INTERSTATE SIGN SIZING PROGRAM

INTRODUCTION

This computer program automatically sizes and locates copy on Interstate Highway sign panels using the U. S. Bureau of Public Roads standard spacing specifications. The computer program lists the following information for each sign panel: the square feet of background material, the linear feet of border material, the number of letters and numerals of each size, and the amount of reflective material used in each shield or arrow which appears on the sign panel. More than one sign may be run at one time, in which case total quantities on each of the above items are given as a summary listing.

DATA INPUT

The input data for this program is the information which would appear on the sign (copy, arrows, shields, etc.) along with the necessary parameters such as station number, type of background material, etc. Figure 1 on Page 2 is the input coding form for this program. At the top right corner of the form, there are two blocks labeled A and B; then each successive block is labeled in order throughout the form. These labels correspond to letters in the legend located in the bottom left corner of the form. The various blocks are labeled directly in or adjacent to the appropriate block. On the right side of the form there is a blank

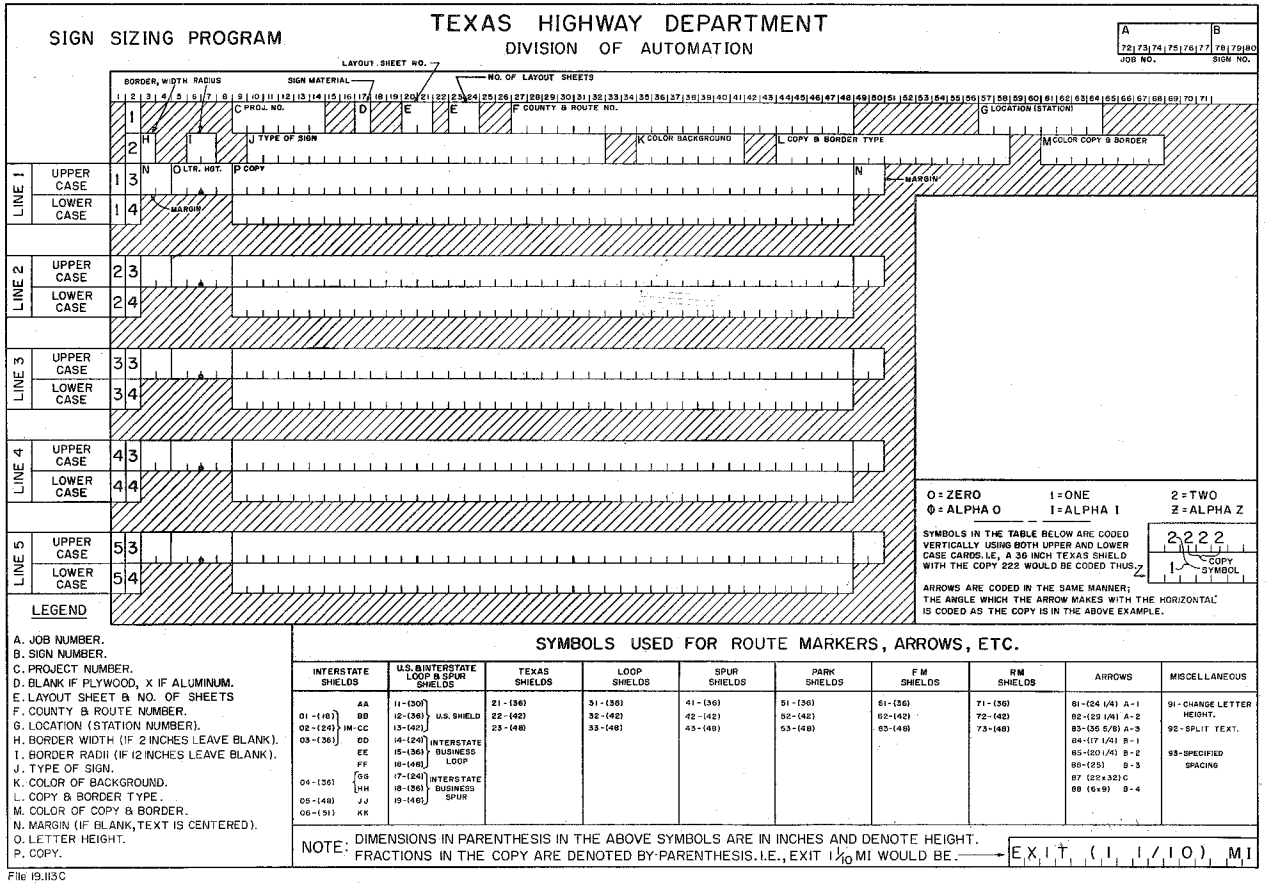


Figure 1. Sample Input Data Form

space which may be used by the designer to sketch the proposed sign panel to help him determine his design. Directly below this blank area is information which will be useful in coding the form. The table along the bottom contains the symbols used for route markers, arrows, etc., when coding this input form. One form is required for each sign panel to be sized.

The input coding form is divided into two parts: (1) the parameters, which include such things as project number, station number, county and highway number, etc., and (2) the lines of copy. The blocks labeled A through M which constitute the first two lines on the input form are the parameters. Blocks N, O and P are used in coding the text of the sign and are the lines of copy.

Parameters

The various parameters are coded as follows:

1. Block A (Job No.)

   The job number is coded in this block. If a number of signs is to be run at one time, each sign must have the same number in this block. Whenever this job number changes, a summary listing of quantities is printed out since the program assumes that this is the end of one job or batch. The Districts are urged to make this job number unique within the District by assigning numbers such as 121234 where the first two digits are the District Number followed by four numbers which are unique to each job

within that District.

2. Blocks B (Sign No.) and E (Layout Sheet No.) and E (No. of Layout Sheets)

The sign number is coded in Block B. There are two blocks labeled E. These blocks are used to locate the sign on a layout sheet. The block labeled Layout Sheet No. refers to the individual sheet number, whereas the block labeled Number of Layout Sheets refers to how many layout sheets there will be on the project. A sign number may be used only once per layout sheet number, i.e., Sign No. 3 cannot be used twice on Layout Sheet No. 4 of 8. However, there could be a Sign No. 3 on Layout Sheet No. 4 of 8 and on No. 5 of 8.

3. Block C (Project No.)

The control and section of the project is coded in this block.

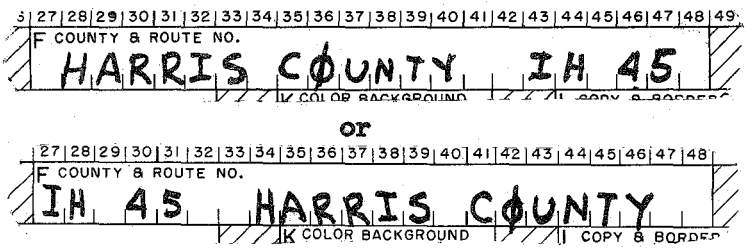
4. Block D (Sign Material)

The type of the background material is coded in this block. If the material is plywood, the block is left blank. If the material is aluminum an "X" is coded in this block.

5. Block F (County and Route No.)

The County and Highway Number may be coded anywhere and in any order within this block as shown below. (Blocks

with coding in any order are known as "free fields".)



6. Block G (Station)

The station number may be coded anywhere within this block.

7. Block H (Border Width)

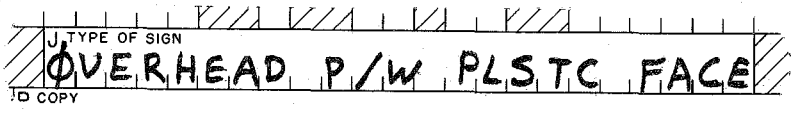
If a border width other than the standard two inches is required, it is coded in this block in inches. If the standard border width is to be used, this block should be left blank.

8. Block I (Border Radius)

If a border radius other than the standard 12 inches is required, it is coded in this block in inches. If the standard border radius is to be used, this block should be left blank.

9. Block J (Type of Sign)

The type of sign is coded anywhere in this block. For example, "Overhead Plywood, Plastic Face" is a type of sign. It is coded in the block as shown on the following page.



10. Block K (Color Background)

    The color of the background (Green or Blue) is coded in this block which is another free field.

11. Block L (Copy and Border Type)

    The type of the copy and border, for example "Blueline Removed", is coded in this field.

12. Block M (Color Copy and Border)

    This block is a free field and is coded with the color of the copy and border.

Copy

The program is capable of handling up to five Lines of copy. One Line of copy consists of two physical lines on the form. The Lines are labeled along the left side as shown in Figure 1. A Line of copy may consist of words, a shield or arrows, or any combination of these. When coding a word, the top line is used for upper case or capital letters, and the lower line is used for lower case letters, if any. If only an arrow or shield appears on a line, this is considered as a line of copy. The form must be coded consecutively on Lines one through five, i.e., a sign which has three Lines of copy is coded using the spaces marked Line 1, Line 2, and

Line 3.

In composing signs there are two types of lettering. One is all capital letters and the other is upper and lower case letters. (Capital letters and upper case letters are spaced differently.) The program assumes that within a word, if there are no lower case letters, then the word is composed of all capital letters. If lower case letters are encountered the upper case to lower case spacing is used.

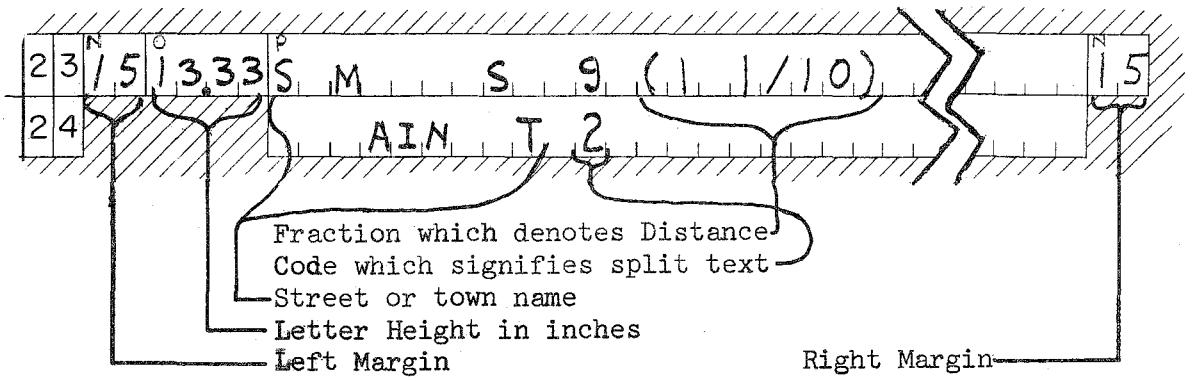
The symbols which indicate route markers, arrows, etc. are coded vertically using both the upper and lower line within a Line of copy. The data input form has all the codes for route markers, arrows, etc. listed on the bottom of the form along with some brief instructions for their use. Fractions which appear in the copy are coded using parentheses around the number and fraction. An example of a fraction is shown on the input data form.

Each Line is composed of three parts, the margin (Block N), the letter height (Block O), and the copy (Block P). There are two blocks labeled N for each Line. The sign copy is coded using these blocks as follows:

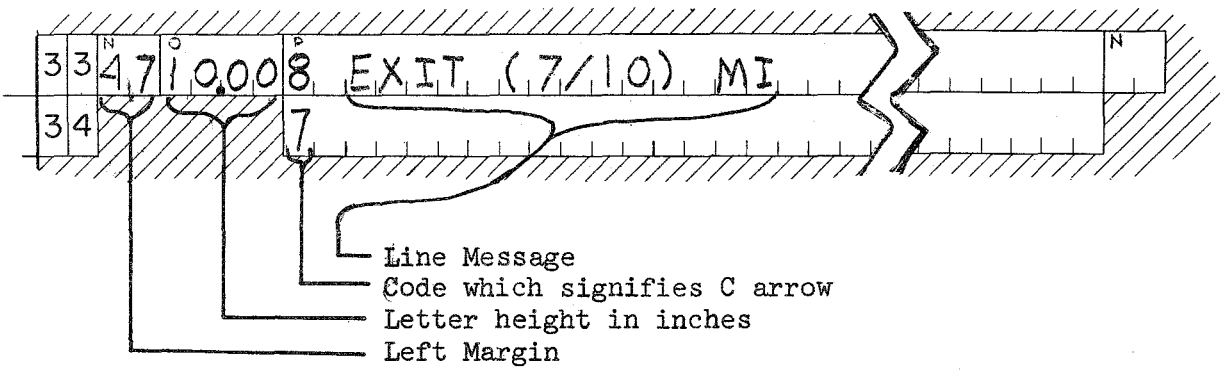
1. Block N (Margin)

   The designer is allowed to specify margins on either or both ends of any line. The specified margin is coded in inches on the data input form in the block labeled N. If specified margins are called for on both ends of a Line

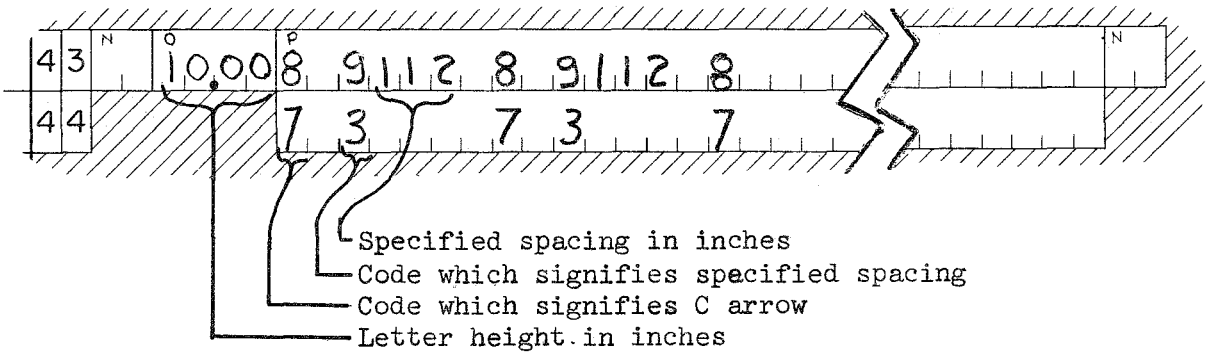
of copy, a $\frac{9}{2}$ must be coded vertically in the position where the designer would like the excess space to appear. (Coding vertically means that the top number appears on the upper line and the bottom number appears on the lower line.) The coding is shown in the example below and in Figure 4 on Page 18 of the example problems.



This example is a sequence sign and for legibility the text is justified on both the left and right. If margins were not specified each line would be centered on the panel. Another use of the margin occurs when an arrow or shield must be a specified distance from an edge. In this case the distance is measured to the edge of the arrow or shield and not to the center. An example is shown on the following page and in Figure 3 on Page 17 .



If a specified spacing is required between two symbols or words, they are separated by a $\frac{9}{3}$ coded vertically followed by the specified spacing in inches. This spacing is also measured from edge to edge. An example is shown below and in Figure 5 on Page 19 .



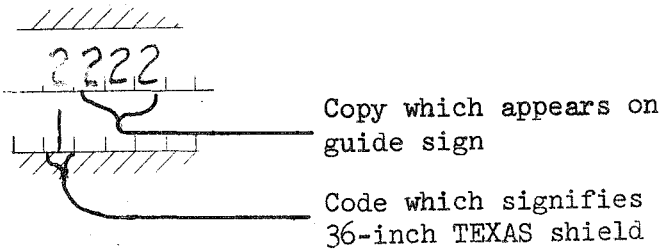
In this example both blocks of N are left blank since this is an internal spacing. A vertical spacing may not be specified.

2. Block O (Letter Height)

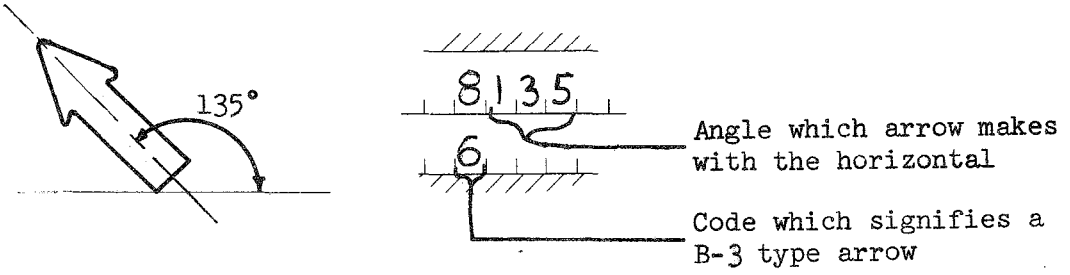
This block is used for the letter height of the Line. A letter height must be given for every Line of copy, even if only a shield or arrow appears on that line. This is necessary for interlinear spacing. If only a shield or arrow appears, a good letter height to use is 16.00.

3. Block P (Copy)

The actual sign copy is coded in this block along with the various symbols which represent route markers, arrows, etc. Each word or symbol is separated from the next word or symbol by a blank space. Only one blank space should appear between any two words or symbols. The text of the line must begin in the first column of the block. A blank space should not be left before the initial word or symbol. Each type of shield which appears on an Interstate sign panel has a corresponding symbol (two digit number) shown in the table at the bottom of the input data form. (These two digit numbers are entered vertically on the form.) Beside each of the symbols is a number in parentheses which denotes the height in inches of the particular shield. For example, if the designer needs a 36-inch TEXAS shield with the copy 222, it would be coded as follows:



Arrows are coded in the same manner. The angle which the arrow makes with the horizontal is coded like the copy in the above example. For instance, a B-3 arrow in the configuration shown below would be coded as follows:



The one exception is the C type arrow which points downward and which is only used on overhead signs. The degree which this arrow makes with the horizontal is not coded along with the symbol. The $\frac{8}{7}$ stands alone.

The example problems show the method in which several types of signs are coded on the data input form along with the output listing for each of these example signs.

OUTPUT

There is one page of output generated for each sign within a batch or job. This page lists all the sizing information pertaining to the sign along with the quantities of the materials required to fabricate it. Figure 2 on Page 13 is an example output sheet. Each of the Example Problems also contains an output sheet. The following items are listed along the top line of each page: Job Number, Project Number, Sign Number, Layout Sheet Number and Number of Sheets, County and Highway Number, and Station. All of this information corresponds to the same information entered on the input data form. The rest of the output listing is divided into four parts: (1) Sign Description, (2) Sign Layout, (3) Sign Quantities, and (4) Copy Spacing. Each of these will be discussed in detail.

Sign Description

The sign dimensions, width and height, are given as (1) exact distances in inches and (2) distances rounded off to the next higher half foot increment. The background material whether it be aluminum or plywood is sold in six inch increments in both dimensions. The rounded distances from the computer program give a slightly larger sign than is required. If the designer deems it necessary, he may reduce the overall dimensions of the sign slightly. A situation which might require this paring would occur in an overhead

JOB NO - 123456 PROJ NO - 27117 SIGN NO 001 LAYOUT SHEET 01 OF 27 COUNTY-HIGHWAY - IH 610 HARRIS CO STATION - 193600

SIGN DESCRIPTION	SIGN LAYOUT	VERTICAL SPACING	SIGN QUANTITIES			
			ITEM	QUANTITY	ITEM	QUANTITY
WIDTH - 205.75 SAY - 17 FT 6 IN		15.50 IN	10.00 IN CAP	6		
HEIGHT - 93.00 SAY - 8 FT 0 IN	10 G D	16.00 IN	16.00 IN UC	4		
BORDER WIDTH - 2 IN	L ULFTON R		12.00 IN LC	16		
BORDER RADII - 12 IN		12.00 IN	10.00 IN NUM	3		
QUANTITY REQUIRED - 140.00 SQ FT	20 8 S	16.00 IN	12 IN RADIUS	4		
LEGEND -	L ISSONNET T		2 IN BORDER	43.00		
BACKGROUND -		10.00 IN	PLYWOOD	140.00		
A) TYPE - OVERHEAD P/W PLSTC FCE	30 EXIT (3/10) MI	15.00 IN				
B) COLOR - GREEN	L					
		11.50 IN				
LEGEND -						
A) TYPE - BLUELINE REMOV.						
B) COLOR - WHITE						
NOTE - COPY SPACING IS IN INCHES AND EIGHTHS	TOTAL HEIGHT - 96.00 IN					

**** SIGN COPY ****

LINE 1 - LENGTH OF COPY (LESS MARGIN AND EDGE) - 139-1/8 IN LETTER HEIGHTS - 16.00 IN UC 12.00 IN LC N/A IN CAPS

UPPER CASE	SPACE	G							SPACE	D			SPACE				
LOWER CASE			U	L	F	T	O	N			R						
CHARACTER-		18-	16-	7 -	9 -	11-	15-	10-		18-	7 -						
SPACING		0/8	3/8	6/8	6/8	5/8	3/8	2/8		1/8	7/8						
WORD SPACE	35 -4/8 IN	89 -1/8 IN							24 -0/8 IN	26 -0/8 IN			35 -3/8 IN				

LINE 2 - LENGTH OF COPY (LESS MARGIN AND EDGE) - 169-6/8 IN LETTER HEIGHTS - 16.00 IN UC 12.00 IN LC N/A IN CAPS

UPPER CASE	SPACE	B								SPACE	S		SPACE				
LOWER CASE			I	S	S	O	N	N	E	T		T					
CHARACTER-		18-	7 -	13-	13-	15-	16-	15-	13-	8 -		16-	8 -				
SPACING		4/8	4/8	3/8	6/8	3/8	3/8	0/8	6/8	0/8		1/8	0/8				
WORD SPACE	20 -1/8 IN	121-5/8 IN								24 -0/8 IN		24 -1/8 IN		20 -1/8 IN			

LINE 3 - LENGTH OF COPY (LESS MARGIN AND EDGE) - 113-5/8 IN LETTER HEIGHTS - N/A IN UC N/A IN LC 10.00 IN CAPS

UPPER CASE	SPACE	E	X	I	T	SPACE	3/10		SPACE	M	I	SPACE					
LOWER CASE																	
CHARACTER-		9 -	12-	5 -	7 -					14-	2 -						
SPACING		7/8	1/8	2/8	3/8					4/8	0/8						
WORD SPACE	48 -2/8 IN	34 -5/8 IN				15 -0/8 IN		32 -4/8 IN		15 -0/8 IN		16 -4/8 IN		48 -1/8 IN			

Figure 2. Sample Output Listing

installation. Signs which are greater than 10 ft. 6 in. in the vertical dimension cannot be lighted properly. If, for example, an overhead sign designed by this program gave a vertical dimension of 11 ft. 0 in., then 6 in. may be removed by the designer. If this is done then the quantity of background material required must be adjusted along with the quantity of border material. The quantity of background material required is given as an output according to the rounded off dimensions of the sign panel.

The other information under the Sign Description Block is a printout of the same information which is entered on the input data form. These parameters are as follows: (1) border width in inches, (2) border radius in inches, (3) type of background material, (4) color of background material, (5) type of copy and border material, and (6) color of copy and border material.

Sign Layout

This block consists of two parts: (1) a duplicate of the input Lines of copy, and (2) the vertical spacing of the sign panel. This block gives a check of the input Line copy for the sign panel. The vertical spacing of the sign panel is given in inches along with the total height in inches.

Sign Quantities

The Sign Quantities Block consists of two columns of items and quantities. Thirty-six different items per sign panel can be handled

in this block. The block contains total quantities for the sign panel including the quantity of: (1) each size letter, (2) each size number, (3) each type route marker, (4) each type arrow, (5) each type of background material (aluminum or plywood), (6) each type of aluminum used in fabricating Interstate shields, and (7) border material used.

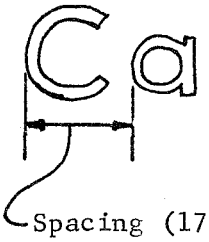
Sign Copy

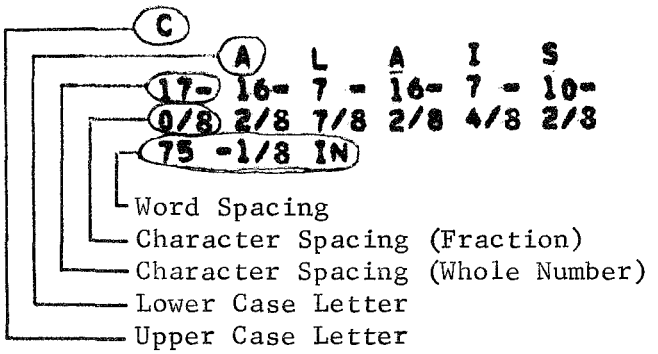
Each Line of copy on the sign panel generates six lines of output. Each Line is labeled and separated by several blank lines. The first line of the output gives: (1) the length of the copy less margins and edges, and (2) the letter heights used for the Line of copy. The length of the Line is given in inches and eighths whereas the letter heights are given in inches and hundredths.

The second and third lines of output show the copy which would appear on this Line on the sign panel. The second line which is labeled upper case is used to show upper case and capital letters, numerals, spaces, arrow types, route marker copy, and fractions. The third line which is labeled lower case is used to show lower case letters and types of route markers.

The fourth and fifth lines of output give the character spacing within words in the Line of copy. The upper line (fourth line) gives the whole number and the lower line (fifth line) gives the

fraction in eighths. The whole number and fraction make up the character spacing within a word. The spacing is measured from the beginning of one character to the beginning of the next character as shown below. The spacing of the last character in a word is the width of that character.





The sixth line is the word spacing and gives widths of spaces, words, arrows, route markers, and fractions for the Line of copy. These widths are also in inches and eighths.

There is one more output to this program. It is a summary listing of quantities from all of the signs within a batch or job. In this summary the quantity is listed for each item which is required to fabricate all of the signs on a job. The listing is similar to the sign quantities block on each sign output sheet and an example is shown on Page 20 of the example problems.

JOB NO - 123456 PROJ NO - 123456 SIGN NO 001 LAYOUT SHEET 01 OF 03 COUNTY-HIGHWAY - TRAVIS COUNTY IH 35 STATION - 1008+07

SIGN DESCRIPTION	SIGN LAYOUT	VERTICAL SPACING
WIDTH - 130.12 SAY - 11 FT 0 IN		13.00 IN
HEIGHT - 122.00 SAY - 10 FT 6 IN	1U 271 EAST	36.00 IN
BORDER WIDTH - 2 IN	L 1	
BORDER RADII - 12 IN		11.00 IN
QUANTITY REQUIRED - 115.50 SQ FT	2U B	16.00 IN
LEGEND -	L ASTROP	
BACKGROUND -		12.00 IN
A) TYPE - OVERHEAD P/W PLSTC FACE	3U 8	22.00 IN
B) COLOR - GREEN	L 7	
		16.00 IN
LEGEND -		
A) TYPE - BLUELINE REMOV.		
B) COLOR - WHITE		
NOTE - COPY SPACING IS IN INCHES AND EIGHTHS	TOTAL HEIGHT - 126.00 IN	

SIGN QUANTITIES			
ITEM	QUANTITY	ITEM	QUANTITY
6.00 IN CAP	5		
12.00 IN CAP	4		
16.00 IN UC	1		
12.00 IN LC	6		
12.00 IN NUM	2		
C ARROW	1		
IM-2T7F	1		
3 IN RADIUS	4		
12 IN RADIUS	4		
1 IN BORDER	10.00		
2 IN BORDER	35.00		
F-ALUMINUM	9.00		
PLYWOOD	115.50		

**** SIGN COPY ****

LINE 1 - LENGTH OF COPY (LESS MARGIN AND EDGE) - 69 -5/8 IN LETTER HEIGHTS - N/A IN UC N/A IN LC 12.00 IN CAPS

UPPER CASE	SPACE	TX 71	SPACE	E	A	S	T	SPACE		
LOWER CASE		IM-2T7F								
CHARACTER-				11-	15-	12-	8 -			
SPACING				4/8	3/8	6/8	7/8			
WORD SPACE	31 -2/8 IN	36 -0/8 IN	18 -0/8 IN	48 -4/8 IN				31 -1/8 IN		

LINE 2 - LENGTH OF COPY (LESS MARGIN AND EDGE) - 94 -1/8 IN LETTER HEIGHTS - 16.00 IN UC 12.00 IN LC N/A IN CAPS

UPPER CASE	SPACE	B						SPACE		
LOWER CASE			A	S	T	R	O	P		
CHARACTER-		17-	14-	13-	13-	10-	15-	10-		
SPACING		2/8	5/8	3/8	0/8	2/8	3/8	2/8		
WORD SPACE	19 -0/8 IN	94 -1/8 IN						18 -7/8 IN		

LINE 3 - LENGTH OF COPY (LESS MARGIN AND EDGE) - 32 -0/8 IN LETTER HEIGHTS - N/A IN UC N/A IN LC 16.00 IN CAPS

UPPER CASE	SPACE	C-ARROW	SPACE		
LOWER CASE					
CHARACTER-					
SPACING					
WORD SPACE	58 -0/8 IN	32 -0/8 IN	42 -0/8 IN		

SIGN SIZING PROGRAM

TEXAS HIGHWAY DEPARTMENT
DIVISION OF AUTOMATION

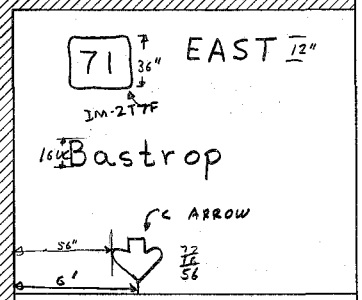
A 1 2 3 4 5 6 (JOB NO.) B 0 0 1 (SIGN NO.)

BORDER, WIDTH RADIUS | SIGN MATERIAL | LAYOUT SHEET NO. | NO. OF LAYOUT SHEETS

1		C PROJ. NO. 1,2,3,4,5,6	D	E 01	E 03	F COUNTY & ROUTE NO. TRAVIS COUNTY, IH 35	G LOCATION (STATION) 1008+07
2	H	I	J TYPE OF SIGN OVERHEAD P/W PLSTC FACE	K COLOR BACKGROUND GREEN	L COPY & BORDER TYPE BLUELINE REMOV.	M COLOR COPY & BORDER WHITE	

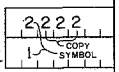
			N	O LTR. HGT.	P COPY
LINE 1	UPPER CASE	1 3		12.00	27.1 EAST
	LOWER CASE	1 4	MARGIN		1
LINE 2	UPPER CASE	2 3			16.00 B
	LOWER CASE	2 4			AST.RΦP
LINE 3	UPPER CASE	3 3			56 16.00 8
	LOWER CASE	3 4			7
LINE 4	UPPER CASE	4 3			
	LOWER CASE	4 4			
LINE 5	UPPER CASE	5 3			
	LOWER CASE	5 4			

N MARGIN



O = ZERO 1 = ONE 2 = TWO
Φ = ALPHA O I = ALPHA I Z = ALPHA Z

SYMBOLS IN THE TABLE BELOW ARE CODED VERTICALLY USING BOTH UPPER AND LOWER CASE CARDS. I.E., A 36 INCH TEXAS SHIELD WITH THE COPY 222 WOULD BE CODED THUS: Z



ARROWS ARE CODED IN THE SAME MANNER; THE ANGLE WHICH THE ARROW MAKES WITH THE HORIZONTAL IS CODED AS THE COPY IS IN THE ABOVE EXAMPLE.

LEGEND

A. JOB NUMBER.
B. SIGN NUMBER.
C. PROJECT NUMBER.
D. BLANK IF PLYWOOD, X IF ALUMINUM.
E. LAYOUT SHEET & NO. OF SHEETS
F. COUNTY & ROUTE NUMBER.
G. LOCATION (STATION NUMBER).
H. BORDER WIDTH (IF 2 INCHES LEAVE BLANK).
I. BORDER RADII (IF 12 INCHES LEAVE BLANK).
J. TYPE OF SIGN.
K. COLOR OF BACKGROUND.
L. COPY & BORDER TYPE.
M. COLOR OF COPY & BORDER.
N. MARGIN (IF BLANK, TEXT IS CENTERED).
O. LETTER HEIGHT.
P. COPY.

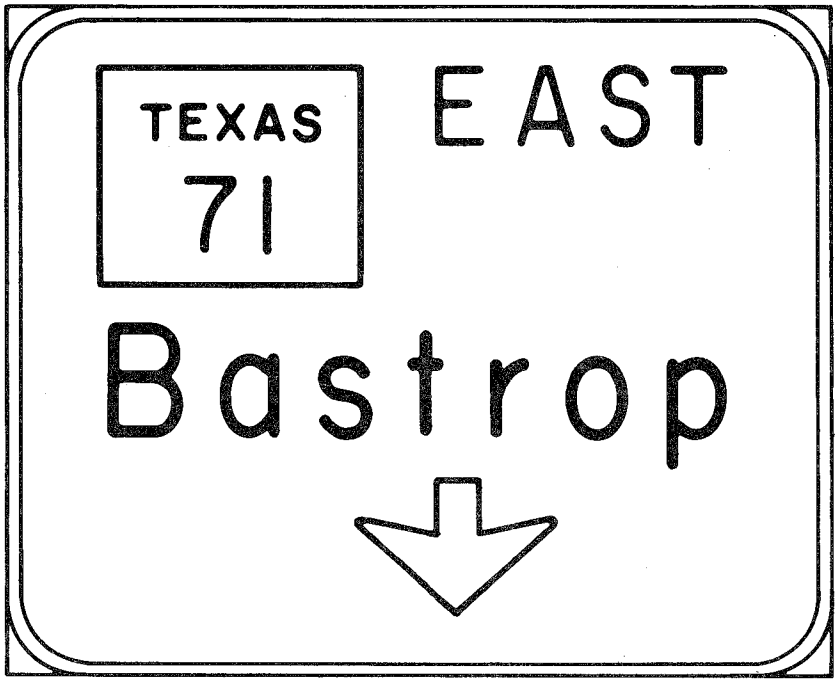
SYMBOLS USED FOR ROUTE MARKERS, ARROWS, ETC.

INTERSTATE SHIELDS	U.S. & INTERSTATE LOOP & SPUR SHIELDS	TEXAS SHIELDS	LOOP SHIELDS	SPUR SHIELDS	PARK SHIELDS	FM SHIELDS	RM SHIELDS	ARROWS	MISCELLANEOUS
AA 01-(18) BB 02-(24) CC 03-(36) DD EE FF 04-(36) GG HH 05-(48) JJ 06-(51) KK	11-(30) 12-(36) U.S. SHIELD 13-(42) 14-(24) INTERSTATE BUSINESS LOOP 15-(36) 16-(48) 17-(24) INTERSTATE BUSINESS SPUR 18-(36) 19-(48)	21-(36) 22-(42) 23-(48)	31-(36) 32-(42) 33-(48)	41-(36) 42-(42) 43-(48)	51-(36) 52-(42) 53-(48)	61-(36) 62-(42) 63-(48)	71-(36) 72-(42) 73-(48)	81-(24 1/4) A-1 82-(29 1/4) A-2 83-(35 5/8) A-3 84-(17 1/4) B-1 85-(20 1/4) B-2 86-(25) B-3 87 (22x32) C 88 (6x9) B-4	91-CHANGE LETTER HEIGHT. 92-SPLIT TEXT. 93-SPECIFIED SPACING

NOTE: DIMENSIONS IN PARENTHESIS IN THE ABOVE SYMBOLS ARE IN INCHES AND DENOTE HEIGHT. FRACTIONS IN THE COPY ARE DENOTED BY PARENTHESIS. I.E., EXIT 1 1/10 MI WOULD BE. → EXIT (1 1/10) MI

File 19.113C

Data Input Form

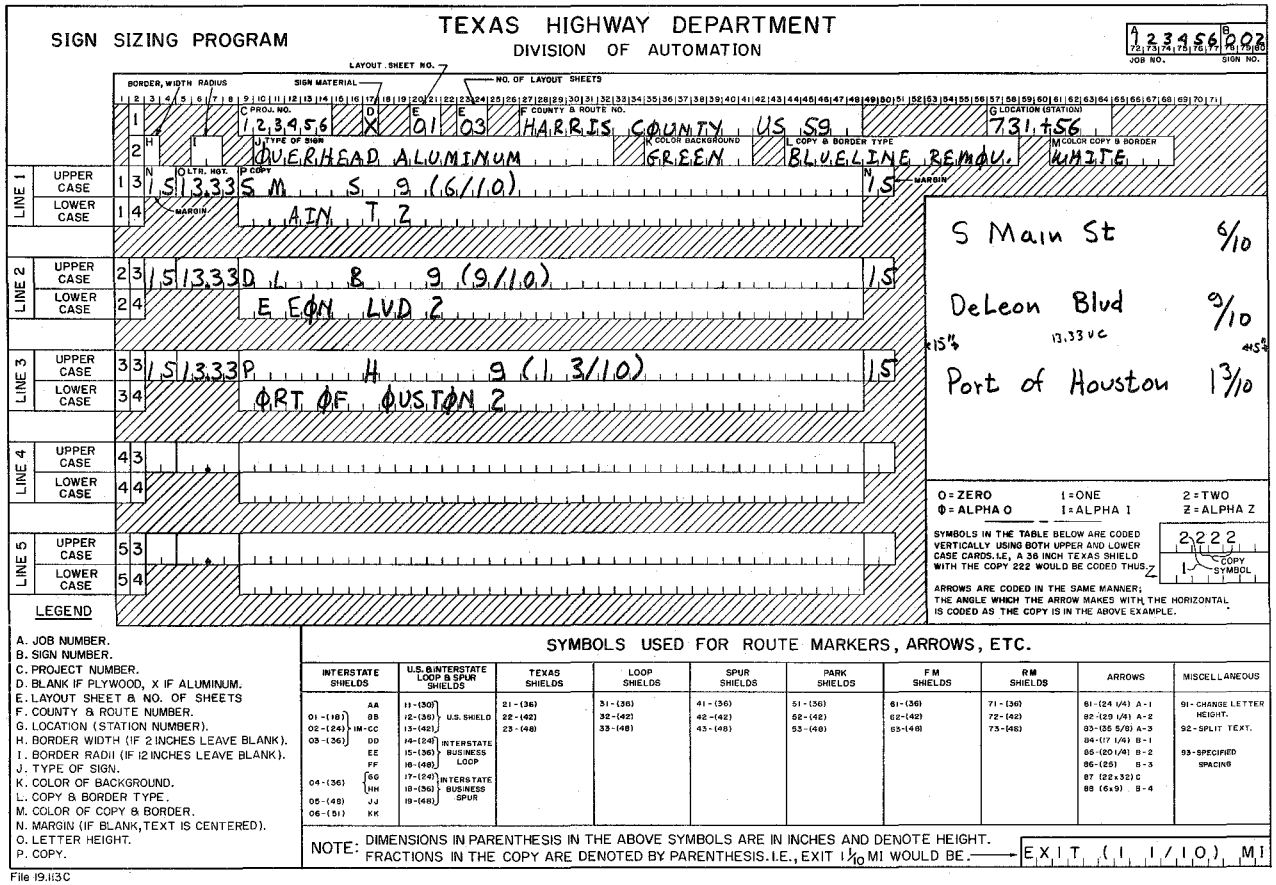


Sign Layout

Figure 3. Sample Problem Number One

```
 JOB NO - 123456  PROJ NO - 123456  SIGN NO 002  LAYOUT SHEET 01 OF 03  COUNTY-HIGHWAY - HARRIS COUNTY  US 59    STATION - 731+56

************************************************************************************************************************************
*                                   *                                        VERTICAL *              SIGN QUANTITIES               *
*         SIGN DESCRIPTION          *               SIGN LAYOUT              SPACING  *                                            *
*                                   *                                                 *   ITEM     QUANTITY *  ITEM     QUANTITY *
* WIDTH  - 289.12 SAY - 24 FT  6 IN *                                        14.00 IN * 13.33 IN UC       8 *                      *
* HEIGHT - 104.00 SAY -  9 FT  0 IN *  1U S M    S  9 (6/10)                 20.00 IN * 10.00 IN LC      22 *                      *
* BORDER WIDTH -                2 IN *  L     AIN  T 2                                * 13.33 IN NUM     10 *                      *
* BORDER RADII -               12 IN *                                       10.00 IN * 12 IN RADIUS      4 *                      *
* QUANTITY REQUIRED -  220.50 SQ FT *  2U D L     B    9 (9/10)              20.00 IN * 2 IN BORDER   59.00 *                      *
* LEGEND -                          *   L  E EON  LVD 2                               * PLYWOOD      220.50 *                      *
* BACKGROUND -                      *                                        10.00 IN *                     *                      *
* A) TYPE - OVERHEAD ALUMINUM       *  3U P       H        9 (1 3/10)        20.00 IN *                     *                      *
* B) COLOR - GREEN                  *   L  ORT OF  OUSTON 2                           *                     *                      *
*                                   *                                        14.00 IN *                     *                      *
* LEGEND -                          *                                                 *                     *                      *
* A) TYPE - BLUELINE REMOV.         *                                                 *                     *                      *
* B) COLOR - WHITE                  *                                                 *                     *                      *
*                                   *                                                 *                     *                      *
*************************************                                                 *                     *                      *
*                                   *                                                 *                     *                      *
*   NOTE - COPY SPACING IS IN       *                                                 *                     *                      *
*          INCHES AND EIGHTHS       *                      TOTAL HEIGHT - 108.00 IN *                     *                      *
*                                   *                                                 *                     *                      *
************************************************************************************************************************************

                                                        **** SIGN   COPY ****

  LINE 1 - LENGTH OF COPY (LESS MARGIN AND EDGE) - 176-6/8 IN   LETTER HEIGHTS -    13.33 IN UC   10.00 IN LC   N/A   IN CAPS
  UPPER CASE   SPACE        S             SPACE    M                SPACE    S            SPACE       6/10         SPACE
  LOWER CASE                                           A   I   N                  T
  CHARACTER-                6 -                    16- 13- 7 - 8 -           13- 6 -
  SPACING                   6/8                    7/8 4/8 5/8 4/8           4/8 5/8
  WORD SPACE   17 -0/8 IN   6 -6/8 IN 20 -0/8 IN 46 -4/8 IN       20 -0/8 IN 20 -1/8 IN 103-2/8 IN  43 -3/8 IN  17 -0/8 IN

  LINE 2 - LENGTH OF COPY (LESS MARGIN AND EDGE) - 201-1/8 IN   LETTER HEIGHTS -    13.33 IN UC   10.00 IN LC   N/A   IN CAPS
  UPPER CASE   SPACE        D    L                  SPACE    B                SPACE      9/10         SPACE
  LOWER CASE                    E       E   O   N                 L   V   D
  CHARACTER-                14- 15- 12- 11- 12- 8 -          15- 6 - 12- 8 -
  SPACING                   1/8 2/8 5/8 5/8 6/8 4/8          4/8 2/8 5/8 4/8
  WORD SPACE   17 -0/8 IN   74 -7/8 IN              20 -0/8 IN 42 -7/8 IN      78 -7/8 IN  43 -3/8 IN  17 -0/8 IN

  LINE 3 - LENGTH OF COPY (LESS MARGIN AND EDGE) - 255-1/8 IN   LETTER HEIGHTS -    13.33 IN UC   10.00 IN LC   N/A   IN CAPS
  UPPER CASE   SPACE        P                  SPACE                SPACE    H                                SPACE      1 3/10      S
  LOWER CASE                    O   R   T                O   F                  O   U   S   T   O   N
  CHARACTER-                13- 12- 8 - 6 -              11- 5 -             15- 12- 12- 11- 9 - 12- 8 -
  SPACING                   7/8 6/8 1/8 5/8              3/8 4/8             2/8 6/8 2/8 1/8 5/8 6/8 4/8
  WORD SPACE   17 -0/8 IN   41 -3/8 IN      20 -0/8 IN 16 -7/8 IN 20 -0/8 IN 82 -2/8 IN                   24 -7/8 IN  54 -5/8 IN  1

         CONTINUATION OF LINE 3 *****
  UPPER CASE   PACE
  LOWER CASE
  CHARACTER-
  SPACING
  WORD SPACE   7 -0/8 IN
```

Output Listing



Data Input Form

Sign Layout

Figure 4. Sample Problem Number Two

JOB NO - 123456 PROJ NO - 123456 SIGN NO 003 LAYOUT SHEET 01 OF 03 COUNTY-HIGHWAY - HARRIS COUNTY IH 45 STATION - 155+13

SIGN DESCRIPTION	SIGN LAYOUT	VERTICAL SPACING	SIGN QUANTITIES			
			ITEM	QUANTITY	ITEM	QUANTITY
WIDTH - 263.25 SAY - 22 FT 0 IN	1U 045 175 NORTH	13.00 IN	12.00 IN CAP	5		
HEIGHT - 122.00 SAY - 10 FT 6 IN	L 4 1	36.00 IN	16.00 IN UC	2		
BORDER WIDTH - 2 IN			12.00 IN LC	14		
BORDER RADII - 12 IN		11.00 IN	C ARROW	2		
QUANTITY REQUIRED - 231.00 SQ FT	2U H D	16.00 IN	IM-GC	1		
LEGEND -	L UNTSVILLE ALLAS		IM-1A1F	1		
BACKGROUND -		12.00 IN	12 IN RADIUS	4		
A) TYPE - OVERHEAD P/W PLSTC FACE	3U 8 9112 8	22.00 IN	IM-1A1F RAD	1		
B) COLOR - GREEN	L 7 3 7		2 IN BORDER	57.00		
		16.00 IN	IM-1A1F BORD	1.00		
LEGEND -			A-ALUMINUM	4.32		
A) TYPE - BLUELINE REMOV.			F-ALUMINUM	5.54		
B) COLOR - WHITE			PLYWOOD	231.00		
NOTE - COPY SPACING IS IN INCHES AND EIGHTHS	TOTAL HEIGHT - 126.00 IN					

**** SIGN COPY ****

LINE 1 - LENGTH OF COPY (LESS MARGIN AND EDGE) - 173-0/8 IN LETTER HEIGHTS - N/A IN UC N/A IN LC 12.00 IN CAPS

UPPER CASE	SPACE	IH 45	SPACE	US 75	SPACE	N	O	R	T	H	SPACE							
LOWER CASE		IM-GG		IM-1A1F														
CHARACTER-						14-	15-	13-	12-	9 -								
SPACING						7/8	3/8	2/8	6/8	5/8								
WORD SPACE	45 -4/8 IN	36 -0/8 IN	18 -0/8 IN	35 -0/8 IN	18 -0/8 IN	65 -7/8 IN					45 -4/8 IN							

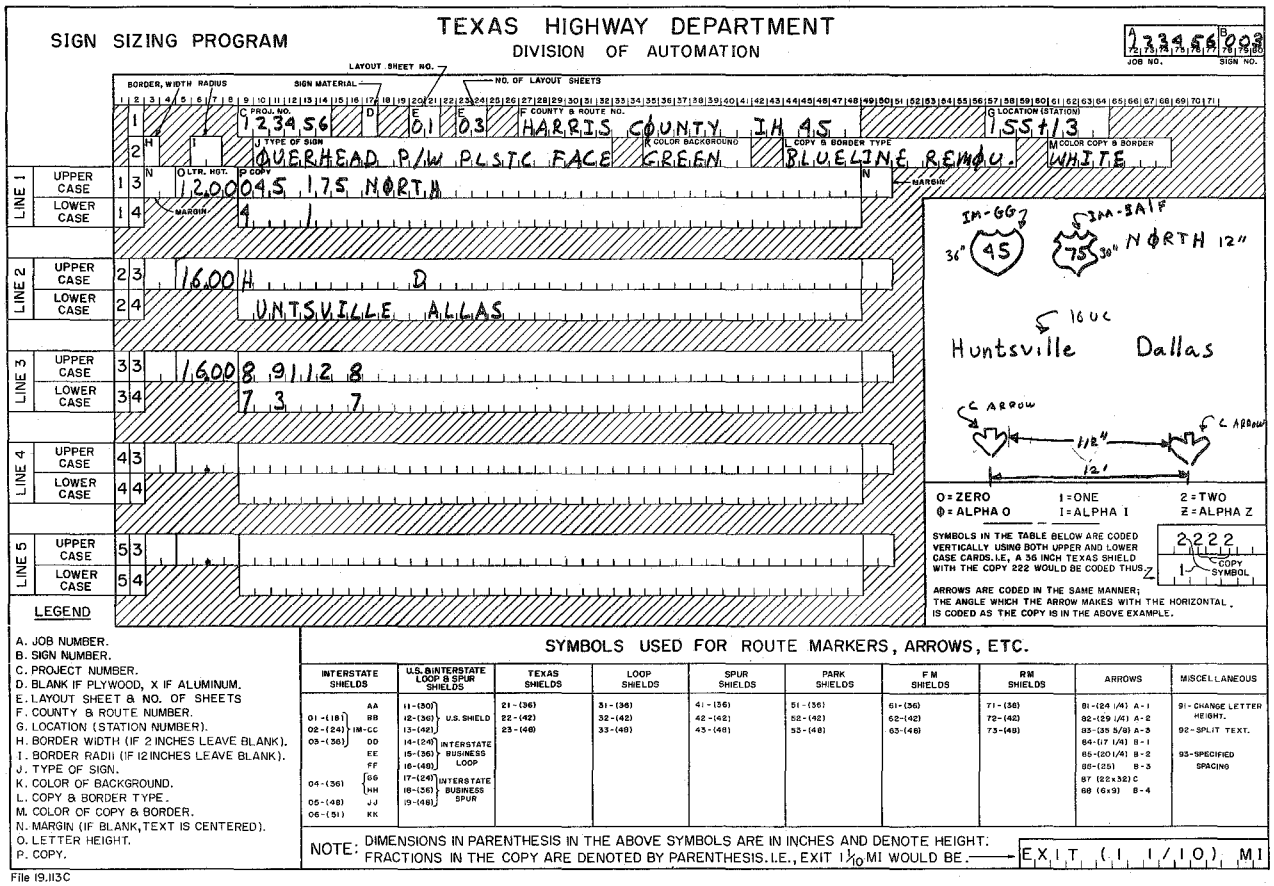
LINE 2 - LENGTH OF COPY (LESS MARGIN AND EDGE) - 227-2/8 IN LETTER HEIGHTS - 16.00 IN UC 12.00 IN LC N/A IN CAPS

UPPER CASE	SPACE	H									SPACE	D					SPACE	
LOWER CASE			U	N	T	S	V	I	L	L	E		A	L	L	A	S	
CHARACTER-		19-	16-	14-	11-	13-	16-	9 -	9 -	7 -	10-		16-	16-	9 -	7 -	14-	10-
SPACING		2/8	3/8	6/8	2/8	3/8	4/8	2/8	2/8	7/8	2/8		7/8	2/8	2/8	7/8	5/8	2/8
WORD SPACE	18 -3/8 IN	128-1/8 IN										24 -0/8 IN	75 -1/8 IN					18 -3/8 IN

LINE 3 - LENGTH OF COPY (LESS MARGIN AND EDGE) - 176-0/8 IN LETTER HEIGHTS - N/A IN UC N/A IN LC 16.00 IN CAPS

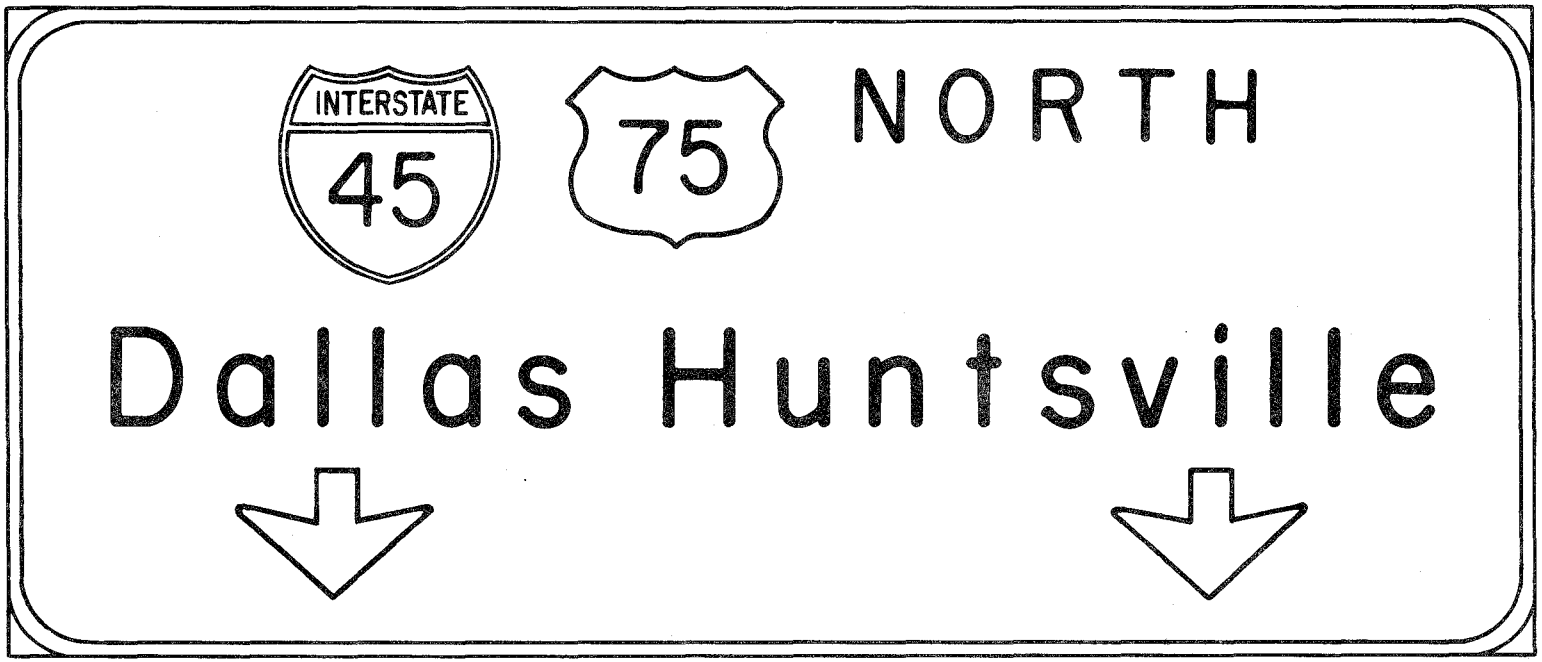
UPPER CASE	SPACE	C-ARROW	SPACE	C-ARROW	SPACE	
LOWER CASE						
CHARACTER-						
SPACING						
WORD SPACE	44 -0/8 IN	32 -0/8 IN	112-0/8 IN	32 -0/8 IN	44 -0/8 IN	

Output Listing



File 19.113C

Data Input Form



Sign Layout

Figure 5. Sample Problem Number Three

124456 REQUIREMENTS

ITEM	QUANT.	ITEM	QUANT.	ITEM	QUANT.	ITEM	QUANT.	ITEM	QUANT.	ITEM	QUANTITY
LETTERS		ARROWS		TEXAS SHIELDS		SPUR SHIELDS		FM SHIELDS		MISCELLANEOUS	
6.00 IN CAP	5	A-1 ARROW	0	IM-2T1F	0	IM-2S1F	0	IM-2F1F	0	1 IN BORDER	10.00 FT.
8.00 IN CAP	0	A-2 ARROW	0	IM-2T2F	0	IM-2S2F	0	IM-2F2F	0	2 IN BORDER	151.00 FT.
10.00 IN CAP	0	A-3 ARROW	0	IM-2T3F	0	IM-2S3F	0	IM-2F3F	0	3 IN BORDER	0.0 FT.
10.67 IN CAP	0	B-1 ARROW	0	IM-2T4F	0	IM-2S4F	0	IM-2F4F	0	IM-1A1F BORDER	1.00
12.00 IN CAP	9	B-2 ARROW	0	IM-2T5F	0	IM-2S5F	0	IM-2F5F	0	IM-1A2F BORDER	0.0
13.33 IN CAP	0	B-3 ARROW	0	IM-2T6F	0	IM-2S6F	0	IM-2F6F	0	IM-1A3F BORDER	0.0
15.00 IN CAP	0	C ARROW	3	IM-2T7F	1	IM-2S7F	0	IM-2F7F	0	IM-1A4F BORDER	0.0
16.00 IN CAP	0			IM-2T8F	0	IM-2S8F	0	IM-2F8F	0	IM-1A5F BORDER	0.0
18.00 IN CAP	0	INTERSTATE SHIELDS		IM-2T9F	0	IM-2S9F	0	IM-2F9F	0	IM-1A6F BORDER	0.0
20.00 IN CAP	0	IM-AA	0	IM-2T10F	0	IM-2S10F	0	IM-2F10F	0		
24.00 IN CAP	0	IM-BB	0	IM-2T11F	0	IM-2S11F	0	IM-2F11F	0	3 IN RADIUS CORNER	4
		IM-CC	0	IM-2T12F	0	IM-2S12F	0	IM-2F12F	0	6 IN RADIUS CORNER	0
6.00 IN UC	0	IM-DD	0							9 IN RADIUS CORNER	0
8.00 IN UC	0	IM-EE	0	LOOP SHIELDS		PARK SHIELDS		RM SHIELDS		12 IN RADIUS CORNER	12
10.67 IN UC	0	IM-FF	0	IM-2L1F	0	IM-2P1F	0	IM-2R1F	0	IM-1A1F RADIUS CORNER	1
13.33 IN UC	8	IM-GG	1	IM-2L2F	0	IM-2P2F	0	IM-2R2F	0	IM-1A2F RADIUS CORNER	0
16.00 IN UC	3	IM-HH	0	IM-2L3F	0	IM-2P3F	0	IM-2R3F	0	IM-1A3F RADIUS CORNER	0
20.00 IN UC	0	IM-JJ	0	IM-2L4F	0	IM-2P4F	0	IM-2R4F	0	IM-1A4F RADIUS CORNER	0
24.00 IN UC	0	IM-KK	0	IM-2L5F	0	IM-2P5F	0	IM-2R5F	0	IM-1A5F RADIUS CORNER	0
				IM-2L6F	0	IM-2P6F	0	IM-2R6F	0	IM-1A6F RADIUS CORNER	0
4.50 IN LC	0	IM-1L LOOP	0	IM-2L7F	0	IM-2P7F	0	IM-2R7F	0		
6.00 IN LC	0	IM-1M LOOP	0	IM-2L8F	0	IM-2P8F	0	IM-2R8F	0	PLYWOOD SIGN MATERIAL	567.00 SQ.FT.
9.00 IN LC	0	IM-1N LOOP	0	IM-2L9F	0	IM-2P9F	0	IM-2R9F	0	A-ALUM. SIGN MATERIAL	4.32 SQ. FT.
10.00 IN LC	22			IM-2L10F	0	IM-2P10P	0	IM-2R10F	0	F-ALUM. SIGN MATERIAL	14.54 SQ. FT.
12.00 IN LC	20	IM-1P SPUR	0	IM-2L11F	0	IM-2P11P	0	IM-2R11F	0		
15.00 IN LC	0	IM-1R SPUR	0	IM-2L12F	0	IM-2P12P	0	IM-2R12F	0		
18.00 IN LC	0	IM-1S SPUR	0								
NUMERALS		U.S. SHIELDS									
6.00 IN NUM	0	IM-1A1F	1								
8.00 IN NUM	0	IM-1A2F	0								
10.00 IN NUM	0	IM-1A3F	0								
10.67 IN NUM	0	IM-1A4F	0								
12.00 IN NUM	2	IM-1A5F	0								
13.33 IN NUM	10	IM-1A6F	0								
15.00 IN NUM	0										
16.00 IN NUM	0										
18.00 IN NUM	0										
20.00 IN NUM	0										
24.00 IN NUM	0										

TOTAL NUMBER OF SIGNS PROCESSED 3

Figure 6. Summary of Quantities Listing