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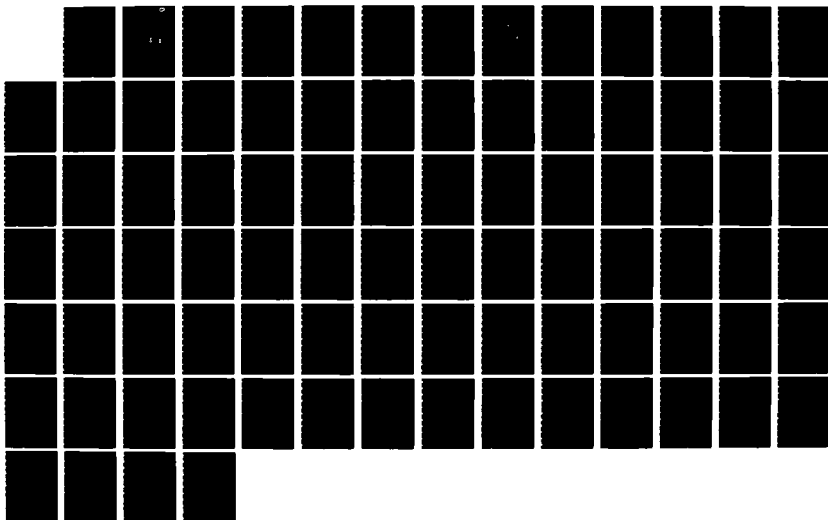
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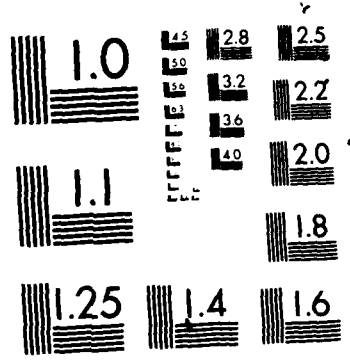
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Special Report 86-13

June 1986



**US Army Corps
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Cold Regions Research &
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A description of the building materials data base for Portland, Maine

Carolyn J. Merry and Perry J. LaPotin

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) A building materials sampling program for the Portland, Maine, region was conducted in July and August 1984 to examine the types and amounts of building surface materials exposed to acid deposition. The stratified, systematic, unaligned random sampling approach was used to generate sample points across the six sampling frame areas. A minimum of 70 sample points was examined per sampling frame to yield a total sample size of 461 points. Building sizes, surface materials, roof characteristics, roof-mounted apparatus, chimneys, gutters, downspouts and fences were recorded. This report provides an initial summary of the data collected. <i>Keywords:</i>		

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PREFACE

This report was prepared by Carolyn J. Merry, Research Physical Scientist, Earth Sciences Branch, Research Division, U.S. Army Cold Regions Research and Engineering Laboratory, and Perry J. LaPotin, Senior Programmer, Department of Physics and Astronomy, Dartmouth College, Hanover, New Hampshire. This research was funded under the U.S. Army Corps of Engineers Civil Works Remote Sensing Research Program, CWIS 32297, Demonstration of Satellite Digital Data in Corps Planning, Engineering and Operational Activities, in cooperation with the National Acid Precipitation Assessment Program run the the U.S. Environmental Protection Agency.

The authors extend their appreciation to Dr. Harlan McKim (CRREL), who was a co-investigator on this project, for his support and helpful technical discussions on the study; to William Porter, 1st Lt. Jeffrey Songco (CRREL), Celia Nawawi (Dartmouth College) and Thomas Johnson (U.S. Geological Survey) for assistance in gathering the building inventory data in Portland; to Doris French (Dartmouth College) for typing the data into the computer; to Sonya Travis (CRREL) and Celia Nawawi for coding the data from the worksheets and editing the Portland data base; and to Professor Thomas Adler (Thayer School of Engineering, Dartmouth College) and Dr. Harlan McKim for their technical reviews of this manuscript.

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A DESCRIPTION OF THE BUILDING MATERIALS DATA BASE FOR PORTLAND, MAINE

Carolyn J. Merry and Perry J. LaPotin

INTRODUCTION

Background

The Interagency Task Force on Acid Precipitation manages the National Acid Precipitation Assessment Program (NAPAP). There are ten Task Groups, one for each of the nine research areas in the National Program and one for international activities (Table 1). The goal of NAPAP is to develop and improve a data base that will help us understand the causes and effects of acid deposition and how it can be effectively managed. Our work on the acid rain program has been with the Environmental Protection Agency in support of Task Group G, which looks at Effects on Building Materials and Cultural Resources, as part of the ongoing effort to examine the type and magnitude of building materials exposed to acid deposition in the northeastern United States.

Table 1. The ten Task Groups within the National Acid Precipitation Assessment Program (after Interagency Task Force on Acid Precipitation 1984).

Task group		Coordinating agency*
A	Natural sources	NOAA
B	Man-made sources	DOE
C	Atmospheric processes	NOAA
D	Deposition monitoring	DOI
E	Aquatic effects	EPA
F	Terrestrial effects	USDA
G	Effects on materials and cultural resources	DOI
H	Control technologies	EPA
I	Assessments	EPA
J	International activities	DOS

-
- * NOAA - National Oceanic and Atmospheric Administration
DOE - Department of Energy
DOI - Department of Interior
EPA - Environmental Protection Agency
USDA - United States Department of Agriculture
DOS - Department of State

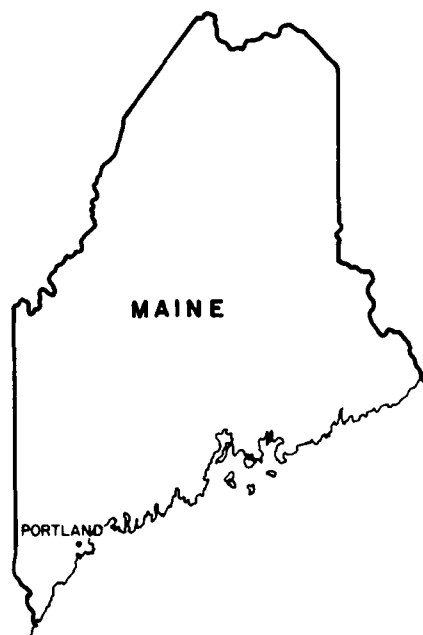


Figure 1. Location of Portland, Maine.

Objective

The purpose of this report is to present the data base of building materials collected for Portland, Maine (Fig. 1). This city was selected as it was similar in land area and population size to New Haven, Connecticut,* where similar data were collected. The data from New Haven and Portland can then be compared to see how well one city's characteristics could be extrapolated from the other city. Distribution summaries will be presented in the form of frequency tables, histograms and bar charts. In future reports the data will be analyzed to determine the suitability of various indicators in predicting the building materials distribution.

DESIGN OF THE FIELD SAMPLING PROGRAM

Sampling frame definition

The city of Portland, Maine, was subdivided into the sampling frames of Urban Central Business District (UCBD), Urban Livelihood, Industrial-Commercial (ULIC), Urban Multi-Family Residential (UMFR), Urban Single-Family Residential (USFR), Nonurban Suburbanizing (NSUB) and Nonurban Rural

* Personal communication with J. Wray, U.S. Geological Survey, 1984.

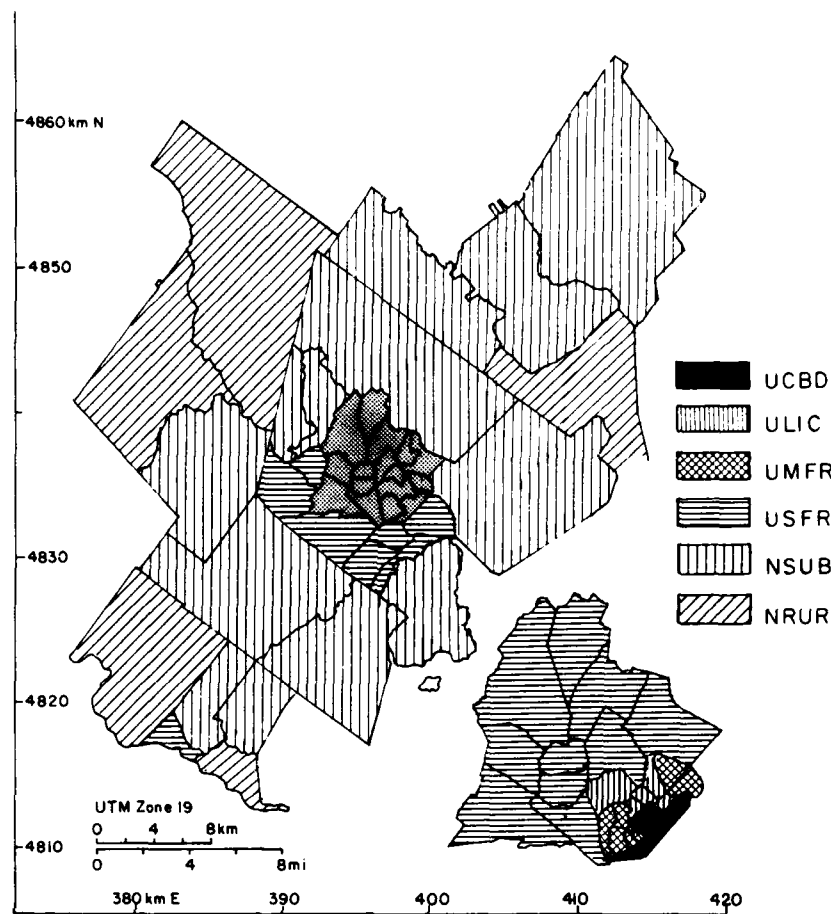


Figure 2. Sampling frames for the Portland, Maine, area (map provided by J. Wray, Urban Geographer, U.S.G.S.).

(NRUR) (Fig. 2). Each sampling frame consists of a number of census tracts that have a commonality on the basis of population density, single-unit dwellings and land use (Rosenfield 1984). The two 1980 census variables were population density in persons per square kilometre and percent of dwelling units in one-unit structures. The three variables of land use (circa 1973) were percent of area with residential buildings, percent of area with nonresidential buildings and percent of area that is open land (Table 2). The water surface area within a tract was not considered. These data were used in the Statistical Analysis System (SAS) to group the tracts into sampling frames.*

* Personal communication with J. Wray, U.S. Geological Survey, 1984.

Table 2. The U.S. Geological Survey land use and land cover categories (after Anderson et al. 1976 and Rosenfield 1984).

<u>Collapsed categories</u>	<u>Level I</u>	<u>Level II</u>
Built residential	1 Urban or builtup land	11 Residential
Built nonresidential		12 Commercial and services
		13 Industrial
		14 Transportation, communications and utilities
		15 Industrial and commercial complexes
		16 Mixed urban or builtup land
		17 Other urban or builtup land
Open land, with buildings	2 Agricultural land	21 Cropland and pasture
		22 Orchards, groves, vineyards, nurseries and ornamental horticultural areas
		23 Confined feeding operations
		24 Other agricultural land
Open land, without buildings	3 Rangeland	31 Herbaceous rangeland
		32 Shrub and brush rangeland
		33 Mixed rangeland
	4 Forest land	41 Deciduous forest land
		42 Evergreen forest land
		43 Mixed forest land
Omitted from analysis	5 Water	51 Streams and canals
		52 Lakes
		53 Reservoirs
		54 Bays and estuaries
Open land, without buildings	6 Wetland	61 Forested wetland
		62 Nonforested wetland
	7 Barren land	71 Dry salt flats
		72 Beaches
		73 Sandy areas other than beaches
		74 Bare exposed rocks
		75 Strip mines, quarries and gravel pits
		76 Transitional areas
		77 Mixed barren land

Selection of sample points

The sample size of 70 was calculated previously from the Revere, Massachusetts, data base of buildings (Merry and LaPotin 1985a) by multiplying the minimum sample size determined from the cumulative multinomial distribution (30) by the design effect (2.34) from the Revere data (Rosenfield 1984).

The sample points were generated by the U.S. Geological Survey using a stratified, systematic, unaligned random sampling procedure. Previously, a similar sampling procedure (stratified, systematic, unaligned) was used by the U.S. Geological Survey for selecting samples for use in accuracy testing of the land use and land cover maps produced under the National Land Use and Land Cover Mapping Program (Ling and Rosenfield 1980). An advantage of the systematic sampling algorithm is that it distributes the sample units equitably over the entire sampling frame. In addition, sample points are area weighted, and proportionally allocated on the basis of area (Rosenfield 1984). Table 3 displays the total number of points that were generated for the Portland field survey program. The UTM coordinates for each sample point are shown in Appendix A.

Each sample point had a corresponding "footprint" or a given spatial area on the ground that had to be examined in the field. We used the same footprint areas as we had used in New Haven (Table 4) because of the unavailability of the 1980 census data at the time of the field work (see Merry and LaPotin [1985b] for a description of how the footprint size was determined). We felt that these values were reasonable to use since the two cities were comparable in land area and population density.*

Table 3. Number of sample points for the Portland, Maine, building materials inventory.

Sampling frame	Number of points with buildings	Number of empty points	Total points
UCBD	42 (50%)	42 (50%)	84 (100%)
ULIC	59 (72%)	23 (28%)	82 (100%)
UMFR	44 (56%)	34 (44%)	78 (100%)
USFR	36 (49%)	38 (51%)	74 (100%)
NSUB	24 (34%)	46 (66%)	70 (100%)
NRUR	15 (20%)	58 (80%)	73 (100%)
Total	220 (48%)	241 (52%)	461 (100%)

* Personal communication with J. Wray, U.S. Geological Survey 1984.

Table 4. Footprint sizes for the Portland, Maine, sampling frames.

Sampling frame	Footprint size	
	(ft)	(m)
UCBD	139	42
ULIC	144	44
UMFR	90	27
USFR	87	26
NSUB	364	111
NRUR	364	111

Field survey

The field program began in July 1984 and was completed within two months by two-person teams. One person normally recorded the dimensions and material types of the building; the other person took photographs of the building and used an optical rangefinder to determine its height.

The building worksheet was developed for a committee composed of representatives from CRREL, the EPA's Environmental Sciences Research Laboratory at Research Triangle Park and the U.S. Bureau of Standards. The worksheet form was designed to provide information on: the spatial location of the building in UTM coordinates; characteristics of the surrounding terrain in terms of census tract, land use type and sampling frame; dimensions and type of building; lot size dimensions; materials distribution percentages in the foundation, first story, and all above stories; and the surface area and material types for the roof, roof-mounted apparatus (vents, flues, stacks, skylights and flashing), chimneys, rain gutters, downspouts and fences. The worksheet used in the Portland field survey is shown in Appendix A. The worksheet was redesigned from the New Haven survey to allow more space for recording the data. Also, the column fields (from which the data variables were recorded) were placed on the worksheet to make it easier to code the data onto sheets for typing into the computer.

DATA DESCRIPTION

Each sample point was recorded on an individual data sheet during the survey. If the sample point was empty, the sections concerning description of the building were coded as zeros. If there was more than one building per sample point, a separate worksheet was completed for every building. These worksheets were used to develop a composite building. The composite worksheet represents the distribution of materials found for all the buildings in the footprint. The data were checked several times using the procedures described in Appendix A.

The variables assigned to the Portland field data are described in Appendix B. The frequency runs for the variables are organized by variable type (e.g., major classification, census tract data, general building description). The page formats are organized so that for each variable, numeric summaries are provided first (e.g., the labels for each value with frequency of occurrence and percent of the distribution), followed by graphic presentation (histogram or bar chart), and ending with statistical summaries (e.g., mean, mode, skewness and kurtosis). The sample size is presented at the bottom of each summary section, along with the number of missing observations. Each observation corresponds to a sample point within one of the six sampling frames in Portland. Figure 3 is an example of how the frequency runs are presented in Appendix B.

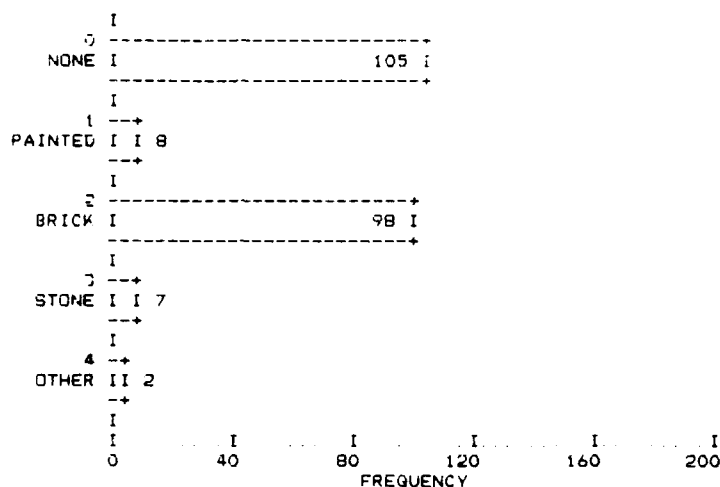
Certain variables in our data set describe the building material exposure and distribution, for example, exposed walls in footprint (EWIF) and average wall height (HT). The corresponding frequency runs for the building description variables are tabulated using the sample size of 220, where buildings were observed in the footprints (Table 3). All other variables not related to the building descriptions use the 461 total cases.

The column headings marked VALUE represent the actual observed value for the variable. Frequency (denoted FREQ) represents the number of cases falling within the category. Percent (PCT) and cumulative percent (CUM PCT) represent the percent of the total falling within the specified category and the running cumulative percent, respectively. The cumulative percent for the last category is always 100.

Analysis was done using the Statistical Package for the Social Sciences (SPSS) software on a VAX-11/785 minicomputer (Nie et al. 1975). A

CMAT CHIMNEY MATERIAL

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
NONE	0	105	47.7	47.7	47.7
PAINTED	1	8	3.6	3.6	51.4
BRICK	2	98	44.5	44.5	95.9
STONE	3	7	3.2	3.2	99.1
OTHER	4	2	.9	.9	100.0
	TOTAL	220	100.0	100.0	



MEAN	1.059	STD ERR	.072	MEDIAN	1.000
MODE	0.0	STD DEV	1.065	VARIANCE	1.133
KURTOSIS	-1.369	S E KURT	1.991	SKEWNESS	.225
S E SKEW	.164	RANGE	4.000	MINIMUM	0.0
MAXIMUM	4.000	SUM	233.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	0.0	33.30	0.0
50.00	1.000	66.70	2.000	75.00	2.000
90.00	2.000				

VALID CASES 220 MISSING CASES 0

Figure 3. Sample page of frequency analysis data.

more in-depth discussion of the summary statistics can be found in most elementary applied statistics texts (see Snedecor and Cochran 1980).

DISCUSSION

The frequencies in Appendix B are separated into six sections. The Major Classification Variables section includes the distribution of land use designation (LU), sampling frame (SFRAME), sample point number (SPOINT) and census tract (TRACT) for the 461 total observations.

The land use classification for each sample point (LU) was based on its location within the digital land use data base from the Geographic

Information Retrieval and Analysis System (GIRAS) (Mitchell et al. 1977). The aerial photography used in GIRAS is dated from 1972-74 (Loelkes 1977). The minimum mapping unit for the land cover map is 10 acres (0.04 km²) for the level II categories 11-17, 23-24, 51-54, 75 and urban occurrences of 76 (Table 2). The minimum mapping unit for the remaining level II categories was 40 acres (0.16 km²).

About 30% of the sampled footprints in Portland fall within the residential land use class. Another 22% are within the commercial and services land use class, 19% are within the cropland category and 15% are within the transportation land use class. These four land uses make up 86% of the sampled footprints. Cumulative percents show that 81% of the sample points fall within the level I category of urban or builtup land, with the remaining 19% found within the level I category of agriculture.

The sampling frame (SFRAME) shows the distribution of footprints within a given sampling frame. The minimum number of sampled points for a given subcategory is 70, corresponding to the NSUB class. The horizontal bar chart for SFRAME illustrates the uniformity of the sampled distribution and shows that all sampling frames contain the minimum of 70 points.

The census tract (TRACT) variable represents the distribution of sampled footprints within a given tract. The majority (9%) of sample points are within census tract 15, which corresponds to the ULIC sampling frame (Fig. 2 and 4). Another 7% each were found within census tracts (3 and 41) located within UCBD and NRUR respectively. The remaining 77% of the sample points are distributed somewhat uniformly.

Appendix B also includes the available Census Tract Data from the U.S. Bureau of Census, and the land areas within five land use classes derived from the U.S. Geological Survey GIRAS data base (corresponding to the 50 sampled census tracts in Portland). There were eight variables, based on the 1980 census, coded into the Portland data base. Three of the variables included the total population in the census tract (POP), the total number of housing (dwelling) units in a census tract (DU), and the number of dwelling units in one-unit structures (U1). The U.S. Geological Survey combined several of the GIRAS land cover types into five land cover classes that included: the total land area (ALAND), the built residential land use (ABR), the built nonresidential land use (ABNR), the open land containing buildings (AOB) and the open land containing no buildings (AO). All land area values are in millions of square feet.

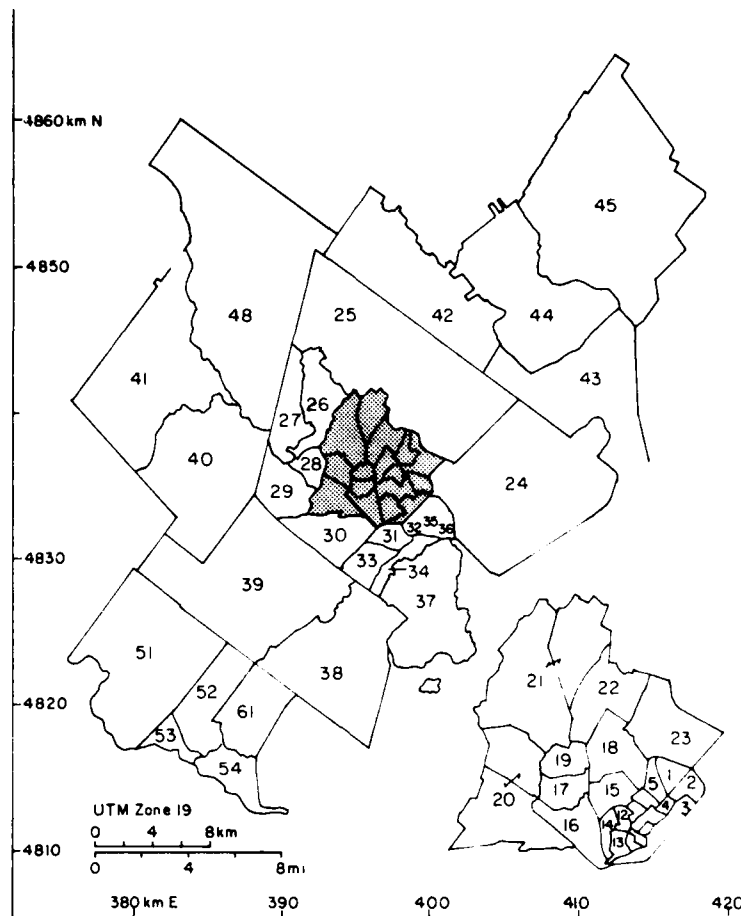


Figure 4. Census tracts for the Portland, Maine, area (after US Census Bureau 1980).

The tract population (POP) variable shows an average population per tract of 3041 persons. The range of population values found within the Portland tracts varies from 34 to over 11,250 people per census tract. The population distribution is skewed slightly to the right, with 75% of the tracts having population values of 3777 people and below.

The total dwelling units (DU) in a given tract varies from 19 to over 4467. The average number of units is 1273, with a similar median value of 1207 units. The average number of dwelling units in one-unit structures (U1) is 593, with a standard deviation of 669 units. Dwelling units range from 1 to 3139 per tract; 90% of the tracts contained 1591 one-unit structures or less.

The remainder of the census tract variables in Appendix B represent the millions of square feet of the total land coverage (ALAND) within the

built residential (ABR), built nonresidential (ABNR), open land with buildings (AOB) and open land without buildings (AO) categories (US Bureau of Census 1980). In comparing the medians of the above five variables, the majority of the land in Portland is in the category of open land without buildings (1.38 million ft²). Overall, the least amount of land was found in the category of area open with buildings, whose median value was 0. The median area of built residential was 693,000 ft² per tract. A median value of 167,000 ft² per tract was categorized as built nonresidential.

The built residential category (ABR) includes the level II urban category, residential (see Table 2). The built nonresidential category (ABNR) includes the urban categories of commercial and services, industrial, transportation, communications and utilities, industrial and commercial complexes, and the mixed urban or builtup land. The open land with buildings category (AOB) includes the other urban or builtup land, and the entire level I agricultural land category. Open without buildings (AO) includes the level I categories of wetlands and barren land.

General Building Descriptions, including wall dimensions, are provided in Appendix B too. Frequencies are tabulated using the 220 cases where buildings were observed. Variables include the approximate age of the structure (AGE), exposed walls in the footprint (EWIF), average wall height (HT), lot size (LOT1 and LOT2), side dimensions (SIDE1 and SIDE2) and the building type (TYPE).

The first variable (AGE) represents the approximate age of the structure using the year 1900 as a base (e.g., 1984 is shown as 84, 1900 as zero, and 1801 as -99). Of the observed structures, 15% were built prior to 1900. The range in building age is 134 years; the mean construction date is 1938; the median construction date is 1944; and the most frequently observed construction date is 1884. The upper third of the building age distribution begins in 1964. The distribution of age is skewed left, reflecting the larger frequency of buildings built prior to 1900.

The exposed walls in footprint (EWIF) is the perimeter (in feet) of the building (or buildings) contained within the footprint. EWIF is recorded for use in calculating the area of building wall surfaces contained within the sampled footprint. Of the 220 structures sighted, 67% show EWIF values of 252 ft and below. The mean EWIF value is 228 ft, with a median value of 180 ft. The percentiles indicate that 10% of the observed structures display EWIF values greater than 407 ft.

The variable indicating average wall height in feet (HT) for a sampled structure is also provided in Appendix B. One quarter of the buildings are 18 ft or less in height. Cumulative percents show that the majority of observed wall heights are below 40 ft (86%). Using 12 ft per story as an average, we see that 11% of the observations are one-story structures, 46% are two-story structures (and below), and 86% are three-story structures (and below). Both mean (29 ft) and median values (25 ft) correspond to an average building size of over two stories. The standard deviation of 19 ft (1.5 stories) reflects the small variance of buildings found in Portland relative to the maximum observed height of 140 ft.

The lot size variables (LOT1 and LOT2) represent the respective length and width dimensions (in feet) of the plot of ground surrounding the sampled structure. The person on the survey team estimated the lot size in the field by using markers, such as fences and the proximity of adjacent buildings. The average lot dimension was 133 ft by 120 ft. The most frequently occurring lot dimension was 100 ft by 50 ft. The percentiles show that 90% of the lots were 260 ft long by 230 ft wide, and below. The overall range of lot dimensions was 570 ft.

The variables SIDE1 and SIDE2 are the respective length and width dimensions of the building in feet. The average building is 85 ft long and 73 ft wide. The median building is somewhat below the average size, with a 52-ft length and 40-ft width. The range of dimensions is 435 ft for SIDE1 and 540 ft for SIDE2. The most frequently occurring dimensions are 30 ft for SIDE1 and 20 ft for SIDE2. Both distributions are skewed to the right (skewness = 2.2 and 3.1) suggesting a greater frequency of smaller-sized buildings.

The building type classification (TYPE) is useful for determining the distribution of individual structures by usage. In the frequency distribution, 241 (52%) of the 461 sampled footprints had no structures (Table 3). Of the footprints containing buildings (220), 44% were found to be one-unit residential structures. The other significant building type was the other commercial buildings category (18%). The remaining building types represented 6% or less of the observations in any given usage class.

The Spatial Areas of Building Materials section follows. It presents the five composite building material classifications recommended by the

Interagency Task Force.* These areas represent square footage of building materials surface potentially exposed to acid deposition. The five composite building materials computed were painted materials (APAIN), mortar-masonry (AMORT), stone materials (ASTONE), galvanized metal (AGALV) and all other materials (AOTHER). From the original building worksheet (Appendix A), the 21 material types were aggregated into the five categories (Table 5).

For the area of painted materials (APAIN), 17% of the sampled structures have no painted wall surfaces. The average exposure of painted

Table 5. The 21 material types grouped into five material types.

APAIN

- Painted wood (excl. stained)
- Painted steel
- Painted aluminum
- Painted masonry
- Painted concrete
- Painted stucco
- Painted other material
- Painted other material (cannot identify)

AMORT

- Bare brick
- Bare block
- Bare field stone

AGALV

- Bare galvanized steel

ASTONE

- Bare marble
- Bare limestone
- Bare granite

AOTHER

- Bare wood (incl. stained)
- Bare concrete
- Bare glass
- Bare vinyl
- Bare other material
- Bare other material (cannot identify)

* Personal communication with F. Lipfert, Brookhaven National Laboratory, 1984.

materials in Portland is 3497 ft^2 with a median exposure of 1917 ft^2 . The standard deviation of 6398 ft^2 reflects an average range for painted exposure from a minimum of 0 ft^2 to a maximum of $73,920 \text{ ft}^2$. Percentiles suggest that 90% of the painted materials exposure is 7925 ft^2 and below. The distribution is extremely skewed to the right (skewness = 7.0) and is far more peaked (kurtosis = 69.0) than a normal distribution with similar mean and standard error.

Areas of exposed mortar-masonry materials (AMORT) were observed for 113 structures, indicating that 49% of the footprints with buildings had no mortar-masonry exposure (i.e., of the total 220 sampled footprints, 51% had mortar-masonry walls). The mean mortar-masonry surface area (2766 ft^2) is higher than the median exposure (67 ft^2), reflecting the skew of the distribution to the right (skewness = 3.4). The range of mortar-masonry surface area is $37,320 \text{ ft}^2$; however, the percentile values show that 75% of the structures have exposures ranging from nothing to 1836 ft^2 . Only 10% of the structures had exposures greater than 8535 ft^2 .

The exposure of bare stone materials (ASTONE) is very rare in the Portland sample. Cumulative frequencies show that 96% of the footprints with buildings have no exposed bare stone surfaces. The summary statistics show that buildings with exposed stone surfaces are on the average 184 ft^2 , with a standard deviation of 1824 ft^2 . The median and mode values were 0; the maximum exposed surface area was $21,900 \text{ ft}^2$.

Very few structures (3%) have bare galvanized steel (AGLAV) exposure. Of the 220 footprints with buildings, 7 structures were composed of some bare galvanized steel. The summary statistics show a median and mode of 0, with a mean exposure of 136 ft^2 . The maximum exposed surface area was $16,250 \text{ ft}^2$.

The fifth composite material class is the other materials category (AOTHER) that includes all other materials not classified into the above categories; 51% of the structures had some exposed materials falling into the AOTHER category. These surface areas are relatively continuous and nonclustering, with a uniform frequency distribution. The percentile values reflect the uniformity of the distribution for surface wall areas of 804 ft^2 and below at the 75th percentile. The upper 10th percentile rises sharply to a maximum AOTHER exposure, for an individual building, of $36,000 \text{ ft}^2$ (the histogram illustrates the sharp rise in values).

Appendix B includes a section called Roof Materials and Roof-Mounted Apparatus Items. The section presents exposed chimney area (CAREA), chimney material (CMAT), exposed roof area (ESAREA), roof material (ERMAT), roof slope (SLOPE) and the roof apparatus items for the observed buildings (ITEM1, APP, RMAT, ITEM2, APPSKY, SKYM, FLMAT, FLLG, APPFL).

The mean surface area of an observed chimney (CAREA) is 37 ft², with a standard deviation of 87 ft². The percentiles indicate that most chimneys are small, usually having less than 24 ft² of exposure (75%). Of the exposed chimneys, the majority are made of brick. The variable CMAT suggests that 85% (98 of the 115 sighted chimneys) were brick.

The exposed surface area of the roof (ESAREA) shows a wide range of values, from 0 ft² to 9999 ft². (One building did not have a roof as it was an old building that had recently been gutted by fire.) The mean surface area observed was 3887 ft², with the most frequently occurring roof size being greater than 9999 ft². The standard deviation was fairly high at 3457 ft². The percentile values indicate that 75% of the roof areas are less than 6410 ft².

The roof material (ERMAT) was predominantly asphalt shingle (55%), followed by tar (30%) and materials that could not be identified (8%). About 30% of the roofs were flat, rather than sloped (i.e., the SLOPE variable).

There were 40 occurrences of vents, flues and stacks (ITEM1); these items were principally (60%) bare aluminum (RMAT).

The field crews sighted six occurrences of skylights in Portland (ITEM2). The skylight framing material (SKYM) was equally divided among painted, bare galvanized, bare aluminum and other material types.

There were 37 occurrences of flashing material (FLMAT). Painted and bare aluminum were the predominant material types (FLMAT) (81% of the 37). The flashing length (FLLG) ranged from 1 ft to over 999 ft, the average being 53 ft. Flashings, however, were sighted on only 17% of the structures sampled.

Rain Gutters, Downspouts and Fences is the last section in Appendix B. Rain gutters (RGMAT) and downspouts (DSPOUT) were found on 90 structures. Most rain gutters and downspouts were painted. The average length of a rain gutter (RGUT) was 54 ft, and for a downspout (DSLENG) the average length was 26 ft. A standard deviation of 116 ft was observed for the rain gutters; the standard deviation was smaller for the downspouts, 46 ft.

There were 44 fences (FENCE) observed within the sampled footprints. The material types were principally bare galvanized chain link. The fence length (FLENG) varied from 5 to greater than 999 ft, and the height (FHT) varied from 2 to 8 ft.

CONCLUSIONS

A building materials sampling program for the Portland, Maine, area was conducted during July and August 1984. The stratified, systematic, unaligned random sampling procedure was applied to generate sample points across the six sampling frame areas. Using this procedure, we surveyed a total of 461 points with a minimum of 70 sample footprints per frame. A diversity of data was taken on building size and surface materials, roof characteristics and roof apparatus, chimneys, gutters, downspouts and fences. The Portland data are summarized according to overall material distribution by structure.

A summary of the composite material classes is provided in Table 6. Notice that 96% and 97% of the sampled structures showed no bare stone and bare galvanized steel exposure. Of the remaining three categories, mortar-masonry exposure and other material exposure were sighted on just under half of the sampled structures (49%). Median exposures suggest that APAINT accounts for the majority of exposure per structure in Portland. As was cited in the New Haven sample (Merry and LaPotin 1985b), the combined AGALV

Table 6. Summary statistics of the five composite material classes.

Composite material class	Mean exposure (ft ²)	Median exposure (ft ²)	Inner quartile (ft ²)	Range (ft ²)	Percent of structures not exhibiting the material class
APAI NT	3497	1917	212 to 4503	73920	17
AMORT	2766	67	0 to 456	37320	49
AGALV	136	0	0 to 0	16250	97
ASTONE	184	0	0 to 0	21900	96
AOTHER	1115	29	0 to 804	36000	49

and ASTONE categories are infrequently observed and should be reclassified to more adequately represent the exposure level by material class.

LITERATURE CITED

- Anderson, J.R., E.E. Hardy, J.T. Roach and R.E. Witmer (1976) A land use and land cover classification system for use with remote sensor data. U.S. Geological Survey, Professional Paper 964.
- Interagency Task Force on Acid Precipitation (1984) Operating Research Plan, vol. I, Research Framework. Washington, D.C: U.S. Government Printing Office.
- Ling, H.S. and G.H. Rosenfield (1980) A computer program for use in testing the accuracy of land use and land cover maps. USGS Internal Report.
- Loelkes, G.L., Jr. (1977) Specifications for land use and land cover and associated maps. U.S. Geological Survey, Open-file Report 77-555.
- Merry, C.J. and P.J. LaPotin (1985a) An analysis of the Revere, Quincy and Stamford structure data bases for predicting building materials distribution. U.S. Army Cold Regions Research and Engineering Laboratory, Special Report 85-7.
- Merry, C.J. and P.J. LaPotin (1985b) A description of the building materials data base for New Haven, Connecticut. U.S. Army Cold Regions Research and Engineering Laboratory, Special Report 85-19.
- Merry, C.J. and H.L. McKim (1984) Method of acquiring structural materials data for use in the EPA acid rain deposition program (abstract). Peer Review Meeting for Materials Effects Task Group G and Assessments and Policy Analysis Task Group I, Research summaries, 14-17 February, Burlington, Vermont. Raleigh: North Carolina State University, Acid Deposition Program.
- Mitchell, W.B., S.C. Guptill, K.E. Anderson, R.G. Fegeas and C.A. Hallam (1977) GIRAS: A geographic information retrieval and analysis system for handling land use and land cover data. U.S. Geological Survey, Professional Paper 1059.
- Nie, N.H., C.H. Hull, J.G. Jenkins, K. Steinbrenner and D.H. Bent (1975) SPSS, Statistical Package for the Social Sciences, 2nd ed. New York: McGraw-Hill Book Company.
- Rosenfield, G.H. (1984) Spatial sample design for building materials inventory for use with an acid rain damage survey (R. Schmidt and H. Smolin, Ed.). The Changing Role of Computers in Public Agencies. 22nd Annual Conference, The Urban and Regional Information Systems Association, 12-15 August, Seattle, Washington, pp. 502-512.
- Snedecor, G.R. and W.G. Cochran (1980) Statistical Methods. Ames: Iowa State University Press.
- U.S. Bureau of Census (1980) Census of population and housing: Census tracts Portland, Maine, SMSA.

APPENDIX A. DATA

Listing of UTM coordinates for each sample point in Portland, Maine

	UTM East	UTM North		UTM East	UTM North
1	399460.00	4834800.00	74	398410.00	4834140.00
2	399350.00	4834660.00	75	397970.00	4834110.00
3	399190.00	4834420.00	76	398180.00	4834090.00
4	399340.00	4834240.00	77	398100.00	4834080.00
5	399120.00	4834160.00	78	398730.00	4834050.00
6	398940.00	4834150.00	79	397840.00	4834030.00
7	398810.00	4834040.00	80	397990.00	4834030.00
8	398870.00	4833980.00	81	398230.00	4833980.00
9	398920.00	4833890.00	82	398150.00	4833940.00
10	398860.00	4833870.00	83	397850.00	4833900.00
11	398660.00	4833790.00	84	398070.00	4833870.00
12	398760.00	4833750.00	85	399110.00	4834950.00
13	398590.00	4833670.00	86	399210.00	4834830.00
14	398680.00	4833660.00	87	398940.00	4834820.00
15	398730.00	4833540.00	88	399030.00	4834790.00
16	398590.00	4833490.00	89	398780.00	4834670.00
17	398530.00	4833420.00	90	399040.00	4834610.00
18	398370.00	4833250.00	91	398810.00	4834570.00
19	398130.00	4833130.00	92	399130.00	4834520.00
20	398040.00	4833090.00	93	398840.00	4834460.00
21	398250.00	4833090.00	94	398580.00	4836000.00
22	397930.00	4833010.00	95	398600.00	4835850.00
23	397760.00	4832970.00	96	398610.00	4835780.00
24	398000.00	4832940.00	97	398650.00	4835650.00
25	397640.00	4832930.00	98	398370.00	4835570.00
26	397510.00	4832910.00	99	398640.00	4835540.00
27	397580.00	4832910.00	100	398470.00	4835460.00
28	397850.00	4832900.00	101	398510.00	4835430.00
29	397720.00	4832890.00	102	398650.00	4835360.00
30	397970.00	4832860.00	103	398430.00	4835350.00
31	397380.00	4832800.00	104	398890.00	4835320.00
32	396920.00	4832750.00	105	398880.00	4835190.00
33	396870.00	4832690.00	106	398520.00	4835150.00
34	398340.00	4835220.00	107	398660.00	4835140.00
35	398190.00	4835170.00	108	398850.00	4835070.00
36	398370.00	4835170.00	109	398700.00	4835060.00
37	398130.00	4835050.00	110	398650.00	4833970.00
38	398000.00	4835040.00	111	398250.00	4833950.00
39	398260.00	4835020.00	112	398290.00	4833950.00
40	397880.00	4834980.00	113	398470.00	4833820.00
41	398530.00	4834970.00	114	398130.00	4833710.00
42	398360.00	4834940.00	115	398580.00	4833710.00
43	398130.00	4834920.00	116	398280.00	4833700.00
44	398230.00	4834910.00	117	398370.00	4833610.00
45	397990.00	4834900.00	118	397940.00	4834780.00
46	398500.00	4834860.00	119	398120.00	4834590.00
47	398200.00	4834850.00	120	397850.00	4834570.00
48	398660.00	4834820.00	121	397990.00	4834520.00
49	398370.00	4834770.00	122	398110.00	4834490.00
50	398480.00	4834780.00	123	397830.00	4834430.00
51	398390.00	4834770.00	124	397840.00	4834300.00
52	398630.00	4834720.00	125	397820.00	4834160.00
53	398300.00	4834710.00	126	396750.00	4835580.00
54	398350.00	4834690.00	127	396930.00	4835520.00
55	398520.00	4834690.00	128	397020.00	4835490.00
56	398370.00	4834540.00	129	396690.00	4835400.00
57	398510.00	4834510.00	130	397110.00	4835380.00
58	398380.00	4834460.00	131	396620.00	4835370.00
59	398580.00	4834460.00	132	396830.00	4835350.00
60	398340.00	4834410.00	133	396370.00	4835310.00
61	398730.00	4834410.00	134	397470.00	4835270.00
62	398750.00	4834340.00	135	397250.00	4835260.00
63	398890.00	4834330.00	136	396980.00	4835240.00
64	398460.00	4834300.00	137	397320.00	4835210.00
65	398060.00	4834290.00	138	397510.00	4835200.00
66	398210.00	4834290.00	139	397110.00	4835180.00
67	398680.00	4834260.00	140	396610.00	4835150.00
68	398590.00	4834250.00	141	396710.00	4835110.00
69	398270.00	4834220.00	142	397690.00	4835110.00
70	398280.00	4834160.00	143	396440.00	4835090.00
71	398520.00	4834160.00	144	396640.00	4835070.00
72	398800.00	4834160.00	145	397860.00	4835070.00
73	398630.00	4834150.00	146	397080.00	4835050.00

	UTM East	UTM North		UTM East	UTM North
147	397220.00	4835030.00	196	397730.00	4834550.00
148	396630.00	4835310.00	197	397250.00	4834420.00
149	397430.00	4834990.00	198	397460.00	4834400.00
150	396340.00	4834950.00	199	397460.00	4834310.00
151	397630.00	4834940.00	200	397480.00	4834090.00
152	396880.00	4834900.00	201	397670.00	4833880.00
153	396410.00	4834890.00	202	397360.00	4833860.00
154	397460.00	4834880.00	203	397800.00	4833790.00
155	396580.00	4834850.00	204	397700.00	4833760.00
156	397250.00	4834850.00	205	397900.00	4833700.00
157	396720.00	4834830.00	206	398190.00	4833510.00
158	397630.00	4834820.00	207	397930.00	4833450.00
159	397740.00	4834770.00	208	398140.00	4833430.00
160	396930.00	4834760.00	209	398250.00	4833280.00
161	397120.00	4834720.00	210	397600.00	4833380.00
162	396860.00	4834610.00	211	398220.00	4833330.00
163	396590.00	4834570.00	212	397830.00	4833210.00
164	396780.00	4834540.00	213	398000.00	4833170.00
165	396730.00	4834510.00	214	397470.00	4833790.00
166	396520.00	4834440.00	215	397540.00	4833730.00
167	398900.00	4836070.00	216	397180.00	4833710.00
168	398670.00	4836050.00	217	397210.00	4833630.00
169	399120.00	4836050.00	218	397440.00	4833530.00
170	399220.00	4835970.00	219	397880.00	4833520.00
171	398770.00	4835870.00	220	397320.00	4833520.00
172	398990.00	4835870.00	221	397460.00	4833330.00
173	398930.00	4835860.00	222	397320.00	4833290.00
174	399530.00	4835780.00	223	397110.00	4833260.00
175	399400.00	4835770.00	224	397610.00	4833200.00
176	399150.00	4835730.00	225	397270.00	4833150.00
177	398940.00	4835710.00	226	397590.00	4833100.00
178	399250.00	4835650.00	227	397570.00	4833080.00
179	399020.00	4835550.00	228	397170.00	4832960.00
180	399480.00	4835550.00	229	397010.00	4834410.00
181	399260.00	4835480.00	230	397150.00	4834300.00
182	399260.00	4835310.00	231	396870.00	4834270.00
183	399100.00	4835210.00	232	397220.00	4834250.00
184	399680.00	4835620.00	233	396970.00	4834130.00
185	399810.00	4835490.00	234	397200.00	4834120.00
186	399770.00	4835470.00	235	396650.00	4834080.00
187	399570.00	4835310.00	236	397020.00	4834030.00
188	399860.00	4835230.00	237	397050.00	4833930.00
189	399670.00	4835120.00	238	396820.00	4833860.00
190	399790.00	4835100.00	239	396980.00	4833750.00
191	399690.00	4835090.00	240	396920.00	4833410.00
192	399420.00	4835060.00	241	396980.00	4833250.00
193	399320.00	4835050.00	242	397010.00	4833290.00
194	399410.00	4834910.00	243	396890.00	4833050.00
195	397480.00	4834600.00	244	396920.00	4832940.00

	UTM East	UTM North	CENS	LU		UTM East	UTM North	CENS	LU
21.	396220.	4835030.	16	12	26.	393270.	4837520.	21	14
22.	395920.	4834370.	16	12	27.	398380.	4839160.	22	11
23.	396130.	4834210.	16	12	28.	396920.	4839100.	22	11
24.	396270.	4835570.	17	11	29.	396730.	4838860.	22	11
25.	395570.	4835460.	17	11	30.	397040.	4838320.	22	11
26.	394740.	4835440.	17	11	31.	396620.	4838100.	22	11
27.	394850.	4834680.	17	11	32.	396080.	4837690.	22	13
28.	397230.	4837290.	18	11	33.	395930.	4837220.	22	12
29.	396640.	4836720.	18	11	34.	398630.	4838360.	23	14
30.	395470.	4836130.	19	12	35.	398360.	4838270.	23	12
31.	393970.	4836550.	20	11	36.	398470.	4837430.	23	13
32.	394590.	4836250.	20	17	37.	398290.	4836830.	23	11
33.	392730.	4835630.	20	14	38.	390890.	4837260.	28	17
34.	392680.	4834880.	20	14	39.	390630.	4836790.	28	11
35.	393970.	4834670.	20	11	40.	390910.	4836700.	28	11
36.	393950.	4834050.	20	11	41.	392640.	4836580.	28	12
37.	393300.	4833590.	20	17	42.	392990.	4833010.	30	14
38.	394620.	4833540.	20	14	43.	394610.	4832720.	30	14
39.	394030.	4841710.	21	13	44.	394200.	4832600.	30	12
40.	394280.	4839430.	21	14	45.	396140.	4832410.	30	13
41.	395220.	4838160.	21	11	46.	392100.	4832170.	30	14
42.	392690.	4837750.	21	21	47.	395290.	4832150.	30	14
43.	394740.	4837720.	21	11	48.	394320.	4832140.	30	12
44.	394960.	4837610.	21	13	49.	393920.	4831770.	30	12
45.	394940.	4837570.	21	12	50.	394940.	4831400.	30	11

	UTM East	UTM North	CENS	LU		UTM East	UTM North	CENS	LU
51.	395350.	4831250.	30	11	63.	400170.	4833900.	35	12
52.	394820.	4830640.	30	11	64.	400370.	4833700.	35	12
53.	394740.	4831530.	31	11	65.	400170.	4832000.	36	16
54.	397510.	4831320.	31	11	66.	400730.	4831900.	36	11
55.	400100.	4830700.	32	11	67.	382140.	4819240.	53	17
56.	394700.	4831340.	32	12	68.	381320.	4818500.	53	11
57.	395400.	4831760.	33	12	69.	381910.	4818120.	53	11
58.	395210.	4830750.	33	11	70.	382260.	4817990.	53	11
59.	396340.	4830470.	33	11	71.	382700.	4817590.	53	11
60.	397510.	4830380.	33	12	72.	383520.	4817020.	53	12
61.	400180.	4831460.	34	11	73.	383960.	4816700.	53	11
62.	398970.	4831150.	34	11	74.	382830.	4816550.	53	13

UTM East	UTM North		UTM East	UTM North
245	395330.00	4845910.00	280	385300.00
246	394770.00	4843751.00	281	396200.00
247	393790.00	4843069.00	282	394431.00
248	395310.00	4842131.00	283	394579.00
249	396650.00	4841889.00	284	394990.00
250	397720.00	4841610.00	285	399300.00
251	397140.00	4839960.00	286	400229.00
252	392410.00	4841980.00	287	398150.00
253	392610.00	4841011.00	288	403700.00
254	390440.00	4837730.00	289	404370.00
255	390660.00	4840079.00	290	404000.00
256	389321.00	4835591.00	291	406130.00
257	388390.00	4834630.00	292	404930.00
258	398990.00	4828810.00	293	405770.00
259	399740.00	4826439.00	294	413050.00
260	401120.00	4824020.00	295	414450.00
261	395099.00	4827349.00	296	411490.00
262	391650.00	4825090.00	297	412830.00
263	396370.00	4824960.00	298	408240.00
264	396810.00	4824250.00	299	383870.00
265	386250.00	4830999.00	300	385900.00
266	389399.00	4830750.00	301	386570.00
267	381439.00	4830361.00	302	385020.00
268	390390.00	4829671.00	303	385540.00
269	394250.00	4828949.00	304	387130.00
270	387570.00	4828600.00	305	388789.00
271	386699.00	4825689.00	306	389030.00
272	384859.00	4840429.00	307	386350.00
273	386230.00	4839540.00	308	386730.00
274	383420.00	4838251.00	309	387961.00
275	387120.00	4837819.00	310	385860.00
276	382210.00	4837440.00	311	386130.00
277	384410.00	4837130.00	312	382450.00
278	388090.00	4836940.00	313	385210.00
279	386370.00	4834810.00	314	388110.00
				4818821.00

UTM East	UTM North	CENS	LU	UTM East	UTM North	CENS	LU
1.	383160.	4850060.	41	19.	383840.	4840700.	41
2.	382630.	4849630.	41	20.	379760.	4839990.	41
3.	382970.	4847290.	41	21.	360811.	4839780.	41
4.	380950.	4844750.	41	22.	377270.	4839541.	41
5.	382040.	4844551.	41	23.	380880.	4839419.	41
6.	379670.	4844379.	41	24.	379530.	4839100.	41
7.	380110.	4844310.	41	25.	378440.	4839080.	41
8.	382079.	4843510.	41	26.	378600.	4837840.	41
9.	379420.	4843501.	41	27.	380099.	4837570.	41
10.	383861.	4843240.	41	28.	380280.	4837420.	41
11.	385150.	4843020.	41	29.	410630.	4843520.	43
12.	380030.	4842930.	41	30.	409421.	4840770.	43
13.	381140.	4842831.	41	31.	400590.	4858200.	46
14.	384820.	4842700.	41	32.	399820.	4857970.	46
15.	376660.	4842100.	41	33.	402430.	4857040.	46
16.	383490.	4841950.	41	34.	402040.	4857060.	46
17.	381260.	4841980.	41	35.	402370.	4856780.	46
18.	381459.	4840860.	41	36.	404180.	4856670.	46

UTM East	UTM North	CENS	LU	UTM East	UTM North	CENS	LU
37. 377471.	4856610.	46	21	55. 377440.	4824930.	61	21
38. 399740.	4856499.	46	21	56. 382410.	4824620.	61	21
39. 424431.	4856200.	46	21	57. 381350.	4824610.	61	21
40. 430220.	4855339.	46	21	58. 385320.	4824439.	61	21
41. 431130.	4855240.	46	21	59. 378610.	4824390.	61	21
42. 432650.	4854900.	46	21	60. 383220.	4823450.	61	21
43. 398250.	4854710.	46	21	61. 383750.	4823011.	61	21
44. 394870.	4854270.	46	11	62. 378420.	4822069.	61	21
45. 432960.	4854270.	46	21	63. 380090.	4821710.	61	21
46. 430410.	4853771.	46	21	64. 376900.	4820120.	61	21
47. 430240.	4853310.	46	21	65. 378040.	4819371.	61	21
48. 430250.	4853311.	46	21	66. 376930.	4819199.	61	21
49. 430899.	4852690.	46	21	67. 379870.	4817610.	61	11
50. 430380.	4852330.	46	11	68. 378520.	4817570.	61	21
51. 401020.	4851870.	46	21	69. 385240.	4815940.	64	11
52. 421471.	4850810.	46	21	70. 387840.	4815471.	64	11
53. 387190.	4826211.	51	21	71. 385539.	4815020.	64	11
54. 387321.	4826010.	51	21				

Building worksheet used in the Portland field sampling program

Revised 3 August 1981

BUILDING INVENTORY WORKSHEET

_____ Tract/MCD¹⁻³

_____ Sampling frame⁴

_____ Sampling point number⁵⁻⁷

_____ USGS land cover type⁸⁻⁹

_____ Type of structure (circle one)¹⁰⁻¹¹

Residential building:

Housing unit:

- 1 unit detached¹
- 1 unit attached²
- 2 units³
- 3 & 4 units⁴
- 5-9 units⁵
- 10-19 units⁶
- 20-49 units⁷
- 50 or more units⁸

Nonhousekeeping (hotels,
motels, dormitories,
fraternity, nursing homes)⁹

Nonresidential buildings:

- Office building¹⁰
- Other commercial¹¹
- Industrial¹²
- Hospital or institutional¹³
- Religious¹⁴
- Educational¹⁵
- Other nonresidential¹⁶
- Farm (nonresidential)¹⁷
- Other (identify structure _____)¹⁸

Cannot identify¹⁹

Sketch of Building

_____(yr) Approximate age of building¹²⁻¹⁴
____ft, Wall height¹⁵⁻¹⁷
____ft, Side 1 of building¹⁸⁻²⁰
____ft, Side 2 of building²¹⁻²³
____ft, Lot size, side 1²⁴⁻²⁶
____ft, Lot size, side 2²⁷⁻²⁹
____ft, Exposed walls in footprint³⁰⁻³²

Photo ID _____

Street adress _____

WALLS

Percent(%) of wall area of
each horizontal section

Founda- tion	1st story	All stories above 1st
-----------------	--------------	--------------------------

PAINTED WALLS

1. Wood (excl. stained)	_____	_____	_____
2. Steel	_____	_____	_____
3. Aluminum	_____	_____	_____
4. Masonry	_____	_____	_____
5. Concrete	_____	_____	_____
6. Stucco	_____	_____	_____
7. Other material (identify material _____)	_____	_____	_____
8. Cannot identify	_____	_____	_____

BARE WALLS

9. Brick	_____	_____	_____
10. Block	_____	_____	_____
11. Field stone	_____	_____	_____
12. Concrete	_____	_____	_____
13. Marble	_____	_____	_____
14. Limestone	_____	_____	_____
15. Granite	_____	_____	_____
16. Galvanized steel	_____	_____	_____
17. Wood (incl. stained)	_____	_____	_____
18. Glass	_____	_____	_____
19. Vinyl	_____	_____	_____
20. Other material (identify material _____)	_____	_____	_____
21. Cannot identify	_____	_____	_____

TOTAL	100	100	100
-------	-----	-----	-----

ROOF

[illegible]

CHIMNEYS

62-65ft², Exposed surface area above roof

66Material (circle one): (1) painted, (2) brick, (3) stone, (4) other
(identify material _____), (9) cannot identify

RAIN GUTTERS

67-69ft, Horizontal runs

70 Material (circle one): (1) bare galvanized, (2) vinyl, (3) painted,
(4) copper, (5) other (identify material _____), (9) cannot identify.

DOWNSPOUTS

_____ ⁷¹Material (circle one): (1) bare galvanized, (2) vinyl, (3) painted,
(4) copper, (5) other (identify material _____), (9)
cannot identify

⁷²⁻⁷⁴ft, sum of heights for all downspouts

FENCES

_____ ⁷⁵Material (circle one): (1) bare galvanized chain link, (2) bare
galvanized wire mesh, (3) painted, (4) brick, (5) block, (6) field
stone, (7) unpainted wood, (8) other (identify material _____),
(9) cannot identify

_____ ⁷⁶⁻⁷⁸ft, Length

_____ ⁷⁹⁻⁸⁰ft, Height

Procedures used to check the Portland data

The data were checked several ways to ensure that the data base was correct. A major check of the material type percentages and the EWIF value was done before printing a frequency run of the entire data set.

The percentage check done was to sum the percentage of material types for the three stories of the building. We needed to ensure that the sum of all material types was 100%. Also, during the same computer run, we checked to see that every building had a foundation. (In some cases, the field team had not recorded a foundation.) For these cases, the photo of the building was examined to determine the material type of the foundation. We assumed 12 ft for the first story component of the building. In addition, during the same computer run, we would print out cases where the building height was greater than 14 ft (assuming 2 ft for the foundation and 12 ft for the first story) and there were no percentages recorded for the second and above stories.

The EWIF value was also checked against the lot size and the building side dimensions. A printout of these values was obtained for every building. We assumed that the building sides were the square root of the exposed roof area and would check to make sure that the EWIF was not larger than the building sides. There was also a check to ensure that the building was not larger than the lot size dimensions.

Several hand calculations were done for the building surface areas and compared against the computer-calculated surface areas. These values had to be consistent for different types of materials for a given building. The frequency runs were checked for a number of items. The number of downspouts had to be the same as the number of rain gutters.

The empty footprints were noted for each sampling frame and verified against the number of buildings expected for each sampling frame.

The tally of land use and census tract numbers also had to be correct for each sampling frame. The number of roof areas had to equal the number of buildings.

The number of cases had to be the same for a given accessory. For example, the number of material types and the surface area values had to be the same for the variables of roofs, fences, downspouts, rain gutters and roof-mounted apparatus. Although not every building had all these compo-

nents, if the value was recorded, then each material type had to have a corresponding surface area.

Strange or unexpected numbers for all the variables encountered during editing of the data base were always doublechecked against the building worksheets. For example, the EWIF values were always fairly even in value or divisible by 5. Any unusual numbers or large numbers were doublechecked and verified during the editing process, not only for the EWIF, but for the other variables as well.

APPENDIX B. RESULTS OF THE FREQUENCY ANALYSIS

Description of the Portland data variables

<u>Variable name</u>	<u>Brief description</u>	<u>Detailed description</u>
LU	Land use	U.S. Geological Survey land use classification, where: 11 = residential, 12 = commercial and services, 13 = industrial, 14 = transportation, communications and utilities, 15 = industrial and commercial complexes, 16 = mixed urban or builtup land, 17 = other urban and or builtup land, 21 = cropland and pasture, 22 = orchard, groves, vineyards, nurseries and ornamental agricultural areas, 23 = confined feeding operations, 24 = other agricultural land, 31 = herbaceous rangeland, 32 = shrub and brush rangeland, 33 = mixed rangeland, 41 = deciduous forestland, 42 = evergreen forestland, 43 = mixed forestland, 51 = streams and canals, 52 = lakes, 53 = reservoirs, 54 = bays and estuaries, 61 = forested wetland, 62 = nonforested wetland, 71 = dry salt flats, 72 = beaches, 73 = sandy areas other than beaches, 74 = bare exposed rock, 75 = strip mines, quarries, and gravel pits, 76 = transitional areas, 77 = mixed barren land.
SFRAME	Sampling frame	Sampling frame, where: 1 = UCBD 2 = ULIC 3 = UMFR 4 = USFR 5 = NSUB 6 = NRUR
SPOINT	Sample point number	Sampling point number within sampling frame.
TRACT	Census tract	Census tract number, see Figure 4.
POP	Tract population	Total population in census tract.
DU	Total dwelling units in tract	Total number of housing units in census tract.
UI	One-unit structures in tract	Number of dwelling units in one-unit structures in census tract.
ALAND	Area of land coverage	Total land area of census tract (millions of ft ²).
ABR	Area of built residential	Land area of census tract in built residential (millions of ft ²).
ABNR	Area of built nonresidential	Land area of census tract in built nonresidential (millions of ft ²).
AOB	Area, open land with buildings	Land area of census tract in open with buildings (millions of ft ²).

AO	Area of open land without buildings	Land area of census tract in open without buildings (millions of ft ²).
AGE	Approx. age of structure	Approximate age of the building. 1900 is the base year (year 0). To obtain age, add the value of 1900. Ages less than 1900 are coded as negative values.
EWIF	Exposed wall in footprint	Exposed walls (perimeter of the building) within a given footprint (ft).
HT	Average wall height	Average building height (ft).
LOT1	Lot size, side 1	Lot size associated with sampling point, side 1 (ft).
LOT2	Lot size, side 2	Lot size associated with sampling point, side 2 (ft).
SIDE1	Side 1 of bldg.	Side dimension of the building (ft).
SIDE2	Side 2 of bldg.	Side dimension of the building (ft).
TYPE	Structure type-usage	Value label assigned to structure, where: 0 = no building, 1 = 1 housing unit detached, 2 = 1 housing unit attached, 3 = 2 housing units, 4 = 3 to 4 housing units, 5 = 5 to 9 housing units, 6 = 10 to 19 housing units, 7 = 20 to 49 housing units, 8 = 50 or more housing units, 9 = nonhousekeeping (i.e., hotels, motels, dormitories, fraternity and sorority houses, nursing homes and similar facilities), 10 = office buildings, 11 = other commercial buildings, 12 = industrial buildings, 13 = hospital or institutional buildings, 14 = religious building, 15 = educational building, 16 = other nonresidential buildings, 17 = farm (nonresidential), 18 = other buildings, 19 = cannot identify building.
APAIN	Area of painted surface	The total surface area (ft ²) of a building having painted materials.
AMORT	Area of mortar-masonry surface	The total surface area (ft ²) of a building having mortar and masonry materials.
ASTONE	Area of stone surface	The total surface area (ft ²) of a building having stone materials.
AGALV	Area of galvanized surface	The total surface area (ft ²) of a building having galvanized materials.
AOTHER	Area of other materials	The total surface area (ft ²) of a building having all other materials.
CAREA	Exposed chimney area	Exposed surface area of chimney above roof (ft ²).
CMAT	Chimney material	Chimney material type, where: 0 = no chimney observed, 1 = painted, 2 = brick, 3 = stone, 4 = other chimney material, and 9 = cannot identify chimney material.
ESAREA	Area of exposed roof	Exposed roof area of building (ft ²).
ERMAT	Roof material type	Exposed roof material, where: 0 = tar, 1 = asphalt shingle, 2 = wood, 3 = painted metal, 4 = bare galvanized, 5 = tile, 6 = slate, 7 = copper, 8 = other roof material, 9 = cannot identify roof material.

SLOPE	Indicator: roof slope	Roof configuration: 1 = sloped, 2 = flat.
ITEM1	Number of roof apparatus items	Number of items of roof-mounted apparatus (vents, flues and stacks).
APP	Indicator: roof apparatus	Presence of roof-mounted apparatus (vents, flues, and stacks) where 1 = observed and 0 = not observed.
RMAT	Roof apparatus material	Material type of the roof-mounted apparatus (vents, flues and stacks), where: 1 = painted, 2 = bare galvanized, 3 = bare aluminum, 4 = other roof-mounted apparatus material, 9 = cannot identify roof-mounted apparatus material.
ITEM2	Number of sky- lights	Number of skylights observed.
APPSKY	Skylights	Presence of skylights, where: 1 = observed and 0 = not observed.
SKYM	Framing material of skylights	Framing material type of skylights, where: 1 = painted, 2 = bare galvanized, 3 = bare aluminum, 4 = other material type, and 9 = cannot identify material type.
FLMAT	Material type of flashing	Material type of flashing, where: 1 = painted, 2 = bare galvanized, 3 = bare aluminum, 4 = other material type, and 9 = cannot identify.
FLLG	Length of flashing	Length of flashing (ft).
APPFL	Flashing	Presence of flashing, where: 1 = observed, 0 = not observed.
RGMAT	Rain gutter material	Rain gutter material type, where: 0 = no chimney observed, 1 = bare galvanized, 2 = vinyl, 3 = painted, 4 = copper, 5 = other rain gutter material, and 9 = cannot identify rain gutter material.
DSPOUT	Material of downspout	Material type of downspouts, where: 0 = no downspout observed, 1 = bare galvanized, 2 = vinyl, 3 = painted, 4 = copper, 5 = other downspout material, and 9 = cannot identify downspout material.
RGUT	Rain gutter length	Horizontal length of rain gutters (ft).
DSLENG	Downspout length	Length of downspout (ft).
FENCE	Fence type	Material type of fences, where: 0 = no fences observed, 1 = bare galvanized chain link, 2 = bare galvanized wire mesh, 3 = painted fence, 4 = brick, 5 = block, 6 = field stone, 7 = unpainted wood, 8 = other material type, and 9 = cannot identify fence material.
FLENG	Fence length	Length of fence (ft).
FHT	Fence height	Height of fence (ft).

Major classification variables

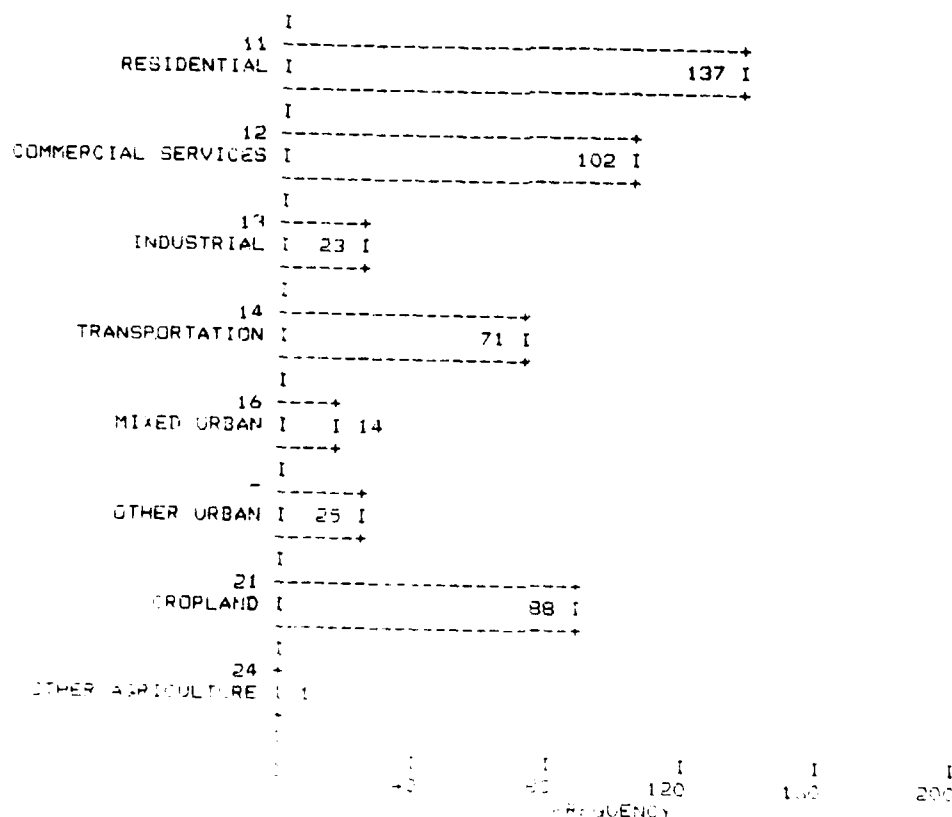
LU LAND USE DESIGNATION

MEAN	14.197	STD. ERR.	173	MEDIAN	12.000
MODE	11.000	STD. DEV.	3.712	VARIANCE	13.781
KURTOSIS	- .513	S.E. KURT	1.996	SKEWNESS	1.010
S.E. SKEW	.114	RANGE	13.000	MINIMUM	11.000
MAXIMUM	24.000	SUM	6545.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	11.000	25.00	11.000	33.30	12.000
50.00	12.000	66.70	14.000	75.00	16.000
90.00	21.000				

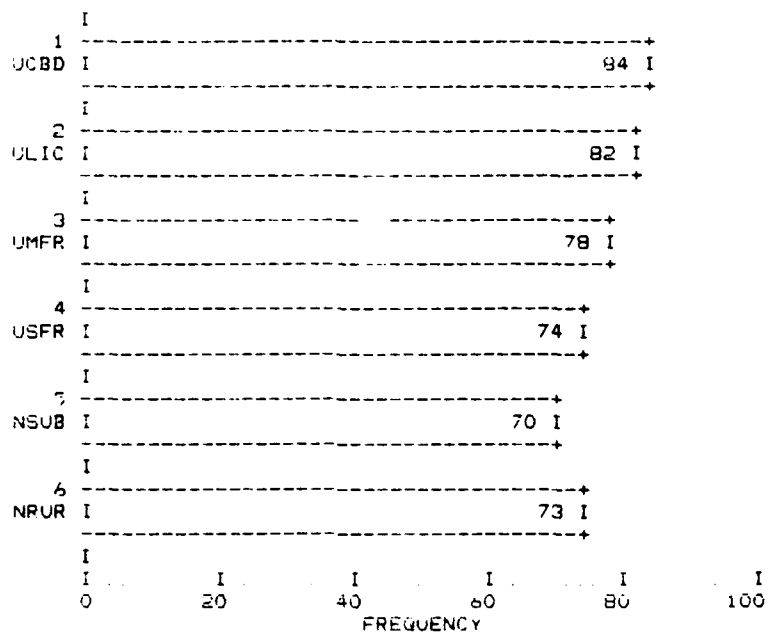
VALID CASES 461 MISSING CASES 0

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
RESIDENTIAL	11	137	29.7	29.7	29.7
COMMERCIAL SERVICES	12	102	22.1	22.1	51.8
INDUSTRIAL	13	23	5.0	5.0	56.8
TRANSPORTATION	14	71	15.4	15.4	72.2
MIXED URBAN	16	14	3.0	3.0	75.3
OTHER URBAN	17	25	5.4	5.4	80.7
CROPLAND	21	88	19.1	19.1	99.8
OTHER AGRICULTURE	24	1	.2	.2	100.0
TOTAL		461	100.0	100.0	



SFRAME SAMPLING FRAME

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
UCBD	1	84	18.2	18.2	18.2
ULIC	2	82	17.8	17.8	36.0
UMFR	3	78	16.9	16.9	52.9
USFR	4	74	16.1	16.1	69.0
NSUB	5	70	15.2	15.2	84.2
NRUR	6	73	15.8	15.8	100.0
	TOTAL	461	100.0	100.0	



MEAN	3.397	STD ERR	.080	MEDIAN	3.000
MODE	1.000	STD DEV	1.717	VARIANCE	2.949
KURTOSIS	-1.269	S.E. KURT	1.996	SKEWNESS	.089
S.E. SKEW	.114	RANGE	5.000	MINIMUM	1.000
MAXIMUM	6.000	SUM	1565.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	1.000	25.00	2.000	33.30	2.000
50.00	3.000	66.70	4.000	75.00	5.000
90.00	6.000				
VALID CASES	461	MISSING CASES	0		

SPDINT SAMPLE POINT NUMBER

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
1	6	1	1	29	6	1	38	57	6	1	74
2	6	1	3	30	6	1	39	58	6	1	75
3	6	1	4	31	6	1	40	59	6	1	77
4	6	1	5	32	6	1	42	60	6	1	78
5	6	1	7	33	6	1	43	61	6	1	79
6	6	1	8	34	6	1	44	62	6	1	81
7	6	1	9	35	6	1	46	63	6	1	82
8	6	1	10	36	6	1	47	64	6	1	83
9	6	1	12	37	6	1	48	65	6	1	85
10	6	1	13	38	6	1	49	66	6	1	86
11	6	1	14	39	6	1	51	67	6	1	87
12	6	1	15	40	6	1	52	68	6	1	89
13	6	1	17	41	6	1	53	69	6	1	90
14	6	1	18	42	6	1	55	70	6	1	91
15	6	1	20	43	6	1	56	71	5	1	92
16	6	1	21	44	6	1	57	72	5	1	93
17	6	1	22	45	6	1	59	73	5	1	94
18	6	1	23	46	6	1	60	74	4	1	95
19	6	1	25	47	6	1	61	75	3	1	96
20	6	1	26	48	6	1	62	76	3	1	97
21	6	1	27	49	6	1	64	77	3	1	97
22	6	1	29	50	6	1	65	78	3	1	98
23	6	1	30	51	6	1	66	79	2	0	98
24	6	1	31	52	6	1	68	80	2	0	99
25	6	1	33	53	6	1	69	81	2	0	99
26	6	1	34	54	6	1	70	82	2	0	100
27	6	1	35	55	6	1	72	83	1	0	100
28	6	1	36	56	6	1	73	84	1	0	100

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 50 OCCURRENCES

18	2	*****
24	6	*****
24	10	*****
24	14	*****
24	18	*****
24	22	*****
24	26	*****
24	30	*****
24	34	*****
24	38	*****
24	42	*****
24	46	*****
24	50	*****
24	54	*****
24	58	*****
24	62	*****
24	66	*****
23	70	*****
17	74	*****
11	78	*****
9	82	*****

I + I + I + I + I + I + I
0 5 10 15 20 25

HISTOGRAM FREQUENCY

MEAN	39.078	STD ERR	1.047	MEDIAN	39.000
MODE	1.000	STD DEV	22.481	VARIANCE	505.416
KURTOSIS	-1.140	S.E. KURT	1.996	SKEWNESS	.043
S.E. SKEW	.114	RANGE	83.000	MINIMUM	1.000
MAXIMUM	84.000	SUM	18015.000		

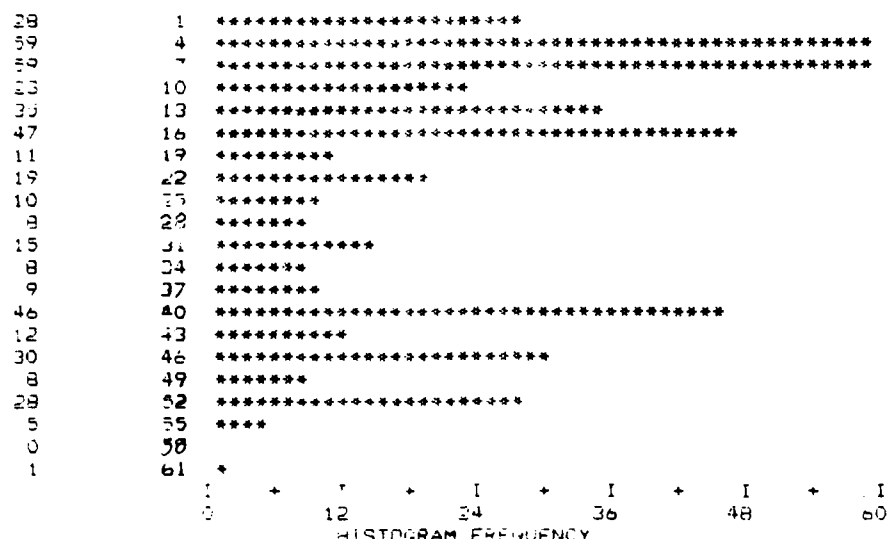
PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	8.000	25.00	20.000	33.30	26.000
50.00	39.000	66.60	52.000	75.00	58.000
90.00	70.000				

VALID CASES 461 MISSING CASES 0

TRACT LEVEL TRACT

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
1	17	4	4	18	2	0	55	36	2	0	70
2	11	2	6	19	1	0	55	37	3	1	71
3	34	7	13	20	8	2	57	38	4	1	72
4	9	2	15	21	8	2	59	39	6	1	73
5	16	3	19	22	8	2	60	40	10	2	75
6	22	5	24	23	3	1	61	41	30	7	82
7	29	6	30	25	7	2	62	42	10	2	84
8	8	2	32	26	3	1	63	44	2	0	84
9	8	2	33	27	1	0	63	45	8	2	86
10	8	2	35	28	4	1	64	46	22	5	91
11	7	2	37	29	3	1	65	48	8	2	93
12	4	1	38	30	11	2	67	51	16	3	96
13	15	3	41	31	2	0	68	52	4	1	97
14	16	3	44	32	2	0	68	53	8	2	99
15	40	9	53	33	4	1	69	54	5	1	100
16	3	1	54	34	2	0	69	61	1	0	100
17	4	1	54	35	2	0	70				

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 1 20 OCCURRENCES



MEAN	22.002	STD. ERR.	.791	MEDIAN	15.000
MODE	15.000	STD. DEV.	16.994	VARIANCE	288.785
KURTOSIS	-1.257	S.E. KURT.	1.995	SKEWNESS	.469
S.E. SKEW.	.114	RANGE	60.000	MINIMUM	1.000
MAXIMUM	61.000	SUM	10143.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	5.000	25.00	7.000	33.30	9.000
50.00	15.000	66.70	30.000	75.00	40.000
90.00	46.000				

VALID CASES 61 MISSING CASES 0

Census tract data

PER AGED POPULATION

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
34 00	34	7	7	2695 00	8	2	53	4617 00	4	1	81
710 00	4	2	9	2701 00	4	1	54	4944 00	10	2	83
687 00	22	5	14	2752 00	4	1	54	5037 00	8	2	85
1281 00	8	2	16	2863 00	11	2	57	5282 00	3	1	85
1375 00	8	2	18	2882 00	2	0	57	5357 00	4	1	86
1427 00	2	0	18	3367 00	40	9	66	5863 00	8	2	88
1477 00	16	3	21	3414 00	2	0	66	5990 00	6	1	89
1545 00	22	5	26	3422 00	3	1	67	6027 00	11	2	92
1570 00	7	2	28	3480 00	3	1	68	6291 00	1	0	92
1652 00	3	1	30	3516 00	2	0	68	6501 00	10	2	94
1898 00	5	1	31	3520 00	1	0	68	6585 00	2	0	94
1898 00	16	3	34	3632 00	30	7	75	6853 00	7	2	96
1919 00	22	5	39	3777 00	2	0	75	7838 00	3	1	97
2058 00	15	3	45	3829 00	4	1	76	8087 00	8	2	98
2078 00	4	1	43	3917 00	8	2	78	11250 00	8	2	100
2157 00	18	4	47	4377 00	1	0	78				
2627 00	17	4	51	4393 00	8	2	80				

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 2 00 OCCURRENCES

34	292	*****
31	827	*****
70	1262	*****
65	1897	*****
43	2432	*****
21	2967	*****
81	3502	*****
14	4037	*****
13	4572	*****
25	5107	*****
8	5642	****
18	6177	*****
12	6712	*****
0	7247	
3	7782	**
8	8317	****
0	8852	
0	9387	
0	9922	
0	10457	
8	10992	****

1 + 1 + 1 + 1 + 1
 20 40 60 80 100
 HISTOGRAM FREQUENCY

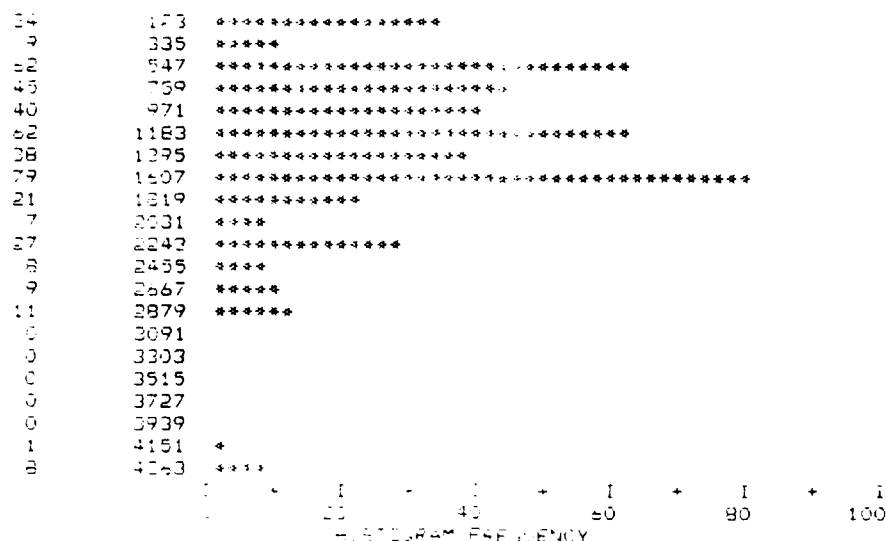
MEAN	1043 455	STD ERR	111 113	MEDIAN	2627 000
MODE	2627 000	STD DEV	3170 431	VARIANCE	4713200 55
KURTOSIS	2 210	S.E. MEAN	1 996	SKEWNESS	1 275
S.E. MEAN	114	RANGE	11216 000	MINIMUM	34 000
MAXIMUM	11 30 100	SUM	1461804 00		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10 00	687 000	25 00	1045 000	33 30	1898 000
25 00	1262 000	50 00	2432 000	75 00	3777 000
75 00	6027 000				
VALID CASES	461	MISSING CASES			

20 TOTAL LIKE LINE WRITE IN THE

VALUE	FREQ	PCT	CUM	VALUE	FREQ	PCT	CUM	VALUE	FREQ	PCT	CUM
19 00	24	7	7	1151 00	5	1	46	1733 00	8	2	82
350 00	4	2	9	1153 00	5	1	47	1795 00	1	0	82
461 00	22	5	14	1195 00	2	0	49	1800 00	4	1	83
546 00	2	0	15	1207 00	30	7	54	1881 00	8	2	85
609 00	22	5	19	1255 00	3	1	55	2015 00	3	1	85
639 00	15	3	22	1291 00	11	2	57	2070 00	4	1	86
656 00	3	1	23	1338 00	2	0	57	2153 00	10	2	88
706 00	16	3	27	1348 00	1	0	58	2163 00	6	1	90
795 00	24	5	32	1384 00	2	0	58	2186 00	11	2	92
806 00	2	0	33	1412 00	2	0	59	2361 00	8	2	94
899 00	15	3	35	1458 00	8	2	60	2652 00	2	0	94
941 00	4	1	37	1460 00	4	1	61	2664 00	7	2	96
981 00	4	1	38	1465 00	1	0	63	2775 00	8	2	97
1065 00	17	4	41	1582 00	40	9	72	2824 00	3	1	98
1079 00	15	3	44	1595 00	29	5	78	4199 00	1	0	98
1117 00	4	1	45	1611 00	10	2	80	4467 00	8	2	100

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 2 00 OCCURRENCES



MEAN	1075 408	STD DEV	27 1 6	MEDIAN	1207 000
MODE	1592 000	VAR DEV	747 371	VARIANCE	635834 053
KURTOSIS	3 803	SKEWNESS	1 994	SKEWNESS	1 213
SKEWNESS	014	RANGE	4448 000	MINIMUM	19 000
MAXIMUM	4467 000	SUM	587264 000		

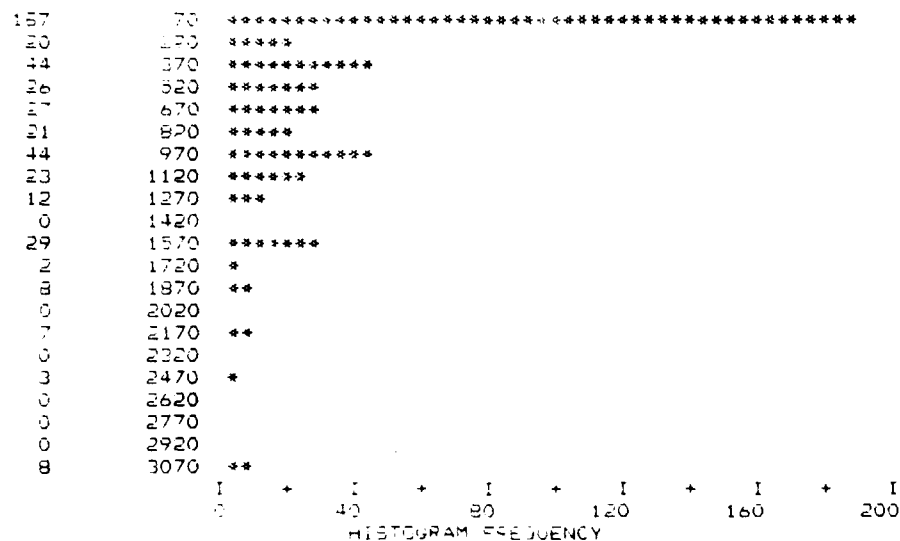
PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10 00	461 000	45 00	1065 000	33 30	899 000
50 00	1207 000	65 00	1595 000	75 00	1595 000
90 00	2186 000				

VALID CASES 440 4467000

THE UNIT SHALL BE IN TRAIL

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
1 00	53	14	14	417 00	40	4	54	1015 00	30	7	80
8 00	9	2	16	480 00	4	1	55	1089 00	11	2	82
23 00	8	2	17	524 00	22	5	59	1145 00	4	1	83
24 00	8	2	19	510 00	16	3	64	1169 00	8	2	85
28 00	16	3	23	554 00	1	0	64	1230 00	2	0	85
33 00	5	2	24	577 00	2	0	64	1296 00	10	2	88
34 00	22	5	29	705 00	3	1	65	1509 00	10	2	90
73 00	7	2	31	711 00	5	1	66	1583 00	1	0	90
75 00	11	2	33	755 00	8	2	68	1593 00	8	2	92
78 00	4	1	34	781 00	2	0	68	1599 00	6	1	93
100 00	16	3	37	820 00	4	1	69	1628 00	4	1	94
143 00	15	3	41	822 00	1	0	69	1646 00	2	0	94
162 00	17	4	44	886 00	6	1	70	1930 00	8	2	96
292 00	3	1	45	898 00	8	2	72	2107 00	7	2	98
370 00	2	0	45	955 00	3	1	73	2479 00	3	1	98
408 00	2	0	46	981 00	3	1	74	3139 00	8	2	100

COUNT MIEPOINT ONE SYMBOL EQUALS APPROXIMATELY 4 00 OCCURRENCES



MEAN	593 210	STD ERR	31 153	MEDIAN	417 000
MODE	1 000	STD DEV	654 088	VARIANCE	447679 167
KURTOSIS	2 367	S E KURT	1 996	SKEWNESS	1 469
S E SKEW	114	RANGE	3138 000	MINIMUM	1 000
MAXIMUM	3139 000	SUM	273470 000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10 00	1 000	50 00	34 000	33 30	78 000
50 00	417 000	66 70	755 000	75 00	1015 000
90 00	1541 000				

VALID CASES 461 MISSING CASES 1

ALAND AREA LAND COVERAGE

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
0 0	56	12	12	87	1	0	55	3 15	3	1	77
00	29	4	18	89	3	1	55	3 47	3	1	78
03	9	2	20	95	2	0	56	3 59	4	1	79
05	8	2	22	1 08	2	0	56	3 87	1	0	79
11	8	2	24	1 15	4	1	57	4 34	8	2	81
11	4	1	25	1 20	4	1	58	5 65	30	7	87
13	16	3	28	1 25	2	0	58	6 26	10	2	90
15	9	2	30	1 46	4	1	59	7 05	4	1	90
16	7	2	31	1 58	8	2	61	7 05	10	2	93
21	16	3	35	1 86	2	0	61	8 72	3	1	93
23	11	2	37	1 87	1	0	62	9 30	6	1	95
32	17	4	44	2 17	11	2	64	9 34	2	0	95
40	15	3	44	2 29	8	2	66	11 16	8	2	97
41	40	9	53	2 75	8	2	67	12 22	7	2	98
46	2	0	53	3 01	22	5	72	22 51	8	2	100
50	3	1	54	3 10	16	3	76				
59	2	0	54	3 14	5	1	77				

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 4.00 OCCURRENCES

0	-3 5	
0	-2 0	
172	-1 5	*****
101	1 0	*****
24	2 5	*****
16	4 0	****
30	5 5	*****
24	7 0	*****
2	8 5	+
8	10 0	**
15	11 5	****
0	13 0	
0	14 5	
0	16 0	
0	17 5	
0	19 0	
0	20 5	
8	22 0	**
0	23 5	
0	25 0	
0	26 5	

1 + 1 + 1 + 1 + 1 + 1 + 1
0 40 80 120 160 200
HISTOGRAM FREQUENCY

MEAN	2 431	STD ERR	184	MEDIAN	413
MODE	0 0	STD DEV	3 940	VARIANCE	15 527
KURTOSIS	10 093	SKEWURT	1 796	SKEWNESS	2 816
SKEW	114	RANGE	22 506	MINIMUM	0 0
MAXIMUM	22 506	SUM	1143 660		

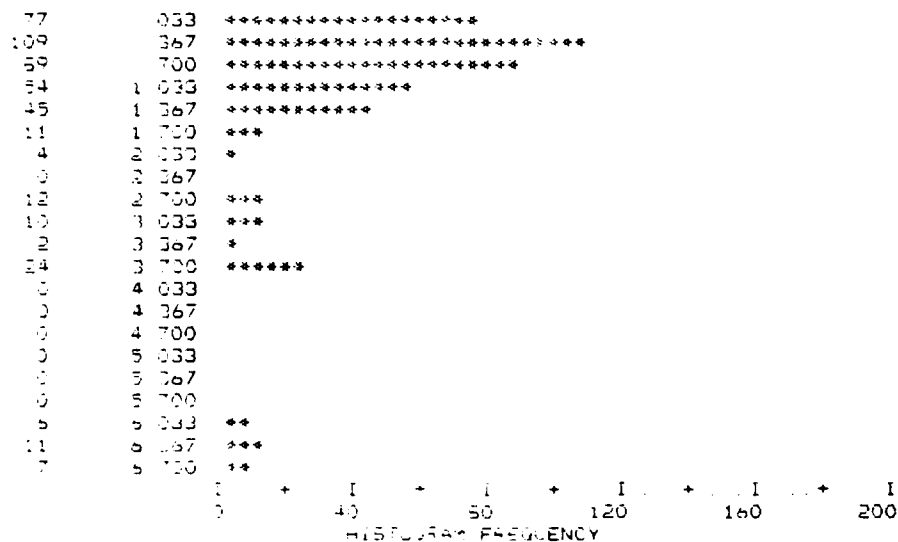
PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10 00	1 0	25 00	126	33 30	208
50 00	413	66 70	2 749	75 00	3 101
90 00	7 150				

VALID CASES 461 MISSING CASES

AGEA CHILD RESIDEN 121

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
05	7	2	2	49	23	5	40	1 51	4	1	79
05	5	1	3	53	1	0	40	1 52	8	2	80
07	2	1	3	54	1	0	41	1 53	3	1	81
09	11	0	5	57	2	0	41	1 58	1	0	81
09	4	1	5	63	22	5	46	1 80	10	2	84
12	15	3	10	65	04	7	53	1 95	4	1	84
16	8	2	11	73	30	7	60	2 66	8	2	86
16	8	2	13	90	1	1	61	2 77	4	1	87
17	17	4	17	97	40	9	69	3 01	10	2	89
24	4	1	18	1 11	2	0	70	3 50	2	0	90
25	3	2	19	1 12	5	2	71	3 69	8	2	91
27	9	2	21	1 22	0	1	72	3 71	8	2	93
38	10	5	26	1 25	0	1	73	3 80	8	2	95
39	2	0	26	1 31	3	1	73	5 89	6	1	96
41	16	3	30	1 32	16	3	77	6 34	11	2	98
42	16	3	33	1 33	3	1	77	6 68	7	2	100
47	2	0	34	1 35	2	0	78				

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 4.00 OCCURRENCES

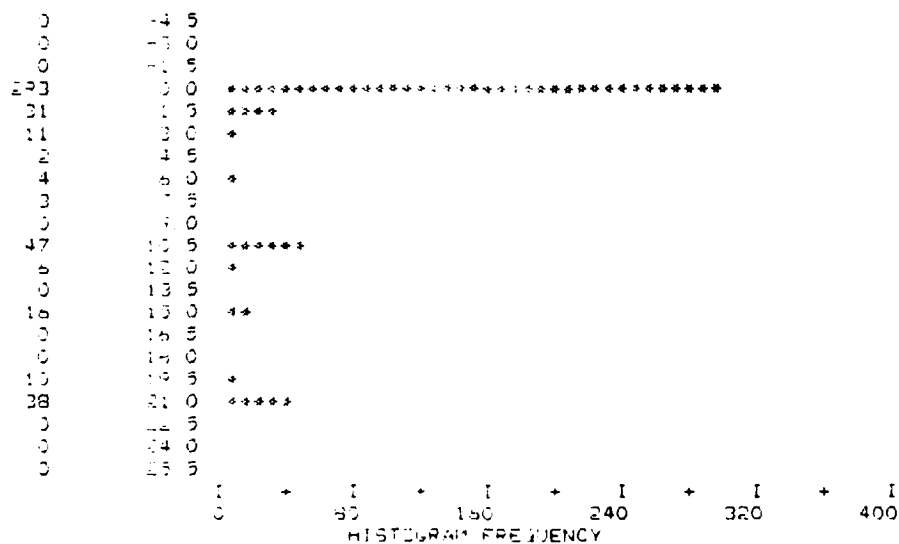


MEAN	1 311	STD. DEV.	1 170	MEDIAN	693
MODE	4 70	STD. DEV.	1 512	VARIANCE	2 285
KURTOSIS	4 448	SK. KURT.	1 795	SKEWNESS	2 223
SK. SKEW	114	RANGE	5 633	MINIMUM	047
MAXIMUM	5 660	SUM	567 340		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10 00	135	25 00	392	33 30	421
50 00	693	50 00	970	75 00	1 322
90 00	3 690				
VALID CASES	441	MISSING CASES	0		

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
	0 0	185	40.1	40.1	40.1
	01	3	.7	.7	40.8
	01	2	.4	.4	41.2
	03	3	.4	.4	41.6
	04	13	3.3	3.3	44.9
	06	2	.4	.4	45.3
	07	3	.7	.7	46.0
	07	1	.2	.2	46.2
	10	11	2.4	2.4	48.6
	17	8	1.7	1.7	50.3
	17	17	3.7	3.7	54.0
	18	16	3.5	3.5	57.5
	18	4	.9	.9	58.4
	24	5	1.1	1.1	59.4
	07	2	.4	.4	59.9
	46	2	.4	.4	60.3
	54	2	.4	.4	60.5
	55	4	.9	.9	61.4
	52	2	.4	.4	61.8
	72	8	1.7	1.7	63.6
	1 02	4	.9	.9	64.4
	1 20	3	.7	.7	65.1
	1 23	4	.9	.9	65.9
	1 24	8	1.7	1.7	67.7
	1 60	11	2.4	2.4	70.1
	2 14	1	.2	.2	70.3
	2 65	8	1.7	1.7	72.0
	3 21	3	.7	.7	72.7
	4 48	2	.4	.4	73.1
	5 26	4	.9	.9	74.0
	6 19	3	.7	.7	74.6
	9 91	3	.7	.7	76.4
	10 91	22	4.8	4.8	81.1
	11 00	1	.2	.2	82.6
	11 02	10	2.2	2.2	84.8
	12 12	5	1.3	1.3	86.1
	15 21	15	3.5	3.5	89.6
	15 30	10	2.2	2.2	91.8
	16 47	4	.9	.9	93.5
	21 25	15	3.5	3.5	100.0
	TOTAL	461	100.0	100.0	

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 8.00 OCCURRENCES



MEAN	4.262	STD. ERR.	.329	MEDIAN	.167
MODE	0.0	STD. DEV.	7.033	VARIANCE	49.467
KURTOSIS	.572	S.E. KURT.	1.996	SKEWNESS	1.441
S.E. SKEW	.114	RANGE	21.247	MINIMUM	0.0
MAXIMUM	21.247	SUM	1264.876		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	0.0	33.30	0.0
50.00	1.67	50.00	1.243	75.00	9.911
90.00	19.301				

VALID CASES	451	MISSING CASES	0
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408 AREA OPEN WITH BUILDINGS

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
	0.0	252	54.7	54.7	54.7
	.04	4	.9	.9	55.5
	.15	1	.2	.2	55.7
	.15	3	.7	.7	56.4
	.21	2	.4	.4	56.8
	.36	3	.7	.7	57.5
	.74	4	.9	.9	58.4
	1.19	8	1.7	1.7	60.1
	1.42	2	.4	.4	60.5
	1.70	8	1.7	1.7	62.3
	2.59	8	1.7	1.7	64.0
	2.68	4	.9	.9	64.9
	3.83	11	2.4	2.4	67.2
	4.20	8	1.7	1.7	69.0
	4.72	3	.7	.7	69.6
	5.70	5	1.1	1.1	70.7
	8.04	1	.2	.2	70.9
	8.32	3	.7	.7	71.6
	11.58	4	.9	.9	72.5
	13.61	1	.2	.2	72.7
	13.76	2	.4	.4	73.1
	18.91	3	.7	.7	73.8
	23.19	4	.9	.9	74.6
	35.25	10	2.2	2.2	76.8
	37.42	10	2.2	2.2	79.0
	40.92	22	4.8	4.8	83.7
	41.36	30	6.5	6.5	90.2
	45.30	16	3.5	3.5	93.7
	47.03	7	1.5	1.5	95.2
	59.49	6	1.3	1.3	96.5
	65.78	3	.7	.7	98.3
	77.77	3	.7	.7	100.0
TOTAL		451	100.0	100.0	

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 8.00 OCCURRENCES

```

249      -1 *****
52        3 *****
9         7 *
4        11 *
1        15
5        19 *
4        23 *
0        27
0        31
10       35 *
32       39 ****
30       43 ****
23       47 ***
0        51
0        55
4        59 *
0        63
8        67 *
0        71
0        75
8        79 *

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I   +   I   +   I   +   I   +   I   +   I
0   80  160  240  320  400
HISTOGRAM FREQUENCY

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MEAN	12.324	STD. ERR	.969	MEDIAN	0.0
MODE	0.0	STD. DEV	20.805	VARIANCE	432.839
KURTOSIS	.651	S.E. KURT	1.996	SKEWNESS	1.389
S.E. SKEW	.114	RANGE	77.770	MINIMUM	0.0
MAXIMUM	77.770	SUM	5912.070		

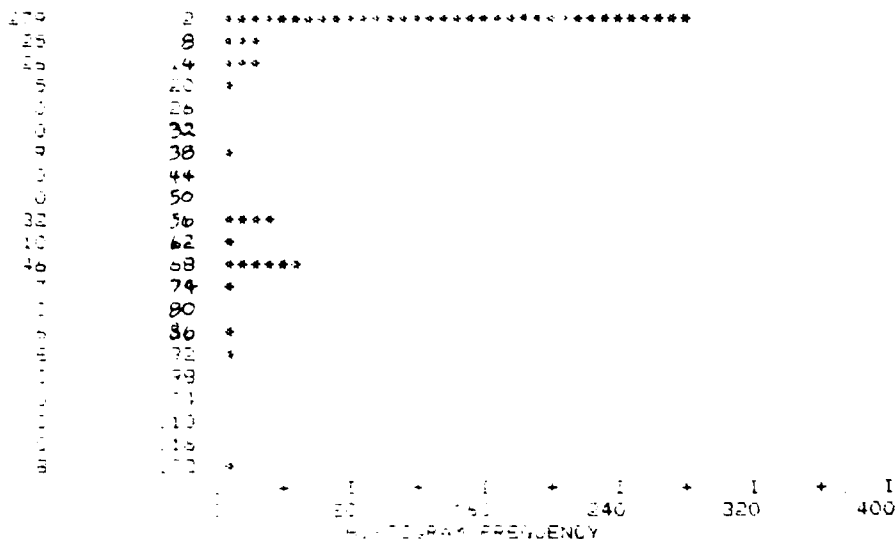
PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	0.0	33.30	0.0
50.00	0.0	65.70	3.930	75.00	35.250
90.00	41.060				

VALID CASES 401 MISSING CASES 0

43 AREA OPEN WITHOUT BLDGS

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
20	4	1	1	1.64	1	0	64	14.21	3	1	70
21	7	2	2	1.65	2	0	64	14.90	8	2	72
25	6	2	4	1.93	4	1	55	19.17	4	1	72
30	9	2	6	2.27	5	1	56	19.60	1	0	73
30	8	2	8	2.32	2	0	56	36.08	2	0	73
38	22	5	13	2.32	3	1	57	36.40	4	1	74
42	11	2	15	3.88	2	0	57	37.12	3	1	75
48	3	2	17	4.29	2	0	58	55.37	2	5	79
49	29	6	23	4.47	4	1	59	58.51	10	2	82
55	8	0	23	4.60	5	2	61	62.61	10	2	84
56	15	3	27	5.72	6	2	62	66.43	16	3	87
60	15	3	30	6.34	4	1	63	68.99	30	7	94
65	17	4	34	6.14	5	1	64	76.93	7	2	95
67	24	7	41	6.25	6	2	66	86.80	5	1	97
71	16	3	45	12.60	1	0	66	90.65	8	2	98
1.08	40	9	53	12.82	5	1	67	124.44	8	2	100
1.54	2	0	54	12.95	11	2	69				

COUNT MIDPOINT THE GRAPH BEGINS APPROXIMATELY 8.00 OCCURRENCES



MEAN	61.610	STD. ERR.	1.460	MEDIAN	1.384
MODE	1.004	STD. DEV.	31.353	VARIANCE	982.983
QUANTILES	104	SKURTOSIS	1.996	SKEWNESS	1.376
MINIMUM	114	RANGE	124.241	MINIMUM	201
MAXIMUM	24.442	SUM	9568.977		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	102	25.00	51	33.30	1.664
50.00	1.004	65.70	12.507	75.00	55.366
90.00	58.992				

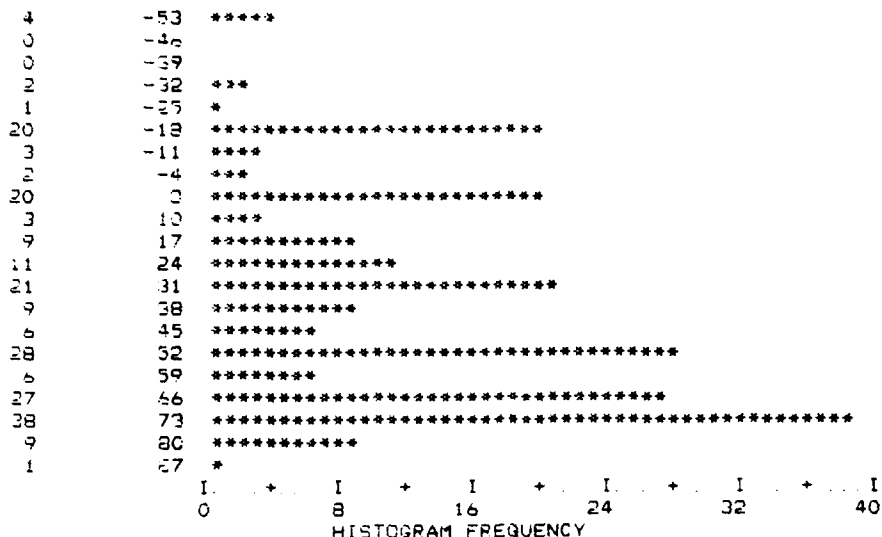
VALID CASES 461 MISSING CASES 0

General building descriptions

RE GRAPH CASE OF STRUCTURE

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
-50	4	2	2	10	1	0	25	64	12	5	71
-30	2	1	3	14	5	2	27	65	5	2	74
-25	1	0	3	20	4	2	29	66	1	0	74
-20	4	2	5	24	7	3	32	67	1	0	75
-16	14	6	11	25	4	2	34	68	1	0	75
-15	2	1	12	30	11	5	39	69	7	3	78
-14	1	0	13	34	10	5	44	70	14	6	85
-10	2	1	14	35	6	3	46	71	1	0	85
-5	1	0	14	40	3	1	48	72	1	0	85
-1	1	0	15	44	6	3	50	74	14	6	92
1	5	2	17	49	2	1	51	75	8	4	95
2	3	1	18	50	9	4	55	79	4	2	97
4	10	5	23	54	9	4	60	80	4	2	99
5	1	0	23	55	8	4	63	81	1	0	100
6	1	0	24	59	2	1	64	84	1	0	100
9	2	1	25	60	4	2	66				

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 80 OCCURRENCES



MEAN	27.545	STD. ERR.	5.140	MEDIAN	44.000
MODE	-16.000	STD. DEV.	33.154	VARIANCE	1108.805
MINIMUM	-604	SKEWNESS	1.991	SKEWNESS	-637
MAXIMUM	64.000	RANGE	134.000	MINIMUM	-50.000
		SUM	3282.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	-16.000	25.00	11.000	33.30	25.000
50.00	44.000	66.70	64.000	75.00	68.750
90.00	74.000				

VALID CASES 120 MISSING CASES 0

GROUPED WALL ON FOOTPRINT

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
50	1	0	0	162	1	0	42	368	4	2	84
54	1	0	1	170	8	4	46	378	1	0	84
74	1	0	1	180	10	5	50	380	2	1	85
76	1	0	2	194	1	0	51	388	2	1	86
80	7	3	5	196	1	0	51	390	4	2	88
84	1	0	5	200	5	2	54	400	5	2	90
96	2	1	6	210	8	4	57	408	1	0	90
90	10	5	11	220	7	3	60	420	3	1	92
96	1	0	11	230	4	2	62	428	1	0	92
100	8	4	15	240	6	3	65	438	1	0	93
102	1	0	15	250	4	2	67	440	2	1	94
104	2	1	16	254	2	1	68	458	1	0	94
108	1	0	17	260	2	1	69	478	2	1	95
110	9	4	21	266	1	0	69	480	2	1	96
116	1	0	21	280	5	2	71	500	1	0	96
120	7	3	25	290	5	2	74	518	1	0	97
124	1	0	25	300	2	1	75	520	1	0	97
130	8	4	29	318	1	0	75	528	1	0	98
140	11	5	34	320	3	1	76	556	2	1	99
144	1	0	34	330	2	1	77	576	1	0	99
150	6	3	37	340	2	1	78	500	1	0	100
156	1	0	37	348	3	1	80	740	1	0	100
160	10	5	42	360	5	2	82				

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 30 OCCURRENCES

11	65	*****
35	98	*****
29	131	*****
36	164	*****
15	197	*****
17	230	*****
9	263	*****
12	296	*****
8	329	*****
13	362	*****
14	395	*****
7	428	*****
1	461	*
5	494	*****
3	527	****
3	560	****
1	593	*
0	626	
0	659	
0	692	
1	725	*

I	+	I	+	I	+	I	+	I	+	I
0		8		16		24		32		40

HISTOGRAM FREQUENCY

MEAN	227.591	STD ERR	8.733	MEDIAN	180.000
MODE	140.000	STD DEV	129.527	VARIANCE	16777.202
KURTOSIS	.626	S E KURT	1.991	SKEWNESS	1.028
S E SKEW	.164	RANGE	690.000	MINIMUM	50.000
MAXIMUM	740.000	SUM	50070.000		

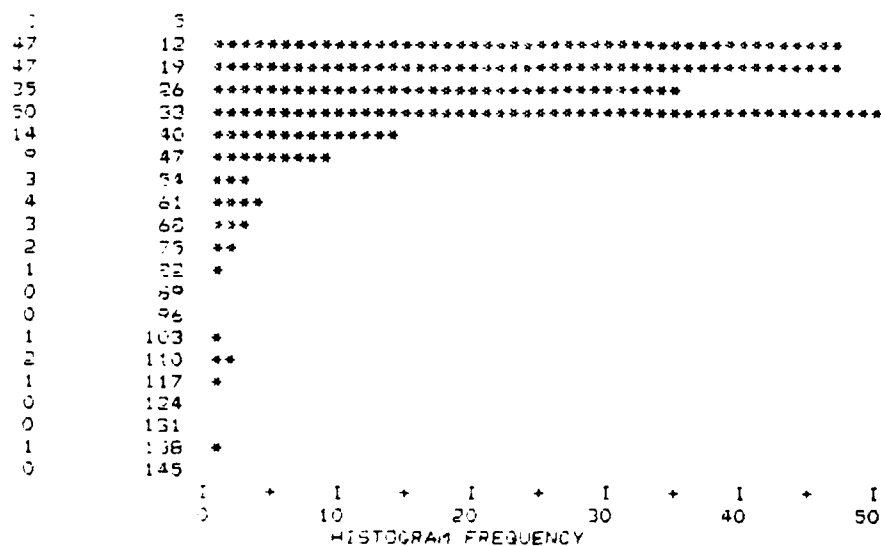
PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	90.000	25.00	125.500	33.30	140.000
50.00	180.000	66.70	251.628	75.00	319.500
90.00	407.200				

VALID CASES	220	MISSING CASES	0
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AIRFRAME WALL HEIGHT

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
	9	1	5	5	5
	10	5	3.6	3.6	4.1
	11	3	1.4	1.4	5.5
	12	12	5.5	5.5	10.9
	14	2	.9	.9	11.8
	15	21	9.5	9.5	21.4
	17	4	1.8	1.8	23.2
	18	4	1.8	1.8	25.0
	19	1	.5	.5	25.5
	20	26	11.8	11.8	37.3
	22	12	5.5	5.5	42.7
	23	3	1.4	1.4	44.1
	24	4	1.8	1.8	45.9
	25	26	11.8	11.8	57.7
	27	1	.5	.5	58.2
	28	1	.5	.5	58.6
	30	26	11.8	11.8	70.5
	32	6	2.7	2.7	73.2
	33	3	1.4	1.4	74.5
	35	15	6.8	6.8	81.4
	40	11	5.0	5.0	86.4
	42	1	.5	.5	86.8
	43	2	.9	.9	87.7
	45	6	2.7	2.7	90.5
	50	3	1.4	1.4	91.8
	55	3	1.4	1.4	93.2
	60	4	1.8	1.8	95.0
	65	2	.9	.9	95.9
	70	1	.5	.5	96.4
	75	2	.9	.9	97.3
	85	1	.5	.5	97.7
	100	1	.5	.5	98.2
	110	2	.9	.9	99.1
	120	1	.5	.5	99.5
	140	1	.5	.5	100.0
TOTAL		220	100.0	100.0	

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 100 OCCURRENCE



MEAN	29.209	STD ERR	1.276	MEDIAN	25.000
MODE	20.000	STD DEV	18.928	VARIANCE	358.285
KURTOSIS	10.251	S E KURT	1.991	SKEWNESS	2.740
S E SKEW	1.64	RANGE	131.000	MINIMUM	9.000
MAXIMUM	140.000	SUM	6426.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	12.000	25.00	18.250	33.30	20.000
50.00	25.000	66.70	30.000	75.00	35.000
90.00	45.000				

VALID CASES 220 MISSING CASES 0

DATA LOT SIZE SIZE ONE

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
30	1	0	0	105	3	1	56	210	1	0	85
35	3	1	2	110	8	4	60	215	1	0	85
40	6	3	5	115	2	1	60	220	3	1	87
45	5	2	7	120	10	5	65	240	3	1	88
50	16	7	14	125	1	0	65	250	3	1	90
55	3	1	15	130	5	2	68	260	3	1	91
60	15	7	22	132	1	0	68	290	1	0	91
65	5	2	25	140	3	1	70	300	7	3	95
70	15	7	31	145	1	0	70	360	1	0	95
75	5	2	34	150	16	7	77	370	1	0	95
80	10	5	38	160	4	2	79	400	3	1	97
85	6	3	41	170	2	1	80	450	1	0	97
89	1	0	41	175	1	0	80	500	2	1	98
90	8	4	45	180	2	1	81	550	1	0	99
95	3	1	46	190	1	0	82	600	3	1	100
100	18	8	55	200	6	3	85				

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 1.20 OCCURRENCES

15	35	*****
59	63	*****
46	91	*****
30	119	*****
24	147	*****
5	175	****
9	203	*****
6	231	*****
6	259	*****
9	287	*****
0	315	
0	343	
2	371	**
3	399	***
0	427	
1	455	*
0	483	
2	511	**
1	539	*
0	567	
3	595	***

I + I + I + I + I + I + I

0 12 24 36 48 60

HISTOGRAM FREQUENCY

MEAN	103.073	STD. ERR.	7.167	MEDIAN	100.000
MODE	100.000	STD. DEV.	106.310	VARIANCE	11301.148
KURTOSIS	6.195	S.E. KURT	1.991	SKEWNESS	2.130
S.E. SKEW	164	RANGE	570.000	MINIMUM	30.000
MAXIMUM	600.000	SUM	29275.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	50.000	25.00	70.000	33.30	75.000
50.00	100.000	66.70	130.000	75.00	150.000
90.00	260.000				

VALID CASES	220	MISSING CASES	0
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DATA LIST FILE=BLDG TWO

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	TOTAL PERCENT
	30	2	.9	.9	.9
	35	5	2.3	2.3	3.2
	38	1	.5	.5	3.6
	40	10	4.5	4.5	8.2
	45	5	2.3	2.3	10.5
	50	25	11.4	11.4	21.8
	55	6	2.7	2.7	24.5
	60	14	6.4	6.4	30.9
	63	1	.5	.5	31.4
	65	1	.5	.5	31.8
	70	15	6.8	6.8	38.6
	75	9	4.1	4.1	42.7
	80	13	5.9	5.9	48.6
	85	3	1.4	1.4	50.0
	90	11	5.0	5.0	55.0
	95	2	.9	.9	55.9
	100	17	7.7	7.7	63.6
	110	9	4.1	4.1	67.7
	115	1	.5	.5	68.2
	120	4	1.8	1.8	70.0
	125	1	.5	.5	70.5
	130	4	1.8	1.8	72.3
	135	1	.5	.5	72.7
	140	1	.5	.5	73.2
	150	12	5.5	5.5	78.6
	155	1	.5	.5	79.1
	160	2	.9	.9	80.0
	170	2	.9	.9	80.9
	180	3	1.4	1.4	82.3
	200	9	4.1	4.1	86.4
	210	1	.5	.5	86.8
	215	1	.5	.5	87.3
	220	3	1.4	1.4	88.6
	230	5	2.3	2.3	90.9
	250	3	1.4	1.4	92.3
	260	1	.5	.5	92.7
	270	1	.5	.5	93.2
	300	5	2.3	2.3	95.5
	350	1	.5	.5	95.9
	400	3	1.4	1.4	97.3
	420	1	.5	.5	97.7
	450	2	.9	.9	98.6
	560	1	.5	.5	99.1
	600	2	.9	.9	100.0
TOTAL		220	100.0	100.0	

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 150 OCCURRENCES

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23      35 *****
71      63 *****
16      91 *****
19     119 *****
17     147 *****
5      175 ***
11     203 *****
8      231 *****
5      259 ***
5      287 ***
0      315
1      343 *
0      371
3      399 **
1      427 *
2      455 *
0      483
0      511
0      539
1      567 *
2      595 *

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I + I + I + I + I + I
0 15 30 45 60 75
HISTOGRAM FREQUENCY

MEAN	120.232	STD ERR	6.691	MEDIAN	87.500
MODE	50.000	STD DEV	99.247	VARIANCE	9850.051
KURTOSIS	6.968	S.E. KURT	1.991	SKEWNESS	2.408
S.E. SKEW	.164	RANGE	570.000	MINIMUM	30.000
MAXIMUM	600.000	SUM	26451.000		

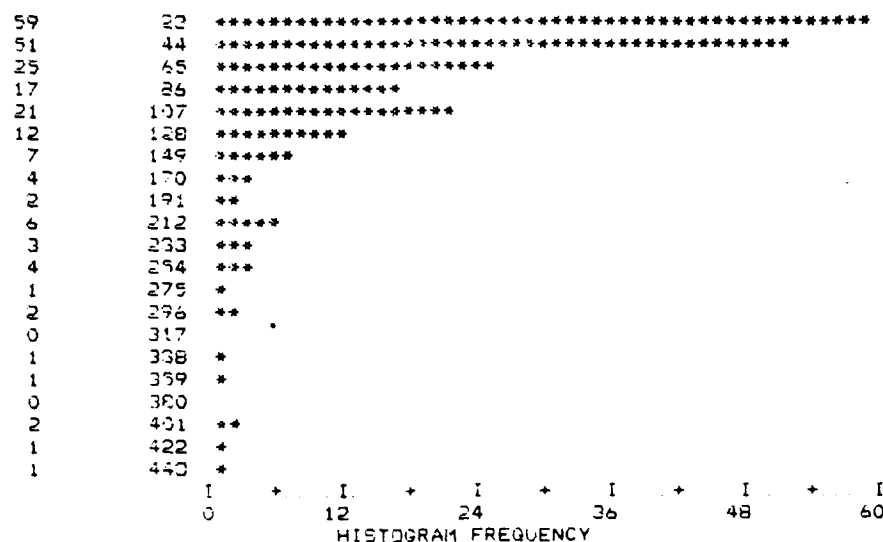
PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	45.000	25.00	60.000	33.30	70.000
50.00	87.500	66.70	110.000	75.00	150.000
90.00	230.000				

VALID CASES 220 MISSING CASES 0

TABLE 1. FREQUENCY OF VALUES

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
15	2	1	1	48	1	0	44	130	2	1	84
17	1	0	1	50	14	5	50	140	1	0	85
18	1	0	2	55	5	2	52	150	6	3	87
20	8	4	5	60	9	4	56	160	4	2	89
22	1	0	6	65	4	2	58	200	2	1	90
23	2	1	7	70	4	2	60	210	2	1	91
24	1	0	7	75	3	1	61	220	4	2	93
25	18	8	15	80	5	2	64	240	3	1	94
29	1	0	16	90	11	5	69	250	4	2	96
30	24	11	27	95	1	0	69	275	1	0	96
35	10	5	31	100	10	5	74	300	2	1	97
40	14	6	38	105	3	1	75	330	1	0	98
42	1	0	38	110	7	3	78	350	1	0	98
43	1	0	39	115	1	0	79	400	2	1	99
45	9	4	43	120	9	4	83	420	1	0	100
47	1	0	43	125	1	0	83	450	1	0	100

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 1 20 OCCURRENCES



MEAN	85.300	STD. ERR.	5.393	MEDIAN	52.500
MODE	30.000	STD. DEV.	80.066	VARIANCE	6410.540
KURTOSIS	5.173	S.E. KURT	1.991	SKEWNESS	2.164
S.E. SKEW	.164	RANGE	435.000	MINIMUM	15.000
MAXIMUM	450.000	SUM	18766.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	25.000	25.00	30.000	33.30	40.000
50.00	52.500	66.70	90.000	75.00	108.750
90.00	209.000				

VALID CASES	220	MISSING CASES	0
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VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
	10	1	5	5	5
	12	2	9	9	14
	15	12	55	55	68
	17	1	5	5	73
	18	3	14	14	86
	20	20	118	118	205
	23	1	5	5	209
	25	19	86	86	295
	28	2	9	9	305
	30	11	50	50	355
	35	10	45	45	400
	38	1	5	5	405
	40	22	100	100	505
	43	1	5	5	509
	45	9	41	41	550
	50	13	59	59	609
	55	5	23	23	632
	60	9	41	41	673
	65	1	5	5	677
	70	3	14	14	691
	75	3	14	14	705
	80	3	14	14	718
	85	3	14	14	732
	90	9	41	41	773
	95	1	5	5	777
	100	5	23	23	800
	105	1	5	5	805
	110	3	14	14	818
	120	7	32	32	850
	130	3	14	14	864
	135	2	9	9	873
	140	1	5	5	877
	150	2	9	9	886
	160	2	9	9	895
	170	1	5	5	900
	180	3	14	14	914
	200	5	23	23	936
	210	2	9	9	945
	220	4	18	18	964
	250	1	5	5	968
	260	1	5	5	973
	300	1	5	5	977
	360	1	5	5	982
	375	1	5	5	986
	500	1	5	5	991
	550	2	9	9	1000
TOTAL		250	1000	1000	

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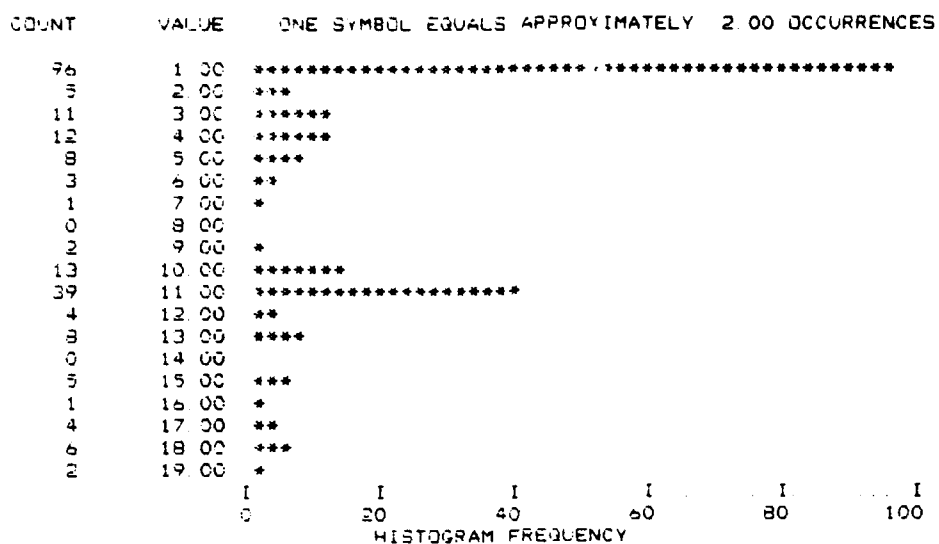
19      20      ****
21      46      ****
19      72      ****
22      68      ****
12      124     *****
5        150     ***
4        176     **
7        202     ****
4        226     **
2        254     *
0        280
1        306     *
0        332
1        358     *
1        384     *
0        410
0        436
0        462
1        488     *
0        514
2        540     *

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MEAN	73.273	STD ERR	5.616	MEDIAN	40.000
MODE	20.000	STD DEV	53.293	VARIANCE	6937.706
KURTOSIS	12.717	S E KURT	1.891	SKEWNESS	3.136
S E SKEW	164	RANGE	540.000	MINIMUM	10.000
MAXIMUM	550.000	SUM	16120.000		

VALID CASES	220	MISSING CASES	0
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53



MEAN	5.845	STD. ERR.	.369	MEDIAN	3.000
MODE	1.000	STD. DEV.	5.473	VARIANCE	29.949
KURTOSIS	-.587	S.E. KURT	1.991	SKEWNESS	.687
S.E. SKEW	.164	RANGE	18.000	MINIMUM	1.000
MAXIMUM	19.000	SUM	1286.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	1.000	25.00	1.000	33.30	1.000
50.00	3.000	66.70	10.000	75.00	11.000
90.00	13.000				

VALID CASES 220 MISSING CASES 0

Spatial areas of building materials

AREA PAINTED SURFACE

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
0.0	38	17	17	1165.12	2	1	39	3200.00	1	0	62
28.47	1	0	18	1195.27	1	0	40	3212.07	1	0	63
44.13	1	0	19	1195.93	1	0	40	3231.29	1	0	63
45.49	1	0	19	1197.53	1	0	40	3238.91	1	0	64
56.90	1	0	19	1200.00	2	1	41	3241.88	1	0	64
59.07	1	0	20	1249.80	1	0	42	3242.79	1	0	65
70.45	1	0	20	1264.39	1	0	42	3520.00	1	0	65
73.75	1	0	20	1274.45	1	0	43	3520.00	1	0	65
90.21	1	0	21	1291.03	1	0	43	3538.83	1	0	66
90.47	1	0	21	1422.10	1	0	44	3539.56	1	0	66
103.02	1	0	22	1424.90	1	0	44	3550.68	1	0	67
122.60	1	0	22	1489.66	1	0	45	3567.60	1	0	67
123.36	1	0	23	1524.34	1	0	45	3570.00	1	0	68
141.33	1	0	23	1543.57	1	0	45	3627.27	1	0	68
171.59	1	0	24	1560.00	1	0	46	3771.43	1	0	69
175.81	1	0	24	1600.00	2	1	47	3813.00	1	0	69
207.52	2	1	25	1682.11	1	0	47	3834.78	1	0	70
225.30	1	0	25	1720.18	1	0	48	3860.76	1	0	70
254.71	1	0	26	1766.40	1	0	48	3894.65	1	0	70

302.68	1	0	26	1800	00	2	1	49	3906	29	1	0	71
335.80	1	0	27	1800	00	1	0	50	3912	61	1	0	71
388.24	1	0	27	1899	30	1	0	50	3920	00	1	0	72
409.77	1	0	28	1935	51	1	0	50	4000	00	1	0	72
425.75	1	0	28	1950	00	1	0	51	4103	52	1	0	73
466.10	1	0	29	1951	30	1	0	51	4140	00	1	0	73
518.00	1	0	29	1965	21	1	0	52	4180	00	1	0	74
588.83	1	0	30	1973	90	1	0	52	4200	00	1	0	74
599.16	1	0	30	2000	00	3	1	54	4320	00	1	0	75
605.53	1	0	30	2048	94	1	0	54	4383	40	1	0	75
627.03	1	0	31	2160	00	1	0	55	4542	22	1	0	75
640.00	1	0	31	2210	00	1	0	55	4609	03	1	0	76
684.39	1	0	32	2370	21	1	0	55	4623	53	1	0	76
702.99	1	0	32	2400	00	1	0	56	4630	57	1	0	77
707.69	1	0	33	2500	00	1	0	56	4658	75	1	0	77
768.00	1	0	33	2550	00	1	0	57	4680	00	1	0	78
778.38	1	0	34	2579	27	1	0	57	4734	16	1	0	78
902.56	1	0	34	2675	98	1	0	58	4736	23	1	0	79
949.57	1	0	35	2694	81	1	0	58	4750	21	1	0	79
953.85	1	0	35	2750	00	1	0	59	4793	29	1	0	80
956.10	1	0	35	2789	43	1	0	59	4800	00	2	1	80
959.17	1	0	36	2792	15	1	0	60	4883	21	1	0	81
977.29	1	0	36	2896	24	1	0	60	4893	82	1	0	81
1022.95	1	0	37	2988	68	1	0	60	5027	53	1	0	82
1043.12	1	0	37	3060	00	1	0	61	5149	67	1	0	82
1080.00	1	0	38	3080	00	1	0	61	5280	00	1	0	83
1113.41	1	0	38	3189	15	1	0	62	5299	72	1	0	83

VALUE	FREQ	PCT	CUM	VALUE	FREQ	PCT	CUM	VALUE	FREQ	PCT	CUM
5500.00	2	1	84	7144.69	1	0	90	10213.12	1	0	95
5907.80	1	0	85	7247.19	1	0	90	10625.54	1	0	95
6144.16	1	0	85	8000.00	1	0	90	10800.00	1	0	95
6231.27	1	0	85	8507.91	1	0	91	11153.91	1	0	96
6418.60	1	0	86	9113.68	1	0	91	15830.86	1	0	97
6561.92	1	0	86	9155.64	1	0	92	16204.46	1	0	97
6600.00	1	0	87	9360.24	1	0	92	16475.00	1	0	98
6720.00	1	0	87	9454.55	1	0	93	17948.49	1	0	98
6774.75	1	0	88	9533.79	1	0	93	22307.82	1	0	99
6864.94	1	0	88	9750.00	1	0	94	22604.62	1	0	99
6983.25	1	0	89	10000.00	1	0	94	32400.00	1	0	100
6989.43	1	0	89	10120.00	1	0	95	73920.00	1	0	100

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 4.00 OCCURRENCES

143	1760	*****
53	5280	*****
13	8800	***
3	12320	*
3	15840	*
1	19360	
2	22880	*
0	26400	
0	29920	
1	33440	
0	36960	
0	40480	
0	44000	
0	47520	
0	51040	
0	54560	
0	58080	
0	61600	
0	65120	
0	68640	
1	72160	

I + I + I + I + I + I
 0 40 80 120 160 200
 HISTOGRAM FREQUENCY

MEAN 2495.959
MODE 0 0
KURTOSIS 68.970
S.E. SKEW 164
MAXIMUM 73920.000

STD. ERR 431.340
STD. DEV. 6397.811
S.E. KURT 1.991
RANGE 73920.000
SUM 769330.874

MEDIAN 1917.405
VARIANCE 40931984.5
SKEWNESS 6.985
MINIMUM 0 0

PERCENTILE VALUE
10 00 0 0
50 00 1917.405
90 00 7924.719

PERCENTILE VALUE
25 00 211.964
66 70 3557.566

PERCENTILE VALUE
33 30 774.154
75 00 4502.516

VALID CASES 220

MISSING CASES 0

1ST 4584 100000 100000 100000

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
0 0	107	49	49	423.84	1	0	55	5153.76	1	0	82
10 56	1	0	49	432.63	1	0	66	5187.00	1	0	83
32 50	1	0	50	452.81	1	0	66	5220.00	1	0	83
65 84	1	0	50	455.19	1	0	67	5400.00	1	0	84
58 44	1	0	50	456.60	1	0	67	5495.16	1	0	84
30 57	1	0	51	488.73	1	0	68	5518.68	1	0	85
114 94	1	0	51	546.09	1	0	68	5743.20	1	0	85
129 43	1	0	52	570.57	1	0	69	6068.64	1	0	85
144 59	1	0	52	570.73	1	0	69	6176.64	1	0	86
148 00	1	0	53	575.84	1	0	70	6264.00	1	0	86
159 32	1	0	53	581.40	1	0	70	6320.93	1	0	87
171 17	1	0	54	635.06	1	0	70	6450.57	1	0	87
175 59	1	0	54	698.08	1	0	71	6858.67	1	0	88
194 02	1	0	55	700.28	1	0	71	7060.39	1	0	88
219 98	1	0	55	744.36	1	0	72	7114.22	1	0	89
226 10	1	0	55	769.86	1	0	72	7678.79	1	0	89
241 09	1	0	56	846.15	1	0	73	8409.14	1	0	90
248 96	1	0	56	1055.50	1	0	73	8534.88	2	1	90
249 60	1	0	57	1092.18	1	0	74	9172.77	1	0	91
259 82	1	0	57	1142.49	1	0	74	9600.84	1	0	91
264 71	1	0	58	1240.00	1	0	75	9754.74	1	0	92
270 09	1	0	58	1824.25	1	0	75	11622.71	1	0	92
272 73	1	0	59	1840.00	1	0	75	12293.20	1	0	93
283 15	1	0	59	2076.61	1	0	76	13660.61	1	0	93
285 33	1	0	60	2171.72	1	0	76	14708.57	1	0	94
290 97	1	0	60	2504.26	1	0	77	14800.00	1	0	94
305 55	1	0	60	2900.30	1	0	77	15470.54	1	0	95
322 78	1	0	61	3106.12	1	0	78	16103.96	1	0	95
340 00	1	0	61	3555.19	1	0	78	17433.78	1	0	95
349 79	1	0	62	3676.25	1	0	79	17972.08	2	1	96
357 99	1	0	62	3864.20	1	0	79	19620.84	1	0	97
361 17	1	0	63	3920.00	1	0	80	20953.00	1	0	97
365 77	1	0	63	4530.90	1	0	80	21328.53	1	0	98
366 79	1	0	64	4554.51	1	0	80	23506.43	1	0	98
370 44	1	0	64	4555.82	1	0	81	30289.05	1	0	99
387 93	1	0	65	4805.58	1	0	81	36448.13	1	0	99
396 48	1	0	65	5025.34	1	0	82	37320.26	2	1	100

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 4.00 OCCURRENCES

```

154      590 *****
  7      2656 **
12      4436 ***
11      6214 ***
  5      7992 *
  3      9770 *
  2     11548 *
  1     13326
  3     15104 *
  2     16882 *
  2     18660 *
  2     20438 *
  1     22216
  1     23994
  0     25772
  0     27550
  0     29328
  1     31106
  0     32884
  0     34662
  3     36440 *

```

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      I      +      I      +      I      +      I      +      I
      0      40      80      120      160      200
      HISTOGRAM FREQUENCY

```

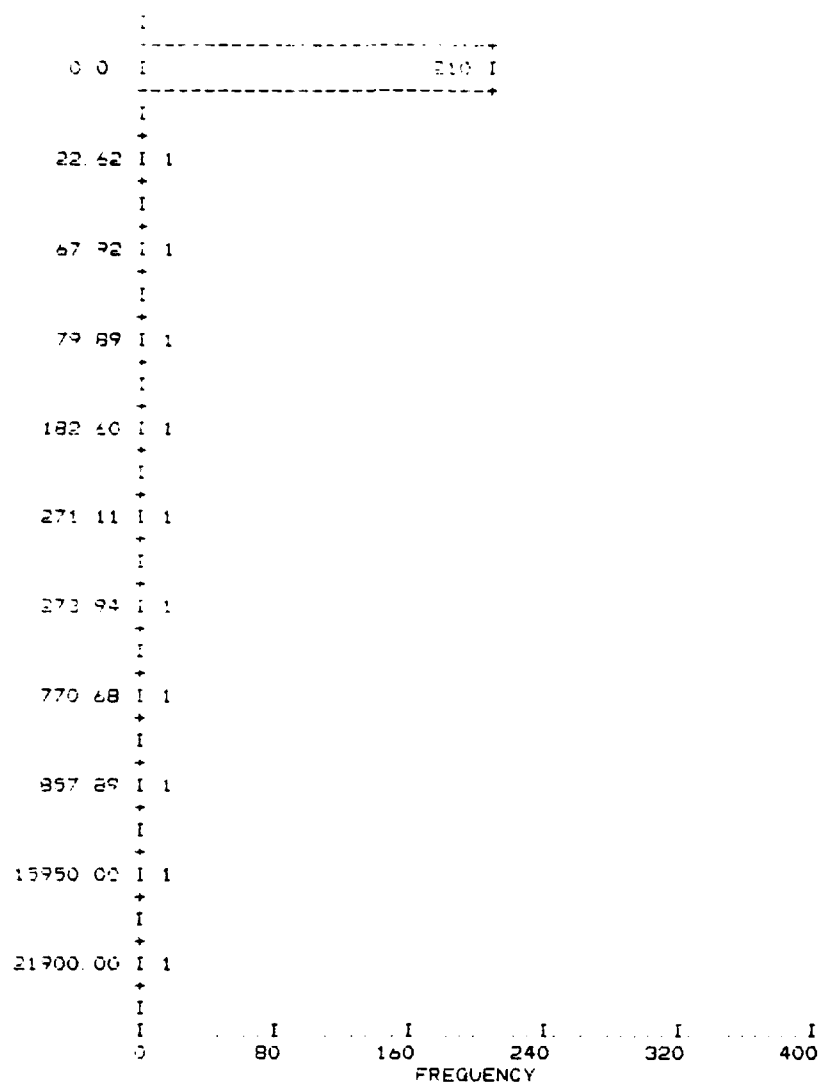
MEAN	2765.735	STD ERR	428.614	MEDIAN	67.141
MODE	0.0	STD DEV	6357.366	VARIANCE	40416106.1
KURTOSIS	12.781	S.E. KURT	1.991	SKEWNESS	3.368
S.E. SKEW	164	RANGE	37320.256	MINIMUM	0.0
MAXIMUM	37320.256	SUM	608461.756		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	0.0	33.30	0.0
50.00	67.141	66.70	455.765	75.00	1836.062
90.00	8534.883				

VALID CASES 220 MISSING CASES 0

PERCENTAGE OF TOTAL CASES

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	TOTAL PERCENT
	0.0	210	95.5	95.5	95.5
	22.62	1	5	5	95.9
	67.92	1	5	5	96.4
	79.89	1	5	5	96.8
	182.60	1	5	5	97.3
	271.11	1	5	5	97.7
	273.94	1	5	5	98.2
	770.68	1	5	5	98.6
	857.89	1	5	5	99.1
	15950.00	1	5	5	99.5
	21900.00	1	5	5	100.0
TOTAL		220	100.0	100.0	



MEAN 183.530
 MODE 0.0
 KURTOSIS 117.618
 S.E. SKEW 164
 MAXIMUM 21900.000

STD. ERR 122.933
 STD. DEV 1823.396
 S.E. KURT 1.991
 RANGE 21900.000
 SUM 40376.656

MEDIAN 0.0
 VARIANCE 3324773.84
 SKEWNESS 10.763
 MINIMUM 0.0

PERCENTILE VALUE
 10.00 0.0
 50.00 0.0
 90.00 0.0

PERCENTILE VALUE
 25.00 0.0
 66.70 0.0

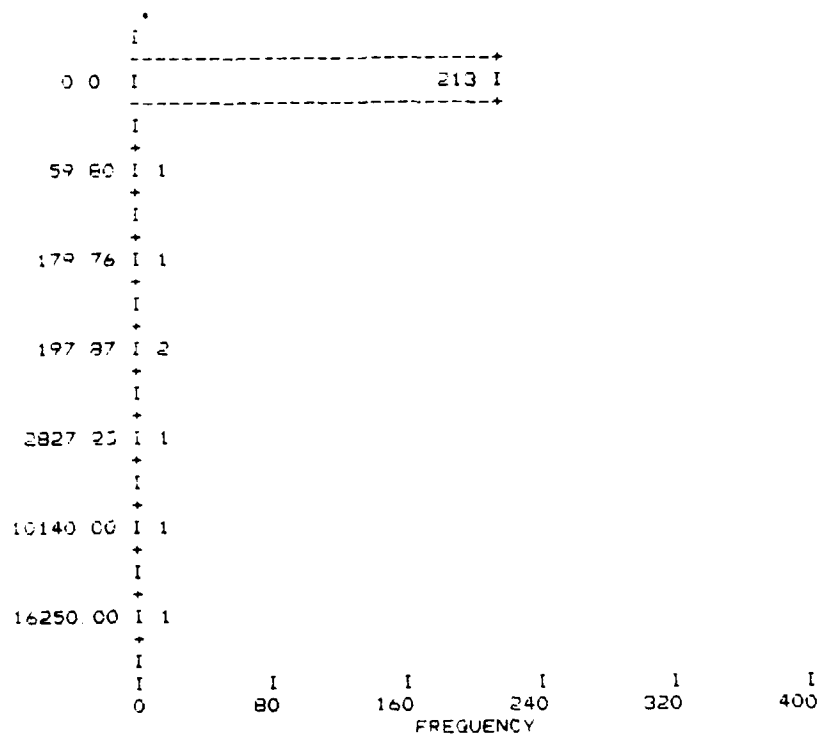
PERCENTILE VALUE
 33.30 0.0
 75.00 0.0

VALID CASES 320

MISSING CASES 0

DATA - SA - ACHARD'S SURFACE

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
	0 0	213	96.8	96.8	96.8
	59.80	1	5	5	97.3
	179.76	1	5	5	97.7
	197.87	2	9	9	98.6
	2827.23	1	5	5	99.1
	10140.00	1	5	5	99.5
	16250.00	1	5	5	100.0
	TOTAL	220	100.0	100.0	



MEAN	135.893	STD. ERR.	37.744	MEDIAN	0.0
MODE	0.0	STD. DEV.	1301.455	VARIANCE	1693784.06
KURTOSIS	123.733	S.E. KURT	1.991	SKEWNESS	10.880
S.E. SKEW	164	RANGE	16250.000	MINIMUM	0.0
MAXIMUM	16250.000	SUM	29852.515		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	0.0	33.30	0.0
50.00	0.0	66.70	0.0	75.00	0.0
90.00	0.0				
VALID CASES	220	MISSING CASES	0		

OTHER MATERIALS

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
0 0	108	49	49	311 32	1	0	86	1360.00	1	0	93
24 12	1	0	50	316 46	1	0	86	1511.51	1	0	83
25 76	1	0	50	345 66	1	0	87	1617.78	1	0	84
32 40	1	0	50	373 58	1	0	87	1642.47	1	0	84
37 00	1	0	51	384 00	1	0	88	1683.57	1	0	85
42 20	1	0	51	417 44	1	0	88	1819.92	1	0	85
50 70	1	0	52	418 60	1	0	89	1844.79	1	0	85
55 31	1	0	52	486 32	1	0	89	1861.70	1	0	86
62 29	1	0	53	502 62	1	0	90	1951.55	1	0	86
62 58	1	0	53	542.23	1	0	90	2176.53	2	1	87
65 25	1	0	54	545 45	1	0	90	2236.85	1	0	88
87 87	1	0	54	635 06	1	0	91	2275.00	1	0	88
117 21	1	0	55	650 85	1	0	91	2279.74	2	1	89
121 62	1	0	55	660 00	1	0	92	2374.93	1	0	90
139 61	1	0	55	706 21	1	0	92	2400.00	1	0	90
153 55	1	0	56	730 43	1	0	93	2586.88	1	0	90
175 61	1	0	56	756 71	1	0	93	2700.00	1	0	91
183 39	1	0	57	774 46	1	0	94	2750.00	1	0	91
192 00	1	0	57	776 18	1	0	94	3000.00	1	0	92
192 31	1	0	58	780 00	1	0	95	3204.47	1	0	92
200 00	1	0	58	795 38	1	0	95	3213.00	1	0	93
205 66	1	0	59	806 72	1	0	95	3500.00	1	0	93
207 47	1	0	59	816 75	1	0	96	3674.66	1	0	94
208 70	1	0	60	826 49	1	0	96	3919.79	1	0	94
227 90	1	0	60	835 98	1	0	97	4709.53	1	0	95
236 50	1	0	60	855 40	1	0	97	5123.39	1	0	95
240 00	1	0	61	880 00	1	0	98	5600.00	1	0	95
243 90	1	0	61	960 00	1	0	98	6300.00	1	0	96
244 07	1	0	62	969 14	1	0	99	6567.37	1	0	96
266 39	1	0	62	990 00	1	0	99	6797.03	1	0	97
268 97	1	0	63	1015.17	1	0	99	7111.76	1	0	97
287 85	1	0	63	1136 76	1	0	99	9129.55	1	0	98
289 90	1	0	64	1200 00	1	0	99	12566.81	1	0	98
290 57	1	0	64	1252 55	1	0	99	12757.40	1	0	99
293 71	1	0	65	1261 76	1	0	99	14990.83	1	0	99
310 34	1	0	65	1267 50	1	0	99	21151.87	1	0	100
310 95	1	0	65	1300 00	1	0	99	36000.00	1	0	100

ONE SYMBOL EQUALS APPROXIMATELY 4.00 OCCURRENCES

108	650	*****
18	2565	*****
5	4230	*
4	5995	*
1	7710	
1	9423	
0	11140	
2	12855	*
1	14570	
0	16285	
0	18000	
0	19715	
1	21430	
0	23145	
0	24860	
0	26575	
0	28290	
0	30005	
0	31720	
0	33435	
1	35150	

HISTOGRAM FREQUENCY

MEAN	1114.928	STD ERR	229.158	MEDIAN	29.082
MODE	0.0	STD DEV	3408.302	VARIANCE	11616523.9
KURTOSIS	56.921	S.E. KURT	1.991	SKENNESS	6.702
S.E. SKEW	164	RANGE	15000.000	MINIMUM	0.0
MAXIMUM	15000.000	SUM	245284.158		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	0.0	33.30	0.0
50.00	29.082	66.70	357.022	75.00	803.886
90.00	2568.189				

VALID CASES 220 MISSING CASES 0

Roof material and roof-mounted apparatus items

14-24 IN. LOSE CHIMNEY AREA

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
0.0	105	48	48	34.00	1	0	78	110.00	1	0	91
1.00	1	0	48	40.00	5	2	80	120.00	1	0	92
3.00	6	3	51	46.00	1	0	81	128.00	1	0	92
4.00	9	4	55	48.00	3	1	82	140.00	1	0	93
5.00	3	1	56	54.00	2	1	83	160.00	2	1	94
6.00	6	3	59	56.00	1	0	84	196.00	1	0	94
7.00	2	1	60	57.00	1	0	84	200.00	1	0	95
8.00	3	1	61	60.00	3	1	85	216.00	1	0	95
9.00	1	0	62	62.00	2	1	86	240.00	2	1	96
10.00	3	1	63	64.00	1	0	87	268.00	1	0	96
12.00	5	2	65	65.00	1	0	87	270.00	1	0	97
16.00	7	3	69	72.00	2	1	88	320.00	1	0	97
18.00	3	1	70	80.00	1	0	89	366.00	1	0	98
20.00	3	1	71	86.00	1	0	89	400.00	2	1	99
22.00	1	0	72	88.00	1	0	90	402.00	1	0	99
24.00	8	4	75	96.00	1	0	90	480.00	1	0	100
30.00	3	1	77	102.00	1	0	90	612.00	1	0	100
32.00	2	1	78	108.00	1	0	91				

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 4.00 OCCURRENCES

157	6	*****
24	36	*****
14	60	****
5	76	**
3	126	*
2	156	*
2	186	*
1	216	
2	246	*
2	276	*
1	306	
0	336	
1	366	
3	396	*
0	426	
0	456	
1	486	
0	516	
0	546	
0	576	
1	606	

I + I + I + I + I + I + I

0 40 80 120 160 200

HISTOGRAM FREQUENCY

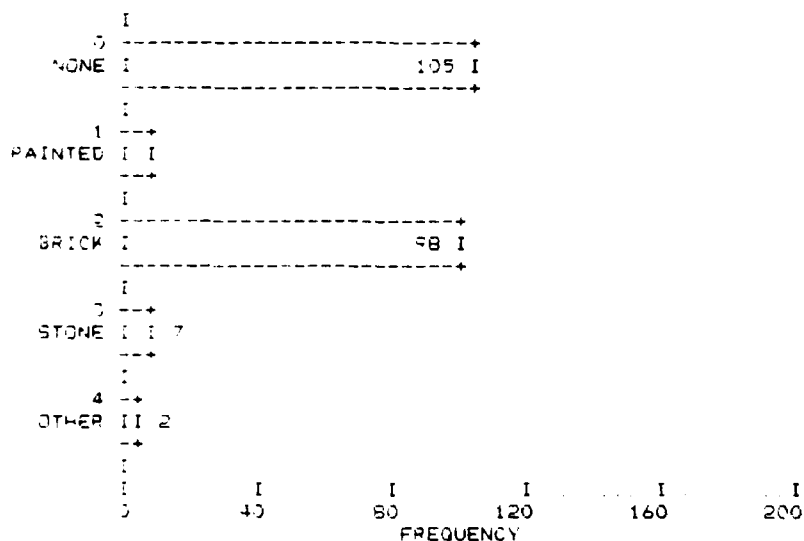
MEAN	15.577	STD. ERR.	5.575	MEDIAN	3.000
MODE	0.0	STD. DEV.	87.150	VARIANCE	7595.151
KURTOSIS	15.827	S.E. KURT	1.991	SKEWNESS	3.751
S.E. SKEW	1.64	RANGE	512.000	MINIMUM	0.0
MAXIMUM	512.000	SUM	8047.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	0.0	33.30	0.0
50.00	3.000	66.70	16.000	75.00	24.000
90.00	101.400				

VALID CASES 220 MISSING CASES 0

LIST OF VALUES MATERIAL

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	TOTAL PERCENT
NONE	0	105	47.7	47.7	47.7
PAINTED	1	8	3.6	3.6	51.4
BRICK	2	98	44.5	44.5	95.9
STONE	3	7	3.2	3.2	99.1
OTHER	4	2	.9	.9	100.0
TOTAL		220	100.0	100.0	



MEAN	1.059	STD. ERR.	.072	MEDIAN	1.000
MODE	0.0	STD. DEV.	1.065	VARIANCE	1.133
KURTOSIS	-1.369	S.E. KURT	1.991	SKEWNESS	.225
S.E. SKEW	1.64	RANGE	4.000	MINIMUM	0.0
MAXIMUM	4.000	SUM	233.000		

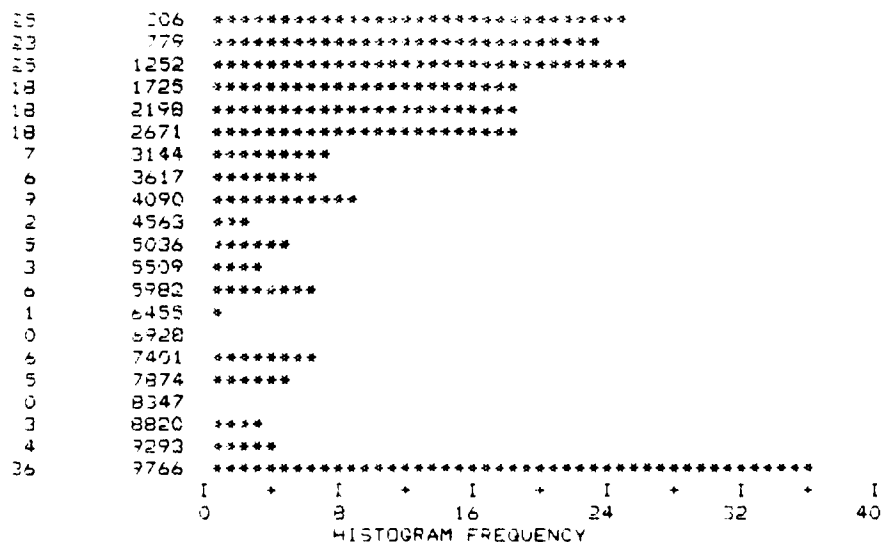
PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	0.0	33.30	0.0
50.00	1.000	66.70	2.000	75.00	2.000
90.00	2.000				

VALID CASES 220 MISSING CASES 0

TABLE 1 AREA OF EXPOSED ROOF

VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT	VALUE	FREQ	PCT	CUM PCT
72	1	0	0	1440	1	0	32	3400	1	0	61
100	1	0	1	1453	1	0	33	3480	1	0	62
150	1	0	1	1470	1	0	33	3510	1	0	62
200	1	0	2	1500	4	2	35	3550	1	0	63
225	1	0	2	1594	1	0	35	3600	2	1	64
240	1	0	3	1600	1	0	36	3870	1	0	64
270	1	0	3	1680	1	0	36	3900	2	1	65
375	3	1	5	1700	1	0	37	3942	1	0	65
400	3	1	6	1750	1	0	37	4040	1	0	66
450	3	1	7	1800	2	1	38	4100	1	0	66
480	2	1	8	1850	1	0	39	4136	1	0	67
500	6	3	11	1900	2	1	40	4200	1	0	67
525	1	0	11	1920	1	0	40	4250	1	0	68
573	1	0	12	1926	1	0	40	4500	2	1	69
580	1	0	12	1942	1	0	41	4862	1	0	69
600	6	3	15	1947	1	0	41	4900	1	0	70
670	1	0	15	2000	6	3	44	5100	1	0	70
700	1	0	15	2050	1	0	45	5180	1	0	70
750	2	1	17	2100	1	0	45	5200	1	0	71
800	4	2	19	2113	1	0	45	5305	1	0	71
840	1	0	19	2150	2	1	46	5500	1	0	72
872	1	0	20	2200	2	1	47	5600	1	0	72
900	2	1	20	2250	2	1	48	5750	1	0	73
975	1	0	21	2300	2	1	49	5760	4	2	75
990	1	0	21	2400	1	0	50	6201	1	0	75
1000	1	0	22	2475	1	0	50	6480	1	0	75
1039	1	0	22	2490	1	0	50	7200	2	1	76
1040	1	0	23	2500	6	3	53	7500	1	0	77
1100	1	0	23	2625	1	0	54	7569	3	1	78
1166	1	0	24	2640	1	0	54	7822	1	0	79
1200	5	2	26	2700	3	1	55	8100	4	2	80
1212	1	0	26	2750	1	0	56	8600	1	0	81
1225	1	0	27	2777	1	0	56	8640	1	0	81
1250	1	0	27	2800	3	1	58	9000	1	0	82
1280	1	0	28	2950	1	0	58	9350	2	1	83
1335	1	0	28	2960	1	0	59	9390	1	0	83
1350	2	1	29	3000	1	0	59	9500	1	0	84
1360	2	1	30	3100	1	0	60	9600	1	0	84
1370	1	0	30	3150	1	0	60	9900	1	0	85
1386	1	0	31	3240	1	0	60	9999	34	15	100
1400	2	1	32	3300	1	0	61				

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 30 OCCURRENCES



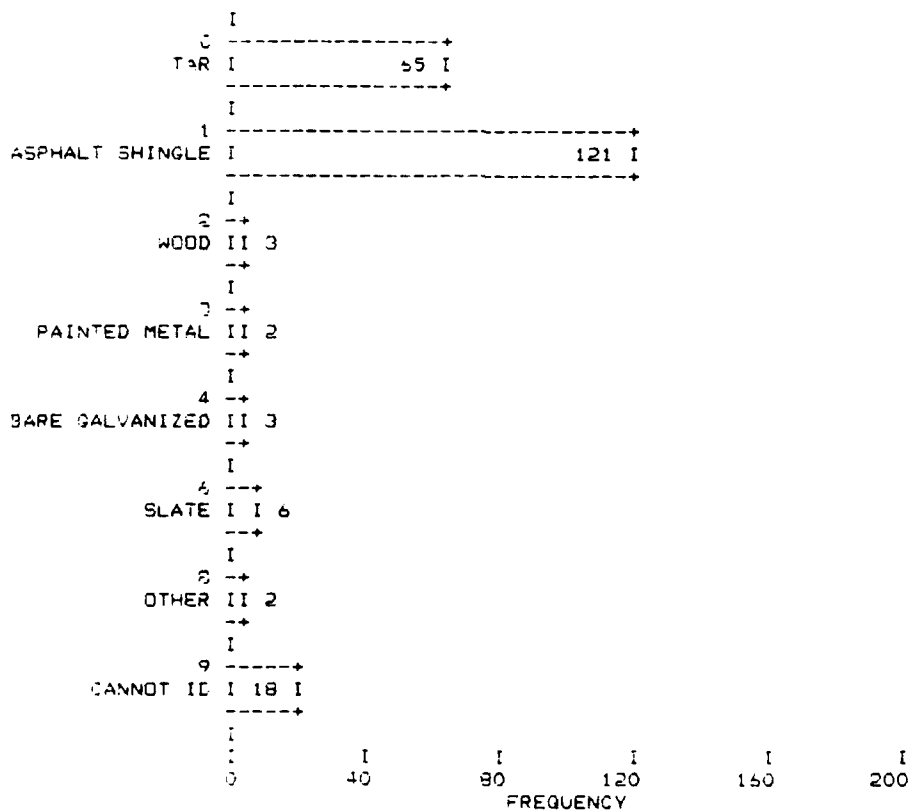
MEAN	3887.059	STD ERR	233.063	MEDIAN	2482.500
MODE	9999.000	STD DEV	3456.889	VARIANCE	11950084.7
KURTOSIS	883	S E KURT	1.991	SKEWNESS	.818
S E SKEW	164	RANGE	9927.000	MINIMUM	72.000
MAXIMUM	9999.000	SUM	855153.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	500.000	25.00	1200.000	33.30	1487.790
50.00	2482.500	66.70	4162.048	75.00	6410.250
90.00	9999.000				

VALID CASES 220 MISSING CASES 0

PRINT SELF MATERIAL TYPE

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	SUM PERCENT
TAR	0	65	29.5	29.5	29.5
ASPHALT SHINGLE	1	121	55.0	55.0	84.5
WOOD	2	3	1.4	1.4	85.9
PAINTED METAL	3	2	.9	.9	86.8
BARE GALVANIZED	4	3	1.4	1.4	88.2
SLATE	6	6	2.7	2.7	90.9
OTHER	8	2	.9	.9	91.8
CANNOT ID	9	18	8.2	8.2	100.0
TOTAL		220	100.0	100.0	

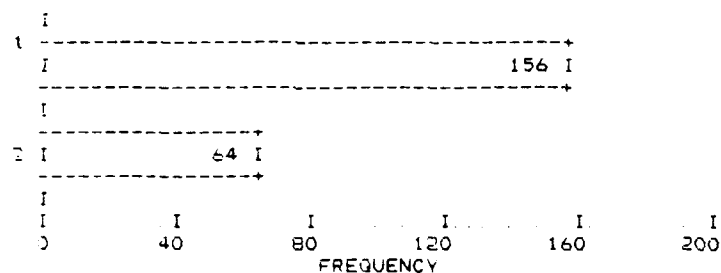


MEAN	1.532	STD. ERR.	.171	MEDIAN	1.000
MODE	1.000	STD. DEV.	2.542	VARIANCE	5.452
KURTOSIS	3.502	S.E. KURT	1.991	SKEWNESS	2.230
S.E. SKEW	.164	RANGE	9.000	MINIMUM	0.0
MAXIMUM	9.000	SUM	359.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	0.0	33.30	1.000
50.00	1.000	66.70	1.000	75.00	1.000
90.00	6.000				
VALID CASES	220	MISSING CASES	0		

VALUE LABEL

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	SUM PERCENT
	1	156	70.9	70.9	70.9
	2	64	29.1	29.1	100.0
	TOTAL	220	100.0	100.0	

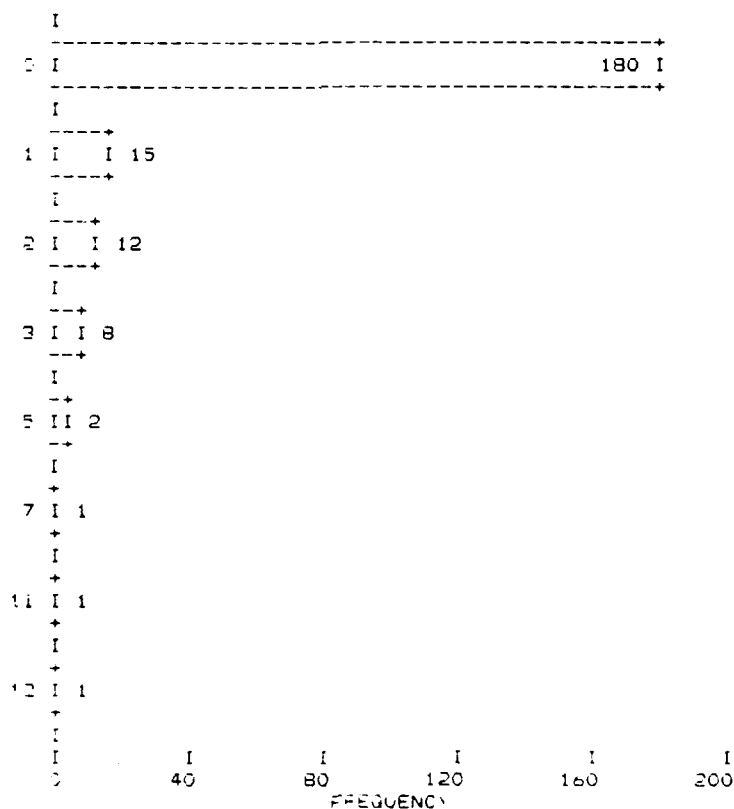


MEAN	1.291	STD. ERR.	.031	MEDIAN	1.000
MODE	1.000	STD. DEV.	.455	VARIANCE	.207
KURTOSIS	-1.151	S.E. KURT	1.991	SKEWNESS	.927
S.E. SKEW	.164	RANGE	1.000	MINIMUM	1.000
MAXIMUM	2.000	SUM	284.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	1.000	25.00	1.000	33.30	1.000
50.00	1.000	66.70	1.000	75.00	2.000
90.00	2.000				
VALID CASES	220	MISSING CASES	0		

TABLE 1. VALUE OF KENT'S FLIES, STACKS

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
	0	180	81.8	81.8	81.8
	1	15	6.8	6.8	88.6
	2	12	5.5	5.5	94.1
	3	8	3.6	3.6	97.7
	5	2	.9	.9	98.6
	7	1	.5	.5	99.1
	11	1	.5	.5	99.5
	12	1	.5	.5	100.0
	TOTAL		220	100.0	100.0

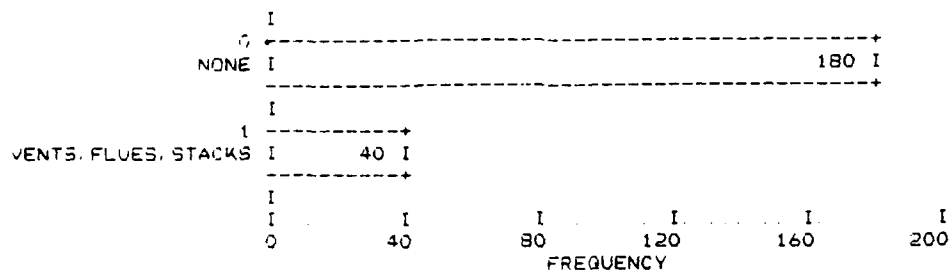


MEAN	4.68	STD. ERR.	.097	MEDIAN	0.0
MODE	0.0	STD. DEV.	1.435	VARIANCE	2.059
KURTOSIS	33.574	S.E. KURT	1.991	SKEWNESS	5.186
S.E. SKEW	1.64	RANGE	12.000	MINIMUM	0.0
MAXIMUM	12.000	SUM	103.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	0.0	33.30	0.0
50.00	0.0	66.70	0.0	75.00	0.0
90.00	2.000				
VALID CASES	220	MISSING CASES	0		

SPSS: STATISTICS

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	SUM PERCENT
NONE	0	180	81.8	81.8	81.8
VENTS, FLUES, STACKS	1	40	18.2	18.2	100.0
	TOTAL	220	100.0	100.0	



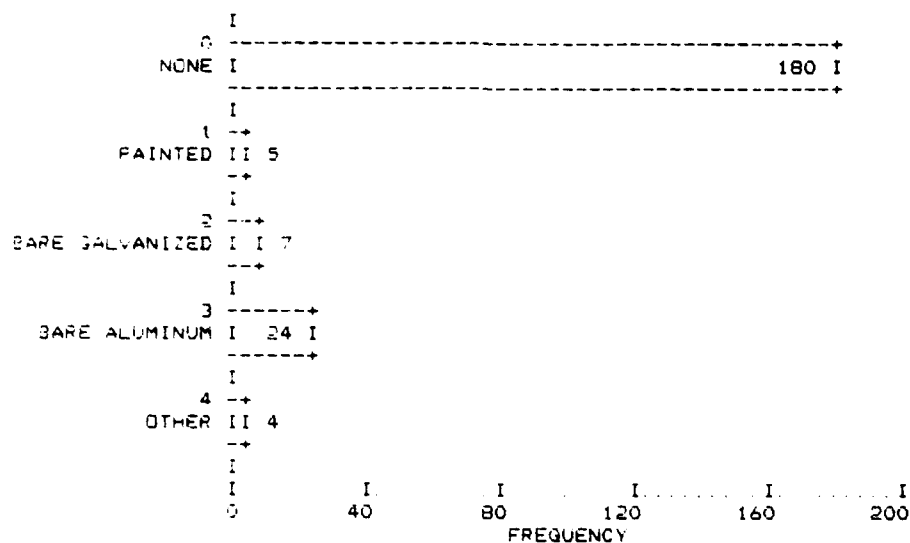
MEAN	182	STD ERR	026	MEDIAN	0 0
MODE	0 0	STD DEV	387	VARIANCE	149
KURTOSIS	767	S E KURT	1 991	SKEWNESS	1 661
S E SKEW	164	RANGE	1 000	MINIMUM	0 0
MAXIMUM	1 000	SUM	40 000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10 00	0 0	25 00	0 0	33 30	0 0
50 00	0 0	66 70	0 0	75 00	0 0
90 00	1 000				

VALID CASES 220 MISSING CASES 0

SPSS: STATISTICS

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	SUM PERCENT
NONE	0	180	81.8	81.8	81.8
PAINTED	1	5	2.3	2.3	84.1
BARE GALVANIZED	2	7	3.2	3.2	87.3
BARE ALUMINUM	3	24	10.9	10.9	98.2
OTHER	4	4	1.8	1.8	100.0
	TOTAL	220	100.0	100.0	



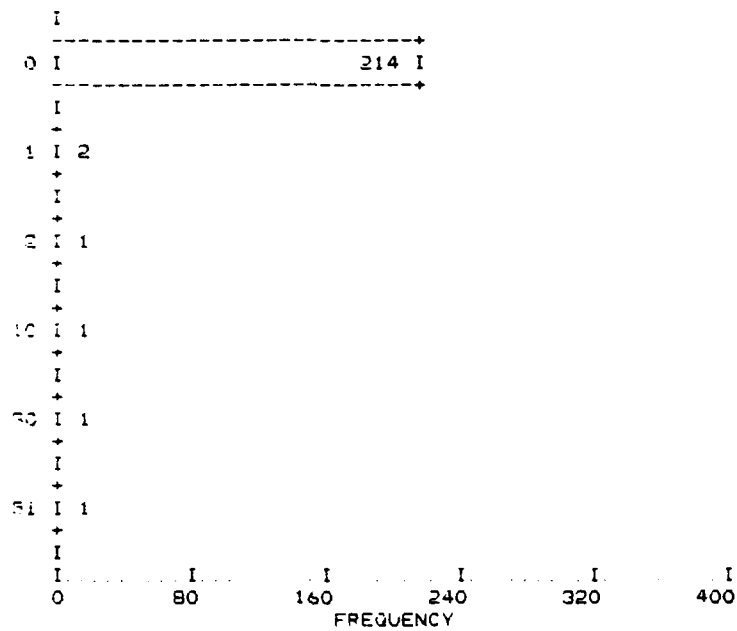
MEAN	486	STD ERR	074	MEDIAN	0 0
MODE	0 0	STD DEV	1 092	VARIANCE	1 192
KURTOSIS	2 296	S E KURT	1 991	SKEWNESS	1 980
S E SKEW	164	RANGE	4 000	MINIMUM	0 0
MAXIMUM	4 000	SUM	107 000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10 00	0 0	25 00	0 0	33 30	0 0
50 00	0 0	66 70	0 0	75 00	0 0
90 00	3 000				

VALID CASES	220	MISSING CASES	0
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PERCENTILES

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	SUM PERCENT
	0	214	97 3	97 3	97 3
	1	2	9	9	98 2
	2	1	5	5	98 6
	10	1	5	5	99 1
	30	1	5	5	99 5
	51	1	5	5	100 0
TOTAL		220	100 0	100 0	



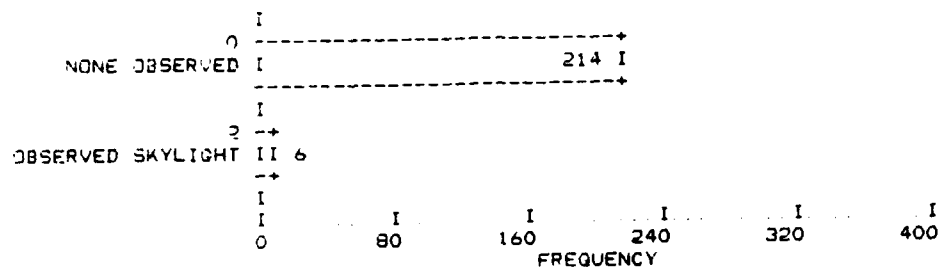
MEAN	432	STD ERR	272	MEDIAN	0.0
MODE	0.0	STD DEV	4.035	VARIANCE	16.283
KURTOSIS	126.380	S.E. KURT	1.991	SKEWNESS	10.942
S.E. SKEW	164	RANGE	51.000	MINIMUM	0.0
MAXIMUM	51.000	SUM	95.000		

ITEMS: 10.00, 20.00, 30.00, 40.00, 50.00, 60.00, 70.00, 80.00, 90.00, 100.00

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	0.0	33.30	0.0
50.00	0.0	66.70	0.0	75.00	0.0
90.00	0.0				
VALID CASES	220	MISSING CASES	0		

SPSSW: SKYLIGHT MATERIAL

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
NONE OBSERVED	0	214	97.3	97.3	97.3
OBSERVED SKYLIGHT	2	6	2.7	2.7	100.0
	TOTAL	220	100.0	100.0	



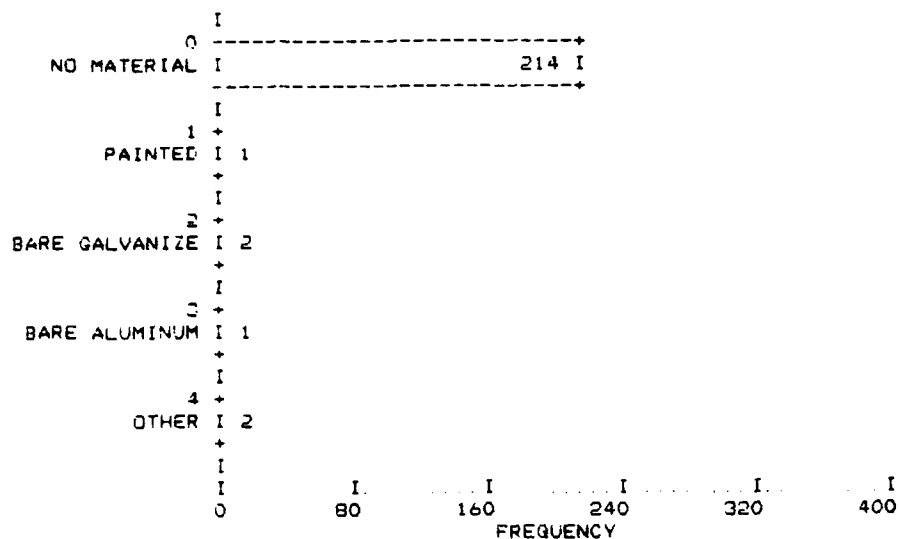
MEAN	.055	STD ERR	.022	MEDIAN	0.0
MODE	0.0	STD DEV	.326	VARIANCE	.107
KURTOSIS	32.455	S.E. KURT	1.991	SKEWNESS	5.845
S.E. SKEW	.164	RANGE	2.000	MINIMUM	0.0
MAXIMUM	2.000	SUM	12.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	0.0	33.30	0.0
50.00	0.0	66.70	0.0	75.00	0.0
90.00	0.0				

VALID CASES 220 MISSING CASES 0

SPSSW: SKYLIGHT MATERIAL

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
NO MATERIAL	0	214	97.3	97.3	97.3
PAINTED	1	1	.5	.5	97.7
BARE GALVANIZE	2	2	.9	.9	98.6
BARE ALUMINUM	3	1	.5	.5	99.1
OTHER	4	2	.9	.9	100.0
	TOTAL	220	100.0	100.0	



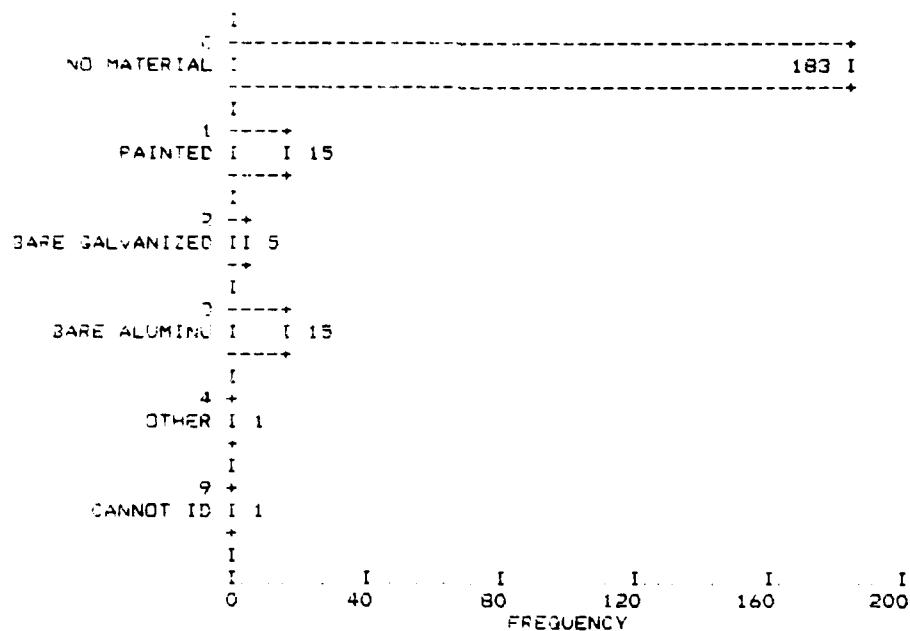
MEAN	073	STD ERR	032	MEDIAN	0.0
MODE	0.0	STD DEV	.472	VARIANCE	.223
KURTOSIS	51.463	S E KURT	1.991	SKWNESS	7.057
S E SKEW	.164	RANGE	4.000	MINIMUM	0.0
MAXIMUM	4.000	SUM	16.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	0.0	33.30	0.0
50.00	0.0	56.70	0.0	75.00	0.0
90.00	0.0				

VALID CASES	220	MISSING CASES	0
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PERCENTAGE DISTRIBUTION

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	SUM PERCENT
NO MATERIAL	0	183	83.2	83.2	83.2
PAINTED	1	15	6.8	6.8	90.0
BARE GALVANIZED	2	5	2.3	2.3	92.3
BARE ALUMINUM	3	15	6.8	6.8	99.1
OTHER	4	1	.5	.5	99.5
CANNOT ID	9	1	.5	.5	100.0
TOTAL		220	100.0	100.0	



MEAN	377	STD ERR	070	MEDIAN	0 0
MODE	0 0	STD DEV	1 037	VARIANCE	1 076
KURTOSIS	23 097	S E KURT	1 991	SKEWNESS	4 022
S E SKEW	164	RANGE	9 000	MINIMUM	0 0
MAXIMUM	9 000	SUM	83 000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10 00	0 0	25 00	0 0	33 30	0 0
50 00	0 0	66 70	0 0	75 00	0 0
90 00	1 900				
VALID CASES	220	MISSING CASES	0		

FILED READING LENGTH

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	SUM PERCENT
	0	183	83.2	83.2	83.2
	1	1	.5	.5	83.6
	5	1	.5	.5	84.1
	60	1	.5	.5	84.5
	80	3	1.4	1.4	85.9
	90	1	.5	.5	86.4
	100	1	.5	.5	86.8
	150	2	.9	.9	87.7
	200	2	.9	.9	88.6
	210	1	.5	.5	89.1
	220	1	.5	.5	89.5
	260	2	.9	.9	90.5
	265	1	.5	.5	90.9
	280	1	.5	.5	91.4
	290	2	.9	.9	92.3
	320	1	.5	.5	92.7
	348	2	.9	.9	93.6
	350	1	.5	.5	94.1
	368	1	.5	.5	94.5
	400	3	1.4	1.4	95.9
	408	1	.5	.5	96.4
	420	1	.5	.5	96.8
	480	1	.5	.5	97.3
	560	1	.5	.5	97.7
	600	3	1.4	1.4	99.1
	806	1	.5	.5	99.5
	999	1	.5	.5	100.0
TOTAL		220	100.0	100.0	

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 4.00 OCCURRENCES

185	20	*****
5	60	*
1	116	
2	164	*
4	212	*
4	260	*
3	308	*
4	356	*
5	404	*
0	452	
1	500	
1	548	
3	596	*
0	644	
0	692	
0	740	
1	788	
0	836	
0	884	
0	932	
1	980	
I + I + I + I + I + I + I		
0 40 80 120 160 200		

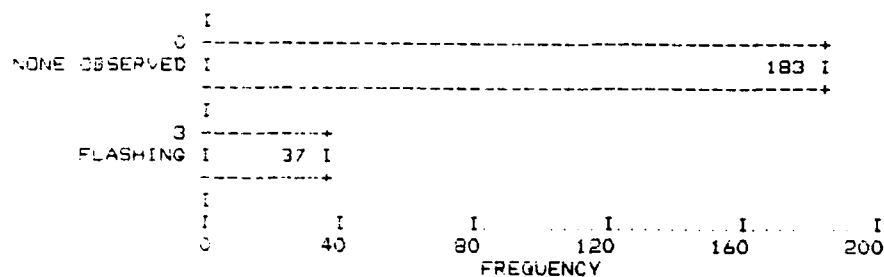
HISTOGRAM FREQUENCY

MEAN	53.082	STD ERR	9.948	MEDIAN	0.0
MODE	0.0	STD DEV	147.855	VARIANCE	21861.162
FURTOSIS	12.901	S E KURT	1.991	SKEWNESS	3.384
S E SKEW	164	RANGE	999.000	MINIMUM	0.0
MAXIMUM	999.000	SUM	11678.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	0.0	33.30	0.0
50.00	0.0	66.70	0.0	75.00	0.0
90.00	260.000				
VALID CASES	220	MISSING CASES	0		

APPFL INDICATOR: FLASHING

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
NONE OBSERVED	0	183	83.2	83.2	83.2
FLASHING	3	37	16.8	16.8	100.0
	TOTAL	220	100.0	100.0	



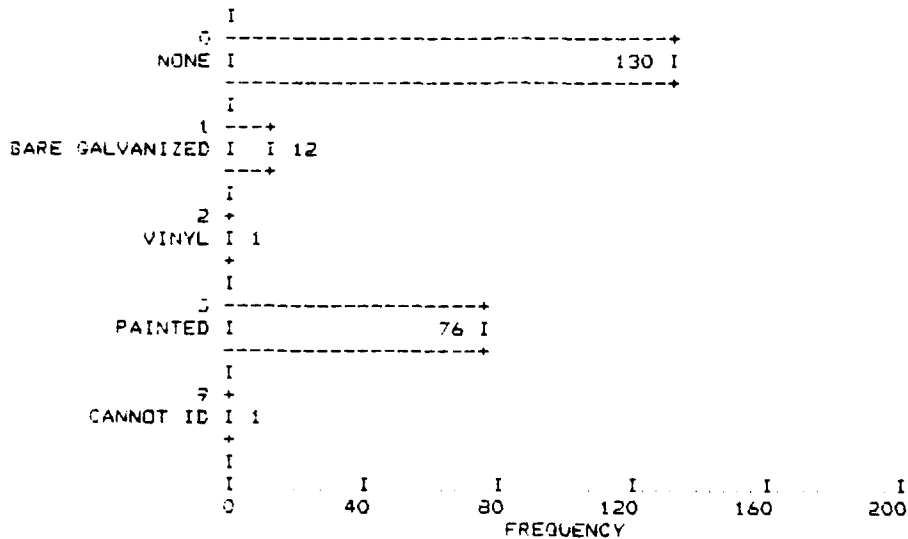
MEAN	505	STD ERR	076	MEDIAN	0.0
MODE	0.0	STD DEV	1.125	VARIANCE	1.265
KURTOSIS	1.002	S.E. KURT	1.991	SKEWNESS	1.787
S.E. BAEW	164	RANGE	3.000	MINIMUM	0.0
MAXIMUM	3.000	SUM	111.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	0.0	33.30	0.0
50.00	0.0	66.70	0.0	75.00	0.0
90.00	3.000				
VALID CASES	220	MISSING CASES	0		

Rain gutters, downspouts and fences

STATISTICS: RAIN GUTTER MATERIAL

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
NONE	0	130	59.1	59.1	59.1
BARE GALVANIZED	1	12	5.5	5.5	64.5
VINYL	2	1	.5	.5	65.0
PAINTED	3	76	34.5	34.5	99.5
CANNOT ID	9	1	.5	.5	100.0
TOTAL		220	100.0	100.0	



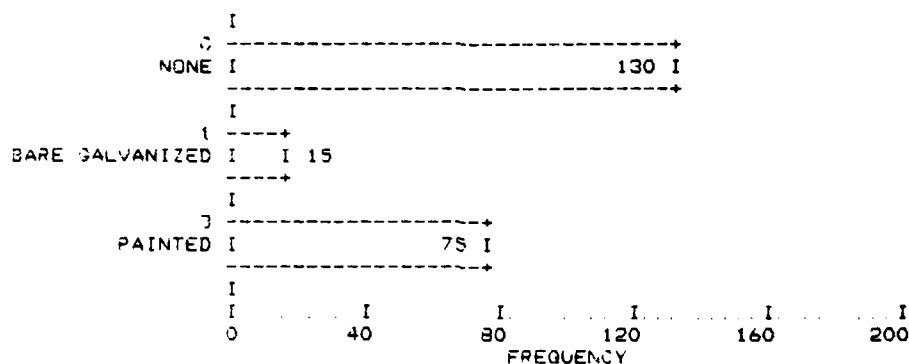
MEAN	1.141	STD ERR	101	MEDIAN	0.0
MODE	0.0	STD DEV	1.503	VARIANCE	2.259
KURTOSIS	1.507	S.E. KURT	1.991	SKEWNESS	1.061
S.E. SKEW	.164	RANGE	9.000	MINIMUM	0.0
MAXIMUM	9.000	SUM	251.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	0.0	33.30	0.0
50.00	0.0	66.70	3.000	75.00	3.000
90.00	3.000				

VALID CASES 220 MISSING CASES 0

LEAD-1 MATERIAL OF CORNSPOUT

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
NONE	0	130	59.1	59.1	59.1
BARE GALVANIZED	1	15	6.8	6.8	65.9
PAINTED	3	75	34.1	34.1	100.0
	TOTAL	220	100.0	100.0	



MEAN	1.091	STD ERR	.094	MEDIAN	0.0
MODE	0.0	STD DEV	1.398	VARIANCE	1.955
KURTOSIS	-1.592	S.E. KURT	1.991	SKEWNESS	.595
S.E. SKEW	.164	RANGE	3.000	MINIMUM	0.0
MAXIMUM	3.000	SUM	240.000		

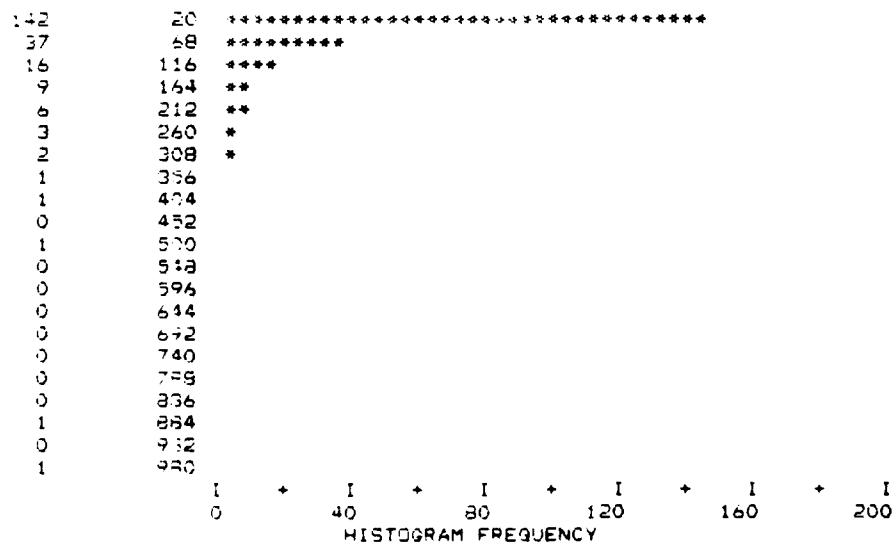
PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	0.0	33.30	0.0
50.00	0.0	66.70	3.000	75.00	3.000
90.00	3.000				

VALID CASES	220	MISSING CASES	0
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LOADING FACTOR BUTTERS

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
	0	130	59.1	59.1	59.1
	20	1	.5	.5	59.5
	25	3	1.4	1.4	60.9
	30	2	.9	.9	61.8
	40	6	2.7	2.7	64.5
	45	2	.9	.9	65.5
	50	5	2.3	2.3	67.7
	60	11	5.0	5.0	72.7
	70	4	1.8	1.8	74.5
	75	2	.9	.9	75.5
	80	8	3.6	3.6	79.1
	90	5	2.3	2.3	81.4
	95	1	.5	.5	81.8
	100	8	3.6	3.6	85.5
	105	1	.5	.5	85.9
	110	3	1.4	1.4	87.3
	120	1	.5	.5	87.7
	130	2	.9	.9	88.6
	140	3	1.4	1.4	90.0
	155	1	.5	.5	90.5
	160	1	.5	.5	90.9
	168	1	.5	.5	91.4
	170	2	.9	.9	92.3
	180	1	.5	.5	92.7
	200	3	1.4	1.4	94.1
	220	2	.9	.9	95.0
	230	1	.5	.5	95.5
	240	1	.5	.5	95.9
	260	1	.5	.5	96.4
	270	1	.5	.5	96.8
	290	1	.5	.5	97.3
	300	1	.5	.5	97.7
	360	1	.5	.5	98.2
	420	1	.5	.5	98.6
	500	1	.5	.5	99.1
	900	1	.5	.5	99.5
	999	1	.5	.5	100.0
TOTAL		220	100.0	100.0	

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 4.0 OCCURRENCES



MEAN	53.895	STD ERR	7.852	MEDIAN	0.0
MODE	0.0	STD DEV	116.467	VARIANCE	13564.551
KURTOSIS	32.539	S.E. KURT	1.991	SKEWNESS	4.921
S.E. SKEW	1.64	RANGE	999.000	MINIMUM	0.0
MAXIMUM	999.000	SUM	11857.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	0.0	33.30	0.0
50.00	0.0	66.70	50.000	75.00	75.000
90.00	153.500				

VALID CASES 220 MISSING CASES 0

LEVEL 0 CONVERSION LENGTH

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
	0	130	59.1	59.1	59.1
	10	3	1.4	1.4	60.5
	11	1	.5	.5	60.9
	12	3	1.4	1.4	62.3
	15	3	1.4	1.4	63.6
	16	1	.5	.5	64.1
	20	7	3.2	3.2	67.3
	25	1	.5	.5	67.7
	30	11	5.0	5.0	72.7
	32	1	.5	.5	73.2
	35	1	.5	.5	73.4
	40	7	3.2	3.2	76.8
	42	1	.5	.5	77.3
	50	5	2.3	2.3	79.5
	55	1	.5	.5	80.0
	60	12	5.5	5.5	85.5
	75	2	.9	.9	86.4
	80	10	4.5	4.5	90.9
	90	2	.9	.9	91.8
	98	1	.5	.5	92.3
	100	5	2.3	2.3	94.5
	115	1	.5	.5	95.0
	120	4	1.8	1.8	96.8
	125	2	.9	.9	97.7
	135	1	.5	.5	98.2
	150	2	.9	.9	99.1
	180	1	.5	.5	99.5
	420	1	.5	.5	100.0
TOTAL		220	100.0	100.0	

10. AT MICROPOINT ONE SYMBOL EQUALS APPROXIMATELY 400 OCCURRENCES

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1 1 10 *****
2 1 10 *****
14 50 ****
14 70 ****
13 50 ***
6 110 **
7 130 **
2 150 *
0 170
1 190
0 210
0 230
0 250
0 270
0 290
0 310
0 330
0 350
0 370
0 390
1 410

```

A histogram showing the frequency distribution of data. The x-axis is labeled 'HISTOGRAM FREQUENCY' and ranges from 0 to 200 with major tick marks at 0, 40, 80, 120, 160, and 200. The y-axis represents frequency, with a scale from 0 to 100. The histogram consists of several vertical bars of varying heights, representing the frequency of different data intervals. The distribution is roughly bell-shaped, peaking around a frequency of 100.

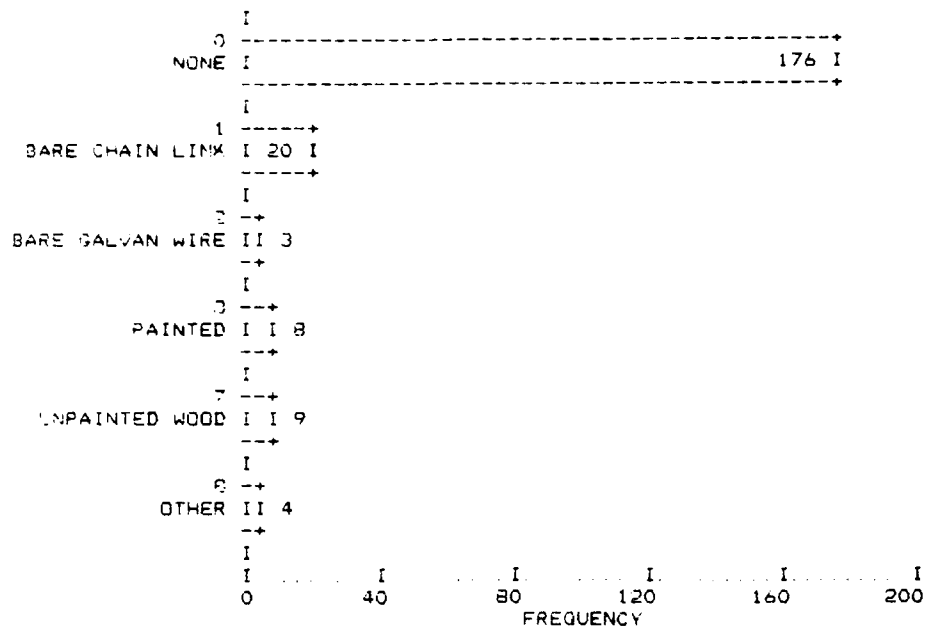
MEAN	25.705	STD ERR	3.119	MEDIAN	0.0
MODE	0.0	STD DEV	46.269	VARIANCE	2140.830
FORTOSIS	23.910	S E KURT	1.991	SKEWNESS	3.690
S E SKW	164	RANGE	420.000	MINIMUM	0.0
MAXIMUM	420.000	SUM	5655.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10 00	0 0	25 00	0 0	33 30	0 0
50 00	0 0	66 70	20 000	75 00	40 000
90 00	20 000				

VALID CASES	220	MISSING CASES	0
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[illegible]

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	TOTAL PERCENT
NONE	0	175	80.0	80.0	80.0
BARE CHAIN LINK	1	20	9.1	9.1	89.1
BARE GALVAN WIRE	2	3	1.4	1.4	90.5
PAINTED	3	9	3.6	3.6	94.1
UNPAINTED WOOD	7	9	4.1	4.1	98.2
OTHER	8	4	1.8	1.8	100.0
TOTAL		220	100.0	100.0	



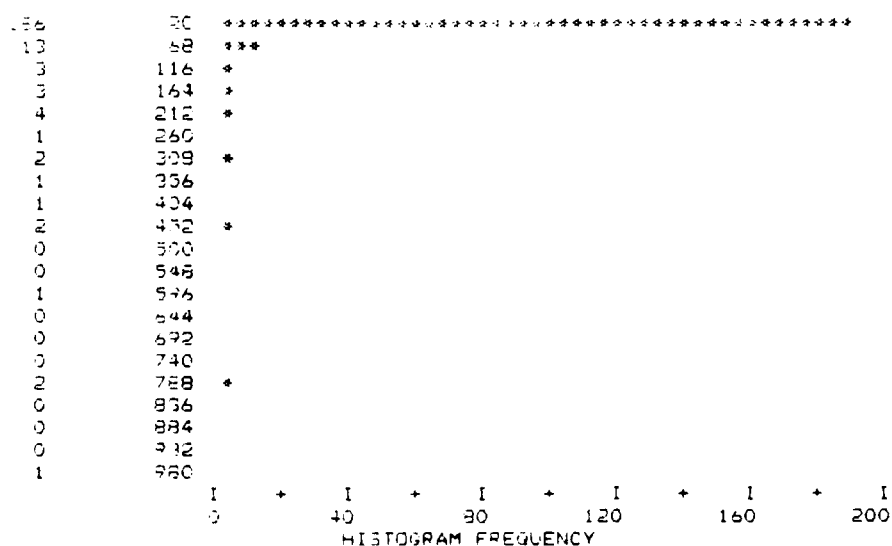
MEAN	659	STD ERR	121	MEDIAN	0 0
MODE	0 0	STD DEV	1.795	VARIANCE	3.221
KURTOSIS	8.922	S E KURT	1.991	SKWNESS	3.138
S E SKW	164	RANGE	8.000	MINIMUM	0 0
MAXIMUM	8.000	SUM	145.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0 0	25.00	0 0	33.30	0 0
50.00	0 0	66.70	0 0	75.00	0 0
90.00	2.000				
VALID CASES	220	MISSING CASES	0		

NAME: _____ PHONE: _____

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
	0	176	80.0	80.0	80.0
	5	1	.5	.5	80.5
	10	1	.5	.5	80.9
	12	1	.5	.5	81.4
	20	2	.9	.9	82.3
	25	1	.5	.5	82.7
	30	2	.9	.9	83.6
	35	1	.5	.5	84.1
	40	1	.5	.5	84.5
	50	4	1.8	1.8	86.4
	55	1	.5	.5	86.8
	60	1	.5	.5	87.3
	70	1	.5	.5	87.7
	75	2	.9	.9	88.6
	80	1	.5	.5	89.1
	85	2	.9	.9	90.0
	90	1	.5	.5	90.5
	100	2	.9	.9	91.4
	110	1	.5	.5	91.8
	140	2	.9	.9	92.7
	150	1	.5	.5	93.2
	200	4	1.8	1.8	95.0
	250	1	.5	.5	95.5
	300	1	.5	.5	95.9
	320	1	.5	.5	96.4
	360	1	.5	.5	96.8
	400	1	.5	.5	97.3
	440	1	.5	.5	97.7
	460	1	.5	.5	98.2
	600	1	.5	.5	98.6
	800	2	.9	.9	99.5
	999	1	.5	.5	100.0
TOTAL		220	100.0	100.0	

COUNT MIDPOINT ONE SYMBOL EQUALS APPROXIMATELY 4 ON OCCURRENCES



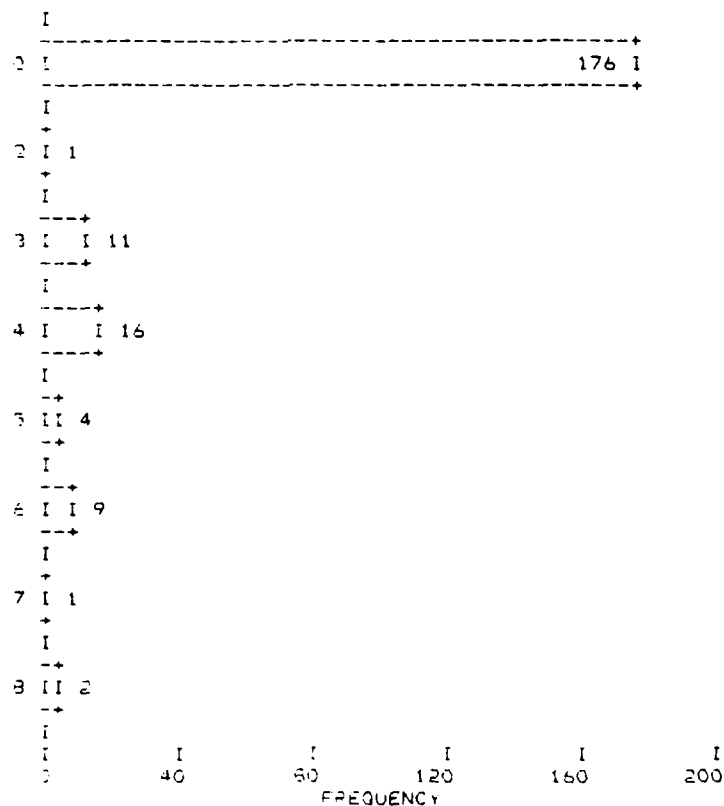
MEAN	38.050	STD. ERR.	8.633	MEDIAN	0.0
MODE	0.0	STD. DEV.	128.052	VARIANCE	16397.390
AURTOSIS	27.135	S.E. KURT	1.991	SKEWNESS	4.899
S.E. SKEW	164	RANGE	999.000	MINIMUM	0.0
MAXIMUM	999.000	SUM	8371.000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10.00	0.0	25.00	0.0	33.30	0.0
50.00	0.0	66.70	0.0	75.00	0.0
90.00	89.500				

VALID CASES 220 MISSING CASES 0

AT HEIGHT

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
	0	176	80.0	80.0	80.0
	2	1	5	5	80.5
	3	11	5.0	5.0	85.5
	4	16	7.3	7.3	92.7
	5	4	1.8	1.8	94.5
	6	9	4.1	4.1	98.6
	7	1	5	5	99.1
	8	2	9	9	100.0
	TOTAL	220	100.0	100.0	



MEAN	291	STD ERR	128	MEDIAN	0 0
MODE	0 0	STD DEV	1 294	VARIANCE	3 586
KURTOSIS	2 651	S E KURT	1 991	SKEWNESS	1 958
S E SKEW	164	RANGE	8 000	MINIMUM	0 0
MAXIMUM	8 000	SUM	196 000		

PERCENTILE	VALUE	PERCENTILE	VALUE	PERCENTILE	VALUE
10 00	0 0	25 00	0 0	33 30	0 0
50 00	0 0	66 70	0 0	75 00	0 0
90 00	4 000				

VALID CASES	220	MISSING CASES	0
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END

11-86

DT/C