



U.S. Department
of Transportation
**Federal Highway
Administration**

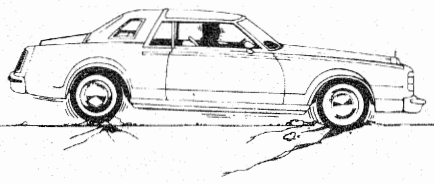
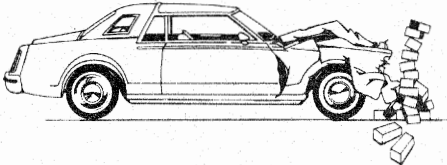
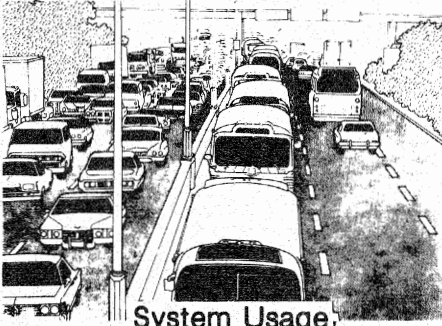
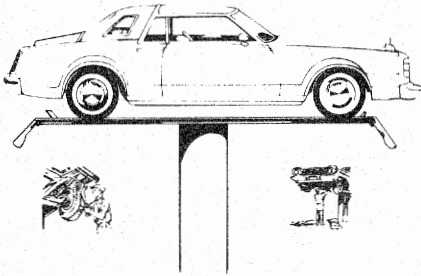
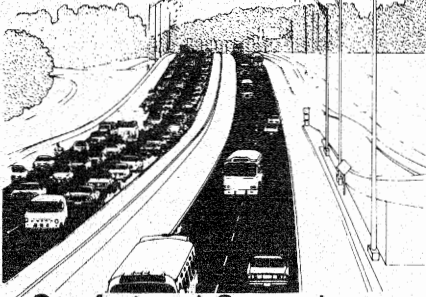
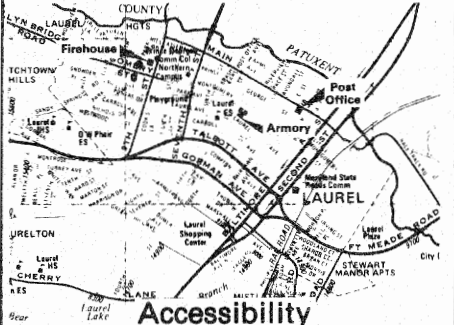
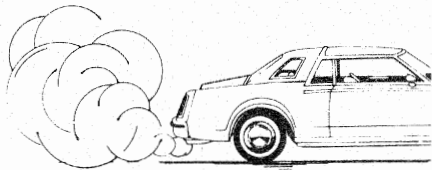
Highway Performance Monitoring System Analytical Process

May 1987

Sensitivity Analysis

Part 1: Characteristics of the Data

Office of Planning

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HIGHWAY PERFORMANCE
MONITORING SYSTEM
ANALYTICAL PROCESS

Sensitivity Analysis

Part 1: Characteristics of the Data

by the FEDERAL HIGHWAY ADMINISTRATION
OFFICE OF PLANNING
Highway Performance Analysis Branch (HPN-21)

May 1987

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PREFACE

The HPMS data base contains the most complete and accurate nationwide information on our highway network. Information from the data base is included yearly in the FHWA publication **HIGHWAY STATISTICS**. In addition, the data is used biennially in determining future highway program needs and as support for the Report to the Congress on the Status of the National Highways: Conditions and Performance.

In order to improve the utility of HPMS, the Highway Performance Analysis Branch (HPN-21) is reviewing the HPMS data base and the Analytical Process. The purpose of this review is to determine the sensitivity of the HPMS model to the input data and the desired Minimum Tolerable Conditions (MTCs). The 3 principal areas of review are:

1. Determine the characteristics of the data, i.e., what values are coded for the different data items. Besides providing "nice-to-know" information about the coding practices, this information will also provide input to part 2 of the review.
2. Determine the sensitivity of the model to changes in the coded data items, e.g., what happens to our conclusions on funding level needs if traffic growth is underestimated, or if the percent of trucks is in error.
3. Determine the sensitivity of the model to changes in the MTCs, e.g., using the current national default MTCs as a benchmark, what happens to the funding level needs, if we are willing to accept a higher level of congestion before adding lanes.

This report contains the results of Part I of the project. It identifies the range and distribution of reported values and serves as a reference for users of the dataset. No effort has been made to fully evaluate the ramifications of the results or to address the quality of each State's data submission. The characteristics of 27 HPMS data items (or combination of items) are reported. The information shown for each item was chosen to best characterize that particular item (for example, sometimes percentile statistics were best, sometimes averages, sometimes histograms). Bullets, highlighting the main comments for each item, precede each set of tables or charts. Results are usually shown by functional class within each of three areas (Rural, Small, Urban, or Urbanized). The presentation scheme was chosen to generally agree with that shown in the Data Review Package sent to each state by HPM-20 (as part of the HPMS edit process). This will allow holders of that package to compare their State's results with the national picture.

The following general information is provided as background:

1. These results are based on the 1985 HPMS sample section data. Because of various problems with their data, 4 States were not included.
2. About 92,000 sample and sub-sample records were used in the analysis. The results shown represent averages, or percentage distributions of the individual records, not the expanded mileage represented by the sample. Depending on the particular data item, statistics based on the expanded mileage could be significantly different.
3. Item numbers shown for each data item refer to the numbering system used in the HPMS Field Manual. Readers should refer to that document for more information about the data items, and for information about the coding.
4. The coding convention for the "Functional Class" is excerpted from the Field Manual since it is widely used in this report:

RURAL

- 01 - Principal Arterial - Interstate
- 02 - Principal Arterial - Other
- 06 - Minor Arterial
- 07 - Major Collector
- 08 - Minor Collector

SMALL URBAN or URBANIZED

- 11 - Principal Arterial - Interstate
- 12 - Principal Arterial - Other Freeways or Expressways
- 14 - Other Principal Arterial
- 16 - Minor Arterial
- 17 - Collector

5. The percentage splits shown generally add up to 100% within a functional class (when that is the smallest group shown, e.g., in the 3-dimensional bar chart).

6. The results shown are sometimes based on only a few records within a particular functional class within a particular area. In some cases (e.g., the horizontal bar chart), the number of records is shown. The reader can then decide how much validity to attach to the results. In cases where the charts do not show this information (e.g., the 3-dimensional bar chart), attempt has been made to note if the sample size is small.
7. The table of contents identifies the pages associated with each data item. For example a user interested in pavement condition would first find bullets discussing the pavement condition statistics followed by (1) a national pavement condition histogram showing the distribution of pavement condition, (2) percentage block charts showing the distribution of pavement condition, by functional class, by area, for rigid and flexible pavements, and (3) average values for rigid and flexible pavements by functional class. The amount of detail provided for each item varies.

Here are some example of the type of comments made in the report:

87% of records represent currently undivided samples. Assuming 2 or more subsamples for each subdivided sample, it is evident that very few samples are subdivided.

Average sample section lengths in rural and urban areas are 2 to 3 miles and 0.5 to 1 mile respectively.

Traffic Growth (1985 to 2005)

- 60% average growth on rural and small urban Interstate
- 40%-50% average growth on remaining functional classes.
- Projected compound annual growth rates are 1.7% to 2.5%. TRAFFIC VOLUMES TRENDS for September, 1986 compared to September 1985 indicate 3.2% to 5.5% growth for all roads and streets and even higher rates for rural arterials.
- Published compound annual growth rate for 1970-1985 is 3.2%. It would appear that the National HPMS data is understating the traffic growth. However, it is essential that this be analyzed on a state-by-state basis.

- 66% of samples and subsamples report high flexible pavements. When expanded these samples represent 48% of the mileage for all arterials and collectors. On the higher systems there is a better correlation between percentage of records having high flexible pavement and actual percentage of miles with high flexible pavements (within 2%).

- Structural No./Slab Thickness

- There are significant clusters of Structural Numbers (SN) at the values of 1.0 and 6.0, most likely indicating the reporting of default representative values.
- 87% of reported slab thickness, "D", are values of 8-10" with a "D" = 9 being most prevalent.

- Pavement Condition

- The even 0.5 increments (20% of the scale) are coded 45% of the time indicating the full range of values are not being coded.
- Average pavement conditions range from 2.9 to 3.8 with flexible pavements having slightly higher ratings on the higher functional classes and slightly lower ratings on lower classes.

- Widening Feasibility

- 74 to 93% of rural samples can be widened 2 or more lanes while 5-11% can not be widened at all.
- 43 to 88% of urban samples can be widened 2 or more lanes, while 10 to 30% can not be widened at all.

- Alignment Adequacy

- Less than 13% of rural arterial and collector sample sections have severe horizontal alignment problems.
- Less than 7% of rural arterial and collector sample sections have severe vertical alignment problems.

Percent Trucks

- Average percent trucks ranged from 7-21% in rural areas and 4-19% in urban areas.
- Maximum reported off-peak percent trucks were 66% in rural areas and 45% in urbanized areas.
- Maximum number of trucks/day was 32,000 on rural Interstate (median, 2000) and 49,000 on urbanized Interstate (median, 4000)
- Maximum ESAL's/Year in Design Lane

	Rigid	Flexible
Rural I	3,300,000 (median, 450,000)	3,200,000 (median, 250,000)
Urban I	3,250,000 (median, 700,000)	3,350,000 (median, 450,000)

V/C Ratio

- In rural or small urban areas, median v/c ratio falls in 0.21-30 range. In urbanized areas, median v/c ratio falls in 0.61-0.70 range.
- Heft of Pavement vs Trucks/Day/Design Lane
- Good correlation for flexible pavements

GLOSSARY

The following abbreviations are used in the body of this report:

FUNC_CL =functional class
=number
INTERMED =intermediate
STAN DEV =standard deviation
COEF OF VAR =coefficient of variation
CUM =cumulative
SEV =severely
RESTR =restricted
IMPAIR =impairment
UNCOORD, FIX =uncoordinated, fixed time
TRAF ACT =traffic actuated
PROGRESS =progressive
FREQ =frequency
POS BAR =positive barrier

x

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SECTION LENGTH

(Item 23)

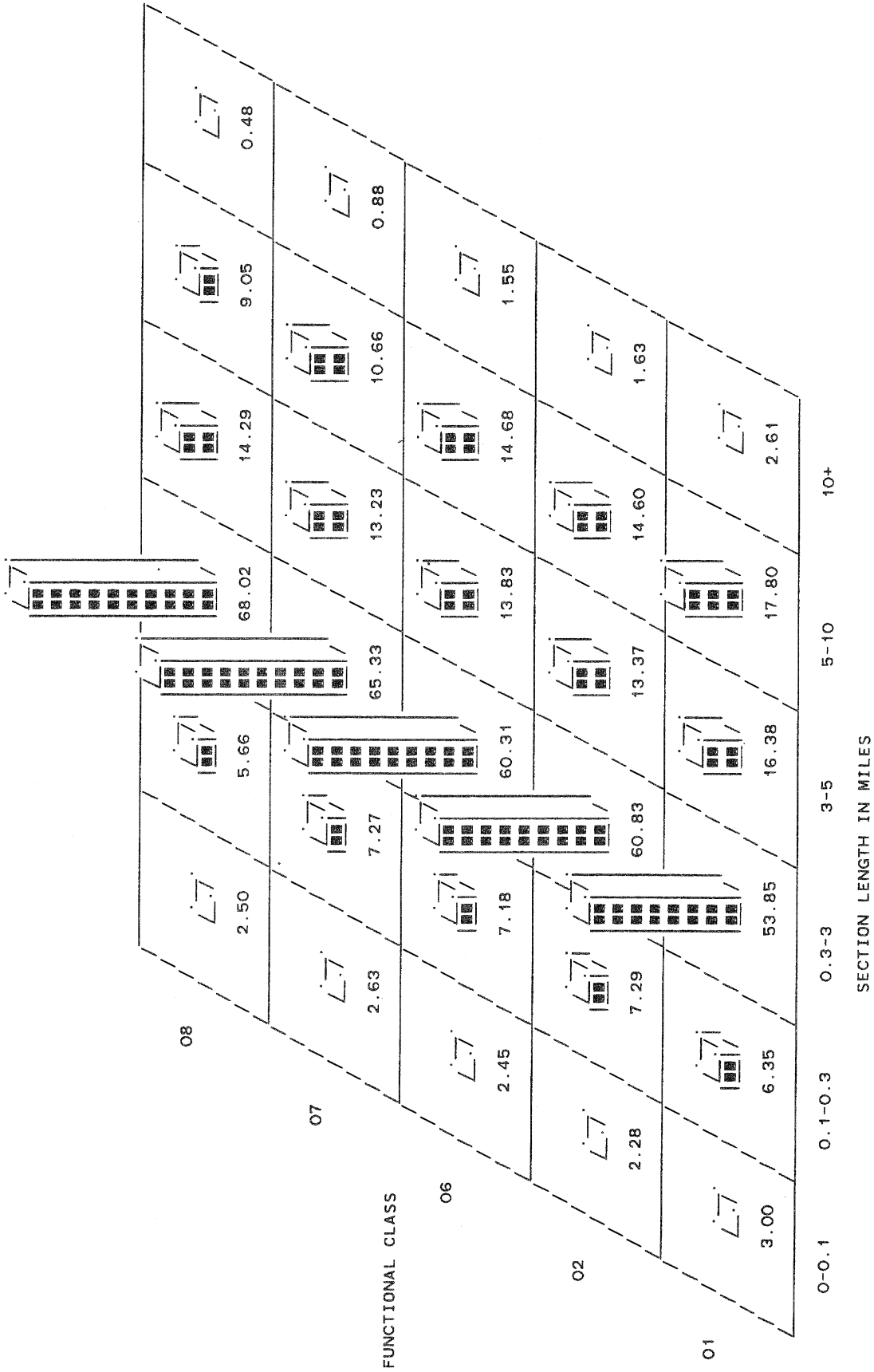
- 87% of the records are undivided samples; the data shown here, although including the split sections, would be approximately the same even if it only included undivided samples
- 2-to 3-mile average in rural areas; 8-10% of the rural records are shorter than the 0.3-mile guideline minimum; 1-3% are longer than the guideline maximum of 10 miles
- 0.5-to 1-mile average in urban areas; 5-9% of the urban records are shorter than the 0.1-mile guideline minimum; few are longer than the 3-or 5-mile guideline maximums
- average decreases with lower functional classes
- 5/6 of reported lengths are less than twice the MEAN for each functional class

SECTION LENGTH

		SECTION LENGTH IN MILES						
AREA	FUNCTIONAL CLASS	#	MIN	MEAN	MAX	STAN DEV	COEF OF VAR	
RURAL	01	4628.00	0.01	2.92	21.82	2.88	98.83	
	02	10157.00	0.00	2.49	22.86	2.72	109.11	
	06	6520.00	0.01	2.51	24.67	2.76	109.74	
	07	5818.00	0.01	2.16	16.75	2.32	107.66	
	08	7546.00	0.01	2.11	23.80	2.10	99.39	
	11	775.00	0.01	0.97	8.62	1.04	106.60	
	12	630.00	0.01	0.84	5.82	0.89	106.04	
	14	7074.00	0.00	0.48	9.57	0.54	112.89	
SMALL URBAN	16	4254.00	0.01	0.41	4.47	0.41	99.88	
	17	4896.00	0.01	0.39	6.36	0.38	96.55	
	11	4400.00	0.01	0.98	16.91	1.22	125.17	
	12	3202.00	0.01	0.89	15.63	1.09	121.91	
	14	10817.00	0.01	0.59	12.98	0.70	119.28	
	16	10218.00	0.01	0.53	8.48	0.56	103.97	
	17	11664.00	0.00	0.49	4.84	0.48	97.72	
URBANIZED								

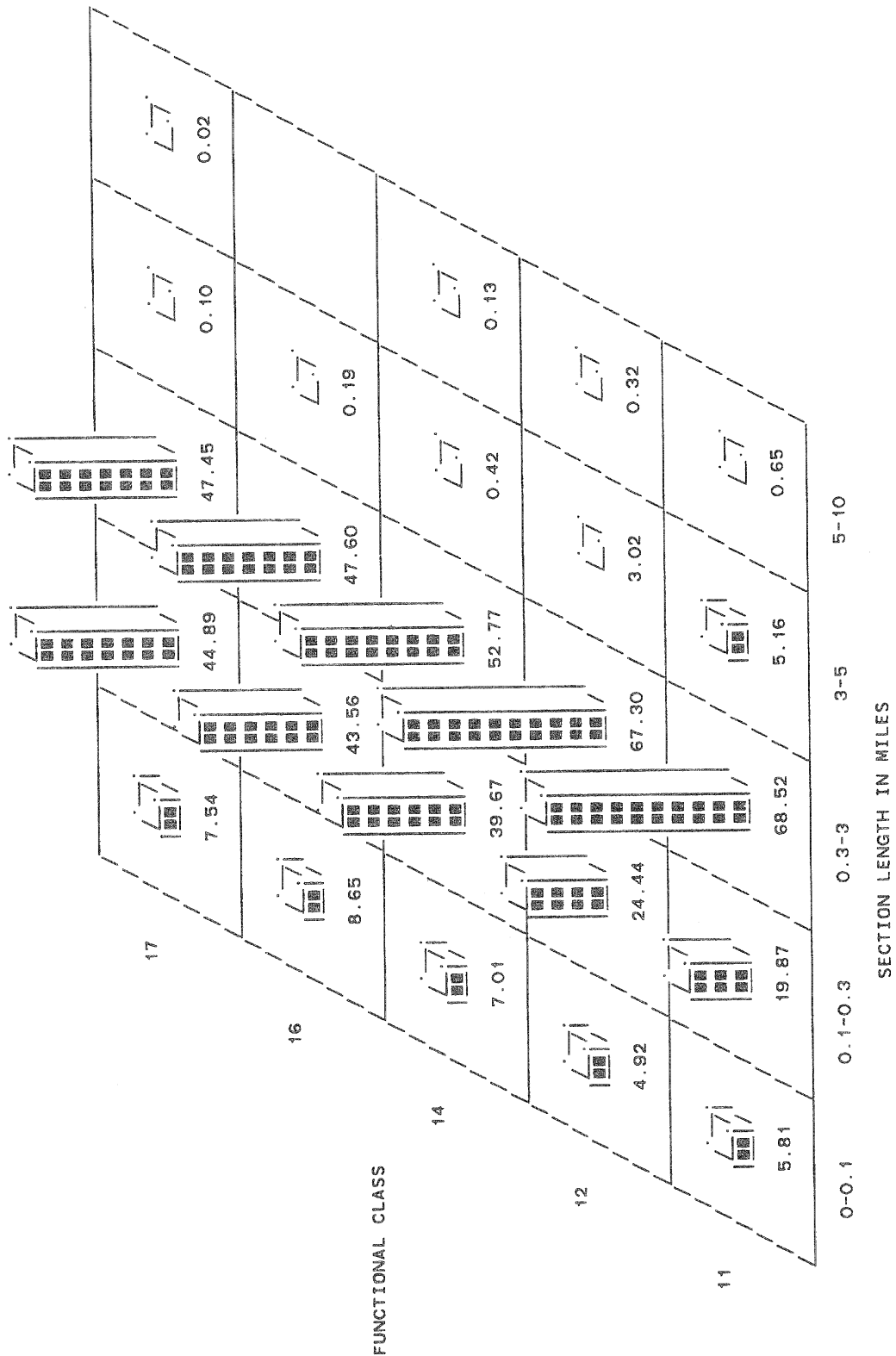
SECTION LENGTH
AREA=RURAL

PERCENTAGE BLOCK CHART



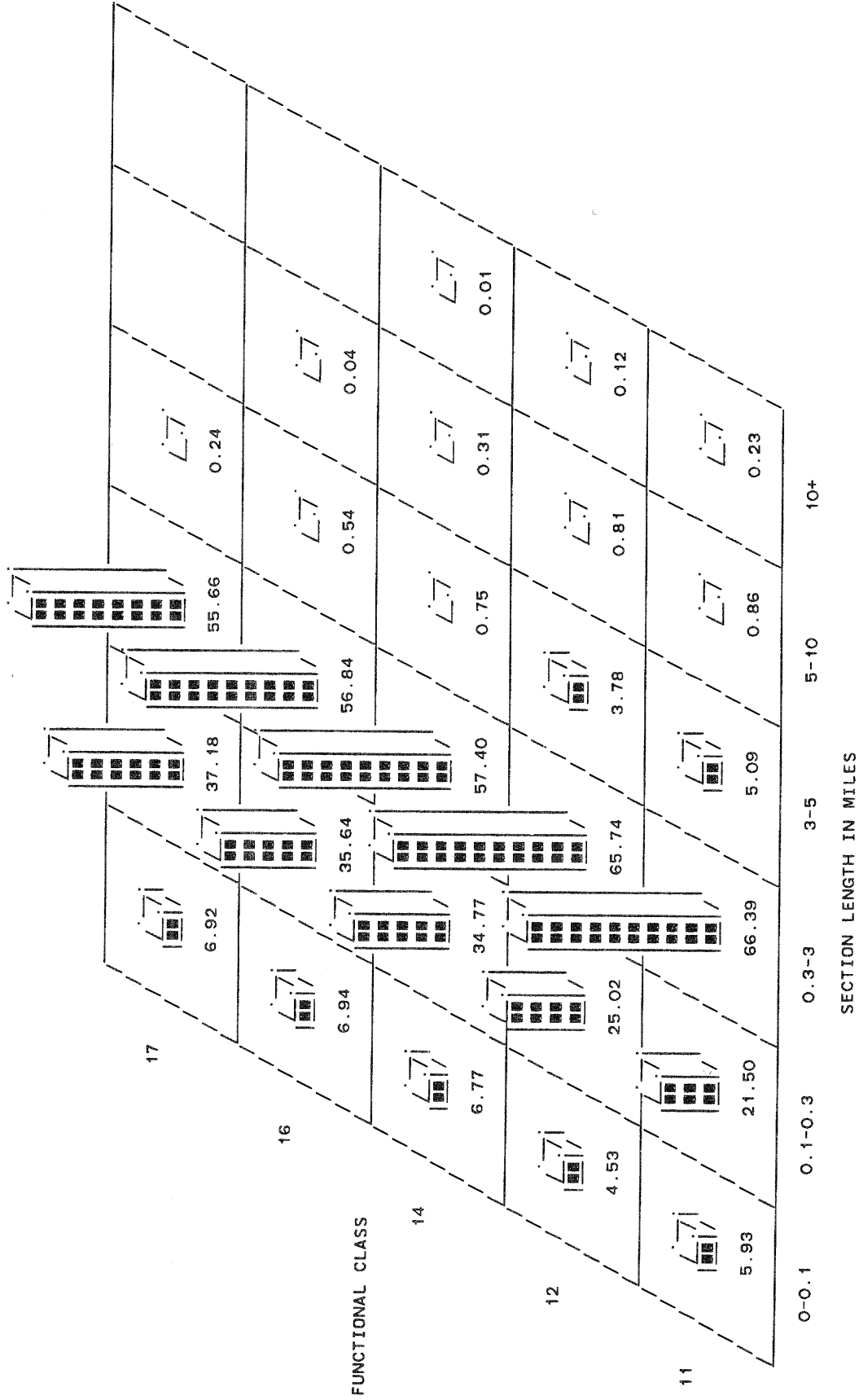
SECTION LENGTH
AREA=SMALL URBAN

PERCENTAGE BLOCK CHART



SECTION LENGTH
AREA=URBANIZED

PERCENTAGE BLOCK CHART



PROJECTED TRAFFIC GROWTH

1985 - 2005

(Items 24,61)

- 60% growth (median) on l in rural and small urban areas;
otherwise 40--50% growth (median)
- corresponding projected compound annual growth rates, 1.7--2.5% are lower than historical (3.2%, 1970--1985)
- projected growth generally decreases with lower functional classes in rural or small urban areas
- growth rates approximately the same on all functional classes in urbanized areas
- the 90th percentile for all functional classes tends to be about 100%; i.e. traffic doubling in 20 years
- 6 states usually report the same growth rate for all samples in a particular functional class

PROJECTED TRAFFIC GROWTH

(Items 24,61)

—projected compound annual growth rates, along splits similar to that shown in FHWA's TRAFFIC VOLUME TRENDS (Sept 1986), are also conservative:

HPMS TRAFFIC VOL TRENDS (1985—2005) (Sept 1985—Sept 1986)

RURAL ARTERIALS

EASTERN	2.0%	6.7%
CENTRAL	2.0%	4.0%
WESTERN	2.4%	5.3%

ALL ROADS/STREETS

EASTERN	1.8%	5.3%
CENTRAL	2.0%	3.2%
WESTERN	2.3%	5.5%

PROJECTED TRAFFIC GROWTH (%), 1985-2005
PERCENTILE STATISTICS

----- AREA=RURAL -----

FUNCTIONAL CLASS	#	10TH	25TH	MEDIAN	75TH	90TH
O1	4628	32.05	45.29	63.28	86.00	109.29
O2	10157	17.18	33.18	48.59	73.48	91.24
O6	6520	11.53	28.90	48.44	70.57	102.42
O7	5818	0.00	25.54	47.95	71.56	110.00
O8	7546	0.00	21.03	41.51	73.48	115.70

----- AREA=SMALL URBAN -----

FUNCTIONAL CLASS	#	10TH	25TH	MEDIAN	75TH	90TH
11	775	32.59	42.43	59.92	80.00	108.67
12	630	17.35	35.59	46.00	63.75	81.84
14	7074	18.27	30.05	48.59	64.59	90.12
16	4254	12.57	29.23	46.20	62.00	97.96
17	4896	4.15	24.09	40.82	61.00	105.00

----- AREA=URBANIZED -----

FUNCTIONAL CLASS	#	10TH	25TH	MEDIAN	75TH	90TH
11	4400	9.34	28.11	45.80	75.17	109.30
12	3202	4.43	24.00	44.32	68.55	107.24
14	10817	9.42	25.12	48.59	71.06	103.00
16	10218	5.30	23.78	48.24	69.96	114.00
17	11664	3.33	23.23	43.73	66.00	113.99

PROJECTED TRAFFIC GROWTH (%), COMPOUND GROWTH RATE
PERCENTILE STATISTICS

----- AREA=RURAL -----

FUNCTIONAL CLASS	10TH	25TH	MEDIAN	75TH	90TH
01	1.40	1.89	2.48	3.15	3.76
02	0.80	1.44	2.00	2.79	3.29
06	0.55	1.28	1.99	2.71	3.59
07	0.00	1.14	1.98	2.74	3.78
08	0.00	0.96	1.75	2.79	3.92

----- AREA=SMALL URBAN -----

FUNCTIONAL CLASS	10TH	25TH	MEDIAN	75TH	90TH
11	1.42	1.78	2.38	2.98	3.75
12	0.80	1.53	1.91	2.50	3.03
14	0.84	1.32	2.00	2.52	3.26
16	0.59	1.29	1.92	2.44	3.47
17	0.20	1.09	1.73	2.41	3.65

----- AREA=URBANIZED -----

FUNCTIONAL CLASS	10TH	25TH	MEDIAN	75TH	90TH
11	0.45	1.25	1.90	2.84	3.76
12	0.22	1.08	1.85	2.64	3.71
14	0.45	1.13	2.00	2.72	3.60
16	0.26	1.07	1.99	2.69	3.88
17	0.16	1.05	1.83	2.57	3.88

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OF LANES

(Items 24,26)

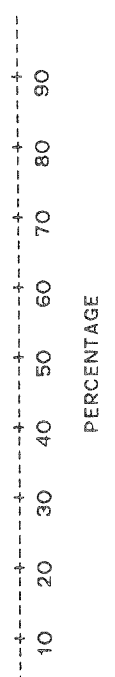
- 4 lanes dominate on I routes and on urban freeways/expressways
- 35 to 48% of the other urban principal arterials are 4 lanes
- generally 2 lanes elsewhere
- as expected, there is a correlation between AADT and the number of lanes — more lanes with higher AADT

1985 HPMS Sample Data

OF LANES
AREA=RURAL

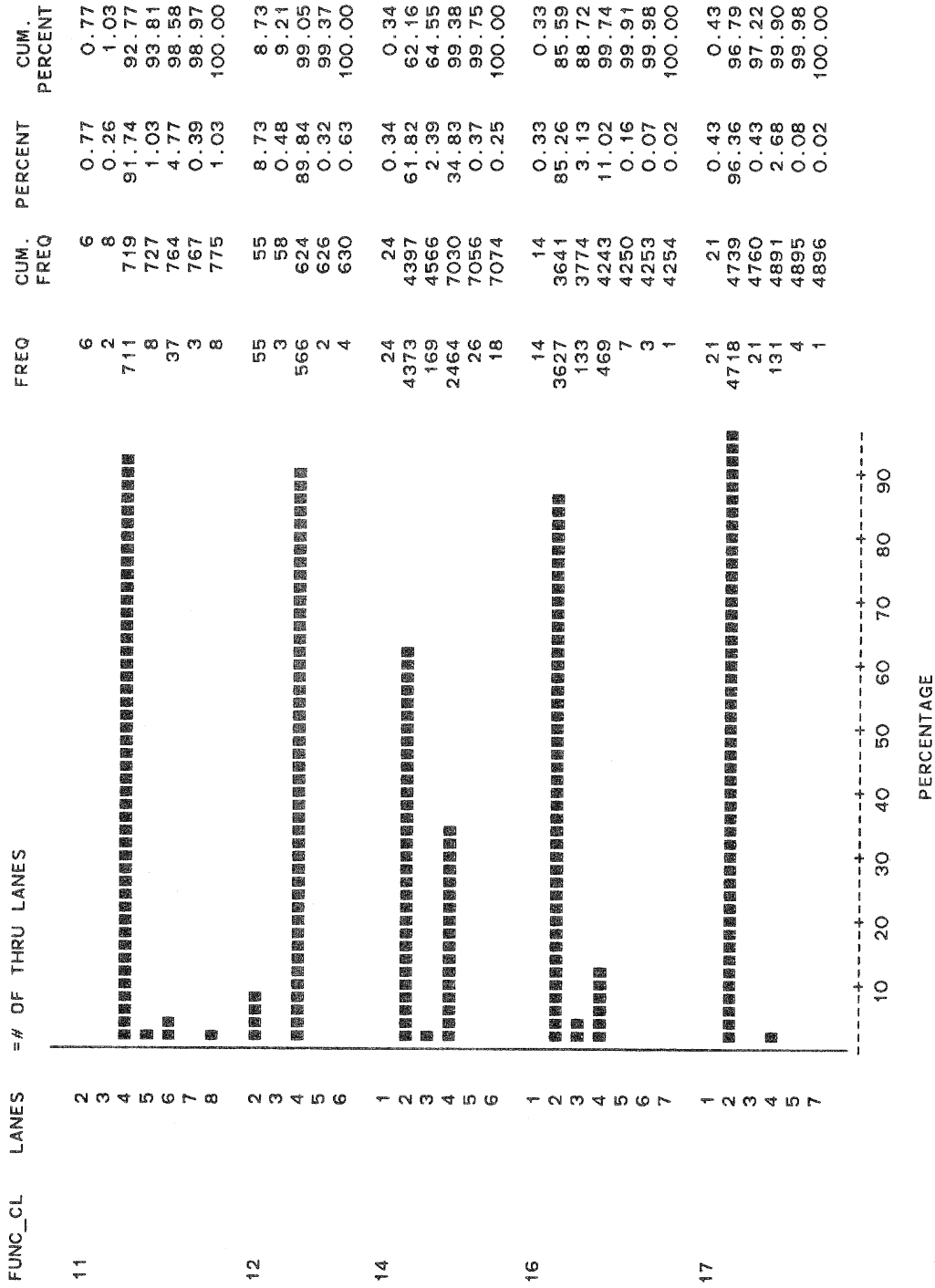
PERCENTAGE BAR CHART

FUNC_CL	LANES	# OF THRU LANES	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT	
01	2	40	40	40	0.86	0.86	
	3	10	50	50	0.22	1.08	
	4	4225	4275	4275	91.29	92.37	
	5	67	4342	4342	1.45	93.82	
	6	244	4586	4586	5.27	99.09	
	7	8	4594	4594	0.17	99.27	
	8	31	4625	4625	0.67	99.94	
	9	3	4628	4628	0.06	100.00	
	10	1	1	4629	0.01	100.00	
02	1	7197	7197	7197	70.86	70.87	
	2	266	7464	7464	2.62	73.49	
	3	2642	10106	10106	26.01	99.50	
	4	19	10125	10125	0.19	99.68	
	5	28	10153	10153	0.28	99.96	
	6	3	10156	10156	0.03	99.99	
	8	1	10157	10157	0.01	100.00	
	10	4	4	10157	0.06	100.00	
	06	1	5971	5971	5971	91.58	91.64
		2	68	6043	6043	1.04	92.68
3		469	6512	6512	7.19	99.88	
4		6	6518	6518	0.09	99.97	
5		2	6520	6520	0.03	100.00	
6		5	5	6520	0.03	100.00	
07	1	5597	5597	5597	96.20	96.29	
	2	23	5625	5625	0.40	96.68	
	3	187	5812	5812	3.21	99.90	
	4	2	5814	5814	0.03	99.93	
	5	3	5817	5817	0.05	99.98	
	6	1	5818	5818	0.02	100.00	
	7	43	43	5818	0.57	100.00	
08	1	7459	7459	7459	98.85	99.42	
	2	11	7502	7502	0.15	99.56	
	3	32	7545	7545	0.42	99.99	
	4	1	7546	7546	0.01	100.00	
	5	1	1	7546	0.01	100.00	



OF LANES
AREA=SMALL URBAN

PERCENTAGE BAR CHART



OF LANES
AREA=URBANIZED
PERCENTAGE BAR CHART

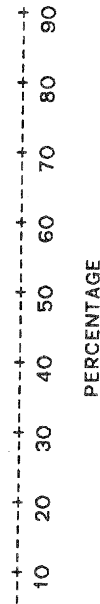
FUNC_CL	LANES	# OF THRU LANES	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT	
11	1	1	1	1	0.02	0.02	
	2	23	22	23	0.50	0.52	
	3	26	3	26	0.07	0.59	
	4	2390	2390	2416	54.32	54.91	
	5	82	2498	2498	1.86	56.77	
	6	1350	3848	3900	30.68	87.45	
	7	52	3900	3900	1.18	88.64	
	8	390	4290	4290	8.86	97.50	
	9	21	4311	4311	0.48	97.98	
	10	61	4372	4372	1.39	99.36	
	11	2	4374	4374	0.05	99.41	
	12	20	4394	4394	0.45	99.86	
	14	4	4398	4398	0.09	99.95	
	15	1	4399	4399	0.02	99.98	
	16	1	4400	4400	0.02	100.00	
	12	1	11	11	11	0.34	0.34
2		157	157	168	4.90	5.25	
3		38	206	206	1.19	6.43	
4		2409	2615	2615	75.23	81.67	
5		39	2654	2654	1.22	82.89	
6		446	3100	3100	13.93	96.81	
7		9	3109	3109	0.28	97.10	
8		69	3178	3178	2.15	99.25	
9		2	3180	3180	0.06	99.31	
10		14	3194	3194	0.44	99.75	
12		7	3201	3201	0.22	99.97	
14		1	3202	3202	0.03	100.00	
14		1	36	36	36	0.33	0.33
		2	4528	4564	4564	41.86	42.19
	3	334	4898	4898	3.09	45.28	
	4	5167	10065	10065	47.77	93.05	
	5	97	10162	10162	0.90	93.94	
	6	610	10772	10772	5.64	99.58	
	7	10	10782	10782	0.09	99.68	
	8	34	10816	10816	0.31	99.99	
	11	1	10817	10817	0.01	100.00	
	16	1	39	39	39	0.38	0.38
		2	7205	7244	7244	70.51	70.89
3		232	7476	7476	2.27	73.17	
4		2553	10029	10029	24.99	98.15	
5		42	10071	10071	0.41	98.56	
6		143	10214	10214	1.40	99.96	
7		2	10216	10216	0.02	99.98	
8		1	10217	10217	0.01	99.99	
10		1	10218	10218	0.01	100.00	
17		1	81	81	81	0.69	0.69
	2	10553	10634	10634	90.47	91.17	
	3	122	10756	10756	1.05	92.22	

OF LANES
AREA=URBANIZED

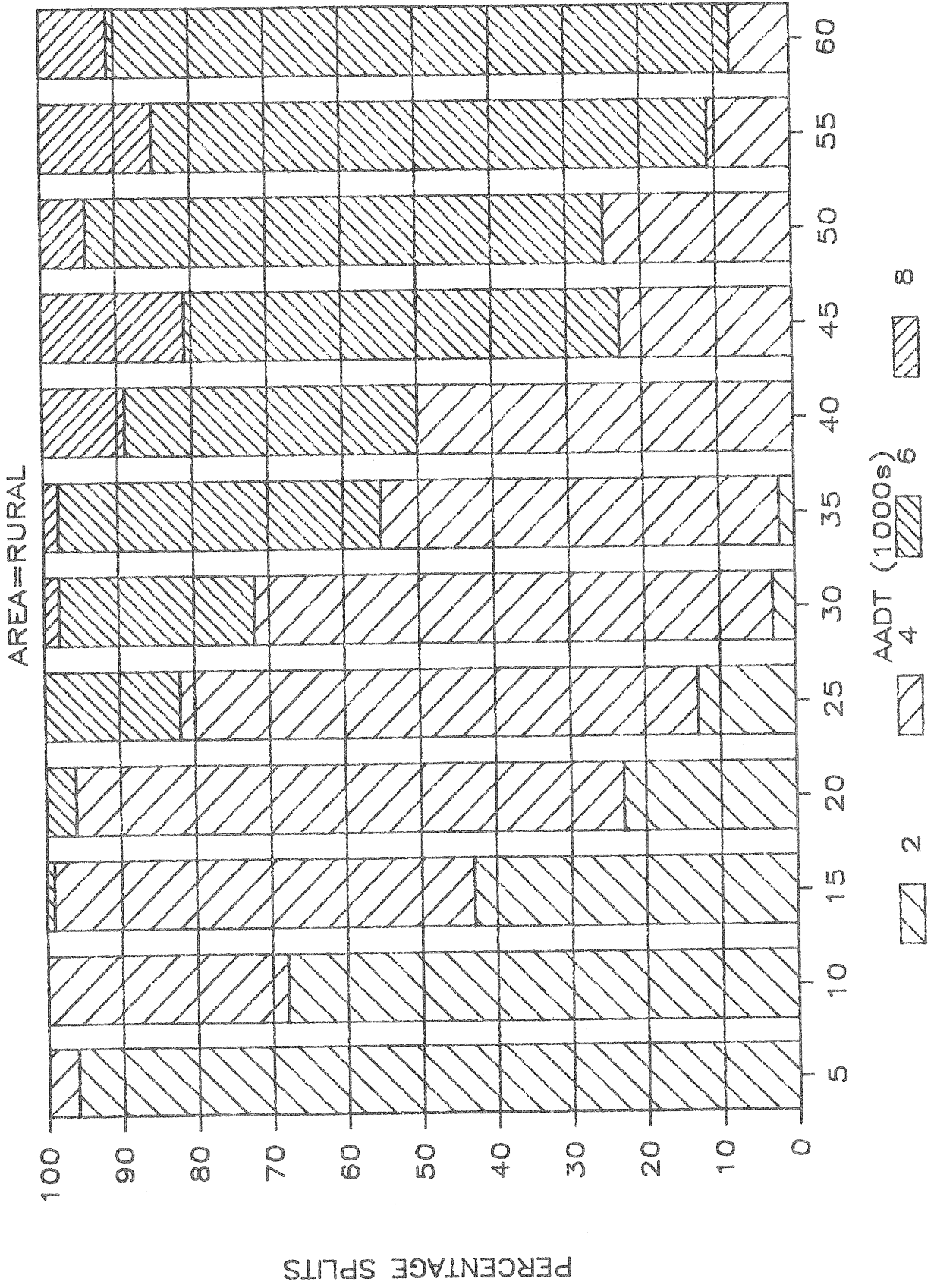
PERCENTAGE BAR CHART

FUNC_CL LINES =# OF THRU LANES

FUNC_CL	LINES	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
4	11634	878	11634	7.53	99.74
5	11640	6	11640	0.05	99.79
6	11662	22	11662	0.19	99.98
7	11663	1	11663	0.01	99.99
8	11664	1	11664	0.01	100.00

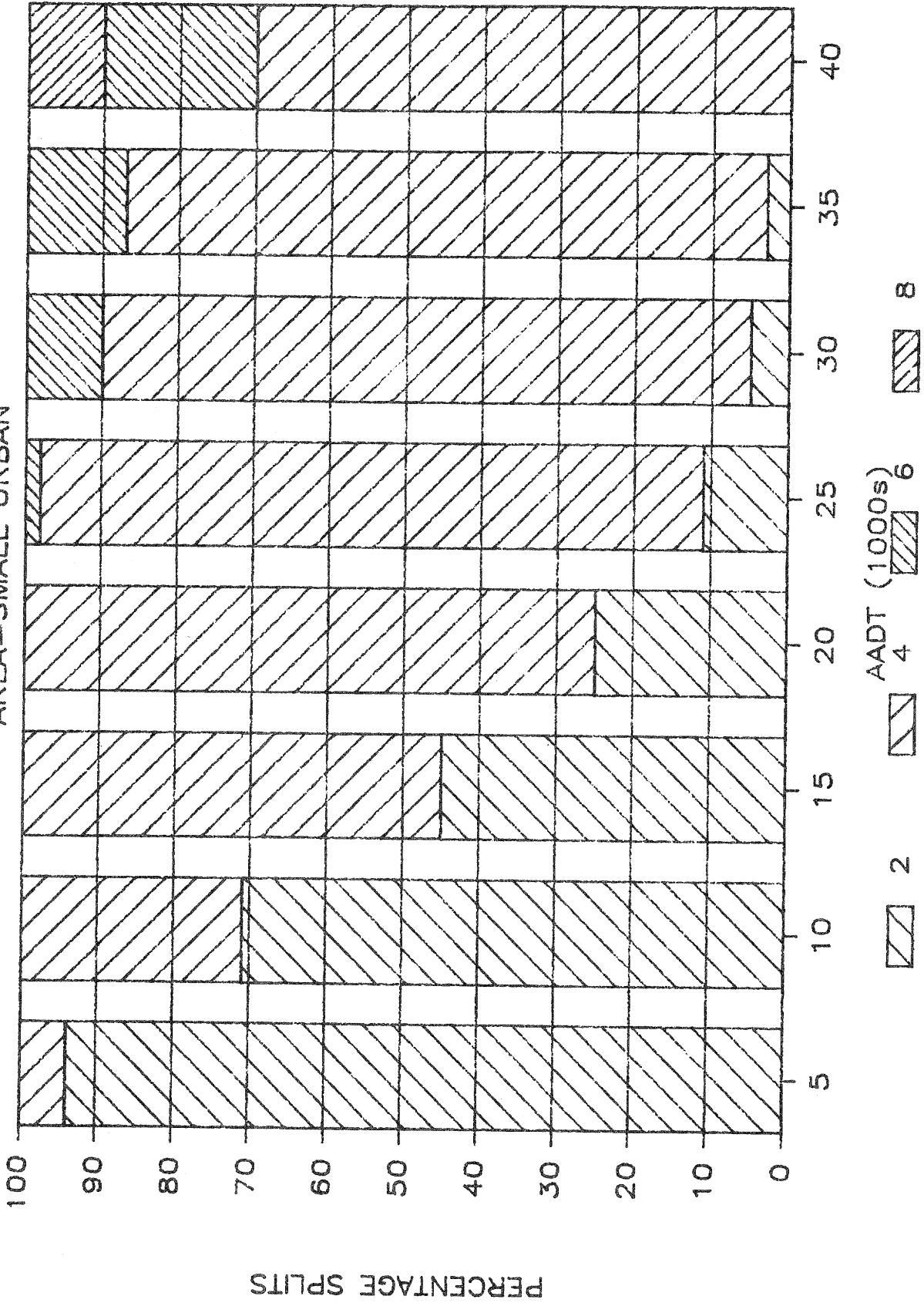


RELATION: AADT AND LANES

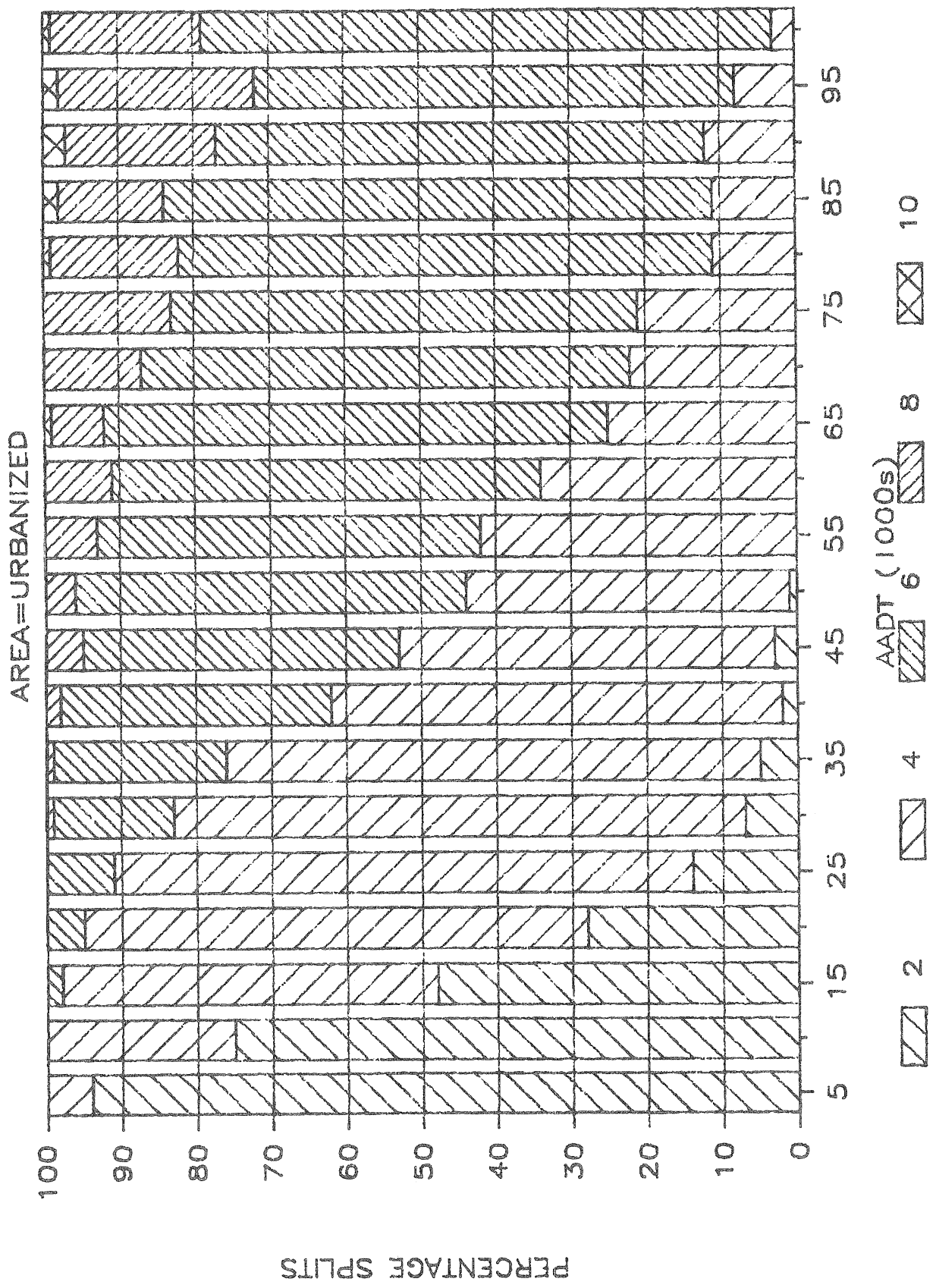


RELATION: AADT AND LANES

AREA=SMALL URBAN



RELATION: AADT AND LANES



SURFACE TYPE

(Item 32)

—“low”=bituminous surface treated (<1”); “intermed”=mixed bituminous or bituminous penetration(1–7”); “other”=brick, block, etc.

—majority of records are high type flexible (surface/base > 7”)

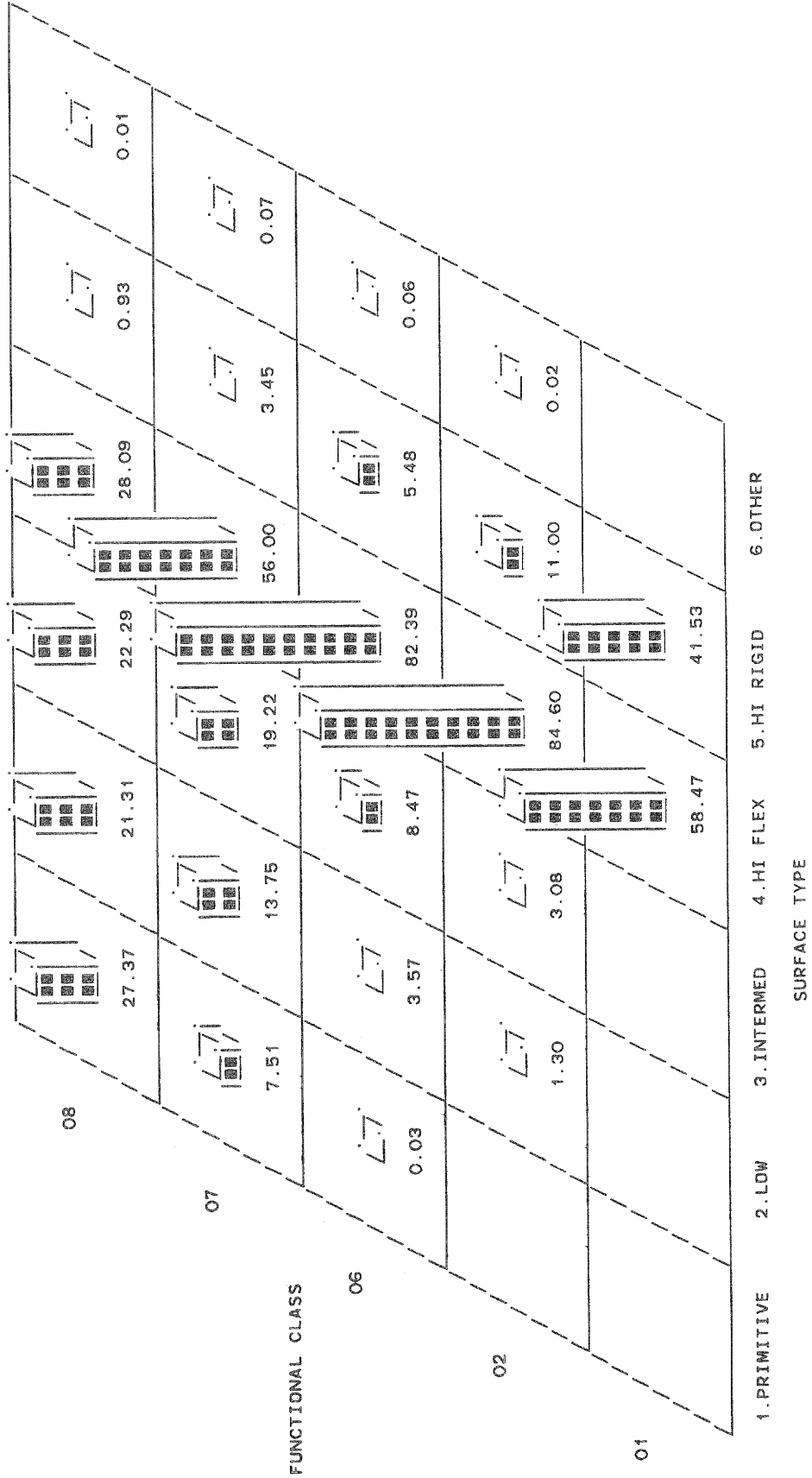
—large proportion of rigid samples only on the principal arterials (11–53%)

—lower surface types become more prevalent with lower functional classes

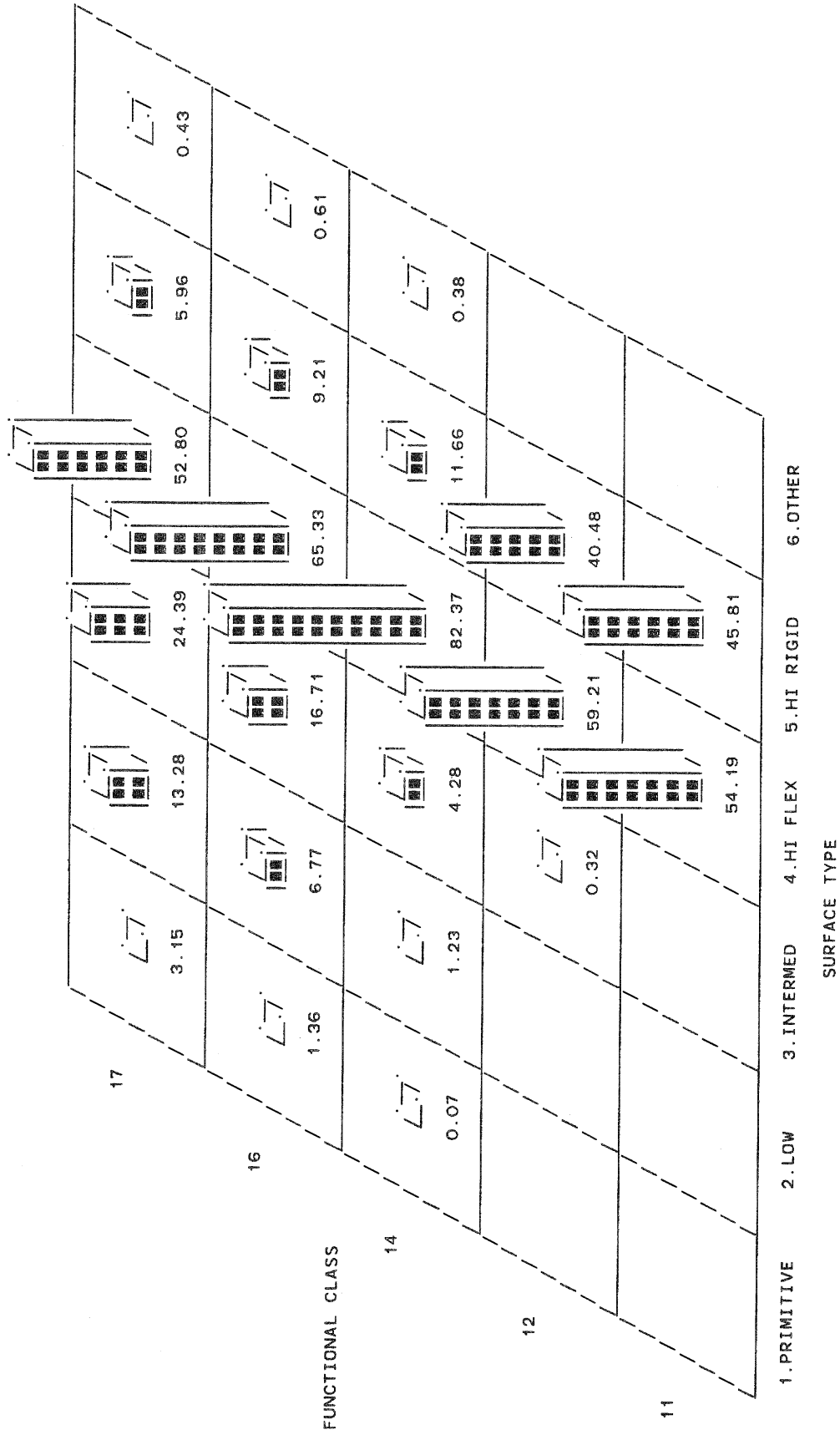
1985 HPMS Sample Data

SURFACE TYPE
AREA=RURAL

PERCENTAGE BLOCK CHART

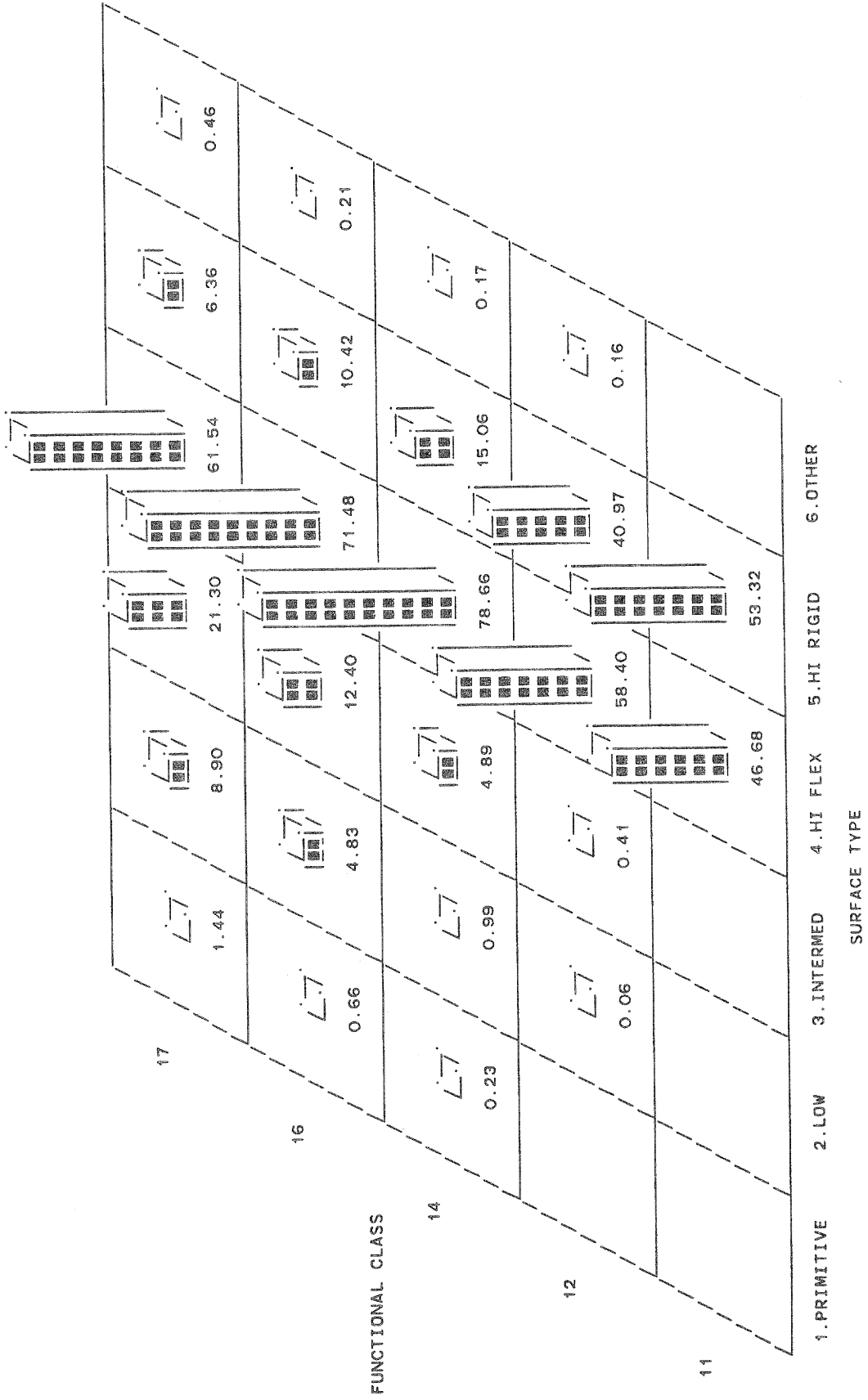


SURFACE TYPE
 AREA=SMALL URBAN
 PERCENTAGE BLOCK CHART



SURFACE TYPE
AREA-URBANIZED

PERCENTAGE BLOCK CHART



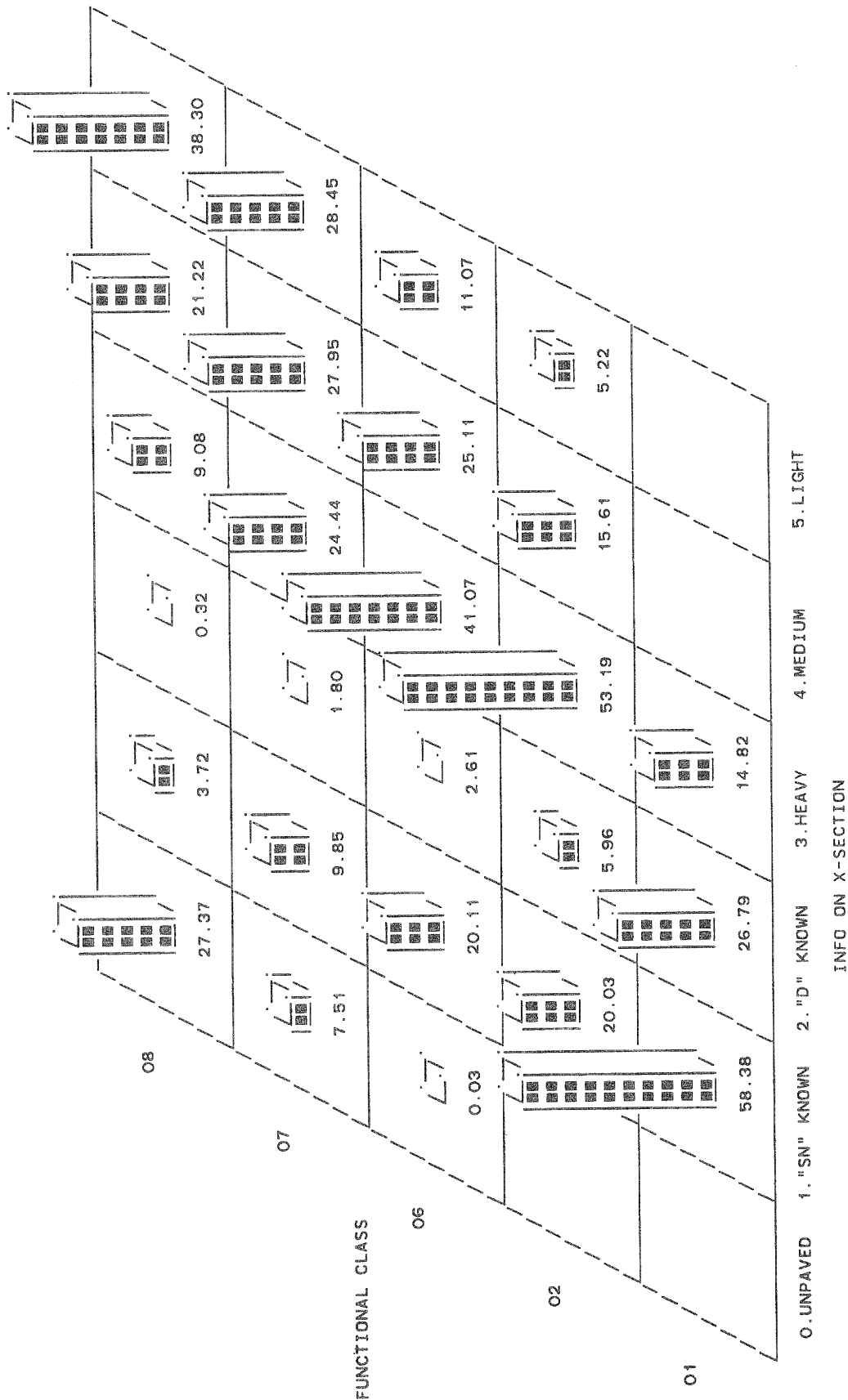
INFORMATION REPORTED ON PAVEMENT SECTION

(Item 34)

- the percent of time that the actual SN or D is reported falls off rapidly with lower functional classes (e.g. rural, 85% → 4%)
- the relative shift among Heavy, Medium, and Light sections generally varies with lower functional classes as expected
- reporting of the actual SN value is required for 1 sample sections with flexible pavements

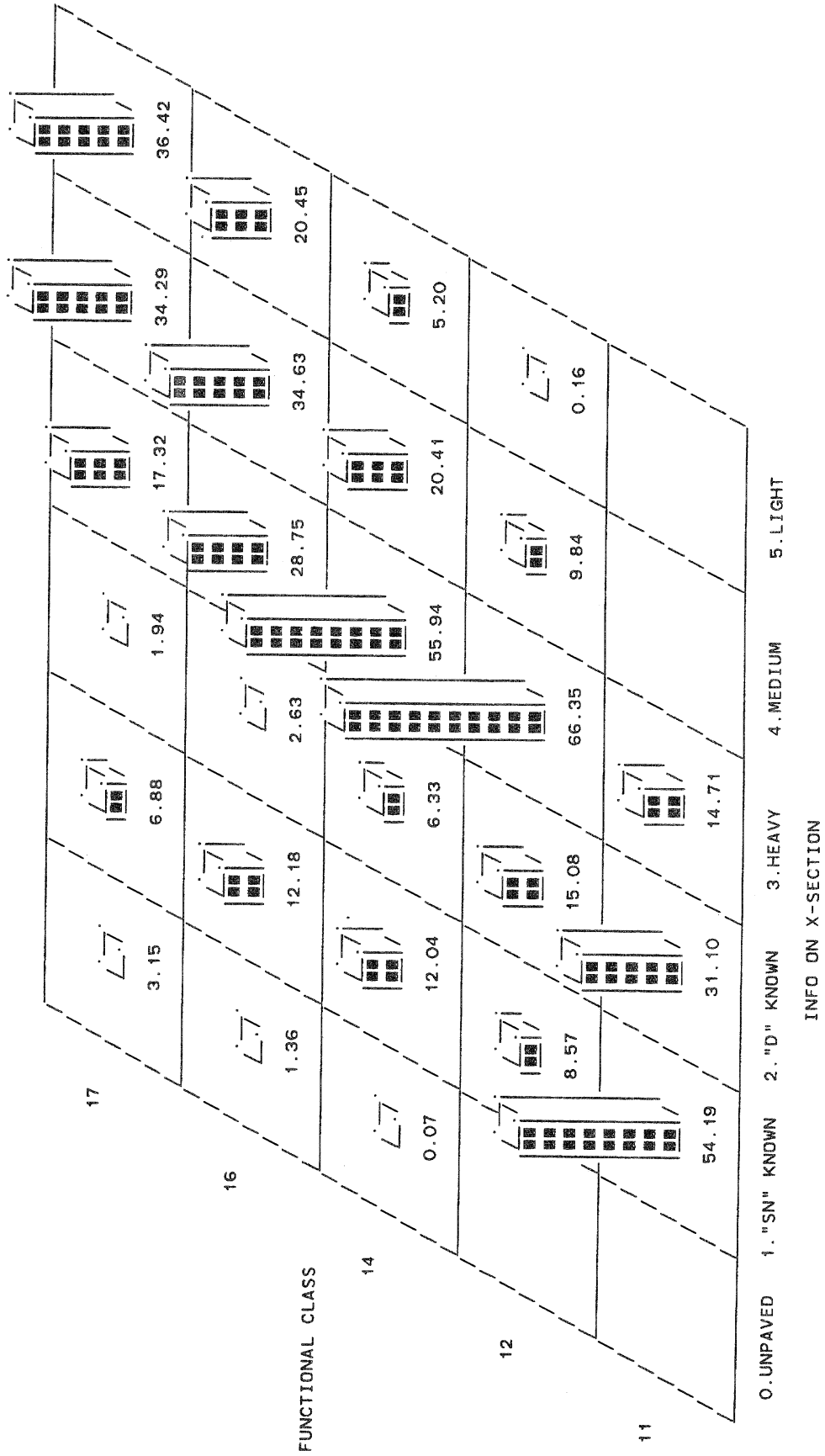
INFORMATION REPORTED ON PAVEMENT SECTION
AREA= RURAL

PERCENTAGE BLOCK CHART



INFORMATION REPORTED ON PAVEMENT SECTION
 AREA=SMALL URBAN

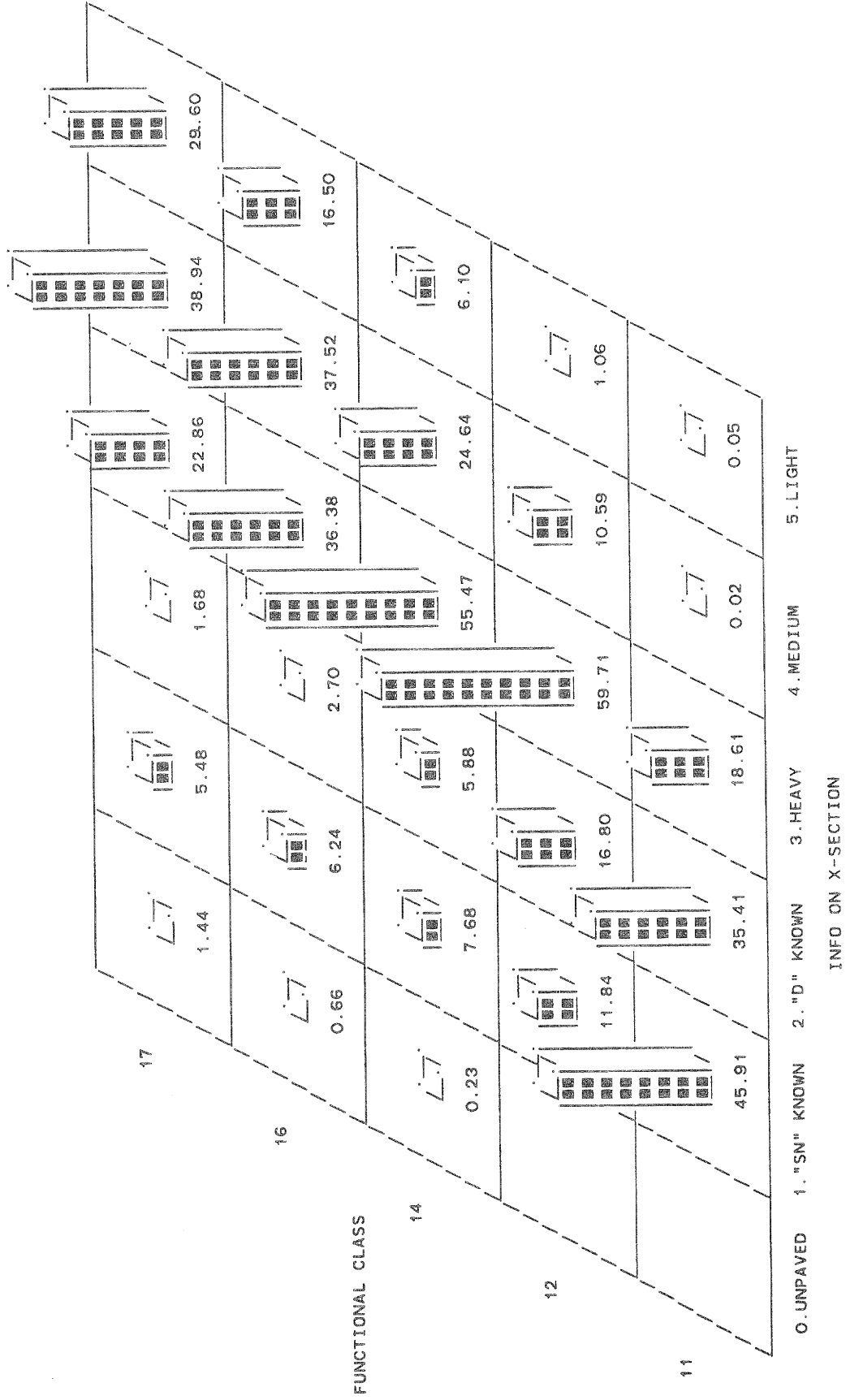
PERCENTAGE BLOCK CHART



INFO ON X-SECTION

INFORMATION REPORTED ON PAVEMENT SECTION
AREA=URBANIZED

PERCENTAGE BLOCK CHART



INFO ON X-SECTION

CORRELATION

SURFACE TYPE / PAVEMENT SECTION

(Items 32,34)

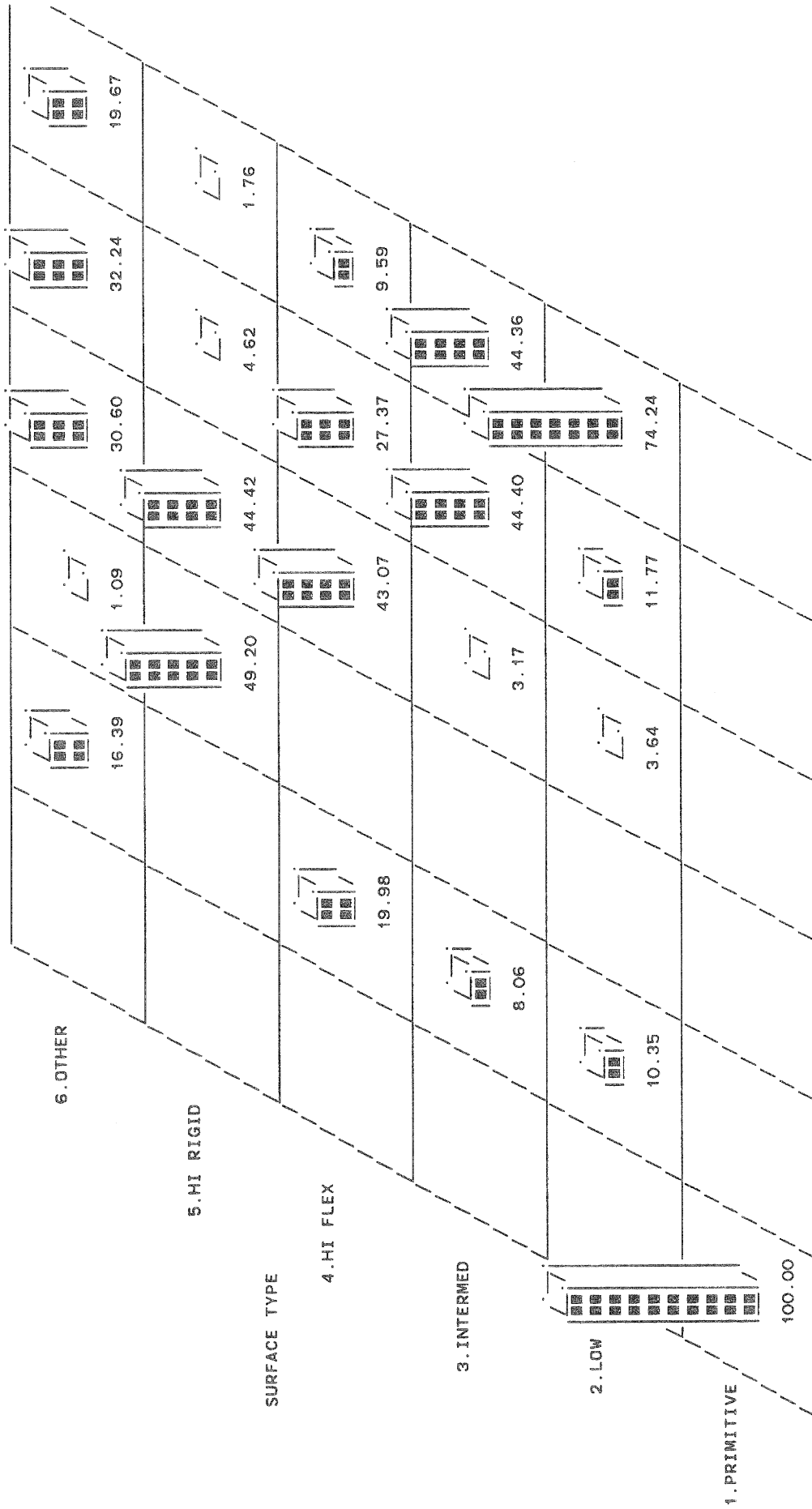
—the slab thickness "D" is reported on half of the rigid records; most of the rest is described as "Heavy"

—only 20% of the High Flexible records have the SN reported (half of this is due to the requirement to report SN on I flexible pavements); most of the rest is described as "Heavy" or "Medium"

—8 to 10% of the lower type bituminous records had SNs reported

1985 HPMS Sample Data

CORRELATION BETWEEN SURFACE TYPE &
 INFORMATION REPORTED ON PAVEMENT SECTION
 PERCENTAGE BLOCK CHART



0. UNPAVED 1. "SN" KNOWN 2. "D" KNOWN 3. HEAVY 4. MEDIUM 5. LIGHT
 INFO ON X-SECTION

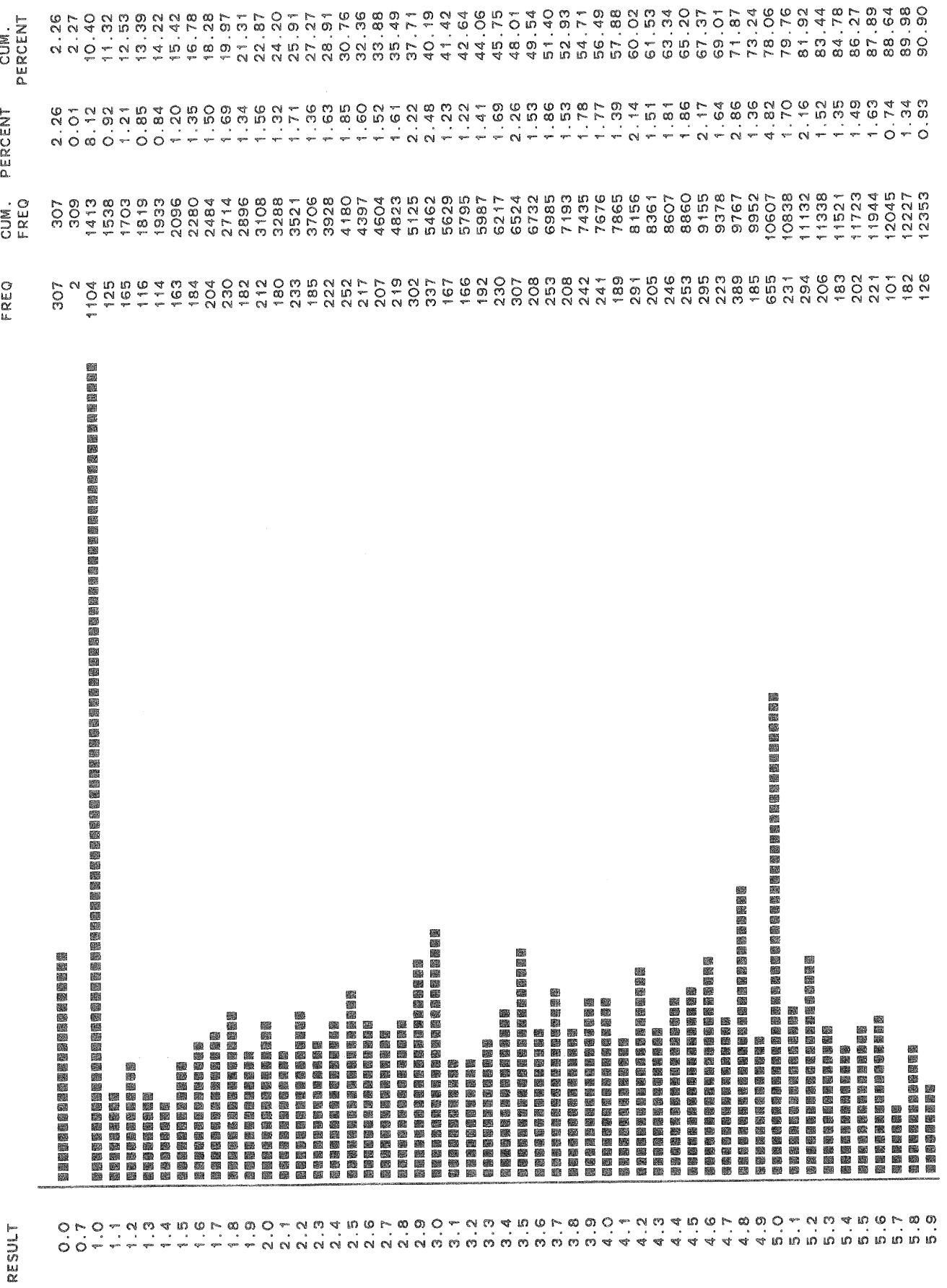
SN OR D

(Item 35)

- 16% of the samples were coded as 1.0 or 6.0 (where SN was reported known); Significant reporting of these SNs indicate that supposedly known SNs are instead being defaulted to representative SNs shown in the HPMS Manual
- records coded 0.0 mean that required SNs for I flexible sections were not reported
- no unusual reporting frequencies for rigid pavements
- average SN or D is greatest for the I system and decreases for lower functional classes (reported 0 SNs are deleted)
- the coef of variation is less for rigid than for flexible (higher absolute avg., only a few standard thicknesses)
- the coefficient of variation generally increases with lower functional class (incr. range about a decr. avg)

REPORTED SN OR D (AS APPROPRIATE FOR PAVEMENT TYPE)
PAVEMENT=FLEX (SN)

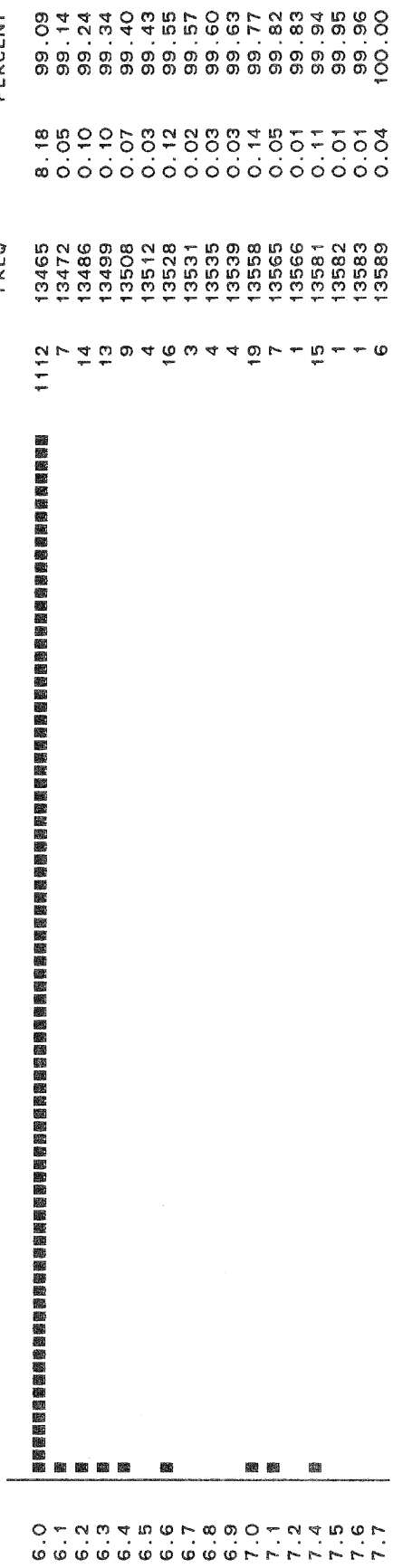
PERCENTAGE BAR CHART



REPORTED SN OR D (AS APPROPRIATE FOR PAVEMENT TYPE)
PAVEMENT=FLEX (SN)

PERCENTAGE BAR CHART

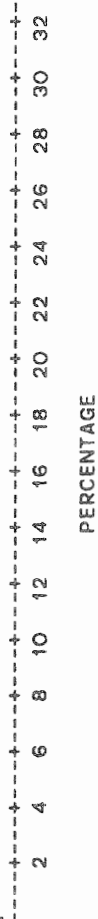
RESULT



REPORTED SN OR D (AS APPROPRIATE FOR PAVEMENT TYPE)
PAVEMENT=RIGID (D)

PERCENTAGE BAR CHART

RESULT	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
4	2	2	0.03	0.03
5	1	3	0.02	0.05
6	326	329	5.14	5.19
7	281	610	4.43	9.62
8	1924	2534	30.35	39.97
9	2047	4581	32.29	72.27
10	1523	6104	24.03	96.29
11	52	6156	0.82	97.11
12	177	6333	2.79	99.91
14	6	6339	0.09	100.00



AVERAGE SN OR D (AS APPROPRIATE FOR PAVEMENT TYPE)
 WITH ZEROS DELETED
 PAVEMENT=FLEX (SN)

RESULT

AREA	FUNCTIONAL CLASS	#	MIN	MEAN	MAX	STAN DEV	COEF OF VAR
RURAL	01	2640.00	1.00	4.71	7.70	1.09	23.05
	02	2034.00	1.00	3.40	6.00	1.33	39.09
	06	1311.00	1.00	2.68	6.00	1.21	45.03
	07	573.00	0.70	2.50	6.00	1.02	40.96
	08	281.00	1.00	2.12	6.00	0.91	43.01
	11	407.00	1.00	4.87	6.20	0.98	20.09
	12	54.00	1.00	3.87	6.00	1.03	26.70
	14	852.00	1.00	3.44	6.00	1.34	39.14
SMALL URBAN	16	518.00	1.00	1.83	6.00	1.21	66.02
	17	337.00	1.00	1.86	6.00	1.17	63.09
	11	1788.00	1.00	5.07	7.70	1.03	20.27
	12	379.00	1.00	4.62	6.90	1.09	23.49
	14	831.00	1.00	3.67	6.00	1.42	38.59
	16	638.00	1.00	2.35	6.00	1.32	56.00
	17	639.00	1.00	2.28	6.00	1.25	54.74
URBANIZED	11	1788.00	1.00	5.07	7.70	1.03	20.27
	12	379.00	1.00	4.62	6.90	1.09	23.49
	14	831.00	1.00	3.67	6.00	1.42	38.59
	16	638.00	1.00	2.35	6.00	1.32	56.00
	17	639.00	1.00	2.28	6.00	1.25	54.74

AVERAGE SN OR D (AS APPROPRIATE FOR PAVEMENT TYPE)
 WITH ZEROS DELETED
 PAVEMENT=RIGID (D)

RESULT

AREA	FUNCTIONAL CLASS	#	MIN	MEAN	MAX	STAN DEV	COEF OF VAR
RURAL	01	1240.00	7.00	9.09	14.00	1.09	12.00
	02	605.00	6.00	8.72	12.00	1.06	12.18
	06	170.00	6.00	8.11	10.00	1.07	13.17
	07	105.00	4.00	6.77	10.00	1.16	17.17
	08	24.00	6.00	6.50	9.00	0.98	15.05
	11	241.00	8.00	9.05	12.00	1.16	12.76
	12	95.00	6.00	9.03	10.00	0.96	10.65
	14	448.00	6.00	8.42	12.00	1.14	13.52
SMALL URBAN	16	112.00	6.00	7.57	10.00	1.07	14.15
	17	95.00	6.00	7.42	11.00	1.23	16.51
	11	1558.00	6.00	9.17	12.00	1.01	10.98
	12	538.00	6.00	9.13	12.00	1.06	11.61
	14	636.00	6.00	8.79	12.00	1.15	13.09
	16	276.00	6.00	8.14	12.00	1.19	14.58
	17	196.00	6.00	7.93	10.00	1.34	16.84
URBANIZED							

HEFT OF PAVEMENTS

COMBINING SN OR D WITH LIGHT, MEDIUM, & HEAVY CATEGORIES

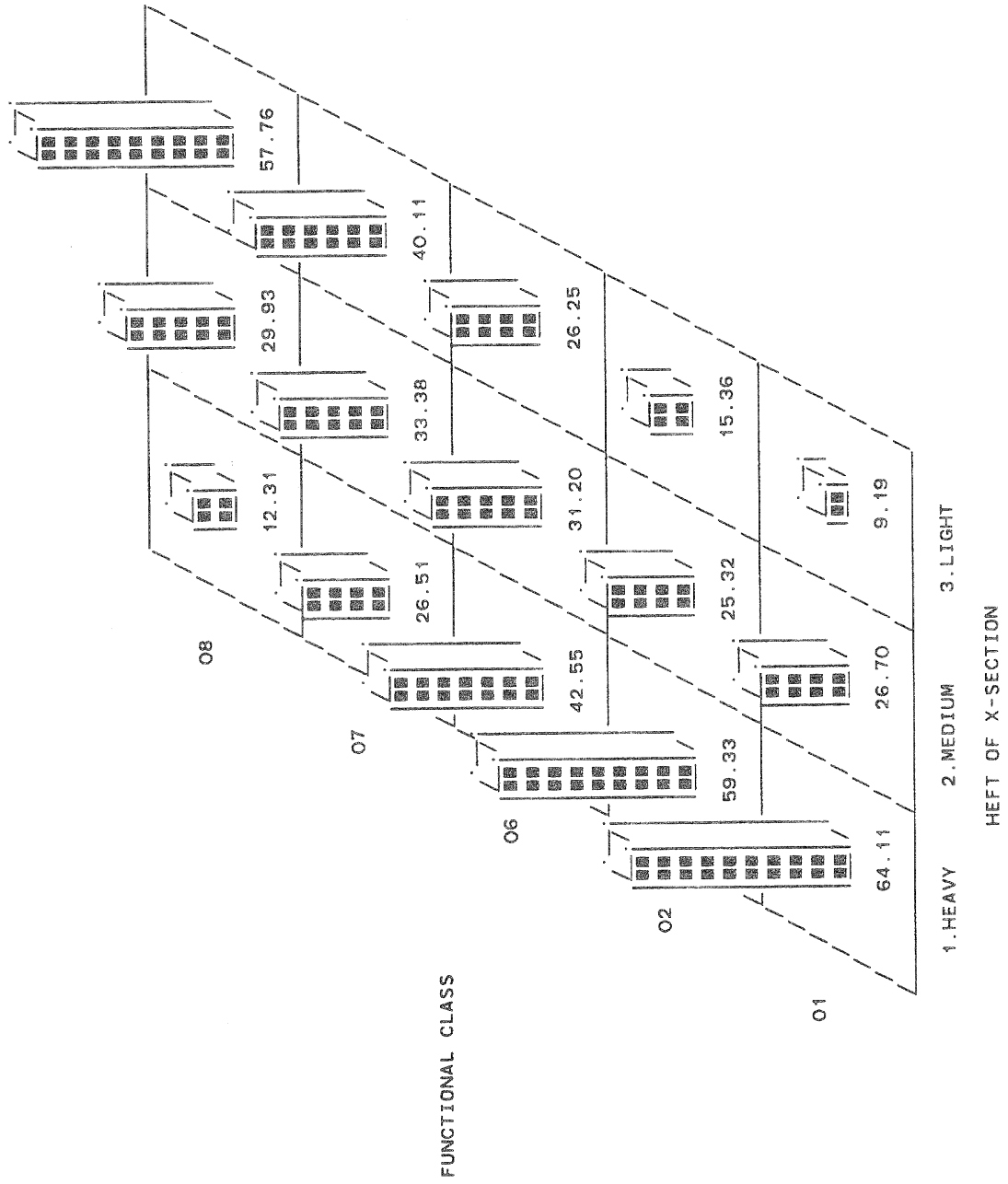
(Items 34,35)

- for flexible pavements, the mix is skewed to the Heavy in the higher functional classes, and to the Light in lower functional classes, as expected (reported 0.0 SNs are not included)
- most rigid pavements are categorized as Heavy or Medium except for lower functional classes in the rural area
- there are relatively few rigid pavements in the lower functional classes so the % shown are based on a small sample

1985 HPMS Sample Data

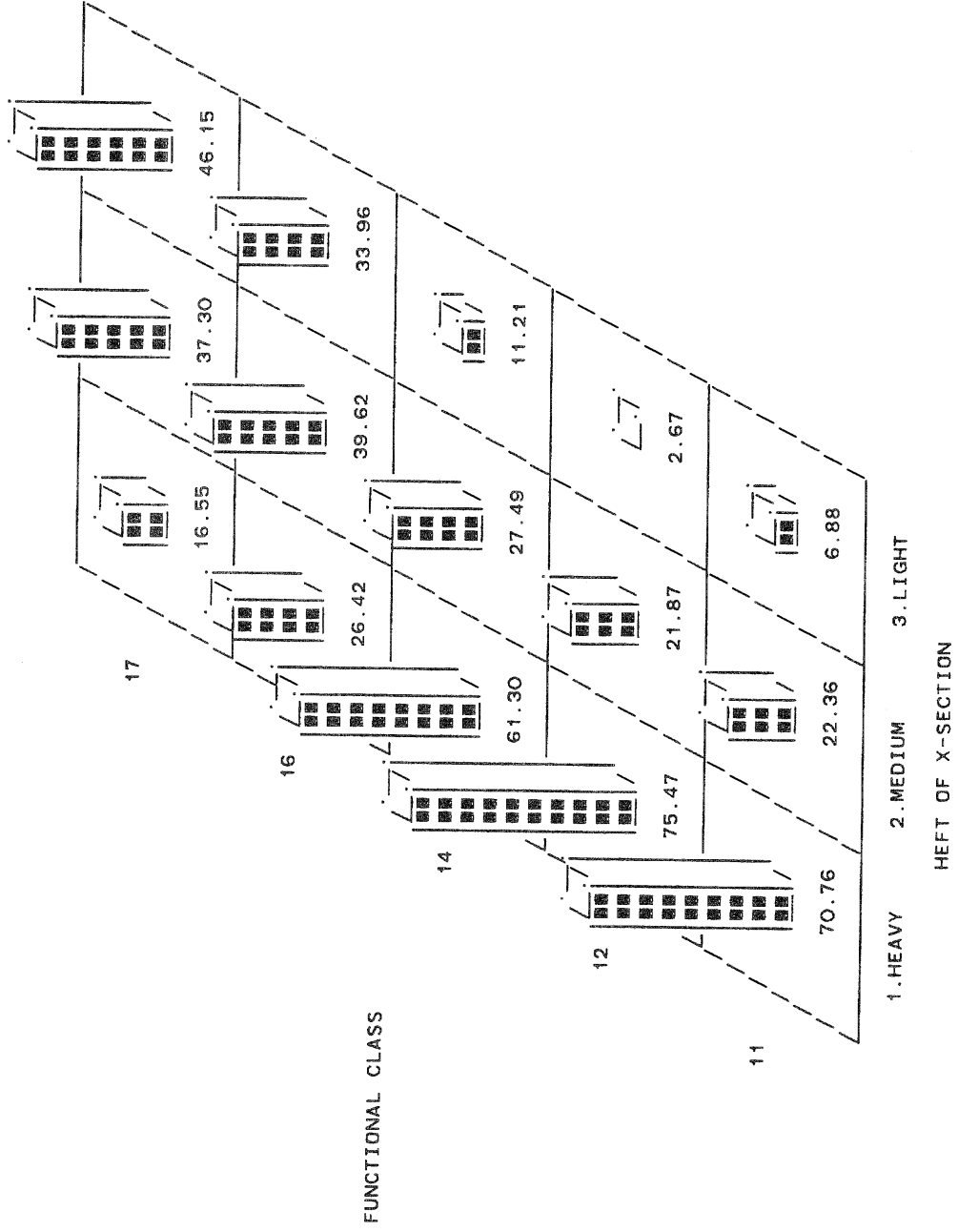
HEFT OF PAVEMENTS COMBINING SN OR D
 WITH LIGHT, MEDIUM, AND HEAVY CATEGORIES
 WITH ZEROS DELETED
 PAVEMENT=FLEX AREA=RURAL

PERCENTAGE BLOCK CHART



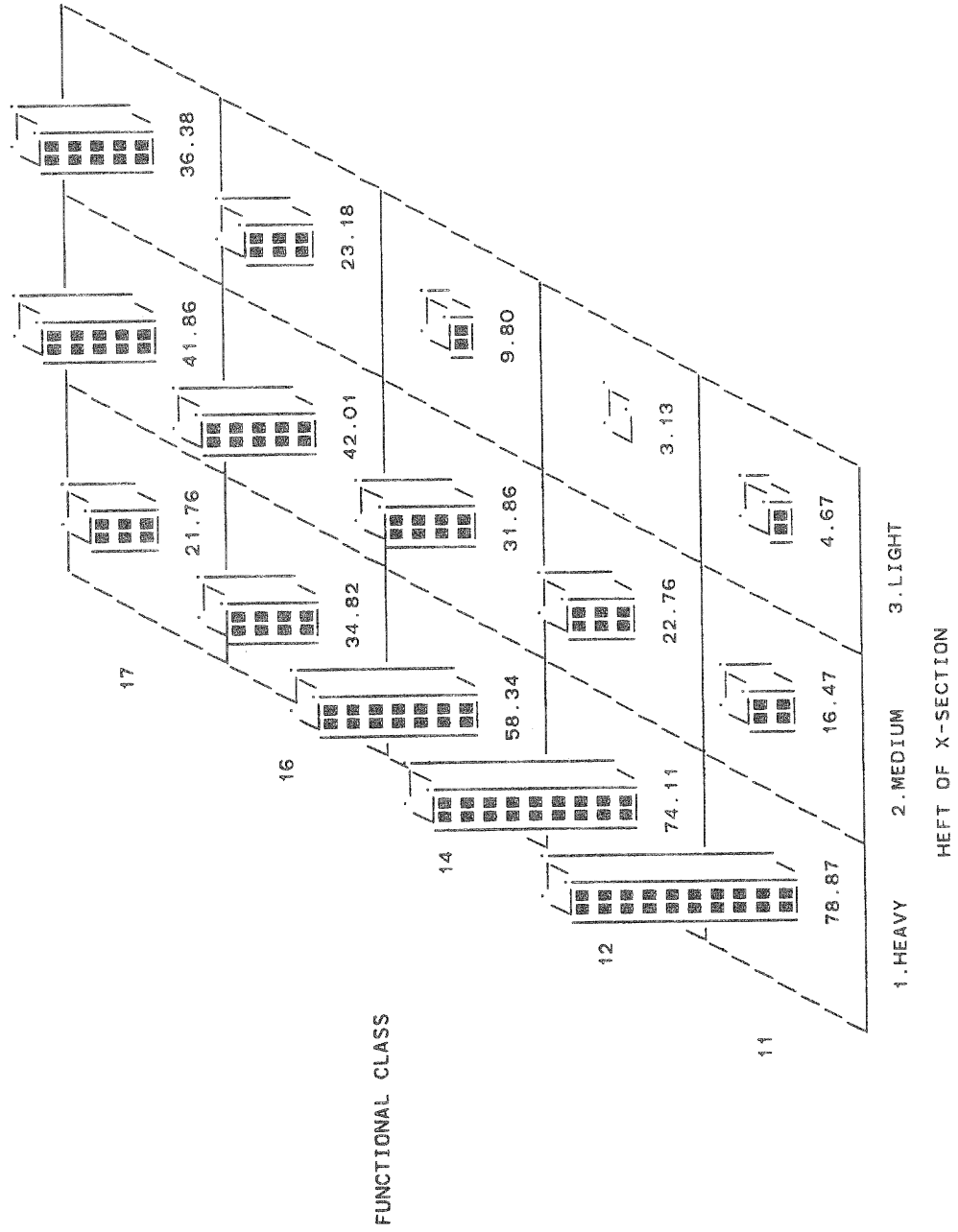
HEFT OF PAVEMENTS COMBINING SN OR D
 WITH LIGHT, MEDIUM, AND HEAVY CATEGORIES
 WITH ZEROS DELETED
 PAVEMENT=FLEX AREA=SMALL URBAN

PERCENTAGE BLOCK CHART



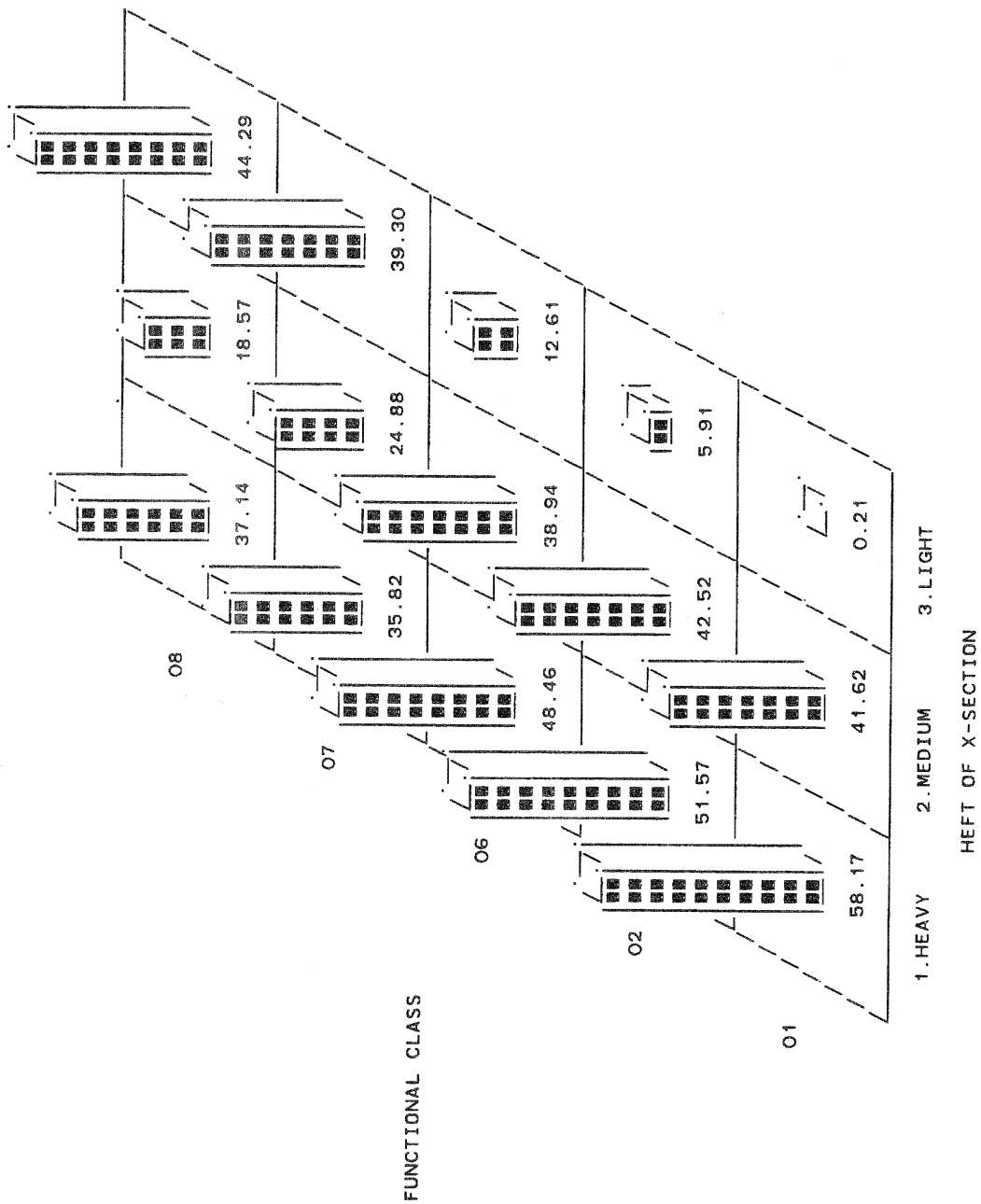
HEFT OF PAVEMENTS COMBINING SN OR D
 WITH LIGHT, MEDIUM, AND HEAVY CATEGORIES
 WITH ZEROS DELETED
 PAVEMENT=FLEX AREA=URBANIZED

PERCENTAGE BLOCK CHART



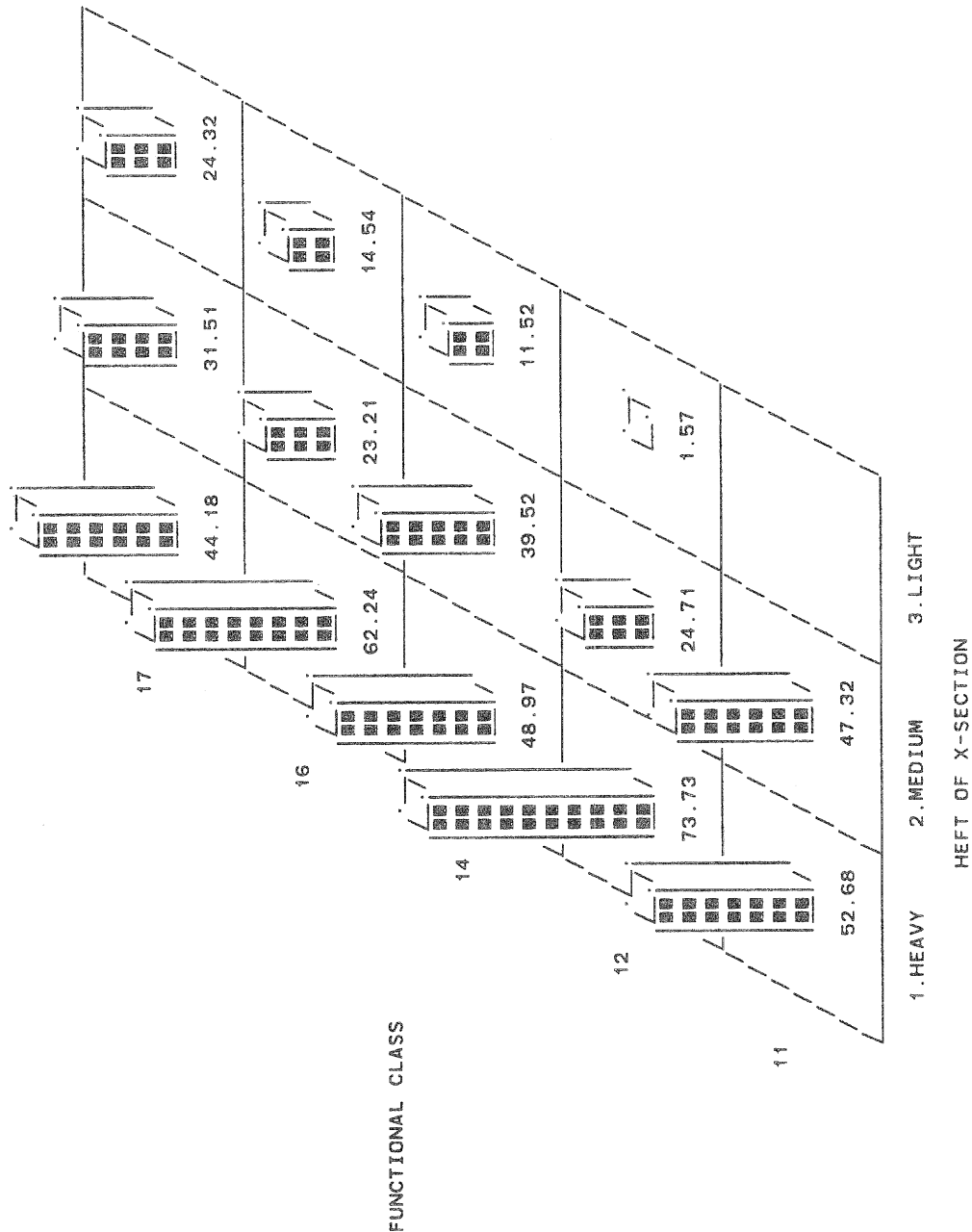
HEFT OF PAVEMENTS COMBINING SN OR D
 WITH LIGHT, MEDIUM, AND HEAVY CATEGORIES
 WITH ZEROS DELETED
 PAVEMENT=RIGID AREA=RURAL

PERCENTAGE BLOCK CHART



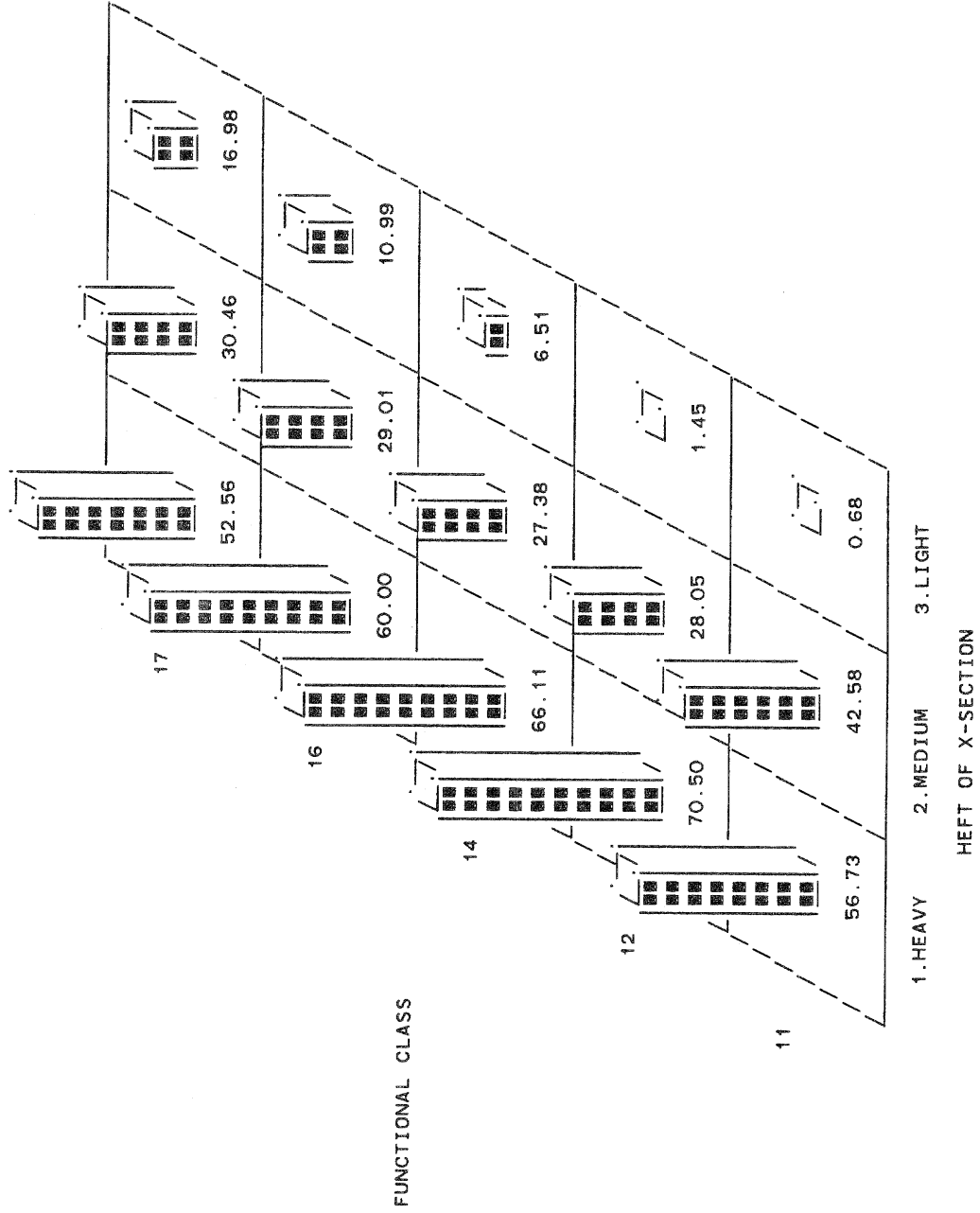
HEFT OF PAVEMENTS COMBINING SN OR D
 WITH LIGHT, MEDIUM, AND HEAVY CATEGORIES
 WITH ZEROS DELETED
 PAVEMENT=RIGID AREA=SMALL URBAN

PERCENTAGE BLOCK CHART



HEFT OF PAVEMENTS COMBINING SN OR D
 WITH LIGHT, MEDIUM, AND HEAVY CATEGORIES
 WITH ZEROS DELETED
 PAVEMENT=RIGID AREA=URBANIZED

PERCENTAGE BLOCK CHART

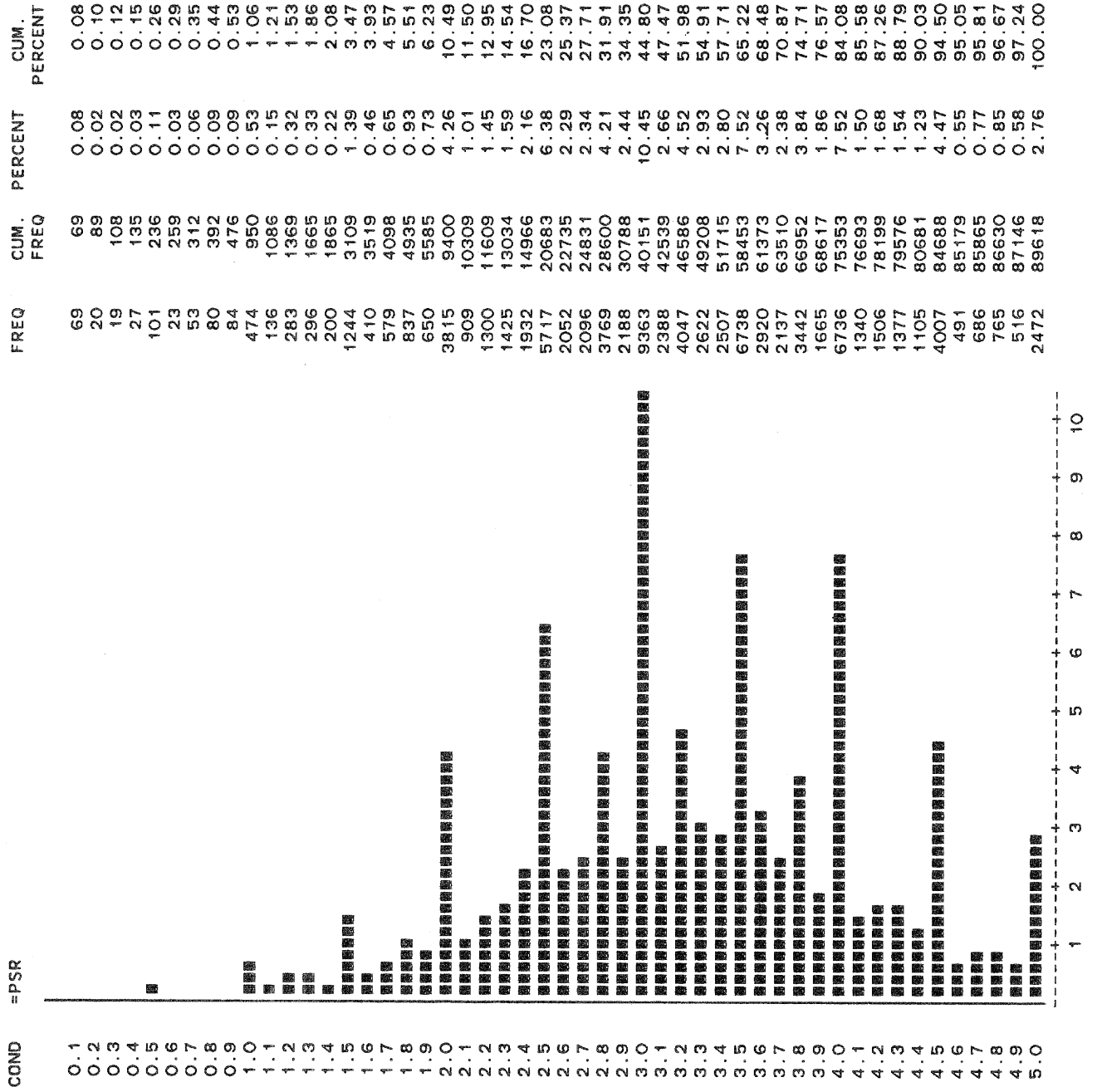


PAVEMENT CONDITION

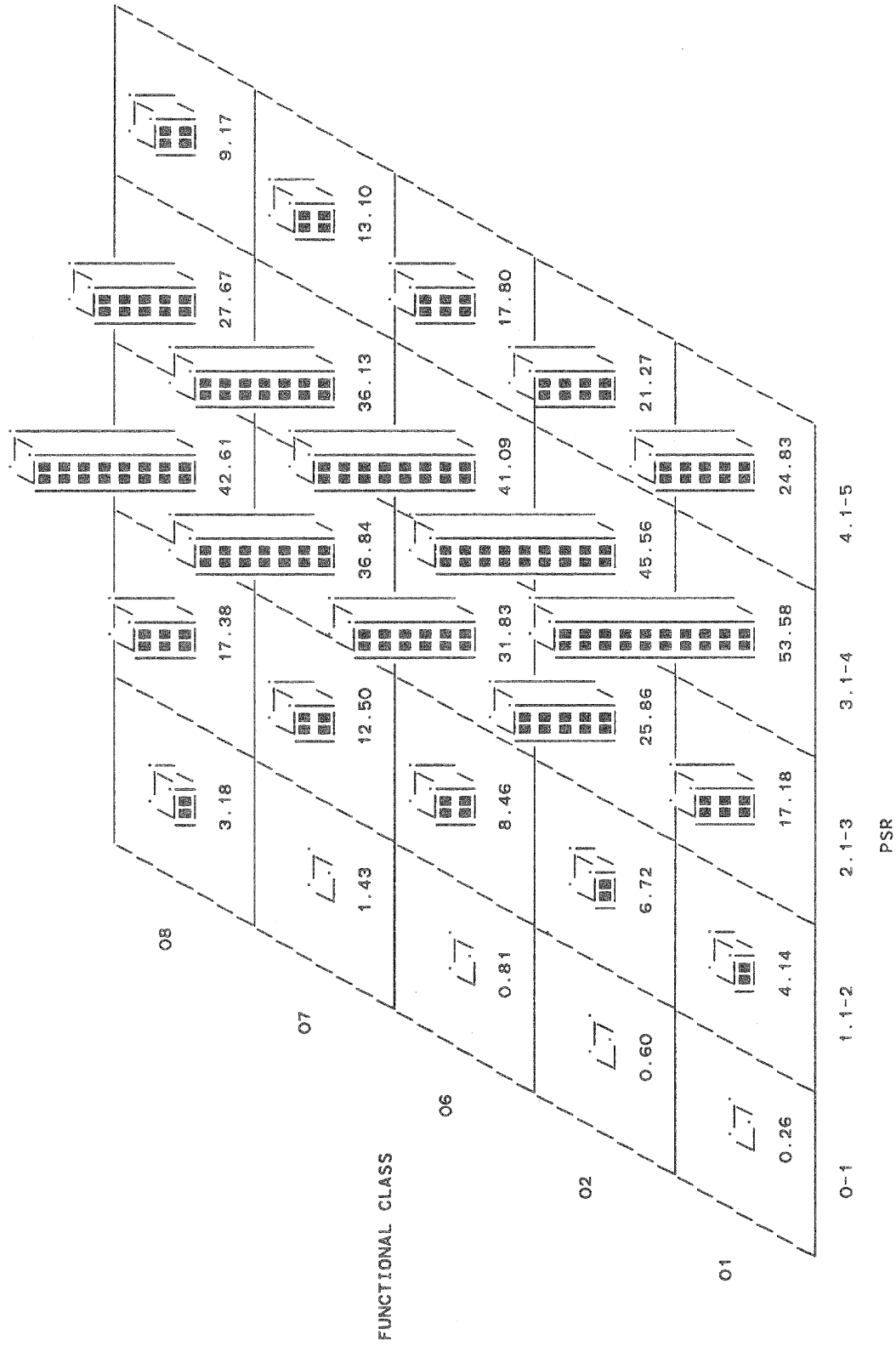
(Item 36)

- the distribution is shown for all records; the full range of possible values are not being coded — the even "0.5" increments (20% of the scale) are coded 45% of the time
- average condition decreases with lower functional classes for both types of pavement
- overall condition ratings for both type pavements are similar, although flexible ratings are slightly higher than rigid ratings in higher functional classes, while the reverse is true in lower functional classes
- 2/3 of ratings fall in the 2.4 to 4.1 range
- there are relatively few rigid pavements in the lower functional classes

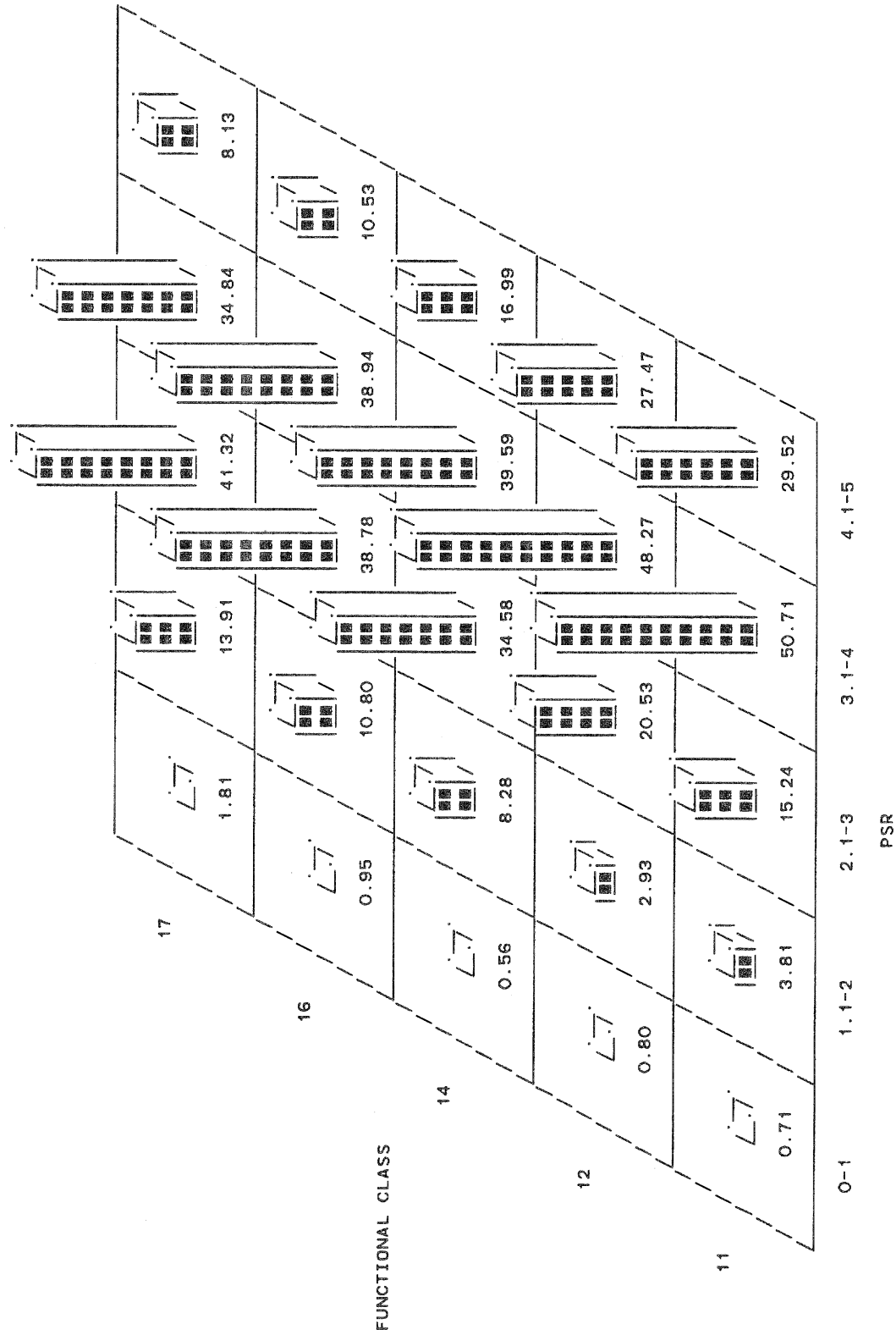
REPORTED PAVEMENT CONDITION
PERCENTAGE BAR CHART



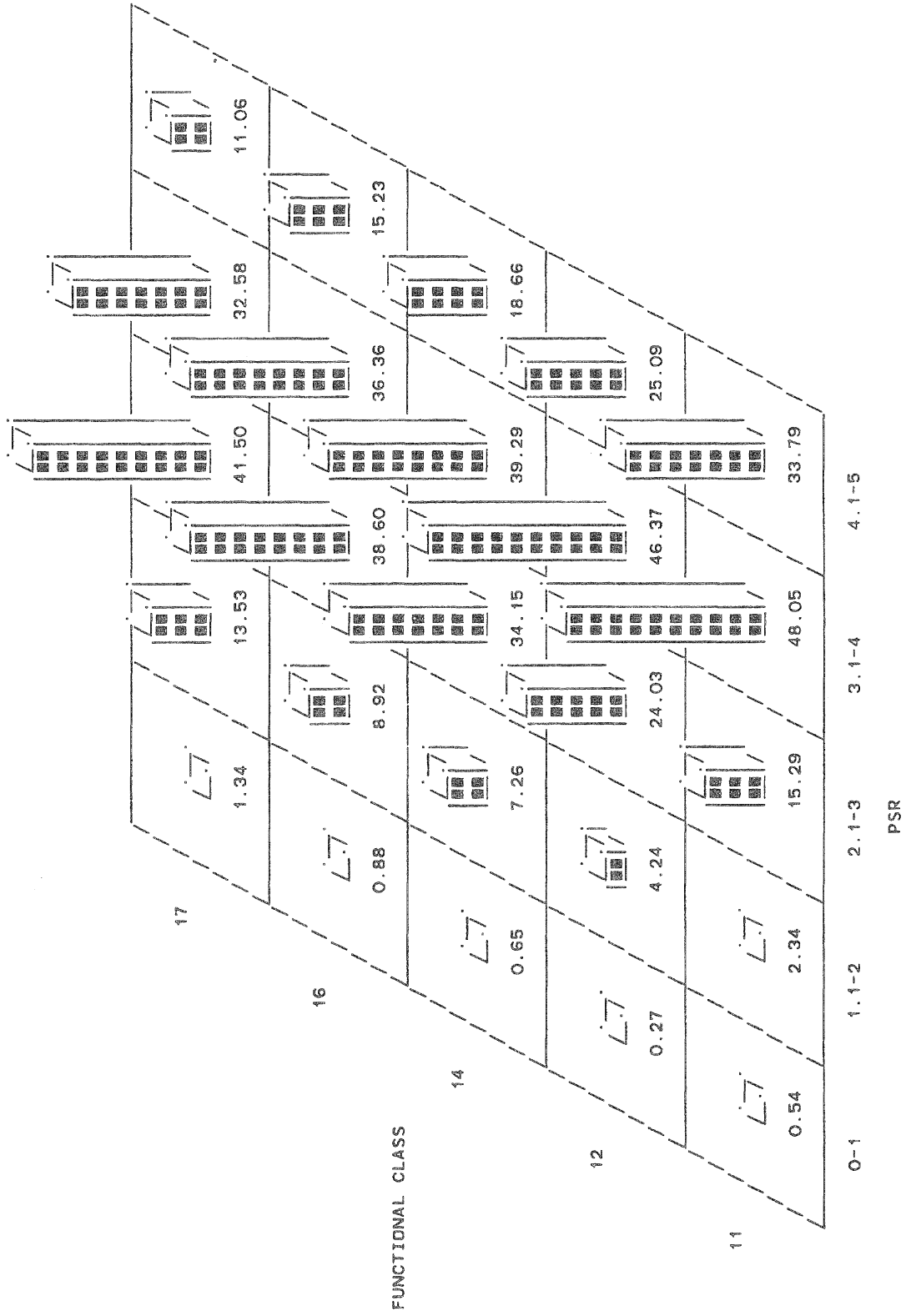
PAVEMENT CONDITION
 PAVEMENT=FLEX AREA=RURAL
 PERCENTAGE BLOCK CHART



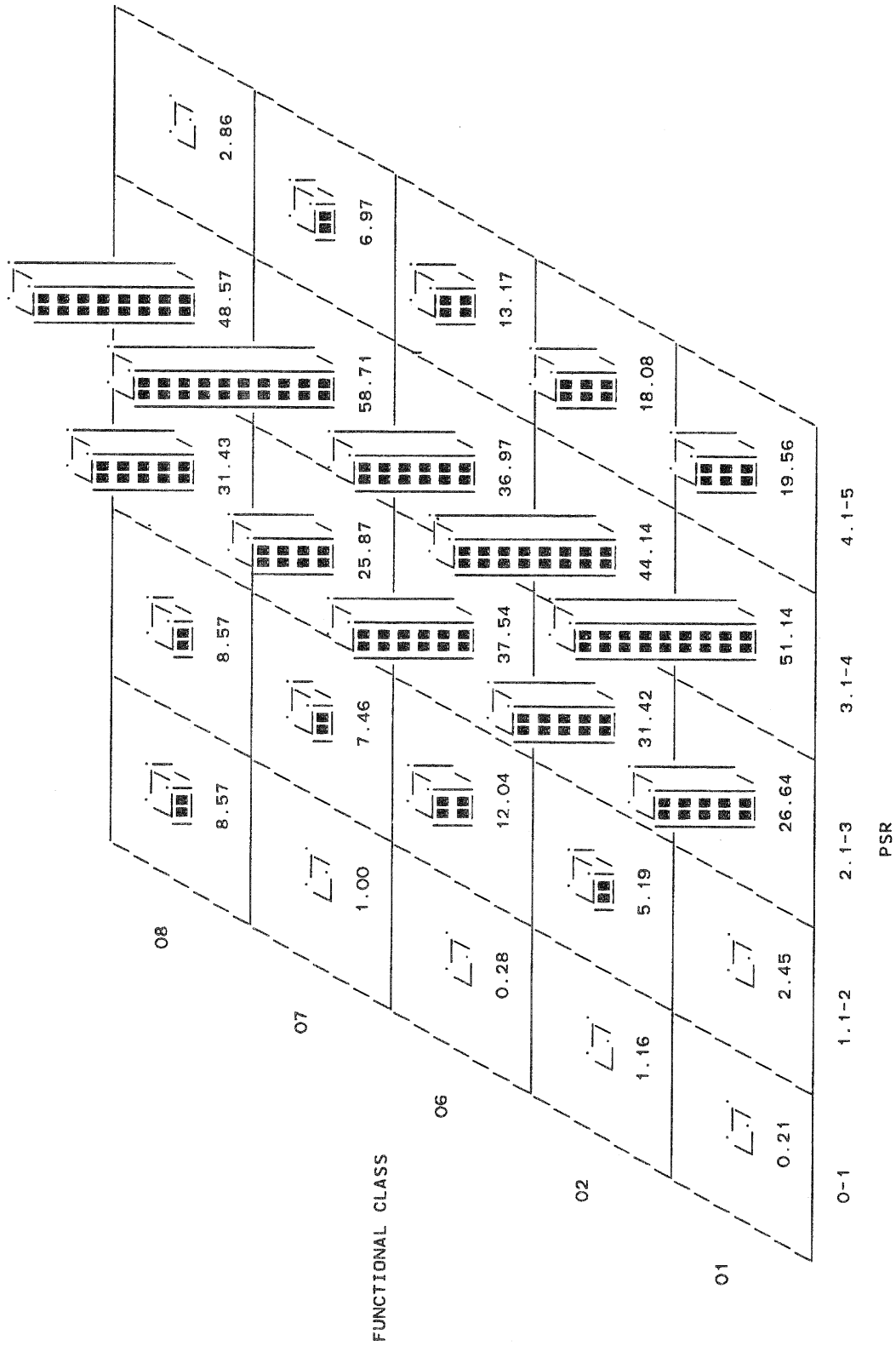
PAVEMENT CONDITION
 PAVEMENT=FLEX AREA=SMALL URBAN
 PERCENTAGE BLOCK CHART



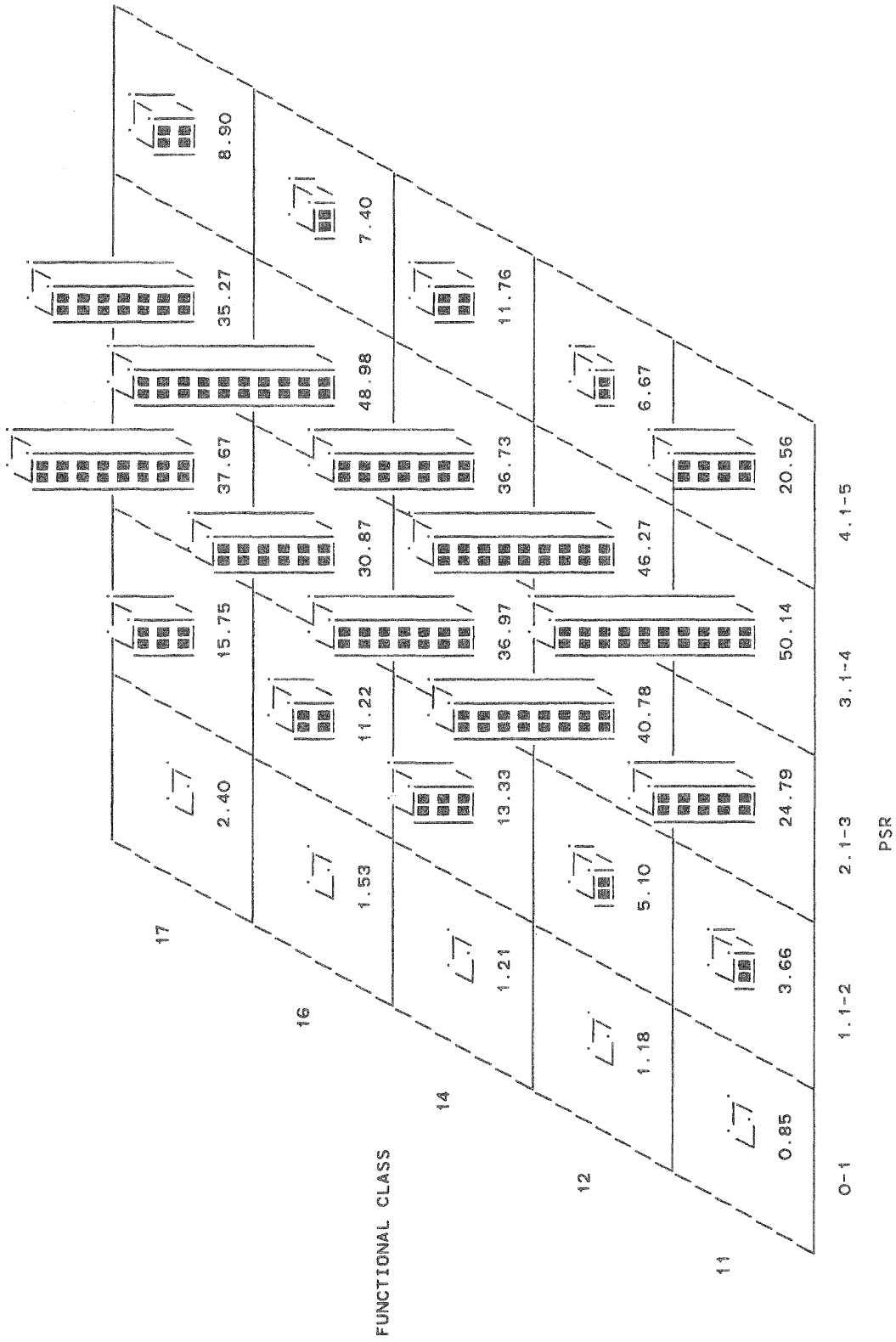
PAVEMENT CONDITION
 PAVEMENT=FLEX AREA=URBANIZED
 PERCENTAGE BLOCK CHART



PAVEMENT CONDITION
 PAVEMENT=RIGID AREA=RURAL
 PERCENTAGE BLOCK CHART

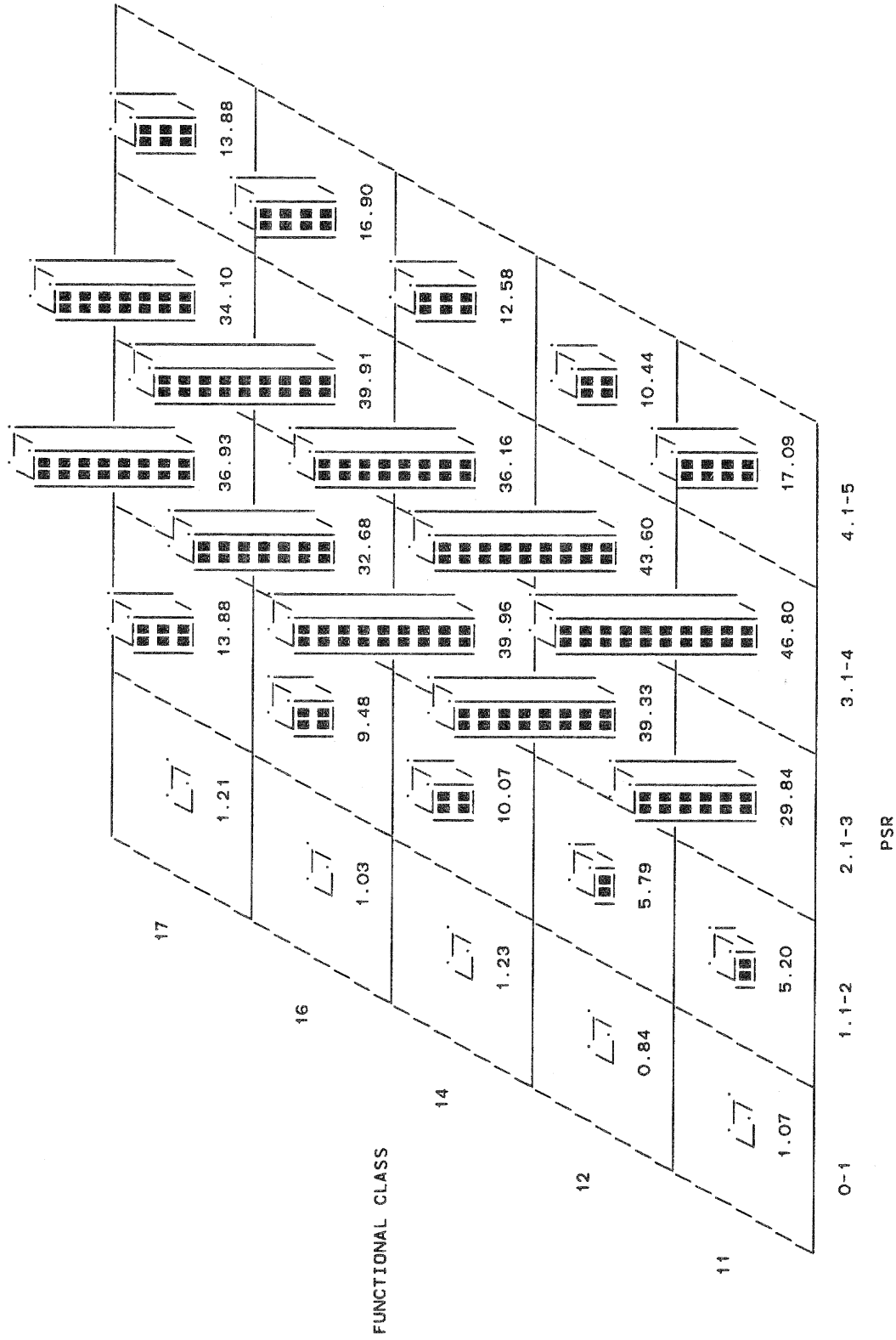


PAVEMENT CONDITION
 PAVEMENT=RIGID AREA=SMALL URBAN
 PERCENTAGE BLOCK CHART



PAVEMENT CONDITION
 PAVEMENT=RIGID AREA=URBANIZED

PERCENTAGE BLOCK CHART



AVERAGE PAVEMENT CONDITION
PAVEMENT=FLEX

		PSR						
AREA	FUNCTIONAL CLASS	#	MIN	MEAN	MAX	STAN DEV	COEF OF VAR	
RURAL	01	2706.00	0.50	3.59	5.00	0.76	21.15	
	02	9038.00	0.10	3.42	5.00	0.83	24.18	
	06	6157.00	0.20	3.28	5.00	0.85	26.01	
	07	5176.00	0.10	3.12	5.00	0.89	28.50	
	08	5410.00	0.10	2.86	5.00	0.93	32.64	
	11	420.00	0.80	3.66	5.00	0.81	22.02	
	12	375.00	1.00	3.62	5.00	0.80	22.01	
	14	6217.00	0.10	3.29	5.00	0.84	25.55	
SMALL URBAN	16	3778.00	0.10	3.11	5.00	0.82	26.35	
	17	4429.00	0.10	2.98	5.00	0.86	28.80	
	11	2054.00	0.50	3.78	5.00	0.77	20.29	
	12	1885.00	0.10	3.52	5.00	0.78	22.30	
	14	9145.00	0.10	3.32	5.00	0.85	25.63	
URBANIZED	16	9065.00	0.10	3.20	5.00	0.85	26.69	
	17	10700.00	0.10	3.04	5.00	0.88	28.93	
	ALL	76555.00	0.10	3.23	5.00	0.88	27.17	

AVERAGE PAVEMENT CONDITION
PAVEMENT=RIGID

PSR

AREA	FUNCTIONAL CLASS	#	MIN	MEAN	MAX	STAN DEV	COEF OF VAR
RURAL	01	1922.00	0.10	3.49	5.00	0.70	19.96
	02	1117.00	0.10	3.32	5.00	0.82	24.75
	06	357.00	0.50	3.13	5.00	0.85	27.11
	07	201.00	0.10	3.25	5.00	0.80	24.52
	08	70.00	0.20	2.90	5.00	0.95	32.89
	11	355.00	0.10	3.45	5.00	0.77	22.30
	12	255.00	0.10	3.15	5.00	0.72	22.91
	14	825.00	0.10	3.07	5.00	0.88	28.68
SMALL URBAN	16	392.00	0.10	3.06	5.00	0.79	25.90
	17	292.00	0.10	2.92	5.00	0.90	30.75
	11	2346.00	0.10	3.37	5.00	0.80	23.78
	12	1312.00	0.10	3.20	5.00	0.76	23.82
	14	1629.00	0.10	3.10	5.00	0.86	27.72
	16	1065.00	0.10	3.24	5.00	0.90	27.65
	17	742.00	0.10	3.08	5.00	0.90	29.29
ALL		12880.00	0.10	3.25	5.00	0.83	25.46
URBANIZED	11						
	12						
	14						
	16						
	17						

LANE WIDTH

(Item 39)

- only shown by area since little difference in functional classes; basically 10—12' averages
- note extremes: narrow rural sections (5—8') and urban sections with parking (18'+)

1985 HPMS Sample Data

LANE WIDTH (NOTE EXTREMES)
AREA=RURAL

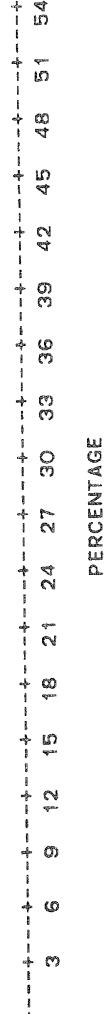
PERCENTAGE BAR CHART



LANE WIDTH (NOTE EXTREMES)
AREA=SMALL URBAN

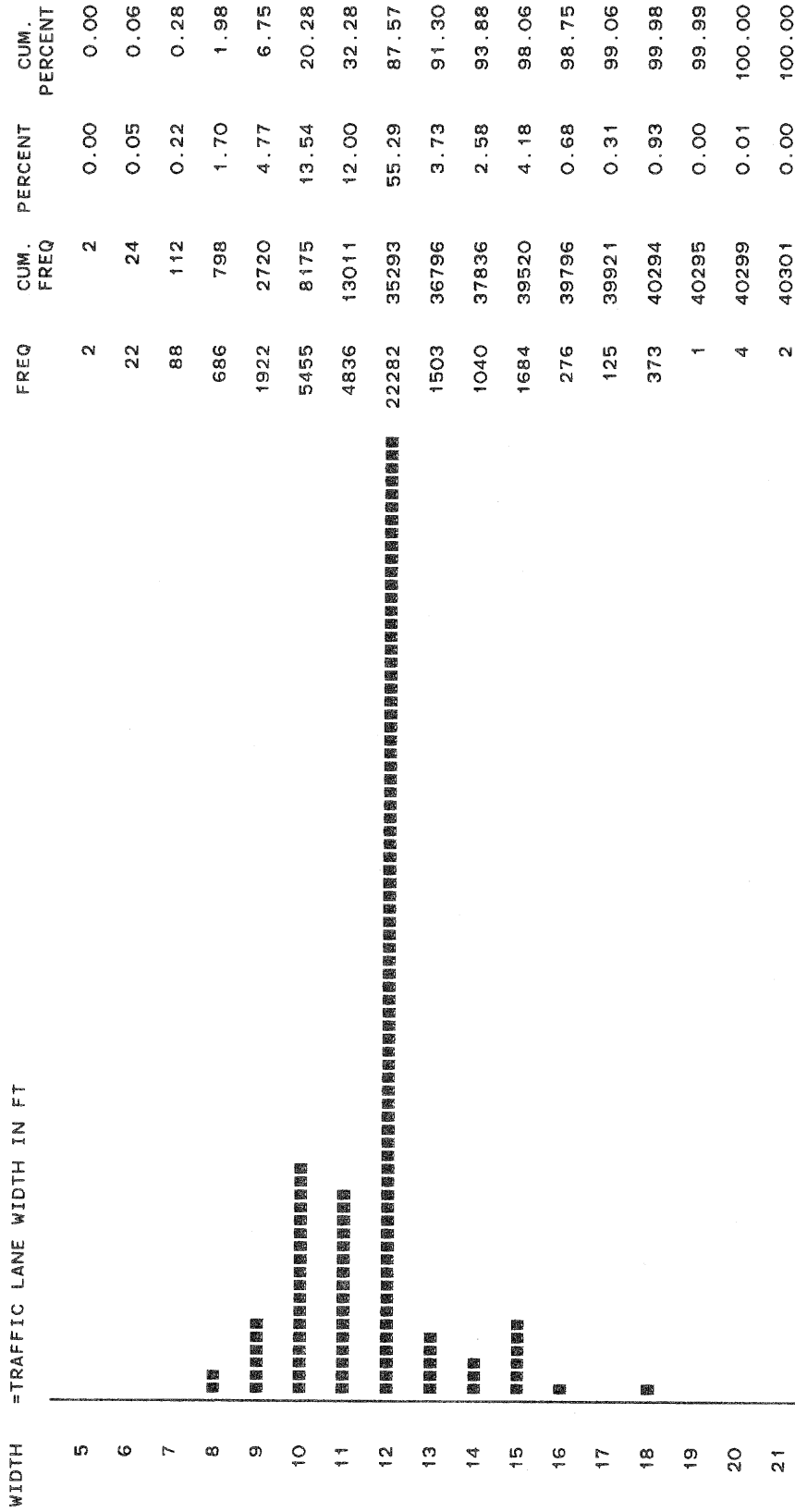
PERCENTAGE BAR CHART

WIDTH	-TRAFFIC LANE WIDTH IN FT	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
6		8	8	0.05	0.05
7		64	72	0.36	0.41
8		299	371	1.70	2.10
9		984	1355	5.58	7.69
10		2236	3591	12.68	20.37
11		2160	5751	12.25	32.62
12		9577	15328	54.33	86.95
13		576	15904	3.27	90.21
14		567	16471	3.22	93.43
15		794	17265	4.50	97.94
16		136	17401	0.77	98.71
17		61	17462	0.35	99.05
18		156	17618	0.88	99.94
19		2	17620	0.01	99.95
20		2	17622	0.01	99.96
22		4	17626	0.02	99.98
24		2	17628	0.01	99.99
27		1	17629	0.01	100.00



LANE WIDTH (NOTE EXTREMES)
 AREA=URBANIZED

PERCENTAGE BAR CHART



SHOULDER TYPE

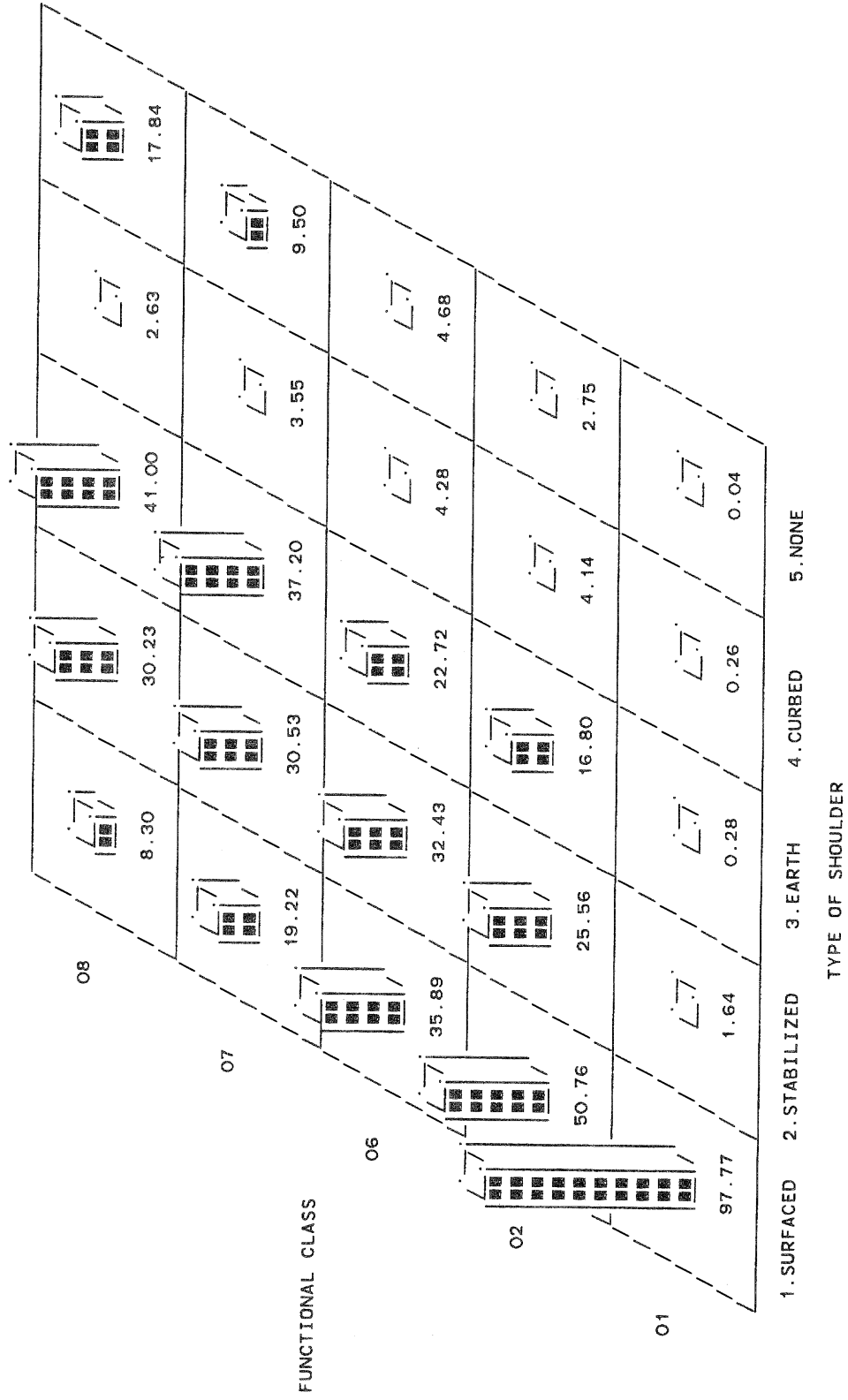
(Item 41)

- data shown is for paved sections only
- higher type shoulders on the higher functional classes
- many rural sections in the lower functional classes report no shoulders (10-18%)
- as expected, a large % of the urban sections are curbed once you go lower in functional class than expressways (38-44%)

1985 HPMS Sample Data

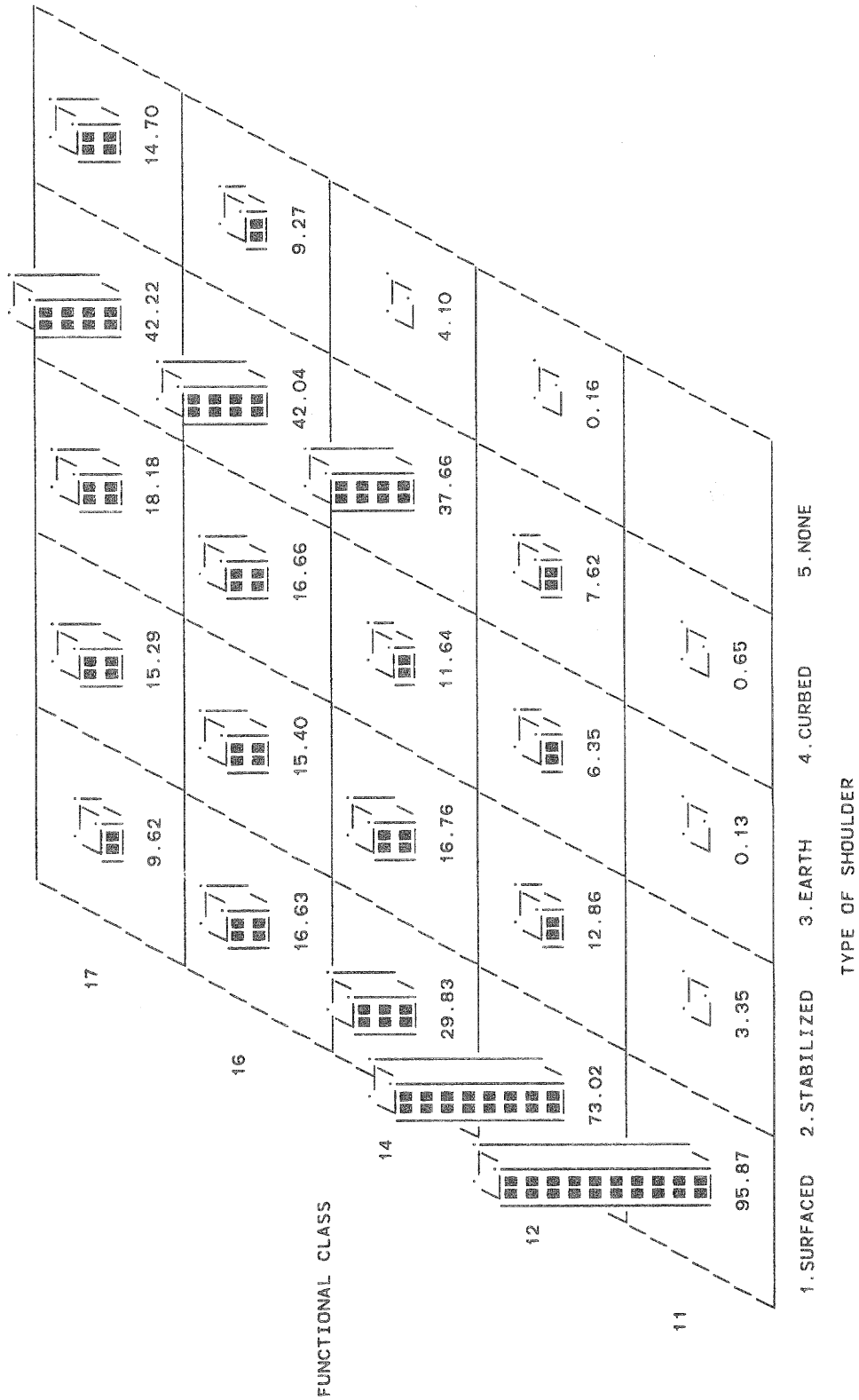
SHOULDER TYPE
(PAVED SECTIONS ONLY)
AREA=RURAL

PERCENTAGE BLOCK CHART



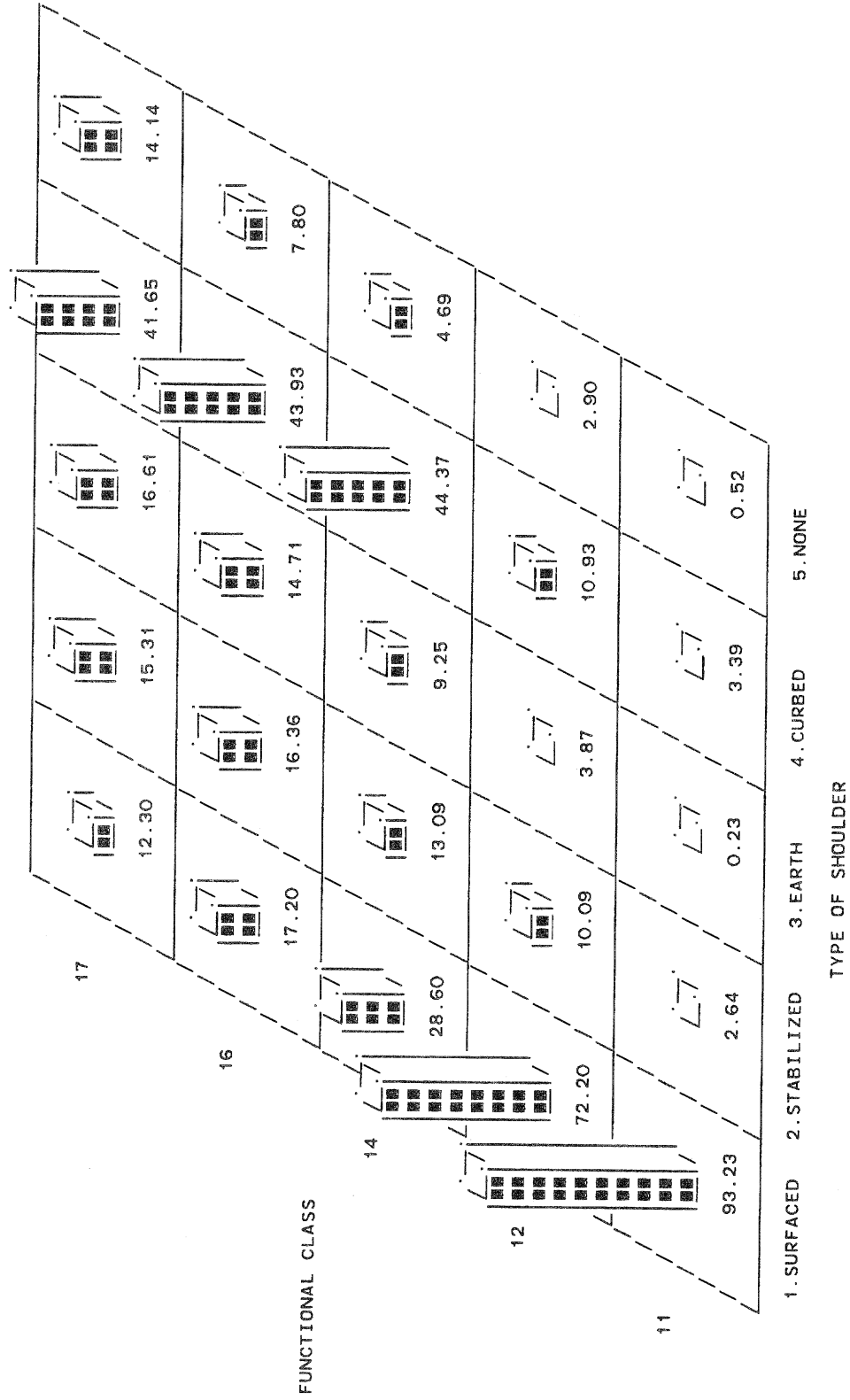
SHOULDER TYPE
(PAVED SECTIONS ONLY)
AREA=SMALL URBAN

PERCENTAGE BLOCK CHART



SHOULDER TYPE
(PAVED SECTIONS ONLY)
AREA = URBANIZED

PERCENTAGE BLOCK CHART



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RIGHT SHOULDER WIDTH

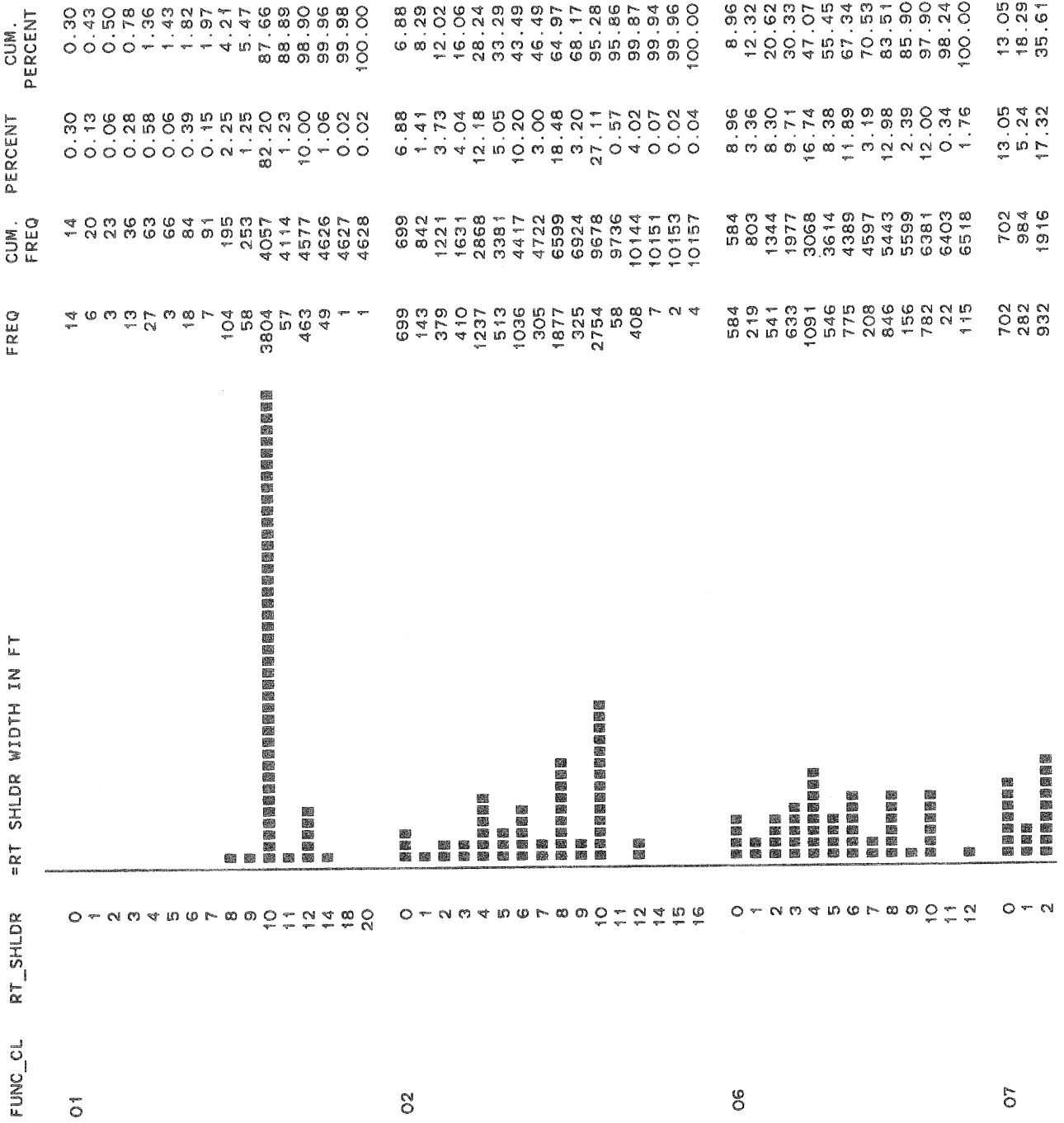
(Items 41,42a)

- a "0" width indicates no shoulder exists
- 10 to 12' shoulders on the I system
- shoulder width decreases with lower functional classes
- note that some records are coded as having unusually high widths (16'+)
- as expected, there is a relationship between shoulder type and width; wider shoulders are associated with higher type shoulders

1985 HPMS Sample Data

RIGHT SHOULDER WIDTH
(PAVED SECTIONS ONLY)
AREA=RURAL

PERCENTAGE BAR CHART

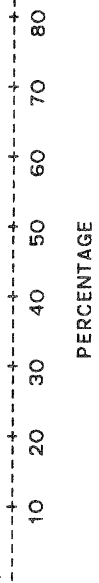


RIGHT SHOULDER WIDTH
(PAVED SECTIONS ONLY)
AREA=RURAL

PERCENTAGE BAR CHART

=RT SHLDR WIDTH IN FT

FUNC_CL	RT_SHLDR	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
	3	816	2732	15.16	50.77
	4	848	3580	15.76	66.53
	5	398	3978	7.40	73.93
	6	572	4550	10.63	84.56
	7	118	4668	2.19	86.75
	8	324	4992	6.02	92.77
	9	50	5042	0.93	93.70
	10	288	5330	5.35	99.05
	11	10	5340	0.19	98.24
	12	39	5379	0.72	99.96
	14	1	5380	0.02	99.98
	20	1	5381	0.02	100.00
08	0	1122	1122	20.47	20.47
	1	423	1545	7.72	28.19
	2	1276	2821	23.28	51.47
	3	790	3611	14.41	65.88
	4	706	4317	12.88	78.76
	5	333	4650	6.08	84.84
	6	419	5069	7.64	92.48
	7	48	5117	0.88	93.36
	8	164	5281	2.99	96.35
	9	23	5304	0.42	96.77
	10	141	5445	2.57	99.34
	11	2	5447	0.04	99.38
	12	30	5477	0.55	99.93
	14	1	5478	0.02	99.95
	15	1	5479	0.02	99.96
	16	1	5480	0.02	99.98
	36	1	5481	0.02	100.00



RIGHT SHOULDER WIDTH
(PAVED SECTIONS ONLY)
AREA=SMALL URBAN

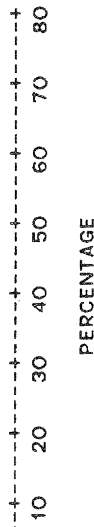
PERCENTAGE BAR CHART

FUNC_CL	RT_SHLDR	=RT_SHLDR WIDTH IN FT	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT	
11	0	0	5	5	0.65	0.65	
	4	4	1	6	0.13	0.77	
	7	7	2	8	0.26	1.03	
	8	8	27	35	3.48	4.52	
	9	9	6	41	0.77	5.29	
	10	10	624	665	80.52	85.81	
	11	11	6	671	0.77	86.58	
	12	12	92	763	11.87	98.45	
	14	14	12	775	1.55	100.00	
	12	0	0	49	49	7.78	7.78
		1	1	2	51	0.32	8.10
		2	2	8	59	1.27	9.37
		3	3	8	67	1.27	10.63
		4	4	11	78	1.75	12.38
6		6	11	89	1.75	14.13	
7		7	8	97	1.27	15.40	
8		8	113	210	17.94	33.33	
9		9	15	225	2.38	35.71	
10		10	310	535	49.21	84.92	
11		11	10	545	1.59	86.51	
12		12	80	625	12.70	99.21	
13		13	1	626	0.16	99.37	
14		14	4	630	0.63	100.00	
14	0	0	2952	2952	41.76	41.76	
	1	1	76	3028	1.08	42.83	
	2	2	246	3274	3.48	46.31	
	3	3	292	3566	4.13	50.45	
	4	4	437	4003	6.18	56.63	
	5	5	233	4236	3.30	59.92	
	6	6	485	4721	6.86	66.78	
	7	7	140	4861	1.98	68.77	
	8	8	753	5614	10.65	79.42	
	9	9	127	5741	1.80	81.21	
	10	10	1118	6859	15.82	97.03	
	11	11	36	6895	0.51	97.54	
	12	12	158	7053	2.24	99.77	
	14	14	13	7066	0.18	99.96	
	15	15	2	7068	0.03	99.99	
	18	18	1	7069	0.01	100.00	
	16	0	0	2153	2153	51.31	51.31
		1	1	135	2288	3.22	54.53
2		2	336	2624	8.01	62.54	
3		3	257	2881	6.12	68.66	
4		4	325	3206	7.75	76.41	
5		5	152	3358	3.62	80.03	
6		6	227	3585	5.41	85.44	
8		8	51	3636	1.22	86.65	
			267	3903	6.36	93.02	

RIGHT SHOULDER WIDTH
(PAVED SECTIONS ONLY)
AREA=SMALL URBAN

PERCENTAGE BAR CHART

FUNC_CL	RT_SHLDR	=RT SHLDR WIDTH IN FT	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
	9		31	3934	0.74	93.76
	10		183	4117	4.36	98.12
	11		17	4134	0.41	98.52
	12		58	4192	1.38	99.90
	14		2	4194	0.05	99.95
	15		2	4196	0.05	100.00
17	0		2699	2699	56.92	56.92
	1		220	2919	4.64	61.56
	2		527	3446	11.11	72.67
	3		328	3774	6.92	79.59
	4		278	4052	5.86	85.45
	5		119	4171	2.51	87.96
	6		204	4375	4.30	92.26
	7		39	4414	0.82	93.08
	8		165	4579	3.48	96.56
	9		21	4600	0.44	97.01
	10		86	4686	1.81	98.82
	11		8	4694	0.17	98.99
	12		46	4740	0.97	99.96
	15		1	4741	0.02	99.98
	16		1	4742	0.02	100.00



RIGHT SHOULDER WIDTH
(PAVED SECTIONS ONLY)
AREA=URBANIZED

PERCENTAGE BAR CHART

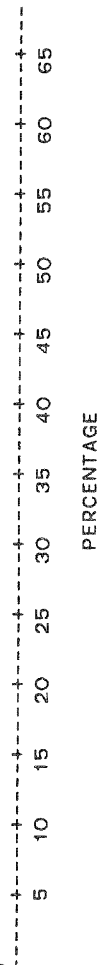
FUNC_CL	RT_SHLDR	=RT SHLDR WIDTH IN FT	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT	
11	0	0	172	172	3.91	3.91	
	1	1	8	180	0.18	4.09	
	2	2	15	195	0.34	4.43	
	3	3	17	212	0.39	4.82	
	4	4	15	227	0.34	5.16	
	5	5	27	254	0.61	5.77	
	6	6	32	286	0.73	6.50	
	7	7	8	294	0.18	6.68	
	8	8	193	487	4.39	11.07	
	9	9	89	576	2.02	13.09	
	10	10	3004	3580	68.27	81.36	
	11	11	59	3639	1.34	82.70	
	12	12	707	4346	16.07	98.77	
	13	13	1	4347	0.02	98.80	
	14	14	49	4396	1.11	99.91	
	16	16	1	4397	0.02	99.93	
	20	20	1	4398	0.02	99.95	
	22	22	2	4400	0.05	100.00	
	12	0	0	443	443	13.84	13.84
		1	1	14	457	0.44	14.27
		2	2	50	507	1.56	15.83
		3	3	28	535	0.87	16.71
4		4	47	582	1.47	18.18	
5		5	16	598	0.50	18.68	
6		6	99	697	3.09	21.77	
7		7	42	739	1.31	23.08	
8		8	369	1108	11.52	34.60	
9		9	86	1194	2.69	37.29	
10		10	1620	2814	50.59	87.88	
11		11	34	2848	1.06	88.94	
12		12	335	3183	10.46	99.41	
13		13	2	3185	0.06	99.47	
14		14	16	3201	0.50	99.97	
22		22	1	3202	0.03	100.00	
14		0	0	5293	5293	49.05	49.05
		1	1	113	5406	1.05	50.09
		2	2	442	5848	4.10	54.19
		3	3	267	6115	2.47	56.66
		4	4	533	6648	4.94	61.60
		5	5	284	6932	2.63	64.23
	6	6	606	7538	5.62	69.85	
	7	7	175	7713	1.62	71.47	
	8	8	1011	8724	9.37	80.84	
	9	9	153	8877	1.42	82.26	
	10	10	1575	10452	14.59	96.85	
	11	11	44	10496	0.41	97.26	
	12	12	281	10777	2.60	99.86	
	14	14	7	10784	0.06	99.93	
	15	15	4	10788	0.04	99.96	

RIGHT SHOULDER WIDTH
(PAVED SECTIONS ONLY)
AREA=URBANIZED

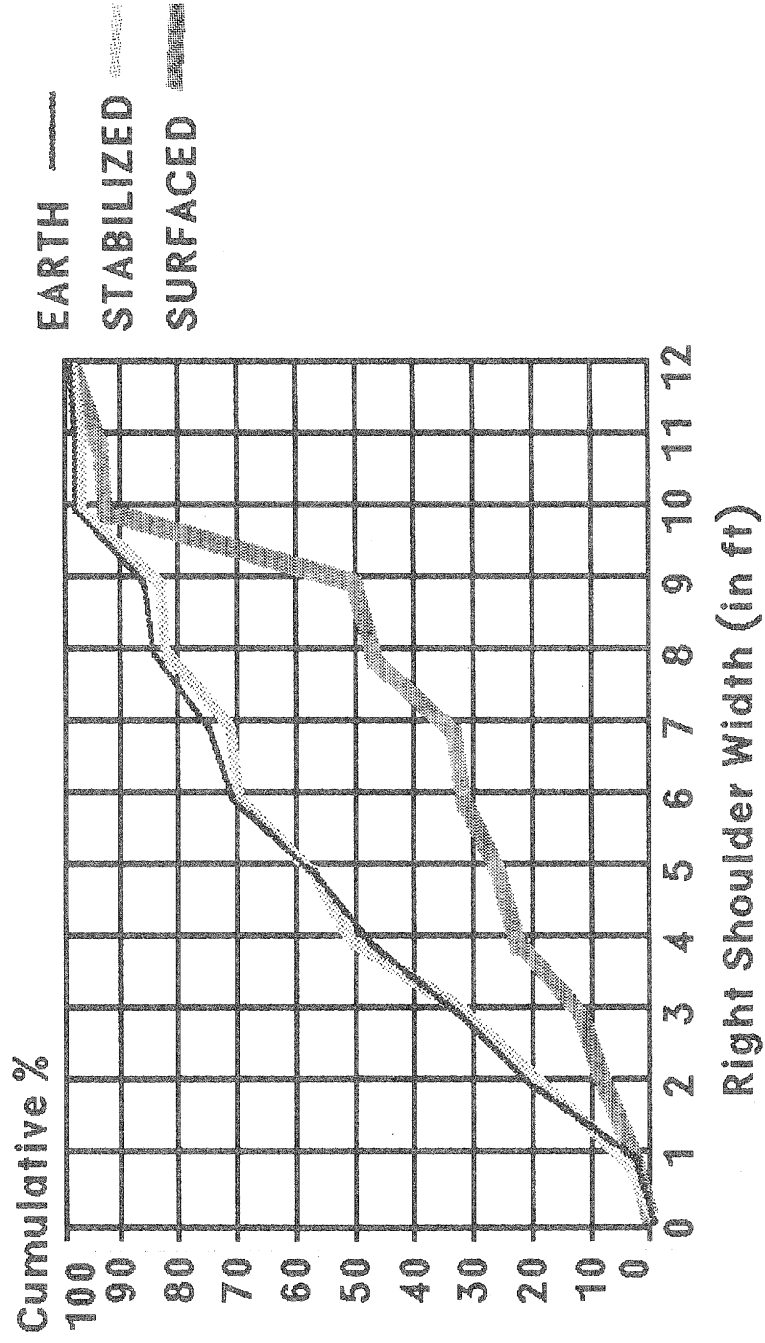
PERCENTAGE BAR CHART

FUNC_CL RT_SHLDR =RT SHLDR WIDTH IN FT

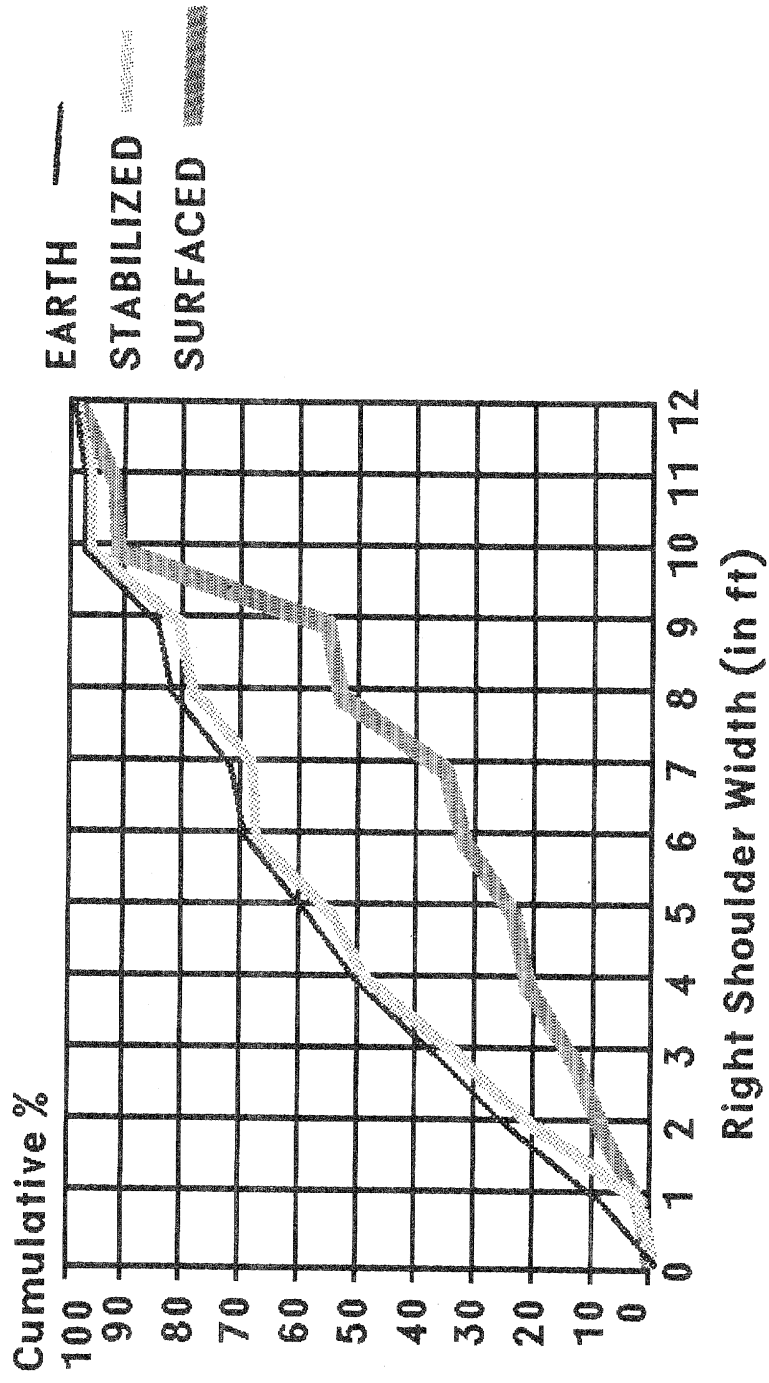
FUNC_CL	RT_SHLDR	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
16	16	1	10789	0.01	99.97
	18	2	10791	0.02	99.99
	28	1	10792	0.01	100.00
	0	5251	5251	51.73	51.73
	1	249	5500	2.45	54.18
	2	779	6279	7.67	61.86
	3	625	6904	6.16	68.01
	4	689	7593	6.79	74.80
	5	355	7948	3.50	78.30
	6	565	8513	5.57	83.86
	7	152	8665	1.50	85.36
	8	760	9425	7.49	92.85
	9	92	9517	0.91	93.75
	10	484	10001	4.77	98.52
	11	30	10031	0.30	98.82
	12	114	10145	1.12	99.94
	13	2	10147	0.02	99.96
	15	1	10148	0.01	99.97
	18	2	10150	0.02	99.99
19	1	10151	0.01	100.00	
17	0	6413	6413	55.78	55.78
	1	390	6803	3.39	59.18
	2	1280	8083	11.13	70.31
	3	785	8868	6.83	77.14
	4	733	9601	6.38	83.52
	5	338	9939	2.94	86.46
	6	467	10406	4.06	90.52
	7	180	10586	1.57	92.08
	8	533	11119	4.64	96.72
	9	47	11166	0.41	97.13
	10	234	11400	2.04	99.16
	11	15	11415	0.13	99.30
	12	78	11493	0.68	99.97
	13	1	11494	0.01	99.98
	15	1	11495	0.01	99.99
	26	1	11496	0.01	100.00



RELATION: SHOULDER WIDTH AND TYPE AREA-RURAL

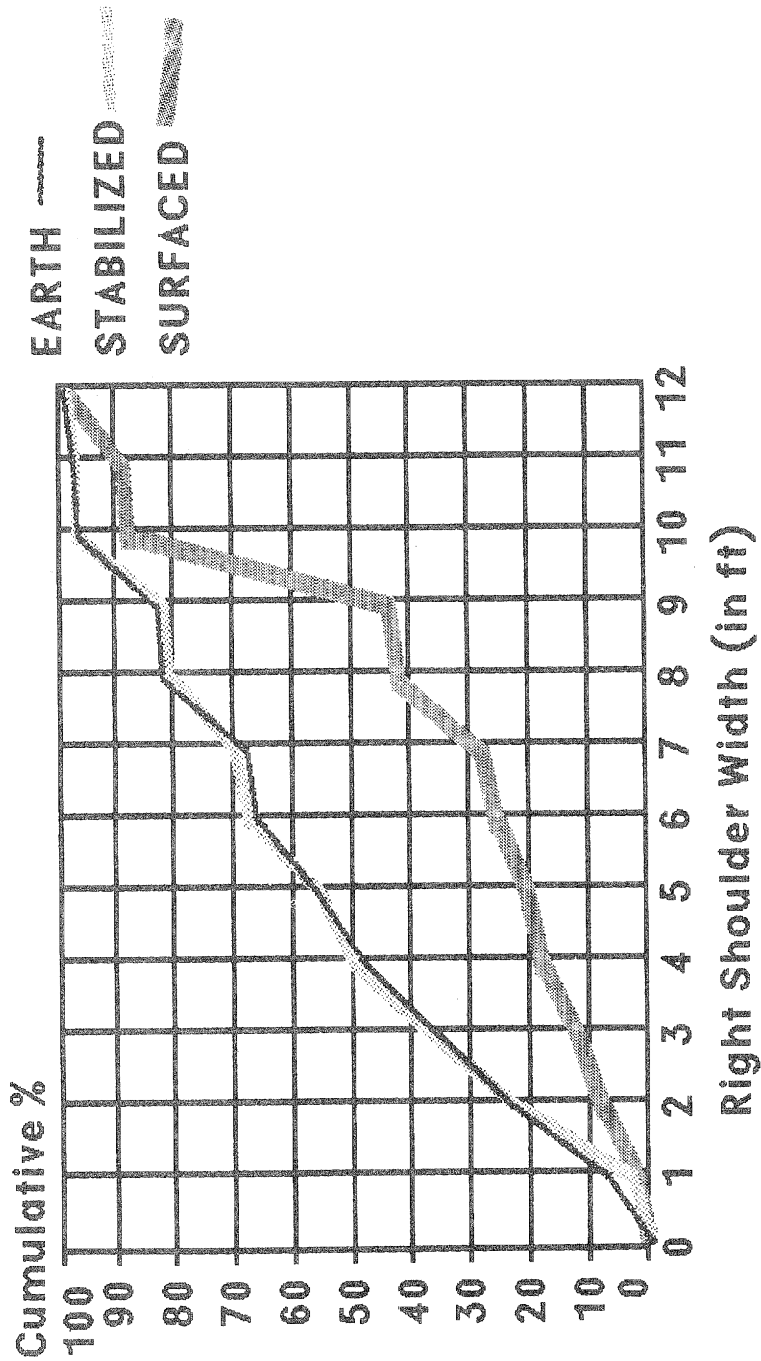


RELATION: SHOULDER WIDTH AND TYPE
AREA—SMALL URBAN



RELATION: SHOULDER WIDTH AND TYPE

AREA—URBANIZED



EARTH ———
STABILIZED
SURFACED [hatched]

LEFT SHOULDER WIDTH

(Item 42b)

- 4 to 6' shoulders on the I system
- a large % of the lower functional classes (even looking at only paved divided highways) report no left shoulder
- generally 4' when there is a shoulder reported

1985 HPMS Sample Data

LEFT SHOULDER WIDTH (FOR PAVED DIVIDED HIGHWAYS ONLY)
AREA=RURAL

PERCENTAGE BAR CHART

FUNC_CL	LT_SHLDR	=LT_SHLDR WIDTH IN FT	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
01	0	0	93	93	2.03	2.03
	1	1	20	113	0.44	2.47
	2	2	170	283	3.72	6.18
	3	3	533	816	11.65	17.83
	4	4	2314	3130	50.57	68.40
	5	5	260	3390	5.68	74.08
	6	6	882	4272	19.27	93.36
	7	7	14	4286	0.31	93.66
	8	8	120	4406	2.62	96.28
	9	9	12	4418	0.26	96.55
	10	10	120	4538	2.62	99.17
	11	11	6	4544	0.13	99.30
12	12	32	4576	0.70	100.00	
02	0	0	681	681	28.90	28.90
	1	1	35	716	1.49	30.39
	2	2	231	947	9.80	40.20
	3	3	199	1146	8.45	48.64
	4	4	595	1741	25.25	73.90
	5	5	109	1850	4.63	78.52
	6	6	290	2140	12.31	90.83
	7	7	19	2159	0.81	91.64
	8	8	92	2251	3.90	95.54
	9	9	29	2280	1.23	96.77
	10	10	60	2340	2.55	99.32
	11	11	7	2347	0.30	99.62
12	12	9	2356	0.38	100.00	
06	0	0	139	139	42.77	42.77
	1	1	4	143	1.23	44.00
	2	2	38	181	11.69	55.69
	3	3	28	209	8.62	64.31
	4	4	57	266	17.54	81.85
	5	5	16	282	4.92	86.77
	6	6	20	302	6.15	92.92
	7	7	2	304	0.62	93.54
	8	8	11	315	3.38	96.92
	9	9	1	316	0.31	97.23
	10	10	7	323	2.15	99.38
	12	12	2	325	0.62	100.00
07	0	0	80	80	61.54	61.54
	1	1	3	83	2.31	63.85
	2	2	4	87	3.08	66.92
	3	3	4	91	3.08	70.00
	4	4	20	111	15.38	85.38
	5	5	5	116	3.85	89.23
	6	6	2	118	1.54	90.77
	8	8	4	122	3.08	93.85
	10	10	7	129	5.38	99.23
	12	12	1	130	0.77	100.00

LEFT SHOULDER WIDTH (FOR PAVED DIVIDED HIGHWAYS ONLY)
 AREA=RURAL

PERCENTAGE BAR CHART

FUNC_CL	LT_SHLDR	=LT_SHLDR WIDTH IN FT	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
08	0	0	8	8	53.33	53.33
	2	2	1	9	6.67	60.00
	3	3	1	10	6.67	66.67
	4	4	1	11	6.67	73.33
	5	5	1	12	6.67	80.00
	7	7	1	13	6.67	86.67
	8	8	2	15	13.33	100.00



LEFT SHOULDER WIDTH (FOR PAVED DIVIDED HIGHWAYS ONLY)
 AREA=SMALL URBAN

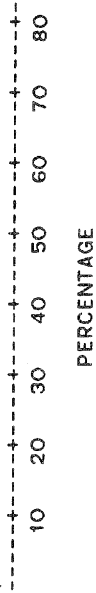
PERCENTAGE BAR CHART

FUNC_CL	LT_SHLDR	=LT SHLDR WIDTH IN FT	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
11	0	0	34	34	4.42	4.42
	1	1	4	38	0.52	4.94
	2	2	19	57	2.47	7.41
	3	3	64	121	8.32	15.73
	4	4	393	514	51.11	66.84
	5	5	58	572	7.54	74.38
	6	6	130	702	16.91	91.29
	7	7	4	706	0.52	91.81
	8	8	24	730	3.12	94.93
	9	9	7	737	0.91	95.84
	10	32	769	4.16	100.00	
12	0	0	178	178	31.12	31.12
	1	1	22	200	3.85	34.97
	2	2	43	243	7.52	42.48
	3	3	39	282	6.82	49.30
	4	4	140	422	24.48	73.78
	5	5	46	468	8.04	81.82
	6	6	54	522	9.44	91.26
	7	7	7	529	1.22	92.48
	8	8	23	552	4.02	96.50
	9	9	1	553	0.17	96.68
	10	10	16	569	2.80	99.48
	12	12	3	572	0.52	100.00
14	0	0	1013	1013	69.48	69.48
	1	1	31	1044	2.13	71.60
	2	2	69	1113	4.73	76.34
	3	3	49	1162	3.36	79.70
	4	4	133	1295	9.12	88.82
	5	5	22	1317	1.51	90.33
	6	6	91	1408	6.24	96.57
	7	7	2	1410	0.14	96.71
	8	8	23	1433	1.58	98.29
	9	9	3	1436	0.21	98.49
	10	10	19	1455	1.30	99.79
	12	12	3	1458	0.21	100.00
16	0	0	187	187	77.59	77.59
	1	1	7	194	2.90	80.50
	2	2	17	211	7.05	87.55
	3	3	8	219	3.32	90.87
	4	4	10	229	4.15	95.02
	5	5	2	231	0.83	95.85
	6	6	2	233	0.83	96.68
	7	7	2	235	0.83	97.51
	8	8	3	238	1.24	98.76
	10	10	2	240	0.83	99.59
	11	11	1	241	0.41	100.00
17	0	0	52	52	82.54	82.54
	1	1	1	53	1.59	84.13

LEFT SHOULDER WIDTH (FOR PAVED DIVIDED HIGHWAYS ONLY)
 AREA=SMALL URBAN

PERCENTAGE BAR CHART

FUNC_CL	LT_SHLDR	=LT SHLDR WIDTH IN FT	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
	2	10	1	54	1.59	85.71
	3	15	3	57	4.76	90.48
	4	20	2	59	3.17	93.65
	5	25	1	60	1.59	95.24
	6	30	2	62	3.17	98.41
	12	35	1	63	1.59	100.00



LEFT SHOULDER WIDTH (FOR PAVED DIVIDED HIGHWAYS ONLY)
AREA=URBANIZED

PERCENTAGE BAR CHART

FUNC_CL	LT_SHLDR	=LT_SHLDR WIDTH IN FT	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
11	0	0	405	405	9.29	9.29
	1	1	82	487	1.88	11.17
	2	2	297	784	6.81	17.99
	3	3	426	1210	9.77	27.76
	4	4	1420	2630	32.58	60.33
	5	5	259	2889	5.94	66.28
	6	6	609	3498	13.97	80.25
	7	7	40	3538	0.92	81.17
	8	8	312	3850	7.16	88.32
	9	9	52	3902	1.19	89.52
	10	10	328	4230	7.52	97.04
	11	11	8	4238	0.18	97.22
	12	12	117	4355	2.68	99.91
	13	13	1	4356	0.02	99.93
14	14	1	4357	0.02	99.95	
16	16	1	4358	0.02	99.98	
30	30	1	4359	0.02	100.00	
12	0	0	871	871	29.46	29.46
	1	1	127	998	4.29	33.75
	2	2	340	1338	11.50	45.25
	3	3	253	1591	8.56	53.80
	4	4	609	2200	20.60	74.40
	5	5	199	2399	6.73	81.13
	6	6	279	2678	9.44	90.56
	7	7	26	2704	0.88	91.44
	8	8	112	2816	3.79	95.23
	9	9	14	2830	0.47	95.71
	10	10	85	2915	2.87	98.58
	11	11	2	2917	0.07	98.65
	12	12	36	2953	1.22	99.86
	13	13	4	2957	0.14	100.00
14	0	0	2964	2964	74.70	74.70
	1	1	91	3055	2.29	76.99
	2	2	200	3255	5.04	82.03
	3	3	105	3360	2.65	84.68
	4	4	270	3630	6.80	91.48
	5	5	53	3683	1.34	92.82
	6	6	152	3835	3.83	96.65
	7	7	11	3846	0.28	96.93
	8	8	59	3905	1.49	98.41
	9	9	10	3915	0.25	98.66
	10	10	42	3957	1.06	99.72
	11	11	1	3958	0.03	99.75
	12	12	10	3968	0.25	100.00
	16	0	0	1221	1221	88.35
1		1	20	1241	1.45	89.80
2		2	43	1284	3.11	92.91
3		3	18	1302	1.30	94.21
4		4	27	1329	1.95	96.16

LEFT SHOULDER WIDTH (FOR PAVED DIVIDED HIGHWAYS ONLY)
 AREA=URBANIZED

PERCENTAGE BAR CHART

FUNC_CL	LT_SHLDR	=LT_SHLDR WIDTH IN FT.	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
	5	5	8	1337	0.58	96.74
	6	6	26	1363	1.88	98.63
	7	7	3	1366	0.22	98.84
	8	8	4	1370	0.29	99.13
	10	10	9	1379	0.65	99.78
	12	12	3	1382	0.22	100.00
17	0	0	365	365	92.41	92.41
	1	1	4	369	1.01	93.42
	2	2	8	377	2.03	95.44
	3	3	2	379	0.51	95.95
	4	4	4	383	1.01	96.96
	5	5	3	386	0.76	97.72
	6	6	1	387	0.25	97.97
	7	7	2	389	0.51	98.48
	8	8	3	392	0.76	99.24
	9	9	1	393	0.25	99.49
	10	10	2	395	0.51	100.00



MEDIAN TYPE

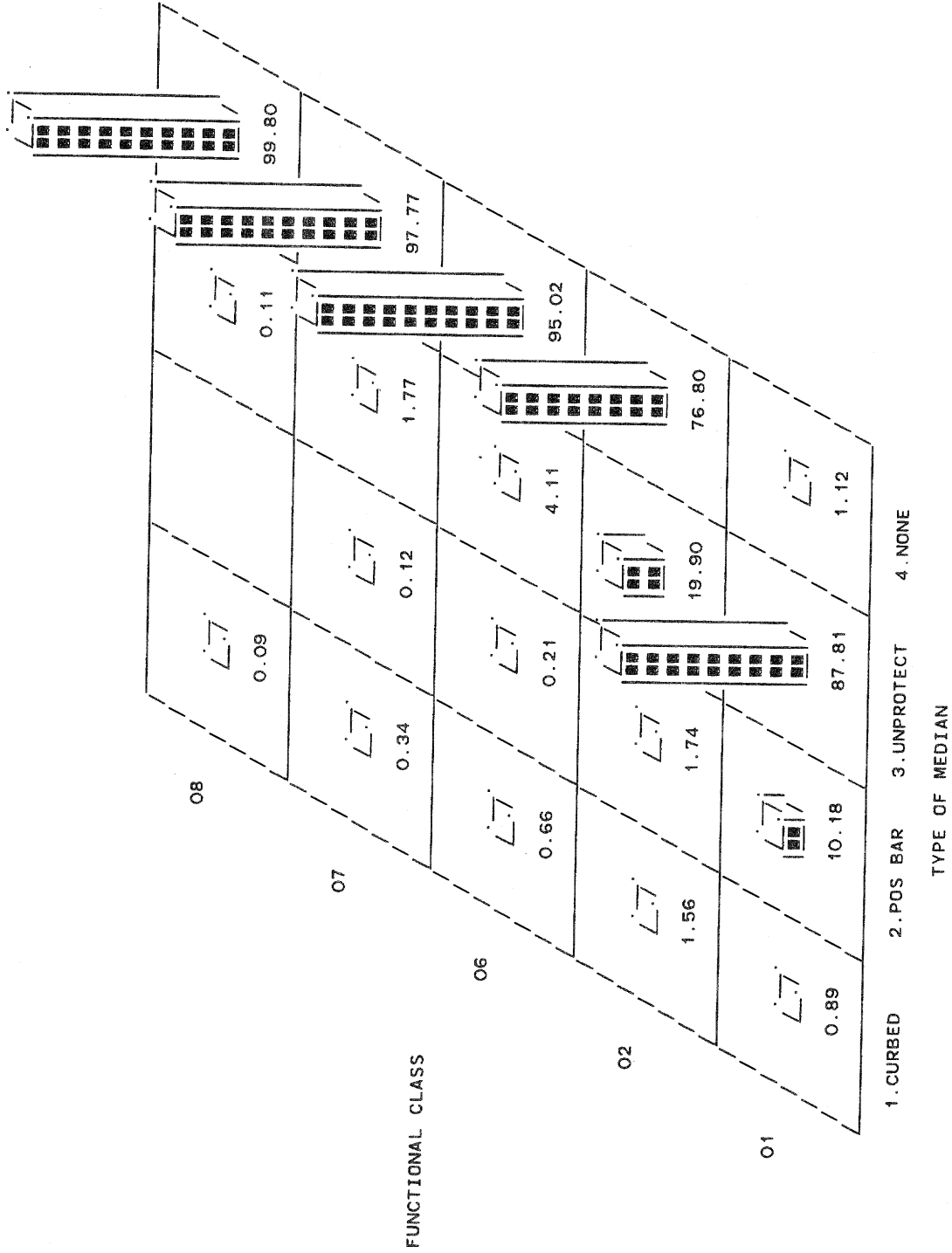
(Items 43,44)

- generally the medians on divided sections are unprotected
- no median indicates that the section is undivided
- there are some freeways/expressways coded as having no median (8--9%)
- positive barriers generally only on I or on urban freeways/expressways
- as expected, there is a relationship between median type and width; curbs or positive barriers are generally associated with narrower widths

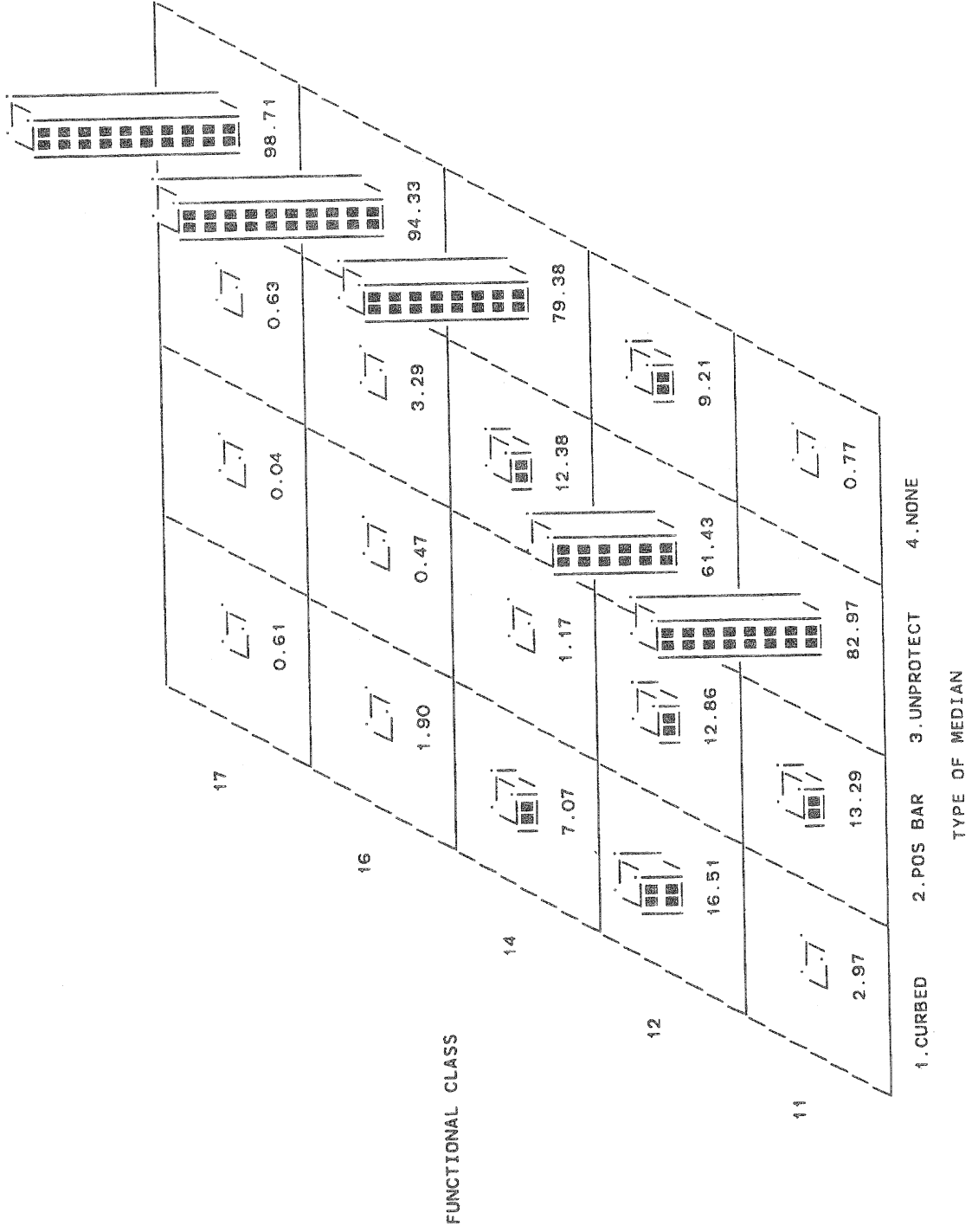
1985 HPMS Sample Data

MEDIAN TYPE
AREA=RURAL

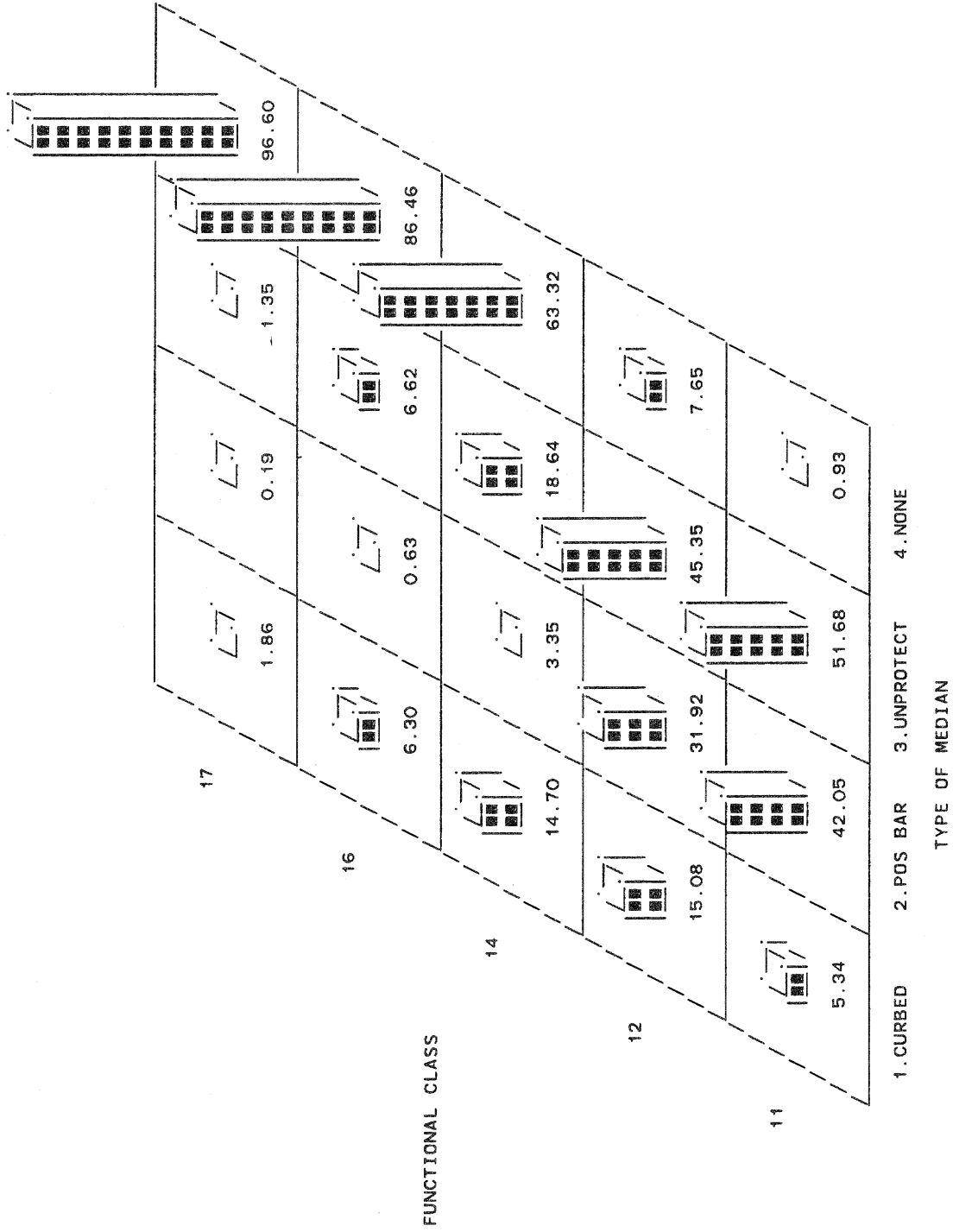
PERCENTAGE BLOCK CHART



MEDIAN TYPE
 AREA-SMALL URBAN
 PERCENTAGE BLOCK CHART

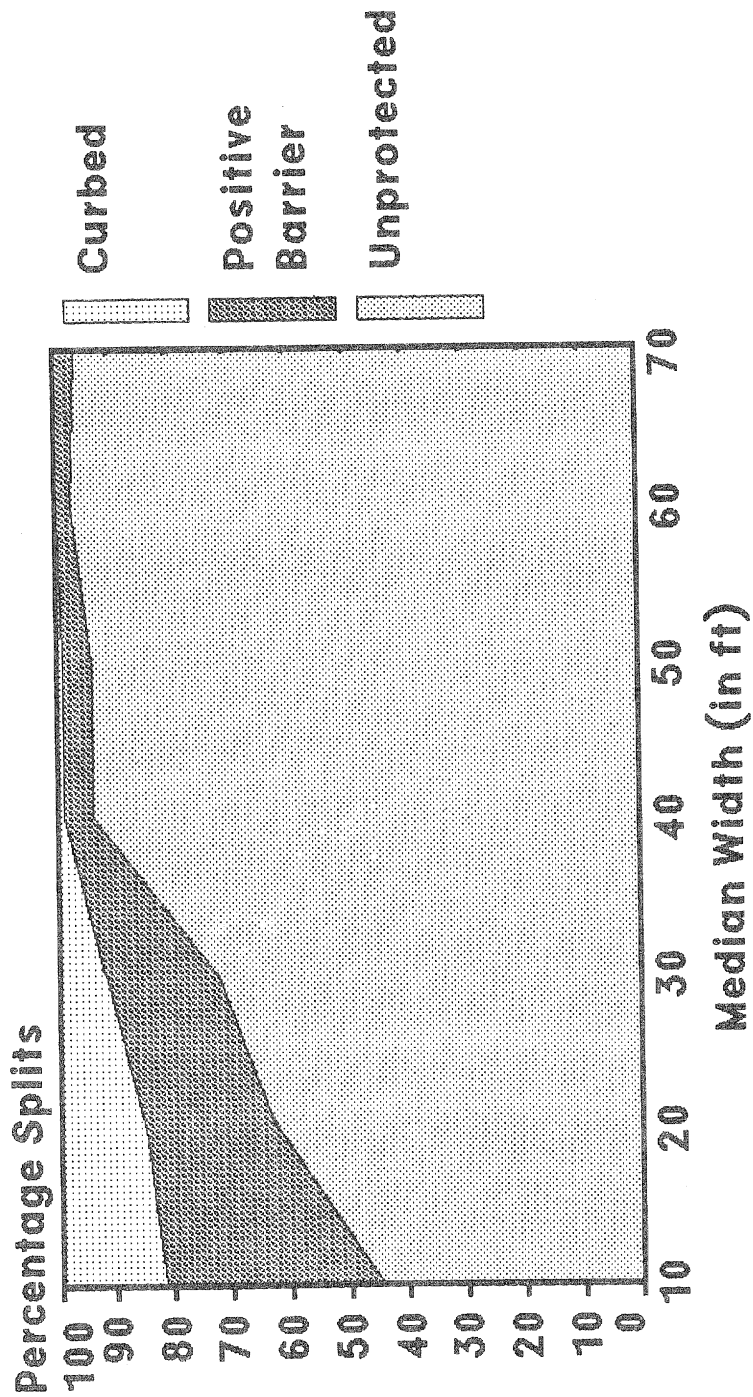


MEDIAN TYPE
 AREA=URBANIZED
 PERCENTAGE BLOCK CHART



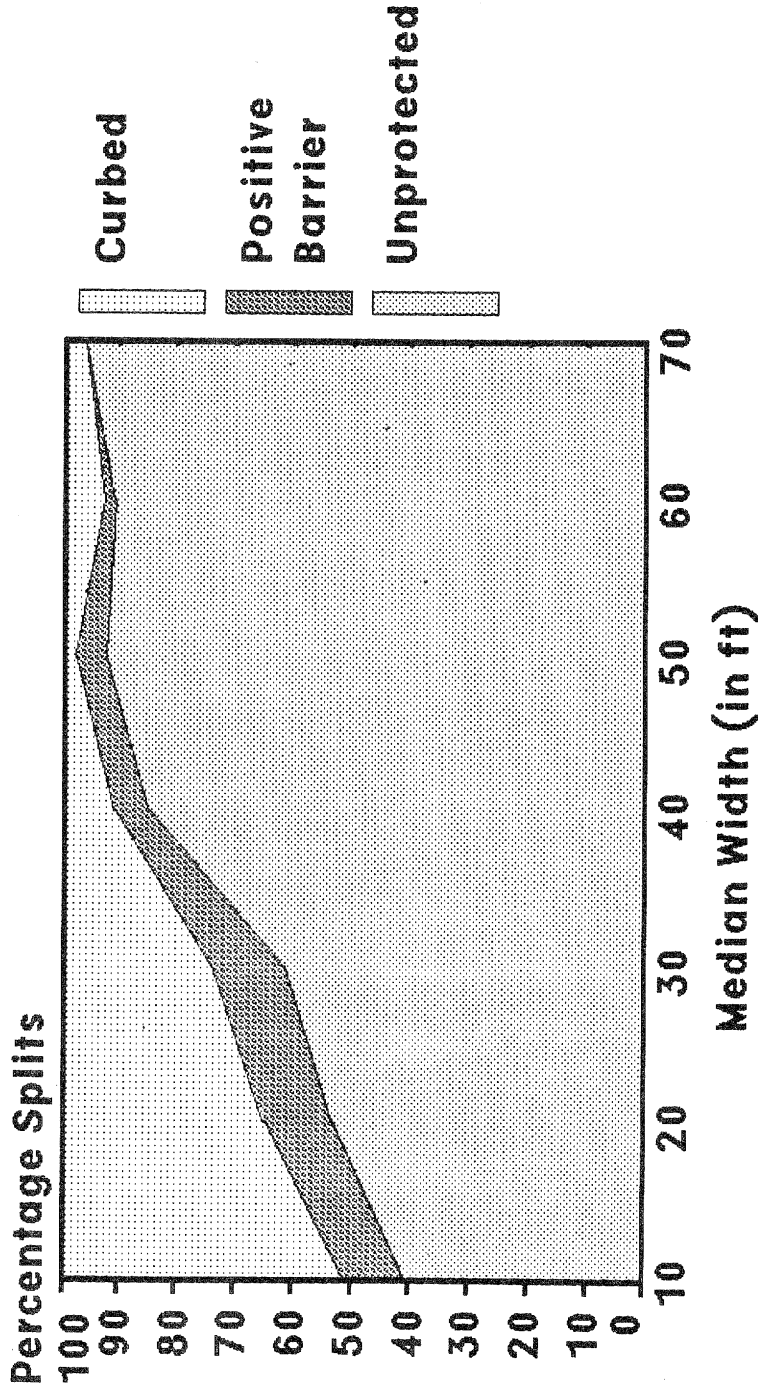
RELATION: MEDIAN WIDTH AND TYPE

AREA-RURAL



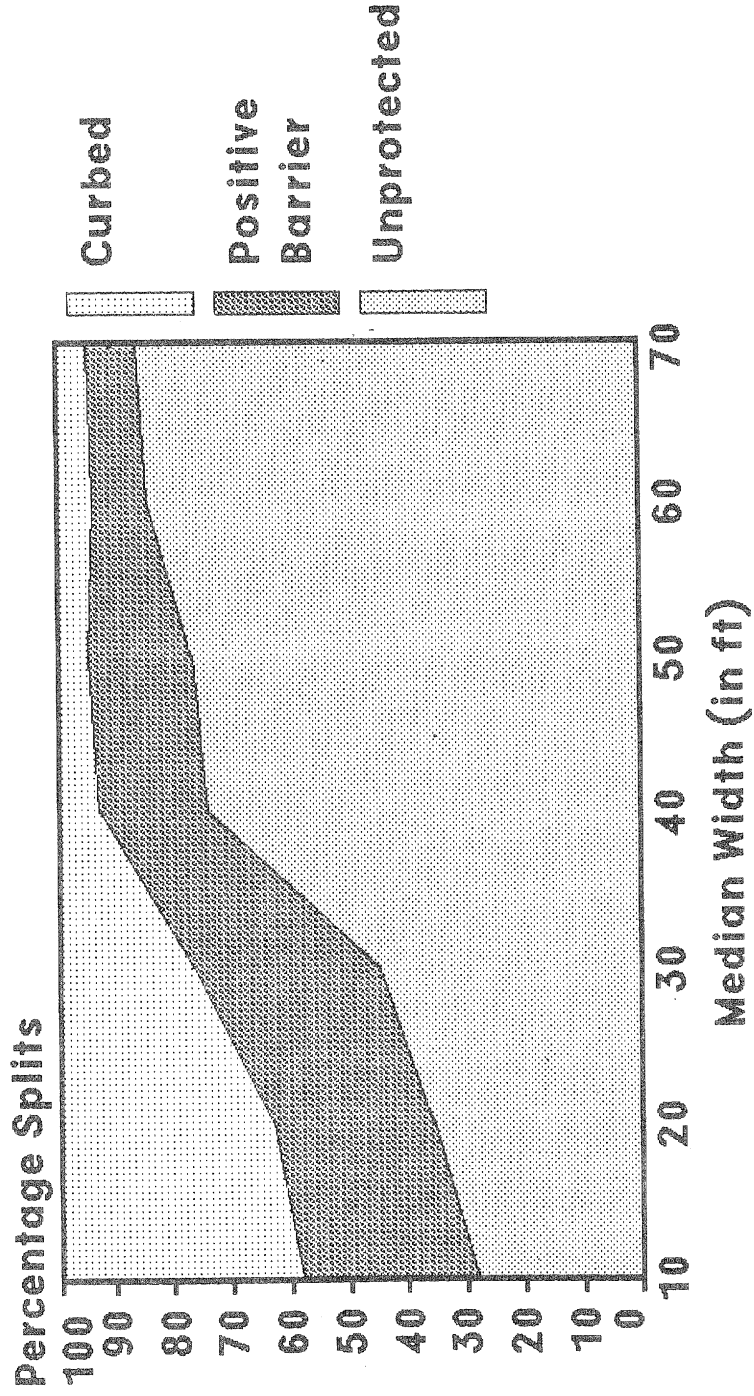
RELATION: MEDIAN WIDTH AND TYPE

AREA—SMALL URBAN



RELATION: MEDIAN WIDTH AND TYPE

AREA-URBANIZED



MEDIAN WIDTH

(Item 44)

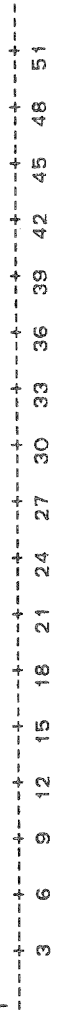
- approximately 25% of all records are divided highways
- average median width decreases with lower functional class
- lower functional classes tend to be clustered around an 11-20' width, whereas higher functional class widths are more dispersed

1985 HPMS Sample Data

MEDIAN WIDTH (FOR DIVIDED HIGHWAYS ONLY)
AREA=RURAL

PERCENTAGE BAR CHART

FUNC_CL	WIDTH	MEDIAN WIDTH IN FT	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
01	01-10	103	103	103	2.25	2.25
	11-20	247	247	350	5.40	7.65
	21-30	135	485	1056	2.95	10.60
	31-40	571	1056	1561	12.48	23.08
	41-50	881	2442	1561	11.04	34.11
	51-60	522	2964	2442	19.25	53.37
	61-70	408	3372	11.41	64.77	
	71-80	276	3648	8.92	73.69	
	81-90	928	4576	6.03	79.72	
	91+	181	7.68	20.28	100.00	
02	01-10	181	181	181	7.68	7.68
	11-20	395	576	16.77	24.45	
	21-30	274	850	11.63	36.08	
	31-40	480	1330	20.37	56.45	
	41-50	317	1647	13.46	69.91	
	51-60	128	1957	13.16	83.06	
	61-70	64	2085	5.43	88.50	
	71-80	51	2149	2.72	91.21	
	81-90	156	2200	2.16	93.38	
	91+	156	2356	6.62	100.00	
06	01-10	37	37	11.38	11.38	
	11-20	89	126	27.38	38.77	
	21-30	64	190	19.69	58.46	
	31-40	55	245	16.92	75.38	
	41-50	31	276	9.54	84.92	
	51-60	19	295	5.85	90.77	
	61-70	5	300	1.54	92.31	
	71-80	6	306	1.85	94.15	
	81-90	1	307	0.31	94.46	
	91+	18	325	5.54	100.00	
07	01-10	25	25	19.23	19.23	
	11-20	58	83	44.62	63.85	
	21-30	15	98	11.54	75.38	
	31-40	12	110	9.23	84.62	
	41-50	7	117	5.38	90.00	
	51-60	8	125	6.15	96.15	
	61-70	1	126	0.77	96.92	
	71-80	1	127	0.77	97.69	
	81-90	3	130	2.31	100.00	
	91+	3	130	2.31	100.00	
08	01-10	4	4	26.67	26.67	
	11-20	8	12	53.33	80.00	
	31-40	2	14	13.33	93.33	
	41-50	1	15	6.67	100.00	



MEDIAN WIDTH (FOR DIVIDED HIGHWAYS ONLY)
AREA=URBANIZED

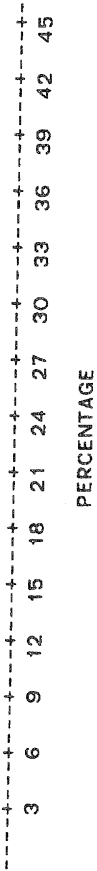
PERCENTAGE BAR CHART

FUNC_CL	WIDTH	=MEDIAN WIDTH IN FT	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
11	01-10	█	427	427	9.80	9.80
	11-20	█	796	1223	18.26	28.06
	21-30	█	446	1669	10.23	38.29
	31-40	█	750	2419	17.21	55.49
	41-50	█	421	2840	9.66	65.15
	51-60	█	584	3424	13.40	78.55
	61-70	█	239	3663	5.48	84.03
	71-80	█	101	3764	2.32	86.35
	81-90	█	163	3927	3.74	90.09
91+	█	432	4359	9.91	100.00	
12	01-10	█	484	484	16.37	16.37
	11-20	█	692	1176	23.40	39.77
	21-30	█	394	1570	13.32	53.09
	31-40	█	493	2063	16.67	69.77
	41-50	█	292	2355	9.87	79.64
	51-60	█	232	2587	7.85	87.49
	61-70	█	79	2666	2.67	90.16
	71-80	█	55	2721	1.86	92.02
	81-90	█	34	2755	1.15	93.17
91+	█	202	2957	6.83	100.00	
14	01-10	█	1060	1060	26.71	26.71
	11-20	█	1629	2689	41.05	67.77
	21-30	█	510	3199	12.85	80.62
	31-40	█	340	3539	8.57	89.19
	41-50	█	103	3642	2.60	91.78
	51-60	█	106	3748	2.67	94.46
	61-70	█	39	3787	0.98	95.44
	71-80	█	13	3800	0.33	95.77
	81-90	█	7	3807	0.18	95.94
	91+	█	161	3968	4.06	100.00
	16	01-10	█	476	476	34.39
11-20		█	633	1109	45.74	80.13
21-30		█	134	1243	9.68	89.81
31-40		█	65	1308	4.70	94.51
41-50		█	20	1328	1.45	95.95
51-60		█	19	1347	1.37	97.33
61-70		█	8	1355	0.58	97.90
71-80		█	1	1356	0.07	97.98
81-90		█	1	1357	0.07	98.05
91+		█	27	1384	1.95	100.00
17		01-10	█	138	138	34.85
	11-20	█	154	292	38.89	73.74
	21-30	█	38	330	9.60	83.33
	31-40	█	34	364	8.59	91.92
	41-50	█	9	373	2.27	94.19
	51-60	█	8	381	2.02	96.21
	61-70	█	2	383	0.51	96.72
71-80	█	2	385	0.51	97.22	

MEDIAN WIDTH (FOR DIVIDED HIGHWAYS ONLY)
 AREA=URBANIZED

PERCENTAGE BAR CHART

FUNC_CL	WIDTH	=MEDIAN WIDTH IN FT	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
81-90		■	2	387	0.51	97.73
91+		■ ■ ■ ■	9	396	2.27	100.00



ROW WIDTH

(Item 45)

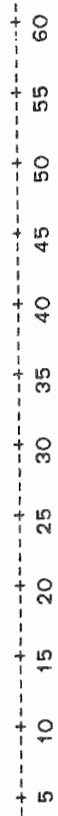
- average ROW width decreases with lower functional class
- I ROW peak tends to fall in the 251--300' range
- lower functional classes tend to peak in the 51--100' range
- approximately 12 million acres (an area the size of Vt and NH) is taken up by roads represented in the HPMS sample (collectors and above) -- approximately 0.5% of the US land area

1985 HPMS Sample Data

ROW WIDTH
AREA=RURAL

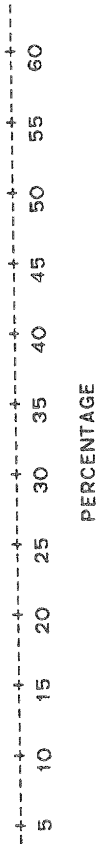
PERCENTAGE BAR CHART

FUNC_CL	WIDTH	=ROW WIDTH IN FT	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
01	51-100	█	44	44	0.95	0.95
	101-150	█	136	180	2.94	3.89
	151-200	█	320	500	6.91	10.80
	201-250	█	385	885	8.32	19.12
	251-300	█	1582	2467	34.18	53.31
	301-350	█	756	3223	16.34	69.64
	351-400	█	666	3889	14.39	84.03
	401+	█	739	4628	15.97	100.00
02	1- 50	█	463	463	4.56	4.56
	51-100	█	3891	4354	38.31	42.87
	101-150	█	2506	6860	24.67	67.54
	151-200	█	1690	8550	16.64	84.18
	201-250	█	577	9127	5.68	89.86
	251-300	█	528	9655	5.20	95.06
	301-350	█	219	9874	2.16	97.21
	351-400	█	180	10054	1.77	98.99
401+	█	103	10157	1.01	100.00	
06	1- 50	█	937	937	14.37	14.37
	51-100	█	3386	4323	51.93	66.30
	101-150	█	1188	5511	18.22	84.52
	151-200	█	760	6271	11.66	96.18
	201-250	█	108	6379	1.66	97.84
	251-300	█	62	6441	0.95	98.79
	301-350	█	18	6459	0.28	99.06
	351-400	█	50	6509	0.77	99.83
401+	█	11	6520	0.17	100.00	
07	1- 50	█	1483	1483	25.49	25.49
	51-100	█	3524	5007	60.57	86.06
	101-150	█	615	5622	10.57	96.63
	151-200	█	149	5771	2.56	99.19
	201-250	█	19	5790	0.33	99.52
	251-300	█	15	5805	0.26	99.78
	301-350	█	3	5808	0.05	99.83
	351-400	█	2	5810	0.03	99.86
401+	█	8	5818	0.14	100.00	
08	1- 50	█	3277	3277	43.43	43.43
	51-100	█	3933	7210	52.12	95.55
	101-150	█	291	7501	3.86	99.40
	151-200	█	32	7533	0.42	99.83
	201-250	█	1	7534	0.01	99.84
	251-300	█	3	7537	0.04	99.88
	351-400	█	6	7543	0.08	99.96
	401+	█	3	7546	0.04	100.00



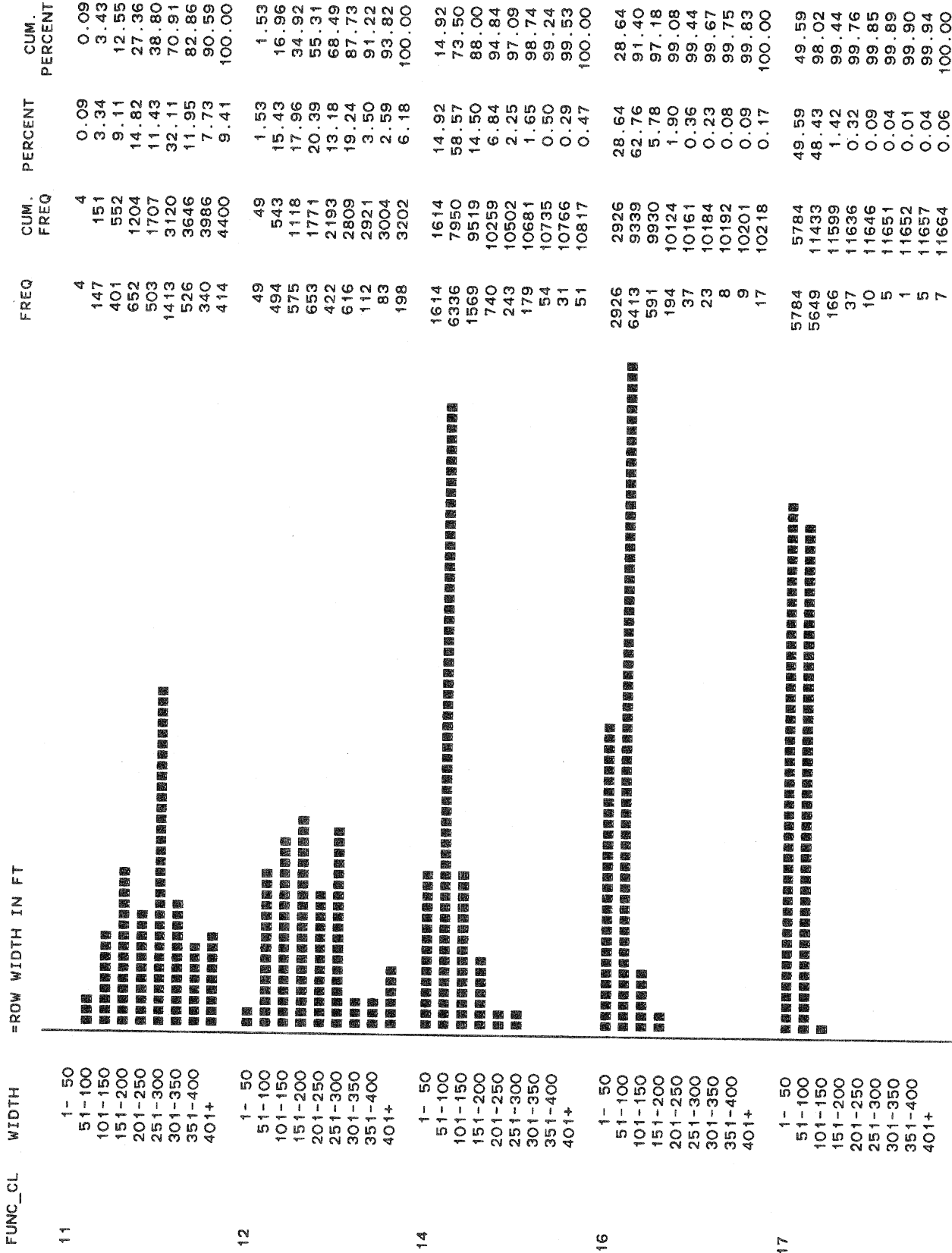
ROW WIDTH
AREA=SMALL URBAN
PERCENTAGE BAR CHART

FUNC_CL	WIDTH	=ROW WIDTH IN FT	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT	
11	51-100	█	8	8	1.03	1.03	
	101-150	██	38	46	4.90	5.94	
	151-200	███	69	115	8.90	14.84	
	201-250	████	94	209	12.13	26.97	
	251-300	█████	329	538	42.45	69.42	
	301-350	██████	110	648	14.19	83.61	
	351-400	███████	64	712	8.26	91.87	
	401+	████████	63	775	8.13	100.00	
12	1-50	█	14	14	2.22	2.22	
	51-100	██	67	81	10.63	12.86	
	101-150	███	132	213	20.95	33.81	
	151-200	████	147	360	23.33	57.14	
	201-250	█████	80	440	12.70	69.84	
	251-300	██████	98	538	15.56	85.40	
	301-350	███████	29	567	4.60	90.00	
	351-400	████████	18	585	2.86	92.86	
		401+	█████████	45	630	7.14	100.00
	14	1-50	█	1143	1143	16.16	16.16
51-100		██	4219	5362	59.64	75.80	
101-150		███	967	6329	13.67	89.47	
151-200		████	434	6763	6.14	95.60	
201-250		█████	120	6883	1.70	97.30	
251-300		██████	111	6994	1.57	98.87	
301-350		███████	30	7024	0.42	99.29	
351-400		████████	22	7046	0.31	99.60	
		401+	█████████	28	7074	0.40	100.00
16		1-50	█	1362	1362	32.02	32.02
		51-100	██	2673	4035	62.83	94.85
		101-150	███	150	4185	3.53	98.38
		151-200	████	51	4236	1.20	99.58
	201-250	█████	6	4242	0.14	99.72	
	251-300	██████	9	4251	0.21	99.93	
	301-350	███████	1	4252	0.02	99.95	
	351-400	████████	2	4254	0.05	100.00	
	17	1-50	█	2453	2453	50.10	50.10
		51-100	██	2395	4848	48.92	99.02
101-150		███	35	4883	0.71	99.73	
151-200		████	9	4892	0.18	99.92	
201-250		█████	2	4894	0.04	99.96	
251-300		██████	1	4895	0.02	99.98	
		401+	████████	1	4896	0.02	100.00



ROW WIDTH
AREA=URBANIZED

PERCENTAGE BAR CHART



WIDENING FEASIBILITY

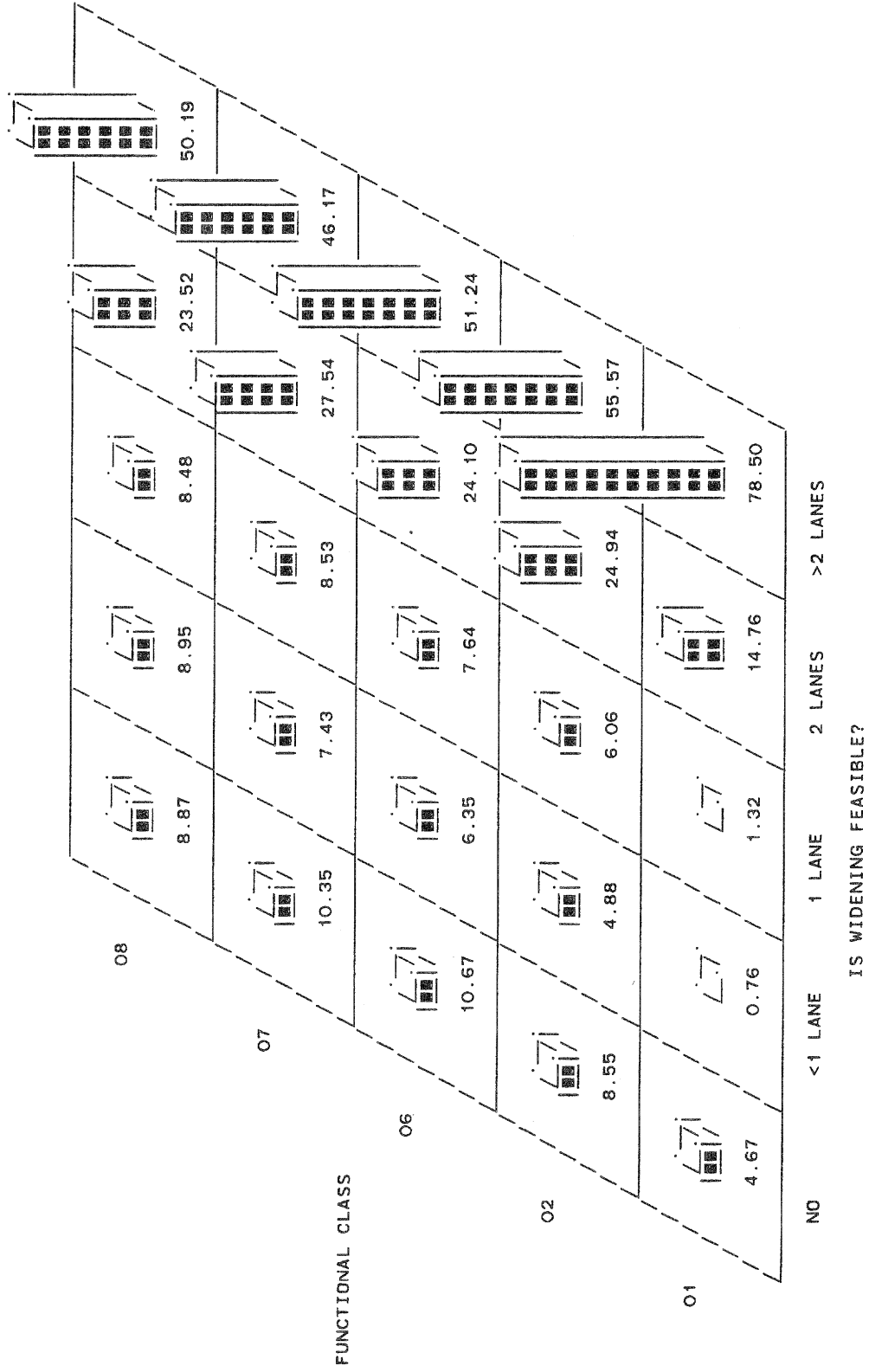
(Item 46)

- in the rural area, 74 to 93% of the sections can be widened 2 or more lanes, with the percent decreasing with lower functional class; 5 to 11% of the sections cannot be widened
- surprisingly, in urban areas, 43 to 88% of the sections can be widened 2 or more lanes, with the percent decreasing with lower functional class, as expected; 10 to 30% of the sections cannot be widened

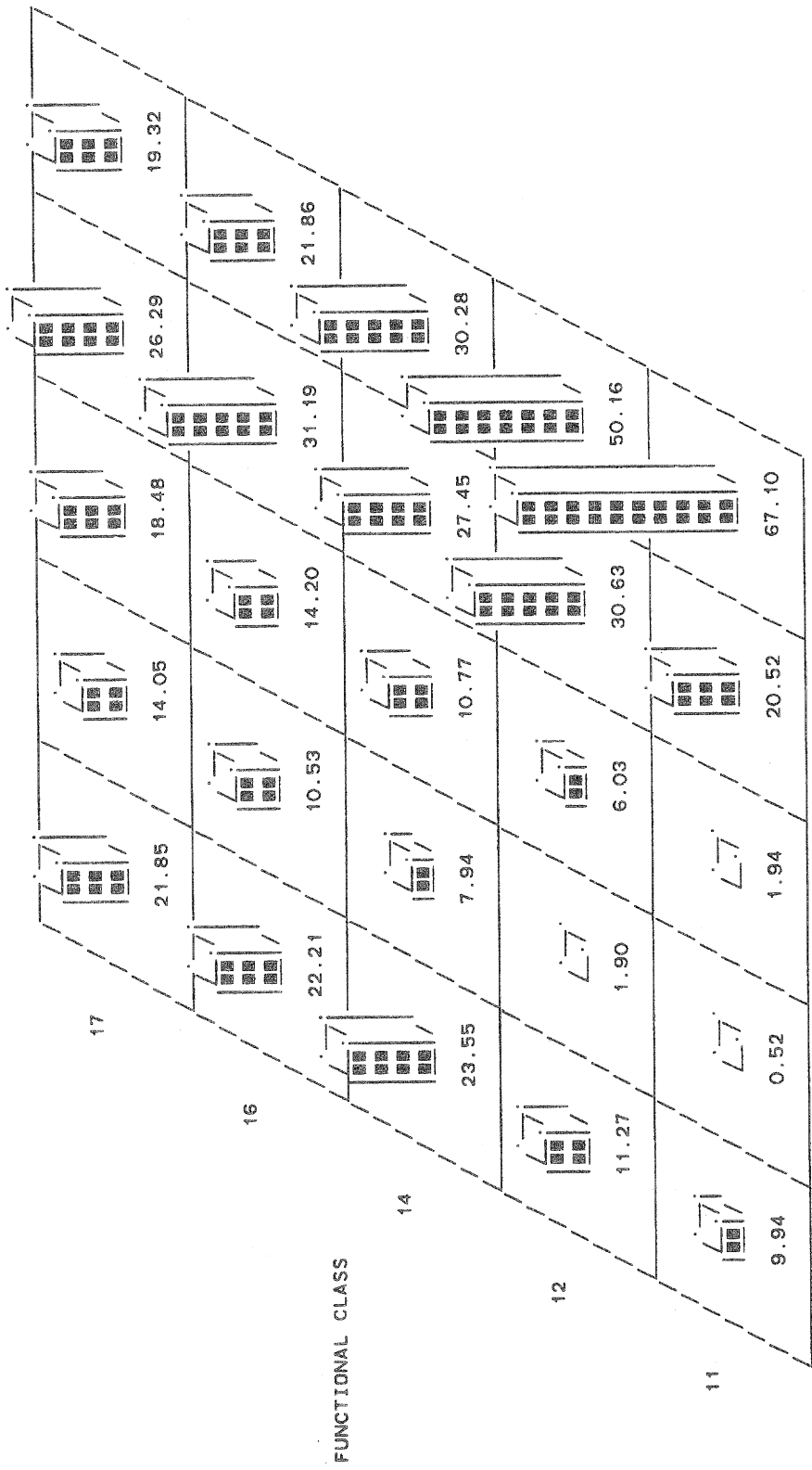
1985 HPMS Sample Data

WIDENING FEASIBILITY
AREA=RURAL

PERCENTAGE BLOCK CHART



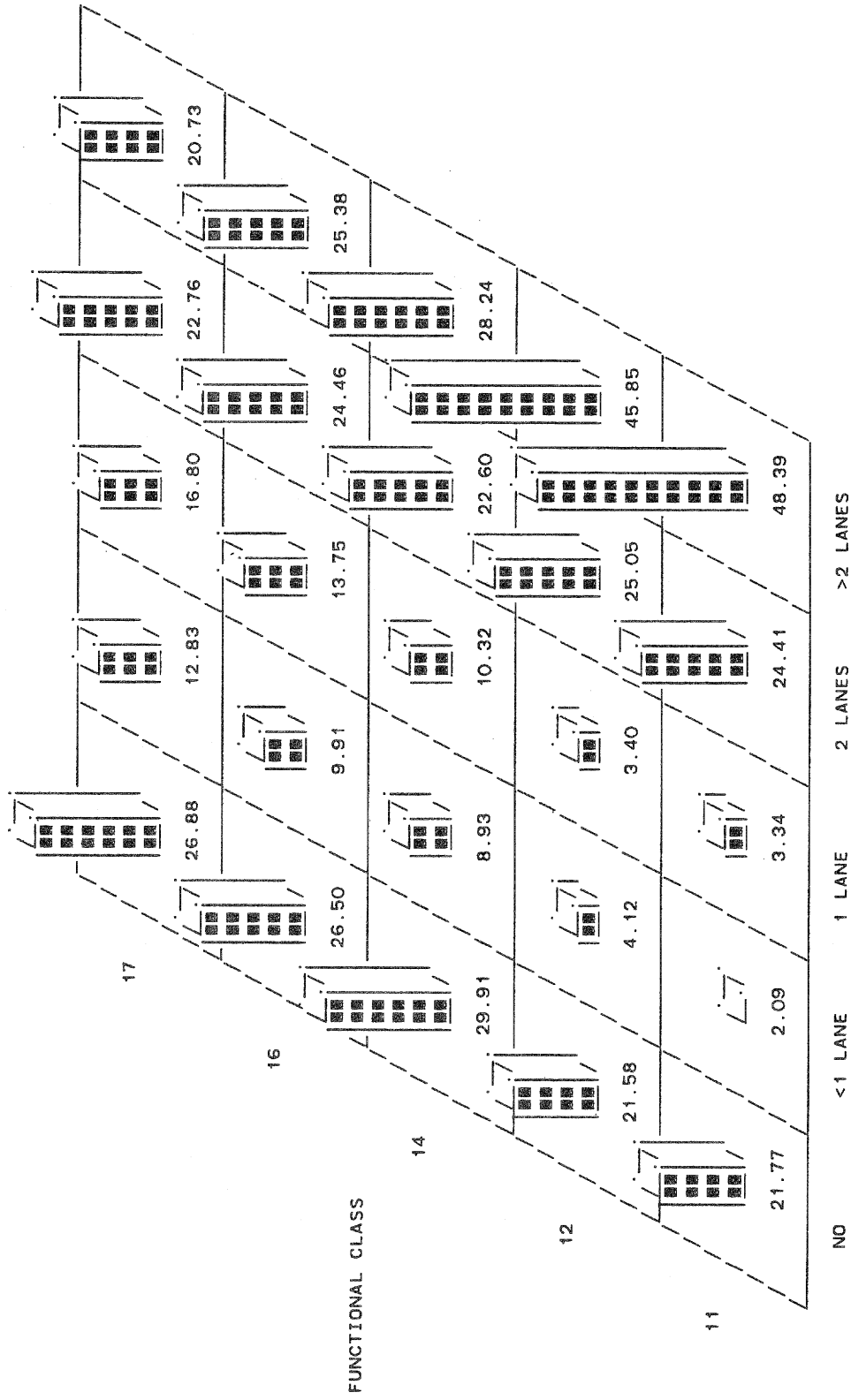
WIDENING FEASIBILITY
 AREA=SMALL URBAN
 PERCENTAGE BLOCK CHART



NO <1 LANE 1 LANE 2 LANES >2 LANES
 IS WIDENING FEASIBLE?

WIDENING FEASIBILITY
AREA=URBANIZED

PERCENTAGE BLOCK CHART



IS WIDENING FEASIBLE?

HORIZONTAL ALIGNMENT ADEQUACY

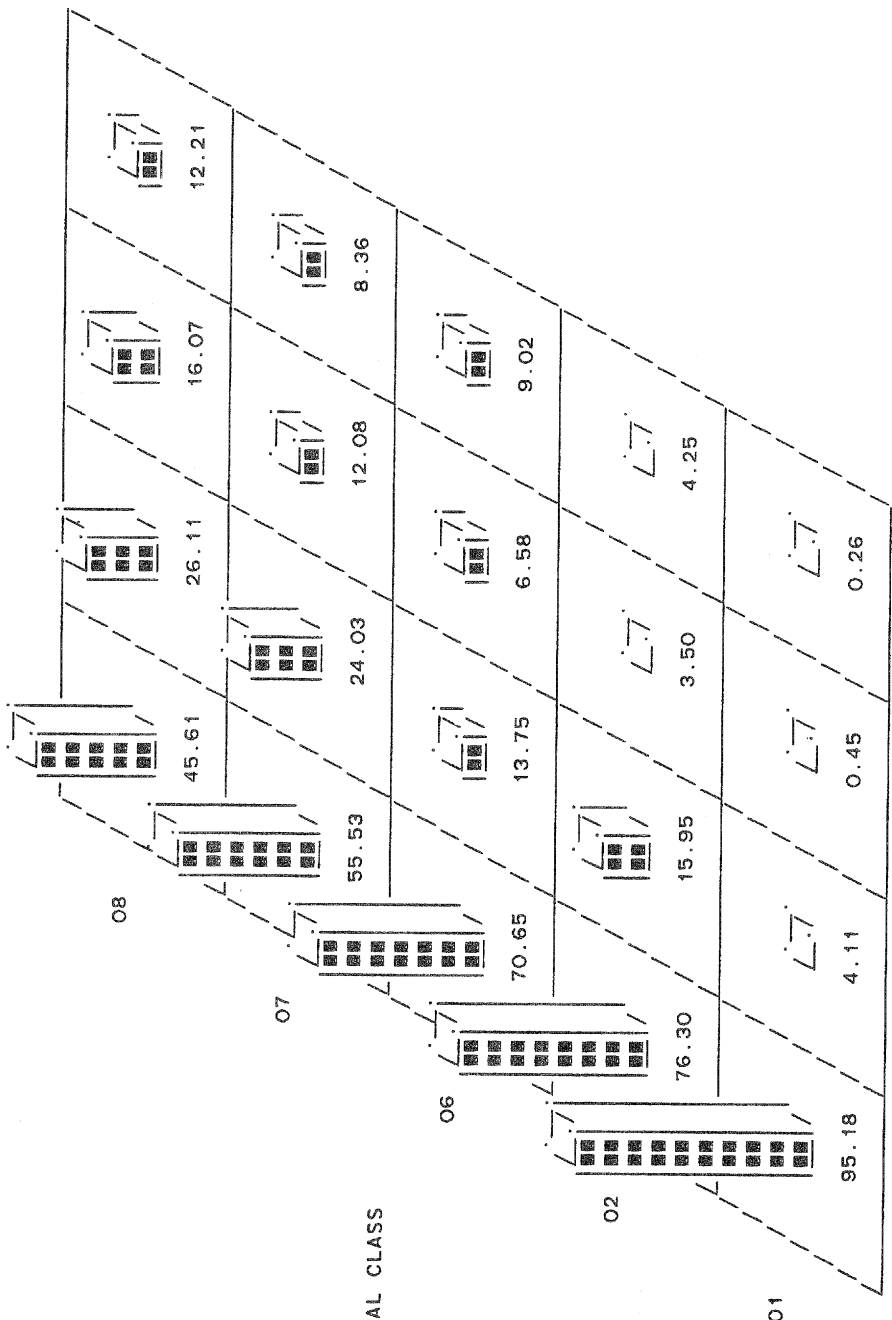
(Item 47)

- data shown is for rural paved sections only
- only 0—9% of the minor and principal arterials have severely restricted horizontal alignment (calculated)
- only 8—12% of the collectors have severely restricted horizontal alignment (coded)

1985 HPMS Sample Data

HORIZONTAL ALIGNMENT ADEQUACY
(PAVED SECTIONS ONLY)
AREA=RURAL

PERCENTAGE BLOCK CHART



1. FULL STAND 2. UNRESTRICT 3. SOME RESTR 4. SEV RESTR
HORIZONTAL ALIGNMENT

VERTICAL ALIGNMENT ADEQUACY

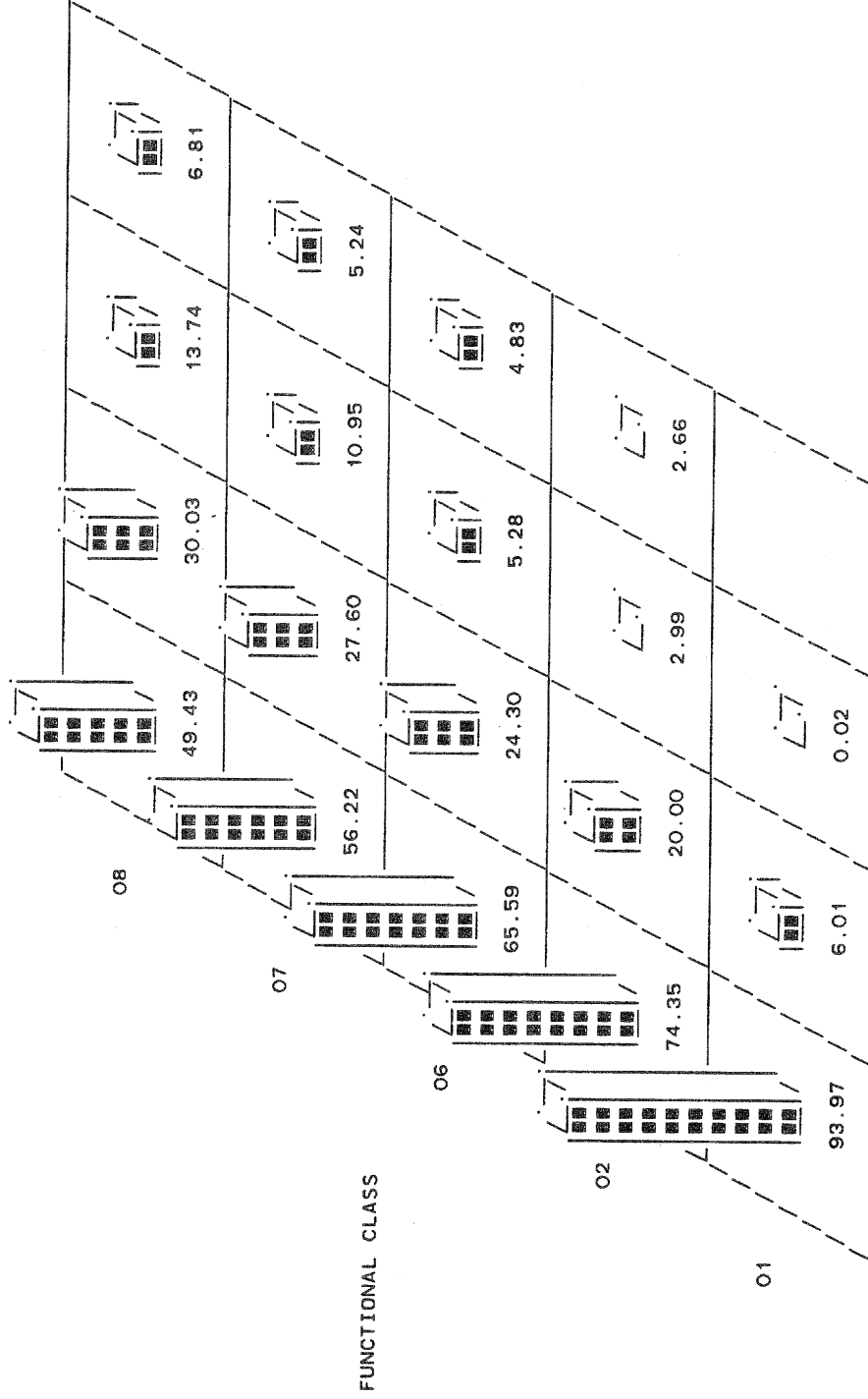
(Item 49)

- data shown is for rural paved sections only**
- only 0—5% of the minor and principal arterials have frequent impairment of the vertical alignment (calculated)**
- only 5—7% of the collectors have frequent impairment of the vertical alignment (coded)**

1985 HPMS Sample Data

VERTICAL ALIGNMENT ADEQUACY
(PAVED SECTIONS ONLY)
AREA=RURAL

PERCENTAGE BLOCK CHART



1. FULL STAND 2. SUFFICIENT 3. SOME IMPAIR 4. FREQ IMPAIR
VERTICAL ALIGNMENT

% TRUCKS, OFF PEAK

(Items 24,54b)

- the highest average % trucks occurs in the rural area (7 to 21%), with the higher values on the higher functional classes
- the small urban area samples exhibit the same trends by functional class, the averages ranging from 4 to 19%
- the urbanized area samples exhibit the same trends by functional class, the averages ranging from 4 to 12%
- distributions are also shown for calculated trucks/day estimates, and trucks/day/design lane estimates; lane distributions same as used in SHRP site selection process
- distributions are also shown for pavement loading in ESALs/year in design lane; truck factors, 0.8 and 1.3, assumed

1985 HPMS Sample Data

% TRUCKS, OFF PEAK

AREA		% TRUCKS, OFF PEAK						
FUNCTIONAL CLASS	#	MIN	MEAN	MAX	STAN DEV	COEF OF VAR		
RURAL								
01	4628.00	0.00	21.43	56.00	8.57	40.00		
02	10157.00	0.00	13.87	66.00	6.97	50.21		
06	6520.00	0.00	11.30	45.00	6.18	54.65		
07	5818.00	0.00	8.84	45.00	5.25	59.41		
08	7546.00	0.00	7.51	46.00	5.11	67.99		
SMALL URBAN								
11	775.00	0.00	18.80	56.00	8.46	45.01		
12	630.00	0.00	10.72	34.00	6.26	58.37		
14	7074.00	0.00	7.38	44.00	4.47	60.58		
16	4254.00	0.00	4.66	45.00	3.59	77.18		
17	4896.00	0.00	4.19	41.00	3.27	78.08		
URBANIZED								
11	4400.00	0.00	12.11	43.00	6.56	54.15		
12	3202.00	0.00	7.50	45.00	4.52	60.32		
14	10817.00	0.00	5.94	44.00	3.62	61.02		
16	10218.00	0.00	4.80	45.00	3.44	71.54		
17	11664.00	0.00	4.02	45.00	3.15	78.46		

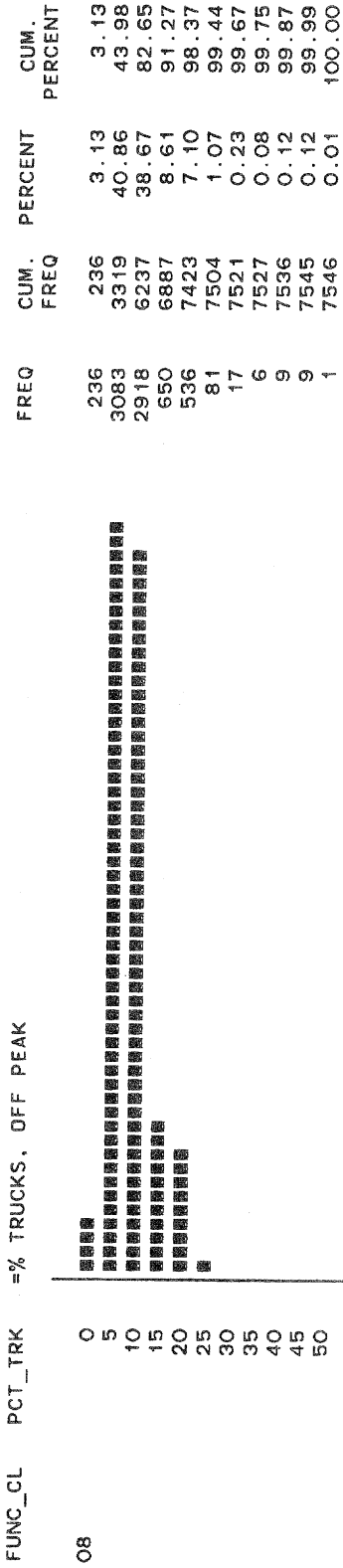
TRUCK INFORMATION (BASED ON % TRUCKS, OFF PEAK)
 (VALUES ARE ROUNDED UP TO THE NEXT INCREMENT SHOWN)
 AREA=RURAL

PERCENTAGE BAR CHART

FUNC_CL	PCT_TRK	% TRUCKS, OFF PEAK	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT	
01	0	0	7	7	0.15	0.15	
	5	5	59	66	1.27	1.43	
	10	10	423	489	9.14	10.57	
	15	15	793	1282	17.13	27.70	
	20	20	899	2181	19.43	47.13	
	25	25	1087	3268	23.49	70.61	
	30	30	720	3988	15.56	86.17	
	35	35	368	4356	7.95	94.12	
	40	40	172	4528	3.72	97.84	
	45	45	78	4606	1.69	99.52	
	50	50	16	4622	0.35	99.87	
	55	55	5	4627	0.11	99.98	
	60	60	1	4628	0.02	100.00	
	02	0	0	16	16	0.16	0.16
		5	5	637	653	6.27	6.43
		10	10	3179	3832	31.30	37.73
15		15	2704	6536	26.62	64.35	
20		20	2205	8741	21.71	86.06	
25		25	829	9570	8.16	94.22	
30		30	359	9929	3.53	97.76	
35		35	103	10032	1.01	98.77	
40		40	54	10086	0.53	99.30	
45		45	58	10144	0.57	99.87	
50		50	6	10150	0.06	99.93	
55		55	3	10153	0.03	99.96	
60		60	2	10155	0.02	99.98	
70		70	2	10157	0.02	100.00	
06		0	0	19	19	0.29	0.29
		5	5	1045	1064	16.03	16.32
	10	10	2319	3383	35.57	51.89	
	15	15	1686	5069	25.86	77.75	
	20	20	1000	6069	15.34	93.08	
	25	25	272	6341	4.17	97.25	
	30	30	85	6426	1.30	98.56	
	35	35	57	6483	0.87	99.43	
	40	40	26	6509	0.40	99.83	
	45	45	11	6520	0.17	100.00	
	07	0	0	101	101	1.74	1.74
		5	5	1500	1601	25.78	27.52
		10	10	2542	4143	43.69	71.21
		15	15	1022	5165	17.57	88.78
		20	20	533	5698	9.16	97.94
		25	25	70	5768	1.20	99.14
30		30	24	5792	0.41	99.55	
35		35	10	5802	0.17	99.72	
40		40	5	5807	0.09	99.81	
45		45	11	5818	0.19	100.00	

TRUCK INFORMATION (BASED ON % TRUCKS, OFF PEAK)
 (VALUES ARE ROUNDED UP TO THE NEXT INCREMENT SHOWN)
 AREA=RURAL

PERCENTAGE BAR CHART



TRUCK INFORMATION (BASED ON % TRUCKS, OFF PEAK)
 (VALUES ARE ROUNDED UP TO THE NEXT INCREMENT SHOWN)
 AREA=SMALL URBAN

PERCENTAGE BAR CHART

FUNC_CL	PCT_TRK	% TRUCKS, OFF PEAK	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT	
11	0	0	1	1	0.13	0.13	
	5	5.55	43	44	5.55	5.68	
	10	11.10	86	130	11.10	16.77	
	15	16.65	158	288	20.39	37.16	
	20	22.20	188	476	24.26	61.42	
	25	27.75	146	622	18.84	80.26	
	30	33.30	94	716	12.13	92.39	
	35	38.85	34	750	4.39	96.77	
	40	44.40	18	768	2.32	99.10	
	45	49.95	5	773	0.65	99.74	
	60	60.00	1	774	0.13	99.87	
			1	775	0.13	100.00	
12	0	0.16	1	1	0.16	0.16	
	5	20.32	128	129	20.32	20.48	
	10	36.64	237	366	37.62	58.10	
	15	52.96	127	493	20.16	78.25	
	20	69.28	87	580	13.81	92.06	
	25	85.60	30	610	4.76	96.83	
	30	101.92	18	628	2.86	99.68	
	35	118.24	2	630	0.32	100.00	
	14	0	0.89	63	63	0.89	0.89
		5	39.37	2785	2848	39.37	40.26
		10	78.74	2834	5682	40.06	80.32
15		118.11	1052	6734	14.87	95.19	
20		157.48	248	6982	3.51	98.70	
25		206.85	54	7036	0.76	99.46	
30		256.22	22	7058	0.31	99.77	
35		305.59	7	7065	0.10	99.87	
40		354.96	4	7069	0.06	99.93	
45		404.33	5	7074	0.07	100.00	
16		0	11.59	493	493	11.59	11.59
	5	57.95	2516	3009	59.14	70.73	
	10	115.90	968	3977	22.76	93.49	
	15	173.85	225	4202	5.29	98.78	
	20	231.80	35	4237	0.82	99.60	
	25	289.75	10	4247	0.24	99.84	
	30	347.70	1	4248	0.02	99.86	
	35	405.65	5	4253	0.12	99.98	
	40	463.60	1	4254	0.02	100.00	
	45	521.55					
	17	0	6.99	342	342	6.99	6.99
5		34.95	3508	3850	71.65	78.64	
10		69.90	821	4671	16.77	95.40	
15		104.85	189	4860	3.86	99.26	
20		139.80	20	4880	0.41	99.67	
25		174.75	7	4887	0.14	99.82	
30		209.70	4	4891	0.08	99.90	
35		244.65	1	4892	0.02	99.92	
40		279.60					
45		314.55					

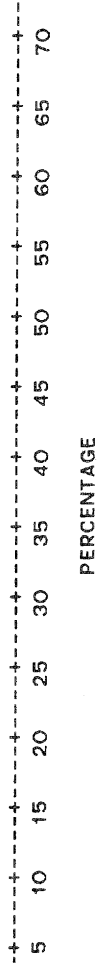
TRUCK INFORMATION (BASED ON % TRUCKS, OFF PEAK)
 (VALUES ARE ROUNDED UP TO THE NEXT INCREMENT SHOWN)
 AREA=SMALL URBAN

PERCENTAGE BAR CHART

FUNC_CL PCT_TRK =% TRUCKS, OFF PEAK

40
45

FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
3	4895	0.06	99.98
1	4896	0.02	100.00



TRUCK INFORMATION (BASED ON % TRUCKS, OFF PEAK)
 (VALUES ARE ROUNDED UP TO THE NEXT INCREMENT SHOWN)
 AREA=URBANIZED

PERCENTAGE BAR CHART

FUNC_CL PCT_TRK =% TRUCKS, OFF PEAK

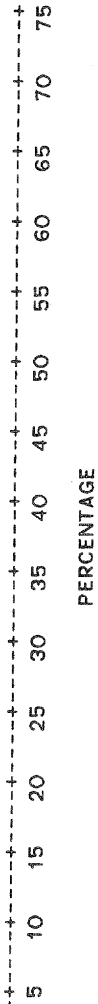
FUNC_CL	PCT_TRK	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
11	0	10	10	0.23	0.23
	5	598	608	13.59	13.82
	10	1590	2198	36.14	49.95
	15	1150	3348	26.14	76.09
	20	594	3942	13.50	89.59
	25	278	4220	6.32	95.91
	30	123	4343	2.80	98.70
	35	44	4387	1.00	99.70
	40	11	4398	0.25	99.95
	45	2	4400	0.05	100.00
12	0	90	90	2.81	2.81
	5	1109	1199	34.63	37.45
	10	1285	2484	40.13	77.58
	15	546	3030	17.05	94.63
	20	121	3151	3.78	98.41
	25	37	3188	1.16	99.56
	30	11	3199	0.34	99.91
	35	2	3201	0.06	99.97
	40	1	3202	0.03	100.00
	14	0	197	197	1.82
5		5910	6109	54.65	56.48
10		3510	9619	32.45	88.92
15		1036	10655	9.58	98.50
20		135	10790	1.25	99.75
25		15	10805	0.14	99.89
30		4	10809	0.04	99.93
35		6	10815	0.06	99.98
40		1	10816	0.01	99.99
45		1	10817	0.01	100.00
16	0	409	409	4.00	4.00
	5	6896	7305	67.49	71.49
	10	2241	9546	21.93	93.42
	15	567	10113	5.55	98.97
	20	62	10175	0.61	99.58
	25	15	10190	0.15	99.73
	30	16	10206	0.16	99.88
	35	3	10209	0.03	99.91
	40	8	10217	0.08	99.99
	45	1	10218	0.01	100.00
17	0	609	609	5.22	5.22
	5	8724	9333	74.79	80.02
	10	1652	10985	14.16	94.18
	15	601	11586	5.15	99.33
	20	63	11649	0.54	99.87
	25	4	11653	0.03	99.91
	30	4	11657	0.03	99.94
	35	3	11660	0.03	99.97

TRUCK INFORMATION (BASED ON % TRUCKS, OFF PEAK)
 (VALUES ARE ROUNDED UP TO THE NEXT INCREMENT SHOWN)
 AREA=URBANIZED

PERCENTAGE BAR CHART

FUNC_CL PCT_TRK =% TRUCKS, OFF PEAK

40
45



TRUCK INFORMATION (BASED ON % TRUCKS, OFF PEAK)
 (VALUES ARE ROUNDED UP TO THE NEXT INCREMENT SHOWN)
 AREA=RURAL

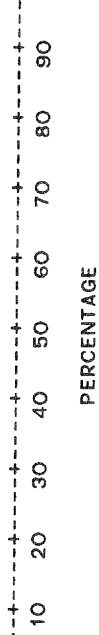
PERCENTAGE BAR CHART

FUNC_CL	TRUCKS	=TRUCKS / DAY	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT		
01	0		7	7	0.15	0.15		
	1000	██████████	802	809	17.33	17.48		
	2000	██████████	1425	2234	30.79	48.27		
	3000	██████████	885	3119	19.12	67.39		
	4000	██████████	553	3672	11.95	79.34		
	5000	██████████	348	4020	7.52	86.86		
	6000	██████████	227	4247	4.90	91.77		
	7000	██████████	165	4412	3.57	95.33		
	8000	██████████	102	4514	2.20	97.54		
	9000	██████████	28	4542	0.61	98.14		
	10000		35	4577	0.76	98.90		
	11000		19	4596	0.41	99.31		
	12000		12	4608	0.26	99.57		
	13000		5	4613	0.11	99.68		
	14000		11	4624	0.24	99.91		
	16000		1	4625	0.02	99.94		
26000		1	4626	0.02	99.96			
32000		2	4628	0.04	100.00			
02	0		16	16	0.16	0.16		
	1000	██████████	8453	8469	83.22	83.38		
	2000	██████████	1240	9709	12.21	95.59		
	3000	██████████	293	10002	2.88	98.47		
	4000	██████████	84	10086	0.83	99.30		
	5000	██████████	29	10115	0.29	99.59		
	6000	██████████	15	10130	0.15	99.73		
	7000	██████████	4	10134	0.04	99.77		
	8000	██████████	8	10142	0.08	99.85		
	9000	██████████	4	10146	0.04	99.89		
	10000	██████████	3	10149	0.03	99.92		
	11000	██████████	3	10152	0.03	99.95		
	12000	██████████	3	10155	0.03	99.98		
	13000	██████████	1	10156	0.01	99.99		
	14000	██████████	1	10157	0.01	100.00		
	06	0		19	19	0.29	0.29	
1000		██████████	6190	6209	94.94	95.23		
2000		██████████	246	6455	3.77	99.00		
3000		██████████	48	6503	0.74	99.74		
4000		██████████	12	6515	0.18	99.92		
5000		██████████	4	6519	0.06	99.98		
7000		██████████	1	6520	0.02	100.00		
07		0		101	101	1.74	1.74	
		1000	██████████	5579	5680	95.89	97.63	
		2000	██████████	112	5792	1.93	99.55	
		3000	██████████	21	5813	0.36	99.91	
		4000	██████████	5	5818	0.09	100.00	
		08	0		236	236	3.13	3.13
			1000	██████████	7300	7536	96.74	99.87

TRUCK INFORMATION (BASED ON % TRUCKS, OFF PEAK)
 (VALUES ARE ROUNDED UP TO THE NEXT INCREMENT SHOWN)
 AREA=RURAL

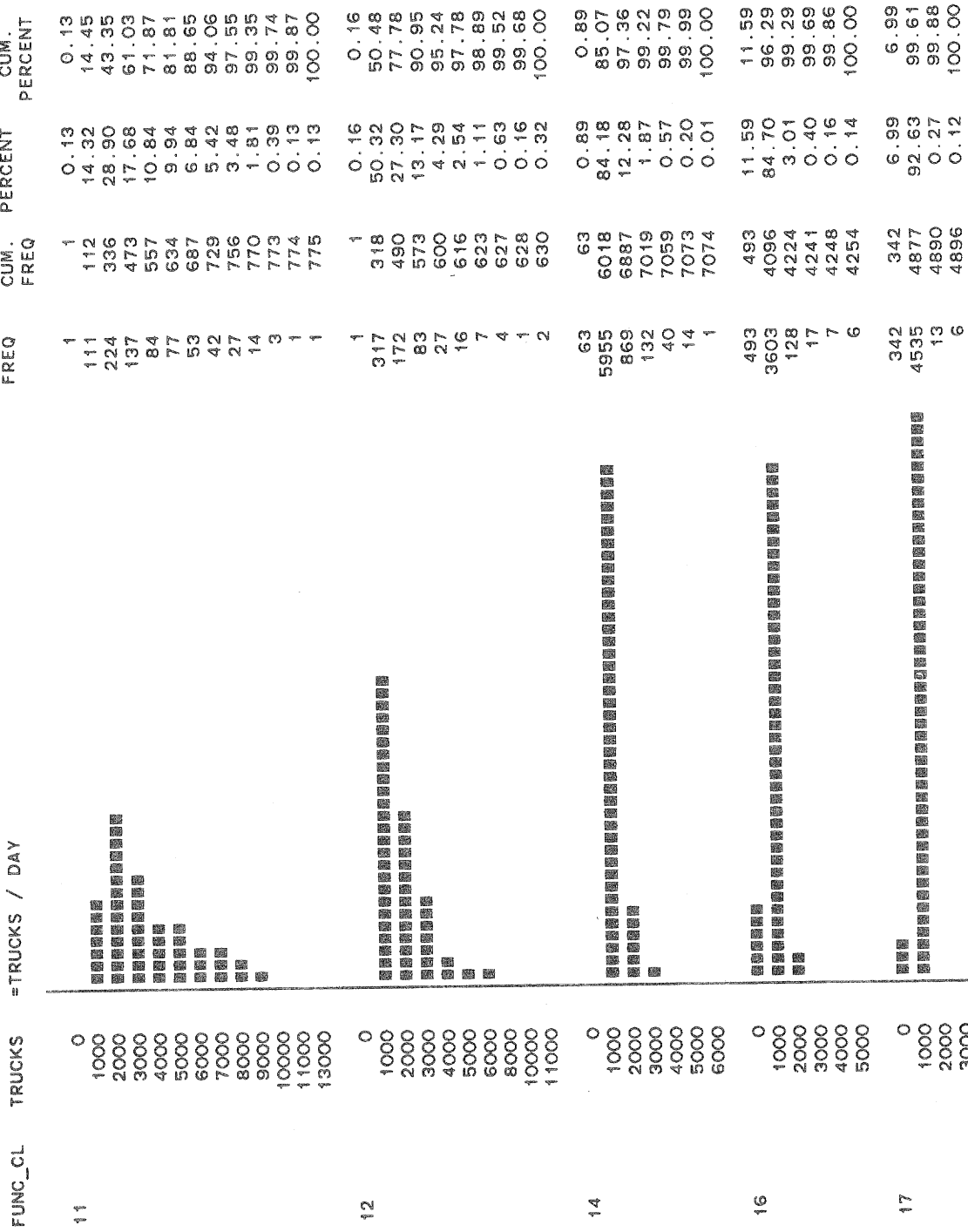
PERCENTAGE BAR CHART

FUNC_CL	TRUCKS	=TRUCKS / DAY	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
	2000		6	7542	0.08	99.95
	3000		1	7543	0.01	99.96
	4000		3	7546	0.04	100.00



TRUCK INFORMATION (BASED ON % TRUCKS, OFF PEAK)
 (VALUES ARE ROUNDED UP TO THE NEXT INCREMENT SHOWN)
 AREA=SMALL URBAN

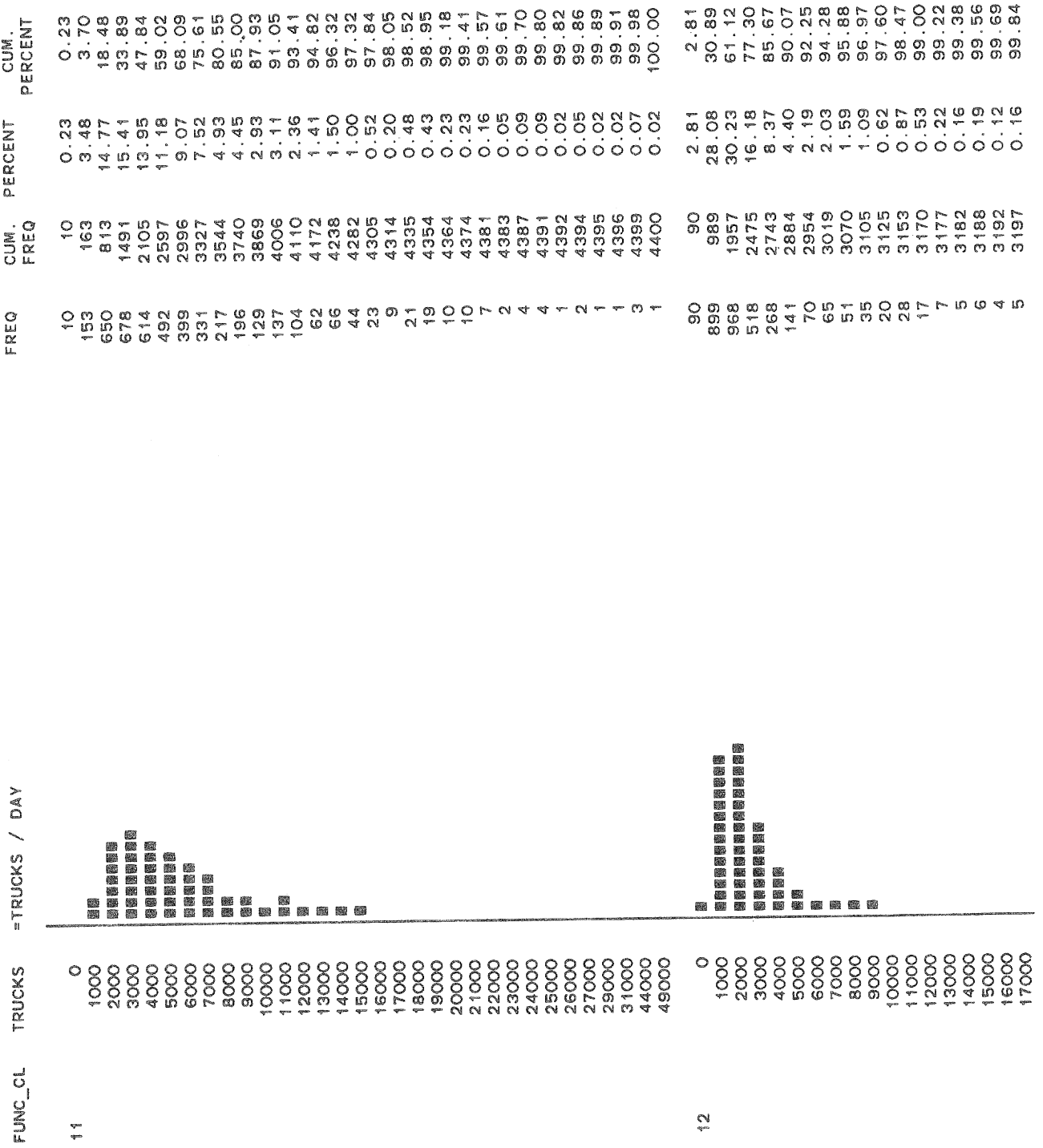
PERCENTAGE BAR CHART



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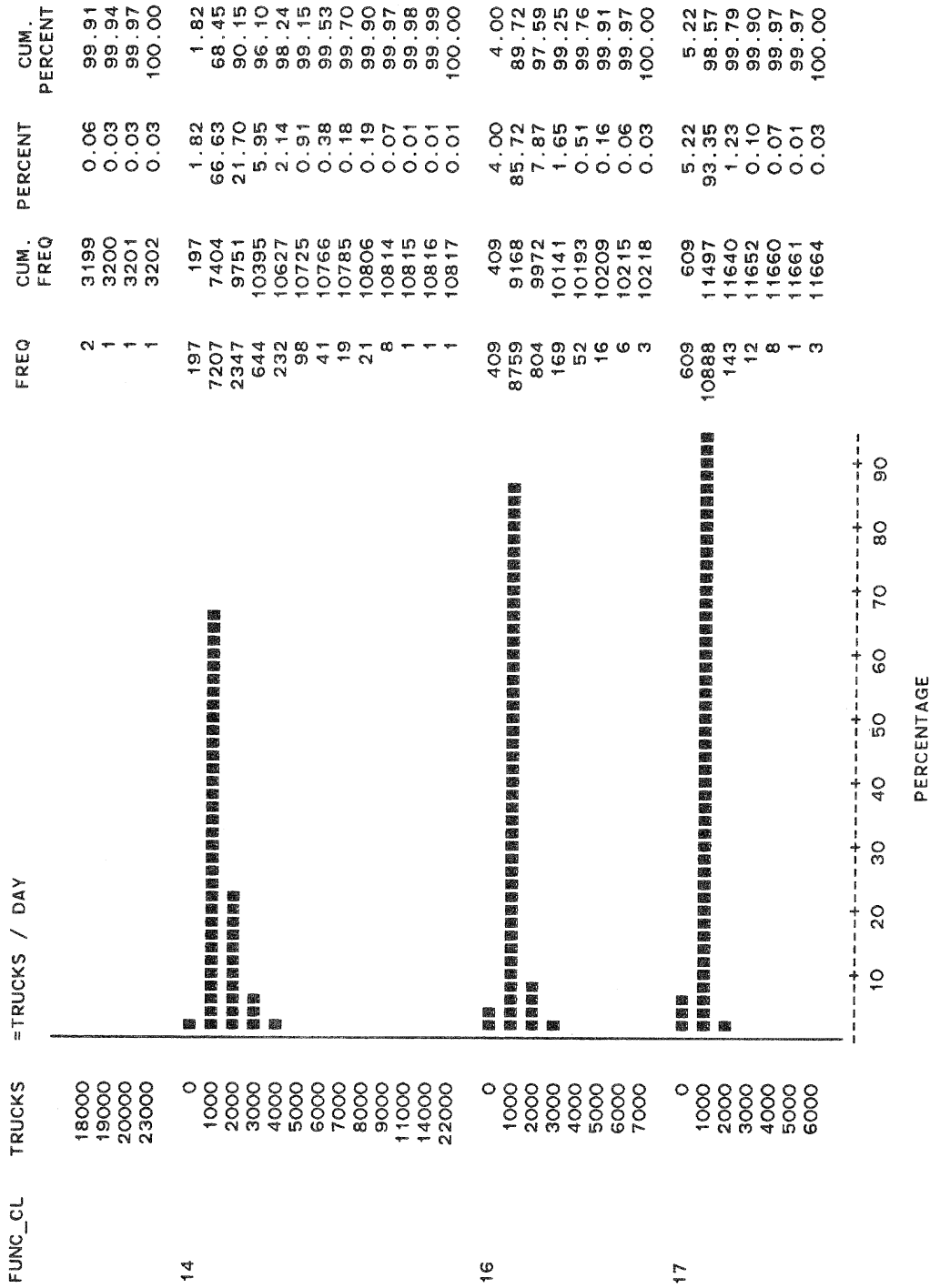
TRUCK INFORMATION (BASED ON % TRUCKS, OFF PEAK)
 (VALUES ARE ROUNDED UP TO THE NEXT INCREMENT SHOWN)
 AREA=URBANIZED

PERCENTAGE BAR CHART



TRUCK INFORMATION (BASED ON % TRUCKS, OFF PEAK)
 (VALUES ARE ROUNDED UP TO THE NEXT INCREMENT SHOWN)
 AREA=URBANIZED

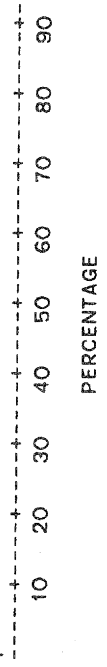
PERCENTAGE BAR CHART



TRUCK INFORMATION (BASED ON % TRUCKS, OFF PEAK)
 (VALUES ARE ROUNDED UP TO THE NEXT INCREMENT SHOWN)
 AREA=SMALL URBAN

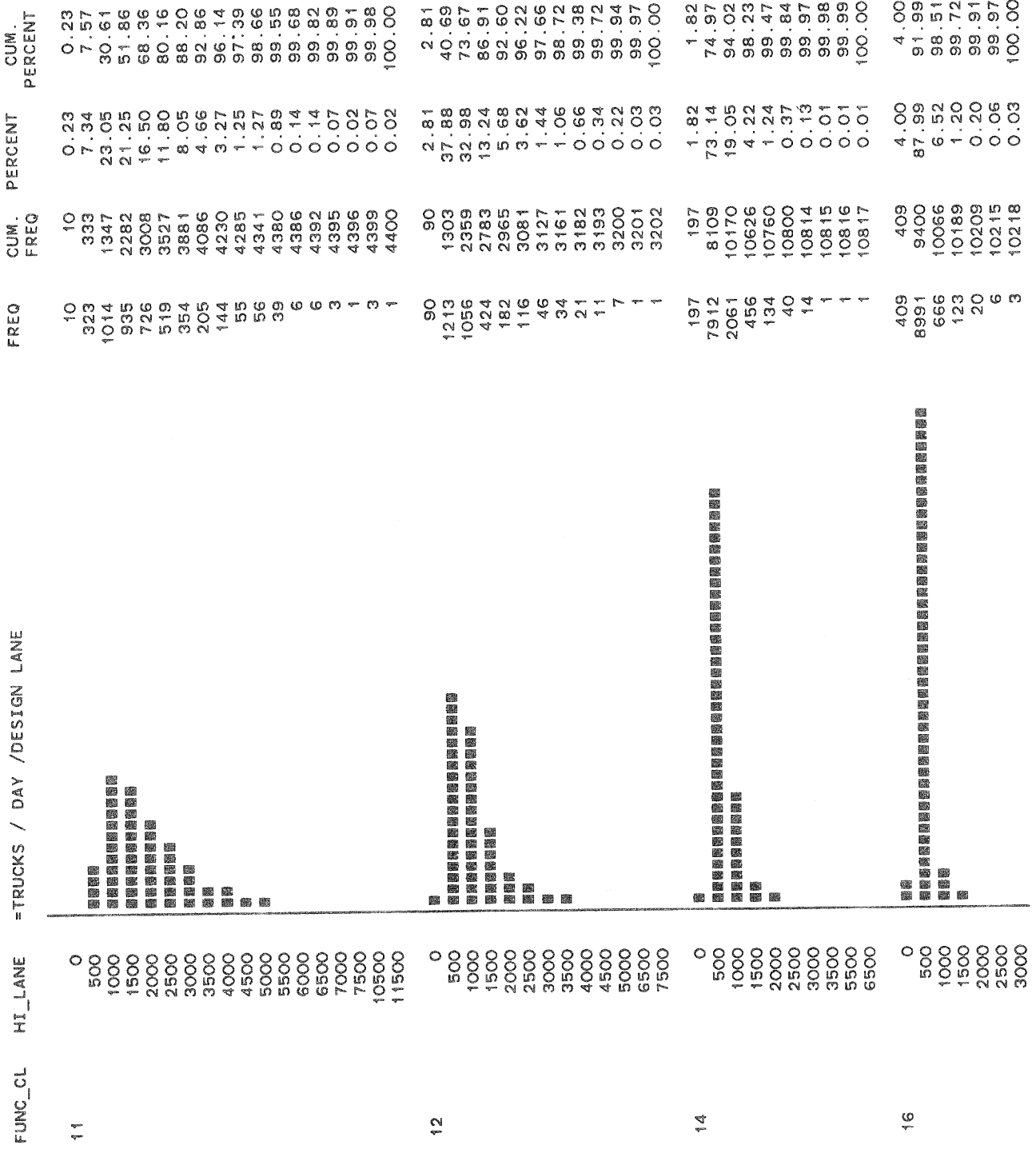
PERCENTAGE BAR CHART

FUNC_CL	HI_LANE	=TRUCKS / DAY /DESIGN LANE	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT	
11	0	█	1	1	0.13	0.13	
	500	█	145	146	18.71	18.84	
	1000	█	262	408	33.81	52.65	
	1500	█	140	548	18.06	70.71	
	2000	█	94	642	12.13	82.84	
	2500	█	76	718	9.81	92.65	
	3000	█	41	759	5.29	97.94	
	3500	█	14	773	1.81	99.74	
	4000	█	2	775	0.26	100.00	
	12	0	█	1	1	0.16	0.16
500		█	345	345	54.60	54.76	
1000		█	195	540	30.95	85.71	
1500		█	60	600	9.52	95.24	
2000		█	23	623	3.65	98.89	
2500		█	1	624	0.16	99.05	
3000		█	4	628	0.63	99.68	
4000		█	2	630	0.32	100.00	
14		0	█	63	63	0.89	0.89
		500	█	6183	6246	87.40	88.30
	1000	█	712	6958	10.07	98.36	
	1500	█	95	7053	1.34	99.70	
	2000	█	20	7073	0.28	99.99	
	2500	█	1	7074	0.01	100.00	
	16	0	█	493	493	11.59	11.59
		500	█	3622	4115	85.14	96.73
		1000	█	119	4234	2.80	99.53
		1500	█	13	4247	0.31	99.84
2000		█	7	4254	0.16	100.00	
17		0	█	342	342	6.99	6.99
		500	█	4537	4879	92.67	99.65
		1000	█	14	4893	0.29	99.94
		1500	█	3	4896	0.06	100.00



TRUCK INFORMATION (BASED ON % TRUCKS, OFF PEAK)
 (VALUES ARE ROUNDED UP TO THE NEXT INCREMENT SHOWN)
 AREA=URBANIZED

PERCENTAGE BAR CHART



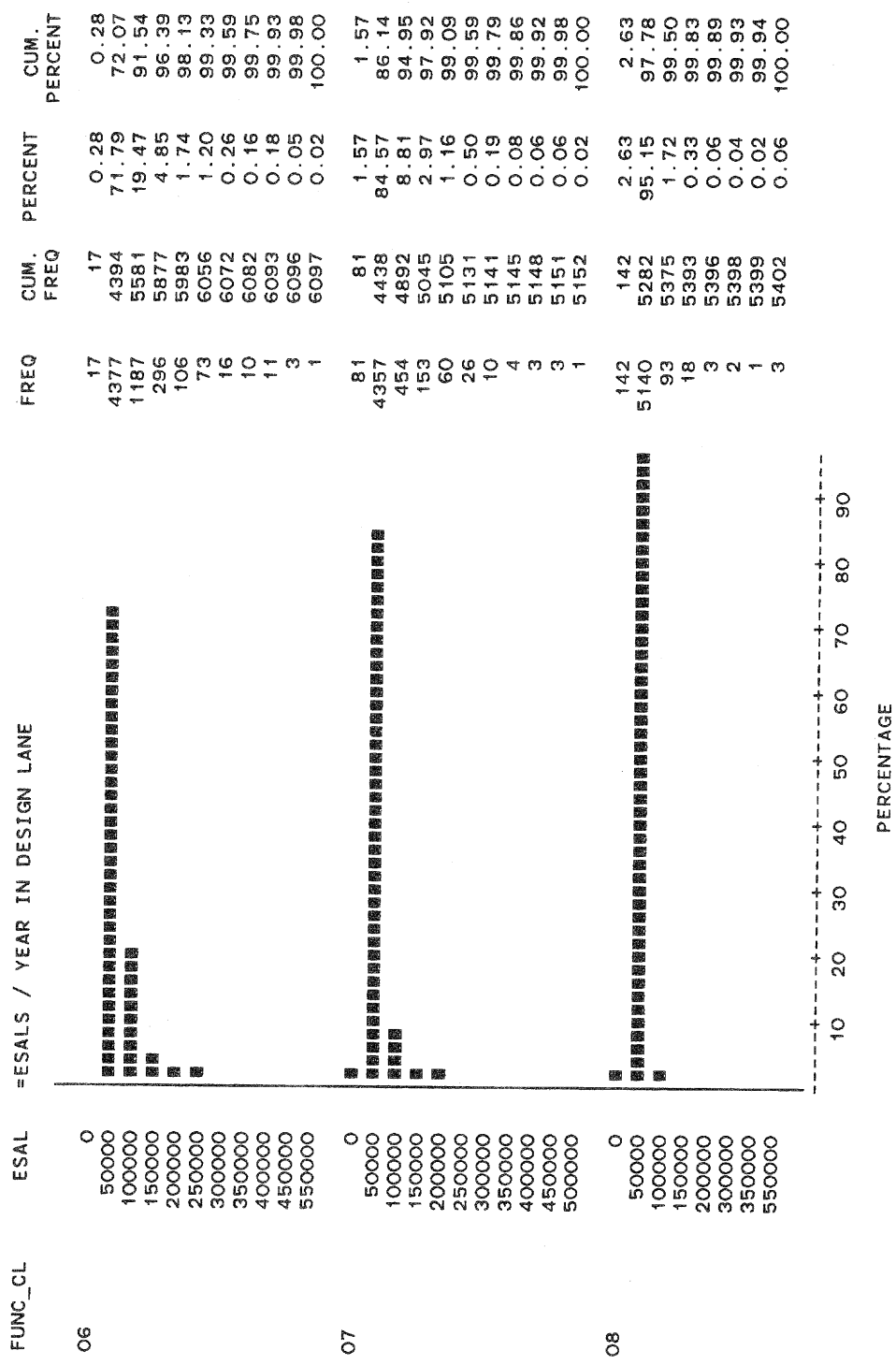
ESALS / YEAR IN DESIGN LANE
 (ROUNDED UP TO NEXT INCREMENT SHOWN)
 PAVEMENT=FLEX AREA=RURAL

PERCENTAGE BAR CHART

FUNC_CL	ESAL	=ESALS / YEAR IN DESIGN LANE	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
01	0		5	5	0.19	0.19
	50000		90	95	3.34	3.52
	100000		261	356	9.67	13.19
	150000		383	739	14.20	27.39
	200000		375	1114	13.90	41.29
	250000		299	1413	11.08	52.37
	300000		166	1579	6.15	58.52
	350000		192	1771	7.12	65.64
	400000		173	1944	6.41	72.05
	450000		145	2089	5.37	77.43
	500000		125	2214	4.63	82.06
	550000		122	2336	4.52	86.58
	600000		67	2403	2.48	89.07
	650000		69	2472	2.56	91.62
	700000		45	2517	1.67	93.29
	750000		38	2555	1.41	94.70
	800000		38	2593	1.41	96.11
	850000		37	2630	1.37	97.48
	900000		21	2651	0.78	98.26
	950000		17	2668	0.63	98.89
1000000		9	2677	0.33	99.22	
1050000		6	2683	0.22	99.44	
1100000		5	2688	0.19	99.63	
1150000		2	2690	0.07	99.70	
1250000		2	2692	0.07	99.78	
1300000		2	2694	0.07	99.85	
1350000		1	2695	0.04	99.89	
1450000		1	2696	0.04	99.93	
3200000		2	2698	0.07	100.00	
02	0		15	15	0.17	0.17
	50000		3264	3279	37.11	37.28
	100000		3118	6397	35.45	72.73
	150000		1264	7661	14.37	87.10
	200000		526	8187	5.98	93.08
	250000		273	8460	3.10	96.18
	300000		112	8572	1.27	97.45
	350000		90	8662	1.02	98.48
	400000		56	8718	0.64	99.11
	450000		29	8747	0.33	99.44
	500000		19	8766	0.22	99.66
	550000		13	8779	0.15	99.81
	600000		6	8785	0.07	99.87
	650000		1	8786	0.01	99.89
	700000		4	8790	0.05	99.93
	750000		1	8791	0.01	99.94
	850000		2	8793	0.02	99.97
	1050000		1	8794	0.01	99.98
	1100000		1	8795	0.01	99.99
	1250000		1	8796	0.01	100.00

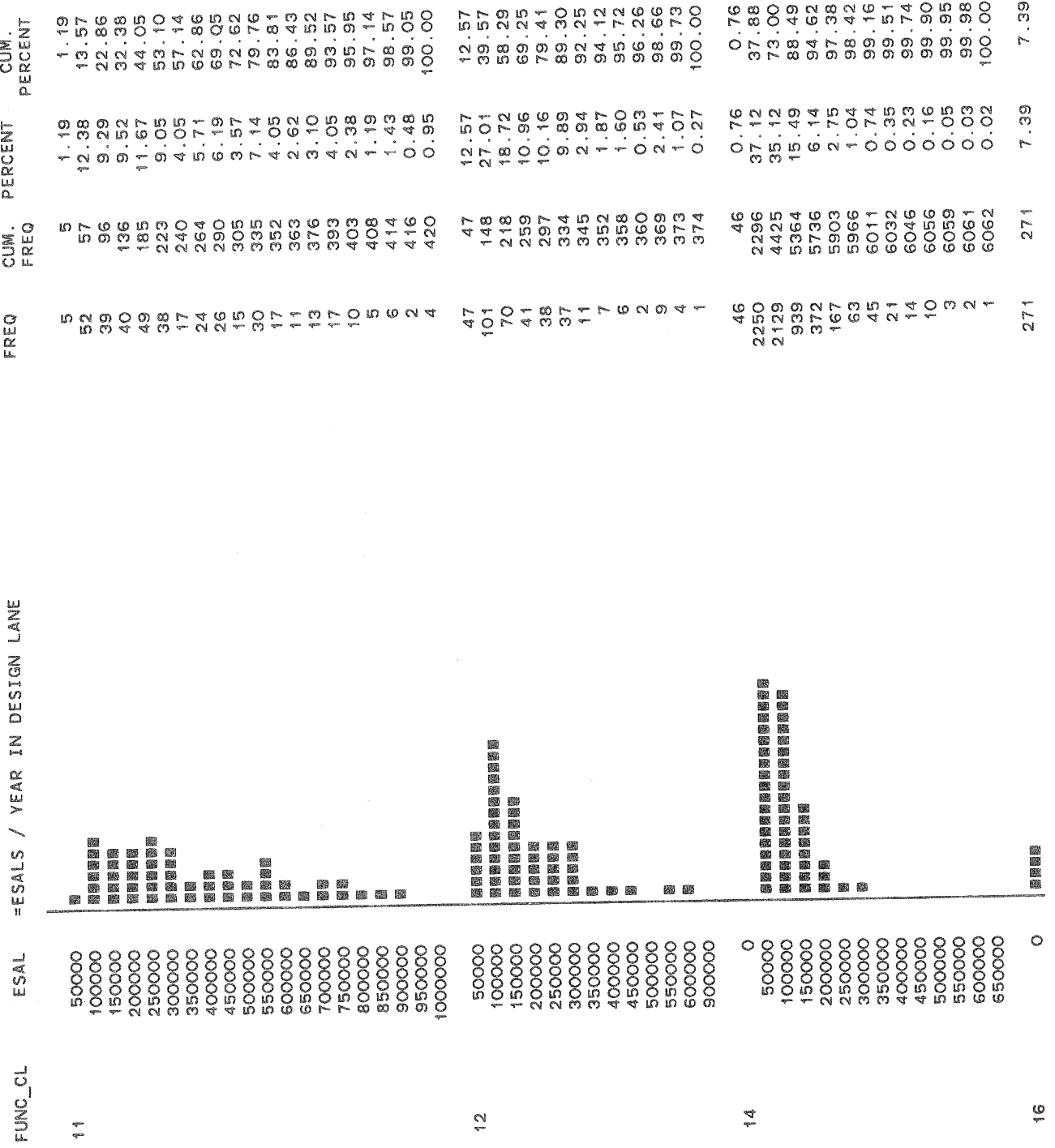
ESALS / YEAR IN DESIGN LANE
 (ROUNDED UP TO NEXT INCREMENT SHOWN)
 PAVEMENT=FLEX AREA=RURAL

PERCENTAGE BAR CHART



ESALS / YEAR IN DESIGN LANE
 (ROUNDED UP TO NEXT INCREMENT SHOWN)
 PAVEMENT=FLEX AREA=SMALL URBAN

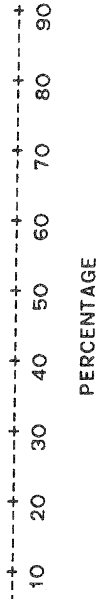
PERCENTAGE BAR CHART



ESALS / YEAR IN DESIGN LANE
 (ROUNDED UP TO NEXT INCREMENT SHOWN)
 PAVEMENT=FLEX AREA=SMALL URBAN

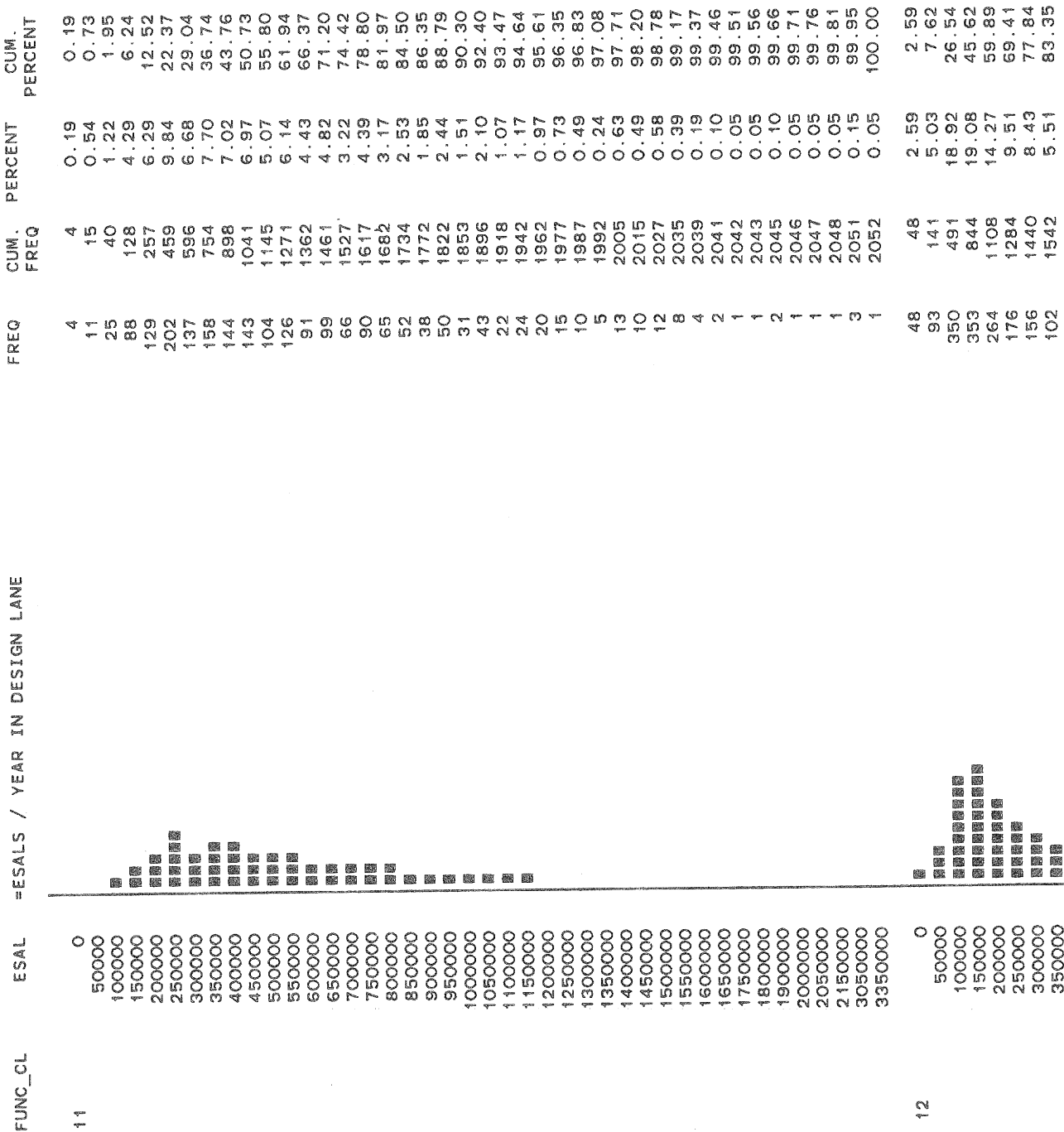
PERCENTAGE BAR CHART

FUNC_CL	ESAL	=ESALS / YEAR IN DESIGN LANE	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
	50000	2624	2624	2895	71.54	78.93
	100000	520	520	3415	14.18	93.10
	150000	133	133	3548	3.63	96.73
	200000	60	60	3608	1.64	98.36
	250000	32	32	3640	0.87	99.24
	300000	11	11	3651	0.30	99.54
	350000	7	7	3658	0.19	99.73
	400000	4	4	3662	0.11	99.84
	450000	5	5	3667	0.14	99.97
	550000	1	1	3668	0.03	100.00
17	0	266	266	266	6.06	6.06
	50000	3928	3928	4194	89.44	95.49
	100000	152	152	4346	3.46	98.95
	150000	30	30	4376	0.68	99.64
	200000	9	9	4385	0.20	99.84
	250000	1	1	4386	0.02	99.86
	300000	4	4	4390	0.09	99.95
	350000	2	2	4392	0.05	100.00



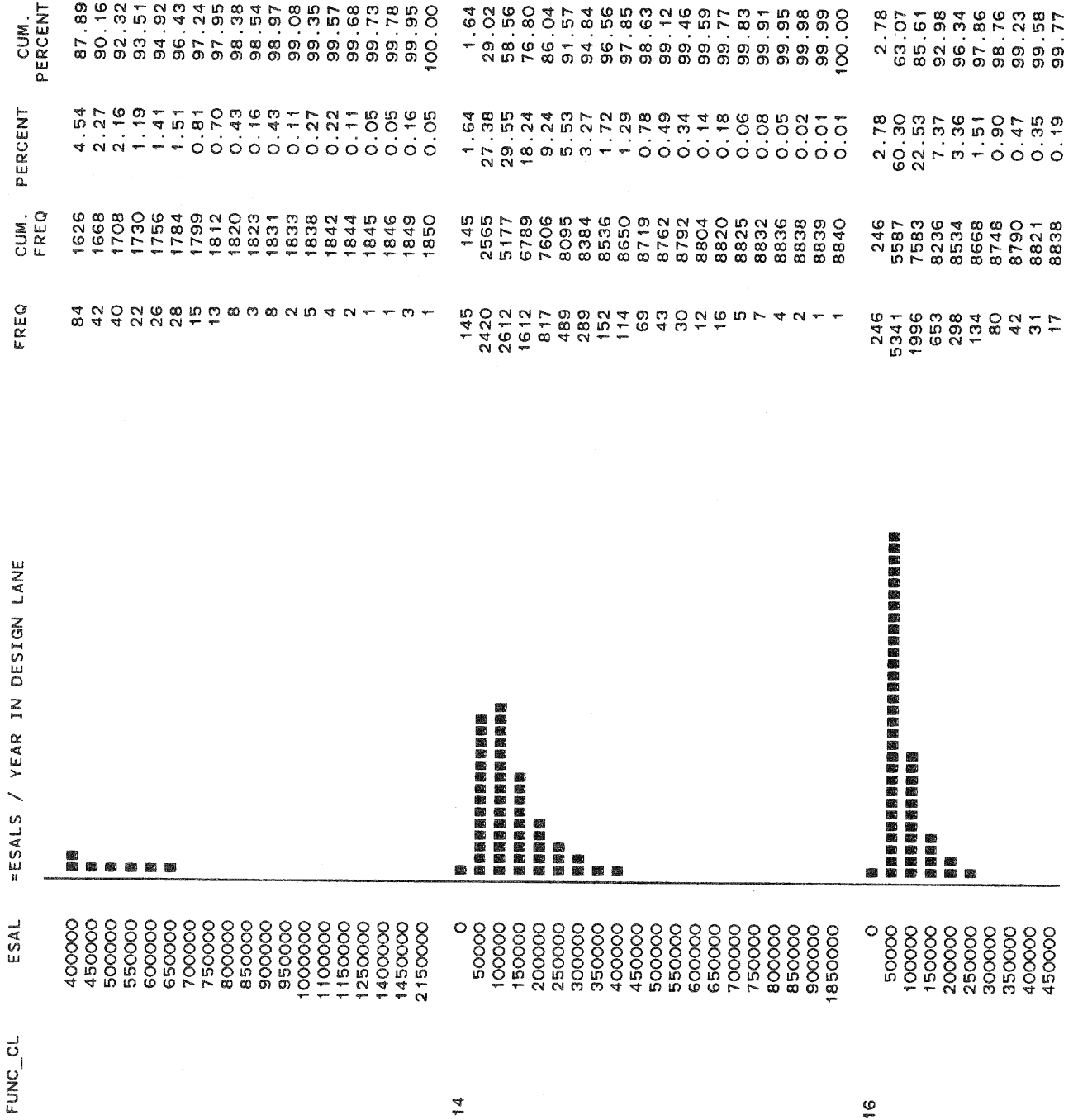
ESALS / YEAR IN DESIGN LANE
 (ROUNDED UP TO NEXT INCREMENT SHOWN)
 PAVEMENT=FLEX AREA=URBANIZED

PERCENTAGE BAR CHART



ESALS / YEAR IN DESIGN LANE
 (ROUNDED UP TO NEXT INCREMENT SHOWN)
 PAVEMENT=FLEX AREA=URBANIZED

PERCENTAGE BAR CHART



ESALS / YEAR IN DESIGN LANE
 (ROUNDED UP TO NEXT INCREMENT SHOWN)
 PAVEMENT=FLEX AREA=URBANIZED

PERCENTAGE BAR CHART

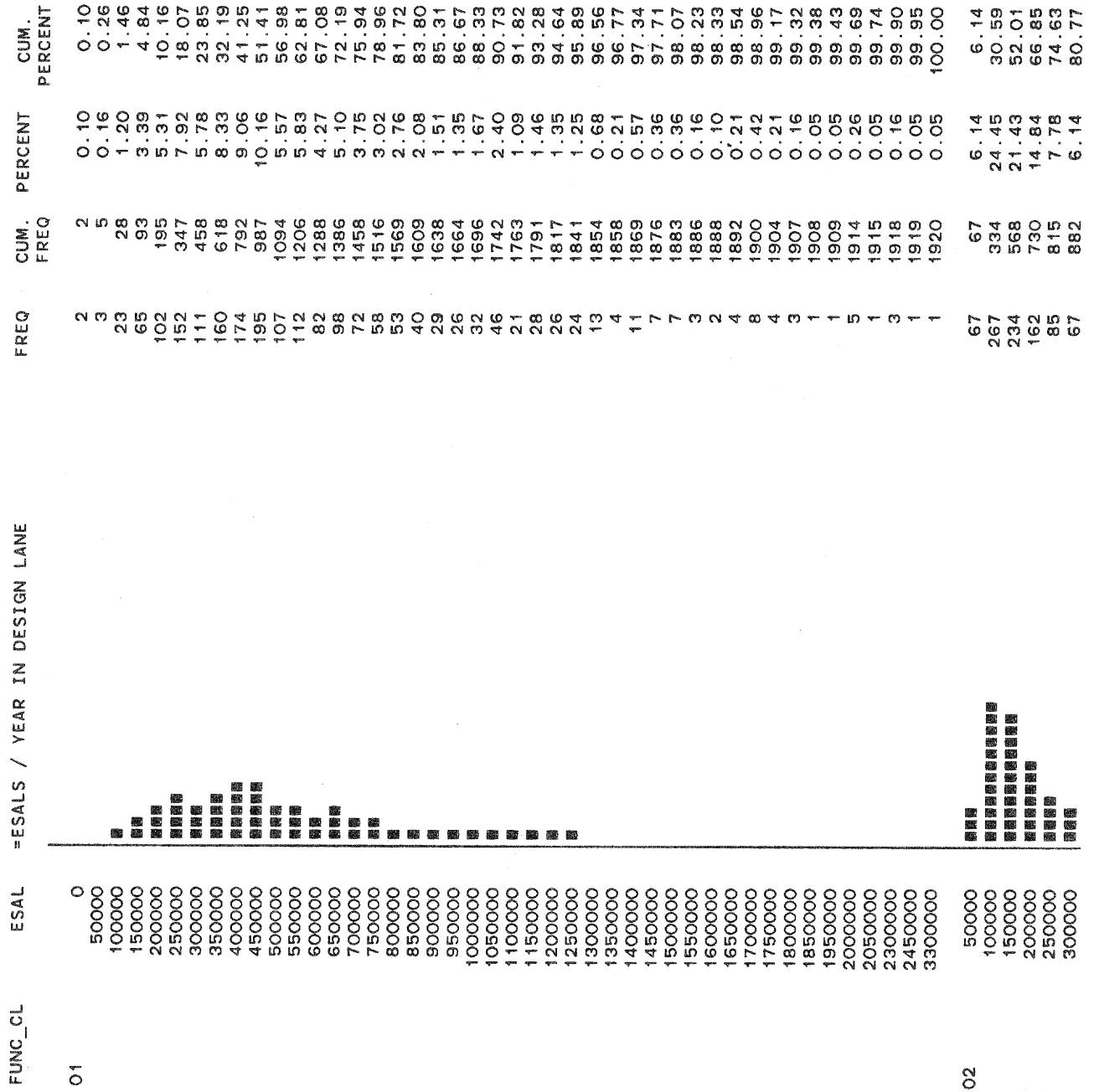
FUNC_CL	ESAL	=ESALS / YEAR IN DESIGN LANE	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
17	0	0	452	452	4.29	4.29
	50000	50000	8951	9403	84.93	89.22
	100000	100000	820	10223	7.78	97.00
	150000	150000	204	10427	1.94	98.94
	200000	200000	68	10495	0.65	99.58
	250000	250000	21	10516	0.20	99.78
	300000	300000	8	10524	0.08	99.86
	350000	350000	7	10531	0.07	99.92
	400000	400000	2	10533	0.02	99.94
	500000	500000	1	10534	0.01	99.95
	550000	550000	4	10538	0.04	99.99
	900000	900000	1	10539	0.01	100.00



PERCENTAGE

ESALS / YEAR IN DESIGN LANE
 (ROUNDED UP TO NEXT INCREMENT SHOWN)
 PAVEMENT=RIGID AREA=RURAL

PERCENTAGE BAR CHART



ESALS / YEAR IN DESIGN LANE
(ROUNDED UP TO NEXT INCREMENT SHOWN)
PAVEMENT=RIGID AREA=RURAL

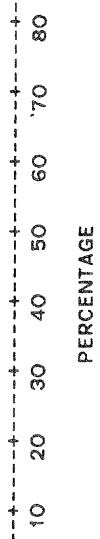
PERCENTAGE BAR CHART

FUNC_CL	ESAL	=ESALS / YEAR IN DESIGN LANE	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
06	350000	2	55	55	5.04	85.81
	400000	3	42	97	3.85	89.65
	450000	4	32	101	2.93	92.58
	500000	5	12	102	1.10	93.68
	550000	6	18	104	1.65	95.33
	600000	7	11	105	1.01	96.34
	650000	8	6	105	0.55	96.89
	700000	9	5	106	0.46	97.34
	800000	10	1	106	0.09	97.44
	850000	11	3	107	0.27	97.71
	900000	12	2	107	0.18	97.89
	950000	13	4	107	0.37	98.26
	1000000	14	2	107	0.18	98.44
	1050000	15	1	107	0.09	98.53
	1250000	16	1	107	0.09	98.63
	1300000	17	3	108	0.27	98.90
	1350000	18	2	108	0.18	99.08
	1400000	19	1	108	0.09	99.17
	1450000	20	1	108	0.09	99.27
	1500000	21	2	108	0.18	99.45
	1550000	22	1	108	0.09	99.54
1650000	23	1	108	0.09	99.63	
1750000	24	1	109	0.09	99.72	
1900000	25	1	109	0.09	99.81	
2150000	26	1	109	0.09	99.90	
07	0	1	1	1	0.29	0.29
	50000	2	120	121	34.78	35.07
	100000	3	105	226	30.43	65.51
	150000	4	46	272	13.33	78.84
	200000	5	20	292	5.80	84.64
	250000	6	19	311	5.51	90.14
	300000	7	3	314	0.87	91.01
	350000	8	8	322	2.32	93.33
	400000	9	6	336	1.74	95.07
	450000	10	1	337	0.29	95.36
	500000	11	2	339	0.58	95.94
	550000	12	2	341	0.58	96.52
	600000	13	1	342	0.29	96.81
	650000	14	1	343	0.29	97.10
	700000	15	1	344	0.29	97.39
	750000	16	1	344	0.29	97.68
	1150000	17	1	345	0.29	97.97
	0	18	10	10	5.00	100.00
	50000	19	125	135	62.50	100.00
	100000	20	35	170	17.50	100.00
	150000	21	16	186	8.00	100.00
200000	22	5	191	2.50	100.00	
250000	23	3	194	1.50	100.00	
300000	24	2	196	1.00	100.00	

ESALS / YEAR IN DESIGN LANE
 (ROUNDED UP TO NEXT INCREMENT SHOWN)
 PAVEMENT=RIGID AREA=RURAL

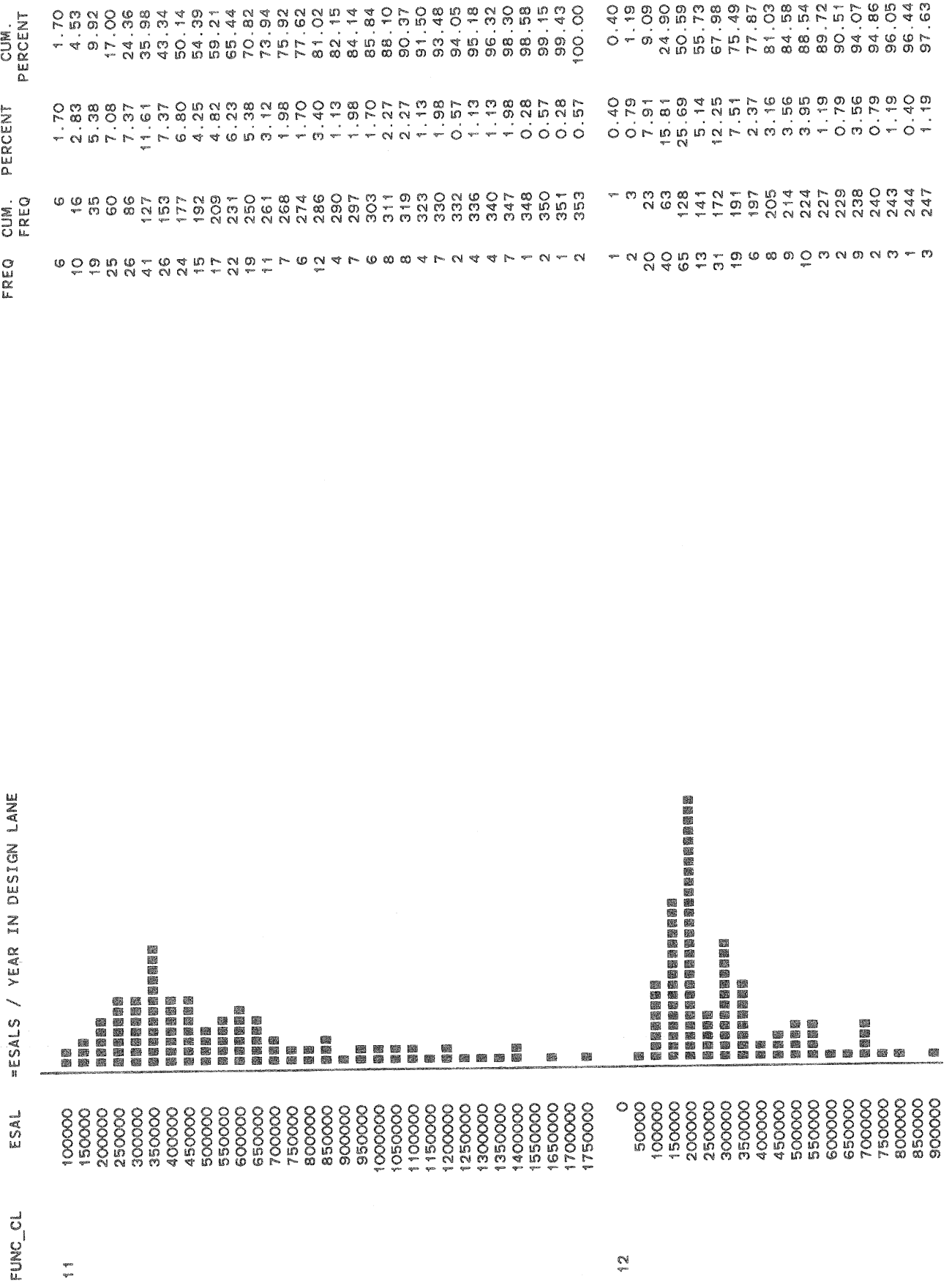
PERCENTAGE BAR CHART

FUNC_CL	ESAL	=ESALS / YEAR IN DESIGN LANE	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
	350000		1	197	0.50	98.50
	450000		1	198	0.50	99.00
	500000		1	199	0.50	99.50
	650000		1	200	0.50	100.00
08	0		5	5	7.58	7.58
	50000		54	59	81.82	89.39
	100000		5	64	7.58	96.97
	150000		2	66	3.03	100.00



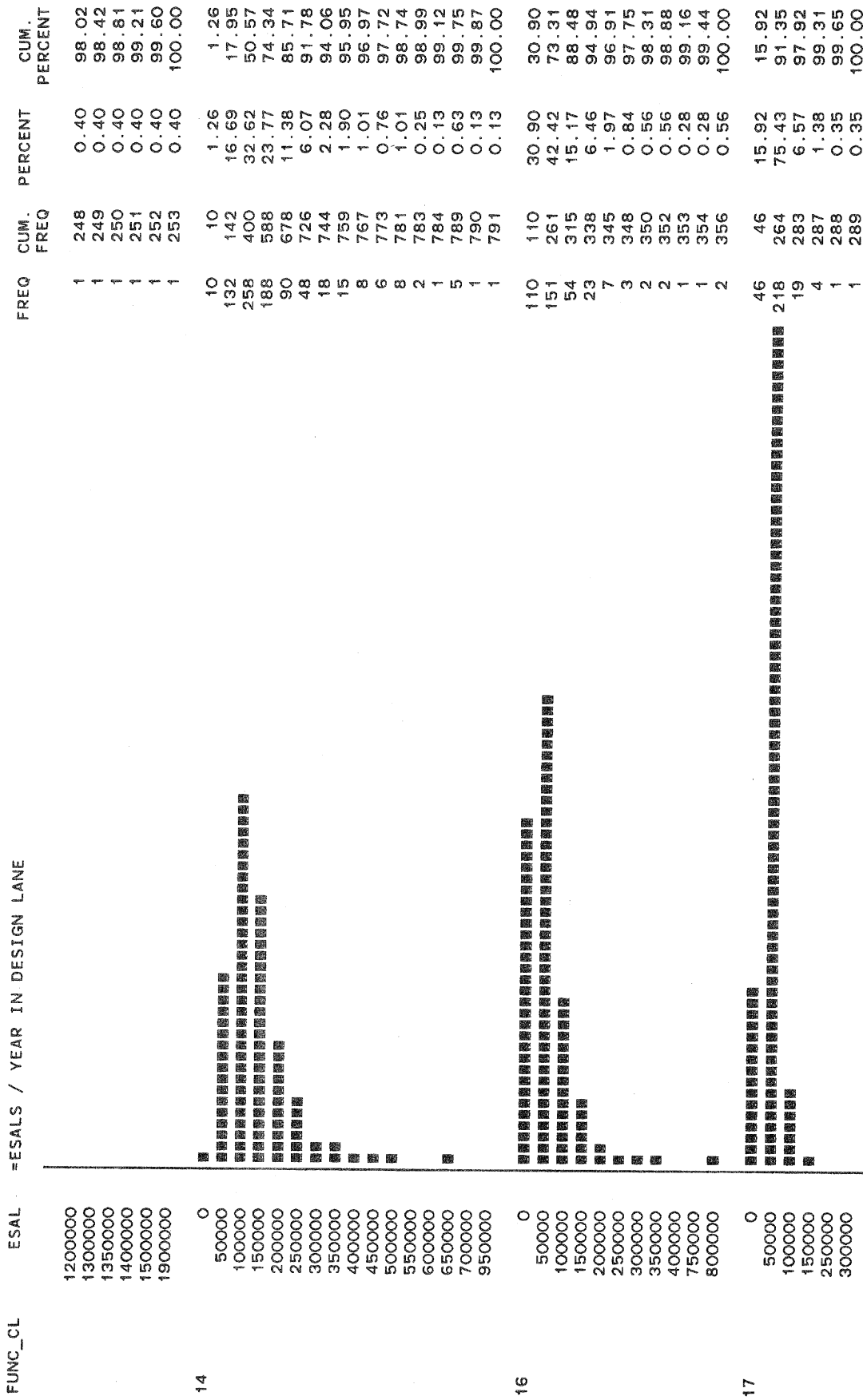
ESALS / YEAR IN DESIGN LANE
 (ROUNDED UP TO NEXT INCREMENT SHOWN)
 PAVEMENT=RIGID AREA=SMALL URBAN

PERCENTAGE BAR CHART



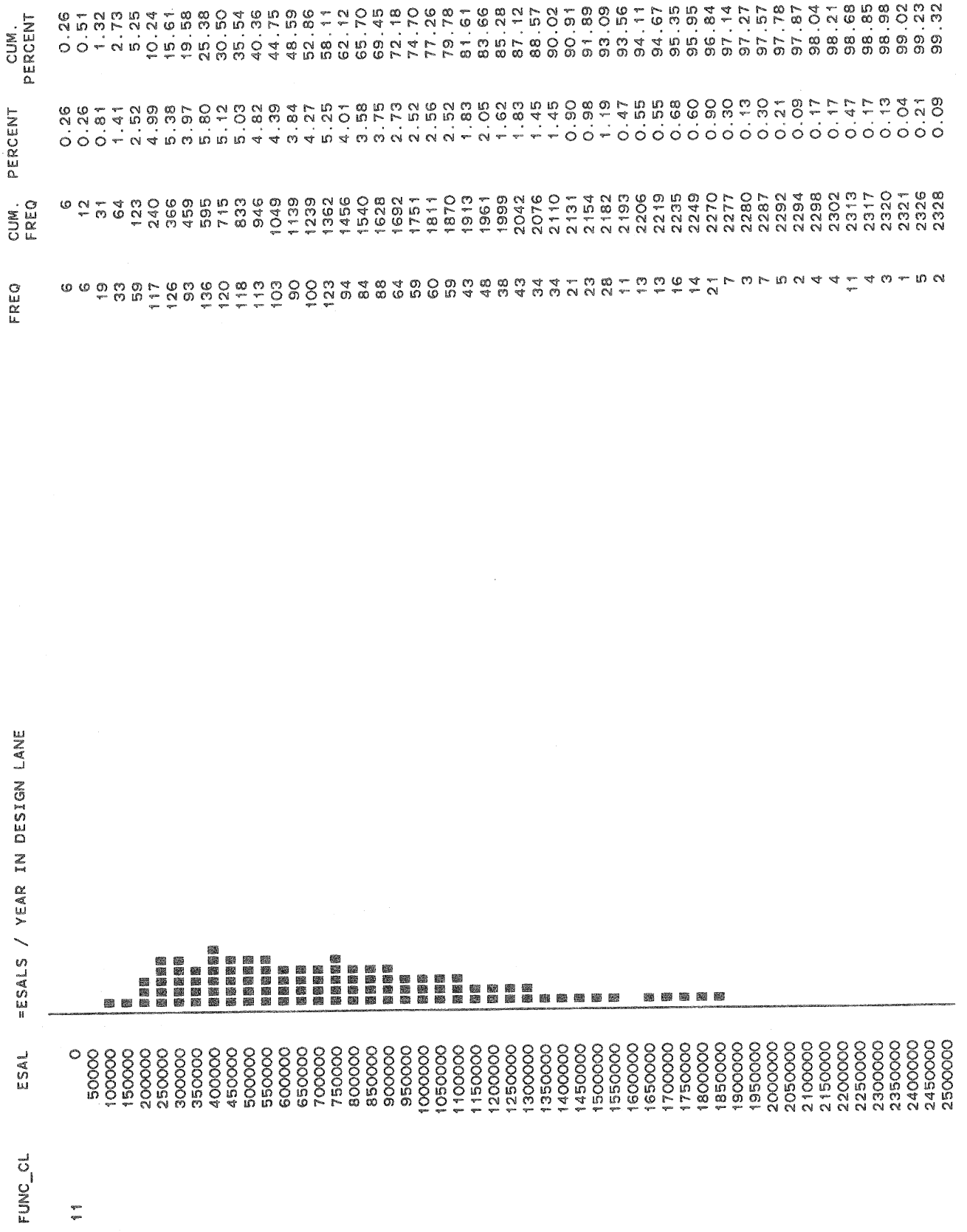
ESALS / YEAR IN DESIGN LANE
 (ROUNDED UP TO NEXT INCREMENT SHOWN)
 PAVEMENT=RIGID AREA=SMALL URBAN

PERCENTAGE BAR CHART



ESALS / YEAR IN DESIGN LANE
 (ROUNDED UP TO NEXT INCREMENT SHOWN)
 PAVEMENT=RIGID AREA=URBANIZED

PERCENTAGE BAR CHART



ESALS / YEAR IN DESIGN LANE
 (ROUNDED UP TO NEXT INCREMENT SHOWN)
 PAVEMENT=RIGID AREA=URBANIZED

PERCENTAGE BAR CHART

ESALS / YEAR IN DESIGN LANE

FUNC_CL ESAL

2550000
 2600000
 2700000
 2750000
 2800000
 2900000
 2950000
 3050000
 3250000

12

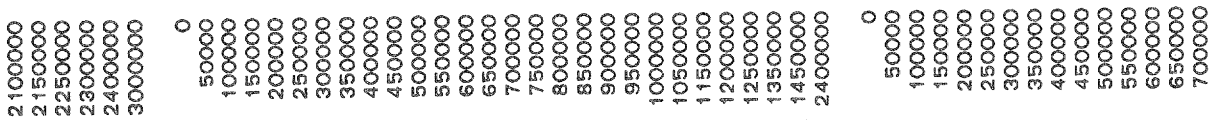
FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
6	2334	0.26	99.57
3	2337	0.13	99.70
1	2338	0.04	99.74
1	2339	0.04	99.79
1	2340	0.04	99.83
1	2341	0.04	99.87
1	2342	0.04	99.91
1	2343	0.04	99.96
1	2344	0.04	100.00
40	40	3.08	3.08
19	59	1.46	4.55
69	128	5.32	9.86
86	214	6.63	16.49
132	346	10.17	26.66
132	478	10.17	36.83
135	613	10.40	47.23
107	720	8.24	55.47
76	796	5.86	61.33
71	867	5.47	66.80
57	924	4.39	71.19
56	980	4.31	75.50
44	1024	3.39	78.89
32	1056	2.47	81.36
21	1077	1.62	82.97
16	1093	1.23	84.21
24	1117	1.85	86.06
15	1132	1.16	87.21
26	1158	2.00	89.21
8	1166	0.62	89.83
18	1184	1.39	91.22
16	1200	1.23	92.45
13	1213	1.00	93.45
8	1221	0.62	94.07
3	1224	0.23	94.30
6	1230	0.46	94.76
7	1237	0.54	95.30
6	1243	0.46	95.76
2	1245	0.15	95.92
5	1250	0.39	96.30
8	1258	0.62	96.92
5	1263	0.39	97.30
6	1269	0.46	97.77
2	1271	0.15	97.92
1	1272	0.08	98.00
3	1275	0.23	98.23
5	1280	0.39	98.61
4	1284	0.31	98.92
4	1288	0.31	99.23
1	1289	0.08	99.31
2	1291	0.15	99.46

ESALS / YEAR IN DESIGN LANE
 (ROUNDED UP TO NEXT INCREMENT SHOWN)
 PAVEMENT=RIGID AREA=URBANIZED

PERCENTAGE BAR CHART

FUNC_CL ESAL =ESALS / YEAR IN DESIGN LANE

FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
2	1293	0.15	99.61
1	1294	0.08	99.69
1	1295	0.08	99.77
1	1296	0.08	99.85
1	1297	0.08	99.92
1	1298	0.08	100.00
29	29	1.85	1.85
129	158	8.24	10.09
296	454	18.90	28.99
276	730	17.62	46.62
213	943	13.60	60.22
156	1099	9.96	70.18
114	1213	7.28	77.46
89	1302	5.68	83.14
49	1351	3.13	86.27
37	1388	2.36	88.63
36	1424	2.30	90.93
29	1453	1.85	92.78
23	1476	1.47	94.25
15	1491	0.96	95.21
21	1512	1.34	96.55
12	1524	0.77	97.32
7	1531	0.45	97.77
13	1544	0.83	98.60
5	1549	0.32	98.91
5	1554	0.32	99.23
2	1556	0.13	99.36
1	1557	0.06	99.43
3	1560	0.19	99.62
1	1561	0.06	99.68
2	1563	0.13	99.81
1	1564	0.06	99.87
1	1565	0.06	99.94
1	1566	0.06	100.00
81	81	8.08	8.08
288	369	28.74	36.83
251	620	25.05	61.88
114	734	11.38	73.25
77	811	7.68	80.94
61	872	6.09	87.03
38	910	3.79	90.82
29	939	2.89	93.71
20	959	2.00	95.71
13	972	1.30	97.01
6	978	0.60	97.60
5	983	0.50	98.10
2	985	0.20	98.30
4	989	0.40	98.70
4	993	0.40	99.10



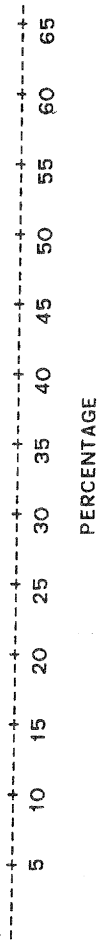
14

16

ESALS / YEAR IN DESIGN LANE
 (ROUNDED UP TO NEXT INCREMENT SHOWN)
 PAVEMENT=RIGID AREA=URBANIZED

PERCENTAGE BAR CHART

FUNC_CL	ESAL	=ESALS / YEAR IN DESIGN LANE	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
17	0		75	75	10.55	10.55
	50000		466	541	65.54	76.09
	100000		85	626	11.95	88.05
	150000		53	679	7.45	95.50
	200000		17	696	2.39	97.89
	250000		3	699	0.42	98.31
	300000		6	705	0.84	99.16
	350000		2	707	0.28	99.44
	450000		1	708	0.14	99.58
	550000		1	709	0.14	99.72
	800000		1	710	0.14	99.86
	950000		1	711	0.14	100.00



RATIO OF % TRUCKS OFF PEAK TO PEAK

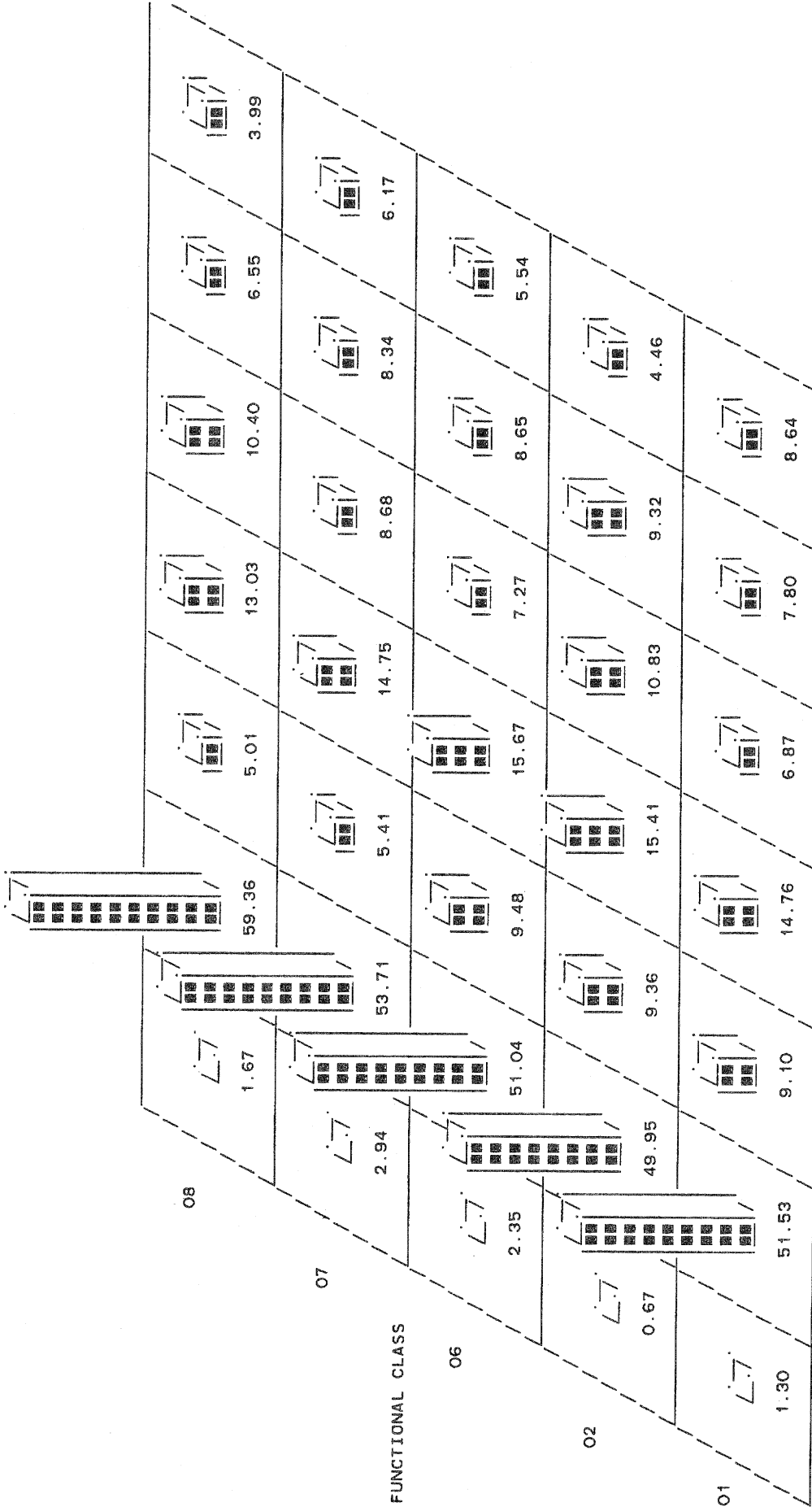
(Items 54a,54b)

- much of the time, the two values are coded the same (generally in the range of 40 to 55% of the samples by functional class); the lowest % occurs in the urban area I/freeways /expressways where one would expect a difference and where one would expect information to be available
- when there was a difference reported, the ratios peaked most of the time in the 1.26 to 1.5 range, but only to a slight extent
- 15 of the states reported the same figures for both variables approximately 100% of the time

1985 HPMS Sample Data

RATIO OF % TRUCKS OFF PEAK / % TRUCKS PEAK
AREA=RURAL

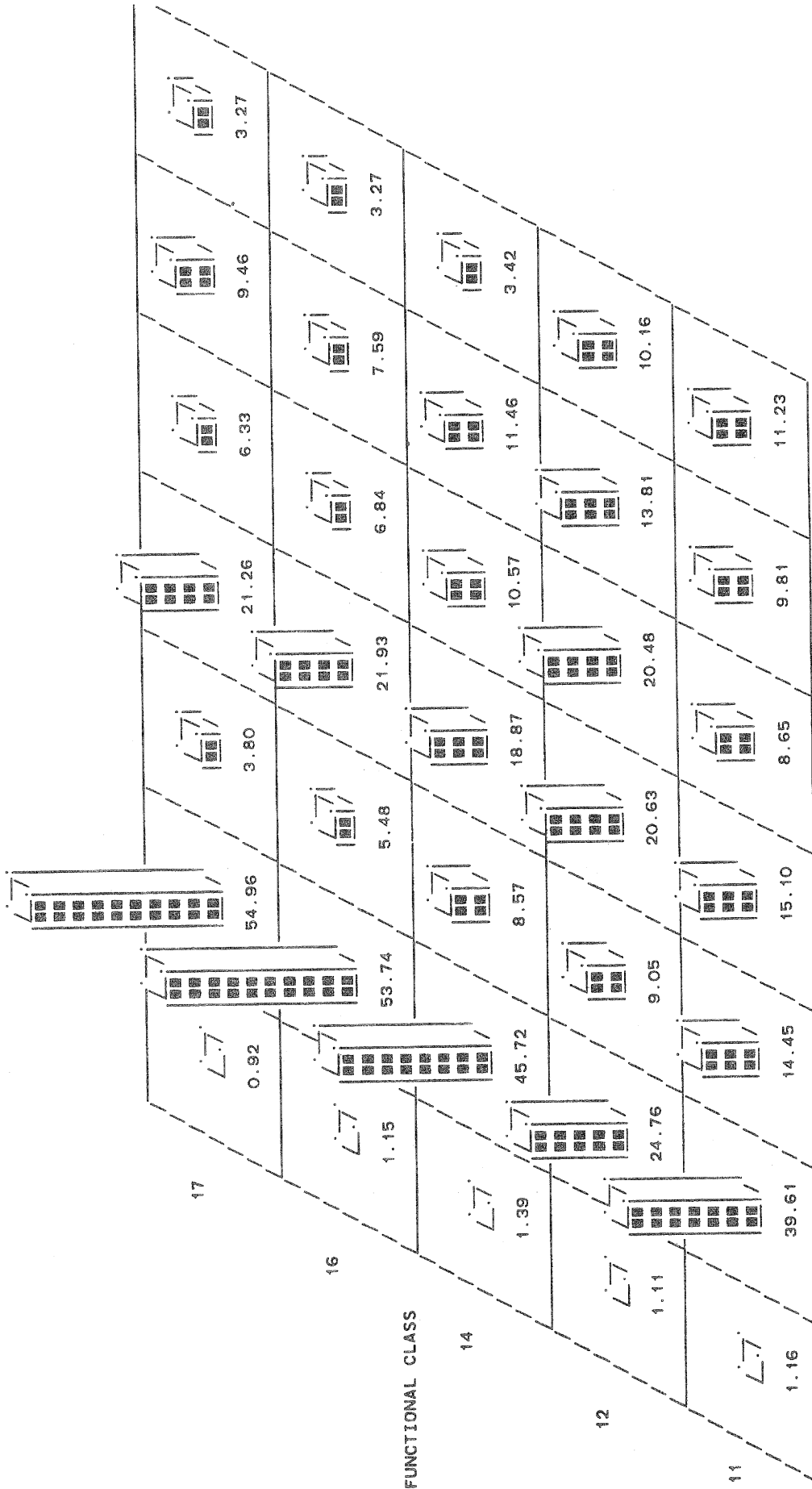
PERCENTAGE BLOCK CHART



(1) 0-0.99 (2) SAME (3) 1.01-1.25 (4) 1.26-1.5 (5) 1.51-1.75 (6) 1.76-2 (7) 2.01+
% TRK OFF PEAK/% TRK PEAK

RATIO OF % TRUCKS OFF PEAK / % TRUCKS PEAK
 AREA=SMALL URBAN

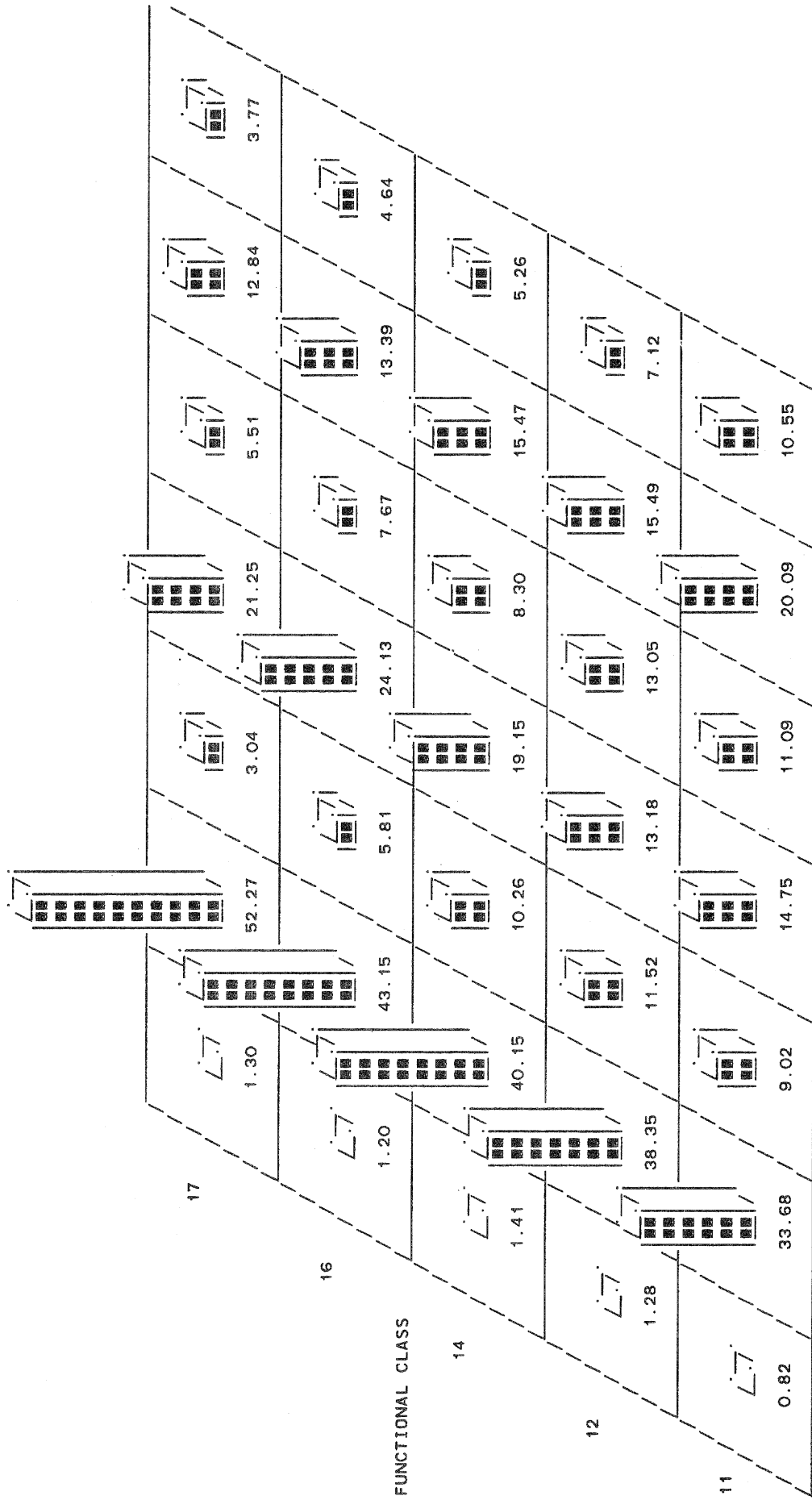
PERCENTAGE BLOCK CHART



(1) 0-0.99 (2) SAME (3) 1.01-1.25 (4) 1.26-1.5 (5) 1.51-1.75 (6) 1.76-2 (7) 2.01+
 % TRK OFF PEAK/% TRK PEAK

RATIO OF % TRUCKS OFF PEAK / % TRUCKS PEAK
AREA=URBANIZED

PERCENTAGE BLOCK CHART



(1) 0-0.99 (2) SAME (3) 1.01-1.25 (4) 1.26-1.5 (5) 1.51-1.75 (6) 1.76-2 (7) 2.01+

% TRK OFF PEAK/% TRK PEAK

K FACTOR

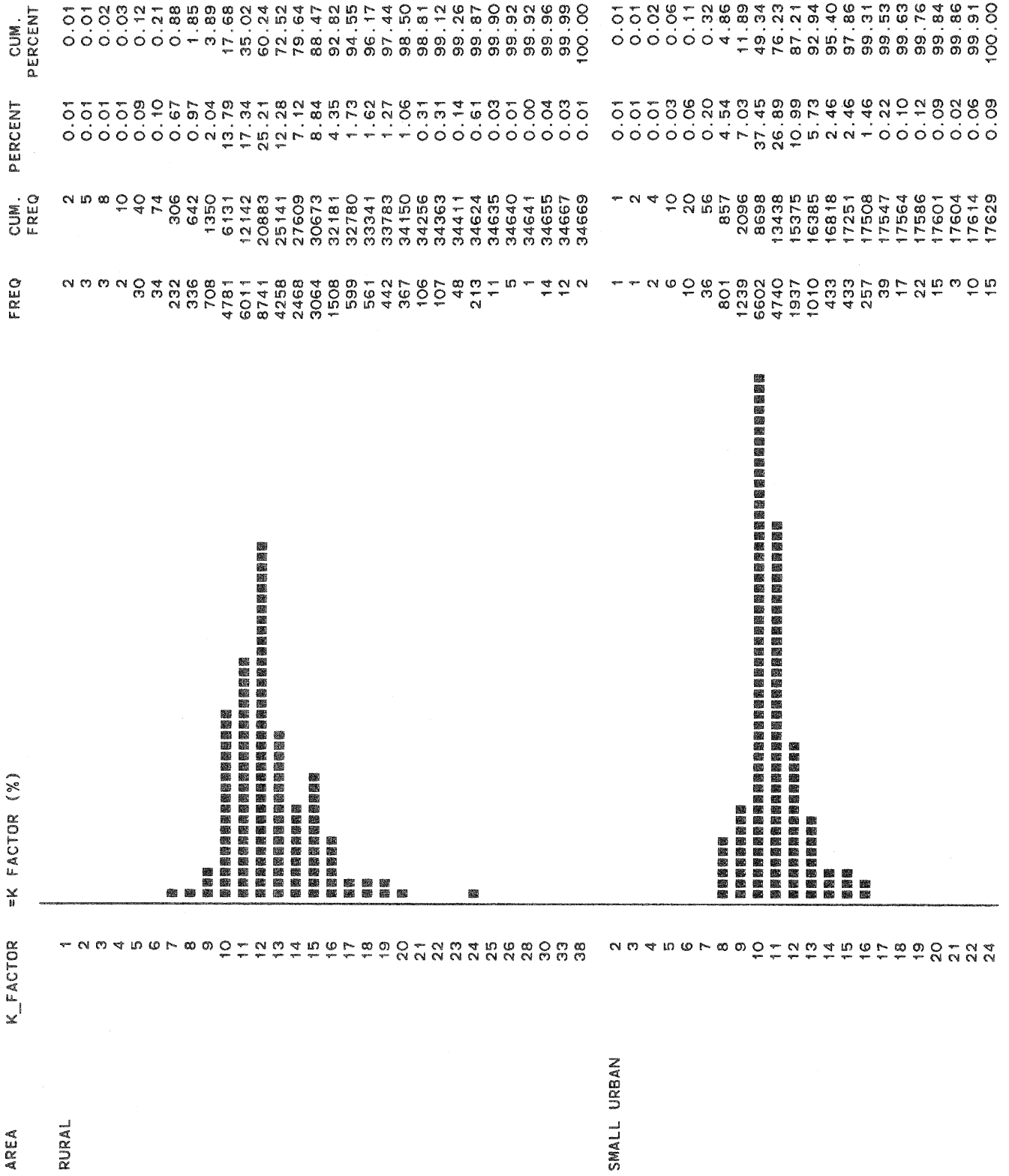
(Item 55)

—the design hour volume as a percent of the ADT peaks at
12% in the rural area, and 10% in urban areas

1985 HPMS Sample Data

K FACTOR (%)

PERCENTAGE BAR CHART



K FACTOR (%)
PERCENTAGE BAR CHART

AREA	K_FACTOR	=K FACTOR (%)	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
URBANIZED	1		4	4	0.01	0.01
	2		1	5	0.00	0.01
	3		4	9	0.01	0.02
	4		5	14	0.01	0.03
	5		53	67	0.13	0.17
	6		123	190	0.31	0.47
	7		307	497	0.76	1.23
	8		2487	2984	6.17	7.40
	9		4358	7342	10.81	18.22
	10		15723	23065	39.01	57.23
	11		8977	32042	22.27	79.51
	12		4620	36662	11.46	90.97
	13		1949	38611	4.84	95.81
	14		507	39118	1.26	97.06
	15		886	40004	2.20	99.26
	16		105	40109	0.26	99.52
	17		71	40180	0.18	99.70
	18		33	40213	0.08	99.78
	19		25	40238	0.06	99.84
	20		23	40261	0.06	99.90
	21		5	40266	0.01	99.91
	22		5	40271	0.01	99.93
	23		1	40272	0.00	99.93
	24		29	40301	0.07	100.00



DIRECTIONAL FACTOR

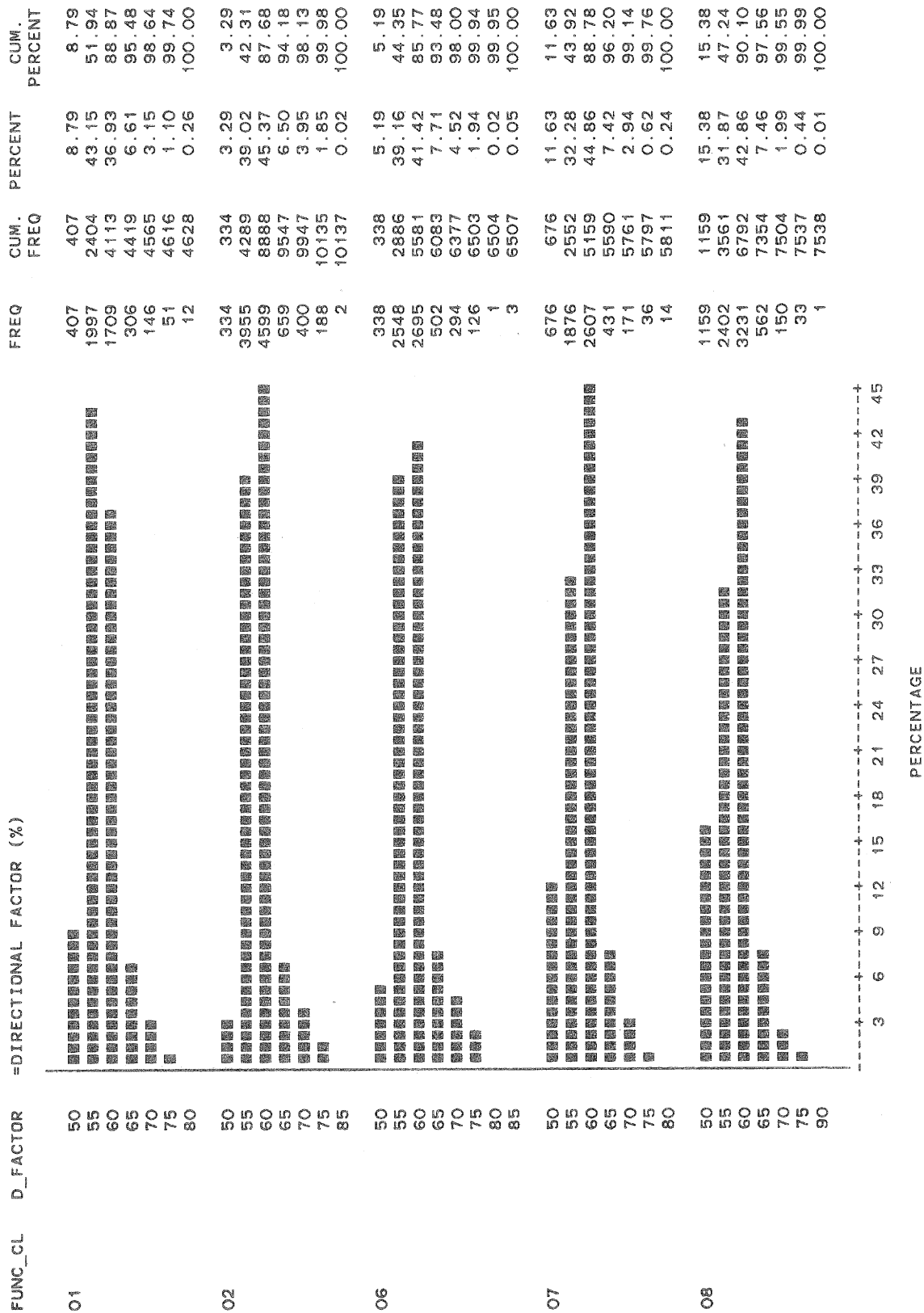
(Item 56)

- values shown are rounded up to the next 5% increment
- predominantly coded in the 51 to 60% range, with a 55% peak on the rural interstate, and a 60% peak elsewhere

1985 HPMS Sample Data

DIRECTIONAL FACTOR (%) FOR 2-WAY FACILITIES
AREA=RURAL

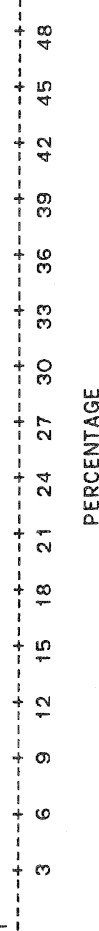
PERCENTAGE BAR CHART



DIRECTIONAL FACTOR (%) FOR 2-WAY FACILITIES
 AREA=SMALL URBAN

PERCENTAGE BAR CHART

FUNC_CL	D_FACTOR	=DIRECTIONAL FACTOR (%)	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
11	50	██████████	37	37	4.77	4.77
	55	██████████	239	276	30.84	35.61
	60	██████████	300	576	38.71	74.32
	65	██████████	141	717	18.19	92.52
	70	██████████	42	759	5.42	97.94
	75	██████████	15	774	1.94	99.87
	80	██████████	1	775	0.13	100.00
12	50	██████████	51	51	8.11	8.11
	55	██████████	113	164	17.97	26.07
	60	██████████	261	425	41.49	67.57
	65	██████████	165	590	26.23	93.80
	70	██████████	29	619	4.61	98.41
	75	██████████	10	629	1.59	100.00
	14	50	██████████	629	629	9.22
55		██████████	1775	2404	26.03	35.25
60		██████████	3168	5572	46.45	81.70
65		██████████	795	6367	11.66	93.36
70		██████████	371	6738	5.44	98.80
75		██████████	75	6813	1.10	99.90
85		██████████	2	6815	0.03	99.93
16	50	██████████	5	6820	0.07	100.00
	55	██████████	467	467	11.22	11.22
	60	██████████	1143	1610	27.46	38.67
	65	██████████	1822	3432	43.77	82.44
	70	██████████	274	3706	6.58	89.02
	75	██████████	427	4133	10.26	99.28
	85	██████████	29	4162	0.70	99.98
17	50	██████████	1	4163	0.02	100.00
	55	██████████	598	598	12.40	12.40
	60	██████████	1295	1893	26.84	39.24
	65	██████████	2377	4270	49.27	88.52
	70	██████████	245	4515	5.08	93.59
	75	██████████	273	4788	5.66	99.25
	85	██████████	33	4821	0.68	99.94
			3	4824	0.06	100.00



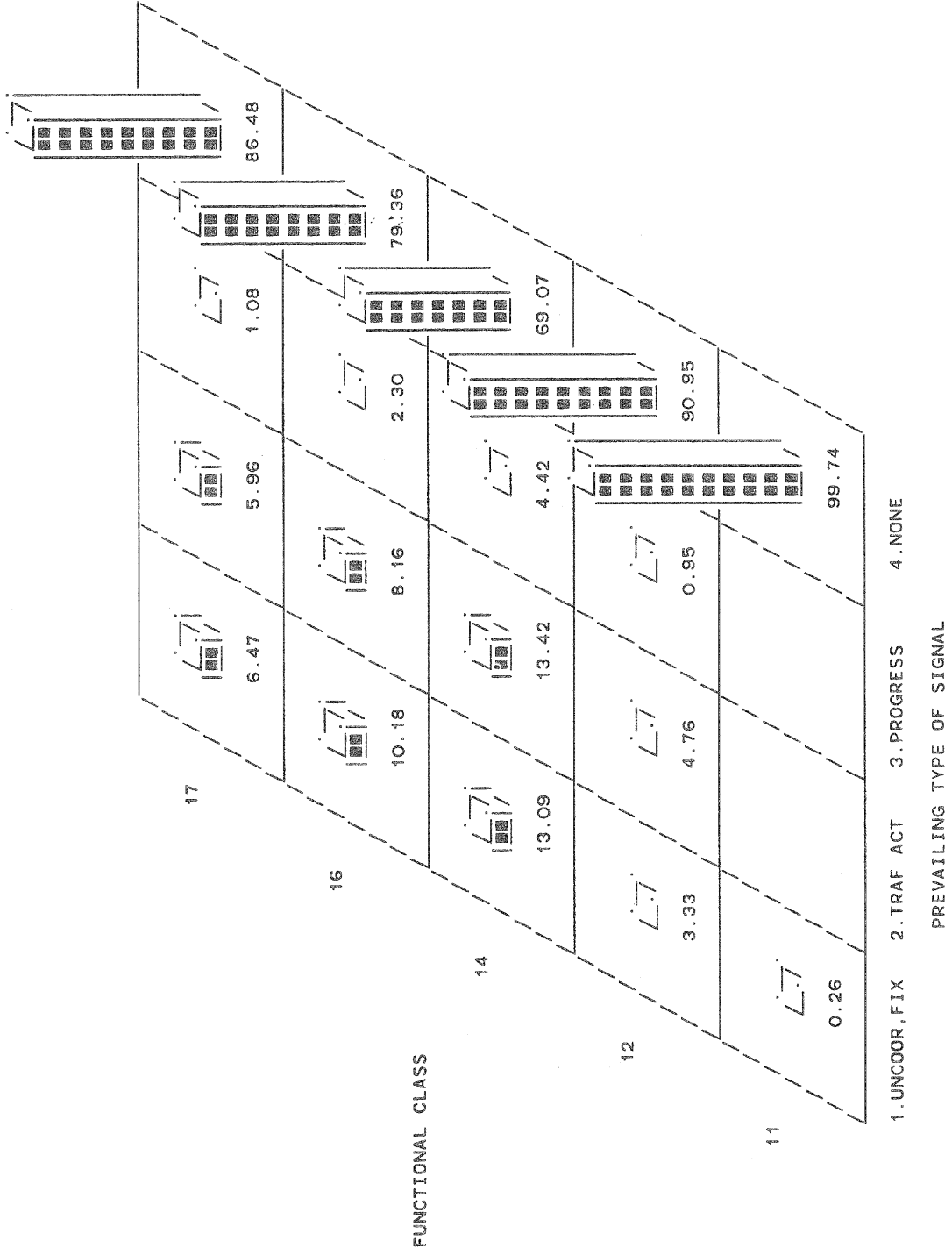
SIGNALIZATION

(Item 58)

- in urban areas, generally there are no signal systems reported for the section; the highest % occurs on non—expressway arterials**
- the relative proportion of signals generally falls into the ratio 3:3:1 by type: uncoordinated fixed time: traffic actuated: progressive**

1985 HPMS Sample Data

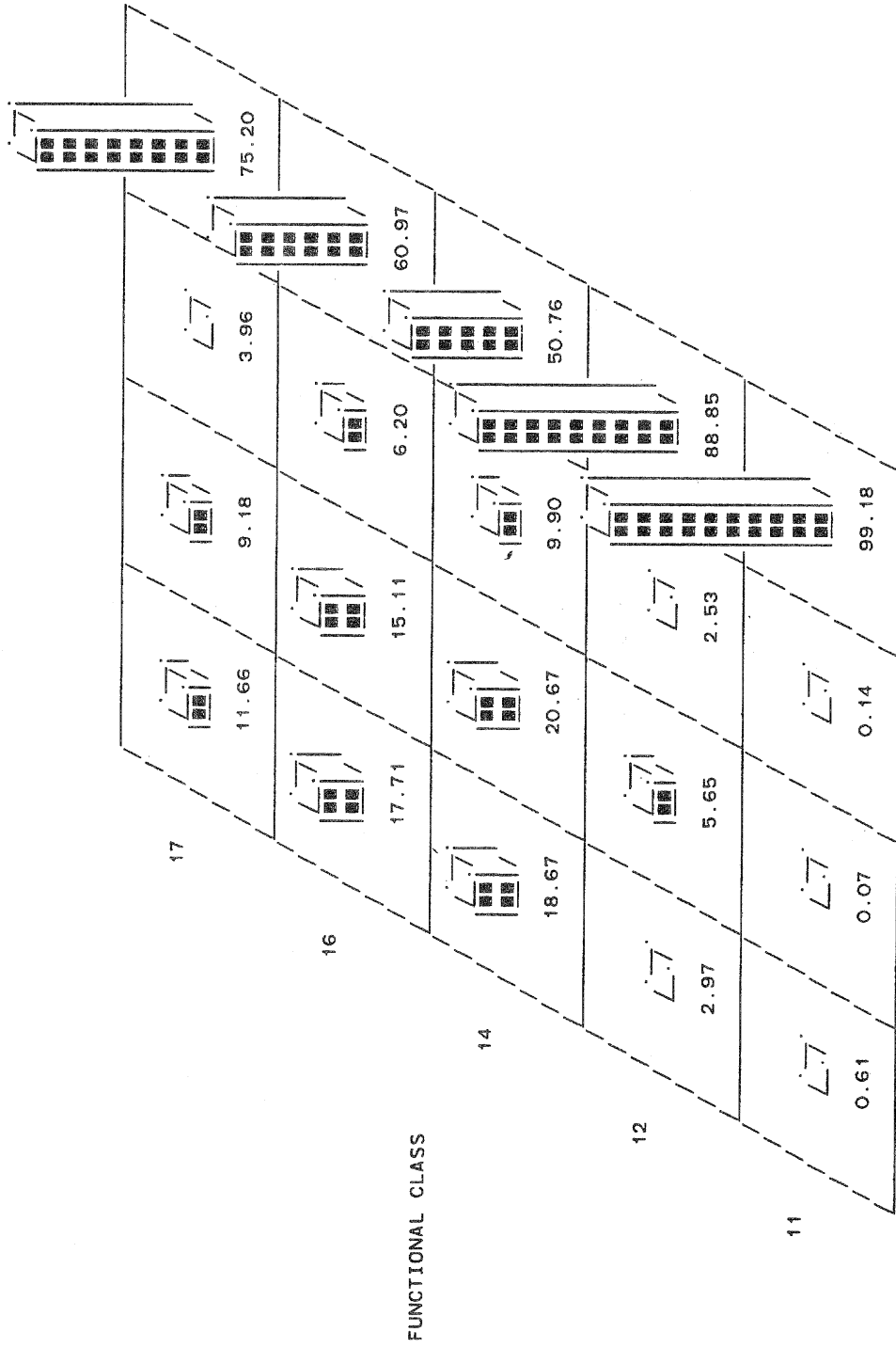
SIGNALIZATION
 AREA=SMALL URBAN
 PERCENTAGE BLOCK CHART



1. UNCOORD. FIX 2. TRAF ACT 3. PROGRESS 4. NONE
 PREVAILING TYPE OF SIGNAL

SIGNALIZATION
AREA=URBANIZED

PERCENTAGE BLOCK CHART



PERCENT GREEN TIME

(Item 59)

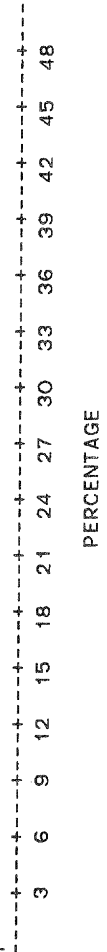
- in urban areas, the percent green time generally falls in the 31 to 60% range
- average percent green time decreases with lower functional class, as expected

1985 HPMS Sample Data

PERCENT GREEN TIME (WHEN SIGNALS EXIST)
AREA=SMALL URBAN

PERCENTAGE BAR CHART

FUNC_CL	GREEN	=TYPICAL % GREEN TIME		FREQ	PERCENT	CUM. PERCENT
		FREQ	PERCENT			
11	41-50 %	1	50.00	1	50.00	50.00
	61-70 %	1	50.00	1	50.00	100.00
	21-30 %	2	2.99	2	2.99	2.99
	31-40 %	7	7.46	7	7.46	10.45
	41-50 %	24	25.37	24	25.37	35.82
	51-60 %	51	40.30	27	40.30	76.12
12	61-70 %	10	14.93	10	14.93	91.04
	71-80 %	4	5.97	4	5.97	97.01
	81-90 %	2	2.99	2	2.99	100.00
	11-20 %	13	0.58	13	0.58	0.58
	21-30 %	89	3.95	89	3.95	4.52
	31-40 %	246	10.91	246	10.91	15.43
14	41-50 %	637	28.25	637	28.25	43.68
	51-60 %	801	35.52	801	35.52	79.20
	61-70 %	270	11.97	270	11.97	91.18
	71-80 %	90	3.99	90	3.99	95.17
	81-90 %	109	4.83	109	4.83	100.00
	01-10 %	4	0.45	4	0.45	0.45
16	11-20 %	21	2.36	21	2.36	2.81
	21-30 %	74	8.31	74	8.31	11.11
	31-40 %	178	19.98	178	19.98	31.09
	41-50 %	315	35.35	315	35.35	66.44
	51-60 %	199	22.33	199	22.33	88.78
	61-70 %	60	6.73	60	6.73	95.51
17	71-80 %	21	2.36	21	2.36	97.87
	81-90 %	19	2.13	19	2.13	100.00
	11-20 %	30	4.41	30	4.41	4.41
	21-30 %	73	10.72	73	10.72	15.12
	31-40 %	287	42.14	287	42.14	57.27
	41-50 %	206	30.25	206	30.25	87.52
17	51-60 %	58	8.52	58	8.52	96.04
	61-70 %	14	2.06	14	2.06	98.09
	71-80 %	13	1.91	13	1.91	100.00



PERCENT GREEN TIME (WHEN SIGNALS EXIST)
AREA=URBANIZED

PERCENTAGE BAR CHART

FUNC_CL	GREEN	TYPICAL % GREEN TIME	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT	
11	21-30 %	█	1	1	2.63	2.63	
	31-40 %	█	4	5	10.53	13.16	
	41-50 %	█	5	10	13.16	26.32	
	51-60 %	█	15	25	39.47	65.79	
	61-70 %	█	10	35	26.32	92.11	
	71-80 %	█	3	38	7.89	100.00	
	81-90 %						
12	11-20 %	█	7	7	1.79	1.79	
	21-30 %	█	10	17	2.56	4.36	
	31-40 %	█	30	47	7.69	12.05	
	41-50 %	█	102	149	25.15	38.21	
	51-60 %	█	127	276	32.56	70.77	
	61-70 %	█	87	363	22.31	93.08	
	71-80 %	█	16	379	4.10	97.18	
	81-90 %	█	11	390	2.82	100.00	
14	01-10 %		13	13	0.24	0.24	
	11-20 %	█	34	47	0.63	0.86	
	21-30 %	█	242	289	4.45	5.32	
	31-40 %	█	562	851	10.34	15.65	
	41-50 %	█	1718	2569	31.60	47.26	
	51-60 %	█	1619	4188	29.78	77.04	
	61-70 %	█	944	5132	17.37	94.41	
	71-80 %	█	232	5364	4.27	98.68	
	81-90 %	█	72	5436	1.32	100.00	
	16	01-10 %		16	16	0.39	0.39
		11-20 %	█	90	106	2.22	2.61
21-30 %		█	324	430	7.98	10.59	
31-40 %		█	857	1287	21.11	31.70	
41-50 %		█	1351	2638	33.28	64.98	
51-60 %		█	990	3628	24.38	89.36	
61-70 %		█	291	3919	7.17	96.53	
71-80 %		█	102	4021	2.51	99.04	
81-90 %		█	39	4060	0.96	100.00	
17		01-10 %		20	20	0.67	0.67
		11-20 %	█	156	176	5.23	5.90
	21-30 %	█	443	619	14.86	20.76	
	31-40 %	█	941	1560	31.56	52.31	
	41-50 %	█	987	2547	33.10	85.41	
	51-60 %	█	292	2839	9.79	95.20	
	61-70 %	█	106	2945	3.55	98.75	
71-80 %	█	25	2970	0.84	99.60		
81-90 %	█	12	2982	0.40	100.00		



PERCENTAGE

V/C RATIO

(Calculated value)

- data shown is for paved sections only
- in all areas, the peaks become more pronounced with lower functional classes (minimum of 2 lanes, built for access not capacity)
- in rural or small urban areas, the higher functional classes generally peak in the 0.11-0.20 range; those in the lower, peak in the 0.01-0.10 range
- in urbanized areas, peaks generally fall in the 0.31-0.40 range in the higher functional classes, and in the 0.01-0.10 range in the lower
- as expected, the highest V/C ratios occur in the higher functional classes in the urbanized areas

1985 HPMS Sample Data

V/C RATIO
(PAVED SECTIONS ONLY)
AREA=RURAL

PERCENTAGE BAR CHART

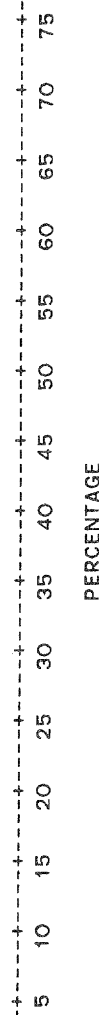
=VOLUME/CAPACITY RATIO

FUNC_CL	VC_RATIO	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
01	.01-.10	596	596	12.88	12.88
	.11-.20	1204	1800	26.02	38.89
	.21-.30	962	2762	20.79	59.68
	.31-.40	601	3363	12.99	72.67
	.41-.50	440	3803	9.51	82.17
	.51-.60	267	4070	5.77	87.94
	.61-.70	228	4298	4.93	92.87
	.71-.80	154	4452	3.33	96.20
	.81-.90	67	4519	1.45	97.64
	.91-1.00	34	4553	0.73	98.38
	1.01-1.10	23	4576	0.50	98.88
	1.11-1.20	22	4598	0.48	99.35
	1.21-1.30	12	4610	0.26	99.61
	1.31+	18	4628	0.39	100.00
02	.01-.10	1163	1163	11.45	11.45
	.11-.20	2613	3776	25.73	37.18
	.21-.30	2240	6016	22.06	59.24
	.31-.40	1526	7542	15.03	74.26
	.41-.50	969	8511	9.54	83.80
	.51-.60	577	9088	5.68	89.48
	.61-.70	332	9420	3.27	92.75
	.71-.80	244	9664	2.40	95.16
	.81-.90	125	9789	1.23	96.39
	.91-1.00	112	9901	1.10	97.49
	1.01-1.10	69	9970	0.68	98.17
	1.11-1.20	58	10028	0.57	98.74
	1.21-1.30	41	10069	0.40	99.14
	1.31+	87	10156	0.86	100.00
06	.01-.10	1683	1683	25.82	25.82
	.11-.20	1926	3609	29.55	55.37
	.21-.30	1120	4729	17.18	72.55
	.31-.40	613	5342	9.40	81.96
	.41-.50	358	5700	5.49	87.45
	.51-.60	216	5916	3.31	90.76
	.61-.70	144	6060	2.21	92.97
	.71-.80	122	6182	1.87	94.85
	.81-.90	99	6281	1.52	96.36
	.91-1.00	49	6330	0.75	97.12
	1.01-1.10	51	6381	0.78	97.90
	1.11-1.20	38	6419	0.58	98.48
	1.21-1.30	31	6450	0.48	98.96
	1.31+	68	6518	1.04	100.00
07	NONE	3	3	0.06	0.06
	.01-.10	2690	2693	49.99	50.05
	.11-.20	1106	3799	20.55	70.60
	.21-.30	494	4293	9.18	79.78
	.31-.40	321	4614	5.97	85.75
.41-.50	195	4809	3.62	89.37	

V/C RATIO
(PAVED SECTIONS ONLY)
AREA=RURAL

PERCENTAGE BAR CHART

FUNC_CL	VC_RATIO	=VOLUME/CAPACITY RATIO	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT	
O8	.51-.60	█	146	4955	2.71	92.08	
	.61-.70	█	99	5054	1.84	93.92	
	.71-.80	█	77	5131	1.43	95.35	
	.81-.90	█	51	5182	0.95	96.30	
	.91-1.00	█	41	5223	0.76	97.06	
	1.01-1.10	█	37	5260	0.69	97.75	
	1.11-1.20	█	32	5292	0.59	98.35	
	1.21-1.30	█	17	5309	0.32	98.66	
	1.31+	█	72	5381	1.34	100.00	
	NONE			44	44	0.80	0.80
	.01-.10	█	4152	4196	75.75	76.56	
	.11-.20	█	677	4873	12.35	88.91	
	.21-.30	█	268	5141	4.89	93.80	
	.31-.40	█	131	5272	2.39	96.19	
.41-.50	█	79	5351	1.44	97.63		
.51-.60	█	40	5391	0.73	98.36		
.61-.70	█	26	5417	0.47	98.83		
.71-.80	█	18	5435	0.33	99.16		
.81-.90	█	10	5445	0.18	99.34		
.91-1.00	█	16	5461	0.29	99.64		
1.01-1.10	█	4	5465	0.07	99.71		
1.11-1.20	█	2	5467	0.04	99.74		
1.21-1.30	█	1	5468	0.02	99.76		
1.31+	█	13	5481	0.24	100.00		



V/C RATIO
(PAVED SECTIONS ONLY)
AREA=SMALL URBAN

PERCENTAGE BAR CHART

=VOLUME/CAPACITY RATIO

FUNC_CL VC_RATIO

FREQ CUM. FREQ PERCENT CUM. PERCENT

FUNC_CL	VC_RATIO	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
11	.01-.10	65	65	8.39	8.39
	.11-.20	182	247	23.48	31.87
	.21-.30	163	410	21.03	52.90
	.31-.40	96	506	12.39	65.29
	.41-.50	88	594	11.35	76.65
	.51-.60	66	660	8.52	85.16
	.61-.70	60	720	7.74	92.90
	.71-.80	21	741	2.71	95.61
	.81-.90	24	765	3.10	98.71
	.91-1.00	1	766	0.13	98.84
	1.01-1.10	2	768	0.26	99.10
	1.11-1.20	1	769	0.13	99.23
	1.21-1.30	3	772	0.39	99.61
	1.31+	3	775	0.39	100.00
12	.01-.10	52	52	8.25	8.25
	.11-.20	201	253	31.90	40.16
	.21-.30	125	378	19.84	60.00
	.31-.40	99	477	15.71	75.71
	.41-.50	54	531	8.57	84.29
	.51-.60	42	573	6.67	90.95
	.61-.70	16	589	2.54	93.49
	.71-.80	21	610	3.33	96.83
	.81-.90	6	616	0.95	97.78
	.91-1.00	2	618	0.32	98.10
	1.01-1.10	2	620	0.32	98.41
	1.11-1.20	4	624	0.63	99.05
	1.21-1.30	4	628	0.63	99.68
	1.31+	2	630	0.32	100.00
14	NONE	1	1	0.01	0.01
	.01-.10	463	464	6.55	6.56
	.11-.20	1253	1717	17.73	24.29
	.21-.30	1274	2991	18.02	42.31
	.31-.40	1024	4015	14.49	56.80
	.41-.50	791	4806	11.19	67.99
	.51-.60	568	5374	8.04	76.02
	.61-.70	447	5821	6.32	82.35
	.71-.80	306	6127	4.33	86.67
	.81-.90	255	6382	3.61	90.28
	.91-1.00	205	6587	2.90	93.18
	1.01-1.10	134	6721	1.90	95.08
	1.11-1.20	104	6825	1.47	96.55
	1.21-1.30	87	6912	1.23	97.78
1.31+	157	7069	2.22	100.00	
16	.01-.10	1141	1141	27.19	27.19
	.11-.20	961	2102	22.90	50.10
	.21-.30	682	2784	16.25	66.35
	.31-.40	420	3204	10.01	76.36
	.41-.50	270	3474	6.43	82.79

V/C RATIO
(PAVED SECTIONS ONLY)
AREA=URBANIZED

PERCENTAGE BAR CHART

=VOLUME/CAPACITY RATIO

FUNC_CL	VC_RATIO	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
11	.01-.10	37	37	0.84	0.84
	.11-.20	197	234	4.48	5.32
	.21-.30	377	611	8.57	13.89
	.31-.40	484	1095	11.00	24.89
	.41-.50	525	1620	11.93	36.82
	.51-.60	511	2131	11.61	48.43
	.61-.70	442	2573	10.05	58.48
	.71-.80	411	2984	9.34	67.82
	.81-.90	353	3337	8.02	75.84
	.91-1.00	245	3582	5.57	81.41
	1.01-1.10	229	3811	5.20	86.61
	1.11-1.20	194	4005	4.41	91.02
	1.21-1.30	150	4155	3.41	94.43
1.31+	245	4400	5.57	100.00	
12	.01-.10	56	56	1.75	1.75
	.11-.20	359	415	11.21	12.96
	.21-.30	482	897	15.05	28.01
	.31-.40	412	1309	12.87	40.88
	.41-.50	407	1716	12.71	53.59
	.51-.60	310	2026	9.68	63.27
	.61-.70	253	2279	7.90	71.17
	.71-.80	215	2494	6.71	77.89
	.81-.90	173	2667	5.40	83.29
	.91-1.00	138	2805	4.31	87.60
	1.01-1.10	96	2901	3.00	90.60
	1.11-1.20	110	3011	3.44	94.03
	1.21-1.30	77	3088	2.40	96.44
1.31+	114	3202	3.56	100.00	
14	.01-.10	386	386	3.58	3.58
	.11-.20	904	1290	8.38	11.95
	.21-.30	1192	2482	11.05	23.00
	.31-.40	1257	3739	11.65	34.65
	.41-.50	1243	4982	11.52	46.16
	.51-.60	1078	6060	9.99	56.15
	.61-.70	949	7009	8.79	64.95
	.71-.80	801	7810	7.42	72.37
	.81-.90	637	8447	5.90	78.27
	.91-1.00	584	9031	5.41	83.68
	1.01-1.10	468	9499	4.34	88.02
	1.11-1.20	382	9881	3.54	91.56
	1.21-1.30	310	10191	2.87	94.43
1.31+	601	10792	5.57	100.00	
16	NONE	1	1	0.01	0.01
	.01-.10	1272	1273	12.53	12.54
	.11-.20	1742	3015	17.16	29.70
	.21-.30	1384	4399	13.63	43.34
	.31-.40	1123	5522	11.06	54.40
.41-.50	953	6475	9.39	63.79	

V/C RATIO
(PAVED SECTIONS ONLY)
AREA=URBANIZED

PERCENTAGE BAR CHART

=VOLUME/CAPACITY RATIO

FUNC_CL VC_RATIO

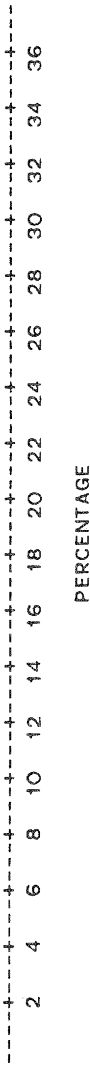
FREQ CUM. PERCENT CUM. PERCENT

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639 7922 6.29 78.04
487 8409 4.80 82.84
422 8831 4.16 87.00
306 9137 3.01 90.01
274 9411 2.70 92.71
207 9618 2.04 94.75
166 9784 1.64 96.38
367 10151 3.62 100.00

17

NONE

4287 4291 0.03 0.03
2334 6625 37.29 37.33
1469 8094 20.30 57.63
953 9047 12.78 70.41
705 9752 8.29 78.70
473 10225 6.13 84.83
331 10556 4.11 88.94
246 10802 2.88 91.82
156 10958 1.36 93.96
133 11091 1.16 95.32
123 11214 1.07 96.48
83 11297 0.72 97.55
54 11351 0.47 98.27
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CORRELATION

Pavement Heft / Condition / Trucks

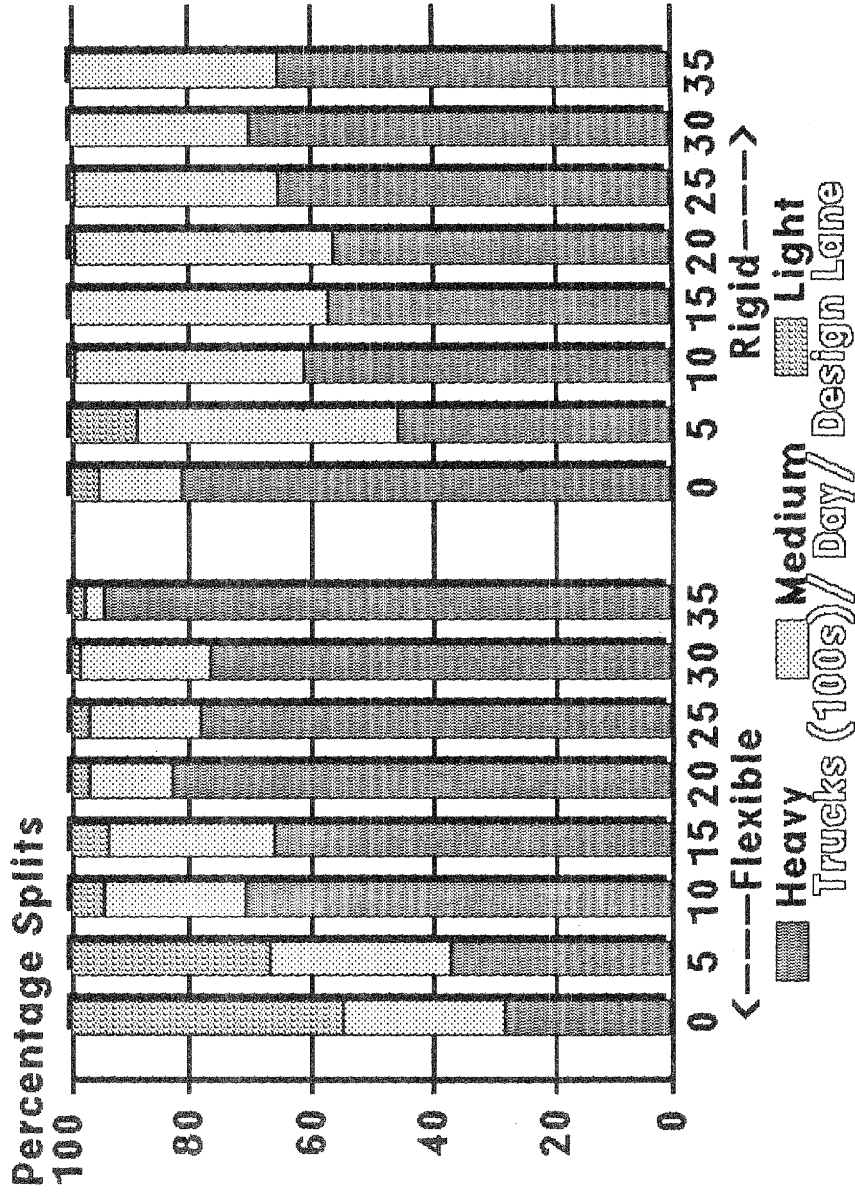
(Items 34,35,36,54b)

- a crosstabulation table was run for two variables: heft of pavements and pavement condition; MEDIUM & HEAVY sections had similar distributions in PSR values; LIGHT sections had a greater proportion of lower rated pavements
- for the two variables: pavement condition and trucks/day/design lane, there seemed to be no bias
- for the two variables: trucks/day/design lane and heft of pavements, for flexible pavements, heavier pavements were associated with higher # of trucks; for rigid pavements, the results were inconclusive (perhaps due to standard designs)

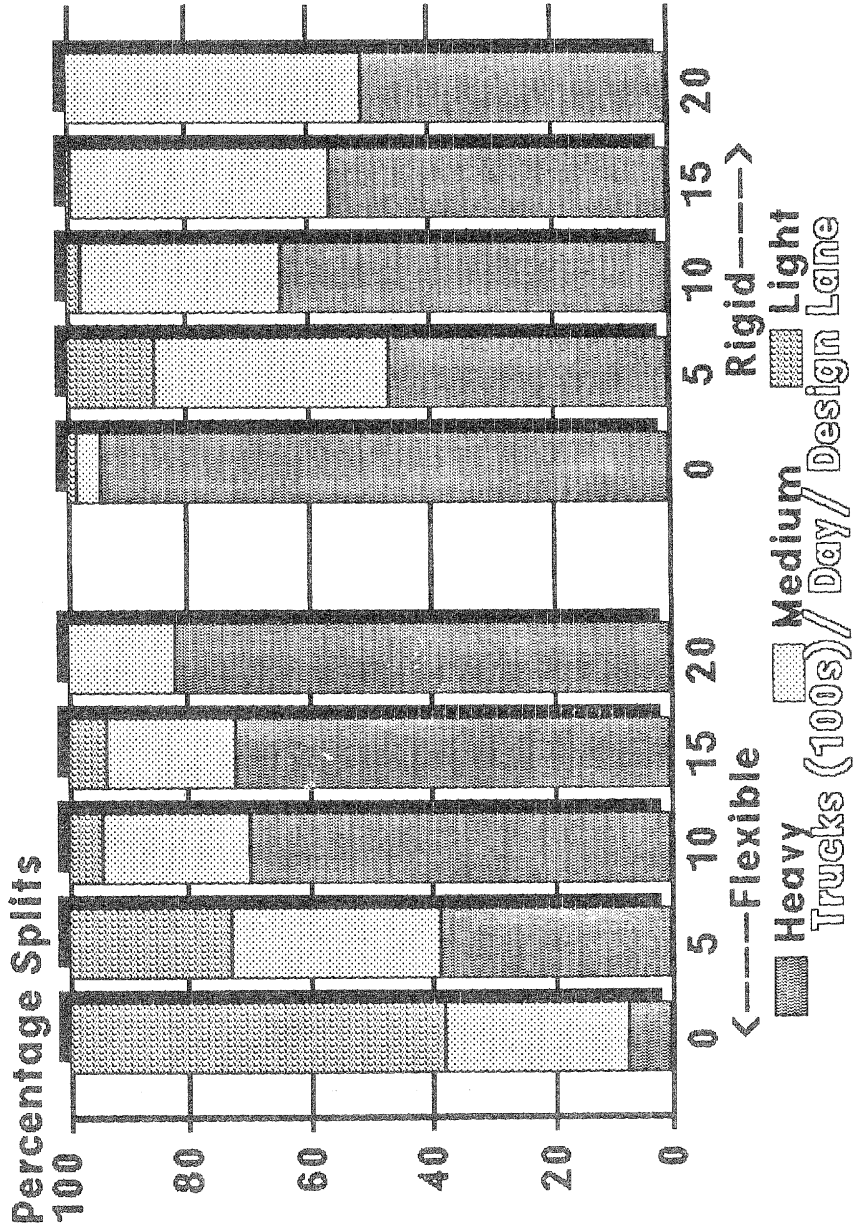
1985 HPMS Sample Data

RELATION: BEFT OF PAVEMENT AND # TRUCKS

AREA-RURAL

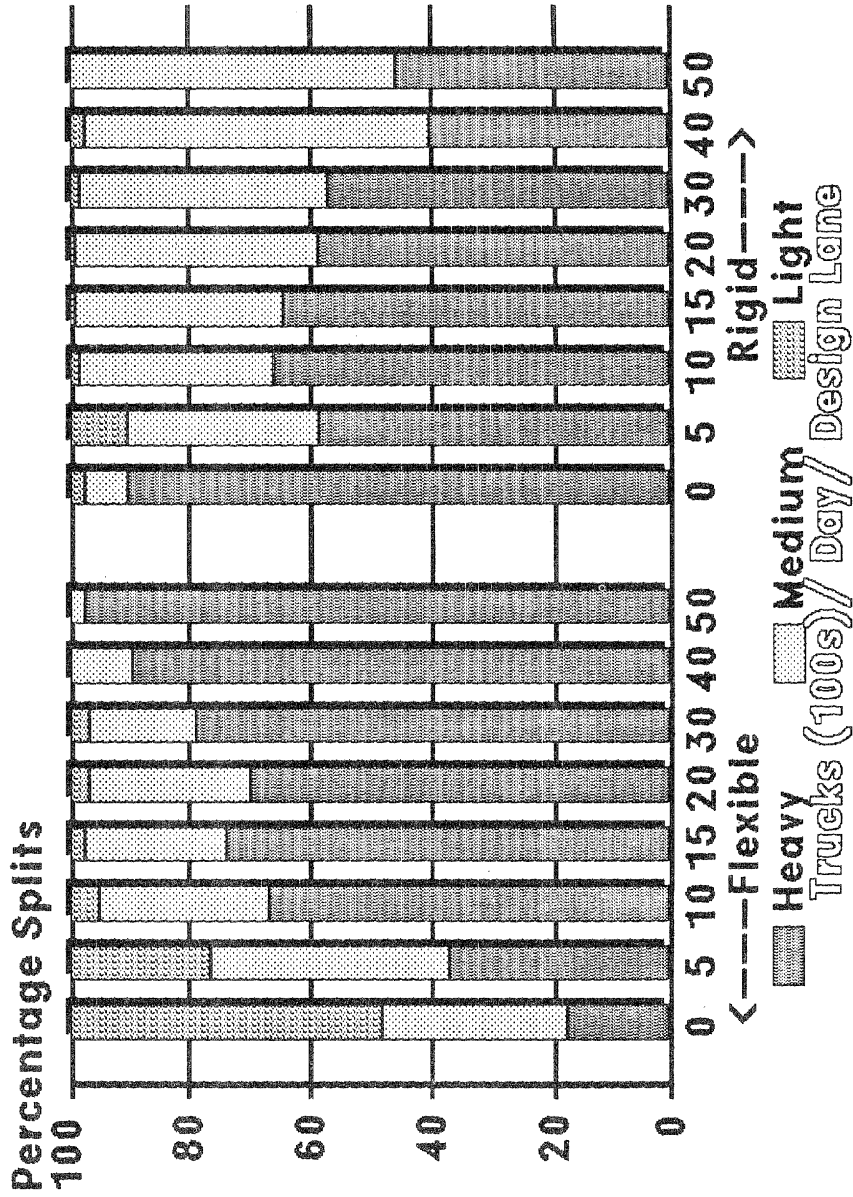


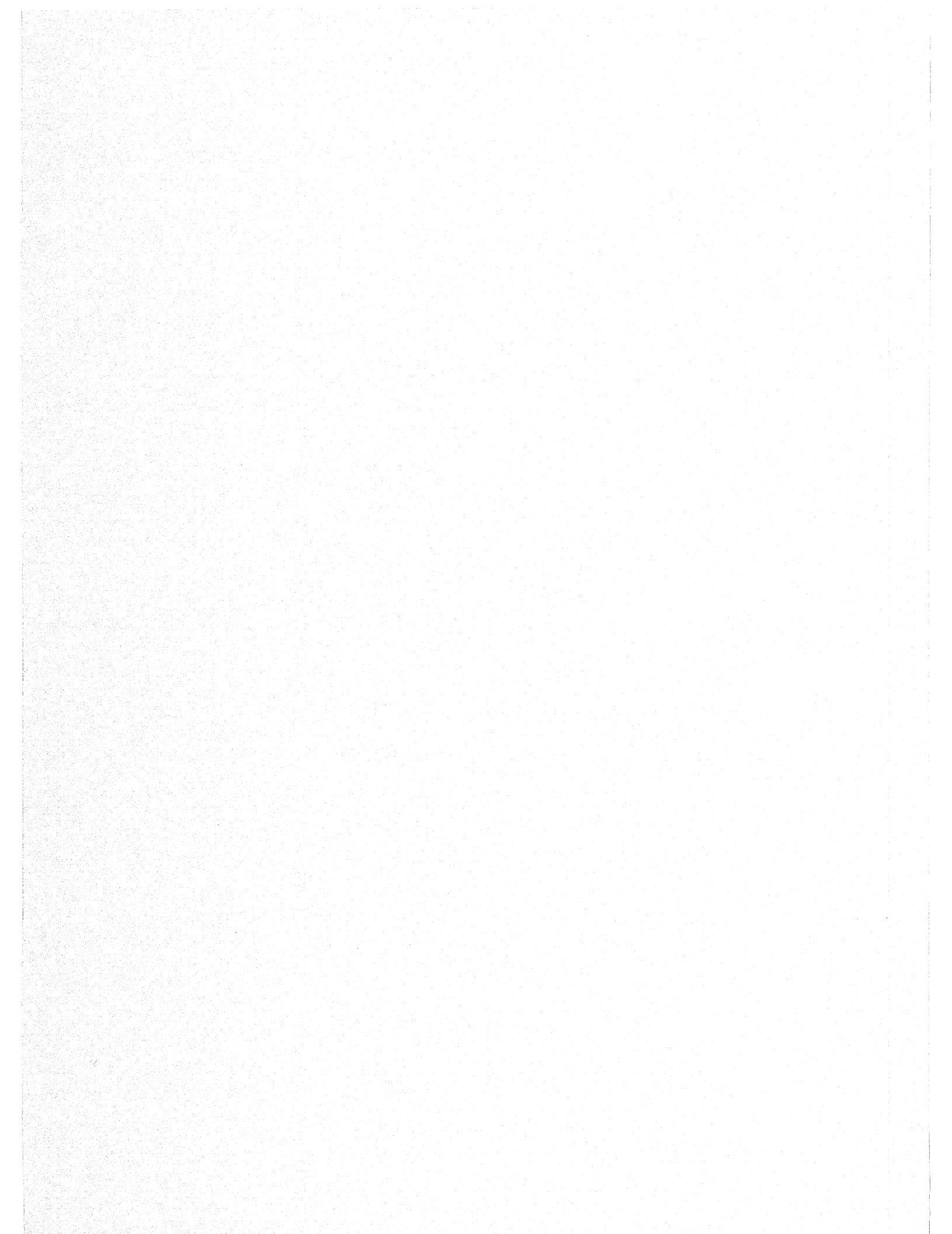
RELATION: HEFT OF PAVEMENT AND # TRUCKS
AREA - SMALL URBAN



RELATION: HEFT OF PAVEMENT AND # TRUCKS

AREA-URBANIZED





HPN-21/7-87(200)QE