row 2; the 8–6 hole-pattern associates with row 14.

For example: The hole-pattern at the intersection of table column 4 and table row 14 (cell 4/14) is 12–8–6. It is the Standard ASCII Card Code representation of the graphic character N, and corresponds to the ASCII bit representation 1001110.

TABLE 1. STANDARD ASCII CARD CODE

ASCII BIT REPRESENTATION	BITS b_7		0	0	0	0	1	1	1	1
	b_6		0	0	1	1	0	0	1	1
	b_5		0	1	0	1	0	1	0	1
BITS	HOLE PATTERNS	ZONE PUNCHES	12 11 0	12 11			12	11	12 0	11 0
b_4 b_3 b_2 b_1	DIGIT PUNCHES	COL / ROW	0	1	2	3	4	5	6	7
0 0 0 0	(NO PUNCH)	0	NUL	DLE	SP‡	0‡	`	P	@	p
0 0 0 1	1	1	SOH	DC1	!	1	A	Q	a	q
0 0 1 0	2	2	STX	DC2	"	2	B	R	b	r
0 0 1 1	3	3	ETX	DC3	#	3	C	S	c	s
0 1 0 0	4	4	EOT	DC4	$	4	D	T	d	t
0 1 0 1	5	5	ENQ	NAK	%	5	E	U	e	u
0 1 1 0	6	6	ACK	SYN	&	6	F	V	f	v
0 1 1 1	7	7	BEL	ETB	'	7	G	W	g	w
1 0 0 0	8	8	BS	CAN	(	8	H	X	h	x
1 0 0 1	9	9	HT	EM	)	9	I	Y	i	y
1 0 1 0	8-2	10	LF	SS	*	:	J	Z	j	z
1 0 1 1	8-3	11	VT	ESC	+	;	K	[	k	{
1 1 0 0	8-4	12	FF	FS	,	<	L	\	l	|
1 1 0 1	8-5	13	CR	GS	-	=	M	]	m	}
1 1 1 0	8-6	14	SO	RS	.	>	N	^	n	~
1 1 1 1	8-7	15	SI	US	/	?	O	_	o	DEL

‡ `

Exceptions:

COL/ROW	BIT REPRESENTATION	CHARACTER	HOLE PATTERN
2/0	010 0000	SP(Space)	No Punch
3/0	011 0000	0 (Zero)	0

TABLE 2. HOLLERITH CARD CODE

COL / ROW	2 ASCII GRAPHIC	2 BIT/BYTE	3 ASCII GRAPHIC	3 BIT/BYTE	4 ASCII GRAPHIC	4 BIT/BYTE	5 GRAPHIC	5 HOLLERITH
0	SP	NO PUNCH	0	0			P	11-7
1	!		1	1	A	12-1	Q	11-9
2	"		2	2	B	12-2	R	11-0
3	#		3	3	C	12-3	S	0-2
4	$	11-8-3	4	4	D	12-4	T	0-3
5	%		5	5	E	12-5	U	0-4
6	&		6	6	F	12-6	V	0-5
7	'		7	7	G	12-7	W	0-6
8	(		8	8	H	12-8	X	0-7
9	)		9	9	I	12-9	Y	0-8
10	*	11-8-4	:		J	11-1	Z	0-9
11	+		;		K	11-2	[	
12	,	0-8-3	<		L	11-3	\	
13	-	11	=		M	11-4	]	
14	.	12-8-3	>		N	11-5	^	
15	/	0-1	?		O	11-6	_	

Editor's Note

This Proposed American Standard has been accepted for final letter ballot and concurrent publication by a Subcommittee of the American Standards Association Sectional Committee X3, Computers and Information Processing. In order that the final version of the proposed standard reflect the largest public consensus, X3 has authorized publication of this document to elicit comment, criticism and general public reaction with the understanding that such a working document is an intermediate result in the standardization process and is subject to change, modification or withdrawal in part or in whole. Comments should be addressed to the X3 Secretary, Business Equipment Manufacturers Association, 235 East 42 Street, New York, N. Y. 10017.—E. L.

* ASA Document X3.2/303, Dec. 3, 1965.

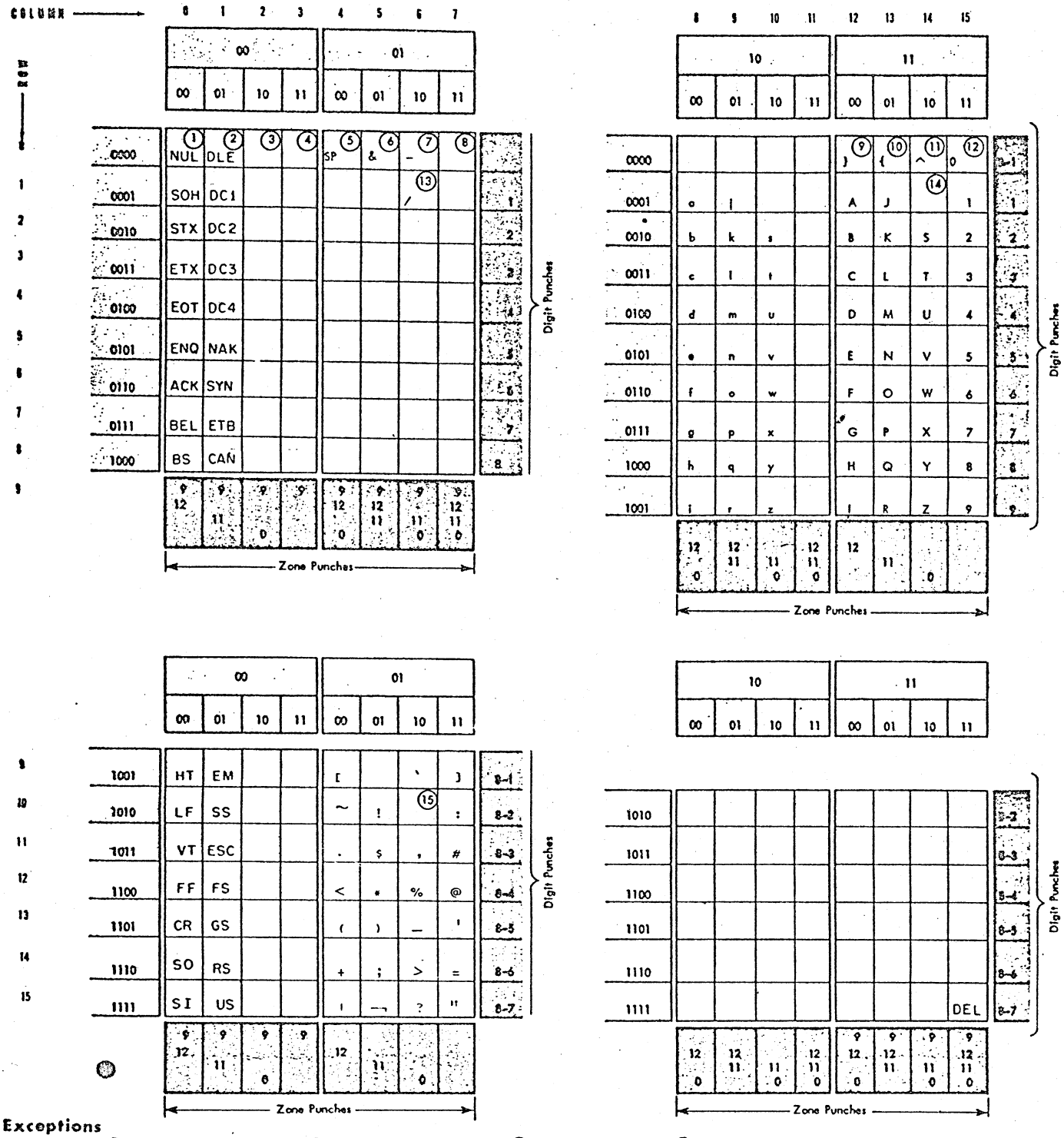

FIG. 4. Logical array of extended BCD card code with ASCII controls